***Our suggested LEXICON ENTRY FORMAT (and for auto-loading into database; plus website display)***

*First 3 lines (only about 2-3 words each) follows Canadian Survey:*

**Name** (in bold; larger font)

**Period: Devonian**

**Age Interval (Map column):**

(this includes the current Time-Abbreviation D22-D31 ; plus geologic-time)

(plus column-number on the province map – however, we suggest that maybe these "22" should be clarified as "Perm-22" or similar to avoid ambiguity on the website)

**Province:**

**Type Locality and Naming:**

Ideally, with Lat-Long; Plus Map if available

We will need those Lat-Long for later map-interfaces

**Synonym:**

If needed

**Lithology and Thickness:**

Would include members; and thicknesses in text

Plus Strat column, images if available

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

***Regional extent:***

This would include Horizontal equivalents, if given

**Fossils:**

We'd suggest always indicating the types; and some (like phytolite) might need a clarification for users

Plus Range charts and images if available

**Age:**

in regional and international chronostrat units (with discussion)

**Depositional setting:**

**Additional Information**

Isotopes; magstrat; economics; history of name changes, etc. – what doesn't fit in the above categories!

**Compiler**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**A’ertaxi Gr**

**Period: Devonian**

**Age Interval (Map column):** D22  (15); Givetian (late Middle Devonian)

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at south of A’ertaxi village, north side of Kunlun Mts. in the Xinjiang Uygur Autonomous Region. . It was named by No 13 Geological Team of Xinjiang in 1957 and was published by Editorial Board of Xinjiang Regional Stratigraphical Scale (1980).

**Lithology and Thickness:**

Limestone, shale. The lower part of the Group is dominated by light-gray, dark-gray limestone and clayey shale, containing coral fossils. The upper part is characterized by green and black shale and dark-gray limestone with breccia limestone on its top. The thickness is 870 m. In the high mountain area between Longle-Agar River valley and Genlishalihe River, the group is characterized by gray, light greenish-gray quartzose sandstone, 260 to 900 m thick.

**Relationships and Distribution:**

***Lower contact:***

Unknown: The contact relationships to the underlying strata are not yet clear.

***Upper contact:***

Unknown: The contact relationships to the overlying strata are not yet clear.

***Regional extent:***

**Fossils:**

Coral fossils: *Eudophyllum* sp., *Brariphyllum* sp., *Syringopora* sp., *Temnophyllum* sp..

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Aertemeishibulak Fm**

**Period: Devonian**

**Age Interval (Map column):** D3(?) (16);Late Devonian

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located on the 898 m Highland, southeast of Aertemeishibulak, south of Bosten (Bagrax) Lake and Xinggir in the Xinjiang Uygur Autonomous Region. It was named by No 13 Geological Team of Xinjiang in 1957 and was published by the Compiling Group of Xinjiang Regional Stratigraphical Scale (1980).

**Lithology and Thickness:**

Sandstone. It is mainly characterized by interbedded purplish-red to purple thick-bedded sandy conglomerate, pebble-bearing sandstone and coarse-grained sandstone, with intercalations of layered arkosic quartzose sandstone at the lower part; the purple sandstone often contains calcareous concretions. The thickness is 1201-1299 m.

**Relationships and Distribution:**

***Lower contact:***

Conformable contact with the underlying Shugouzi Fm of the middle Devonian.

***Upper contact:***

Unknown: It has an obscure contact with the overlying Lower Carboniferous.

***Regional extent:***

**Fossils:**

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Alatag Fm**

**Period: Devonian**

**Age Interval (Map column):** D21 (13,77); early middle Devonian

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at the eastern slope of Karakzile Mt., south of Kümüx in Tosun County, the Xinjiang Uygur Autonomous Region.It was named by Xinjiang Team of Regional Geological Survey in 1965, and was published by the "Regional Scale of Northwest China-Xinjiang” in 1981.

**Lithology and Thickness:**

Limestone and clastics. The section on the eastern slope of Karakzile Mt. is mainly characterized by gray, grayish-black bioclastic limestone, marble, intercalated with chlorite-sericite-quartz schist, metamorphic sandstone and sandy conglomerate. In the bottom are gray pebble limestone and white marble. The thickness is 6167 m.

In the mountainous area north of Karaziletag, this formation is composed of crystalline limestone, sandstone, siltstone and chlorite-sericite-quartz schist. The thickness is 2100 to 4000 m.

At the south slope of Klatag, the Formation is composed of detrital limestone, oolitic limestone, sandstone and chert, intercalated with conglomerate. The outcropping thickness is more than 181 m.

In the area south of Kaidu River and north of Sairimu River, the formation is characterized by greywacke intercalated with siltstone, conglomerate. The upper part is composed of limestone and dolomite intercalated with calcareous sandstone. It is 3217 m in thickness.

In the Liushugou-Huolangwote area south of Sarming Mt., it is intercalated with intermediate-basic to acidic volcanic clastics. The thickness is 5974.6 m in total.

**Relationships and Distribution:**

***Lower contact:***

Conformably or disconformably overlies on the Arpishimabulak Fm.

***Upper contact:***

Conformable contact with the overlying Saharming Fm.

***Regional extent:***

The formation can be recognized on the eastern slope of Karakzile Mt., North of Karaziletag, at the south slope of Klatag, South of Kaidu River and north of Sairimu River and in the Liushugou-Huolangwote area south of Sarming Mt.

**Fossils:**

The limestone on the eastern slope of Karakzile Mt.contains coral fossils: *Favosites*, *Pachyfavosites*, *Heliolites*, *Emmonsia*, and *Xystriphyllum.*

North of Karaziletag the formation yields coral fossils: *Thamnopora incerta*, *T*. ex gr. *Tumefacta*, *Heliolites*, *Squameofavosites* and *Pseudamplexus*.

At the south slope of Klatag the formation contains coral fossils: *Tamnopora* cf. *reticulata*, *Wedekindophyllum* cf. *corneolum.*

South of Kaidu River and north of Sairimu River the upper part of the formation contains corals:

*Disphyllum*, *Cyathophyllum*, *Favosites* and brachiopods: *Camarotoechia*, *Atrypa.*

**Age:**

early middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Alengchu Fm**

**Period: Devonian**

**Age Interval (Map column):** D12 (27); Pragian (middle Early Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Alengchu Village along the Jinshajiang River valley, about 60 km northeast of Lijiang County, Yunnan Province. It was named by Duan Yanxue, Li Dingrong and Leng Chonglin in 1974. Yu Changmin and Liao Weihua formally quoted it in 1978.

**Lithology and Thickness:**

Limestone, shale. It is characterized by dark-gray thin- to medium-bedded limestone intercalated with shale. It can be divided into two lithologic members. The lower member is often intercalated with shale, and the upper member is often intercalated with calcareous shale. The base is marked by the appearance of dark-gray medium-thick bedded bioclastic limestone. The top of the formation to the overlying Banmandaodi Fm is marked by the appearance of dark-gray thick-bedded conglomerate.

The thickness is 517 m.

**Relationships and Distribution:**

***Lower contact:***

The base is a conformable contact onto the underlying Shanjiang Fm, and is marked by the appearance of dark-gray medium-thick bedded bioclastic limestone.

***Upper contact:***

The top of the formation to the overlying Banmandaodi Fm is marked by the appearance of dark-gray thick-bedded conglomerate.

***Regional extent:***

This formation is mainly distributed in Lijiang, Ninglang, Luoshui and Mingyin areas of western Yunnan.

**Fossils:**

Abundant tentaculites of the *Nowakia acuaria* Zone, coral and brachiopod fossils. Two coral assemblages were recognized, including *Lyrielasma chagmani* and *Embolophyllum*.

**Age:**

Pragian (middle Early Devonian)

**Depositional setting:**

It is interpreted as a deep-water basin facies.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Amunik Fm**

**Period: Devonian**

**Age Interval (Map column):** D3 (18); Late Devonian

**Province:** Qinghai

**Type Locality and Naming:**

The type section is located at Amunik Mt., southeast of Xitieshan and southwest of Delingha, in the northern margin of Qaidam Basin, Qinghai Province. It was named by Qinghai No 1 Team of Regional Geological Survey in 1976.

**Lithology and Thickness:**

Sandstone, conglomerate. The formation is mainly characterized by purple, grayish-purple, gray, yellowish-pink arkosic quartzose sandstone and silty mudstone. At the bottom is a bed of purple conglomerate about 2 m thick. The composition of the conglomerate is mainly chert, volcanic rock and limestone, with the pebbles being 2-4 cm in diameter, angular to subangular in shape and cemented with sands.

In Amunik section, the formation is 116 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

Disconformable contact with the underlying Maoniushan Fm.

***Upper contact:***

Conformable or disconformable contact to the overlying Chengqianggou Fm of Lower Carboniferous.

***Regional extent:***

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Anjiacha Fm**

**Period: Devonian**

**Age Interval (Map column):** D21  (41); early Middle Devonian

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Anjiacha, 15 km to north of Liuxiang Township, Xihe County, Gansu Province. It was named by Gansu Metallurgical Geological Exploration Company in 1981 and quoted formally by Zhu Weiyuan in 1988.

**Lithology and Thickness:**

Phyllite, slate. The lower part of the Anjiacha Fm is characterized by phyllite and silty phyllite intercalated with marl and nodular bioclastic limestone; the middle part is composed of thin-bedded metamorphic siltstone intercalated with nodular micrite, phyllitized slate; and the upper part consists of thin- to medium-bedded micritic bioclastic limestone.

It is 447 m in thickness.

At the Jiaogou section (so-called Anxigou Fm), silty slate, phyllite intercalated with thin- to medium-bedded silty crystalline limestone and bioclastic limestone constitute its lower part, and its upper part is dominated by thin- to thick-bedded fine-grained crystalline limestone and marble intercalated with silty slate; it is 310 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

Conformably rests on the Qingshuigou Fm.

***Upper contact:***

***Regional extent:***

The formation can be found in the north limb of Wujiashan anticline, but its stratigraphic sequence and structure are doubtful.

**Fossils:**

The formation contains coral *Favosites*, *Squameo favosites*, *Sociophyllum*, *Pachyfavosites*, *Neospongophyllum* and brachiopoda *Atrypa*, *Indospirifer.*

**Age:**

early Middle Devonian

**Depositional setting:**

**Additional Information**

The Huangjiagou Fm (Du Yuansheng et al., 1988) in the Dongshan area of Xihe County is roughly equivalent to the middle and upper parts of this formation. The Yuchiba Fm and the middle and upper parts of Leijiaba Fm in Xihanshui area of Lixian County in the west correspond to this formation, but with more clastic composition.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Aobaotinghundi Fm**

**Period: Devonian**

**Age Interval (Map column):** D13 (4); Emsian (late Early Devonian)

**Province:** Inner Mongolia

**Type Locality and Naming:**

The type section is located at the west hill of Dong Ujimqin Qi (Banner), Inner Mongolia Autonomous Region. It was named by Inner Mongolia Team of Regional Geological Survey in 1973 during mapping the East Wuchumuqinqi sheet of Geological Map in scale 1:200000 and was published in the Inner Mongolia Volume of The Paleontological Atlas of North China in 1976.

**Lithology and Thickness:**

Siltstone. The formation is mainly characterized by calcareous and clayey siltstone intercalated with minor tuffaceous siltstone and contains abundant fossils. The thickness is about 500 m.

**Relationships and Distribution:**

***Lower contact:***

Conformably contact with the underlying Baruntehua Fm, which differs from Aobaotinghundi Fm by having a more tuffaceous composition.

***Upper contact:***

***Regional extent:***

It is mainly exposed at Aobaotinghundi in the west hill of Dong Ujimqin Qi, at the southern part of Cailunguoshao and at Muhar Mtn.

**Fossils:**

The formation yields the following important fossils: brachiopods *Coelospira* sp., *Paraspirifer*” *gigantean*, *Rhytistrophia beckii*, *Leptaenopyxis bouei*, *Ivanothyris* sp., *Discomyorthis* sp.; coral *Siphonophretis yandelli*, *Metriophyllum* sp., *Keriophyllum* sp.; sponge *Receptaculites* sp.; bryozoan *Fistulipora* sp., *Leioclema* sp.

**Age:**

Emsian (late Early Devonian)

**Depositional setting:**

**Additional Information**

The lithological character of the formation is relative uniform along strike

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Bailiuping Fm**

**Period: Devonian**

**Age Interval (Map column):** D13 (70); Early Emsian (middle Early Devonian)

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located near Bailiuping village, 2 km east of Ganxi village in Beichuan County, Sichuan Province. It was named by Chen Yuanren in 1978.

**Lithology and Thickness:**

Siltstone. The formation is mainly composed of yellowish-green siltstone and mudstone. At the top, it is intercalated with bioclastic limestone and yields small size brachiopods.

**Relationships and Distribution:**

***Lower contact:***

Conformable contact onto the quartz sandstone of the Guanshaopo Fm of the Pingyipu Group.

***Upper contact:***

***Regional extent:***

**Fossils:**

The formation contains small size brachiopods: *Protochonetes* *bailiupingensis*, *Orientospispirifer nakaolingensis*, *O. wangi*; ostracods: *Sulcella sichuanensis*; trilobites: *Caracricalymere ganxiensis*; and conodonts: *Polygnathus dehiscens.*

**Age:**

Early Emsian (middle Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Baishangou Fm**

**Period: Devonian**

**Age Interval (Map column):** D2 (48); Middle Devonian

**Province:** Henan

**Type Locality and Naming:**

The type section is located at Baishangou north of Wangguan village, about 12 km southwest of Xichuan County, Henan Province It was named by the south Henan Team of Regional Geological Survey of Beijing College of Geology, and was published by Regional Stratigraphic Scale of Central-South China in 1974.

**Lithology and Thickness:**

Sandstone. The Lower part of the Formation is characterized by purplish-red shale and grayish-yellow quartz sandstone, with a bed of purplish-black conglomerate (0.97 m thick) at the base. It is 110 m in thickness. The Middle part consists of purple thin-bedded mica-bearing fine-grained feldspathic quartz sandstone and is 160 m in thickness. In the Upper part, it is composed of yellow clay intercalated with thin-bedded sandstone and sandy shale, 130 m thick. At the top, there is a bed of grayish-white fine-grained quartz sandstone.

The lithology of the formation is relatively uniform, but the thickness greatly varies, getting thicker from the west to the east. In the west, at Hutou of Xichuan area the formation is only 83 m thick, but east of Laoguan River to Hulushan of Neixiang area, the thickness reaches about 400 m.

**Relationships and Distribution:**

***Lower contact:***

Disconformably overlies the Zhangjiawan Fm of the Lower Silurian.

***Upper contact:***

***Regional extent:***

**Fossils:**

The bivalve *Cypricardinia* occurs in the middle part of the formation.

**Age:**

Middle Devonian

**Depositional setting:**

It is interpreted as a littoral environment, based on ripple marks and cross-bedding in the sandstone beds.

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Banmandaodi Fm**

**Period: Devonian**

**Age Interval (Map column):** D13 (27); Emsian (late Early Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Alengchu village along the Jinshajiang River valley, about 60 km northeast of Lijiang County, Yunnan Province. It was named by by Duan Yanxue, Li Dingrong and Leng Chonglin in 1974, and Yu Changmin, Liao Weihua formally quoted it in 1978.

**Lithology and Thickness:**

Limestone, conglomerate. It is characterized by dark-gray limestone, shale, chert intercalated with sandstone and conglomerate. It is divided into three parts: the lower part is dominated by dark-gray thick-bedded conglomerate; the middle part is marked by dark-gray shale; and the upper part consists of dark-gray medium-thick-bedded limestone and shale interbeds with 2-3 beds of conglomerate.

It is 141 m in thickness

**Relationships and Distribution:**

***Lower contact:***

Conformable on the Alengchu Fm as assigned by the first appearance of dark-gray thick-bedded conglomerate.

***Upper contact:***

Conformably overlain by the Changyucun Fm capped by the sequence of gray medium-thin-bedded chert intercalated with dark-gray shale.

***Regional extent:***

The formation is restricted to Lijiang, Ninglang, Luoshui and Mingyin area, Yunnan Province.

**Fossils:**

It contains abundant tentaculites, ammonoids and a few coral fossils, including tentaculites *Nowakia zlichovensis* zone and *N. barrandei* zone, and ammonoids *Anetoceras* and *Erbenoceras* zone.

**Age:**

Emsian (late Early Devonian)

**Depositional setting:**

It is interpreted as a a deep-water basin environment.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Bangzhai Fm**

**Period: Devonian**

**Age Interval (Map column): D21** (53,54); Eifelian (early middle Devonian)

**Province:** Guizhou

**Type Locality and Naming:**

The type section is located in Bangzhaishan Mt., Sandu County, Guizhou Province, but the exact location of the section is not clear. The reference section is in the Dahekou to Tunshancun village, east of Dushan County, Guizhou Province. It was named by Ding Wenjiang and Wang Yuelun in 1947.

**Synonym:**

The “Lantu quartz sandstone” in Lantu area of Sandu County (Ji Rongsen, 1939) and the “Mangshan quartz sandstone” west of Duyun City (Yue Senxun, 1929) probably are synonymous.

**Lithology and Thickness:**

Quartzite, sandstone. The formation is dominated by a set of thick-bedded, massive quartz sandstone.

The lower Dahekou member is mainly characterized by brownish-yellow thick-bedded to blocky quartzite intercalated with a few gray thin-bedded siltstones. It is 137 m thick.

The upper Tunshang member is composed of sandstone intercalated with several beds of thin-bedded limestone and marl. It is 114-134 m.

**Relationships and Distribution:**

***Lower contact:***

Conformable: At the base is a bed of about 10 m of brownish-red massive to thick-bedded ferruginous quartz sandstone that conformably overlies on the marl of the Longcongshui Fm.

***Upper contact:***

Conformably capped by the appearance of thick-bedded limestone of the Jipao member of Dushan Fm.

***Regional extent:***

This formation is mainly distributed in Dushan and Duyun areas of south Guizhou and the iron Ore mine area in Hezhang County of northwest Guizhou. The “Lantu quartz sandstone” in Lantu area of Sandu County (Ji Rongsen, 1939) and the “Mangshan quartz sandstone” west of Duyun City (Yue Senxun, 1929) probably are synonymous.

**Fossils:**

It yields brachiopods *Stringocephalus* and *Bornhardtina*.

**Age:**

Eifelian (early middle Devonian)

**Depositional setting:**

It is interpreted as a sedimentary environment of littoral clastic facies.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Baqi Fm**

**Period: Devonian**

**Age Interval (Map column): D22-D31** (65, 69), Late Givetian and may range to Early Frasnian (late Middle Devonian to early Late Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located near Baqi village, northwest of Dale in Xiangzhou County, Guangxi Zhuang Autonomous Region. It was named by Bai Shunliang et al. in 1979.

**Lithology and Thickness:**

Limestone. The Baqi Fm is divided into three lithologic members. The lower member, 13.2 m thick, is mainly composed of thin-bedded (ca. 20 cm) pellet limestone, micritic limestone, intercalated with thin-bedded tentaculite-bearing micritic limestone.

The middle member, 23.9 m thick, is characterized by tentaculite-bearing limestone with cherty interbeds.

The upper member, 8.27 m thick, consists of bioclastic limestone and calcirudite. It contains abundant tentaculites, conodonts and brachiopods.

This Formation is mainly marked by a large number of thin-bedded siliceous rocks, but the thickness greatly varies from area to area.

**Relationships and Distribution:**

***Lower contact:***

The base of the formation is distinguished by the appearance of the thin-bedded tentaculites-bearing marl from the underlying Donggangling Fm.

***Upper contact:***

***Regional extent:***

The Baqi Fm is comparatively extensively distributed; in addition to Xiangzhou and Luzhai in central Guangxi, it can also be observed at Hechi and Huanjiang in northwest Guangxi and at xing’an, Lingchuan, Yongfu, Yangshuo, Guilin, etc. in northern Guangxi.

**Fossils:**

The upper member contains abundant tentaculites, conodonts and brachiopods, including conodonts from middle *Pol. varcus* zone to middle *asymmetricus* zone. Tentaculites are dominated by the *Homoctenus* assemblage, and brachiopods are mainly *Leiorhynus* assemblage with a few *Stringocephalus*.

**Age:**

Late Givetian and may range to Early Frasnian (late Middle Devonian to early Late Devonian)

**Depositional setting:**

Its sedimentary environment is considered to be deep-water slope facies to basin facies.

**Additional Information**

In the Ma’anshan section of Zhongping, this formation is 45.37 m in thickness, but in the naming section (near Baqi village) the thickness is only 21.7 m. The distance between the two sections is only 8 km but their thicknesses are quite different from each other.

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Baruntehua Fm**

**Period: Devonian**

**Age Interval (Map column): D12**  (4), Pragian (middle Early Devonian)

**Province:** Inner Mongolia

**Type Locality and Naming:**

The type section is located at Baruntehua in the west hill of D, Inner Mongolia Autonomous Region. It was named by Inner Mongolia Team of Regional Geological survey in 1973 during mapping the Dong Ujimqin Qi (Banner) sheet of the Geological Map in scale 1:200,000, and published in the Inner Mongolia Volume, the Paleontological Atlas of North China in 1976.

**Lithology and Thickness:**

The formation is divided into two lithologic members. The lower member is characterized by grayish-green tuffaceous sandstone intercalated with tuffaceous slate, mudstone and green tuff. The thickness is more than 555m.

The upper member is mainly grayish-green to yellowish-green tuffaceous siltstone intercalated with tuff, and its exposed thickness is 564 m.

**Relationships and Distribution:**

***Lower contact:***

Unknown: The basal boundaries of the formation are not clear.

***Upper contact:***

Unknown: The upper boundaries of the formation are not clear.

***Regional extent:***

**Fossils:**

The lower member contains brachiopods, bryozoan and coral fossils. The upper member yields abundant fossils, mainly brachiopods *Coelospira concave*, *Merista* sp., *Pacificoulia sinica*; coral *Cleistopora* sp., *Barrandeophyllum* sp., *Syringaxon bohemicum*; trilobites *Unguliproetus unguloides*, and *Otarion*.

**Age:**

Pragian (middle Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Beikuang Fm**

**Period: Devonian**

**Age Interval (Map column): D21** (5), Eifelian (early Middle Devonian)

**Province:** Heilongjiang

**Type Locality and Naming:**

The type section is located at Beikuang W26P102 section and Wunur W26P1 section, 8 km north of Wunur, Heilongjiang Province.

It was named by the No 2 Branch Team of Heilongjiang No 2 Party of Regional Geological Survey in 1981.

**Lithology and Thickness:**

Siltstone, chert. The lower part of the formation is mainly composed of dark-gray fine-grained pelitic calcareous metaclastic rocks and silty mudstone intercalated with limestone lenses, and bears mainly coral. The upper part consists of yellowish-brown, gray and dark-gray chert (with radiolaria), siliceous mudstone and fine-grained clastics, and contains abundant fossils. The thickness is more than 40 m.

At the Beikuang section and in the Forest Farm area of Zhadun River, the formation is dominated by clayey and calcareous siltstone, intercalated with thin-bedded limestone, and the maximum outcropping thickness can reach 150 m.

**Relationships and Distribution:**

***Lower contact:***

At the type section of the Beikuang Fm, the basal slate and siltstone include some breccia, which makes it easily to differentiate from the underlying sparry limestone of the Wunur Fm.

***Upper contact:***

***Regional extent:***

**Fossils:**

The important fossils include conodonts *Polygnathus costatus patulus*, *Icriodus corniferleptus*, *Polygnathus linguiformis*; coral *Favosites karpinskyi*, *Tyrganolites*.

**Age:**

Eifelian (early Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Bianqinggou Fm**

**Period: Devonian**

**Age Interval (Map column): D13** (55), Emsian (late Early Devonian)

**Province:**  Yunnan

**Type Locality and Naming:**

The type section is located at Bianqinggou of Shaotong county, Yunnan Province. It was named by Xian Siyuan and Zhou Xiyun in 1974, and formally quoted in 1978.

**Lithology and Thickness:**

Mudstone. It is mainly composed of yellowish-green mudstone, sandy mudstone intercalated with thin-bedded limestone, and siltstone. The thickness of the Biangqinggou Fm is 77.9 m.

**Relationships and Distribution:**

***Lower contact:***

Conformable: The lower boundary is at the base of a 10-m bed of gray medium-bedded limestone, which differs from the brownish-yellow thick-bedded sandstone intercalated with yellowish-gray sandy mudstone of the underlying Pojiao Fm. They are in a conformable contact.

***Upper contact:***

The upper boundary is marked by a change from yellow and yellowish-green mudstone to the thick-bedded quartz sandstone of overlying Suotoushan Fm.

***Regional extent:***

The Biangqinggou Fm is mainly distributed in the Shaotong and Liliang area.

**Fossils:**

It yields abundant brachiopods *Athyrisina yohi*, *Trigonospirifer trigonata*, *Nadiastrophia zhaotongensis*, and coral *Squameofavosites wagranensis.*

**Age:**

Emsian (late Early Devonian)

**Depositional setting:**

It is interpreted as a platform deposition.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Boqu Gr**

**Period: Devonian**

**Age Interval (Map column): D2-3** (24), middle and late Devonian

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located from Jiacun to Yali in Nyalam County, Xizang Autonomous Region. It was named by Wang Yigang et al. in 1974.

**Lithology and Thickness:**

Sandstone. The Group is a set of gray medium-bedded medium- to coarse-grained feldspathic quartz sandstone intercalated with partly silty shale. It is 250 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

Conformably on the marl and sandy shale interbeds of Liangquan Fm.

***Upper contact:***

Overlain by the dark-gray to black shale of the Yali Fm.

***Regional extent:***

It is distributed in the area of Burang--Nyalam, Tingri and Yadong.

**Fossils:**

It contains rare fossils, only plant fragments.

**Age:**

middle and late Devonian

**Depositional setting:**

It is interpreted as a a sublittoral shallow-water facies deposition.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Cailunguoshao Fm**

**Period: Devonian**

**Age Interval (Map column): D31** (4), Frasnian (early Late Devonian)

**Province:** Inner Mongolia

**Type Locality and Naming:**

The type section was not given. It was named by Ding Yunjie et al. in 1972 and quoted formally by Inner Mongolia Team of Regional Geological Survey in 1973 during mapping the Dong Ujimqin Qi Geological Map (the scale is 1:200,000).

**Lithology and Thickness:**

The lower part of the formation is dominated by clayey siltstone, intercalated with fine-grained feldspathic quartz sandstone and limestone lenses. The upper part is mainly marked by medium-fine-grained arkose and pebble-bearing sandstone, intercalated with calcareous sandstone lenses. The outcrop thickness is 564 m.

**Relationships and Distribution:**

***Lower contact:***

Unknown: The bottom of the formation here is cut by faults.

***Upper contact:***

Unknown: The top of the formation here is cut by faults.

***Regional extent:***

**Fossils:**

It yields brachiopods: *Cyrtospirifer* sp., *Spinulicosta* sp., *Schuchertella* sp., *Spinatrypa* sp. and coral: *Stewartophyllum* sp.

**Age:**

Frasnian (early Late Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Cakuohe Fm**

**Period: Devonian**

**Age Interval (Map column): D31-2** (40,51), Frasnian to early Famennian (Late Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Cakuohe, 10 km north of bohai in Luqu County, Gansu Province; the reference section is at Dangduogou, 24 km northwest of Diebu County, Gansu Province. It was named by Xi’an Institute of Geology and Mineral Resources and Gansu No. 1 Team of Regional Geological Survey in 1973, and quoted formally by Qin Feng and Gan Yiyan in 1976.

**Lithology and Thickness:**

Limestone. The lithological character of the formation is marked by interbedded gray and dark-gray thin-bedded fine-grained crystalline limestone, clotted limestone, algal limestone, black calcareous shale, silty calcareous shale and yellowish-gray clayey siltstone, intercalated with more than ten beds of 0.2- to 10.8-m-thick calcirudite. The thickness is 547.4 m in total.

**Relationships and Distribution:**

***Lower contact:***

Conformably overlies the Pulai Fm of middle to upper Devonian.

***Upper contact:***

***Regional extent:***

**Fossils:**

The limestone contains conodonts, trilobites and tentaculites, and the calcirudite contains coral and brachiopods characterized by abundant *Cyrtospirifer*. The lower part yields conodonts *Palmatolepis proversa*, *P. gigas*; the middle part yields *P. poolei.* Westward in the Cakuohe area of Luqu County, the formation contains abundant brachiopods and corals

**Age:**

The Cakuohe Fm is considered provisionally to be Frasnian to early Famennian (Late Devonian) in age.

**Depositional setting:**

The ripples, hummocky cross-bedding and the angular pebbles occurring in this formation indicate a sedimentary environment of shallow-sea shelf facies. Tempestite deposits have been interpreted in the lower and middle parts. Westward in the Cakuohe area of Luqu County, the formation contains abundant brachiopods and corals, is considered as carbonate platform facies, and has a thickness decreasing down to 149 to 260 m.

**Additional Information**

Because of thick cover and many folds and faults, the sequence and the relation of the formation to the overlying and underlying beds are not clear in the type section, so that the Dangduogou section was chosen as a reference section.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Cangna Fm**

**Period: Devonian**

**Age Interval (Map column): D2** (33), Middle Devonian

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located near Cangna of the Zhongza Cow farm in Batang County, Sichuan Province.

It was named by the Sichuan No. 3 Team of Regional Geological Survey in 1974 and was published by Sichuan Compiling Group for Regional Stratigraphical Scale (1978).

**Lithology and Thickness:**

Limestone. The lithology of the formation is characterized by carbonate rock composed of light-gray to grayish-white medium-bedded to massive limestone and nodular *Stromatopora*-bearing reef limestone. The thickness is 230 m.

**Relationships and Distribution:**

***Lower contact:***

Conformable contact with the dark-gray medium-bedded crystalline limestone of the underlying Qiongcuo Fm.

***Upper contact:***

Overlain by the dolomitic algae-bearing limestone of Talipo Fm.

***Regional extent:***

It is distributed in Zhongza of Batang County, Genricuo of Xiangcheng County and Huorelaka of Baiyu County.

**Fossils:**

It contains abundant stromatoporoids

**Age:**

Middle Devonian

**Depositional setting:**

It is interpreted as a shallow-water carbonate platform sedimentary environment.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Chaguoluoma Fm**

**Period: Devonian**

**Age Interval (Map column): D2**  (23), Middle Devonian

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located in the area of Chaguoluoma to Dardong, north of Xianza County, the Xizang Autonomous Region. It was named by Xia Daixiang et al. in 1979.

**Lithology and Thickness:**

Limestone. The formation is marked by a set of massively thick carbonate rocks. The upper part is light-gray to grayish-white thick-bedded limestone intercalated with bioclastic limestone; the lower part is gray to light-gray thick-bedded edgewise limestone.

**Relationships and Distribution:**

***Lower contact:***

Conformable contact onto the underlying banded limestone of the Middle to Lower Devonian Langma Fm.

***Upper contact:***

Overlain by dark-gray thin-bedded clayey limestone of Upper Devonian.

***Regional extent:***

It is distributed at Yongzhuqiao, Tarma, etc. of Xianza County, the Xizang Autonomous Region.

**Fossils:**

**Age:**

Middle Devonian

**Depositional setting:**

It is interpreted as a shallow-water carbonate platform facies.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Changcun Fm**

**Period: Devonian**

**Age Interval (Map column): D21**, Eifelian to Givetian (Middle Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at the west of Yingtang Village of Dale in Xiangzhou County, Guangxi Zhuang Autonomous Region. It was named by Hou Hongfei and Xian Siyuan in 1975.

**Lithology and Thickness:**

It is composed of a set of dolomitic limestone, mudstone, yellowish shale, and siltstone.

**Relationships and Distribution:**

***Lower contact:***

Conformable: The base of the formation is separated by the appearance of dolomitic limestone from the underlying Guche Fm in a conformable contact.

***Upper contact:***

***Regional extent:***

This formation is widely distributed in the west side of Mt. Dayaoshan.

**Fossils:**

The formation contains rare mega-fossils and fish fragments, gastropods, bivalve and brachiopods *Lingula*. There are abundant charophyte fossils in the base.

**Age:**

Eifelian to Givetian (Middle Devonian)

**Depositional setting:**

It is interpreted as a littoral facies environment.

**Additional Information**

The Changcun Fm was often placed within a broadly defined Donggangling Fm.

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Changgou Fm**

**Period: Devonian**

**Age Interval (Map column): D22** (42), late Middle Devonian

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located at Changgou to Sangongdian of Changgou Township in Shangyang County, Shaanxi Province. It was named by Yang Zhihua et al. in 1991.

**Lithology and Thickness:**

Limestone. The lower part consists of medium-bedded lithologies of banded sandy and dolomitic silt-sized to fine-grained crystalline limestone, of bioclastic limestone intercalated with a few sandy slate beds, of calcareous slate and of feldspathic quartz sandstone. The upper part is medium- to thin-bedded calc-arenite intercalated occasionally with sericite slate. The thickness is 924 m in total.

The Changgou Fm lithology in Hongxia, Sanchaxing of Fengxian County is similar to that of Changgou section of Shangyang, containing abundant fossils. At bottom, it is cut by fault and the outcrop thickness is more than 1077 m.

**Relationships and Distribution:**

***Lower contact:***

Conformable on the clastic rocks of the Wangjialeng Fm at the type section.

***Upper contact:***

***Regional extent:***

The formation is distributed at the area of Fengxian, Taibai, Ningshan, Zhen’an and Shanyang counties, Shaanxi Province where its lithology is relative uniform being mainly carbonate rock.

**Fossils:**

The Changgou Fm yields a few brachiopods *Emanuella* and coral *Disphyllum*, *Alveolitella.*

The Changgou Fm in Hongxia, Sanchaxing of Fengxian County yields corals: *Thamnopora*, *Crassialveolitella*, *Pseudomicroplasma*, *Temnophyllum* and brachiopods: *Atrypa*, *Emanuella* etc. The upper part of Changgou Fm in Pingkan area of Fengxian County yields brachiopods *Stringocephalus*; conodonts *Polygnathus* cf. *xylus.*

**Age:**

late Middle Devonian

**Depositional setting:**

It is interpreted as a tidal flat to restricted basin environment.

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Changlongjie Fm**

**Period: Devonian**

**Age Interval (Map column): D32** (68,69), Early Famennian (Late Devonian)

**Province:** Hunan

**Type Locality and Naming:**

The type section is located at the road cut section from Xikuangshan Mine to Laojiangchong Village, Lengshuijiang, Hunan Province. It was named by Tian Qijun in 1938 without type section indicated.

**Lithology and Thickness:**

Mudstone, limestone. The lithology of the Formation is dominated by thin-bedded limestone and mudstone and may be subdivided into three parts: Lower part, about 12 m thick, is composed of yellow thin-bedded mudstone with well-developed horizontal bedding. Middle part is characterized by thin-bedded (10-20 cm) limestone with normal graded bedding. Upper part, about 20 m thick, is characterized by mudstone and thin-bedded limestone or lenses. The Formation is about 55 m thick in total.

**Relationships and Distribution:**

***Lower contact:***

Disconformable contact to the underlying shell limestone of Shetianqiao Fm, which yields abundant corals, stromatoporoids, and oncolites in the top.

***Upper contact:***

Overlain by thick-bedded limestone of the Tuzitang Fm.

***Regional extent:***

The Changlongjie Fm is widely distributed in central Hunan Province, but the thickness greatly varies with the maximum reaching 300 m. In southern Hunan, the limestone beds gradually increase and contain abundant brachiopods.

**Fossils:**

The formation is characterized by having small-sized brachiopods of *Yunnanellina* in the lower part, and of *Yunnanella*-*Yunnanellina* assemblage in the middle part. Along with the appearance of thin-bedded limestone, it yields conodonts *Palmatolepis crepida*.

In southern Hunan, the limestone beds gradually increase and contain abundant brachiopods including *Cyrtiopsis davidsoni* Gr., *Cy*. *spiriferoides* Gr., *Platyspirifer* sp., *Dmitria* sp.

**Age:**

*Palmatolepis triangularis-Pa. crepida* conodont zone of Early Famennian (Late Devonian)

**Depositional setting:**

It is interpreted as a shelf with distal storm events.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Changtanzi Fm**

**Period: Devonian**

**Age Interval (Map column): D32** (70), Famennian (Late Devonian)

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at the Changtanzi lime kiln, east of Shawozi Village in Ganxi of Beichuan County, Sichuan Province. It was named by Fan Yingnian in 1980.

**Lithology and Thickness:**

Limestone. It is dominated by gray to dark-gray lumpy and pellet limestone, intercalated with micritic sandy limestone, algal-laminated limestone and bioclastic micritic limestone. The formation is 121 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

Conformably on the oolitic limestone of Maoba Fm.

***Upper contact:***

Conformably overlain by the dolomite of Majiaoba Fm.

***Regional extent:***

**Fossils:**

The fossils are characterized by abundant solitary coral that can be divided into a lower *Siphonophyllia stereoseptata-Caninia cornucopiae* zone and an upper *Beichuanophyllum pachysepataum-Neobeichuanophyllum multiseptatum* zone; by stromatopora of *Cystostrorau, Rosenella,* *Pachyshylostroma*, *Beichuanostroma*; and by conodonts of *Polygnathus znepolensis-P. changtanziensis* assemblage zone.

**Age:**

Famennian (Late Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

Wang Shitao

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Changyucun Fm**

**Period: Devonian**

**Age Interval (Map column):** **D2-3** (27), Middle and Late Devonian

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Wase Village, east of Erhai Lake in Dali County, Yunnan Province. The reference section is at the area of Qingshan and Hengjing of Eryuan County. It was named by Xiao Yinwen in 1972, and was published by Yunnan Compiling Group for Regional Stratigraphical Scale(1978).

**Lithology and Thickness:**

Limestone. The lithology is characterized by cherty siliceous limestone intercalated with shale that yield tentaculites. The thickness is 608 m.

**Relationships and Distribution:**

***Lower contact:***

Conformable contact to the underlying Banmandaodi Fm.

***Upper contact:***

***Regional extent:***

The formation is mainly distributed in the area of Wase, Eryuan, Huangjinwan of Yongsheng, Alengchu and Mingyin of Lijiang County, east of Erhai Lake in Dali County, Yunnan Province.

**Fossils:**

**Age:**

Middle and Late Devonian

**Depositional setting:**

It is interpreted as a deep-water basin facies.

**Additional Information**

**Compiler**

Xian Siyuan

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Chehe Fm**

**Period: Devonian**

**Age Interval (Map column): D1-2** (60,63), Emsian-Givetian (Early – Middle Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at Yechehe River of Nandan County, Guangxi Zhuang Autonomous Region. It was named by Zhang Zhaojin in 1941.

**Lithology and Thickness:**

Mudstone. This formation is composed of black carbonaceous mudstone, siltstone, and calcareous mudstone intercalated with a few chert, sandstone, and clayey limestone beds. The thickness is more than 800 m.

In Dachang area, it contains reef limestone; and in Chehe area, the formation is commonly metamorphosed in its lower part. In Dashan area, the upper part of Chehe Fm is intercalated with five beds of 0.15-0.35 cm thick intermediate acidic tuff. The abundance of chert increases and the thickness decreases to 283 m in the Shanglin area.

On the basis of biostratigraphy, the Formation has been further divided into three formations: Tangding Fm, Nabiao Fm and Luofu Fm (see Table).

|  |  |  |  |
| --- | --- | --- | --- |
|  | Zhang Zhaojin  (1941) | Bulletin of Guangxi Regional Geological (1985) | This Paper |
| Upper Devonian |  | Liujiang Fm. | Liujiang Fm. |
|  |  | Luofu Fm. |  |
| Middle Devonian | Chehe Bed | Nabiao Fm. | Chehe Bed |
|  |  | Tangding Fm. |  |
| Lower Devonian |  | Yilan Fm. | Yujiang Fm. |
|  |  | Lianhuashan Fm. | Lianhuashan Fm. |

**Relationships and Distribution:**

***Lower contact:***

Conformable: The tentaculite-rich black mudstone at the base of the formation is in conformable contact onto the underlying the Yujiang Fm.

***Upper contact:***

Overlain by the Liujiang Fm.

***Regional extent:***

The distribution of this formation is mainly in the area of Dachang, Chehe, Luofu and Liuzhai in Nandan County, and at Changlao and Wuxu in Hechi City; some may be observed in the Shanglin area, Guangxi.

**Fossils:**

the formation is characterized by tentaculites, ammonoids, trilobites and thin-shell brachiopods, and includes tentaculite zones from *Nowakia subtilis* zone to *N. otomari* zone; ammonoids of *Anatoceras-Erbenoceras*, *Latancestes noeggerati*, *Pinacites jugleri* zones; and trilobites of *Plagiolaria nandanensis* fauna.

**Age:**

Emsian-Givetian (Early – Middle Devonian)

**Depositional setting:**

It is interpreted as a deep-water anoxic basin environment.

**Additional Information**

**Compiler**

Hou Hongfei

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Chigou Fm**

**Period: Devonian**

**Age Interval (Map column): D2** (38), Middle Devonian (uncertain)

**Province:** Shanxi

**Type Locality and Naming:**

The type section is located at Chigou in Niangniangmiao Township of Shanyang County, and reference section is at Xiaotai to Tongjiapo villages in Xiaotai Township of Zhashui County, Shanxi Province. It was named by Shanxi Team of Regional Geological Survey in 1968 during mapping Xiaohekou Geological Map (the scale is 1:50,000) and formally quoted by Du Dinghan et al. in 1986.

**Lithology and Thickness:**

Metamorphosed Greywacke. The Xiaotai section is used here as the stratotype instead of the Chigou section which is incomplete at top. In the Xiaotai section, the Formation is divided into two subformations. The lower part of the Lower subformation is composed of metamorphosed fine-grained feldspathic quartzose greywacke, intercalated occasionally with streaky sandy slate. The middle part is characterized by metamorphosed calcareous quartz siltstone and sandy slate interbeds, intercalated with metamorphosed fine-grained feldspathic greywacke. The upper part of the Lower subformation consists of thin-bedded calcareous feldspathic greywacke intercalated with sandy slate. The Lower subformation is 1410 m in thickness.

The lower part of the Upper subformation is composed of sandy slate intercalated with metamorphosed fine-grained quartz greywacke, calcareous siltstone and thin-bedded microcrystalline limestone; and thin-bedded sandy slate intercalated with clayey silty limestone in its upper part. The thickness of the Upper subformation is 833 m.

The metamorphic degree increases in the east of Shanyang County with tuff in the upper part at Linguan of Danfengzhu and Wuguanhe River; the clastic rocks increase and carbonated rocks decrease in the west of Shanyang County.

**Relationships and Distribution:**

***Lower contact:***

Conformably overlies the Niuerchuan Fm, and this base is marked by the appearance of massive-bedded sandstone beds.

***Upper contact:***

***Regional extent:***

The sandstone beds in the lower part of this formation extend more than 200 km to the east and west, and are near 100 m in thickness.

**Fossils:**

In the Jinqianhe section (Zhou Zhengguo et al., 1992) it yields a few spore fossils: *Retusotriletes*, *Leiotriletes*, *Punctatisporites*

**Age:**

Middle Devonian (uncertain)

**Depositional setting:**

The sandstone beds in the lower part of this formation extend more than 200 km to the east and west, and are near 100 m in thickness. These sandstone beds in the lower part have wedge or tabular cross-bedding and low-angle tabular oblique bedding with multistage washing planes, therefore suggest a shallow-water, high-energy environment with a sand barrier to castellated barrier character.

The metamorphosed middle and upper parts are dominated by parallel bedding, ripple lamination, and lenticular bedding, which indicate a shelf sedimentary environment.

**Additional Information**

The Chigou Fm is the second lowest formation of the Zhashui Gr.

**Compiler**

(Cao Xuandao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Chuandong Fm**

**Period: Devonian**

**Age Interval (Map column): D21** (56), early Middle Devonian

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Chuandong Village of Qujing County, Yunnan Province.

It was named by Yunnan Team of Regional Geological Survey in 1977, and formally quoted by Pan Jiang et al. in 1977.

**Lithology and Thickness:**

Sandstone. The lithology is mainly characterized by gray, grayish-yellow, brownish-red, and purplish-gray sandstone and silty mudstone. It is 130 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

The top is a conformable contact with the overlying pisolite-bearing limestone of Haikou Fm

***Regional extent:***

**Fossils:**

The lower part yields Antiarchi: *Bothriolepis* sp., *Wudinolepis* sp.; in upper part it yields *Bothriolepis* sp., *Xichonolepis qujingensis* and the ostracoda: *Briatina* sp., *Hermmannina* sp.

**Age:**

early Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Chunjieqiao Fm**

**Period: Devonian**

**Age Interval (Map column): D1,** Early Devonian

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located at Guqin of Chayu County, Xizang Autonomous Region.

It was named by Chen Bingwei, Ai Changxing and Zhaxi Wangqu in 1982.

**Lithology and Thickness:**

The formation is characterized by a set of purplish-red coarse-grained clastic rocks composed of purplish-red pebble-bearing coarse-grained sandstone and fine-grained sandstone, partly intercalated with black to grayish-black slate and sandy slate. It is 348 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

Disconformably overlies on the nodular limestone of Ordovician Sangqu Fm.

***Upper contact:***

***Regional extent:***

It is mainly distributed at south of Ranwu, the southeast of Songzong County and Chunjieqiao of Chayu County, Xizang Autonomous Region

**Fossils:**

No fossils have been found.

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Cuifengshan Gr**

**Period: Devonian**

**Age Interval (Map column): D1** (55,57), Lochkovian to Emsian (Early Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Cuifengshan Mt. in Qujing County, Yunnan Province. It was named by Ding Wenjiang in 1914.

**Lithology and Thickness:**

Siltstone. The lower part of this Group is characterized by gray to brownish-yellow siltstone and mudstone.

The middle part consists yellowish-green, purplish-red and brownish-yellow silty mudstone, marl, and fine-grained sandstone intercalated with a few dark-gray thin-bedded limestones in the middle.

The upper part is composed of purplish-red, yellowish-green and brownish-yellow clayey siltstone, siltstone and quartzite.

The top is marked by purplish-red, brownish-yellow and variegated mudstone, siltstone and quartz sandstone.

The outcrop exposed in Xishan of Qujing may reach about 2000 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

This formation conformably overlies the Miandian Fm of Silurian.

***Upper contact:***

It is in a conformable or unconformable contact with the overlying Chuandong Fm.

***Regional extent:***

It is distributed widely in the east of Yunnan, and well developed in Xishan-Cuifengshan area of Qujing County.

**Fossils:**

Lower part: fish fossils: *Polybranchiaspis* *liaojiaoshanensis*, *Yunnaolepis chii* and crossopterygii, arthrodira etc., plus ostracoda: *Leperditia*; gastropoda, fossil plant: *Zosterophyllum,* and spore fossils.

Middle part: fish *Yunnanolepis chii*; bivalve *Dysodonta deprati* etc.; brachiopods *Lingula*; ostracods and plant fossils.

Upper part: abundant plant fossil *Zosterophyllum myretonianum*, bivalve, gastropods and spore fossil.

Top part: plant fossils *Drapanophycus spinaeformis*, *Zosterophyllum spothulatus* etc.; fish fossil *Galeaspis shujiachongensis* and spore fossils.

**Age:**

Lochkovian to Emsian (Early Devonian)

**Depositional setting:**

**Additional Information**

The strata of the Cuifengshan Group are incompletely recorded westward, northward and southward of this area. In the Wuding area, the *Huananaspis-*bearing beds directly overlie the Hongshiya Fm or Douposi Fm of Middle Cambrian, and are overlain by the Emsian Bojiao Fm; therefore, a considerable stratigraphic interval might be absent from its lower part. The Cuifengshan Group in Zhaotong area contains abundant *Polybranchiaspis*, Antiarchi and Crossopterygii fish fossils, has a disconformable contact with the underlying Silurian, and is conformably overlain by the Bojiao Fm and. In Guangnan area of southeast Yunnan, there may be only the lower part of the Cuifengshan Group developed; and the nonmarine sediments yielding fish, bivalve fossils are called the Posongchong Fm (Liao Weihua et al., 1978). The area near Wanshoushan Mt. of Yiliang in east Yunnan belongs to the same sedimentary area with Qujing, and here the group rests conformably on the black shale of Silurian. The lithology of the lower part here is similar to that of Xishan in Qujing, and yields *Polybranchiaspis yulungensis*, *Yunnanolepis*, Crossopterygii and Arctolepida, etc. This unit in this location is 45 m thick and is in faulted contact with the overlying Upper Devonian Zaige limestone. In the area close to Penshuidong, north of Wanshoushan Mt., the beds mentioned above are purplish-red, yellowish-green and yellowish-brown sandstone and mudstone, yield fish and plant fossil fragments, and is slightly more than 100 m in thickness.

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Dacaotan Gr**

**Period: Devonian**

**Age Interval (Map column): D3** (21), Late Devonian

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Dacaotan area between Wangjiadian and Jiudianzi, south of Dongzhakou, southwest of Longxixian (Zhangxian) County, Gansu Province. It was named by Huang Zhenhui in 1959.

**Lithology and Thickness:**

Sandstone. The lithology of the Dacaotan Group is dominated by dark-gray, brownish-yellow, grayish-white, dark-purple, purplish-red and grayish-green feldspathic quartz sandstone, calcareous siltstone, clayey siltstone, and fine-grained sandstone. The total thickness is more than 3300 m.

**Relationships and Distribution:**

***Lower contact:***

Its base has a fault contact with the underlying strata.

***Upper contact:***

The upper contact of the group with the overlying Wangjiadian Fm of the Lower Carboniferous is probably conformable in nature, but still remains pending.

***Regional extent:***

The Dacaotan Group is mainly intermittently exposed north of the northern Qinling, from Niangniangba at Liushui of Dacaotan to Dingtanzi of Liangdang in Zhangxian County. In the area of Dazhuang and Gangoutan in Zhangxian County, the thickness is more than 4737 m and contains plant and fish fossils. In Zishigou area of Zhangxian County, the thickness is more than 1245 m and contains plant *L. rhombicum* etc. (according to scale 1:200,000 Longxi Geological Map). In the area of Sigou of Wushan to Jigou of Tianshui, the outcrop thickness is more than 7900 m, and overlies unconformably on the Yushuping Fm of the Middle Devonian. The corresponding beds in Moyugou, Huayangyu of Tianshui yield plant fossil *L. rhombicum,* etc. (according to scale 1:200,000 Tianshui Geological Map). Near the Dingtanzi of Liangdang, the outcrop thickness is more than 5000 m, where the basal conglomerate overlies unconformably on the Caotangou Group of the Ordovician and contains plant fossils in its lower part.

**Fossils:**

No fossils have been found so far in the very thick interval at the lower part of the Group. The middle and upper parts yield plant fossils: *Leptophloeum rhombicum*, *sublepidodendrom wusihensis*, *Knoria* etc. and Placodermi fish fragments.

Except for *Leptophloeum rhombicum*, the plant fossils in the Dacaotan Group of *Cyclostigma kiltornense, Sublepidodendron mirabile* etc., are similar to those of the Wutong Group in Nanjing area.

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Dacaozi Fm**

**Period: Devonian**

**Age Interval (Map column): D21** (78), Eifelian (early Middle Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Dacaozi of Ninglang County, Yunnan Province. It was named by Fang Runsen in 1976 and published by Yunnan Compiling Group for Regional Stratigraphical Scale (1978).

**Lithology and Thickness:**

Sandstone, limestone. The lithologic character is a set of clastic and carbonate rocks, mainly composed of grayish-white medium-bedded pebble-bearing quartz sandstone, grayish-black shale and grayish-black medium-bedded biogenic limestone (in middle part). The formation has a thickness of 499 m.

**Relationships and Distribution:**

***Lower contact:***

The formation overlies dolomite of the Upper Silurian or is in a disconformable contact with the Lower Silurian.

***Upper contact:***

It is overlain by dark-gray to grayish-black thin- to medium-bedded reef limestone of the Lagude Fm.

***Regional extent:***

It is restrictly distributed in Dacaozi, Xilaping, Baicaoping in Ninglang County, Yunnan Province.

**Fossils:**

The shales contain abundant brachiopods of the *Xenospirifer fongi* zone and corals.

**Age:**

Eifelian (early Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Dafenggou Fm**

**Period: Devonian**

**Age Interval (Map column): D22**  (45-47), Middle Devonian - early Late Devonian

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located at Dafenggou of Luohe Township in Xunyang County, Shaanxi Province.

It was named by No 1 Shaanxi Geological Team in 1964 and Du Dinghan et al. formally quoted it in 1986.

**Lithology and Thickness:**

Sandstone, limestone. The lithology of the lower part is purplish-red to grayish-black iron-bearing quartz sandstone intercalated with sandy phyllite, 130.3 m thick. The sandstone displays tabular, wedge-shaped and bi-directional cross-bedding, sand-laminated bedding, ripple marks.

The upper part is grayish-white massive dolomitic limestone, gray medium- to thick-bedded bioclastic limestone, 57.7 m thick.

**Relationships and Distribution:**

***Lower contact:***

Conformably overlies the Shijiagou Fm.

***Upper contact:***

***Regional extent:***

The formation is distributed in the area of Xunyang, Fengxian, Shanyang County, where it is relatively uniform with a thickness of 112 to 188 m. Westward in the Wafangba area in Fengxian County, carbonate rock increases remarkably in thickness to 609 m but decreases to 278 m in Songshuping of Shanyang County.

**Fossils:**

The formation yields brachiopods *Stringocephalus*, *Atrypa*; coral *Charactophyllum.*

In Songshuping of Shanyang County coral of *Disphyllum* and brachiopod of *Spinatrypa bodini*  have been found. They indicate an early Late Devonian age.

**Age:**

Middle Devonian - early Late Devonian

**Depositional setting:**

It is interpreted as a beach to subtidal deposits.

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Dahelihe Fm**

**Period: Devonian**

**Age Interval (Map column): D3**  (6), Late Devonian

**Province:** Heilongjiang

**Type Locality and Naming:**

The type section is located at the both sides of Dahelihe River of Handaqi, Heihe City, Heilongjiang Province. It was named by Wang Ying et al. in 1964.

**Lithology and Thickness:**

Sandstone, siltstone. The base is marked by light-colored metamorphosed medium-grained feldspathic quartz sandstone; the lower part is sandy conglomerate, feldspathic quartz sandstone and siltstone containing plant fossil fragments; and the upper part is siltstone and chlorite slate containing many brachiopods.

Outcrops west of Handaqi are composed of dark-gray siltstone and calcareous clayey slate intercalated with feldspathic greywacke.

This formation is 500 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

Conformable contacts with the underlying Genlihe Fm.

***Upper contact:***

Conformable contacts with the overlying Xiaohelihe Fm.

***Regional extent:***

**Fossils:**

Main brachiopods are: *Acrospirifer* sp., *Cyrtospirifer* sp., *Spinatrypa* sp., *Tridensilis* sp.

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Dale Fm**

**Period: Devonian**

**Age Interval (Map column): D13** (65), Late Emsian (late Early Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at Dingshan Hill, southwest of Dale Township, Xiangzhou County, Guangxi. It was named by Jia Huizhen and Yang Deli in 1979.

**Lithology and Thickness:**

Limestone. The lithology is dark-gray bioclastic limestone intercalated with nodular limestone, and dolomitic limestone, and the formation is more clayey in its lower and upper parts. Mud content commonly increases from south to north until the upper part of the Dale Fm totally changes into shale at Sipai. Southwards the formation is intercalated with dolomite and gets thinner.

**Relationships and Distribution:**

***Lower contact:***

The base is conformable over the Guanqiao Dolomite.

***Upper contact:***

***Regional extent:***

This formation is distributed along both sides of Dayaoshan Mt., with mud content commonly increasing from south to north until the upper part of the Dale Fm totally changes into shale at Sipai. Southwards the formation is intercalated with dolomite and gets thinner.

**Fossils:**

Brachiopods include three assemblage zones,

lower part: the *Trigonospirifer trigonata-Athyrisina plicata* assemblage zone,

middle part: the *Otospirifer daleensis* assemblage zone,

upper part the *Euryspirifer paradoxus* assemblage zone.

Coral: *Trapezophyllum elegantulum*, *Psydracophyllum irregulare*, *Favosites* spp., *Meosofavosites* sp.

**Age:**

Late Emsian (late Early Devonian)

**Depositional setting:**

It is interpreted as a carbonate platform.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Daliantang Fm**

**Period: Devonian**

**Age Interval (Map column): D13** , Emsian (late Early Devonian)

**Province:** Yunnan, Guangxi

**Type Locality and Naming:**

The type section is located at Daliantang, 8 km NNE of Guangnan County, Yunnan Province.

It was named by Liao Weihua et al. in 1978

**Lithology and Thickness:**

Limestone. The formation is mainly composed of siliceous-banded limestones and of dolomites, intercalated with phosphorus-bearing clay rock in the upper part.

It is 167 m thick.

**Relationships and Distribution:**

***Lower contact:***

Conformable contact onto the underlying gray, grayish-green mudstone of the Pojiao Fm.

***Upper contact:***

Conformable contact with the overlying gray thick-bedded bioclastic limestone intercalated with phosphorus-bearing clay rocks of the Pozheluo Fm.

***Regional extent:***

This formation is widely distributed in Guangnan, Funing, Malipo in southeast Yunnan and west Guangxi.

**Fossils:**

The formation contains abundant fossils, including tentaculites of *Nowakia praecursor* zone and *N. barrandei* zone; ammonoids of *Anetoceras-Erbenoceras* zone and *Teicherticeras* zone; and conodonts: *Polygnathus grombergi*, *P. serotinus.*

**Age:**

Emsian (late Early Devonian)

**Depositional setting:**

It is interpreted as a deep-water basin environment.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Dangduo Fm**

**Period: Devonian**

**Age Interval (Map column):** D13-D21 (40), Emsian - Eifelian (Early - Middle Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located in Dangduo gully, 24 km northwest of Diebu County, Gansu Province. It was named by Zhang Yan in 1961. Qin Feng and Gan Yiyan formally quoted it in 1976.

**Lithology and Thickness:**

Siltstone, sandstone with iron beds. This formation is divided into three members.

The Lower member is composed of dark-gray thin- to medium-bedded micrite or sparite limestone, sandy shale and clayey siltstone.

The Middle member is composed of dark-gray silty shale intercalated with barringerite or siderite nodules and lenses.

The Upper member is composed of grayish-green, purplish-brown medium- to thick-bedded quartz sandstone, siltstone and many beds of chlorite-bearing lime-grain hematitic ferruginous rock.

The thickness is 80.6 m in total.

**Relationships and Distribution:**

***Lower contact:***

Disconformably overlies the Duola Fm.

***Upper contact:***

***Regional extent:***

The formation is well developed in west Luqu and Diebu areas, where the thickness ranges from 85 to 115 m with the thickest being 118 m at the Dangduo gully stratotype. Eastwards from Dangduo gully, it rapidly becomes thinner; and the iron-bearing clastic rock of its upper member directly overly the lower parts of the Lower Devonian or the Silurian, and the basal strata is commonly a calcareous breccia bed of 0.5 to 8.9 m in thickness.

**Fossils:**

The formation contains abundant fossils with coral reef and shelly beach deposits. There are five brachiopod zones distinguished from bottom to top: the *Cymostrophia-Devonochonetes* assemblage zone, the *Otospirifer* acme zone, the *Euryspirifer-Rostrospirifer* assemblage zone, the *Acrospirifer-Parachonetes* assemblage zone and the *Athyrisinopsis uniplicata* acme zone. In the upper part, the conodont *Eognathodus bipennatus montensis* is reported.

**Age:**

Emsian - Eifelian (Early - Middle Devonian)

**Depositional setting:**

The lower part of the Formation was formed in a depositional setting that started with a shallow offshore open platform and then changing into platformal basin; and the upper part belongs to alternating neritic shelf, carbonate platform and marine-beach facies.

**Additional Information**

The formation contains an important iron-bearing bed in west Qinling area.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Danlin Fm**

**Period: Devonian**

**Age Interval (Map column): D1** (52-54), Early Devonian

**Province:** Guizhou

**Type Locality and Naming:**

The type section is located in a gully, 1.5 km west of Danlin Village on the northern slope of Hou’ershan Mt., about 10 km east of the Dushan County seat, Guizhou Province. It was named by Wang Yu et al in 1964.

**Lithology and Thickness:**

Sandstone. The lithology is grayish-white medium-bedded quartz sandstone, partly intercalated with black thin-bedded calcareous siltstone. The base of the formation is a thin bed of conglomerate.

The formation is 191 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

The base of the formation is a thin bed of conglomerate disconformably separating it from the underlying Silurian Wengxiang Group.

***Upper contact:***

***Regional extent:***

The formation is distributed in Dushan of southern Guizhou and in Hezhang of northwestern Guizhou.

**Fossils:**

It contains spores, solecodonts, chitinozoans, a few small-sized brachiopods and plant ?*Psilophyton*, *Hostimella*, *Taeniocrada.*

**Age:**

Early Devonian

**Depositional setting:**

It is interpreted as deposits of littoral facies.

**Additional Information**

The Mangshan quartz sandstone in Duyun (Yue Senxun, 1929) and Wudang Fm near Guiyang City (Devonian Research Team, Chinese Academy of Geological Sciences, 1965, unpublished paper) are partly equivalent to Danlin Fm.

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Dardong Fm**

**Period: Devonian**

**Age Interval (Map column): D1**  (23), Pragian (middle Early Devonian)

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located at Dardong, 5 km north of Yongzhuqiao in Xianza County, Xizang Autonomous Region.

It was named by Xia Daixiang in 1979.

**Lithology and Thickness:**

Limestone. The formation is mainly composed of light- to dark-gray medium-bedded limestone, partly intercalated with bioclastic limestone and calcareous siltstone.

It is 500 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

This formation overlies disconformably on the Dewukaxia Fm of the Lower Silurian.

***Upper contact:***

This formation is overlain by the Deriangma Fm,

***Regional extent:***

It is mainly distributed at Dardong, Kerduo and Tarma of Xianza, northern Xizang Autonomous Region.

**Fossils:**

It contains coral, brachiopods and tentaculites of the *Nowakia acuaria* zone.

**Age:**

Pragian (middle Early Devonian)

**Depositional setting:**

It is interpreted as a deep-water basin facies.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Dazhongzhai Fm**

**Period: Devonian**

**Age Interval (Map column): D11-2** ,Lochkovian(?)-Pragian (Early Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located near Bitijie, about 10 km northeast of Mojiang County, Yunnan. It was named by Yunnan No 2 Team of Regional Geological Survey in 1975.

**Lithology and Thickness:**

Sandstone. The lithologic character is gray to yellowish-gray quartz sandstone, siltstone intercalated with black shale, and with flysch structures.

The exposed thickness is 573.5 m.

**Relationships and Distribution:**

***Lower contact:***

Uncertain: At the type section, the bottom portion is incomplete, therefore the lower contact relations are uncertain.

***Upper contact:***

Uncertain: At the type section, the top portion is incomplete, therefore the upper contact relations are uncertain.

***Regional extent:***

The distribution of the formation is confined to the area of Dazhounzhai, Bilijie and Baishangcun in Mojiang County.

**Fossils:**

The upper part yields the graptolite *Monograptus yukounensis fangensis* and tentaculites *Nowakia acuaria*.

**Age:**

Lochkovian(?)-Pragian (Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**De’an Fm**

**Period: Devonian**

**Age Interval (Map column): D13-D21?** (6), Emsian - Eifelian (Early - Middle Devonian)

**Province:** Heilongjiang

**Type Locality and Naming:**

The type section is located at the south bank of Xigulanhe River, about 10 km northwest of No. 727 Forest Farm in Heihe City, Heilongjiang Province. The reference section is at the east side of Jinshuihe River, about 1.5 km east of Jinshui, Handaqi Township in Heihe City, Heilongjiang Province. It was named by Helongjiang No.1 Team of Regional Geological Survey at the end of the 1970s, and Xue Chunding et al. formally quoted it in 1980.

**Lithology and Thickness:**

Siltstone. It is composed of grayish-black to dark-gray siltstone, chlorite slate, tuffaceous siltstone, intercalated with grayish-black or grayish-black crystalline limestone.

It is 540 m thick.

**Relationships and Distribution:**

***Lower contact:***

The formation lies conformably above the Huolongmen Fm of the Lower Devonian.

***Upper contact:***

The formation is conformably below the Genlihe Fm of the Middle Devonian.

***Regional extent:***

This formation is distributed in Nenjiang County, Heihe City, and the northwest area of Xiaoxing’anling of Huma County, Heilongjiang Province.

**Fossils:**

It contains abundant brachiopods, mainly representing by *Borealispirifer orientalis*, and a few cephalopods “*Devonobactrites*” *jinshuiensis* and corals. Commonly it yields abundant bryozoan fossils of Fenestellae which often appear to be stratified and can be taken as a marker.

**Age:**

Emsian - Eifelian (Early - Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Su Yangzheng)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Deri’angma Fm**

**Period: Devonian**

**Age Interval (Map column): D1** (23), Early Devonian

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located at the top of Deri’angma Mt. in yongzhu, Xainza County, Xizang. It was named by Lin Baoyu in 1981.

**Lithology and Thickness:**

Metamorphosed Sandstone. It is composed of gray medium- to thick-bedded metamorphosed quartz sandstone. It is 183 m thick.

**Relationships and Distribution:**

***Lower contact:***

Conformably on the underlying grayish-black thin-bedded clayey limestone, sandy limestone of the Riarjue Fm.

***Upper contact:***

This formation is below the light-gray thick-bedded crystalline limestone of the Langma Fm.

***Regional extent:***

This formation is mainly distributed in Xianza, Ombu, etc., in Xizang.

**Fossils:**

It contains rare fossils.

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Dingzonglong Fm**

**Period: Devonian**

**Age Interval (Map column): D22** (26, 31, 32), Givetian (Middle Devonian)

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located at Dingzonglong of Markam County, Xizang. It was named by No 3 Team of Regional Geological Survey of Sichuan Geological Bureau and was published by Sichuan Compiling Group for Regional Stratigraphical Scale (1978).

**Lithology and Thickness:**

It is dominated by a set of carbonate rocks. The lower part consists of gray massive dolomite; the middle part consists of yellow shale intercalated with nodular limestone; and the upper part is composed of gray thin-bedded marl intercalated with yellow shale.

It is 169 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

The Formation lies conformably on the sandy slate of the Haitong Fm.

***Upper contact:***

The Formation lies below the gray thin-bedded marl and grayish yellow banded shale of the Zuogadong Fm.

***Regional extent:***

The formation is distributed in Markam County, Xizang and the west part of Derong County, Sichuan.

**Fossils:**

It contains abundant brachiopods, bivalve, gastropods, stromatopora and corals; and the representative element is brachiopod *Stringocephalus*.

**Age:**

Givetian (Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Donggangling Fm**

**Period: Devonian**

**Age Interval (Map column): D22**  (65-67),

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at Doupengling, 1.5 km east of Xiangzhou County, Guangxi. It was named by Yue Senxun in 1928.

**Lithology and Thickness:**

Limestone. The Donggangling Fm is a set of composite sequences of gray to dark-gray medium-bedded limestone, clayey limestone and mudstone.

It is about 400 m thick in Xiangzhou, and about 650 m thick at Tongmu, Qijian of Jinxiu, Luzhai areas where the mudstone contents are increased.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | R. Xu (1938) | Y. Wang &  C. Yu (1965) | H. Hou  (1979) | S. Bai et al. (1979) | H. Hou et al. (1988) |
|  |  |  |  |  | Baqi Fm |
| **Givetian** | Donggangling Fm | Donggangling Fm | Donggangling Mbr | Baqi Fm | Donggangling Fm |
|  |  |  | Changcun Mbr | Jide Fm | Changcun Fm |
| **Eifelian** |  |  | Guche Mbr |  | Guche Fm |
|  | Wucun Bed | Yujiang Fm | Gupa Mbr | Yingtang Fm | Gupa Fm |

**Relationships and Distribution:**

***Lower contact:***

Conformably lies on the mainly clastics of the underlying Changcun Fm,

***Upper contact:***

The Formation is overlain by the Baqi Fm.

***Regional extent:***

The formation is mainly distributed west of Dayaoshan Mt. and in northern Guangxi, covering Xing’an, Lipu, Luzhai, Zhongshan and Hexian.

**Fossils:**

The important fossils include brachiopods: *Stringocephalus burtini*, *Acrothyris kwangsiensis*, *Emanuella* *takwanensis*; bivalves: *Actinopteria*; corals: *Temnophyllum*, *Endophyllum.*

**Age:**

Early Givetian (Middle Devonian), equivalent to conodont *Polygnathus ensensis* zone to middle *varcus* zone.

**Depositional setting:**

It is interpreted as an open or restricted platform sedimentary environment.

**Additional Information**

The lithology and thickness of this formation are relatively uniform; however laterally from north to south, the calcareous content may increase and the muddy content decrease. In the Guilin area, the lithology is marked by dolomitic stromatoporoid-bearing limestone and bioclastic limestone intercalated with dolomite, and is about is 300 m in thickness. In Luocheng and Huanjiang areas, it is intercalated with clastic rocks.

**Compiler**

(Hou hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Dongla Gr**

**Period: Devonian**

**Age Interval (Map column): D3** (31), Late Devonian

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located at Dongla, about 35 km north of Jomda County, Xizang.

It was named by Li Pu et al. in 1955.

**Lithology and Thickness:**

Volcanic rocks. This Group is a set of massive to thick-bedded pyroclastic rock and volcanic rock. The lithology is mainly composed of light-gray, grayish-green to grayish-black rubbly tuffs, rhyolite and clay slate. The thickness is more than 1700 m.

**Relationships and Distribution:**

The contact relationships of the Dongla Group with the overlying and the underlying formations are not yet clear, due to the incomplete exposures at the bottom and the top of the group.

***Lower contact:***

However, a follow up survey indicated a conformable contact with the underlying Middle Devonian (the Dingzonglong Fm).

***Upper contact:***

However, a follow up survey indicated an upper disconformable contact relationship with the overlying Upper Triassic.

In the area of Tuka in Dêqên County, the group has a disconformable contact with the overlying “Machala” Fm of the Visean Stage.

***Regional extent:***

This group is distributed from Dongla to Tuka in Dêqên County along the Jinshajiang River.

**Fossils:**

Metamorphosed siltstone contains brachiopod *Cyrtospirifer.*

**Age:**

Late Devonian

**Depositional setting:**

It is interpreted as a volcanic eruption facies deposit.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Doushishan Fm**

**Period: Devonian**

**Age Interval (Map column): D32** (40,51), middle to late Famennian (Late Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Dangduo Gully, 24 km northwest of Dêwo County, Gansu Province.

It was named by Xi’an Institute of Geology and Mineral Resources and No 1 Branch Team of Gansu No 1 Team of Regional Geological Survey in 1973. Qin Feng and Gan Yiyan formally quoted it in 1976.

**Lithology and Thickness:**

Limestone. The formation is composed of dark-gray to gray medium- to thick-bedded limestones of micrite, psammitic micrite and grainstone intercalated with gray dolomitic micrite and black banded thin-bedded nodular chert.

It is rather hard to find a complete section; at Luqu on the west, it shows higher muddy content. The most complete exposure is located at Dangduo Gully.

The thickness is 659.7 m in total.

**Relationships and Distribution:**

***Lower contact:***

It conformably overlies the Cakuohe Fm.

***Upper contact:***

***Regional extent:***

The most complete exposure is located at Dangduo Gully.

**Fossils:**

Conodonts could be found in many beds; and brachiopod and coral are mainly seen in the middle and upper parts. The middle part is characterized by the brachiopod *Yunnanella-Yunnanellina* assemblage zone, the coral *Gorizdronia-Synaptophyllum* assemblage zone, and the conodont *Polygnathus perplexus*; the upper part yields the brachiopod *Tenticospirifer hsikuangshanensis-Cyrtosspirifer* cf. *pamiricus* assemblage zone, and conodonts *Apatognathus cuspidate*, *Polygnathus semicostatus.*

**Age:**

middle to late Famennian (Late Devonian)

**Depositional setting:**

In the lower part of this Formation is algal limestone with wave marks showing shallow-water deposit characteristics, therefore a neritic shelf to open platform facies is suggested.

**Additional Information**

The resistant thick-bedded carbonate rock in the formation usually forms high or steep cliffs in the landscape. The formation generally has a consistent lithology and thickness.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Dujiacun Gr**

**Period: Devonian**

**Age Interval (Map column): D3** (29), Late Devonian

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Dujiacun Village near Heyuanzhai in Shidian County, Yunnan Province.

It was named by Fang Runsen in 1976 (unpublished).

**Lithology and Thickness:**

Limestone. The Group is composed of gray to yellowish-pink medium-bedded crystalline limestone.

The thickness is 200 m.

**Relationships and Distribution:**

***Lower contact:***

The formation lies conformably on the underlying marl of the Heyuanzhai Fm.

***Upper contact:***

Disconformably overlain by the gray sandy limestone with crinoid stems of the Lower Carboniferous.

***Regional extent:***

The group is restrictly distributed in the Baoshan and Zhenkang areas.

**Fossils:**

It contains brachiopods, stromatopora and corals. The representative brachiopod is *Tenticospirifer*.

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Dushan Fm**

**Period: Devonian**

**Age Interval (Map column): D22** (53,54), Givetian (late Middle Devonian)

**Province:** Guizhou

**Type Locality and Naming:**

The type section is located at Jiwozhai (Jinwozhai), Songjiaqiao and Jipao, east of the Dushan county seat, Guizhou Province. The reference section is at Dahekou, east of the Dushan county seat, Guizhou Province.

It was named by Ding Wenjiang in 1929.

**Lithology and Thickness:**

Limestone. This formation is composed of three members (The subdivision into three members of this formation seems to be only applicable to the Dushan and Mochong--Bingwu areas of Duyun).

The lower part, the Jipao Member, consists of grayish-black medium- to thick-bedded limestone, and thin-bedded nodular limestone and is 180 m thick.

The middle part, the Songjiaqiao Member, is purplish-red to grayish-white ferruginous quartz sandstone, intercalated with dolomitic limestone and shale, and it is 120 m thick.

The upper part, the Jiwozhai Member, is gray to dark-gray thin- to thick-bedded limestone, clayey limestone, and dolomitic limestone. The base has a 4-m-thick bed of grayish-black thin-bedded nodular limestone.

**Relationships and Distribution:**

***Lower contact:***

The base has a 4-m-thick bed of grayish-black thin-bedded nodular limestone, which is in conformable contact with the underlying sandstone and siltstone of the Bangzhai Fm.

***Upper contact:***

***Regional extent:***

It is widely distributed in southern Guizhou Province.

**Fossils:**

Jipao Member: brachiopods *Stringocephalus, Bornhardtina*

Songjiaqiao Member: brachiopod *Lazutkinia* and plant fragments

Jiwozhai Member: branched stromatoporoids containing abundant brachiopods *Stringocephalus, Emanuella,* coral *Stringophyllum*

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

It is interpreted as a platform facies or platform margin facies.

**Additional Information**

The fossil characteristics are nearly the same everywhere, but the thicknesses are variable.

The subdivision into three members of this formation seems to be only applicable to the Dushan and Mochong--Bingwu areas of Duyun.

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Erdaogou Fm**

**Period: Devonian**

**Age Interval (Map column):** D1 (9),Early Devonian

**Province:** Jilin

**Type Locality and Naming:**

A type section was not given and the reference section is at Erdaogou of Dasuihe Township, about 15 km west of Jilin City, Jilin Province.

It was named by Yabe and Jiangkou in 1944.

**Lithology and Thickness:**

Limestone. The formation is mainly composed of grayish-green siltstone and limestone, with dark-gray thick-bedded micrite at the base and with gray thick-bedded limestone at the top.

The outcropped thickness is about 68 m.

**Relationships and Distribution:**

***Lower contact:***

The base of the formation is not exposed.

***Upper contact:***

The top of the formation is unconformably overlain by the Beitongqigou Fm of Carboniferous.

***Regional extent:***

This formation is only distributed in Houshangmenzi to Beitongqigou at Dasuihe Township in Yongji County, Jilin Province where it outcrops at the core of an anticline in E-W direction.

**Fossils:**

It contains abundant fossils, mainly the brachiopod *Quadrithyris rareplicatus* assemblage and *Atrypa nieczlawiensis-Gypidula* cf. *pelagica* assemblage; coral *Stylopleura-Carlinastrea* assemblage and *Squamesfavosites jiriensis-Parathamnopora youngjuensis-Paraheliiollites salairicus* assemblage; trilobite *Calymene-Proetus* assemblage; and gastropods, bryozoan, ostracods, holothuroid fragments.

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Su Yangzheng)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Ertaizi Fm**

**Period: Devonian**

**Age Interval (Map column): D13** (70), Early Emsian (late Early Devonian)

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at Ertaizi, near Xiejiawan, south of Ganxi Village in Pinwu County, Sichuan Province.

It was named by Wan Zhengquan in 1981.

**Lithology and Thickness:**

Limestone. The formation was originally in the lower part of the Yangmaba Fm. The lithology of the formation is dominated by gray to dark-gray massive limestone and clayey limestone, intercalated with a few beds of calcareous shale, carbonaceous shale and fine-grained sandstone.

It is 192 m in thickness,

**Relationships and Distribution:**

***Lower contact:***

It is in conformable contacts with the underlying Xiejiawan Fm.

***Upper contact:***

It is in conformable contacts with the overlying re-defined Yangmaba Fm.

***Regional extent:***

It is distributed in Beichuang and Jiangyou counties in the Longmenshan Mt. area, Sichuan Province.

**Fossils:**

Fossil zones distinguished from bottom to up are two brachiopod zones including the *Otospirifer trigoeneris-Vagrania ertaiziensis* assemblage zone and the *Megastrophia ertaiziensis--Mesodouvillina chuangveiensis* assemblage zone; two coral zones comprising the *Xystriphyllum beichuanense-Hexagonaria hexagona* zone and the *Tryplophyllum cystosum-Sulcophyllum beichuanense* zone; and also has the conodont *Polygnathus serotinus*.

**Age:**

Early Emsian (late Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Ertang Fm**

**Period: Devonian**

**Age Interval (Map column): D13** (65), Middle Emsian (late Early Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located from Tuntou Village to Liufeng Forest Farm on the western slope of Liushiling Ridge at Ertang in Wuxuan County, Guangxi.

It was named by Yu Changmin and Yin Bao’an in 1978.

**Lithology and Thickness:**

Limestone. The formation is a set of strata assemblage composed of limestone and clayey limestone intercalated with marl and dolomitic limestone. From north to south, the mud content may decrease and carbonate content increase.

It is 200 to 487 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

The greenish-gray and dark-gray shale at the base of the formation conformably overlies the Shanglun Fm.

***Upper contact:***

***Regional extent:***

The formation is mainly distributed from Jinxiu in north to Wuxuan in south along the western side of Dayaoshan Mt.

**Fossils:**

It yields rather abundant brachiopods *Howellella fecunda*, *Reticulariopsis ertangensis*, *Glyptospirifer* sp., *Athyrisina* sp., and coral *Lyrielasma guangxiensis*, *Xiangzhouphyllum minor*, *Zonophyllum* sp., *Tryplasma* sp.

**Age:**

Middle Emsian (late Early Devonian) according to the appearance of conodont *Polygnathus perbonus*.

**Depositional setting:**

It is interpreted as an open platform facies.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Etoucun Fm**

**Period: Devonian**

**Age Interval (Map column): D32** (67), latest Famennian (Late Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at Etoucun, about 3.5 km south of Wayaokou of Guilin City, Guangxi.

It was named by Yin Bao’an et al. in 1978.

**Lithology and Thickness:**

Limestone. This formation is a set of gray to dark-gray medium- to thick-bedded bioclastic limestone and stromatoporoid-bearing limestone.

It is 64 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

The base of the formation represented by the appearance of the bioclastic limestone that conformably overlies the light-gray to dark-gray calcirudite of the underlying Rongxian Fm.

***Upper contact:***

The formation is overlain by the Yaoyunling Fm of the Lower Carboniferous.

***Regional extent:***

It is distributed in northern and northeastern Guangxi along the southern margin of Jiangnan Old Land.

**Fossils:**

This formation yields abundant stromatopora *Stromatocerium* sp. and *Actinostroma* sp., foraminifera *Quasiendothyra c. communis* and *Q. konensis*, and coral *Cystophrentis* sp.

**Age:**

latest Famennian (Late Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Fenshuiling Fm**

**Period: Devonian**

**Age Interval (Map column): D22** (76), Givetian (late Middle Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Fenshuiling, west of Daliantang in guangnan County, Yunnan.

It was named by Sha Qingan et al. in 1972.

**Lithology and Thickness:**

Chert. It is composed of variegated thin-bedded chert and siliceous shale with more phosphorus-bearing chert in lower part.

The formation is 154 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

The formation is in a conformable contact with the underlying limestone intercalated with claystone of the Pozheluo Fm.

***Upper contact:***

***Regional extent:***

It is distributed in the areas of southeastern Yunnan and western Guangxi.

**Fossils:**

It yields tentaculites *Nowakia* *otomari*.

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

It is interpreted as a deep-water basin facies.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Fuxingtun Fm**

**Period: Devonian**

**Age Interval (Map column): D2,** Middle Devonian

**Province:** Heilongjiang

**Type Locality and Naming:**

The type section is located at Ma’anshan of Yanshou County, Heilongjiang.

It was named by the Heilongjiang No 1 Team of Regional Geological Survey and was published by “Heilongjiang Regional Stratigraphical Scale” in 1979.

**Lithology and Thickness:**

Continental clastics. The formation is characterized by continental clastic deposits, composed of gray and dark-gray clayey slate, tuffaceous fine sandstone, sandy-gravelly slate intercalated with sericitized felsite volcanic rock.

The outcropped thickness is 1316 m, but its lower boundary is unclear.

**Relationships and Distribution:**

***Lower contact:***

Its lower boundary is unclear.

***Upper contact:***

The top of the formation is an unconformable contact with rhyolite porphyry of unknown age.

***Regional extent:***

**Fossils:**

The upper part of this Formation contains plant fossils *Taeniocrada decheniana*, *Barsassia sibirica*, *Protolepidodendrom yanshouense*, *Lepidodendropsis*? sp.

**Age:**

Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Gala Fm**

**Period: Devonian**

**Age Interval (Map column): D13** (40), Emsian (late Early Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located in Dangduo gully, 24 km northwest of Têwo County, Gansu Province.

It was named by the Xi’an Institute of Geology and Mineral Resources and the Gansu No 1 Team of Regional Geological Survey in 1973. Qin Fong and Gan Yiyan formally quoted it in 1976.

**Lithology and Thickness:**

Dolomite. The formation is dominated by dark-gray massive to thick-bedded algae dolomite and stromatolite-bearing and *stratifera-*bearing dolomite, intercalated with a few sandy dolomitic slate, dolorudite and microcrystalline dolomite. The top is dominated by siltstone and fine-grained sandstone, intercalated with thin- to medium-bedded sandy cryptocrystalline dolomite and sandy marl.

It is 989.3 m in total thickness.

**Relationships and Distribution:**

***Lower contact:***

It conformably overlies the Shangputonggou Fm.

***Upper contact:***

***Regional extent:***

The formation, exposed in the area from Luqu (Ma’ngê) to Têwo counties in western Qinling Mts is consistent in lithology and thickness. However, it is 513-598 m thick in Luqu to the west, 857-990 m thick from Putonggou to Dangduogou, and then eastwards from Dangduogou it sharply thins to only 91 m at Yiwagou; and further eastwards this formation is absent at Rangdag and Zhugqu, and the outcropping thickness is only 12 m at Jiaogonggou in Wudu County.

**Fossils:**

Fossils are rare, and include corals: *Chalcidophyllum*, *Lyrielasma*, *Siphonophrentis* and *Favosites lazutkini*, *Squameofavosites* etc. in the middle and lower parts; and conodont *Polygnathus declinatus*, ostracod *Moelleritia elongata* and bivalves etc. in the upper part.

**Age:**

Emsian (late Early Devonian)

**Depositional setting:**

It is interpreted as a semi-restricted platform tidal flat facies.

**Additional Information**

Four depositional cycles are differentiated in this formation and every cycle includes several smaller cycles, each of which comprises supralittoral, intertidal and subtidal zones.

The subtidal zones are mainly composed of laminated dolomite with burrows and complete individuals of ostracods;

The intertidal zones contain stromatolites, oncolites, algal pellets and bird's-eye structures, with alternating light and dark bands;

The supralittoral zones possess involution structures, gypsum vugs, erosion surfaces and crack structures.

**Compiler**

Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Ganxi Fm**

**Period: Devonian**

**Age Interval (Map column): D13** (70), Early Devonian

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located along the bank of Pingtong River, southeast of Ganxi Township in Beichuan County, Sichuan Province.

It was named by Bao Ci, Peng Kaiqi et al. in 1955, and Yue Senxun quoted formally in 1956.

**Lithology and Thickness:**

Siltstone. The formation is composed of silty mudstone, clayey siltstone intercalated with bioclastic limestone. In Pingyipu area, the lithology is regionally stable and the thickness commonly varies between 150-250 m.

It is 195 m thick.

**Relationships and Distribution:**

***Lower contact:***

It has a conformable contact with the underlying Bailiuping Fm.

***Upper contact:***

It has a conformable contact with the overlying Xiejiawan Fm.

***Regional extent:***

**Fossils:**

It contains abundant benthos fossils, mainly brachiopods, corals, trilobites, bivalve, ostracods and a few pelagic conodonts and tentaculites. There are two brachiopod assemblage zones: the “*Howittia*” *opiparus-Parathyrisina-Neoathyrisina typica* assemblage zone in the lower part and the *Dicoelostrophia punctata-Rostrospirifer tonkinensis* assemblage zone in the upper part; there is also the conodont *dehiscens* zone.

**Age:**

Early Devonian

**Depositional setting:**

The deposits can be divided into mixed tidal flat, bioclastic beach, back-beach flat and shallow shelf facies.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Gaopochang Fm**

**Period: Devonian**

**Age Interval (Map column): D2-3** (52), Middle to Late Devonian

**Province:** Guizhou

**Type Locality and Naming:**

The type section is located at Shuitangzhai, about 3 km south of Gaopochang of Huaxi District, Guiyang City, Guizhou Province. It was named by Guizhou Team of Regional Geological Survey in 1978 and Quoted formally by Guizhou Bureau of Geology and Mineral Resources in 1978.

**Lithology and Thickness:**

Dolomite. The formation is a set of carbonate rocks subdivided into four lithologic members: clayey dolomite, vuggy dolomite, dolomite and pisolitic limestone members, respectively.

The formation is 479 m in thickness

**Relationships and Distribution:**

***Lower contact:***

Conformably on the underlying thick-bedded quartz sandstone of the Mangshan Group or Mazongling Fm.

***Upper contact:***

This formation is overlain by grayish-black thin-bedded clayey limestone of Zhewang Fm.

***Regional extent:***

It is restrictedly distributed in Guiyang to Kaili area.

**Fossils:**

The clayey dolomite of the lower part yields brachiopods *Schizophoria excellens*, *Ambocoelia sinensis.*

**Age:**

Middle to Late Devonian

**Depositional setting:**

It is interpreted as a lagoonal depositional environment.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Gedasi Fm**

**Period: Devonian**

**Age Interval (Map column): D3** (44), Late Devonian

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located near Gedasi Village in northern Huilong Township, Zhen’an County, Shaanxi Province. It was named by Zhao Yazeng and Huang Jiqing in 1931.

**Lithology and Thickness:**

Slate, siltstone. It is composed of rhythmic interbeds of gray to dark-gray silty slate and sericite slate with thin-bedded siltstone, occasionally intercalated with calcareous sandstone, feldspathic quartz sandstone and sandy limestone. The sandstone possesses graded bedding and flute marks; the siltstone has laminated bedding. The rhythmite thickness is commonly 3 to 6 cm (ranges from 1 to 9 cm), and the rhythmites are equivalent to the CDE of Bouma sequence and (A) BCD (E) assemblage, indicating deep-water turbidite deposits.

The outcropping thickness is more than 1776 m.

**Relationships and Distribution:**

***Lower contact:***

The Gedasi Fm outcropped along Qianyou River overlies conformably on the Givetian Gudaoling Fm.

***Upper contact:***

The top of this Formation is absent.

***Regional extent:***

The Gedasi Fm is mainly distributed in the area of Zhen’an and Zhashui, north of the Yunzhen--Kuanping (Zhashui) fracture zone.

**Fossils:**

Fossils haven’t been found so far in this formation.

**Age:**

Late Devonian in age based on stratigraphic sequence.

**Depositional setting:**

The rhythmite thickness is commonly 3 to 6 cm (ranges from 1 to 9 cm), and the rhythmites are equivalent to the CDE of Bouma sequence and (A) BCD (E) assemblage, indicating deep-water turbidite deposits.

**Additional Information**

The Gedasi Fm is a synchronous deposit in relation with the rhythmic clastics of the Jiuliping Fm located south to it.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Gelaohe Fm**

**Period: Devonian**

**Age Interval (Map column): D32**  (54), Uppermost Famennian (Latest Devonian)

**Province:** Guizhou

**Type Locality and Naming:**

The type section is located at Jialaohe Village, 11 km south of the Dushan county seat, Guizhou Province. The lectotype is at the eastern slope of Baihupo Hill, 3 km northwest of the Dushan county seat.

It was named by V. K. Ting in 1931.

**Lithology and Thickness:**

Limestone. The Formation is characterized by dark-gray medium- to thick-bedded clayey limestone intercalated with black and purplish-red shale and marls.

It is 50-100 m thick.

**Relationships and Distribution:**

***Lower contact:***

The formation rests conformably on the Zhewang Fm.

***Upper contact:***

The formation underlies the Tangbagou Fm of lowest Carboniferous.

***Regional extent:***

**Fossils:**

It yields abundant coral *Cystophrentis kolaoohensis,* brachiopods *Ptychomaletoechia kinlingensis, Schuchertella gelaohoensi, Composita ovata, Cleiothyridina media, Yanguania sp., Cyrtospirifer sp.*, and foraminifera *Quasiendithyra kobeitusana, Q. konensis.* The fossil *Cystophrentis kolaoohensis* represents the highest coral zone of the Devonian in south China.

**Age:**

Uppermost Famennian (Latest Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Gerong Fm**

**Period: Devonian**

**Age Interval (Map column): D1**  (33), Early Devonian

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at the Cow Farm of Zongza in Batang County, Sichuan Province

It was named by Sichuan No 3 Team of Regional Geological Survey in 1977 and was published by Sichuan Compiling Group for Regional Stratigraphical Scale in 1978.

**Lithology and Thickness:**

Dolomite. It is a set of carbonate rock and is mainly composed of light-gray to grayish-white thick-bedded dolomite and dolomitic limestone, partly intercalated with thin- to medium-bedded quartz sandstone.

It is 124 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

Conformably on the grayish-white medium-bedded crystalline limestone of the Yiongren Fm of the Upper Silurian.

***Upper contact:***

Conformably overlain by the quartz sandstone at base of the Qiongcuo Fm.

***Regional extent:***

The formation is distributed at Zongza of Batang County and in Dêrong County. Trending to Secang of Zhongdian County, Yunnan Province, the facies changes into interbeds of gray sandy slate with dark-gray thick-bedded limestone, which contain abundant brachiopods and corals fossils.

**Fossils:**

It yields corals *Tryplasma*, *Lyrielasma*, *Favosites.*

**Age:**

Early Devonian

**Depositional setting:**

It is interpreted as a lagoon facies deposit.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Genlihe Fm**

**Period: Devonian**

**Age Interval (Map column): D22**  (6), Givetian (late Middle Devonian)

**Province:** Heilongjiang

**Type Locality and Naming:**

It was named by Zhao Guisan in 1957, with no type section indicated.

**Lithology and Thickness:**

Siltstone. The formation consists of grayish-black siltstone and siliceous slate.

It is about 200 m thick.

**Relationships and Distribution:**

***Lower contact:***

The lower boundary of this formation is unclear, and usually thechlorite slate with abundant fossils is taken for the basal boundary of the formation.

***Upper contact:***

It is overlain conformably by the Dahelihe Fm of Upper Devonian.

***Regional extent:***

This formation is widely distributed in the Lesser Khingan region, and is also observed at the Forest Farm of Butehaqi but with comparatively smaller thickness.

**Fossils:**

It contains abundant brachiopods, mainly *Mucrospirifeer mucronatus, Khinganospirifer paradoxispirifer, Mediospirifer khinganensis, Schuchertella* sp., *Tridensilis ustriskii, Spinatrypa* sp., *Elytha* sp.; and bryozoan *Sulcoretepora* sp., *Leptotrypella* sp.

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Gongguan Fm**

**Period: Devonian**

**Age Interval (Map column): D1-2** (45,46), Lower Devonian (South) to Middle Devonian (North)

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located at Xichaliangding—Xujiacao, Luohe Township, Xunyang County, Shaanxi Province. It was named by No 1 Shaanxi Geological Team in 1964 and was published by “Regional Stratigraphical Scale of Central-Southern China” in 1974.

**Lithology and Thickness:**

Dolomite. It is dolomitic rocks with the lower part composed of gray and dark-gray medium-bedded micritic limestone and fine-grained dolomite intercalated with dolomitic slate, and the upper part composed of gray to light-gray medium-bedded sandy dolomite intercalated with clayey dolomite.

In Gongguan area, this formation is composed of algal dolomite and stromatolite-bearing dolomite, with trough and tabular cross-bedding in the lower part, with climbing-ripple lamination, lenticular bedding and flaser bedding in the middle part, and with exposure marks such as bird's-eyes, mutlion structures, drying cracks, etc. in the upper part.

The total thickness is 549.8 m.

**Relationships and Distribution:**

***Lower contact:***

This formation overlies conformably on the Xichahe Fm.

***Upper contact:***

***Regional extent:***

The formation is distributed in the area of Xunyang and Shanyany counties, along the western margin of Wudang Old Land.

**Fossils:**

In the upper part, it yields ostracods *Paramoelleritia subtrapezoidalis*; gastropods *Murchisonia* cf. *loxomemoides*; and stromatopora *Amphipora*

**Age:**

**Depositional setting:**

It is interpreted as a tidal flat to lagoon facies deposit.

**Additional Information**

In Gongguan-Shuanghe area, it may reach up to 550~689 m in thickness, and belongs to the Lower Devonian. But was deposited within a marine transgression from south to north, therefore in Nankuanping--Shanyang, the thickness reduces down to 47~160 m and the age correspondingly goes up to Middle Devonian.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Guanqiao Fm**

**Period: Devonian**

**Age Interval (Map column): D1** (65), Emsian (Early Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at Guitouling, 1 km southwest of Guanqiao Village near Liufengshan Forest Farm, northeast of Ertang Township in Wuxuan County, Guangxi Zhuangzu Autonomous Region.

It was named by Wang Yu and Yu Changmin in 1965.

**Lithology and Thickness:**

Dolomite. It is composed of gray to light-gray, medium- to thick-bedded dolomite, dolomitic limestone and thin-bedded calcareous mudstone. The mudstone content increases from south to north. In the Dale area, it is dominated by dolomite intercalated with mudstone. Algal lamination, bird-eyes, bio-borings and mud crack structures are often seen in this formation, which would indicate a restricted carbonate platform environment.

The thickness is about 600 m.

**Relationships and Distribution:**

***Lower contact:***

The formation is conformably separated from the underlying Ertang Fm by the appearance of dolomite.

***Upper contact:***

***Regional extent:***

It is distributed along the west side of Dayaoshan Mt., from Litang of Binyang County in south to Jinxiu Yaozu Autonomous County in north.

**Fossils:**

**Age:**

Emsian (Early Devonian) according to the stratigraphic sequences

**Depositional setting:**

It is interpreted as a restricted carbonate platform environment.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Guanshanpo Fm**

**Period: Devonian**

**Age Interval (Map column): D1** (70), Early Devonian

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located between northwest of Ganxi Village and the 71 km milestone of the Mianping road in Beichuan County, Sichuan Province.

It was named by Hou Hongfei, Wan Zhengquan et al. in 1988.

**Lithology and Thickness:**

Sandstone. It is dominated by gray to light-gray medium-bedded fine-grained quartz sandstone intercalated with greywacke.

It is 242 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

It rests in a conformable contact with the underlying Guanyinmiao Fm.

***Upper contact:***

It is in a conformable contact with the overlying Bailiuping Fm.

***Regional extent:***

The formation is mainly developed at Ganxi of Beichuan County and also in Pingwu County; and it thickness reduces at Yanmenba in Jiangyou County, at the southeast limb of Tangwangzhai syncline.

**Fossils:**

The lower part yields fish fossils*Macropetalichthys* and Arthrodira; the middle part yields bivalve, ostracods, inarticulate brachiopods, plant and spore fossils; and trace fossils are developed in the upper part. In Ganxi section of Beichuan County, this formation yields fish fossils *Chuanbeiolepis jiangyouensis*, *Yunlongolepis ligui*, *Parapetallichthys minor* and fragments of Arthrodira, as well as bivalves, plants.

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

The Guanshanpo Fm belongs to the Pingyipu Gr.

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Guanwushan Fm**

**Period: Devonian**

**Age Interval (Map column): D22** (70), Givetian (late Middle Devonian)

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at Guanwushan, northwest of the Jiangyou county seat, Sichuan Province.

It was named by Zhu Sen et al. in 1942.

**Lithology and Thickness:**

Limestone. It is mainly composed of bioclastic micritic limestone intercalated with dolomitic micritic limestone and reef limestone, and is intercalated with a few dark-gray calcareous siltstone or shale in the lower part.

It is 485 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

It is in a conformable contact with the underlying Jinbaoshi Fm.

***Upper contact:***

***Regional extent:***

**Fossils:**

The formation yields very abundant benthic fossils. The brachiopods include in the lower part the upper subzone of the Jinbaoshi assemblage zone (the *Stringocephalus jigonglingensis--Subresselandia guanwushanensis*--*Hadrorhynchus guanwushanensis* subzone), and in the upper part, the *Rhyssochonetes-Devonoproductus* assemblage zone subdivided into a lower *Uncinulus hetrocostellus-Independatrypa lemma-Gypidula laenis* subzone and an upper *Schizophoria excellens* *galeaformis-Emmanuella takuanensis* subzone. The corals can be roughly divided into two successive assemblage zones of the *Sinospongophyllum carinatum-Stringophyllum deples* zone and the *Bilingsastraea* (*Sichuansastraea*) *shawoziensis-B.* (*S.*) *beichuangensis* zone. The conodonts include the *Polygnathus* *varcus* zone and the *P. asymmetricus asymmetricus* zone.

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Guanyinmiao Fm**

**Period: Devonian**

**Age Interval (Map column): D1** (70), Early Devonian

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at the roadside near Guanyinmiao of Ganxi Township, Beichuan County, Sichuan Province.

It was named by Hou Hongfei and Wan Zhengquan in 1988.

**Lithology and Thickness:**

Sandstone. It is dominated by gray to dark-gray medium- to fine-grained quartz sandstone intercalated with greywacke.

**Relationships and Distribution:**

***Lower contact:***

It has conformable contact with the underlying Muerchang Fm.

***Upper contact:***

It has conformable contact with the overlying Guanshanpo Fm.

***Regional extent:***

This formation is most developed in Guixi to Ganxi areas of Beichuan where it is 271 m in thickness, but stretching to the southeast limb of Tangwangzhai syncline, it is hard to recognize because of the reduced thickness.

**Fossils:**

It yields Eurypterida, plant fragments and spores.

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

The Guanyinmiao Fm belongs to the Pingyipu Gr.

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Guanziyao Fm**

**Period: Devonian**

**Age Interval (Map column): D13-D21** (59), Emsian-Eifelian (Early - Middle Devonian)

**Province:** Guizhou

**Type Locality and Naming:**

The type section is located from Lijiawan to Dawushang, 2 km southwest of lead works of Pu’an County, Guizhou Province.

It was named by Hou Hongfei and Xu Guirong in 1964.

**Lithology and Thickness:**

Limestone, dolomite. This formation of carbonate rocks can be divided into three members: the lower part, the Lijiawan Member, is composed of dark-gray to gray-black thin- to thick-bedded marl and dolomitic limestone.

The middle part, the limestone member, consists of dark-gray medium- to thick-bedded fine-grained limestone and marl.

The upper part, the dolomite member, is composed of dark-gray to grayish-white medium- to thick-bedded dolomite, crystalline limestone and marl.

It is 605 m thick.

**Relationships and Distribution:**

***Lower contact:***

No underlying formation is exposed beneath the Guanziyao Fm in type locality.

***Upper contact:***

The upper boundary of this formation is assigned at the disappearance of crystalline limestone and the appearance of chert limestone at the conformable contact with the overlying Huohong Fm.

***Regional extent:***

It is restrictly distributed at Guanziyao in Pu’an County.

**Fossils:**

Lijiawan Member: coral *Calceola*, brachiopod *Puanospirifer.*

Limestone member: abundant brachiopods, corals, among which the *Zdimir*is represents the leading form.

Dolomite member: abundant coral *Acanthophyllum*, *Atelophyllum*.

**Age:**

Emsian-Eifelian (Early - Middle Devonian)

**Depositional setting:**

It is interpreted as a carbonate platform margin.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Gubi Fm**

**Period: Devonian**

**Age Interval (Map column): D31** (64), Frasnian (early Late Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located near Gubi Village of Liujing in Hengxian County, Guangxi.

It was named by Kuang Guodun, Zhao Mingte and Tao Yebin in 1989.

**Lithology and Thickness:**

Limestone. The lower and middle parts are characterized by thin- to medium-bedded clayey banded limestone intercalated with medium- to thick-bedded bioclastic limestone and calcirudite.

The upper part is composed of gray thin-bedded nodular limestone with a bed of breccia limestone at top.

This formation is 77 m thick.

**Relationships and Distribution:**

***Lower contact:***

The base is banded clayey limeston**e,** which differentiates this formation easily from its conformable contact to the underlying thick-bedded calcirudite of the Mintang Fm.

***Upper contact:***

***Regional extent:***

**Fossils:**

The lower and middle parts contain abundant coral *Truncicarinulum*; brachiopod *Tenticospirifer* and stromatoporoids.

The conodont *Polygnathus asymmetricus* occurs at the bottom, and *Palmatolepis linguiformis* occurs at the top.

**Age:**

Frasnian (early Late Devonian)

**Depositional setting:**

It is interpreted as a platform margin facies.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Guche Fm**

**Period: Devonian**

**Age Interval (Map column): D21** (65), Eifelian (early Middle Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located near Yingtang Village of Dale in Xiangzhou County, Guangxi Zhuangzu Autonomous Region.

It was named by Hou Hongfei and Xian Siyuan in 1975.

**Lithology and Thickness:**

Limestone. It is dominated by medium-bedded limestone with chert nodules, dolomitic limestone and clayey bioclastic limestone, intercalated with calcareous shale.

It comprises thicker cherty limestone while its muddy contents gradually decrease.

The thickness is about 170 m.

**Relationships and Distribution:**

***Lower contact:***

At the bottom, it is easily separated by the appearance of chert-bearing limestone from the underlying calcareous shale of the Gupa Fm with a conformable contact.

***Upper contact:***

***Regional extent:***

This formation is widely distributed along the west side of Dayaoshan Mt.; and stretching southwards to Zhongping.

**Fossils:**

It yields abundant brachiopod *Athyrisina squamosaeformis*, *Indospirifer*, “*Uncinulus*” spp., *Yingtangella* *sulcatilis* and coral *Calceola sandalina*, *Utaratuia sinensis*, *Microplasma devonica*.

**Age:**

Eifelian (early Middle Devonian)

**Depositional setting:**

It is interpreted as a typical shallow subtidal environment.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Gudaoling Fm**

**Period: Devonian**

**Age Interval (Map column): D31** (44), Frasnian (early Late Devonian)

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located near Gudaoling on the border between Zhashui and Zhen’an counties, Shaanxi Province.

It was named by Zhao Yazeng and Huang Jiqing in 1931.

**Lithology and Thickness:**

Conglomerate, limestone. The lithology is characterized by a basal 9.2-m-thick conglomerate and sandy conglomerate intercalated with sandy slate, a lower part of clayey limestone and bioclastic micrite, and upper part of clayey banded limestone and thick-bedded crystalline limestone intercalated with calcareous slate and with some reef limestone breccia seen in the topmost part.

The thickness is 412 to 767 m in total.

**Relationships and Distribution:**

***Lower contact:***

It overlies disconformably on the Shiping Fm of the Middle Devonian.

***Upper contact:***

***Regional extent:***

**Fossils:**

In the lower part, it yields brachiopods *Tenticospirifer*, *Cyrtospirifer*; coral *Disphyllum*; and conodonts *Ancyrodella rotundiloba*, *Palmatolepis hassi.*

**Age:**

Frasnian (early Late Devonian)

**Depositional setting:**

It is interpreted as a submerged fan changing upward into a biohermal facies.

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Guijiatun Fm**

**Period: Devonian**

**Age Interval (Map column): D13**  (56), Early Emsian (late Early Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located near Guijiatun of Xishan in Qujing County, Yunnan Province.

It was named by Pan Jiang et al. in 1978.

**Lithology and Thickness:**

Mudstone. It is dominated by purplish-red medium- to thick-bedded mudstone and yellowish-green sandstone intercalated with thin-bedded marl. However in the upper part, the purplish-red colored rock decreases, the yellowish-green rock increases and the mudstone increases. In the middle and upper parts, there are commonly small calcareous nodules.

**Relationships and Distribution:**

***Lower contact:***

It has conformable contact with the underlying Xitun Fm.

***Upper contact:***

It has conformable contact with the overlying Longhuashan Fm (also called the Xujiachong Fm).

***Regional extent:***

**Fossils:**

It yields plant *Zosterophyllum* *myretonianum* etc., bivalve *Modiomorpha crypta*, gastropods, and spores, but no vertebrate fossils have been found.

**Age:**

Early Emsian (late Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Guilin Fm**

**Period: Devonian**

**Age Interval (Map column): D2 (?)-D31** (65,67), Frasnian (early Late Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

It was named by Feng Jinglan in 1929, and no type section was given.

**Lithology and Thickness:**

Limestone. It is a set of gray, dark-gray to grayish-black medium- to thick-bedded micrite limestone, calcarenite and fine-grained dolomite.

The Guilin Fm is 370 to 500 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

The lower part with the dark-gray laminated limestone at the base rests conformably on the stromatopora-bearing dolomite of the Donggangling Fm.

***Upper contact:***

This formation is overlain by the light-gray limestone of the Rongxian Fm.

***Regional extent:***

This formation is widely distributed in Huanjiang, Luocheng, Rong’an, Quanzhou, Guilin, Lingchuan, Lingui, Yangshuo, Yongfu of North Guangxi, in Fuchuan, Hexian, Zhongshan of Northeast Guangxi, and also in Mashan, Du’an, Jingxi of southwest Guangxi.

**Fossils:**

It contains stromatopora *Amphipora* and a few corals, brachiopod.

**Age:**

Frasnian (early Late Devonian) and probably includes part of the Middle Devonian in some locations

**Depositional setting:**

It is interpreted as a subtidal, lagoon, and tidal flat facies.

**Additional Information**

This formation is intercalated with dolomite with minor breccia limestone at its bottom in east of Hexian. In Quangzhou, it is 356-577 m in thickness and intercalated with oncolite-bearing limestone. There are many intercalations of dolomitic limestone and dolomites, 633 m thick totally, in Yongfu and Luocheng. In Longyan of Huanjiang and Dongxing, the formation overlies unconformably on the Pre-Cambrian with a basal 0~ to 45-m-thick bed of conglomerate and quartzose sandstone.

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Guitang Fm**

**Period: Devonian**

**Age Interval (Map column): D13-D21** (66), Emsian to Eifelian (Early to Middle Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located near Guitang Village, 3.5 km north of the Beiliu county seat, Guangxi.

It was named by Wang Yu et al. in 1965.

**Lithology and Thickness:**

Limestone. It is mainly composed of calcarenite, bioclastic limestone, intercalated with stromatopora reef limestone, sandy limestone and calcareous sandstone.

The thickness is about 250 m.

**Relationships and Distribution:**

***Lower contact:***

A basal 2-m-thick bed of fine quartz sandstone separates it conformably from the underlying Huangjingshan Fm.

***Upper contact:***

This formation is conformably deposited below overlying Yarang Fm.

***Regional extent:***

The formation is scattered in distribution and can be observed at Guiping, Lingshan, Liujing of Hengxian, Bahe of Tiandeng, Pingshan of Longan, Longguang of Debao, Baping of Baise and Dachang of Nandan counties in the Guangxi Zhuangzu Autonomous Region, and also at Guanziyao in Guizhou Province. The distribution is generally controlled by its facies.

**Fossils:**

It contains abundant benthos fossils, including brachiopods of *Zdimir-Megastrophia* assemblage, Tetracoralla including *Trapezophyllum cystosum* assemblage, and Tabulata of *Beiliupora* assemblage.

**Age:**

Emsian to Eifelian (Early to Middle Devonian)

**Depositional setting:**

It is interpreted as carbonate platform marginal reef facies and near-reef facies depositional environments.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Guitou Gr**

**Period: Devonian**

**Age Interval (Map column): D1-D2,** Early to Middle Devonian

**Province:** Guangdong

**Type Locality and Naming:**

The type section is located near Guitou Village in Ruyuan County, Guangdong Province.

It was named by Guangdong Team of Regional Geological Survey in 1959.

**Lithology and Thickness:**

Sandstone, conglomerate. The Group is divided into two subgroups. The lower subgroup is dominated by purplish-red quartz sandstone and siltstone intercalated with sandy conglomerate and shale lenses and with a basal conglomerate.

The upper subgroup is characterized by grayish-white sandstone and a few muddy shales, with the base consisting of inequigranular conglomerate and sandy conglomerate.

**Relationships and Distribution:**

***Lower contact:***

It disconformably overlies metamorphic rocks of the Ordovician or Cambrian.

***Upper contact:***

***Regional extent:***

**Fossils:**

Plant fossils *Protolepidodendrom*, *Hostimella*, *Psilophylites* and fish *Bothriolepis* *lochangensis*, *B. kwangtungensis,* *B. sinensis*, *Hunanolepis tieni* etc. occur in the lower part of “Upper Guitou Gr.”.

**Age:**

Early to Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Guixi Fm**

**Period: Devonian**

**Age Interval (Map column): D1** (70), Early Devonian

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at the road side near the Grain Supply Center of Guixi Village in Beichuan County, Sichuan Province. It was named by Hou Hongfei and Wan Zhengquan in 1988.

**Lithology and Thickness:**

Sandstone. It is dominated by brown to dark-gray, medium- to thick-bedded quartz sandstone intercalated with fine-grained greywacke and black clayey siltstone.

This formation in its Guixi section can be divided into lower and upper members: the lower member, the Zhaobiyan Member, is composed of light-gray to dark-gray medium- to thick-bedded, medium- to fine-grained quartz sandstone containing brachiopods *Lingula* and trace fossils.

The upper member, the Raoheba Member, is dominated by brown to dark-gray medium- to thick-bedded sandy mudstone intercalated with fine-grained quartz greywacke and black clayey siltstone containing brachiopod *Lingula longmenshanensis*.

It is 688 m in total thickness.

**Relationships and Distribution:**

***Lower contact:***

It overlies disconformably on the Silurian.

***Upper contact:***

It has an upper conformable contact with the overlying Mu’erchang Fm.

***Regional extent:***

This formation is best developed in the Guixi area; and at the southeast limb of Tangwangzhai syncline, the thickness decreases or even dies out.

**Fossils:**

*Brachiopod Lingula* and trace fossils.

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

The GuixiFm is part of the Pingyipu Gr.

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Gumu Fm**

**Period: Devonian**

**Age Interval (Map column): D21** (58), Eifelian (early Middle Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Gumu Village, 10 km south of the Wenshan county seat, Yunnan Province.

It was named by Fang Runsen in 1973 and was published by Yunnan Compiling Group for Regional Stratigraphical Scale in 1978.

**Lithology and Thickness:**

Limestone. The formation is composed of gray and grayish-black thick-bedded limestone.

It is 238 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

It has a conformable contact onto the underlying dolomite of the Zhichang Fm.

***Upper contact:***

It is overlain by thick-bedded dolomite of the Qujing Fm.

***Regional extent:***

It is distributed in the areas of Wenshan, Yanshan and Qiubei counties.

**Fossils:**

It contains abundant corals, mainly *Favosites*, *Squameofavosites*, *Tryplasma.*

**Age:**

Eifelian (early Middle Devonian)

**Depositional setting:**

It is interpreted as a carbonate platform facies.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Gupa Fm**

**Period: Devonian**

**Age Interval (Map column): D13(?)-D21**  (65), Eifelian (early Middle Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at Yingtang Village of Dale in Xiangzhou County, Guangxi.

It was named by Hou Hongfei and Xian Siyuan in 1975.

**Lithology and Thickness:**

Claystone. It is dominated by earth-yellow mudstone, composed mainly of hydromica clay minerals with a few muscovite and quartz clastics, and is occasionally intercalated with limestone lenses. From north to south the clayey content gradually decreases while the calcareous one increases.

It is 85.7 m thick.

**Relationships and Distribution:**

***Lower contact:***

A basal bed of clayey limestone separates it at a conformable contact from the underlying Dale Fm.

***Upper contact:***

***Regional extent:***

This formation is mainly distributed in the west side of Dayaoshan Mt. From north to south the clayey content gradually decreases while the calcareous one increases.

**Fossils:**

It contains abundant brachiopods including a lower *Xenospirifer fongi* assemblage and an upper *Eospiriferina lachrymosa* assemblage, and corals *Cylindrophyllum agglomeratum*, *Phacellophyllum daleense.*

**Age:**

Eifelian (early Middle Devonian), but its basal beds probably include a part of Emsian (late Early Devonian)

**Depositional setting:**

It is interpreted as a marine subtidal sedimentary environment.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Haikou Fm**

**Period: Devonian**

**Age Interval (Map column): D22** (55-57,61), Middle and Late Givetian (Late Middle Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Haikou Village, nearby Kunming City, Yunnan Province.

It was named by Xie Jiarong in 1941.

**Lithology and Thickness:**

Sandstone. In its type section, the Haikou Fm, about 100 m thick, is dominated by a set of light-gray or grayish-brown sandstone and siltstone, yields *Bothriolepis sinensis* and disconformably overlies on the Lower Cambrian.

In Xichong of Zhanyi, the total thickness reaches about 650 m. The lithology is dominated by gray, grayish-brown, grayish purple, grayish yellow and grayish-white fine-grained quartz sandstone, clayey siltstone and sandy mudstone.

**Relationships and Distribution:**

***Lower contact:***

This formation is in a conformable contact with the underlying Chuandong Fm. However, in the type section at Haikou Village the formation disconformably overlies the Lower Cambrian.

***Upper contact:***

This formation is in a conformable contact with the overlying Zaige Fm.

***Regional extent:***

**Fossils:**

In Xichong of Zhanyi the formation contains plants *Protolepidodendron scharyanum*, *Taeniocrada* sp., *Barrandeina dusliniana*, *Protopteridium minutum* etc.; fish *Bothriolepis*; ostracoda *Leperditia* sp.; charophyte *Trochiliscus ingreca*; bivalve *Modiomorphya* sp.

In Kunming, this formation yields fish *Hunanolepis tieni* and *Macropetalichthyes*.

**Age:**

Middle and Late Givetian (Late Middle Devonian)

**Depositional setting:**

It is interpreted as a

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Haitong Fm**

**Period: Devonian**

**Age Interval (Map column): D21** (26,31,32), Eifelian ((early Middle Devonian)

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located at Haitong of Mangkang County, Xizang.

It was named by Sichuan No.3 Team of Regional Geological Survey in 1972, and was published by Sichuan Compiling Group for Regional Stratigraphical Scale (1978).

**Lithology and Thickness:**

Sandy claystone, metamorphic. It is composed of grayish-black carbonate phyllite intercalated with grayish-white thick-bedded calcareous quartz sandstone, partly intercalated with gray clayey bioclastic limestone.

It is more than 20 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

The formation is disconformably underlain by the purplish-red shale and grayish yellow slate of the Qingnidong Group of Lower Ordovician.

***Upper contact:***

The formation is overlain by the gray thin-bedded limestone of the Dingzonglong Fm.

***Regional extent:***

It is distributed at Gyorxung of Changdu and at Haitong of Markam (Gartog) County, Xizang. To the south, it can extend to northwestern Yunnan where its thickness reaches more than 1000 m and the lower part of the Haitong Fm may extend down into Early Devonian.

**Fossils:**

It yields brachiopods *Acrorospirifer*, *Athyrisina.*

**Age:**

Eifelian ((early Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Handaqi Fm**

**Period: Devonian**

**Age Interval (Map column): D1** (6), Early Devonian

**Province:** Heilongjiang

**Type Locality and Naming:**

The type section was not given, so the auriferous (gold-bearing) ore section west of Xiaogouhe River measured in “Handaqi Geological Map” is suggested as the representative section of this formation.

It was named by Zhao Guisan et al. in 1957.

**Lithology and Thickness:**

Tuff. It is composed of intermediate-basic to intermediate-acidic rocks and can be divided into several obvious eruption cycles. The lower part of this Formation includes four cycles and is dominated by spilite, andesitic porphyrite, tuff and tuffaceous breccia, intercalated with intermediate-acidic tuff, tuffaceous sandstone and crystalline limestone lenses, totaling 752.5 m in thickness.

The upper part, 400 to 500 m thick, is composed of intermediate-acidic and acidic lava, tuff, tuffaceous breccia and spilite interbeds.

**Relationships and Distribution:**

***Lower contact:***

It is in fault contact with the underlying Niqiuhe Fm.

***Upper contact:***

It is conformably overlain by the Jinshui Fm.

***Regional extent:***

This formation shows a northeastern band of distribution mainly in Handaqi area, and gets thinner along the strike or even thins out.

Stretching northeastwards, only the upper part of the Handaqi Fm is developed in Wudaogou, and gradually changes into tuffaceous slate intercalated with intermediate-acidic volcanic rock. At 165 km of Namo Road, the Handaqi Fm, here only 20 m thick, is composed of purple dacitic porphyrite. From Sankuang northwards to the south bank of Chengduhe River, it is similar in lithology and the outcropped thickness is more than 84 m. In the middle reaches of Niqiuhe River the thickness is 529 m.

South of Handaqi and east of Huolongmen, the Handaqi Fm is also distributed where the thickness is more than 540 m and is dominated by intermediate-acidic lava and brecciform tuff.

**Fossils:**

In the interbeds of sedimentary origin, it yields brachiopods *Discomyorthis* sp., “*Atrypa*” sp. and coral *Syringaxom* sp., *Lindstromia* sp.

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Harza Fm**

**Period: Devonian**

**Age Interval (Map column): D3** (17), Late Devonian

**Province:** Qinghai

**Type Locality and Naming:**

The type section is located at Harza on the northern slope of Qimantage, Qinghai Province.

It was named by No.8 Branch Team of Qinghai Team of Petroleum Reconnaissance Survey in 1958 and was quoted by Qinghai Team of Regional Geological Survey (1965, 1969).

**Lithology and Thickness:**

This formation has mixed lithologies of volcanics interbedded in clastic to carbonate sediments.

The lower part is composed of grayish-green slate, feldspathic quartz sandstone and grayish-green andesite, grayish-white rhyolite, grayish purple andesitic agglomerate, etc. The middle part is gray thick-bedded pebble-bearing sandy limestone intercalated with siltstone, grayish-purple conglomerate and pebble-bearing sandstone.

The upper part consists of gray dacite, fine volcanic breccia, tuff, and silty slate intercalated with light-grayish purple rhyolitic andesite, etc.

It is 1316 m in total thickness.

**Relationships and Distribution:**

***Lower contact:***

It is in an intrusive contact with the underlying Variscan granite

***Upper contact:***

It is in a disconformable contact with the overlying Wulonggou Fm of Lower Carboniferous.

***Regional extent:***

**Fossils:**

The middle part yields brachiopods *Cyrtospirifer sinensis*, *C.* *chaoi*, *Daralenlodon* sp., *Tenticospirifer* sp.

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Hazirbulak Fm**

**Period: Devonian**

**Age Interval (Map column): D3** (13), Late Devonian

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located near Hazirbulak, south of Shanshan County, Xinjiang; and the reference section is at east bank of the lower reaches of Keketiek River in Hejing County, Xinjiang.

It was named by Xinjiang Team of Regional Geological Survey in 1958.

**Lithology and Thickness:**

Limestone. In the lower reaches of Keketiek River, this formation is composed of dark-gray massive to thick-bedded limestone intercalated with thin-bedded crystalline limestone and bioclastic limestone.

The outcropping thickness is more than 1614 m.

South of Daxifeng to Kaikousi Mt., this formation is composed of dark-gray oolitic limestone, crystalline dolomite and massive limestone.

It is 1099 m in thickness.

In east in the Hazirbulak area, this formation, 1389 to 2445 m thick, is composed of light-gray to purplish-red greywacke, feldspathic quartz sandstone, and quartz sandstone with limestone interbeds; the middle part is intercalated with gray to grayish-white thin-bedded limestone and calcareous conglomerate.

In Shashishan of Heshuo County, the formation, more than 694 m thick, consists of gray clayey limestone intercalated with yellowish-green sandstone and shale.

**Relationships and Distribution:**

***Lower contact:***

It conformably overlies the Sa’erming Fm of the Middle Devonian.

***Upper contact:***

Its contact with the overlying strata is yet uncertain.

***Regional extent:***

Keketiek River, Daxifeng to Kaikousi Mt, Hazirbulak area and Shashishan of Heshuo County.

**Fossils:**

In the lower reaches of Keketiek River, the formation yields brachiopods *Tenticospirifer*, *Yunnanenllina*, *Camarotoechia*, *Productella.*

South of Daxifeng it yields brachiopods *Tenticospirifer*, *Camarotoechia*, *Cyrtospirifer*, *Chonetes*.

In east in the Hazirbulak area, this formation yields brachiopods *Crytospirifer*, *Camarotoechia*, *Productella*, *Uncinulus*, coral and cephalopods.

In Shashishan of Heshuo County, the formation yields brachiopods *Yunnanella*, *Yunnanellina*, *Cyrtospirifer*, *Productella*, *Athyris.*

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Heitai Fm**

**Period: Devonian**

**Age Interval (Map column): D1-D2** (8), Early to Middle Devonian

**Province:** Heilongjiang

**Type Locality and Naming:**

The existing representative section in use is located at Zhuzhen back-hill of Xinzhong Village, 9 km northeast of the Heitai Railway Station in Mishan County, Heilongjiang Province.

It was named by Yabe in 1940 with the section locality indicated but no character described.

**Lithology and Thickness:**

It is a set of continental-marine alternating sequences of clastic rock alternating with limestone.

The basal part consists of coarse-grained granitic-clast sandstone, greywacke quartzose sandstone and quartzose sandstone intercalated with slate or bioclastic limestone.

The lower part of this formation is composed of sandy bioclastic limestone and silty slate intercalated with thin-bedded limestone, containing abundant fossils.

The upper part of the formation consists of rhythmites between sandstone, siltstone and tuff intercalated with minor bioclastic limestone, containing spore and plant fossils.

In the South about 118 m thick, in the North about 335m thick.

**Relationships and Distribution:**

***Lower contact:***

The Formation unconformably overlies on the granite basement.

***Upper contact:***

The formation is conformably capped by continental acidic volcanics of the Laotudingzi Fm.

***Regional extent:***

The formation is distributed in the area from Mishan to Boqing in Heilongjiang Province

This formation distributes in longitudinal direction in eastern side of Jiamusi Massif and is merely 117.6 m thick at the southern end in Mishan County; but northwards to Baoqing County, where it was named the Qinglongshan Formation, it gradually gets thicker and can even reach 334 m.

**Fossils:**

Fossils are mainly within sandy limestone and silty slate, including coral: *Sulcorphyllum-Cystiphylloides* assemblage and *Squameofavosites multispinulosus*- *Thamnopora wangi-Tyganolithes* assemblage; brachiopods: *Borealispirifer divaricatus*-*Euryspirifer* assemblage; conodonts *Icriodus angustus,* *Coelocerodontus biconvexus,* etc.; and ostracoda, bryozoan, blastoids, etc. In the upper part, it yields spores *Dibolisporites*, *Apiculiretusispora*, *Grandispora*, *Biornatispora* etc.; plant fossils *Taeniocrada decheniana*, *Barsassi;* and brachiopods *Borealispirifer soboroca*.

**Age:**

Early to Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Su Yangzheng)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Hexian Fm**

**Period: Devonian**

**Age Interval (Map column): D13** (67), late Early Devonian

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located from Shankou to Hongfan of Renyi in Hexian County, Guangxi.

It was named in “Guangxi Regional Geology” in 1985.

**Lithology and Thickness:**

Siltstone. It is dominated by purplish-red, grayish-green shale, mudstone, sandy shale, intercalated with sandstone and siltstone, fine-grained sandstone, dolomite and limestone.

It is 187 m thick and the regional thickness is about 48-440 m.

**Relationships and Distribution:**

***Lower contact:***

This formation is in a conformable contact with the underlying Shiqiao Fm.

***Upper contact:***

This formation is in a conformable contact with the overlying Xindu Fm.

***Regional extent:***

It is mainly distributed in Hexian, Zhongshan, Pingle, and Xing’an and Quanzhou in North Guangxi as well.

**Fossils:**

It mainly yields fish *Yunnanolepis chii*, coral *Favosites* sp., *Aulopora* sp., bivalve *Modiomorpha* sp., *Salinopsis* sp. and plant fossil.

**Age:**

late Early Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Heyeba Fm**

**Period: Devonian**

**Age Interval (Map column): D3** (50), Late Devonian

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located between Heyeba and Lingyansi, south of Lueyang County, Shaanxi Province. It was named by Du Dinghan et al. in 1986.

**Lithology and Thickness:**

Quartz sandstone, limestone. The lower part of this formation, 53 m thick, is composed of dark brownish-gray medium- to thick-bedded quartz sandstone intercalated with sandy slate.

The middle part of the formation, 294.7 m thick, is composed of gray to dark-gray thin- to medium-bedded limestone and clayey limestone intercalated with calcareous slate and carbonate-bearing calcareous slate.

The upper part, 229.4 m thick, is gray to dark-gray thin- to thick-bedded limestone, clayey limestone and sandy dolomitic limestone.

**Relationships and Distribution:**

***Lower contact:***

It overlies with a slightly angular unconformity on the Tabo Fm of Lower to Middle Devonian.

***Upper contact:***

The upper contact with the overlying Lueyang Fm is unclear.

***Regional extent:***

The formation is distributed from Jinjiahe to Hejiayan in Lueyang County, and appears often intermittently.

**Fossils:**

In middle part, it yields coral *Disphyllum*, *Waptiphyllum*, *Pseudozaphrentis*, *Alveolites* and conodonts *Palmatodella.*

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Heyuanzhai Fm**

**Period: Devonian**

**Age Interval (Map column): D22-D31** (29), Givetian to Frasnian (Middle - Late Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Heyuanzhai to Chenjiazhai in Shidian County, Yunnan Province. The reference section is on the hillside about 500 m south of Malutang Village in Shidian County, Yunnan Province. It was named by Sun Yunzhu in 1945.

**Lithology and Thickness:**

Limestone. It is dominated by gray to light-gray, medium- to thick-bedded sparite limestone intercalated with granular limestone, bioclastic limestone and clayey shale.

It is 350 m thick.

**Relationships and Distribution:**

***Lower contact:***

The Formation has a conformable contact with the underlying marl and clayey limestone of the Malutang Fm.

***Upper contact:***

The Formation is overlain by the crystalline limestone of the Dujiacun Group.

***Regional extent:***

The formation is distributed in Baoshan, Shidian, Mangshi and Zhenkang areas, Yunnan Province.

**Fossils:**

It contains abundant brachiopods *Aulacella eifelensis*, *Kerpina viata*, *Uncinulus pentagonus*, *Kayserella*, *Indospirifer* and coral *Heterophrentis yuannanensis*, *Acanthophyllum.*

**Age:**

Givetian to Frasnian (Middle - Late Devonian)

**Depositional setting:**

It is interpreted as a carbonate platform.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Hongchuan Fm**

**Period: Devonian**

**Age Interval (Map column): D1?-D21** (7), Eifelian (early Middle Devonian)

**Province:** Heilongjiang

**Type Locality and Naming:**

The type section is located at 3.5 km south of Hongchuan Station in Shangganling District, Yichun City, Heilongjiang Province. It was named by Liu Diansheng et al. in 1980.

**Lithology and Thickness:**

Tuffaceous breccia. It is composed of grayish-green and yellowish-brown tuffaceous breccia intercalated with grayish-green pebbly meta-sandstone and limestone lenses.

It is 257.8 m thick.

**Relationships and Distribution:**

The contact relations with the upper and lower sequences are unclear.

***Lower contact:***

***Upper contact:***

***Regional extent:***

Southwards to the No. 14 Forest Farm, the formation changes into siltstone, slate, carbonaceous slate, calcareous quartzose fine-grained sandstone and bioclastic limestone.

**Fossils:**

It yields abundant brachiopods *Coelospira* sp., *Leptostrophia* sp., *Spinatrypa* sp., *Megastrophia* sp. and bryozoan, crinoid stems.

**Age:**

Eifelian (early Middle Devonian), and probably straddles downward to Early Devonian as well.

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Honggermiao Fm**

**Period: Devonian**

**Age Interval (Map column): D32** (4), Famennian (late Late Devonian)

**Province:** Inner Mongolia

**Type Locality and Naming:**

The type section is located in Honggermiao area of Abag Qi (Banner), Inner Mongolia.

It was named by Ding Yunjie and Tong Zhengxiang in 1960, and formally quoted by Hou Hongfei et al. in 1979.

**Lithology and Thickness:**

Arkose. The formation is characterized by arkose and calcareous siltstone intercalated with limestone lenses, and grayish-green to pink shale; and it may locally be intercalated with andesitic porphyrite. The base consists ofconglomerate.

The outcropped thickness is about 210 m.

**Relationships and Distribution:**

***Lower contact:***

The base consists ofconglomerate and lies unconformably on the underlying Wendurmaio Group.

***Upper contact:***

The upper part is cut by faults.

***Regional extent:***

Similar deposits can also be observed at Aomgenhuduge in Sonid Zuoqi (Left Banner); it extends latitudinally 100 km, consists mainly of tuff, metamorphosed sandstone and conglomerate intercalated with limestone lenses, and yields fauna and plant fossils. It rests unconformably on the Wendurmiao Group.

**Fossils:**

It yields coral: *Nalivkinella profunda*, *Nickolsoniella* sp.; brachiopods: *Cyrtospirifer* spp., *Centrorhynchia turanica*; and plant fossils *Leptophloeum rhombicum.*

**Age:**

Famennian (late Late Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Hongguleleng Fm**

**Period: Devonian**

**Age Interval (Map column): D32** (1), Famennian (Late Devonian)

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at 1.5 km west of Bulongour Reservoir, between Hoxtolgay and Utubulak in Hoboksar Mongol Autonomous County, the Xinjiang Uygur Autonomous Region.

It was named by the Chinese Academy of Geological Sciences and the Xinjiang Team of Regional Geological Survey in 1973 and formally quoted by Hou Hongfei et al. in 1979.

**Lithology and Thickness:**

This carbonate formation, totaling 244 m in thickness, is located at the western (overturned) limb of the syncline.

It is divided into three members:

Lower member, about 108 m thick, is marked by gray thin-bedded shelly limestone, calcarenites and crinoidal limestone with shale intercalations. Next above are gray, thin-bedded intercalations of calcarenites, shale and crinoidal limestone. Upwards in this lower member, there are shale and limestone gradationally intercalated with green and purple tuffaceous mudstone.

Middle member, 110 m thick, is characterized by interbeds of green and purple tuffaceous silty mudstone with horizontal lamination, intercalated with limestone nodules and micritic sandstone.

Upper member, only 18 m thick, is composed of grayish-yellow thin-bedded calcareous siltstone, intercalated with lenses of coarse-grained crinoidal limestone about 2 m thick at the base.

**Relationships and Distribution:**

***Lower contact:***

The Hongguleleng Fm may be in conformable contact with the underlying tuffaceous sandstone and conglomerate of the Zhulumute Fm.

***Upper contact:***

The top of the formation is in a conformable contact with the overlying calcarenite and siltstone of the Heishantou Fm, which yields the brachiopod *Syringothyris*.

***Regional extent:***

This formation, outcropping sporadically southwest of Emuhak Mt. in Aherbulak, is similar in lithology to what can be observed in bulongour area. Southwards, to north of Hoxtolgay Township and Buke River, the lithology is nearly the same, although the coarse-grained clastics and thickness increase and volcaniclastics appear in the lower part.

**Fossils:**

The lower part of this lower member yields brachiopods *Cyrtospirifer sphaeroide.*

The middle part of the lower member yields abundant brachiopods: *Paleospirifer sinicus*, *Centrorhynchus turanica*, *Mesoplica semplicior*, *Aposiella* *quadratus*, *Cleiothyridina* sp., corals: *Nalivkinella profunda*, *Nexon*; *Amplexocarinia* *tenuiseptata*, *Tabulophyllum postnormale*; crinoids *Eutaxocrinus.*

The middle member yields trilobite *Phacops accipitrinus mobilis*.

The upper member yields very abundant blastoids and sparse crinoids.

**Age:**

Famennian (Late Devonian) and may correspond to the *crepida* to *praesulcata* conodont zone.

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Honglingshan Fm**

**Period: Devonian**

**Age Interval (Map column): D22-D31** (41), late Middle Devonian - early Late Devonian

**Province:** Gansu

**Type Locality and Naming:**

The type section is located nearby Dongshan in Shili Township, 12.5 km south of Xihe County, Gansu Province. It was named by Du Yuansheng et al. in 1988.

**Lithology and Thickness:**

Packstone. The Lower part is light-gray to gray medium-bedded packstone intercalated with marl, thick-bedded to massive boundstone and packstone.

The Middle part of the formation is of gray to dark-gray middle- to thick-bedded banded bioclastic algal packstone.

The Upper part is composed of light-gray to gray thick-bedded to massive bio-packstone, skeleton limestone intercalated with medium-bedded dark-gray bioclastic marl.

The thickness is 310.6 m in total.

**Relationships and Distribution:**

***Lower contact:***

Conformably overlies the Huangjiagou Fm (equivalent to the upper part of the Anjiacha Fm).

***Upper contact:***

***Regional extent:***

The Honglingshan Fm exposed at Dongshan in Xihe County.

**Fossils:**

Its limestone contains a succession of conodonts: the *varcus* zone, the *hermani-cristatus* zone, the *disparilis* zone, the *asymmetricus* zone, the *triangularis* zone and the *gigas* zone; the associated fossils are coral, stromatopora, brachiopod, crinoids.

**Age:**

late Middle Devonian to early Late Devonian

**Depositional setting:**

It is interpreted as a shelf, platform and biohermal facies, but southwards to the area of Yeshuihe and Tantuguan, it gradually transitions into shelf facies deposits.

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Huanggongtang Fm**

**Period: Devonian**

**Age Interval (Map column): D22** (68), late Middle Devonian

**Province:** Hunan

**Type Locality and Naming:**

The type section is located at Huanggongtang in Xintian County, Hunan Province.

It was named by Huang Weipei and Li Wenjing in 1990.

**Lithology and Thickness:**

Dolomite. It is dominated by thick, massive to thick-bedded dolomite, intercalated with dolomitic limestone and limestone.

The thickness is usually between 100-300 m, with a general tendency towards thicker in southwest and thinner in northeast.

**Relationships and Distribution:**

***Lower contact:***

This formation is in conformable contact with the underlying Yijiawan Fm, marked by the appearance of dolomite. It is mostly underlain by the Yijiawan Fm; however, in some places, such as at Yishanpu in Xinning and at west side of Sizhoushan in Guiyang when the underlying Yijiawan Fm is absent, the Huanggongtang Fm directly and conformably overlies on the Tiaomajian Fm.

***Upper contact:***

This formation is in conformable contact the overlying Qiziqiao limestone, marked by the disappearance of dolomite. In central Hunan, the lower part of the overlying Qiziqiao Fm is also intercalated with dolomite, but the thickness is less than 20 m and is not steady.

It is mostly overlain by the Qiziqiao limestone, but at Shiguyuan in Jiahe and at Xianghualing in Linwu the overlying strata is the Baqi Fm.

***Regional extent:***

This formation is mainly distributed south to Shaoyang and Hengyang and the lithology is relatively uniform.

**Fossils:**

It yields stromatopora, brachiopods, coral fossils of the *Endophyllum- Stringophyllum* zone.

**Age:**

late Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Tan Zhengxiu)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Huangjingshan Fm**

**Period: Devonian**

**Age Interval (Map column): D13** (64,66), Emsian (late Early Devnian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at 3.5 km north of Beiliu County, Guangxi Zhuangzu Autonomous Region.

It was named by Wang Yu et al. in 1965.

**Lithology and Thickness:**

Dolomite. The lower part, about 270 m thick, is mainly composed of thick-bedded bioclastic dolomite and fine-grained crystalline dolomite, intercalated with stromatopora-bearing or laminated dolomite.

The upper part, about 260 m thick, is composed of bioclastic dolomite intercalated with dolomitic limestone, which are gradually transitioning to bioclastic limestone and dolomitic limestone.

**Relationships and Distribution:**

***Lower contact:***

This formation is separated by the appearance of dolomite beds at the conformable contact to the underlying Yujiang Fm.

***Upper contact:***

It has an upper conformable contact to the overlying Guitang Fm.

***Regional extent:***

This formation is widely distributed from Beiliu in east Guangxi through Yulin, Lingshan, Binyang, Mashan, Tiandeng, Debao, Jingxi, and Baise in west Guangxi, and further to Funing, Wenshan, Malipo of Yunnan Province.

**Fossils:**

Some tabulate corals are occasionally found, and ostracoda *Belodella* has been reported from the upper part.

**Age:**

Emsian (late Early Devnian)

**Depositional setting:**

It is interpreted as a restricted platform environment.

**Additional Information**

The main lithology is relatively uniform, but the thickness is different. Northwards at west side of Dayaoshan Mt., the formation is divided into two formations, namely the Shanglun Fm and the Guanqiao Fm.

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Hujierste Fm**

**Period: Devonian**

**Age Interval (Map column): D2** (1), Middle Devonian

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at south slope of Sharburtishan Mt.

It was named by the Chinese Academy of Geological Sciences and Xinjiang Team of Regional Geological Survey in 1973, and Hou Hongfei et al. quoted it formally in 1979.

**Lithology and Thickness:**

Tuffaceous sandstone. At the outcropping strata in Mangkelu gully at south slope of Sharbutishan Mt., the lower part of this formation is composed of tuffaceous sandy conglomerate, sandstone and conglomerate, intercalated with andesitic porphyrite and limestone lenses.

The upper part consists of grayish-green to dark-gray siltstone and tuffaceous sandstone, intercalated with black carbonate shale, partly with coal beds. The outcropping thickness is 438 m.

**Relationships and Distribution:**

The lower part of this formation is probably a kind of melange accumulation, and the contact relations of its top and bottom with other units are unclear.

***Lower contact:***

***Upper contact:***

***Regional extent:***

**Fossils:**

It contains abundant plant fossils *Protolepidodendron scharyanum*, *Lepidodendropsis theodori*, *Lepidosigillaria* sp., and in carbonaceous shale there are estheria *Asmussia* cf. *vugaris*, *Ulugkemis minussensis*, *Pseudoestheria simplex*.

**Age:**

Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Hulushan Fm**

**Period: Devonian**

**Age Interval (Map column): D32** (48), Famennian (Late Devonian)

**Province:** Henan

**Type Locality and Naming:**

The type section is located t Hulushan of Zaqu, about 15 km southwest of Neixiang County, Henan Province. It was named by the Southern Team of Henan Regional Geological Survey of Beijing Geological Collage in 1961, and Zhang Haiqing formally quoted it in 1987.

**Lithology and Thickness:**

Sandstone. The lower part, 140 m thick, is composed of grayish-white thick-bedded medium- to fine-grained quartzose sandstone, interbedded with lithoclastic sandstone and grayish-yellow silty claystone.

The middle part, 40 m thick, consists of grayish-brown thick-bedded clayey siltstone intercalated with white thick-bedded medium- to fine-grained quartzose sandstone.

The upper part, 40-136 m thick, is represented by grayish-white thick-bedded quartzose sandstone intercalated with grayish-brown iron-bearing clayey siltstone, shale, lithoclastic sandstone, iron-bearing quartzose sandstone and hematite beds.

**Relationships and Distribution:**

***Lower contact:***

The lower part conformably overlies on thick-bedded micritic limestone of the Wangguangou Fm.

***Upper contact:***

The top of the formation has a disconformable contact with the overlying Baishiyan Fm of Lower Carboniferous.

***Regional extent:***

The thickness of this formation in the areas of Xichuan and Neixiang counties, Henan Province is stable, commonly between 230-290 m.

**Fossils:**

The lower part of this formation yields abundant brachiopods represented by the *Yunnanella* acme zone; and in the area of Yongqingshan of Neixiang County, the upper part yields plant fossils of the *Sublepidodendron mirabilis-Lepidodendropsis hermeri* assemblage zone.

**Age:**

Famennian (Late Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Huohong Fm**

**Period: Devonian**

**Age Interval (Map column): D22** (59,60), Givetian (late Middle Devonian)

**Province:** Guizhou

**Type Locality and Naming:**

The type section is located in the area of Yingpan---Nonghe, Huohong District in Ziyun County, Guizhou Province. It was named by the Fifth Prospecting Team under the Ministry of Geology and was quoted by the Guizhou Team of Stratigraphy and Paleontology in 1977.

**Lithology and Thickness:**

Sandy mudstone. It is a set of fine-grained clastic rocks intercalated with siliceous limestone. It is mainly composed of grayish-black thin-bedded mudstone to sandy mudstone intercalated with quartz sandstone, siltstone, calcareous sandstone and siliceous limestone.

The formation is 994 m thick.

**Relationships and Distribution:**

***Lower contact:***

It has conformable basal contact with the underlying black thin-bedded calcareous mudstone of the Chehe Fm.

***Upper contact:***

It is overlain by the siliceous rocks of the Liujiang Fm.

***Regional extent:***

It is distributed in the areas of Ziyun, Luodian and Pu’an counties in south and southwest Guizhou. In Sanglang area, the formation changes facies into quartzose sandstone and clayey siltstone with the thickness decreasing down to 250 m.

**Fossils:**

It yields abundant tentaculites: *Nowakia otomari*, *Viriatellina*, *Striatostyliolina*; brachiopods: *Stringocephalus*, *Emanuella*; and crinoids.

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

It is interpreted as a deeper-water platform basin deposit.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Huoboshan Fm**

**Period: Devonian**

**Age Interval (Map column): D22** (5), Givetian (late Middle Devonian)

**Province:** Heilongjiang

**Type Locality and Naming:**

The type section is located at Huoboshan, Beikuang of Wunur, Heilongjiang Province.

It was named by the No 2 branch Team of Heilongjiang No 2 Team of Regional Geological Survey in 1981.

**Lithology and Thickness:**

Breccia, sandstone. It is dominated by green breccia intercalated with calcareous quartz sandstone and chert. In Zhadunhe Forest Farm, it changes to fine-grained sandstone and sandy conglomerate, partly intercalated with tuffaceous sandstone and tuff, and commonly with conglomerate and breccia at the base.

It is more than 150 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

The formation may be partly in a disconformable contact with the underlying Beikuang Fm.

***Upper contact:***

***Regional extent:***

**Fossils:**

It contains plant fossil fragments, and coral: *Temnophyllum ornatum*, *Endophyllum abditum*, *Thamnopora dunbeiensis*, *Alveolites levis* in the Huoboshan section.

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Huolongmen Fm**

**Period: Devonian**

**Age Interval (Map column): D13**  (6), Emsian (late Early Devonian)

**Province:** Heilongjiang

**Type Locality and Naming:**

No type section was given. It was named by Zhao Guisan et al. in 1957

**Lithology and Thickness:**

It is dominated by shallow-marine deposits, characterized by gray siltstone and slate intercalated with limestone lenses. In the base are pebble-bearing sandstone or thin-bedded sandy conglomerate. The formation has usually undergone low-grade metamorphism.

The formation is 121 to 184.5 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

The formation overlies conformably on the Jinshui Fm and shows no considerable changes in lithology along strike. The main difference between the two formations is that the Jinshui Fm contains more chlorite slate. The bed of pebble-bearing sandstone between these two formations is a marker bed to separate them.

***Upper contact:***

***Regional extent:***

**Fossils:**

Fossils are abundant and dominated by brachiopods: *Gladiostrophia kondoi*, *Coelospira dongbeiensis*, “*Parasperifer*” aff. *gurjevskiensis*, *Howwellella amurensis*, *Rhytistrophia beckii*, *Fallaxispirifer pseudofallax*. etc., and is associated with minor trilobites, bivalve and bryozoan.

**Age:**

Emsian (late Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Jiehejie Fm**

**Period: Devonian**

**Age Interval (Map column): D32-C12** (36), Late Famennian (latest Devonian) to Tournaisian (lowermost Carboniferous)

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located at Fanjiaxia of Jiehejie in Zhen’an County, Shaanxi Province.

It was named by Shaanxi Team of Regional Geological Survey in 1966 during mapping the “Shaangxian Geological Map (the scale is 1:200000)”, and was published by “the Regional Stratigraphic Scale of Northwest China” (the shaanxi Province facsimile) in 1983.

**Lithology and Thickness:**

Limestone. It is composed of gray to dark-gray thin- to medium-bedded, occasionally thick-bedded, micrite limestone and micrite, intercalated with black calcareous slate, siliceous slate and a few cherts in both the upper and lower parts. At Fanjiaxia in Zhen’an and at Shichuan in Zhangxian, the middle part is comprised by calcareous turbidite beds.

This formation, 175 to 382 m thick.

**Relationships and Distribution:**

***Lower contact:***

This formation rests conformably on the Jiuliping Fm, the Xihanshui Group and the Shujiaba Group from south to north respectively.

***Upper contact:***

This formation is conformably overlain by the Yueliangzhai Fm.

***Regional extent:***

This formation is widely distributed in Lintan, Jonê, Zhangxian, Lixian and Huixian in middle Qinling, and also in Zhen’an and Shanyang.

**Fossils:**

Fossils are dominated by conodonts and foraminifera; mega fossil are rare, but trace fossils of deep-water facies are abundant. In the lower part of the Fanjiaxia section, it yields conodonts *Palmatolepis g*. *gracilis*, *Pa. g. sigmodalis*; from the upper part of the section at Zhaoyan in Jonê County of Gansu Province and from that at Hetaoba in Fengxian of Shaanxi Province, foraminifera of *Eotubertina reitlingerae-Earlandia minor* assemblage and conodonts of *Gnathodus semiglaber-Scaliognathus anchoralis* assemblage have been reported.

**Age:**

Late Famennian (latest Devonian) to Tournaisian (lowermost Carboniferous)

**Depositional setting:**

It is interpreted as a basinal facies.

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Jinbaoshi Fm**

**Period: Devonian**

**Age Interval (Map column): D22**  (70), Early Givetian (Middle Devonian)

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at Jinbaoshi, about 5 km south of Ganxi Village in Beichuan County, Sichuan Province. It was named by Wan Zhenquan in 1983.

**Lithology and Thickness:**

Sandstone, siltstone. It is dominated by medium- to fine-grained sandstone, siltstone, clayey siltstone, calcareous clayey siltstone and a few stromatopora reef limestone, bioclastic limestone, and some oolitic hematitic beds. The thickness is 270 m.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

Disconformity (paleosol) followed by upper Givetian Guanwushan Fm.

***Regional extent:***

**Fossils:**

It contains brachiopods, corals, stromatopora fossils, etc.

Three successive brachiopods zones can be distinguished: the *Athyrisina rara-Ambogolossa eleganta-Subresselandia transversa* zone; the *Schizophoria* *kutsingensis- Independatrypa zonatiforinis* zone; and the *Stringocephalus* range zone; the later can be divided into two subzones: the *Stringocephalus transversa-Subresselandia guanwushanensis* subzone below and the *Stringocephalus jigonglingensis-Subresselandia guanwushanensis-Hadrorhynchus guanwushanensis* subzone above which is included in the overlying Guanwushan Fm.

Corals include two assemblage zones: the *Dendrostella ganxiensis-D. converses* zone and the *Tennophyllum conplanatum- T. ganxiense-Dishphyliacon cavitabulata* zone.

Stromatopora include two assemblage zones: the *Actinostroma clathrotum-Parallelopora artiolata-Hermatostroma atelastum* zone and the *Stromatopora hupsehii-Hermatastroma perseptatum-Actinostroma stellatum* zone.

**Age:**

Early Givetian (Middle Devonian), but Hou Hongfei et al (1988) thought that the lower part of this formation might extend down into Eifelian.

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shuitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Jinshui Fm**

**Period: Devonian**

**Age Interval (Map column): D13**  (6), Emsian (late Early Devonian)

**Province:** Heilongjiang

**Type Locality and Naming:**

The type section was not given. The representative section used here is nearby Jinshui of Heihe City, Heilongjiang Province. It was named by Wang Ying in 1963.

**Lithology and Thickness:**

Chlorite slate. The Jinshui Fm at the representative section is dominated by interbeds of grayish-green chlorite slate, tuff and tuffaceous sandstone. The Jinshui Fm in this area is mainly composed of shallow-marine clastic rocks, intercalated with carbonate rock and intermediate basic to intermediate acidic submarine volcanic erupted rocks.

It is 779.1 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the underlying spilite of the Handaqi Fm.

***Upper contact:***

***Regional extent:***

The thickness of this formation reduces to 166.7 m in Handaqi area, with a basal 1.7-m bed of volcanic rock. Westward, some odd exposures of the Jinshui Fm, composed of siltstone and feldspathic quartz sandstone, intercalated with andesitic porphyrite, tuff and thin-bedded limestone, are distributed in the Woduhe area without a complete section. Eastward, at Beishan of Dachazi in the upper reaches of Beishihe River, it consists of grayish-green and purplish gray schistose metamorphic fine-grained sandstone, siltstone, calcareous sandstone and silty slate, totaling more than 600 m in inferred thickness.

**Fossils:**

It mainly yields brachiopods in the assemblage: *Coelospira orientalis*, *Leptaenopyxis bouei*, *Gladiostrophia kondoi*, *Leptostrophia* *nonakai*, *Wilsoniella grandis*, *Reeftonia borealis.*

**Age:**

Emsian (late Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Jiuliping Fm**

**Period: Devonian**

**Age Interval (Map column): D3**  (42), Late Devonian

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located nearby Jiuliping, north of Hujiayuan in Shanyang County, Shaanxi Province; the reference section is at Nanchanggou to Laogou in Shanyang County.

It was named by Shaanxi Team of Regional Geological Survey in 1959 during mapping the “Shaangxian Geological Map (the scale is 1:200000)”, and formally quoted by Wang Yu et al in 1962.

**Lithology and Thickness:**

It can be divided into two members.

Sandstone. The lower member, 802 m thick, is composed of brownish-gray to gray, medium-bedded and thin-bedded calcareous fine- to medium-grained feldspathic quartzose sandstone and quartzose sandstone intercalated with silty slate and minor thin-bedded sandy limestone.

Sericitic silty slate. The upper member, 877 m thick, is mainly characterized by rhythmic interbeds of dark-gray and greenish-gray calcareous sericitic silty slate, sericite silty slate and thin- to medium-bedded calcareous feldspathic quartzose sandstone and thin-bedded sandy limestone.

**Relationships and Distribution:**

***Lower contact:***

The section of the formation from Changgou to Laogou is fairly complete and has a conformable contact to the underlying Hongpu Fm.

***Upper contact:***

The section of the formation from Changgou to Laogou is fairly complete and has a conformable contact to the overlying Jiehejie Fm.

***Regional extent:***

The Jiuliping Fm is widely distributed in the areas from Fengxian to Daibai and Zhen’an to Shanyang; in the east, the strata exposed north of Yunzhen-Kuanping (Zhashui) fault which used to be treated as the upper member of the Jiuliping Fm should be delimited to the Gedasi Fm.

The Jiuliping Fm at Chajiagounao in Zhen’an County, more than 882 m in thickness, is composed of sandy slate intercalated with fine-grained sandstone, thin-bedded limestone and minor conglomerate, yields coral *Philipsastea*; bivalve *Buchiola* and brachiopod *Yunnanellina* etc. and should be equivalent to the upper member of the Jiuliping Fm. In the west, this formation outcrops rather completely with a thickness of more than 1788 m at Qiantongshan in Fengxian County where it conformably overlies the Xinghongpu Fm. Here, it is dominated by medium- to fine-grained feldspathic quartzose sandstone which composes rhythmic interbeds together with silty slate and sandy crystalline limestone; and the lower part yields brachiopod *Atrypa*, coral *Alveolites*, *Chaetetes* etc.; and, in general, it can be correlated with the exposures in the east.

**Fossils:**

The upper part of this upper member yields conodonts *Palmatolepis glabra distorta*, *Pa. g. elongata*, *Pa. minuta* and *Apatognathus*

**Age:**

Late Devonian

**Depositional setting:**

It is interpreted as a beach flat to restricted basin.

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Ke’ankuduk Fm**

**Period: Devonian**

**Age Interval (Map column): D3**  (2), Late Devonian

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at 1.8 km southeast of Ke’ankuduk near Kokesairgy Mt., north of Zhifang in eastern Junggar. It was named by No 2 branch Team of Xinjiang No 1 Team of Regional Geological Survey in 1975, and Yang Shipu et al quoted it formally in 1981.

**Lithology and Thickness:**

Tuffaceous sandstone. This formation outcrops in northeast direction along the slope of Kokesairgy Mt., north of Zhifang.

The lower part is composed of yellowish-green, thin- to medium-bedded tuffaceous sandstone, sandy conglomerate, intercalated with radiolaria-bearing chert.

The upper part consists of variegate beds, dominated by tuffaceous sandstone, often intercalated with tuffaceous conglomerate, breccia and many beds of radiolaria-bearing sedimentary tuff.

It is 1049 m in thickness.

The well-developed bands and laminations, composed of different components, colors and grain sizes, form Bouma sequences. One of the characteristics of this formation is the well-developed dazzlingly beautiful bluish green, sky blue and emerald green sedimentary tuff bands with horizontal bedding, which are usually caused by varying enrichment in radiolarians. In some places, boulder conglomerate beds of 10-20 m in thickness may extend for several kilometers. Pebble compositions are complex, and include intermediate to acidic eruptive rock clasts and crinoidal limestones, most of them are rounded-angular in shape and poorly sorted.

**Relationships and Distribution:**

***Lower contact:***

This formation is in a fault contact with the underlying Zhifang Fm.

***Upper contact:***

This formation has a conformable contact to the overlying Heishantou Fm of Lower Carboniferous.

***Regional extent:***

The distribution of the formation seems to be restricted to Kokesairgy. Eastward to Santang Lake, it changes facies into normal volcaniclastic deposits and contains abundant invertebrate and plant fossils; the thickness may reach 1300 m.

**Fossils:**

The lower part yields plant fossil *Lepidodendropsis*, *Lepidosigillaria*.

The upper part yields plant fossil *Lepidophloeum rhombicum*, radiolaria *Spongentaclinia.*

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Kezirtag Fm**

**Period: Devonian**

**Age Interval (Map column): D32** (14), Famennian (Latest Devonian)

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at Tongguzibulong nearby Kalpin County, the Xinjiang Uygur Autonomous Region. It was named by No 13 Xinjiang Geological Team in 1957, and was published by Xinjiang Compiling Group for Regional Stratigraphical Scale in 1980.

**Lithology and Thickness:**

Sandstone. It is dominated by brick-red and purplish-red thick-bedded sandstone, thin-bedded fine-grained sandstone and siltstone, with interbeds of dark-red siltstone and red sandstone at the base.

It is 1170 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

It conformably contacts onto the underlying Yimugantawu Fm.

***Upper contact:***

It has a disconformable contact to the overlying Kangkelin Fm of Upper Carboniferous.

***Regional extent:***

At southern Tage in Kalpin County, the upper part of the formation is intercalated with red thin-bedded micritic dolomite; there are also salt beds of 1-2 cm in thickness in eastern Yimugantawu. In Akqi County, north of Kalpin there is red greywacke, usually intercalated with pebble beds, suggesting piedmont (?) river facies deposits. The thickness of the formation decreases to about 100 m, or even thins out, in the area east of Kalpin to Yinganshan Mt.

**Fossils:**

No fossils have been recorded in this formation.

**Age:**

The age is inferred to be Famennian (Latest Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Lagude Fm**

**Period: Devonian**

**Age Interval (Map column): D22** (78), Givetian (late Middle Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Village Lagude, about 10 km north of Lude in Yongsheng County, Yunnan.

It was named by the Stratigraphy and Paleontology group of Laboratory of Yunnan Bureau of Geology in 1973, and was published by Yunnan Compiling Group for Regional Stratigraphical Scale in 1978.

**Lithology and Thickness:**

Limestone. It is a set of carbonate rocks that can be divided into two members.

The lower part, the Damaidi Member, is composed of dark-gray bioclastic limestone. It is 328.1 m in thickness.

The upper part, the Suoshabo Member, consists of gray thin- to medium-bedded limestone and dolomitic limestone. It is 427.7 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

Conformable lower contact to the underlying quartz sandstone and grayish-black shale interbeds of Dacaozi Fm.

***Upper contact:***

Overlain by the light-gray to grayish-white medium-bedded limestone of Maoniuping Fm.

***Regional extent:***

**Fossils:**

Its Damaidi Member yields abundant brachiopods *Ilmenia*, *Lazutkinia* and coral *Hexagonaria.*

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

The sedimentary environments of theses two members may be reef and lagoon facies, respectively.

**Additional Information**

A similar deposit distributed in Ninglang, Huaping and Yongsheng is called the Tanshanping Fm (Yunnan Bureau of Geology and Mineral Resources, 1990).

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Langma Fm**

**Period: Devonian**

**Age Interval (Map column): D1-2,** Early to Middle Devonian

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located at Chaguoluoma, north of the Xainza County seat, Xizang (Tibet).

It was named by Lin Baoyu in 1981.

**Lithology and Thickness:**

It is a set of carbonate rock deposits.

The lower part consists mainly of grayish-white to light-gray thick-bedded crystalline limestone, occasionally intercalated with oolitic limestone.

The upper part is mainly composed of gray to grayish-white medium-bedded banded limestone.

It is 226 m in thickness

**Relationships and Distribution:**

***Lower contact:***

The formation has a conformable basal contact to the underlying metamorphic quartzose sandstone (it may be coarse-grained dolomite after Yao Jingguo et al, 1988) of the Deriangma Fm.

***Upper contact:***

The formation is overlain by the grayish-white thick-bedded limestone of the Chaguoluoma Fm.

***Regional extent:***

It is mainly distributed in Xainza and Ombu in Northern Xizang.

**Fossils:**

**It** yields conodonts *Polygnathus dehiscens,* etc. in its base.

**Age:**

Early to Middle Devonian

**Depositional setting:**

It is interpreted as a carbonate platform facies.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Laohuao Fm**

**Period: Devonian**

**Age Interval (Map column): D22-D31** ,late Middle Devonian to early Late Devonian

**Province:** guangdong

**Type Locality and Naming:**

The type section is located at Laohuao in Taishan County, guangdong Province.

It was named by Zhang Youzheng in 1959.

**Lithology and Thickness:**

It is dominated by clastic rocks and bears non-marine, or occasionally marine, fossils.

**Relationships and Distribution:**

***Lower contact:***

It has conformable contact to the underlying Laohuao Fm.

***Upper contact:***

It has conformable contact to the overlying Tianziling Fm.

***Regional extent:***

It is distributed mainly in the areas east of Renhua—Qujiang-- Wengyuan and south of Fogang and Guangning.

**Fossils:**

It contains plant fossils that are quite similar to *Protolepidodendron scharyanum* flora. In 1962, at the top of the Laohuao Fm (only 3-6 m below the *Cyrtospirifer*-bearing Tianziling Fm) in Huangzhukeng Reservoir of Shenjing, Taishan County yielded big fish fossils of *Bothriolepis* sp. and some complete fish bone. In terms of stratigraphic position, it may be higher than the bed yielding *B. kwangtungensis* in the north of Guangdong.

**Age:**

late Middle Devonian to early Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Laohutou Fm**

**Period: Devonian**

**Age Interval (Map column): D22** ,late Middle Devonian

**Province:** Guangdong

**Type Locality and Naming:**

The type section is located at Laohutou, north of the Lechang county seat, Guangdong Province.

It was named by Xu Ruilin in 1937.

**Lithology and Thickness:**

Sandstone. It is dominated by grayish-white to grayish-green medium- to coarse-grained quartzose sandstone. Upwards, the clayey, silty and calcareous components gradually increase and interbeds of sandstone with shale in yellow and red colors appear.

It is about 340 m thick.

**Relationships and Distribution:**

***Lower contact:***

It conformably contacts the underlying yangxi Fm.

***Upper contact:***

The contact relation with the overlying Huanggangliang Fm of the Middle Devonian is unclear.

***Regional extent:***

This formation is mainly distributed in Lechang and Shaoguan of northern Guangdong.

**Fossils:**

It mainly yields fish fossils *Bothriolepis sinensis*, *B. kwangtungensis*, *B. lochangensis,* *B. shaokuanensis,* and plant fossils *Lepidodendropsis* cf. *tiaomaensis,* *Protopteridium minutum, Protolepidodendrom scharyanum*.

**Age:**

late Middle Devonian

**Depositional setting:**

**Additional Information**

The formation is late Middle Devonian in age and can be correlated with the Tiaomajian Fm of central Hunan.

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Laojingzhai Fm**

**Period: Devonian**

**Age Interval (Map column): D22** (30), late Givetian (late Middle Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Laojingzhai of Mengla in Jinping County, Yunnan Province, and the reference section is at Maludong of Jinping County.

It was named by he Second branch Team of yunnan No 2 Team of Regional Geological Survey in 1972, and was published by Yunnan Compiling Group for Regional Stratigraphical Scale in 1978.

**Lithology and Thickness:**

Limestone. It is composed of gray to dark-gray bioclastic limestone and clayey banded limestone.

It is 120 m thick.

**Relationships and Distribution:**

***Lower contact:***

It has a basal conformable contact to the black shale and thin-bedded chert of the Songjiazhai Fm.

***Upper contact:***

It is overlain by light-gray medium-bedded to massive limestone of the Upper Devonian.

***Regional extent:***

It is distributed in Maludong, Songjiazhai, Luogetang and Yilihe of Jinping County, Yunnan Province.

**Fossils:**

It yields corals *Grypophyllum*, *Keriophyllum*, *Cyathophyllum.*

**Age:**

late Givetian (late Middle Devonian)

**Depositional setting:**

**Additional Information**

The first and second beds of the section described in “the Regional Stratigraphic Scale of southwest China; Yunnan facsimile” (1978) should be equivalent to the Songjiazhai Fm.

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Laotudingzi Fm**

**Period: Devonian**

**Age Interval (Map column): D3**  (8), Late Devonian

**Province:** Heilongjiang

**Type Locality and Naming:**

The representative section is located in Baoqing County, Heilongjiang Province.

It was named by by Zhang Jiayuan in 1960, but type section was not given. “The Regional Stratigraphic Scale of Northeast China; Heilongjiang Province facsimile” quoted it formally in 1979

**Lithology and Thickness:**

Pyroclastic rocks. It is composed of intermediate and acidic pyroclastic rocks intercalated with lava and clastic rock. The volcanic rocks are dominated by acidic rock of various contents. In general, the volcanic activity is stronger in the south.

**Relationships and Distribution:**

***Lower contact:***

It conformably contacts the underlying Heitai Fm.

***Upper contact:***

It conformably contacts the overlying Qilikashan Fm.

***Regional extent:***

This formation is distributed in Mishan--Baoqing areas of Heilongjiang Province and usually associated with the Heitai Fm. In areas of Laotudingzi, Lanhuadingzi and Qilikashan etc. the volcanic rocks are of great volume with increased thickness, so as the thickest strata at Laotudingzi is 918 m. The formation is also incompletely outcropped in Xiaobeihu of Ningan County, southwest of Mudanjiang City.

**Fossils:**

No fossils have been found yet.

**Age:**

The age is inferred Late Devonian based on its stratigraphic position (Heilongjiang Regional Stratigraphic Annales, 1994).

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Lazhulong Fm**

**Period: Devonian**

**Age Interval (Map column): D2-3** (22), Middle to Late Devonian

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located at Nanshan of Lazhulong in Rutog County, Xizang (Tibet).

It was named by Zhang Binggao and He Guoxiong in 1984.

**Lithology and Thickness:**

It is dominated by carbonate rocks. The lower part consists of interbeds of grayish-white quartzose sandstone with grayish-black limestone.

The upper part is composed of grayish-white to blackish-gray massive limestone intercalated with thin-bedded limestone.

It is 130 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

This formation has a disconformable contact with the underlying quartz sandstone of the Yaxir Group.

***Upper contact:***

Overlain by the dark-gray thin-bedded marl of the Yueyahu Fm of Lower Carboniferous.

***Regional extent:***

It is distributed in the areas of Lazhulong of Rutog County, Daban of Shuangxian, Yueyahu, Wanquanhu, etc. in Xizang.

**Fossils:**

Abundant brachiopod *Tenticospirifer*; coral *Phillipsastraea*; stromatopora and bryozoan, etc., have been reported.

**Age:**

Middle to Late Devonian

**Depositional setting:**

It is interpreted as a carbonate platform facies.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Lazigou Fm**

**Period: Devonian**

**Age Interval (Map column): D13-D21** (40), Emsian to early Eifelian (late Early Devonian - early Middle Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Lubagou, 8 km northwest of Luoda in Têwo County, Gansu Province.

It was named by Sun Guangyi in 1980, and Hou Hongfei, Wang Shitao et al quoted it formally in 1988.

**Lithology and Thickness:**

Slate. It is dominated by gray phyllitic calcareous sericite slate and calcareous slate, intercalated with purplish-gray thin- to medium-bedded silty marl and dark-gray thin- to medium-bedded micrite.

The thickness is more than 597.7 m.

**Relationships and Distribution:**

***Lower contact:***

At the bottom there is a fault contact with the Bailongjiang Group of the Silurian

***Upper contact:***

***Regional extent:***

**Fossils:**

There are abundant tentaculites and minor brachiopods in marls.

Five range zones and two subzones of tentaculites can be successively distinguished in this formation: *Nowakia* (*N*.) *zlichovensis* zone; *N*. (*N*.) *praecursor* zone; *Viriatellina pseudogeinitziana* zone; *N*. (*N*.) *cancellata* zone; *N.* (*Sulcatonowakia*) *sulcata* cf. *antiqua* subzone and the *N*. (*S*.) *sulcata sulcata* subzone.

**Age:**

Emsian to early Eifelian (late Early Devonian - early Middle Devonian)

**Depositional setting:**

**Additional Information**

The former lower member of the overlying Lubagou Fm shares the same lithology with the Lazigou Fm, and is, therefore, now included as the upper part of this Lazigou Fm; the *N*. (*S*.) *sulcata sulcata* subzone in this portion therefore extends it into early Middle Devonian in age.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Leijiaba Fm**

**Period: Devonian**

**Age Interval (Map column): D13-D21** (41), late Early Devonian to early Middle Devonian

**Province:** Gansu

**Type Locality and Naming:**

The type section is located between Zhujiaba and Guanshang, 46 km south of Lixian County, Gansu Province.

It was named by Xi’an Institute of Geology and Mineral Resources in 1971; Qin Feng and Gan Yiyan published it formally in 1976.

**Lithology and Thickness:**

Slate. The lower part is dominated by gray to dark-gray sandy slate (phyllite), intercalated with medium-bedded quartz sandstone, calcareous sandstone and minor sandy limestone.

The upper part, 2402 m thick, is composed of dark-gray, gray slate (phyllite), calcareous slate intercalated with thin- to medium-bedded bioclastic limestone, lime lenticle and minor thin-platy siltstone.

**Relationships and Distribution:**

***Lower contact:***

Its base is an overthrust fault contact onto the Guanting Group of the Triassic in the south, where the outcropped thickness is more than 1623 m.

***Upper contact:***

***Regional extent:***

**Fossils:**

In the limestone it yields abundant corals: *Temnophyllum poshiense*, *Pseudomicroplasma uralica*, *Parasociophyllum isactis*, and brachiopods: *Uncinulus* *parallelepipedus*, *Athyrisina* etc.

In the lower part (Li Yongjun, 1989) the spore: *Apiculiretusispora plicata*, *Acanthotriletes tenuispinosus*, *Craspedispora arctica*, *Archaeozonotriletes variabilis* etc., have been reported, which can be correlated to those of the Dangduo Fm in Têwo area of West Qinling.

**Age:**

late Early Devonian to early Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Lengbuzi Fm**

**Period: Devonian**

**Age Interval (Map column): D2** (51), Middle Devonian

**Province:** Gansu

**Type Locality and Naming:**

The type section is located nearby Lengbuzi, 5 km north of Linjiang in Wenxian County, Gansu Province.

It was named by Zhang Yan in 1961; Qin Feng and Gan Yiyan quoted it formally in 1976.

**Lithology and Thickness:**

Quartz sandstone. The formation, 207 m thick, is composed of white, grayish-white and dark-gray thick-bedded quartz sandstone, chert-bearing quartzite intercalated with black shale and chert breccia. The quartzite possesses platy cross-bedding and ripple marks. Its lower part comprises more massive conglomerate beds.

**Relationships and Distribution:**

***Lower contact:***

The formation disconformably overlies on the Minbugou Fm.

***Upper contact:***

***Regional extent:***

The largest thickness can reach 207 m in Shawan to Lengbuzi areas; westwards, at Yangtanghe---Zhujiagou areas it thins to only 59-75 m thick; it is 188 m thick at Minbugou and 101 m thick at Huanglong in Songpan County.

**Fossils:**

It yields plant fossils: *Lepidodendropsis* cf. *arborescens* and *Hostimella* sp.

**Age:**

Middle Devonian

**Depositional setting:**

It is interpreted as a near-shore beach deposit.

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Liangquan Fm**

**Period: Devonian**

**Age Interval (Map column): D12**  (24), Pragian (middle Early Devonian)

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located on the hill ridge, east of Liangquan of Nyalam County, Xizang; the reference section is nearby Kede of Pazhu Township in Tingri (Xêgar) County, Xizang (Tibet) Autonomous Region.

It was named by Wang Yigang et al. in 1974.

**Lithology and Thickness:**

Shale, limestone. It is composed of interbeds between grayish-white shale and gray thin-bedded limestone, and also of light-gray silty mudstone which may change into grayish-green or grayish-white in color after weathering.

It is 40 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

The Formation has a conformable contact to the light- to dark-gray limestone of the Pulu Fm of the Upper Silurian.

***Upper contact:***

The Formation is overlain by the light-gray feldspathic quartz sandstone of the Poqu Fm.

***Regional extent:***

It is mainly distributed in Burang, Zanda (Toling) and Zhongba counties, at Yali of Nyalam County, at Kede of Pazhu in Tingri County, and at Yadong County in southern Xizang. Eastward and westward from Nyalam, the thickness of the formation may reach approximately 400 m.

**Fossils:**

The formation contains a large number of tentaculites of *Nowakia acuaria* Zone, graptolites of *Monograptus yukonensis* Zone, belonging to Pragian in age.

**Age:**

Pragian (middle Early Devonian)

**Depositional setting:**

It is interpreted as a deep-water basin facies deposits.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Lianhuashan Fm**

**Period: Devonian**

**Age Interval (Map column): D11** (63-66), early- middle Pragian (middle Early Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at Lianhuashan near Longshanxu in Guixian County, the Guangxi Zhuang Autonomous Region, and reference section is at Liujing in Hengxian County, Guangxi.

It was named by Zhu Tinggu in 1928.

**Lithology and Thickness:**

Siltstone. The Lianhuashan Fm was divided into three members.

The lower member, the Liukankou Member, about 135 m thick, is dominated by purplish-red siltstone and clayey coarse sandstone.

The middle member, the Hengxian Member, about 110 m thick, is dominated by purplish-red clayey siltstone intercalated with thin-bedded gray clayey siltstone and fine-grained sandstone with small cross-bedding and more manganese nodules at bottom.

The upper member, the Lingli Member, about 100 m thick, includes two parts; the upper part consists of purplish-red thin-bedded clayey siltstone and fine sandstone, intercalated with pink mudstone bearing iron nodules and muscovite debris. The lower part consists of grayish-white medium- to thick-bedded fine-grained quartz sandstone, intercalated with purplish-red clayey silty-to-fine-grained sandstone; the base is represented by gray, pebbly sandstone and clayey sandstone.

It is about 400 m in total thickness.

**Relationships and Distribution:**

***Lower contact:***

This formation unconformably contacts the underlying Cambrian.

***Upper contact:***

This formation has an upper conformable contact to the overlying Nagaoling Fm.

***Regional extent:***

**Fossils:**

The lower member, the Liukankou Member yields bivalve *Dysoanaonta angulata, Goniophora* sp. etc., ostracoda *Beyrichia* sp., *Leperditia* sp. etc., fish *Asiaspis expansa* and burrowing trace fossils.

The middle member, the Hengxian Member, contains bivalve and fish: *Yunnanolepis* sp. *Lianhuashanolepis liukingensis, Orientolepis neokwangsiensis*, etc.

The upper member, the Lingli Member, includes two parts; the upper part yields a few fish fragments *Yunnanolepis* sp. and brachiopod *Lingula* sp.; the lower part yields bivalve and ostracods *Leperditia* sp. etc.

**Age:**

Based on the age of the Nagaoling Fm as middle Pragian, the Lianhuashan Fm, which is beneath the Nagaoling Fm, should be earlier than middle Pragian in age.

**Depositional setting:**

It is interpreted as a littoral or foreshore to nearshore depositional environment.

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Liujiang Fm**

**Period: Devonian**

**Age Interval (Map column): D31** (59,60,62,63,66,76), Frasnian (early Late Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located nearby Zhaisha Township (Liujiang County in old name) of Luzhai County, Guangxi.

It was named by Feng Jinglan in 1929.

**Lithology and Thickness:**

Chert. It is dominated by grayish-black to brown thin-bedded chert, siliceous mudstone with horizontal bedding and contains manganese and phosphorites. Small folds and joints are well developed in the formation, and the rocks become fragile after weathering.

It is about 100 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

At base of the formation, it is easily separated at its conformable contact to the underlying Donggangling Fm by the appearance of siliceous rocks.

***Upper contact:***

***Regional extent:***

This formation is widely distributed over Guangxi and in southern Guizhou. Its lithology is relatively uniform, but thickness is variable with a maximum thickness of 400 m. In south Guangxi at Tianlin, Baise, and Guiping, some volcanic lava and basalt are recorded.

**Fossils:**

It contains abundant tentaculites which often gather closely as horizontal bands; the main tentaculites are *Homoctenus tenuicinctus*, *Striatostyliolina striata*, *Nowakia nandanensis*; it bears also brachiopods *leiorhynchus* sp.; ostracoda *Entomozoe* sp.

In Mugui area, it yields ammonoids *Manticoceras kweipingense.*

**Age:**

the age is Frasnian (early Late Devonian) and may extend to Givetian in a few places.

**Depositional setting:**

It is interpreted as a typical basin facies deposit formed during the maximum sea level transgression of Devonian.

**Additional Information**

The Liujiang Fm represents important beds of manganese and phosphorite ores.

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Longdongshui Fm**

**Period: Devonian**

**Age Interval (Map column): D21**  (53,54),

**Province:** Guizhou

**Type Locality and Naming:**

The type section is located in a gully about 300 m east of Longdongshui Village, 10 km east of Dushan County, Guizhou Province.

It was named by Wang Yu et al. in 1964.

**Lithology and Thickness:**

It is mainly a set of carbonate rocks. The lower and middle parts are dominated by dolomitic limestone intercalated with limestone, and the upper part is limestone and clayey limestone with mudstone at top.

It is 59.2 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

It is conformably onto the underlying Shujiaping Fm

***Upper contact:***

***Regional extent:***

Itis restricted in Houershan area in Dushan County.

**Fossils:**

The formation contains abundant corals, brachiopods and a few trilobites, bryozoan, stromatopora, gastropods and bivalves.

Brachiopods can be divided into a *Xenospirifer* *fongi* assemblage zone below and an *Acrospirifer houershanensis* assemblage zone above.

Corals are represented in the lower part by *Lyrielasma qiannanense*, *Grypophyllum* *diluvianum*, *Tabularia devoniana*, *Dushanophrentis cystotabulata*, etc., and in the upper part by *Utaratuia sinensis*, *Sociophyllum minor*, *Breviseptopgyllum kochanense*.

**Age:**

**Depositional setting:**

It is interpreted as a tidal flat and lagoon facies.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Longhuashan Fm**

**Period: Devonian**

**Age Interval (Map column): D13** (56), Late Emsian ((late Early Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Longhuashan of Zhanyi, Yunnan, and the reference section is at Xujiachong of Qujing, Yunnan.

It was named by A.W. Grabau in 1931.

**Lithology and Thickness:**

Sandstone. In Xujiachong section, it is dominated by yellowish-green, purplish-red, grayish-green and yellowish-white sandstone, mudstone and shale interbeds.

It is 500-800 m thick.

In Longhuashan section, the lower part of Longhuashan Fm is incompletely outcropped (about 90 m), but the lithology is the same as that of the Xujiachong section.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

The top is in a conformable or disconformable contact with the overlying Chuandong Fm (the lower part of old Haikou Fm).

***Regional extent:***

**Fossils:**

This formation mainly yields plant fossils *Dreparophycus spinaeformis*, *Zosterophyllum* *yunnanicum*; fish *Galeaspis shujiachongensis* and bivalve.

**Age:**

Late Emsian ((late Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Longkouchong Fm**

**Period: Devonian**

**Age Interval (Map column):** Frasnian (Late Devonian)

**Province:** Hunan

**Type Locality and Naming:**

The type section is located at Longkouchong of Qiziqiao in Xiangxiang County, Hunan Province.

It was named by Tian Qijun, Wang Xiaoqing and Xu Yuandao in 1933.

**Lithology and Thickness:**

Siltstone. It is dominated by siltstone, sandstone and sandy shale, intercalated with clayey limestone and limestone.

**Relationships and Distribution:**

***Lower contact:***

It is separated by the disappearance of thick-bedded limestone and the appearance of sandy shale from the underlying Qiziqiao Fm. It is a conformable contact.

***Upper contact:***

It is separated by the disappearance of sandstone and the appearance of thick-bedded limestone from the overlying Qilijiang Fm. It is a conformable contact.

***Regional extent:***

This formation is distributed in the central part and east of Hunan Province, where the lithology is marked by siltstone, sandstone and sandy shale, intercalated with variable amounts of limestone.

At Longkouchong of Xiangxian County, Shiwan of Hengshan County and Yujiawan of Xiangtan County, it is dominated by siltstone and quartz sandstone, intercalated with shale and minor limestone, and is 200-400 m in thickness. Southward, the sand becomes finer grained, the content of sand decreases, and calcareous content and mud increase.

In the areas north of Shetianqiao in Shaodong and south of Longkouchong, it is dominated by mica-rich siltstone, intercalated with sandy shale and limestone, of 300 m in thickness. In the area from Yangjiatan to Tangwan in Lianyuan County, it may reach more than 500 m in thickness, and is intercalated with thick-bedded limestone of tens to 200 m thick in its middle part, but it rapidly gets thinner, even thins out, along strike.

At Shetianqiao of Shaodong, it is about 300 m thick, dominated by sandy shale or sandy marl, intercalated with siltstone and minor limestone with reduced sand content.

**Fossils:**

It yields brachiopods *Cyrtospirifer sinensis*, *C. disjunctus*, *Desquamatia* sp., *Spinatrypa*, *Spinatrypina* etc., coral *Sinodisphyllum simplex*, *S. variabile* etc.

**Age:**

Frasnian (Late Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Tan Zhengxiu)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Longlinqiao Fm**

**Period: Devonian**

**Age Interval (Map column): D31** (41)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located etween Longlinqiao and Mapoli, 28 km south of Lixian County, Gansu Province.

It was named by Xi’an Institute of Geology and Mineral Resources in 1971; Qin Fong and Gan Yiyan formally quoted it in 1976.

**Lithology and Thickness:**

Slate, limestone. The lower part of this formation is dominated by blackish-gray to dark-gray carbonaceous sericite slate and silty slate, intercalated with thin-bedded siltstone and clayey limestone.

The limestone content increases upward, and the upper part of the formation mainly consists of medium- to thick-bedded limestone. It is more than 1529 m in total thickness, with no top exposed at its type location.

**Relationships and Distribution:**

***Lower contact:***

The formation conformably overlies on the thin-bedded limestone intercalated with slate of the Pingtou Fm.

***Upper contact:***

At Zhayuhenao in Dangchang County the formation conformably contacts the overlying Qigu Fm.

***Regional extent:***

This formation is mainly distributed in Dangchang and Lixian areas west of Xihanshui; it is 771 m thick at Zhayuhenao in Dangchang County where it conformably contacts both the underlying Pingtou Fm and the overlying Qigu Fm. Eastwards, at Dongshan in Xihe County, the formation has a facies transition to mainly carbonate rock in the upper part of the Honglingshan Fm.

**Fossils:**

Fossils are mainly found in the limestone of middle and upper parts, with coral *Disphyllum kostetskae*, *Sinodisphyllum simplex*, *Alveolites obtortus* and brachiopods *Pugnax sinensis*, *Schizophoria kansuensis*, *Spinatrypa bodini*, *Cyrtospirifer.*

**Age:**

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Lubagou Fm**

**Period: Devonian**

**Age Interval (Map column): D21**  (40), Eifelian (early Middle Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Lubagou, 8 km northwest of Luoda in Têwo County, Gansu Province.

It was named by Sun Guangyi in 1980 and was formally quoted by Hou Hongfei, Wang Shitao et al in 1988.

**Lithology and Thickness:**

Dolomite. It is composed of brownish-gray iron-bearing dolomite，fine-grained quartz sandstone, gray phyllitized chlorite sericite slate, calcareous slate and interbeds of thin- to medium-bedded micrite, partly intercalated with ferro-dolomite lenses and lenticular to banded microlitic siderite.

It is 246.1 m in total thickness.

**Relationships and Distribution:**

***Lower contact:***

It conformably overlies the phyllitized chlorite sericite slate of the Lazigou Fm of Lower and Middle Devonian.

***Upper contact:***

It is conformably overlain by the limestone intercalated with slate of the Xiawuna Fm of Middle Devonian.

***Regional extent:***

The Lubagou Fm is mainly distributed from east of Têwo to Zhuqu, and can be correlated with the Lure Fm exposed at west of Têwo, but can be differentiated from the platform-type deposits of the Lure Fm by its clastic rocks intercalated with carbonate rock of littoral continental shelf facies.

**Fossils:**

The limestone contains abundant coral *Sociophyllum*, *Utaratuia*, brachiopods *Indospirifer, Athyrisina.*

**Age:**

Eifelian (early Middle Devonian)

**Depositional setting:**

It is interpreted as a littoral continental shelf facies.

**Additional Information**

This formation originally included two different lithological members, of which a lower member similar to the underlying Lazigou Fm in lithology was put into the Lubagou Fm merely because it yielded Frasnian tentaculites. However, according to the principle of lithostratigraphic classification, it is now returned back to being the upper part of the Lazigou Fm.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Luma Fm**

**Period: Devonian**

**Age Interval (Map column): D13** , Late Emsian (late Early Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at 2 km west of Luma Village in Zhaisha County, Guangxi Zhuangzu Autonomous Region.

It was named by Wang Yu, Yu Changmin and Fang Dawei in 1964.

**Lithology and Thickness:**

Marl. It is dominated by marl intercalated with dark-gray limestone, about 300 m thick.

**Relationships and Distribution:**

***Lower contact:***

At bottom, it is separated by marl from the underlying Lianhuashan sandstone in a conformable contact.

***Upper contact:***

***Regional extent:***

It is mainly restricted in to an area north from Qijian of Jinxiu in North Guangxi; southwards it has a facies transition into the lower part of the Dale Fm.

**Fossils:**

It yields abundant coral fossils: *Trapezophyllum* sp., *Favosites* sp., *Pleurodictyum* sp., *Lithophyllum* sp.

**Age:**

Late Emsian (late Early Devonian)

**Depositional setting:**

It is interpreted as near-shore subtidal environment deposits.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Luofu Fm**

**Period: Devonian**

**Age Interval (Map column): D22**

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located west of Luofu Township in Nandan County, Guangxi.

It was named by Fifth Prospecting Team of Geological Ministry in 1961.

**Lithology and Thickness:**

Mudstone. It is dominated by grayish-black and black mudstone, with its surface becoming yellowish-brown after weathering. The base consists of dolomitic mudstone intercalated with quartzite that is conformably separated from the underlying Tangding Fm by a 1-m-thick bed of sandstone.

It is 400 m thick.

**Relationships and Distribution:**

***Lower contact:***

The base consists of dolomitic mudstone intercalated with quartzite that is conformably separated from the underlying Tangding Fm by a 1-m-thick bed of sandstone.

***Upper contact:***

***Regional extent:***

It is mainly distributed in Nandan, Hechi, Wuxu of Nanning and some places in Shanglin.

**Fossils:**

It contains abundant tentaculites of the *Nowakia otomari* zone, the *N. multicostata* zone, and the *N. hongqiaoensis* zone.

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

It is interpreted as a basin sedimentary environment.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Luotuoshan Fm**

**Period: Devonian**

**Age Interval (Map column): D11-2** (5), early and middle Early Devonian.

**Province:** Heilongjiang

**Type Locality and Naming:**

The type section was not given.

It was named by No 2 branch Team of Heilongjiang No 2 Team of Regional Geological Survey in 1981.

**Lithology and Thickness:**

Metamorphic sandstone. According to the sections located at Luotuoshan and Yienishan, 3 km and 6 km from northeast of Wunur respectively, and the section northwest of Zhadunhe forest Farm, the lithology of the formation is dominated by grayish-green metamorphic calcareous quartz sandstone, phyllitic calcareous slate and siltstone intercalated with bioclastic limestone and with sandy conglomerate at bottom.

It is more than 100 m thick.

**Relationships and Distribution:**

***Lower contact:***

It disconformably overlies the underlying Ordovician.

***Upper contact:***

Its upper part is cut by faults, so no direct contact relation with the overlying Wunur Fm can be seen.

***Regional extent:***

In Da Hingan Ling, this formation is mainly distributed in Wunur to Zhadunhe Forest Farm areas.

**Fossils:**

It yields brachiopods *Protathyris praecursor*, *Cymostrophia* sp., *Ancillotoechia* sp., *Howellella* sp., and coral *Favosites* sp., *Pachyfavosites* sp.

**Age:**

early and middle Early Devonian.

**Depositional setting:**

It is interpreted as a normal shallow-marine deposits.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Lure Fm**

**Period: Devonian**

**Age Interval (Map column): D21** (40), Eifelian (Middle Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Dangduogou, 24 km northwest of Têwo County, Gansu Province.

It was named by Xi’an Institute of Geology and Mineral Resources and Gansu No 1 Team of Regional Geological Survey in 1973. Qin Fong and Gan Yiyan formally quoted it in 1976.

**Lithology and Thickness:**

Limestone. The formation is composed of gray to dark-gray medium- to thick-bedded fine-grained bioclastic limestone, thin- to medium-bedded calcarenite and dolomitized bioclastic limestone intercalated with limestone, sandy shale and calcareous siltstone. In the middle and upper parts, it is intercalated with multiple layers of reefal facies.

It is 238.6 m thick.

**Relationships and Distribution:**

***Lower contact:***

It conformably overlies the iron-bearing clastic rock of the Dangduo Fm.

***Upper contact:***

***Regional extent:***

The lithology and thickness of this formation are stable in the west. It is 170-210 m thick from Luqu to Xiawuna and gets slightly thicker to 239 m at Dangduogou. Eastwards at the Yiwagou section, the clastic content of epicontinental origin gradually increases, therefore the thickness can reach up to 812.4 m.

**Fossils:**

There are abundant brachiopods and corals, and a few bivalve, gastropod, ostracoda, trilobites and conodonts etc.

The brachiopods can be divided into the *Unicinulus subcordiformis-Spissophyllum massivum* assemblage zone in the lower part, the *Indospirifer-Syringopora eifeliensis* assemblage zone in the middle part and the *Productella morsovensis-Redstonea kuznetskiensis* assemblage zone in the upper part.

**Age:**

Eifelian (Middle Devonian)

**Depositional setting:**

The depositional facies sequence from bottom to top is suggested as: open platform, to platform basin, to a semi-restricted platform, then a platform-marginal reef facies.

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Maludong Fm**

**Period: Devonian**

**Age Interval (Map column): D13-D21** (30), late Early Devonian - early Middle Devonian

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Maludong of Jinping County, Yunnan Province.

It was named by No 6 Branch Team of Yunnan No 2 Team of regional Geological Survey in 1972 (unpublished), and was formally published by Yunnan Compiling Group for Regional Stratigraphical Scale in 1978.

**Lithology and Thickness:**

It is a set of carbonate rock, mainly composed of dark-gray to grayish-black micrite and dolomitic limestone intercalated with marl, amounting 1808 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

It has disconformable contact to the underlying dolomite of the Middle Silurian.

***Upper contact:***

It is overlain by grayish-black chert interbedded with siliceous shale of the Songjiazhai Fm.

***Regional extent:***

It is distributed at Maludong, Songjiazhai, Luogetang, Yilihe, etc. in Jinping County, Yunnan Province.

**Fossils:**

The formation yields abundant coral *Favosites*, *Dictyofavosites*, *Tryplasma*, *Thamnopora* and stromatopora.

**Age:**

late Early Devonian to early Middle Devonian

**Depositional setting:**

It is interpreted as a restricted platform and lagoon facies.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Malutang Fm**

**Period: Devonian**

**Age Interval (Map column): D21** (29), Eifelian (early Middle Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at the hillside, 500 m south of Malutang Village in Shidian County, Yunnan Province.

It was named by Hou Hongfei and Dong Zhizhong in 1982.

**Lithology and Thickness:**

The formation mainly consists of clayey limestone.

The lower part, 50 m thick, is composed of earth-like yellow thin-bedded platy marl and calcareous mudstone intercalated with thin beds or lenses of limestone.

The middle and upper parts, 38 m thick, are mainly gray clayey limestone and bioclastic limestone intercalated with earth-like yellow calcareous mudstone.

**Relationships and Distribution:**

***Lower contact:***

The formation is conformably underlain by the crystalline limestone and dolomitic limestone of the Xibiantang Fm.

***Upper contact:***

The formation is overlain by the gray, light-gray medium- to thick-bedded limestone of the Heyuanzhai Fm.

***Regional extent:***

It isdistributed in Baoshan and Shidian areas of Yunnan Province.

**Fossils:**

The lower part yields brachiopods *Strophochonetes*.

The middle and upper parts contain abundant brachiopods *Emanuella*, *Aulacella.*

**Age:**

Eifelian (early Middle Devonian)

**Depositional setting:**

It is interpreted as a quiet basin-marginal environment.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Manger Fm**

**Period: Devonian**

**Age Interval (Map column): D11-D12** (1), Lochkovian to Pragian (Early Devonian)

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at Mangkelu gully, south slope of Sharburtishan Mt, east of Hoboksar County, the Xinjiang Uygur Autonomous Region.

It was named by the Joint Stratigraphical Branch Team between the Chinese Academy of Geological Sciences and the Xinjiang Team of Regional Geological Survey in 1973. Hou Hongfei et al. quoted it formally in 1979.

**Lithology and Thickness:**

Shale, tuffaceous sandstone. It is composed of grayish-green to yellowish-green calcareous shale and calcareous tuffaceous sandstone, intercalated with clayey limestone and limestone nodules in the upper part, and is 267 m thick.

**Relationships and Distribution:**

***Lower contact:***

It is in conformable contact with the underlying Wutubulak Fm of Silurian.

***Upper contact:***

It is in conformable contact with the overlying Mangkelu Fm.

***Regional extent:***

Its distribution is limited in middle part of south slope of Shaburtishan Mt.

**Fossils:**

It yields trilobites *Odontochile sinensis*, *Calymenia* sp.; brachiopods *Aulacella* sp., ?*Resserella* sp. and bivalve.

**Age:**

Lochkovian to Pragian (Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Mangkelu Fm**

**Period: Devonian**

**Age Interval (Map column): D13** (1), Emsian (late Early Devonian)

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at Mangkelu gully in West Junggar.

It was named by the Joint Stratigraphical Branch Team between the Chinese Academy of Geological Sciences and the Xinjiang Team of Regional Geological Survey in 1973. Hou Hongfei et al. quoted it formally in 1979.

**Lithology and Thickness:**

It is a set of carbonate rock deposit, about 288 m thick. It is mainly composed of yellowish-brown thin-bedded sandy limestone, bioclastic limestone, intercalated with yellowish-brown siltstone, calcareous fine-grained sandstone, sandy conglomerate. Some graded bedding is present.

**Relationships and Distribution:**

***Lower contact:***

The basal boundary is placed on the basis of the appearance of limestone from the underlying Manger Fm.

***Upper contact:***

There may be an unconformable contact with the overlying Hujierste Fm.

***Regional extent:***

**Fossils:**

The formation contains brachiopods, corals, bryozoans, etc., which can be partly concentrated into shelly beds. The important fossils are: brachiopods: “*Paraspirifer*” *gigantean*, *Leptaenopyxis bouei*, *Gladostrophia knodoi*, *Coelospira* sp., *Kozillowskiella* sp.; corals: *Pteurodictyum* sp., *Syringaxon* sp., *Barrandeophyllum* sp., *Pachyfavosites* sp., *Pachyfavosites* sp., *Squameofavosites* sp.; bryozoan: *Fistulipora* sp., *Leioclema* sp.

**Age:**

Emsian (late Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Mangshan Gr**

**Period: Devonian**

**Age Interval (Map column): D1-2** (52-54), Early - Middle Devonian

**Province:** Guizhou

**Type Locality and Naming:**

The type section is located in Mangshan area, 3 km west of Duyun City, Guizhou, but the exact locality is unknown. The reference section is nearby Village Mairangzhai of Wudang District in Guiyang City, Guizhou Province. It was named by Yue Senxun in 1929.

**Lithology and Thickness:**

Quartzose sandstone. It is composed of gray, grayish-white and yellowish-brown, thick-bedded to massive quartzose sandstone, intercalated with pebble-bearing quartzose sandstone.

Itranges from 0 to 500 m thick.

The lithology can be divided into two separate formations at Mairangzhai of Wudang in Guiyang:

The lower part, the Wudang Fm, is composed of purplish-red thin- to medium-bedded fine-grained quartz sandstone, clayey siltstone and iron-bearing siltstone.

The upper part, the Mazongling Fm, consists of grayish-yellow to grayish-white quartz sandstone intercalated with shale.

**Relationships and Distribution:**

***Lower contact:***

It has a disconformable basal contact onto the underlying Wengxiang Group of Lower Silurian.

***Upper contact:***

***Regional extent:***

It is distributed at Kaili, Duyun and Guiyang in southern Guizhou Province.

**Fossils:**

It contains a few fish and brachiopod fragments.

**Age:**

Early to Middle Devonian

**Depositional setting:**

It is interpreted as a shore facies.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Maoba Fm**

**Period: Devonian**

**Age Interval (Map column): D32** (70), Middle and Late Famennian (Late Devonian)

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located nearby Maoba Village, about 4 km northwest of Yanmenba in Jiangyou City, Sichuan Province. The representative section is nearby Shawozi of Jiangyou.

It was named by Yue Senxun in 1965.

**Lithology and Thickness:**

Limestone. It is dominated by sparry nodular oolitic limestone, intercalated with bioclastic limestone and algal-laminated limestone, 172.74 m thick.

**Relationships and Distribution:**

***Lower contact:***

The formation is in conformable contact with the underlying dolomite of the Shawozi Fm.

***Upper contact:***

It is in conformable contact with the overlying limestone of the Changtanzi Fm.

***Regional extent:***

**Fossils:**

The fossils are poor, only brachiopods *Cyrtospirifer* and conodont *Polygnathus obliquicostatus* have been reported in the upper part.

**Age:**

Middle and Late Famennian (Late Devonian)

**Depositional setting:**

It is interpreted as a tidal flat and oolitic beach facies.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Maoniushan Fm**

**Period: Devonian**

**Age Interval (Map column): D3** (18), Late Devonian

**Province:** Qinghai

**Type Locality and Naming:**

The type section is located at Maoniushan Mt. in Dulan County, Qinghai Province.

It was named by Qinghai Bureau of Petroleum in 1958.

**Lithology and Thickness:**

Sandstone, andesitic rocks. The formation at the Maoniushan section in Duyun, is composed of purple and grayish-green arkose, pebble-bearing sandstone and fine-grained conglomerate; but the upper part consists of pyroxene andesite, andesitic lava, andesitic breccia, andesitic agglomerate, pebble-bearing andesitic lava and tuff and a few feldspathic greywacke.

It is totaling 4992 m in thickness.

The lithology of this formation is relatively uniform, but thickness changes considerably from more than 1000 m to more than 5000 m.

**Relationships and Distribution:**

***Lower contact:***

It has unconformable contact with the underlying Tanjianshan Group of Upper Ordovician.

***Upper contact:***

It has unconformable contact with the overlying Lower Carboniferous.

***Regional extent:***

**Fossils:**

No fossils are found in this section, but in purplish-red feldspathic sandstone at southern side of Saishitengshan Mt. some plant fossils occur: *Leptophloeum rhombicum*, *Sublepidodendron*, *Lepidodendropsis*.

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Mazongling Fm**

**Period: Devonian**

**Age Interval (Map column): D22** ,Givetian (late Middle Devonian)

**Province:** Guizhou

**Type Locality and Naming:**

The exact locality of the type section is unknown, and the reference section is at Leidapo in Wudang district of Guiyang City, Guizhou Province.

It was named by Yue Senxun in 1929. Pan Jiang et al quoted it formally in 1978.

**Lithology and Thickness:**

Sandstone. It is composed of grayish-white and yellowish-pink thin- to medium-bedded quartz sandstone, partly intercalated with iron-bearing siltstone and shale.

The formation is 150 m in thickness,

**Relationships and Distribution:**

***Lower contact:***

The formation has a conformable contact to the underlying purplish-red quartz sandstone of the Wudang Fm of the Mangshan Grou.

***Upper contact:***

The formation is overlain by clayey dolomite of the Gaopochang Fm.

***Regional extent:***

It is distributed in the area from Wudang to Gaopochang in the outskirts of Guiyang City.

**Fossils:**

The formation yields fossil *Bothriolepis* in the upper part.

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

It is interpreted as a littoral facies deposit.

**Additional Information**

The Mazongling Fm represents the upper formation of the Mangshan Group.

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Menggongao Fm**

**Period: Devonian**

**Age Interval (Map column): D32** (68,69), Latest Devonian

**Province:** Hunan

**Type Locality and Naming:**

The type section is located at Menggongao, east of Lingnan in Shaodong County, Hunan Province.

It was named by Tian Qijun et al. in 1932.

**Lithology and Thickness:**

Shale, limestone. It is characterized by interbeds of limestone with shale, commonly with an upward trend of decreasing sand-silt and increasing calcareous content. The lower part mainly consists of shale and siltstone intercalated with limestone, and the upper part is composed of interbeds of shale with marl and limestone. Limestone is medium bedded and often displays graded bedding.

In the south to Qiyang area, limestone increases and with only a few shale intercalations, and there is a bed of bird-eye limestone developed at the top. The thickness is commonly about 100 m.

**Relationships and Distribution:**

***Lower contact:***

The base is a conformable transition from the underlying Shaodong Fm and is placed at the appearance of limestone.

***Upper contact:***

At its top is often a bed of quartz sandstone.

***Regional extent:***

**Fossils:**

Fossils are mainly coral *Cystophrentis* sp., brachiopods *Cyrtospirifer* sp., *Ptychomalatoechia kinlingensis*; conodont *Icriodus* sp., *Polygnathus obliquicostatus*; spore *Retispora lepidophyta*; foraminifera *Qusiendothyra kobeitusana*; and stromatopora.

**Age:**

Latest Devonian

**Depositional setting:**

It is interpreted as a normal-salinity marine subtidal environment

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Minbugou Fm**

**Period: Devonian**

**Age Interval (Map column): D13-D21** (51),

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Minbugou, 25 km northwest of Wenxian County, Gansu Province.

It was named by Ye Maoquan et al. in 1960; Qin Feng and Gan Yiyan formally quoted it in 1976.

**Lithology and Thickness:**

Siltstone. The formation is composed of dark-gray and grayish-green thin-bedded clayey siltstone, calcareous siltstone and sandy shale intercalated with thin- to medium-bedded sandstone, iron-bearing sandstone, quartz sandstone and a few calcarenite thin-beds or nodules. Some ferruginous nodules are intercalated within the siltstone, occasionally with thin beds of chamositic hematite.

In the calcareous siltstone occur several small shelly patch reefs or coral reef buildups. Ripple marks are fairly well developed on the sandstone surfaces.

It is 346 m thick at its thickest point in Minbugou, but eastwards at Linjiang area it becomes thinner, only 113-116 m thick.

**Relationships and Distribution:**

***Lower contact:***

The formation conformably overlies on the Xigou Fm.

***Upper contact:***

***Regional extent:***

The formation is widely distributed in the southern area of West Qinling. It is 346 m thick at its thickest point in Minbugou, but eastwards at Linjiang area it becomes thinner, only 113-116 m thick.

**Fossils:**

It yields abundant brachiopods and corals; the lower part bears coral *Favosites regularrissimus*, *Squameofavosites obliquespinus*, and the upper part yields brachiopods *Xenospirifer fongi*, *Athyrisina squamosa* and coral *Calceola* *sandalina arcuata*.

**Age:**

**Depositional setting:**

It is interpreted as a shore facies.

**Additional Information**

This formation is important for its iron ore deposits in the southern area of West Qinling and is widely distributed in this area.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Mintang Fm**

**Period: Devonian**

**Age Interval (Map column): D21-D31** (64), latest Eifelian to Early Frasnian ((early Middle to early Late Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at Dishan, west of Gubi Village and south of Liujing railway station in Hengxian County, Guangxi.

It was named by Wang Yu, Yu Changmin and Fang Dawei in 1964.

**Lithology and Thickness:**

Limestone. It is composed of interbeds of gray thin-bedded limestone with bioclastic limestone and brecciola. The lower part is intercalated with dolomitic bio-calcirudite.

It is 88 m thick.

**Relationships and Distribution:**

***Lower contact:***

The 40-cm-thick crinoidal clastic limestone at the base of the Mintang Fm is separated from the underlying dolomite of the Najiao Fm by a bed of 1-4-cm-thick hematite-bearing marl, which may represent an erosion break surface; therefore, there must be disconformable contact relationship between these two formations.

***Upper contact:***

The formation is overlain by the Gubi Fm.

***Regional extent:***

The Mintang Fm is restricted in distribution to Liujing in Hengxian County.

**Fossils:**

The formation yields abundant fossils, including the following important elements: stromatopora *Actinostroma* sp.; brachiopods *Stringocephalus burtini*, *Acrothyris kwangsiensis*; tentaculites *Nowakia otomari*; Tetracoralla *Stringophyllum* sp., *Grypophyllum* sp. and conodonts of *Tortodus kockelianus* zone to *Polygnathus a. asymmestricus* zone.

**Age:**

latest Eifelian to Early Frasnian ((early Middle to early Late Devonian)

**Depositional setting:**

It is interpreted as a platform margin facies environment.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Moding Fm**

**Period: Devonian**

**Age Interval (Map column): D13** (64), Emsian (late Early Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at Liujing railway station of Hengxian County, Guangxi.

It was named by Guangxi Team of Regional Geological Survey in 1982.

**Lithology and Thickness:**

Dolomite. The formation is composed of dark-gray dolomite and chert intercalated with black chert bands.

The thickness is more than 19 m.

**Relationships and Distribution:**

***Lower contact:***

The basal thick-bedded micritic dolomite of the Moding Fm is in a conformable contact with the underlying Yujiang Fm.

***Upper contact:***

The top of the formation is a fault contact with the overlying Najiao Fm.

***Regional extent:***

It is distributed in Nanning, Wuming and Jingxi, Debao etc. of Guangxi.

**Fossils:**

It yields tentaculites *Nowakia barrandei*, *N. elegans*; ammonoids *Erbenoceras elegantulum*; conodont *Polygnathus perbonus.*

**Age:**

Emsian (late Early Devonian)

**Depositional setting:**

It is interpreted as a basin facies environment.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Muerchang Fm**

**Period: Devonian**

**Age Interval (Map column): D1** (70), Early Devonian

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at road side of Muerchang Village, Yunlong Township in Beichuan County, Sichuan Province.

It was named by Hou Hongfei, Wan Zhengquan et al. in 1988.

**Lithology and Thickness:**

Sandstone. It is dominated by light-gray to grayish-black thin- to thick-bedded quartz sandstone intercalated with clayey siltstone, fine-grained quartz greywacke, mudstone and sandy mudstone.

In Muerchang Village of Yunlong Township the formation can be divided into three members:

The lower, the Dishuiyan Member, is characterized by greywacke and mudstone.

The middle, the Gangou Member, is marked by mudstone, sandy mudstone and greywacke.

The upper, the Lingguanmiao Member, consists of greywacke and mudstone.

The formation is 883 m in total thickness

**Relationships and Distribution:**

***Lower contact:***

It is in conformable contact with the underlying Guixi Fm.

***Upper contact:***

It is in conformable contact with the overlying Guanyinmiao Fm.

***Regional extent:***

It is mainly developed in Pingwu and Beichuan counties.

**Fossils:**

In Muerchang Village of Yunlong Township the formation can be divided into three members:

The lower, the Dishuiyan Member, contains trace fossils, plant and *Limulus* fragments.

The middle, the Gangou Member, yields brachiopods *Howellella*, *Strophochonetes pingyipuensis*, ostracoda *Guangxinia beichuanensis*, *Beyridia* *guixiensis* and crinoid stems, bryozoans, etc.

The upper, the Lingguanmiao Member, bears trace fossils, plant and fish fragments, and ostracoda *Ceratopsis giganta*.

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

The Muerchang Fm is part of the Pingyipu Gr.

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Nagaoling Fm**

**Period: Devonian**

**Age Interval (Map column): D12** (63,64,66), Pragian (middle Early Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located in north of Liujing railway station in Hengxian County, Guangxi.

It was named by Wang Yu in 1956.

**Lithology and Thickness:**

Shale. It is dominated by a set of grayish-green shale deposits The lower part is characterized by intercalations of thin beds and lenses of bioclastic limestone; the middle part consists of grayish-green shale; and the upper part is composed of light-brown clayey quartz sandstone and siltstone intercalated with silty mudstone. It is about 170 m in total thickness.

**Relationships and Distribution:**

***Lower contact:***

The base of the Nagaoling Fm is separated by its grayish-green shale from the underlying purplish-red silty mudstone at the top of the Lianhuashan Fm at a conformable contact.

***Upper contact:***

It is overlain by the Yujiang Fm.

***Regional extent:***

This formation is distributed in southern Guangxi with uniform lithology. At Wanjiang in Jingxi, it overlaps directly on the Cambrian in an unconformable contact. In Wuming and Shanglin area, it is mainly composed of shale and siltstone, with rare limestone interbeds.

**Fossils:**

The Nagaoling Fm mainly contains fossils of brachiopods *Orientospirifer nakaolingensis*, *Aseptalium quangxiensis*; bivalve *Sanguinolites nagaolingensis*; and fish *Asiaspis expansa* etc.; and with plant fossil fragments its upper part.

**Age:**

Based on the conodont *Eognathodus sulcatus* (Wang Chengyuan, 1978), the age is equivalent to Pragian.

**Depositional setting:**

According to its sedimentary character and fossils, the lower and middle part of this formation belongs to littoral subtidal mud-flat environment, while the upper part gradually changes into intertidal shore facies environment.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Najiao Fm**

**Period: Devonian**

**Age Interval (Map column): D13-D21** (64), Late Emsian to Early Eifelian (late Early to early Middle Devonian

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located in south of Liujing railway station in Hengxian County, Guangxi.

It was named by Wang Yu, Yu Changmin and Fang Dawei in 1965.

**Lithology and Thickness:**

Dolomite. It is characterized by medium- to fine-grained crystalline dolomite. The lower part consists of gray medium- to thick-bedded biodolomite with dissolution pores, intercalated with gray to black fine-to-micritic dolomite, and contains crinoid stems, stromatopora and minor coral. The middle and upper parts are composed of gray thick-bedded medium-crystalline dolomite.

It is more than 250 m thick.

**Relationships and Distribution:**

***Lower contact:***

In the type section, the Najiao Fm is in fault contact to the underlying Moding Fm.

***Upper contact:***

***Regional extent:***

It is distributed in Hengxian, Litang, Long’an, Jingxi

**Fossils:**

The lower part of the formation contains crinoid stems, stromatopora and minor coral.

In the middle and upper parts a few brachiopods *Zdimir*, *Megastrophia* have been found.

Based on the conodonts *Polygnathus inversus*, *P. serotinus*, *P. c. costatus* and *Tortodus kockelianus* (Xiong Jianfei, 1981), the Najiao Fm should be Late Emsian to Early Eifelian in age.

**Age:**

Late Emsian to Early Eifelian (late Early to early Middle Devonian)

**Depositional setting:**

It is interpreted as a platform margin facies.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Nanpanjiang Fm**

**Period: Devonian**

**Age Interval (Map column): D22** (57), Givetian (Middle Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at the east side of the railway from Yunnan to Vietnam, south of Ludou Village of Panxi in Huaning County, Yunnan Province.

It was named by Sun Yunzhu in 1945.

**Lithology and Thickness:**

Limestone. It is composed of gray, dark-gray marl and shelly limestone.

The formation is than 40 m thick.

**Relationships and Distribution:**

***Lower contact:***

The base is a faulted contact to the sandstone of the underlying Cuifengshan Group

***Upper contact:***

The top is a conformable contact to the sandstone of the overlying Haikou Fm.

***Regional extent:***

It is distributed in an area from Yuanjiang to Jianshui. The thickness varies considerably.

**Fossils:**

The formation contains abundant coral *Grypophyllumtenue, Maageea crassoseptatum, Neospsongophyllumisactis, Diplochone tungshanense, Columnaria* sp.; and brachiopods *Bornhardtina* ex gr. *uncitoides, B. (Parabornhardtina) yunnanensis, Acrothyris kwangsiensis, A. nanpanjiangensis, Eoreticularia maueri*.

**Age:**

Givetian (Middle Devonian)

**Depositional setting:**

It is interpreted as a platform to platform margin facies.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Nanwan Fm**

**Period: Devonian**

**Age Interval (Map column): D22-D31**  (78), Givetian to Eifelian (Middle Devonian)

**Province:** Henan

**Type Locality and Naming:**

The type section is located nearby Nanwan Reservoir, south of Xinyang City, Henan Province.

It was named by Beijing Geological College in 1961, and was published by “Regional Stratigraphical Scale of Center-South China Area” in 1974.

**Lithology and Thickness:**

Schist. It is mainly composed of two-mica plagioclase schist, epidote-bearing biotite blastogranular rock, biotite blastogranular rock and sericite quartz schist, belonging to chlorite schist facies in degree of metamorphism; and its protolith is inferred to be composed of silt, fine-grained sand and claystone.

In the Liulin-Silidian section of Xinyang from north to south it can be divided into three lithological members:

North Member (Dn1), more than 1000 m thick, consists of variegated sandy shale intercalated with a few fine-grained sandstone and siltstone;

Middle Member (Dn2), 2000-3000 m thick, is characterized by grayish-green and grayish-brown fine-grained sandstone to clayey siltstone and displays flysch rhythms similar to those of turbidity current sedimentation; and

South member (Dn3), more than 1500 m thick, is composed of thick-bedded siltstone and sandy claystone.

**Relationships and Distribution:**

***Lower contact:***

It is in faulted contact in south and north with the Sujiahe Group and the Guishan Fm respectively.

***Upper contact:***

***Regional extent:***

**Fossils:**

The fine-grained sandstone to siltstone of the middle member yield abundant fossil spores: *Archaeozonotriletes variabilis*, *Rhabdosporites langii*, *Cristatisporites triangularis*, *Apiculiretusispora granulata*, *Aneurosora graggsii* etc.; chitinozoans *Bruchitina*, *Conochitina*, *Rhabdochitina chavani*; scolecodonts *Nereidavus disjunctus*, *Menogenys summus*, *Comugenys decora*, as well as acritarchs.

**Age:**

Givetian to Eifelian (Middle Devonian)

**Depositional setting:**

It is interpreted as a marine terrigenous deposit environment.

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Niqiuhe Fm**

**Period: Devonian**

**Age Interval (Map column): D12** (6), Pragian (middle Early Devonian)

**Province:** Heilongjiang

**Type Locality and Naming:**

The type section is located in Jinshui and Handaqi area of Nenjiang County, Heilongjiang Province. There are two measured sections: the section at Erzhigou of Wudaogou in Heihe City and the Xigulanhe section, both listed in the Regional Report of “Woduhe Geological Map”(1:2,000,000) in 1976, with a thickness difference about 300 m. The Xigulanhe section is directly overlain by the Jinshui Fm, without the overlying volcanic rock. Hereby we would suggest accepting the Wudaogou section as stratotype for the Niqiuhe Fm.

It was named by Zhao Guisan et al. in 1957.

**Lithology and Thickness:**

Slate, siltstone. In the Erzhigou section of Wudaogou, the formation is dominated by gray clayey or sandy slate intercalated with siltstone and greywacke, and also intercalated with limestone lenses in its upper part.

The outcropped thickness of the formation is 389.3 m.

Westwards from Handaqi, the Niqiuhe Fm in the middle reaches of Guanniaohe River directly underlies the Huolongmen Fm without the volcanics of the Handaqi Fm; the thickness is up to 1000 m; and the lithology is dominated by siltstone and clayey slate, intercalated with pebble-bearing sandstone and a few crystalline limestone lenses, which may represent both the Niqiuhe Fm and the Jinshui Fm.

**Relationships and Distribution:**

***Lower contact:***

The basal boundary is unclear yet.

***Upper contact:***

The top is in a fault contact with the overlying Handaqi Fm. Westwards from Handaqi, the Niqiuhe Fm in the middle reaches of Guanniaohe River directly underlies the Huolongmen Fm without the volcanics of the Handaqi Fm.

***Regional extent:***

**Fossils:**

It yields brachiopods: *Coelospira pseudocamilla*, *Leptococlia sinica*, *Merista* sp., *Aulacella* sp.; corals: *Pleurodictyum* sp., ?*Syringaxon* sp.; and trilobites: *Phacops* sp., *Odontochile* sp.

**Age:**

Pragian (middle Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Niuerchuan Fm**

**Period: Devonian**

**Age Interval (Map column): D1-D31** (38), Givetian to Frasnian (late Middle to early Late Devonian)

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located between Jiangjia Courtyard and Wulongzhai of Wuwanggou Village of Niu’erchuan Town, Shanyang County. The reference section is at Xiaohongling of Xiaotai Town to Huotai of Xingping Town in Zhashui County, Shaanxi.

It was named by Shaanxi Team of Regional Geological Survey during measured Xiaohekou Geological Map (1:50,000) in 1968, and Du Dinghan et al. quoted formally in 1986.

**Lithology and Thickness:**

Siltstone. The lower part is composed of gray to light brownish-gray metamorphosed quartz siltstone and feldspathic quartz siltstone， intercalated with calcareous quartz sandstone and feldspathic quartz greywacke. The middle part is silty slate and calcareous silty slate, intercalated with metamorphosed fine-grained feldspathic quartz greywacke and quartz siltstone, and occasionally intercalated with silty crystalline limestone. The upper part is silty slate, intercalated with metamorphosed quartz siltstone and a few metamorphic fine-grained feldspathic quartz sandstones.

The formation is more than 3519.3 m thick in total.

**Relationships and Distribution:**

***Lower contact:***

Its base is not exposed.

***Upper contact:***

The top of the formation is a conformable contact to the metamorphosed fine-grained quartz sandstone of Chigou Fm.

***Regional extent:***

This formation is distributed in Zhouzhi, Shanyang, Shangnan area of south side of the Zhashui Group.

**Fossils:**

No mega fossils have yet been found in this formation. A few fossil spores: *Leiosphaeridium*, *Punctatisporites*, *Trematosphaeridium* in Dongzigoukou of Chefanggou; and *Aneurospora greggsii*, *Veruciretusispora magnifica* var. *magnifica*, *Samarisporites inaequus* etc. have been reported in middle and upper parts of Niuerchuan Fm in Jinqianhe section by the Xi’an Institute of Geology and Mineral Resources (1976-1977) and Zhou Zhengguo et al. (1992).

**Age:**

Givetian to Frasnian (late Middle to early Late Devonian)

**Depositional setting:**

In east of Shanyang, cross-bedding, ripples, drying crack and *Skolithos* facies trace fossils occur, which indicates an intertidal deposit environment; while in the west of Shanyang, horizontal-bedding markers are characteristic, which would indicate a weak hydrodynamic neritic shelf deposit environment.

**Additional Information**

The Niuerchuan Fm is the lowest formation of the Zhashui Gr.

Because its base is not exposed, the Niuerchuan Fm in Wuwanggou is only equivalent to the middle and upper parts of the Xiaotai to Huotai section. Its outcropping thickness is more than 1773 m. To the east, the metamorphic grade increases, and in Luoyugou area of Shanyang there are more intercalations of clayey dolomite, dolomite and marble interbeds; and to west, the content of clastic rock increases and carbonate rock decreases.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Oujiachong Fm**

**Period: Devonian**

**Age Interval (Map column): D32**  (69)

**Province:** Hunan

**Type Locality and Naming:**

The type section is located on two sides of Oujiachong to Zhushan Coal Mine Road of Xikuangshan in Xinhua, Hunan.

It was named by Huang Daxin in 1978 and Tan Zhengxiu quoted formally in 1987.

**Lithology and Thickness:**

Shale. It is characterized by black and yellowish-green shale or silty shale, intercalated with fine-grained muscovite sandstone and siltstone.

It is 116 m thick.

**Relationships and Distribution:**

***Lower contact:***

The base of the formation is marked by the appearance of siltstone and shale, therefore is easily to delimit from the thick-bedded limestone of the underlying Magunao member of Xikuangshan Fm; these are in a conformable contact with each other, and the lowermost interval has occasional intercalations of marl and dolomitic limestone.

***Upper contact:***

***Regional extent:***

This formation is distributed in Xinhua, Lianyuan, Xinshao areas in central Hunan.

**Fossils:**

It yields fish fossil *Bothriolepis* sp., plant fossil *Leptophloeum* sp., and a few inarticulata brachiopods.

**Age:**

Late Famennian (Late Devonian)

**Depositional setting:**

It is interpreted as a delta facies

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Panlongshan Fm**

**Period: Devonian**

**Age Interval (Map column): D3**  (43), Late Devonian

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located at Panlongshan of Xingzihe in Zhenba County, Shaanxi. The reference section is at Huoyanxi of Xinglongchang in Zhenba County.

It was named by Shaanxi Team of Regional Geological Survey during measured “Ziyang Geological Map”(1:200,000) in 1959, and was published by “The Regional Scale of Northwest China-Shaanxi Volume” in 1983.

**Lithology and Thickness:**

Limestone. Lower part, 70.7 m thick, is composed of gray thin- to medium-bedded banded nodular limestone, intercalated with thick-bedded micrite and calcareous sericitic slate.

The upper part, 72.4 m thick, is composed of gray thin- to medium-bedded micrite and dolomitic limestone intercalated with calcareous slate.

Often the uppermost part has an intercalation of a bed of oolitic hematite, which can be a marker for the top boundary of this formation.

The thickness becomes thinner from north to south, 143 m thick in Paishangou in Huoyanxi, and only 68 m thick in Panlongshan.

**Relationships and Distribution:**

***Lower contact:***

It is in conformable contact with the underlying Tiekuangliang Fm of Upper Devonian.

***Upper contact:***

It is in conformable contact with the overlying Early Carboniferous.

***Regional extent:***

This formation is distributed in Zhenba plateau glacier area in east side of Xinxiang.

**Fossils:**

Lower part yields brachiopods *Cyrtospirifer*, *Desquamatia*, *Schizophoria*; coral *Disphyllum*, *Pseudozaphrentis*, *Alveolites*; and conodont, spore etc..

The upper part yields brachiopods *Yunnanella*, *Yunnanellina*, *Tenticospirifer*, and spore fossils.

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Pingen Fm**

**Period: Devonian**

**Age Interval (Map column): D13-D21** (63), (late Early to early Middle Devonian)

**Province:** Guangxi, Yunnan

**Type Locality and Naming:**

The type section is located at eastern side of Sanchahe reservoir of Nachi Town in Nabo County, Guangxi.

It was named by Xian Siyuan et al. in 1980.

**Lithology and Thickness:**

Limestone. It is a set of thin-bedded silica-bearing banded limestone, clayey limestone, and dolomitic limestone sequences.

Lower member is grayish-black limestone and dolomitic limestone intercalated with siliceous bands.

The lower part of this formation possesses nodular limestone, partly intercalated with calcareous turbidites, with slump structure, wash-bedding etc.

Upper member is dominated by marl, limestone and dolomitic limestone, and is rich in siliceous bands.

It is 192 m thick in the type section.

**Relationships and Distribution:**

***Lower contact:***

It conformably overlies the Yujiang Fm.

***Upper contact:***

***Regional extent:***

It is widely distributed in southwest Guangxi and southeast Yunnan. Regionally, the lithology is relatively uniform, only containing phosphates in the lower part and intercalated with siliceous rocks in the upper part in Congzuo, Daxin, Debao; and with black shale in the lower part in Heshan of Longlin and Nabo.

**Fossils:**

Lower member yields ammonoid *Erbenoceras elegans*; tentaculites *Nowakia praecursor*, *N. barrandei*; conodont *Polygnathus* *perbonus*, *P. inversus*, etc.

Upper member contains tentaculites of the *Nowakia elegans* zone, *N. cancellata* zone, *N. rechteri* zone, and *N. holynensis* zone, and conodonts of *Polygnathus inversus* zone, *P.* *serotinus* zone, *P. c. patulus* zone and *P. c. partitus* zone.

**Age:**

Emsian to Eifelian (late Early to early Middle Devonian)

**Depositional setting:**

It is interpreted as a deep-water basin environment.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Pingtou Fm**

**Period: Devonian**

**Age Interval (Map column): D22** (41), Givetian (late Middle Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located between Wujiaba to Quanducun Village, 38 km south of Lixian County, Gansu.

It was named by Geological Team of West Qinling, and Qin Feng, Gan Yiyan formally quoted it as a lithological member in lower part of Yushuping Fm.

**Lithology and Thickness:**

Clastic rock. This formation, 2494 m thick in total, is composed of fine-grained clastic rock intercalated with carbonate rock

It is divided into five successive units:

a lowermost unit of dark-gray thin to medium-bedded limestone intercalated with calcareous slate and sandstone, 494 m thick;

greenish-gray sandy slate intercalated with thin-bedded sandstone and calcareous sandstone, 810 m thick;

dark-gray thin- to medium-bedded limestone intercalated with thick-bedded limestone, 220 m thick; dark-gray sandy slate intercalated with calcareous quartz sandstone, 865 m thick;

and an uppermost unit of dark-gray thin-bedded limestone intercalated with calcareous slate, 105 m thick.

**Relationships and Distribution:**

***Lower contact:***

It conformably overlies the Yuchiba Fm.

***Upper contact:***

***Regional extent:***

This formation is distributed in Dangchang in west of Xihanshui, Lixian County areas; the carbonate component increases eastward; and to west of Dongshan area, the facies changes into the carbonate platform facies of lower part of Honglingshan Fm. In Wujiashan of Chengxian County, east of Dongshan, the facies returns to clastic rock intercalated with carbonate rock which is called the Guangjinba Fm.

**Fossils:**

The limestone intervals yield abundant brachiopods *Stringocephalus* and coral *Pseudomicroplasma uralica*, *Argutastrea quadrigemina* etc.

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Pingyipu Gr**

**Period: Devonian**

**Age Interval (Map column): D11** (70), Lochkovian (Early Devonian)

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at Pingyipu of Pingwu County, Sichuan.

It was named by Zhao Yazeng, Huang Jiqing in 1931.

**Lithology and Thickness:**

Sandstone. The Group is defined as a set of purplish-red and grayish-green quartz sandstone, intercalated with silty mudstone.

The Group is newly divided into the Guixi Fm, Muerchang Fm, Guanyingmiao Fm and Guanshanpo Fm in the Jiangyou area.

It is more than 3000 m thick in total.

**Relationships and Distribution:**

***Lower contact:***

It overlies unconformably on Silurian.

***Upper contact:***

It is beneath marine mudstone and siltstone with brachiopod *Orientospirifer* fauna”

***Regional extent:***

**Fossils:**

*The group yields Yunnanolepis*, *Macropetalichthys*, *Limulus*, bivalve, ostracoda, inarticulata brachiopods, plant and trace fossils.

**Age:**

Lochkovian (Early Devonian)

**Depositional setting:**

**Additional Information**

The Group is newly divided into the Guixi Muerchang, Guanyingmiao and Guanshanpo Formations in the Jiangyou area.

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Pochengzi Fm**

**Period: Devonian**

**Age Interval (Map column): D3** (77), Late Devonian

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at Kalatage, Keziletage, south of Tuokexun County, Xinjiang.

It was named by Xinjiang No 2 Team of Regional Geological Survey in 1958, and was published by “The Regional Scale of Northwest China-Xinjiang” in 1981.

**Lithology and Thickness:**

Volcanics. Quartz porphyry tuffaceous lava. The Pochengzi Fm in the Xinger area includes three subformations:

The lower subformation is composed of quartz porphyry tuffaceous lava, tuffaceous sandstone, agglomeratic tuffaceous lava, sandstone, siltstone and limestone, 600-800 m thick.

The middle subformation is composed of tuffaceous sandstone intercalated with tuffaceous lava, tuffaceous conglomerate and limestone, 500-700 m thick.

The upper subformation is composed of quartz porphyry, quartz porphyry tuffaceous lava, tuffaceous conglomerate and tuffaceous sandstone intercalated with a few limestone lenses, 363 to 1120 m thick.

**Relationships and Distribution:**

***Lower contact:***

The Pochengzi Fm conformably overlies on middle Devonian.

***Upper contact:***

It has an unconformable upper contact to the overlying Gancaohu Fm of Lower Carboniferous.

***Regional extent:***

**Fossils:**

The middle subformation yields brachiopoda *Yunnanella*, *Atrypa*, *Schuchertella* etc.

The upper subformation yields brachiopod *Cyrtospirifer*, *Camarotoechia*.

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Pojiao Fm**

**Period: Devonian**

**Age Interval (Map column): D13** (55,58,61), early Emsian (late Early Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Village Pojiao, nearby Xiyang Street west of Guangnan County, Yunnan. The reference section is at Daliantang, about 15 km north of Guangnan City, Yunnan.

It was named by Yin Zanxun in 1938.

**Lithology and Thickness:**

Mudstone. It is characterized by sandy mudstone, mainly gray, grayish-green and purplish-red mudstone, silty mudstone and siltstone, and is 150 m thick.

**Relationships and Distribution:**

***Lower contact:***

The formation conformably overlies on the siltstone of Posongchong Fm.

***Upper contact:***

The formation is overlain by the chert-bearing limestone of Daliantang Fm.

***Regional extent:***

It is mainly distributed in Wenshan area of southeastern Yunnan. Sometimes it overlaps on the different strata of Cambrian or Ordovician, and thickness is 50-200 m.

**Fossils:**

It yields abundant brachiopods *Rostrospirifer tonkinensis* and *Dicoelostrophia punctate,* and coral *Calceola sandalina*, *Microcyclus intercalaris.*

**Age:**

early Emsian (late Early Devonian)

**Depositional setting:**

It is interpreted as an intertidal to subtidal zone environment.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Posongchong Fm**

**Period: Devonian**

**Age Interval (Map column): D1** (58,76), Lochkovian to Pragian (?) (Early Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located nearby Posongchong of Xizhang in Guangnan County, Yunnan.

It was named by Liao Weihua et al in 1978.

**Lithology and Thickness:**

Sandstone. It is a set of grayish-brown medium- to thick-bedded fine-grained sandstone, siltstone and silty mudstone.

It is 415 m thick.

**Relationships and Distribution:**

***Lower contact:***

It has an angular unconformable contact with underlying dolomite of Cambrian.,

***Upper contact:***

It is conformably overlain by the black carbonate mudstone of Pojiao Fm.

***Regional extent:***

It is distributed in Guangnan, Wenshan, Mengzi, Maguan, Xichou, Qiubei, Funing, southeast of Yunnan. It often overlaps on the Cambrian or Ordovician, and its thickness changes considerably.

**Fossils:**

It yields plant *Zosterophyllum australianum*, *Sucheocladus* sp., and fish fossils.

**Age:**

Lochkovian to Pragian (?) (Early Devonian)

**Depositional setting:**

It is interpreted as a non-marine shore facies deposit.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Pozhela Fm**

**Period: Devonian**

**Age Interval (Map column): D13-D21**  (76), Emsian to Eifelian (late Early to early Middle Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Daliantang to Pozhela, 8 k m northeast of Guangnan County, Yunnan.

It was named by Liu Weihua, Yun Yan et al. in 1978.

**Lithology and Thickness:**

Limestone. It is composed of dark-gray siliceous banded limestone, crystalline limestone and bioclastic limestone, intercalated with siliceous claystone and apatite-bearing claystone.

The thickness is 160 m.

**Relationships and Distribution:**

***Lower contact:***

The formation has a conformably basal contact to the underlying gray thick-bedded limestone of Daliantang Fm.

***Upper contact:***

The formation is overlain by grayish-brown apatite-bearing chert of Fenshuiling Fm.

***Regional extent:***

Itis mainly distributed in southeast Yunnan and western Guangxi.

**Fossils:**

It yields tentaculites of *Nowakia* *cancellata*, *N. richteri*, and *N. sulcata* zones and conodont *Polygnathus serotinus*.

**Age:**

Emsian to Eifelian (late Early to early Middle Devonian)

**Depositional setting:**

It is interpreted as deep-water platform basin facies deposits.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Pulai Fm**

**Period: Devonian**

**Age Interval (Map column): D22-D31**  (40), Givetian to Frasnian (late Middle to early Late Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Dangduogou, 24 km northwest of Diebu County, Gansu.

It was named by Cao Xuanduo et al. in 1987.

**Lithology and Thickness:**

It is dominated by fine-grained clastic rock.

Lower member, 53.3 m thick, is mainly black silty shale intercalated with thin- to medium-bedded micrite, with a top bed of more than 10 m of massive sparry algae-bearing sandy bioclastic limestone.

Upper member, 214.2 m thick, is mainly black to gray carbonate-bearing shale intercalated with a few thin-bedded lenses of sandy micrite.

**Relationships and Distribution:**

***Lower contact:***

It conformably overlies on the Xiawuna Fm.

***Upper contact:***

***Regional extent:***

**Fossils:**

The lower member contains abundant small size brachiopod and solitary coral and is characterized by tentaculites *Nowakia otomari* acme zone.

The lower part of upper member mainly yields *Nowakia* *postotomari*-*Wedekindella clarkei* assemblage zone, and the upper part has the coral *Grypophyllum mackenziense*-*Temnophyllum longiseptatum* assemblage zone.

Conodont *Icriodus symmetricus* and tentaculites *Striatostyliolina raristriata* appear on the top.

**Age:**

Givetian to Frasnian (late Middle to early Late Devonian)

**Depositional setting:**

It is interpreted as a neritic shelf to basin facies.

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Qiangge Fm**

**Period: Devonian**

**Age Interval (Map column): D32 (32),**

**Province:** Xizhang

**Type Locality and Naming:**

The type section is located at Qiangge of Taoba, Changdu County of Xizhang.

It was named by No 3 Regional Geological Team of Sichuan in 1972 and was published by Regional Geological Survey of Sichuan in 1982.

**Lithology and Thickness:**

Limestone. The Qiangge Formation is composed of grayish-black to black limestone and clayey limestone intercalated with biogenetic limestone and calcareous mudstone.

It is 380 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

It has a conformable contact to the underlying Zhuogedong Formation.

***Upper contact:***

It has a conformable contact to the overlying Wuqingna Formation.

***Regional extent:***

**Fossils:**

It yields abundant brachiopods: *Yunnanella hsikuangshanensis, Tenticospirifer tenticulum, Cyrtospirifer* sp.

**Age:**

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Qiankuntougou Fm**

**Period: Devonian**

**Age Interval (Map column): D13 (75),** Emsian (late Early Devonian)

**Province:** Nei Mongol

**Type Locality and Naming:**

The type section is located at Qikuntaogou of Aoji Village, Aohan Qi, Nei Mongol.

It was named by No. 2 Team of Nei Mongol Regional Geological Survey in 1967, and was published in 1978 by Lioning Compiling Group for Regional Stratigraphical Scale.

**Lithology and Thickness:**

Sandstone. The Formation, 1430 m thick, is dominated by feldspar sandstone, sandy slate, siltstone and basic volcaniclastics with limestone intercalations.

**Relationships and Distribution:**

Its upper and lower boundaries are not exposed.

***Lower contact:***

***Upper contact:***

***Regional extent:***

**Fossils:**

Coral *Wedekindophyllum* sp., *Amplexiphyllum* sp., *Chlamidophyllum* sp., *Rhizophyllum* sp., *Pachyfavosites* sp., *Favosites* sp.; and brachiopoda *Coelospira orientalis, Howellella* sp., *Acrospirife*r sp., *Plebejochonetes plebejus* have been reported from this formation.

**Age:**

Emsian (late Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Su Yangzen)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Qigaisu Gr**

**Period: Devonian**

**Age Interval (Map column): D2-D31 (17),**

**Province:** Qinghai

**Type Locality and Naming:**

The type section is located at west of Qigaisu River of northern slope of Kunlun Mts., Gelmu County of Qinghai Province.

It was named by No. 8 Team of Qinghai Petroleum Survey in 1958 and was published in Qinghai Compiling Group for Regional Stratigraphical Scale.

**Lithology and Thickness:**

In the type area, the Group recorded an incomplete thickness of 2194 m.

Volcanic rock. The lower part is composed of grayish dark and purplish-red volcanic rocks of andesite, rhyolite and lamprophyre.

Sandstone. The middle part is composed of grayish-green and purplish-red medium-fine-grained sandstone, siltstone and sandy slate intercalated with a few beds of conglomerate.

Slate. The upper part is purplish-red slate.

**Relationships and Distribution:**

***Lower contact:***

Its lower boundary is not exposed.

***Upper contact:***

The upper boundary is a disconformable contact with the overlying Lower Carboniferous.

***Regional extent:***

Eastward to Tuolahe River, it is 1982 m thick, and mainly consists of feldspar sandstone intercalated with volcanic breccia.

At Jucheshan, it consists of feldspar sandstone, pebbly sandstone, siltstone and basalt, is 881 m in thickness, and its upper part is dominated by volcanic lava intercalated with clastics that can be divided into several cycles, from basic to acidic, of volcanic eruptions and sedimentation.

**Fossils:**

Fossils of chitinozoans and spore have been found in the middle part, and fragments of Asterolepiformis and *?Protolepidodendron* in the upper part.

**Age:**

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Qigu Fm**

**Period: Devonian**

**Age Interval (Map column): D32 (41),** Famennian (latest Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Zayuhe, upper reaches of Chelagou River, Tanchang County of Gansu Province.

It was named by Li Youngjun and Yang Tianxi in 1987 and published by Li Youngjun in 1989.

**Lithology and Thickness:**

Limestone. The Lower part consists of thin- and medium-bedded limestone intercalated with calcareous slates and a few breccia limestones.

The Upper part consists of thick-bedded nodular limestone.

The recorded outcropping thickness is 802 m.

**Relationships and Distribution:**

***Lower contact:***

The base is a conformable contact with the slates of the underlying Longlinqiao Formation.

***Upper contact:***

The outcrops lack an upper contact to an overlying formation.

***Regional extent:***

**Fossils:**

The fossils are conodonts *Palmatolepis g. gracilis, P. d. delicatula, P. subperlobata*, and brachiopoda *Yunnanellina* spp.

**Age:**

Famennian (latest Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Qilijiang Fm**

**Period: Devonian**

**Age Interval (Map column): D3 1 (69),** Frasnian (early Late Devonian)

**Province:** Hunan

**Type Locality and Naming:**

The type section is located at Xikuangshan Hill, Xinhua County of central Hunan Province.

It was named by Wang Yuelung and Zhang Zhaojin in 1934 and was published by Wang Xiaoqing in 1938.

**Lithology and Thickness:**

Limestone. The lithology is mainly characterized by thick-bedded limestone, intercalated with clayey limestone and few shales and clayey siltstone, and contains abundant corals and brachiopods.

**Relationships and Distribution:**

***Lower contact:***

The lower boundary is drawn on the basis of the appearance of limestone and easily separated from the underlying sandstone of the Longkouchong Formation.

It rests conformably on the Baqi or Liujiang Formation in southern Hunan.

***Upper contact:***

***Regional extent:***

The formation is widely exposed in central Hunan with changeable thickness: 200 m in Lenchuijiang, 300 m in Lianyuan-Xinshao, 40 m in Xiangtan, and less than 10 m in Shaodong.

**Fossils:**

It contains corals *Phillipsastrea* sp., *Sinodisphyllum* sp., *Pseudozaphrentis* sp., *Hexagonaria* sp.; brachiopods *Tenticospirifer* sp., *Cyrtospirifer* sp., *Spinatrypa* sp.; ammonoid *Manticoceras* spp.; and stromatoporoids and ostracods.

**Age:**

Frasnian (early Late Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Tan Zenxiu)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Qilikashan Fm**

**Period: Devonian**

**Age Interval (Map column): D32  (8),**

**Province:** Heilongjiang

**Type Locality and Naming:**

The type section is located at Qilikashan Hill, about 50 km northwestern Mishan County of Heilongjiang Province.

It was named by Qu Guansen and others in 1984 and was published by Guo Shengzhe et al. in 1992.

**Lithology and Thickness:**

Tuffaceous sandstone. In the type locality, the formation is 102.8 m thick, and is composed of a series of purple to grayish-purple tuffaceous fine-grained sandstone, siltstone and slate intercalated with acidic, medium-acidic tuff and tuffaceous lava.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Laotudingzi Formation.

***Upper contact:***

Itis overlain by the Beixing Formation of Lower Carboniferous.

***Regional extent:***

**Fossils:**

The fossils in the siltstone are *Aphyllopteris* sp., *Psilophyton* sp., and *Hostimella* sp.

**Age:**

**Depositional setting:**

**Additional Information**

**Compiler**

(Su Yangzen)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Qingmen Fm**

**Period: Devonian**

**Age Interval (Map column): D21 (55),** Eifelian (early Middle Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Qingmen of Zhaotong County, Yunnan Province.

It was named by No 104 Team of Guizhou Petroleum Survey in 1972 and was published in 1978 by Yunai.

**Lithology and Thickness:**

Sandstone, limestone. The lower part of this formation is characterized by siltstone, quartz sandstone intercalated with iron-bearing beds and the upper part is dominated by clayey limestone, mudstone, fine grained dolostone.

It is 505 m thick.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Qujing Formation with *Stringocephalus* sp.

***Upper contact:***

It is overlain by the quartz sandstone of the Suotaoshan Formation.

***Regional extent:***

The main distribution of this formation is restricted to the area of northeast Yunnan and Yanbian of southwest Sichuan.

**Fossils:**

The formation contains brachiopoda *Bornhardtina* sp.

**Age:**

The age may be Eifelian (early Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Qingshiya Fm**

**Period: Devonian**

**Age Interval (Map column): D22-D31 (38),** Givetian-Frasnian (late Middle to early Late Devonian)

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located at Qingshiya of Xiahekou village, Shanyang County, Shaanxi Province.

It was named by Shaanxi Team of Regional Geological Survey in 1968, and was published by Du Dinghan in 1986.

**Lithology and Thickness:**

Slate. The formation is subdivided into three parts:

The lower part is composed of metamorphosed siltstone and sandstone with limestone intercalations that gradually changes upward to a rhythmical sequence of slate and siltstone.

The middle part consists of slate and phyllite intercalated with limestone and partly with siderite beds. The upper part is dominated by slate with limestone and siltstone intercalations.

The thickness is ranging from 1428 m to 3783 m.

**Relationships and Distribution:**

***Lower contact:***

The formation rests conformably on the Chigou Formation.

***Upper contact:***

The formation is overlain by the Tongyusi Formation.

***Regional extent:***

This formation is distributed at Sannan, Shanyang, Zhashui, Ningshaan. In the east of Shanyang, only the lower part outcrops and is characterized by deeply metamorphosed rocks, such as two-mica quartz schist and garnet-bearing two-mica quartz schist intercalated with amphibole meta-conglomerate and graphitic marble, and is 1428 m thick. Westward to Ningshaan-Taibai area, it consists of clastics with 800-1500 m thickness.

**Fossils:**

At the Eryuhe section, the lower part of the formation yields brachiopods *Atrypa richthofeni, A. kansuensis, “Ambocoelia” sinensis, Emanuella* sp., *Schizophoria* sp.; and spores *Arachaeozonotriletes variabilis, Verouciretusispora robusta*. The important fossil spores in the upper part are *Stenoozonotriletes conformis, Diducites versabilis, Convolutispora opprassa* and *Verrucosisporites* sp.

**Age:**

Givetian-Frasnian (late Middle to early Late Devonian)

**Depositional setting:**

**Additional Information**

The Qingshiya Fm is the second highest formation of the Zhashui Gr.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Qingshuigou Fm**

**Period: Devonian**

**Age Interval (Map column): D21 (41),**

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Qingshuigou, 5 km southwest of Huangzhu Village, Cheng County of Gansu Province.

It was named by Geological Metallurgical Exploration Co. of Gansu in 1981, and was published by Zhao Weijun in 1983.

**Lithology and Thickness:**

Slate. The lower part of the Qingshuigou Formation is characterized by dark-gray to black carbon-bearing siliceous slate and chert.

Dolostone. The upper part of the formation consists of thick-bedded to massive marble intercalated with fine-grained dolostone. It is 383 to 550 m thick.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Wujiashan Formation.

***Upper contact:***

***Regional extent:***

**Fossils:**

The lower part of the Qingshuigou Formation yields microflora *Leiofusa* cf. *puluitatis, L.* aff. *fusiformis, L. bicornuta, Leiospheridium* sp., *Trachysphaeridium* sp.

The upper part of the formation contains coral *Utaratuia gansuensis, Thamnopora* sp., *Dendrostella* sp., *Alveolites* sp. and stromatoporoids *Paramphipora* sp., *Amphipora* spp., *Actinostroma* sp.

**Age:**

The microflora is considered as Silurian age, whereas the coral *Utaratuia* is an index fossil of Eifelian, therefore, it is uncertain if the two parts of the formation are continuous deposits.

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Qinzhou Fm**

**Period: Devonian**

**Age Interval (Map column): D1 1-2 (62),** Lochkovian to Pragian (Early Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at Daoliucun village of Bancheng Town, Qinzhou, Guangxi, and the reference section is at Beijuntang of Zhangmu County, Yulin, Guangxi.

It was named by proposed by Guangxi Regional Geological Survey in 1974 and was published in 1978 by Wang Xiafeng.

**Lithology and Thickness:**

Shale. The formation consists of a series of grayish-black to black shale, light-gray thin-bedded silty mudstone, siltstone and siliceous shale with a yellow-white quartz sandstone at the base.

At the Daoliucun section, it is 600 m thick.

**Relationships and Distribution:**

***Lower contact:***

The formation rests conformably on the Fangcheng Fm of Upper Silurian.

***Upper contact:***

***Regional extent:***

**Fossils:**

This unit at Zhangmu includes five successive *Monograptus* graptolite zones from *M.* cf. *uniformis* zone upward to *M.* *yukonensis* zone;

four brachiopoda assemblage zones: *Spiriferina supramarginalis, Grayina magnifica, Quadrithyris robusta-Boucotia* sp. and *Orientospirifer wangi*;

and fragments of trilobites, tentaculites, and plants.

**Age:**

Lochkovian to Pragian (Early Devonian)

**Depositional setting:**

**Additional Information**

The name of Qinzhou Fm is proposed by Guangxi Regional Geological Survey in 1974 and was published in 1978 by Wang Xiafeng. Depending on biozones, it was further divided into three formations, the Beijuntang Fm, the Lianghetang Fm and the Zhangmu Fm by Guangxi Regional Geological Survey (1986).

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Qiongcuo Fm**

**Period: Devonian**

**Age Interval (Map column): D1-2 (33),** Early to Middle Devonian

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at Niuchang of Zhongzha, Batang County, Sichuan Province.

It was named by No 3 Team of Sichuan Geological Survey in 1974 and was published in 1978 by Sichuan Compiling Group for Regional Stratigraphical Scale.

**Lithology and Thickness:**

Limestone. The Qiongcuo Formation, 231 m thick, is composed of dark-gray to grayish-black thick-bedded or massive crystalline limestone partly intercalated with chert, with a 1-m-thick bed of sandstone at the base.

**Relationships and Distribution:**

***Lower contact:***

It is underlain by the Gerong Formation.

***Upper contact:***

It is overlain by the Cangna Formation.

***Regional extent:***

It is distributed in Selun and Batang of Sichuan and areas of Zhongdian of northeast Yunnan.

**Fossils:**

It contains abundant coral *Favosites* spp. and *Pachyfavosites* spp., stromatoporoids and ostracods.

**Age:**

Early to Middle Devonian

**Depositional setting:**

It is interpreted as a carbonate platform environment.

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Qizinafu Gr**

**Period: Devonian**

**Age Interval (Map column): D3 (15),** Late Devonian

**Province:** Xinjiang

**Type Locality and Naming:**

The Qizinafu Group was derived from the Qizinafu series by De Terra in 1928, who gave the name for a series of purple-red sandstone, conglomerate and volcanic rocks developed in the area south of Yecheng, Xinjiang, but no type section was given.

**Lithology and Thickness:**

Sandstones. In the Yecheng area, the Qizinafu Group is 2000 m thick, and is composed of conglomerate, feldspar sandstone, calcareous sandstone, siltstone and shale.

In the south slope of Kelitag Hill near Mingfeng County, the Group is 729 m thick, and contains *Leptophloeum rhombicum* within the fifth bed of carbonaceous sandstone.

The Group distributed in the middle reaches of Liangliumu River has brown thick-bedded conglomerate in the lower part, 200-300 m in thickness, and grayish-green fine-grained sandstone and siltstone in the upper part, 1500 m in thickness.

In the upper reaches of Yayike River, south of Mingfeng, the Qizinafu Group is dominated by purplish-red, purple and grayish-green sandstone, feldspar sandstone and calcareous siltstone, 1600-2400 m thick.

**Relationships and Distribution:**

***Lower contact:***

It rests unconformably on the formations of various ages.

***Upper contact:***

It is conformably overlain by the Lower Carboniferous with corals.

***Regional extent:***

Yecheng area, Mingfeng County.

**Fossils:**

In the south slope of Kelitag Hill near Mingfeng County, the Group contains *Leptophloeum rhombicum.*

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Qiziqiao Fm**

**Period: Devonian**

**Age Interval (Map column): D22-D31 (68, 69),** late Middle Devonian to early Late Devonian

**Province:** Hunan

**Type Locality and Naming:**

The type section is located at Wanloushan Hill, Qiziqiao Village of Xiangxiang County, Hunan Province.

It was named by Tian Qijun, Wang Xiaoqing and Xu Yuandao in 1933.

**Lithology and Thickness:**

Limestone. In the type area, it is 358 m thick and is composed of thick-bedded limestone intercalated with dolomite limestone and with dolostone in its lower part. The formation has a relatively persistent lithology and varies in thickness from 200 m to 1000 m.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Yijiawan, Huanggountang and Tiaomajian Formations.

***Upper contact:***

It is overlain by Longkouchong, Baqi and Shetianqiao Formations, respectively, in different sedimentary regions.

***Regional extent:***

Central Hunan

**Fossils:**

The lower part yields brachiopod *Stringocephalus burtini.*

**Age:**

late Middle Devonian to early Late Devonian

**Depositional setting:**

The formation is characterized by carbonate rocks on the platform of central Hunan.

**Additional Information**

**Compiler**

(Tan Zenxiu)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Qujing Fm**

**Period: Devonian**

**Age Interval (Map column): D22 (55, 57, 58),** Middle Devonian

**Province:** Yunnan

**Type Locality and Naming:**

The reference section is at Panxi of Huaning County, Yunnan Province.

It was named by Prof. Sun Yunzhu, but no type section was given.

**Lithology and Thickness:**

Limestone. This formation, 1312 m thick, is mainly composed of gray medium- to thick-bedded limestone, clayey limestone and dolomitic limestone.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Haikou Formation.

***Upper contact:***

***Regional extent:***

**Fossils:**

This formation contains brachiopod *Stringocephalus obesus,* coral *Temnophyllum* spp., stromatoporoids and ostracods.

**Age:**

Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Ranwu Gr**

**Period: Devonian**

**Age Interval (Map column): D2-3 (26),** Middle to Late Devonian

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located at Ranwu of Zuogong County, Xizang.

It was named by Sichuan Team of Regional Geological Survey and Nanjing Institute of Geology and Paleontology in 1982.

**Lithology and Thickness:**

Dolostone. In the type area, the Group is incomplete, and is characterized by grayish and yellow medium- and thick-bedded dolostone and dolomitic limestone intercalated with limestone and basalt.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Dingzonglong Formation.

***Upper contact:***

***Regional extent:***

It is distributed in Zuogong and Ranwu area along the Nujiang River.

**Fossils:**

The upper part yields coral *Zaphrentis* sp.

**Age:**

Middle to Late Devonian

**Depositional setting:**

It is interpreted as a platform lagoon.

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Reer Gr**

**Period: Devonian**

**Age Interval (Map column): D1 (39),** Early Devonian

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at the area 55 km north of Ruoerge County, Sichuan.

It was named by Xi’an Institute of Geology and Mineral Resources and No. 1 Team of Gansu Regional Geological in 1973, and published by Qinfeng and Ganyan in 1976.

**Lithology and Thickness:**

Sandstone. Lower part of the Group, 500 m thick, is composed of a variegated alternation of siltstone, sandstone and shale intercalated with thin- to medium-bedded limestone and clayey limestone.

The upper part, 1223.6 m thick, consists of cyclic deposits of purplish-red and grayish-green conglomerate, pebbly sandstone and sandstone siltstone

Eastward, the clastics of the lower part become coarser grained and increase in thickness, and the clastics of the upper part become finer grained and decrease in thickness.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Silurian Bailongjiang Group.

***Upper contact:***

***Regional extent:***

**Fossils:**

Lower part of the Group contains abundant coral *Squameofavosites thetidis, Favosites admirabilis, Lecomptia* sp., *Qinlingopora* sp., and brachiopods *Protothyris* sp., *Howellella* sp.

The upper part yields plant *Zosterophyllum* cf. *yunnanicum, Drepnophycus spinaeformis* and *Taeniocrada* cf. *decheniana*.

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Rongxian (Ronghsian) Fm**

**Period: Devonian**

**Age Interval (Map column): D32 (58, 64, 65),** Famennian (latest Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at the area near Damiaoshan (=Rongxian) city of Guangxi Zhuang Autonomous Region, but no type section was given.

It was named by Tian Qijun (Tien, C. C.) in 1938.

**Lithology and Thickness:**

Limestone. This formation is composed of light-gray to grayish-white medium- to thick-bedded arenite, oolitic limestone, pebbly limestone and dolomitic limestone with algal-laminated bedding or bird-eye structures. It is partly characterized by the development of mud-mounds bearing *Renalcis* and by oncolitic limestone.

The thickness varies from hundreds meters to more than 1000 m.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Guilin Formation.

***Upper contact:***

***Regional extent:***

The Rongxian Formation is widely distributed in the entire Guangxi region and southern Hunan.

**Fossils:**

Megafossils are rare, with only few ostracods, bivalves, rhynchonellid brachiopoda and Palmatolepid conodonts recorded in some sections.

**Age:**

Most of Rongxian Formation is thought to be Famennian (latest Devonian) in age, but part may extend downward into Frasnian.

**Depositional setting:**

It is interpreted as a restricted platform to upper slope setting.

**Additional Information**

Yin et al. (1992) considered that the lithology of so-called Rongxian Formation in Guilin area is quite different with that in Rongxian type area. In Guilin area, it is characterized by laminated limestone with fenestral structures representing a restricted platform environment, whereas in the type area it represents an open platform or slope depositional condition. Therefore, Yin suggested a name of Dongcun Formation specifically for those Famennian stratigraphic units developed on the restricted platform of Guangxi.

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Sa’arming Fm**

**Period: Devonian**

**Age Interval (Map column): D22 (13,77),** Middle Devonian

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at the Sa'arming Hill, Hejing County of Xinjiangm, and the reference section is at the west of Daxifeng Peak, south of Sairuimu River, Hejing County of Xinjiang.

It was named by Xinjiang Regional Geological Survey in 1960, and published by Northwest China Regional Stratigraphical Scale (Xinjiang Volume) in 1981.

**Lithology and Thickness:**

Limestone. At the reference section, the Sa’arming Formation consists of gray to grayish-white medium- to thick-bedded dolomitic limestone with detritus limestone, and is 2533 m in thickness.

Limestone. At Paersabulak, east of Bostan Lake, the Sa’arming Formation is characterized by thick-bedded limestone intercalated with thin-bedded clayey limestone and breccia limestone, and is more than 250 m in thickness.

Metamorphosed rocks. Eastward to Kelakeziler Hill, the Formation is dominated by metamorphosed rocks, volcanic clastics and limestone, and is 439 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Alatag Formation.

***Upper contact:***

***Regional extent:***

**Fossils:**

Some fossils of *Stringocephalus* sp., *Temnophyllum* sp., *Pseudomicroplasma* sp. *Thamnopora* sp. and stromatoporoids have been found in the limestone and dolomitic limestone of southeast Bayingbuluk, and *Stringocephalus* sp., *Atrypa* sp., *Favosites* sp., *Neospongophyllum* sp., *Disphyllum* sp. were found in the upper reaches of Chahanwusu River.

At Paersabulak, east of Bostan Lake, the Sa’arming Formation contains *Temnophyllum* sp., *Grypophyllum* sp., *Thamnophyllum* sp. and *Atrypa* sp.

Eastward to Kelakeziler Hill, it yields *Heliolites* sp., *Favosites* sp., *Cyathophyllum* sp., *Cladophyllum* sp.

**Age:**

Middle Devonian

**Depositional setting:**

**Additional Information**

The relationship between these sections is still unclear.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Sanhekou Gr**

**Period: Devonian**

**Age Interval (Map column): D1-2 (49),** Early to Middle Devonian

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at the area from Sanhekou of Wudu to Kanxian, Gansu Province.

It was named by Geological Team of West Qinling in 1963 and was published in 1976 by Qinfeng and Ganyan.

**Lithology and Thickness:**

Sandy claystone (metamorphic), volcanic rocks. The Sanhekou Group was subdivided by Yang Zhucai (1991) into three formations:

The lower formation is characterized by sericitic phyllite intercalated with thin-bedded nodular limestone.

The middle formation consists of medium-acidic tuff rocks.

The upper formation is composed of thin- to medium-bedded limestone intercalated with phyllite.

In the area from east of Kanxian to Jinjiahe of Nuoyang, all three formations of the Group contain basic- to intermediate-acidic volcanics and tuff rocks.

Incomplete outcrops range from about 4501 to 11237 m thick.

**Relationships and Distribution:**

***Lower contact:***

The Group is underlain by the Silurian Bikou Group.

***Upper contact:***

The Group is overlain by the Carboniferous.

***Regional extent:***

**Fossils:**

The fossils recorded are *Favosites regularissimus, F. diformis, Squameofavosites obliquespinus, Pachyfavosites regularis, Emmonsia* sp., *Caliapora* sp., *Lyrielasma* sp., *Euryspirifer* sp., *Paramphipora* sp., *Anostylostroma* sp.

**Age:**

Early to Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Sanmentan Fm**

**Period: Devonian**

**Age Interval (Map column): D32 (72),** Famennian (latest Devonian)

**Province:** Jiangxi

**Type Locality and Naming:**

The type section is located at the area near Sanmentan of Xiashanxu Village, Yudu County, Jiangxi Province.

It was named by Geological Team of Jiangxi.

**Lithology and Thickness:**

Mudstone, sandstone. The lower part of the Sanmentan Formation is composed of yellow calcareous mudstone and grayish-white feldspar quartz sandstone.

The upper part of the Formation consists of grayish-white, grayish-green, purplish-red, and yellowish-green coarse-grained sandstone, fine-grained sandstone and siltstone.

The thickness is 455 m.

**Relationships and Distribution:**

***Lower contact:***

The unit is in conformable contact with the underlying Zhongbeng Formation.

***Upper contact:***

The unit is in conformable contact with the overlying Lower Carboniferous.

***Regional extent:***

**Fossils:**

The lower part of the Sanmentan Formation contains brachiopoda *Yunnanella synplicata, Y. hunanensis, Cyrtospirifer* cf. *sinensis, Tenticospirifer* sp.

The upper part of the formation yields flora *Leptophloeum rhombicum, Sublepidodendron mirabile, S. wushiense, Lepidodtrobus grabaui.*

**Age:**

Famennian (latest Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Sanglongtan Fm**

**Period: Devonian**

**Age Interval (Map column): D3 (78),** Late Devonian

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at the area near Shangmaoniuping, 10 km north of Lude Village, Yongsheng County of Yunnan Province.

It was named by Paleontological Group of Yunnan Bureau of Geology in 1972 and published by Yunnan Regional Stratigraphical Scale in 1978.

**Lithology and Thickness:**

Limestone. This Formation, 157 m thick, is composed of gray thin- to medium-thick-bedded limestone, intercalated with siliceous rocks and few beds of sandstone at the base.

In the Dacaozi area, it changes into oolitic limestone.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Shangmaoniuping Formation.

***Upper contact:***

It is disconformably overlain by Triassic sandstones.

***Regional extent:***

**Fossils:**

This Formation contains brachiopoda *Yunnanellina* sp., *Cyrtospirifer* sp.

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

In the Dacaozi area, it changes into oolitic limestone.

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shabajiao Fm**

**Period: Devonian**

**Age Interval (Map column): D13 (29),** Early Devonian

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Malutang, Shidian County of Yunnan Province.

It was named by the No. 3 Team of the No.1 Yunnan Regional Geological Survey in 1980.

**Lithology and Thickness:**

Dolomite. The Shabajiao Formation, 200 m thick, consists of coarse-grained dolomite and dolomitic limestone.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Wanjiacun Formation.

***Upper contact:***

***Regional extent:***

It is distributed in areas of Baoshan and Shidian, western Yunnan.

**Fossils:**

The Shabajiao Formation yields the conodont *Polygnathus perbonus.*

**Age:**

Early Devonian

**Depositional setting:**

It is interpreted as a lagoon environment

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shaliushui Gr**

**Period: Devonian**

**Age Interval (Map column): D3 (19, 20),** Famennian (latest Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Shaliushui, north of Jinyuan County, Gansu Province.

It was named by the No. 603 Team of the Gansu Regional Geological Survey in 1963.

**Lithology and Thickness:**

Sandstone. At the type section, the Shaliushui Group, 600 m thick, consists of purplish-red, grayish-green and grayish-white pebbly sandstone, quartz sandstone and siltstone with a 20-m-thick bed of quartz-rich conglomerate.

**Relationships and Distribution:**

***Lower contact:***

In the Hongshiwan of Shajiatang, west of Zhongwei, the Group rests unconformably on the Middle Cambrian Xiangshan Group.

***Upper contact:***

***Regional extent:***

**Fossils:**

The siltstone of the lower part yields flora *Leptophyloeum rhombicum, Sublepidodendron* cf. *wushiense, Sphenopteris* sp.

In the Hongshiwan of Shajiatang, west of Zhongwei, the group contains fish fossils *Remigolepis zhongningensis, Dipnoi* sp. and flora *Leptophyloeum rhombicum.*

**Age:**

Famennian (latest Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shanjiang Fm**

**Period: Devonian**

**Age Interval (Map column): D11 (27),** Early Devonian

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located near Aolengcuo Village, Lijiang County of Yunnan Province.

It was named by Duan Yanxu, Li Dingrong and Lengconglin in 1974 and was published by Yu Changmin and Liao Weihua in 1978.

**Lithology and Thickness:**

Limestone. This formation is characterized by dark-gray bioclastic limestone intercalated with a few beds if yellow calcareous shale.

It has a maximum thickness of 349 m.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Upper Silurian.

***Upper contact:***

***Regional extent:***

**Fossils:**

This formation contains corals *Favosites* sp., *Chalcidophyllum* sp., and tentaculites *Paranowakia bohemica*.

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shangdaminshan Fm**

**Period: Devonian**

**Age Interval (Map column): D32 (5),** Famennian (latest Devonian)

**Province:** Heilongjiang

**Type Locality and Naming:**

The type section is located east of Daminshan Hill, south of Zadunhe River of Mianduhe Town of Da Hinngan Ling, Heilongjiang Province.

It was named by Ning Qisen et al. in 1958

**Lithology and Thickness:**

Tuff. The Shangdaminshan Formation is characterized by grayish-green andesite porphyry tuff and tuffaceous sandstone intercalated with thin beds or lenses of purplish-red limestone, and has tuffaceous conglomerate and breccia at the base.

In the type area, this formation is more than 199 m.

**Relationships and Distribution:**

***Lower contact:***

In the type area, this formation rests conformably on the Xiadaminshan Formation.

***Upper contact:***

In the type area, this formation is overlain by volcanics of unknown age.

***Regional extent:***

**Fossils:**

The limestone includes ammonoids of the *Cheiloceras subpartitum* Zone and *Platyclymenua walcotti* Zone, and corals *Nalivkinella daminshanensis.*

**Age:**

Famennian (latest Devonian)

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shanglun Fm**

**Period: Devonian**

**Age Interval (Map column): D13 (65),** Emsian (late Early Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at Shanglun Village, Miaohuang Town of Xiangzhou County, Guangxi.

It was named by Liu Jinrong Zhile in 1978.

**Lithology and Thickness:**

Dolomite. The Shanglun Formation consists mainly of gray to dark-gray medium- to thick-bedded dolomite intercalated with a few clayey limestone beds.

In the type area, the Formation is about 185 m thick.

**Relationships and Distribution:**

***Lower contact:***

The lower boundary is separated from underlying Yujiang Formation at the appearance of dolostone.

***Upper contact:***

***Regional extent:***

It is mainly distributed in the west side of Dayaoshan Mt. starting from Litang in south to Jinxiu, Tongmu, Qijian at north, and the thickness decreases from south to north.

**Fossils:**

The Shanglun Formation has poor fossils.

**Age:**

Emsian (late Early Devonian)

**Depositional setting:**

It is interpreted as a restricted platform environment.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shangmaoniuping Fm**

**Period: Devonian**

**Age Interval (Map column): D31 (78),** Frasnian (early Late Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located between Lagude and Shangmaoniuping Villages, 19 km north of Lude, Yongsheng County, Yunnan Province.

It was named by the Department of Stratigraphy and Paleontology, Yunnan Bureau Of Geology and Mineral Resources in 1972, and was published in 1978 by Yunnan Compiling Group for Regional Stratigraphical Scale.

**Lithology and Thickness:**

Limestone. The Formation, 250 m thick, is characterized by gray to dark-grayish clayey limestone with thin-bedded oil shale.

**Relationships and Distribution:**

***Lower contact:***

It is underlain by limestone of the Lagude Fm.

***Upper contact:***

It is overlain by sandstone of the Sanglongtan Fm.

***Regional extent:***

**Fossils:**

It yields Leiorhynchid brachiopoda.

**Age:**

Frasnian (early Late Devonian)

**Depositional setting:**

It is interpreted as a slope facies

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shangputonggou Fm**

**Period: Devonian**

**Age Interval (Map column): D12 (40),** Pragian (Early Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Putonggou, 3.2 km east of Zanwa, Ruerga County Gansu Province.

It was named by the Xi’an Institute of Geology and Mineral Resources in 1974, and was published in 1976 by Qinfeng and Gan Yan.

**Lithology and Thickness:**

Dolomitic slate. The Shangputonggou Formation, 337.4 m thick, is composed of purplish-red and grayish-green dolomitic silty slate with sandy limestone, and intercalated with a few beds of dolomite in the upper part.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Xiaputonggou Formation.

***Upper contact:***

***Regional extent:***

Westwards to Luqu and Diebu, the thickness thins to 100 m, and increases to 505.7 m in Xigeershan hill.

**Fossils:**

It contains *Qinlingopora sichuanensis-Q. xiqinlingensis* Assemblage Zone in the lower part and *Thamnopora elegantula-Favosites compositus* Assemblage Zone, *Nymphorhynchia? nympha-Howellella latimina* Assemblage Zone in the upper part.

**Age:**

Pragian (Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shaodong Fm**

**Period: Devonian**

**Age Interval (Map column): D32 (69),** uppermost Famennian (latest Devonian)

**Province:** Hunan

**Type Locality and Naming:**

The type section is located at Liujiatang, northwest of Jieling Town, Hunan Province. The reference section is at Malanbian Village of Xinshao County, Hunan Province.

It was named by Yoh Senxun and Hou Hongfei in 1962.

**Lithology and Thickness:**

Fine-grained clastics. The Shaodong Formation, 70-150 m thick, is characterized by the development of fine-grained clastics, mainly shale, siltstone and fine-grained sandstone, intercalated with thin-bedded or lenses limestone.

**Relationships and Distribution:**

***Lower contact:***

The Formation rests conformably on the Oujiachong Formation, and this lower boundary is generally assigned on the basis of the appearance of marine beds.

***Upper contact:***

***Regional extent:***

It is mainly distributed in the central Hunan.

**Fossils:**

The fossils are corals: *Cystophrentis* spp., *Caninia* spp., *Ceriphyllum* sp.,

Brachiopoda: *Cyrtospirifer* sp., *Ptychomaletechia kinglinensis,*

Conodonts: *Bispathodus aculeatus pulumulus-Clydagmnathus cavusformis* fauna; and

Foraminifera: *Septatournayella rauserae, Qusiendothyra communis.*

**Age:**

uppermost Famennian (latest Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shawan Fm**

**Period: Devonian**

**Age Interval (Map column): D22 (51),** Givetian (late Middle Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located near Shawan, 5 km north of Linjian of Winxian County of Gansu Province.

It was named by Lin Zhile in 1966 and was published by Zhang Zhuqi in 1978.

**Lithology and Thickness:**

Sandstone. The Shawan Formation, 64 m in thickness, consists of brown quartz sandstone and calcareous sandstone intercalated with dark-gray shale and siltstone and a few nodular clayey limestone and lithoclastic limestone.

In the east of Winxian, the shale and sandy shale with ferruginous concretions are well developed in the lower part of this Formation.

In the west of Winxian, the Formation contains several beds of hematite in its lower part, and the thickness increases to 81-92 m.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Lengbuzi Formation.

***Upper contact:***

***Regional extent:***

Winxian region.

**Fossils:**

The limestone contains corals *Crassalveilites incrassatus, Scoliopora denticulate, Dignophyllum* sp., *Disphyllum* sp., *Temnophyllum* sp.

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shawozi Fm**

**Period: Devonian**

**Age Interval (Map column): D31 (70),** Frasnian (early Late Devonian)

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located near Shawozi Village, Ganxi Town, Beichuan County of Sichuan Province.

It was named by Yoh Senxun in 1956.

**Lithology and Thickness:**

Dolomite. The Shawozi Formation, 35 m thick, is composed of grayish-white massive dolomite intercalated with clayey limestone bearing stromatoporoids and algae-laminated limestone.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

***Regional extent:***

The Formation is widely distributed in Longmenshan Mt. area with a persistent lithology, but regionally it has a maximum thickness of 550 m.

**Fossils:**

The fossils are rare, and occasionally include *Yarphyllum elegantum, T. zhongguoensis, T. stroseptatum, ongmenshanophylloides sichuanensis.*

**Age:**

Frasnian (early Late Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shetianqiao Fm**

**Period: Devonian**

**Age Interval (Map column): D31 (68),** Frasnian (early Late Devonian)

**Province:** Hunan

**Type Locality and Naming:**

The type section is located at Shetianqiao village, Shaodong County, Hunan Province.

It was named by Tian C.C., Wang Xiaoqing and Guo Shaoyi in 1929.

**Lithology and Thickness:**

Shale. The formation is characterized by shale and marl intercalated with limestone and clayey limestone.

It has a maximum thickness of 332 m; in Heqing of Lenshuijiang and Gaoping of Liuyang, it recorded a minimum thickness of only tens of meters.

**Relationships and Distribution:**

***Lower contact:***

It is underlain by various formations in different areas:

*Longkouchong Sandstone* at Shetianqiao of Shaodong;

*Qilijiang Limestone* at Qiziqiao of Xiangxiang, Xikuangshan of Lengshuijiang and Huaqiao of Xingshao;

*Qiziqiao Limestone* at Yangtaang of Xingshao, Heqing of Lengshuijiang, Gaoping of Liuyang, Xiaodong of Lingling.

***Upper contact:***

***Regional extent:***

This Formation is mainly exposed in central and south Hunan.

**Fossils:**

The main fossils in this formation are

ammonoids: *Manticoceras* spp.,

conodonts: *Palmatolepis* spp., *Ancyrognathodus triangularis*,

corals: *Phillipsastrea* sp., *Mictophyllum* sp., *Pseudozaphrentis* sp., *Sinodisphyllum* sp., *Hunanophrentis* sp.,

brachiopods: *Desquamatia* sp., *Spinatrypa* sp., *Spinatrypina* sp., *Cyrtospirifer* sp., *Rigauxia* sp.

**Age:**

Frasnian (early Late Devonian)

**Depositional setting:**

It is interpreted as a shallow open platform setting.

**Additional Information**

**Compiler**

(Tan Zenxiu)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shifang Fm**

**Period: Devonian**

**Age Interval (Map column): D22**, late Middle Devonian

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at Trough 710, east of Shuimogou, Yuejiashan Hill of Shifang County, Sichuan Province.

It was named by Wang Shitao and Li Xueren in 1988.

**Lithology and Thickness:**

Breccia. The Formation is characterized by dark-gray breccia with phosphorite containing sulfur, phosphorus, aluminum and strontium, and by grayish claystone with pyrite.

In the type area, the Formation is only 7.35 m thick.

**Relationships and Distribution:**

***Lower contact:***

The unit is unconformable underlain by the Sinian Danying Dolomite Fm.

***Upper contact:***

The unit is disconformably overlain by the Upper Devonian Shawozi Fm which yields *Cyrtospirifer sinensis* and *Atrypa* spp.

***Regional extent:***

The Shifang Formation is mainly distributed in Pengxian, Shifang, Gunxian area of middle section of Longmenshan Mts.

**Fossils:**

It contains fish fossils Bothriolepis spp.

**Age:**

late Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shiifang Gr**

**Period: Devonian**

**Age Interval (Map column): D11 (51),** (Early Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located Mingbaogou - Lingjiang area, and the reference section is located at Mingbaogou, northwestern Wenxian County of Gansu Provence.

It was named by Ye Maoquam and others in 1960, and was published in 1976 by Qinfeng and Gan Yiyan.

**Lithology and Thickness:**

Slate. The Group is dominated by dark greyish sandy slate intercalated with fine-grained sandstone rich in organic materials. The middle and upper parts of the Group contain several beds of siliceous conglomerates and pebbly coarse-grained sandstone. Limestone is rare and is only seen in the upper part of the Group in Mingbaogou where it is characterized by nodular limestone and sandy limestone.

The Group is 925-1550 m thick.

**Relationships and Distribution:**

***Lower contact:***

The Group rests disconformably or with an angular unconformably on the Gangou Formation of Lower Cambrian.

***Upper contact:***

***Regional extent:***

**Fossils:**

The fossils mainly developed in the upper part of the Group are

corals: *Squameofavosites bohemicus, Favosites* cf*. parastriatoporoides*, *Aulacophyllum* sp.,

brachiopods: *Protathyris sibirica, Howellella laeviplicata labilis*.

**Age:**

(Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shijiagou Fm**

**Period: Devonian**

**Age Interval (Map column): D21 (45-47),** Eifelian (early Middle Devonian)

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located at Shijiagou, Luohe Village of Xunyang County, Shaanxi Province. The reference section is at Fengzigou, Luohe Village of Xunyang County.

It was named by No. 1 Geological Team of Shaanxi Province in 1964, and published in the “Paleontological Atlas, Volume Shan-Gan-Ning” in 1983.

**Lithology and Thickness:**

The Shijiagou Formation is divided in to two lithologic members.

Marls. The lower member, 113.6 m in thickness, is composed of gray to dark-gray thin- to medium-bedded marls, clayey limestone and reefal limestone, intercalated with calcareous slate.

Dolomite. The upper member, 40.1 m in thickness, consists of light-grey medium- to thick-bedded dolomite with silty slate intercalations in the lower part and silty slate with siltstone, sandstone and limestone intercalations in the upper part.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the dolomite of the Gongguan Formation.

***Upper contact:***

***Regional extent:***

Westward to Fengxian-Wafanba area, the formation overlaps on the Silurian, and is composed of thin-bedded sandy limestone, mudstone and slate with a basal conglomerate, and contains *Athyrisina* sp., *Utaratuia* sp., and its thickness decreases to 86 m.

**Fossils:**

The main fossils are *Athyrisina* spp., *Utaratuia* sp., *Astrictophyllum* sp., and stromatoporoids in the lower member, and *Sociophyllum* sp., *Thamnopora* sp. in the upper member.

**Age:**

Eifelian (early Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shiping Fm**

**Period: Devonian**

**Age Interval (Map column): D22 (44),** Givetian (late Middle Devonian)

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located at north bank of Qianyou River, Shiping Village of Zashui County, Shaanxi province.

It was named by Yang Zihua in 1991.

**Lithology and Thickness:**

Calcareous sandstone. The Formation is subdivided into three parts.

The lower part, 9 m thick, consists of calcareous, dolomitic conglomerate.

The middle part, 44.14 m thick, is composed of feldspar quartz sandstone and pebbly calcareous sandstone.

The upper part, 17.16 m thick, consists of thin- to medium-bedded arenite and dolomite intercalated with thin-bedded calcareous sandstone, siltstone and pebbly sandstone, and yields brachiopoda *Emanuella takuanensis, Schizophria* sp., and bivalve *Entomaria* sp., *Naticopsis* sp.

**Relationships and Distribution:**

***Lower contact:***

It rests unconformably on the dolomite of Cambrian-Ordovician.

***Upper contact:***

***Regional extent:***

The Formation is only exposed around the Mihuanzen Oldland. Southward to Gudaoling Village, it is about 212 m thick, and is characterized by dolomitic conglomerate with sandy limestone in lower part, sandy limestone with fine-grained sandstone in the middle part, and silty slate with oolitic limestone in the upper part.

**Fossils:**

The upper part yields brachiopoda *Emanuella takuanensis, Schizophria* sp., and bivalve *Entomaria* sp., *Naticopsis* sp.

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shiqiao Fm**

**Period: Devonian**

**Age Interval (Map column): D11** , Early Devonian

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located near Shiqiao Town, Cangwu County of Guangxi Zhuang Autonomous Region.

It was named by Guangxi Geological Survey in 1974.

**Lithology and Thickness:**

Sandstone, siltstone. The Formation is mainly characterized by purplish-red, purplish-gray and grayish-yellow medium- to fine-grained sandstone and siltstone with intercalations of muddy siltstone, silty shale, mudstone and dolostone, and it has a basal conglomerate and pebbly sandstone with a few beds of oolitic ironstone.

It is 288 m thick.

**Relationships and Distribution:**

***Lower contact:***

It rests unconformably on the Cambrian.

***Upper contact:***

***Regional extent:***

**Fossils:**

It contains plant fossils: *Taeniocrada decheniana, Zosterophyllum sinensis, Drepanophyllum* sp., and bivalves can be found at the base.

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

The Formation is thought to be Early Devonian, corresponding to the Nagaoling plus Yujiang Formations.

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shixiagou Fm**

**Period: Devonian**

**Age Interval (Map column): D2 (20),** Givetian (late Middle Devonian)

**Province:** Ningxia

**Type Locality and Naming:**

The type section is located at Shixiagou of Baimaxiang Village, south of Niushoshan Hill, Zhongning County of Ningxia Hui Autonomous Region.

It was named by Pang Jiang and others in 1980.

**Lithology and Thickness:**

Sandstone. The Shixiagou Formation is subdivided into four members:

First member is grayish-white to grayish-yellow medium- to thick-bedded feldspar quartz sandstone, with a 1-m-thick basal bed sandy conglomerate.

Second member consists of purplish-red siltstone with feldspar quartz sandstone intercalations.

Third member is characterized by grayish-white thick-bedded fine-grained quartz sandstone with a bed of purplish-red fine-grained quartz sandstone.

Fourth member is mainly composed of purplish-red siltstone, intercalated with a few beds of purplish-red thin- to medium-thick-bedded fine-grained feldspar quartz sandstone.

The entire Formation is 246 m thick.

**Relationships and Distribution:**

***Lower contact:***

The formation has an unconformable contact to the underlying Xiangshan Formation of Middle Cambrian.

***Upper contact:***

The formation has an unconformable contact to the overlying Zhongning Formation.

***Regional extent:***

**Fossils:**

Fish fossils of *Bothriolepis niushoushanensis* and *Quasipetalichthys* cf. *haikouensis* mainly occur in the Second member.

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shuanlanggou Fm**

**Period: Devonian**

**Age Interval (Map column): D32 (41),** Famennian (latest Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Dong Hill of Shilixiang Village, 12.5 km of Xihe County, Gansu Province.

It was named by Du Yuanseng and others in 1988.

**Lithology and Thickness:**

Slate. The Formation is characterized by dark-gray and yellowish-brown thin-bedded clayey slate intercalated with silty slate and calcareous slate, with horizontal and graded bedding structures.

It has an incomplete thickness of 273 m.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Honglingshan Formation.

***Upper contact:***

***Regional extent:***

**Fossils:**

Conodont *Palmatolepis* cf. *triangularis* and ostracod *Entomozoe (Richteria*) sp. occur in its lower and upper parts, respectively.

**Age:**

Famennian (latest Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shujiaba Gr**

**Period: Devonian**

**Age Interval (Map column): D2-3  (36),** Middle to Upper Devonian

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at the place from Shuijiaba of Tianshui County to north Mayanhe River of Hui County, Gansu Province.

It was named by Shaanxi Geological Survey in 1968 and was published by Zou Guocao in 1983.

**Lithology and Thickness:**

Flysch. The group is mainly characterized by a series of flysch deposits of alternating grayish-green silty slate and thin- to medium-bedded fine-grained sandstone and siltstone. In the type area, the Shujiaba Group has an incomplete thickness of 4618 m.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

The Shujiaba Group has an incomplete thickness of 4618 m, and has a fault contact to the Carboniferous Danfeng Group on both its north and south sides.

***Regional extent:***

**Fossils:**

In the Dahezhuang and Suojiaping, it contains spores *Gradispora comuta, Tumulispora rarituberculata, Kraeuselisporites mitratus*, and plant *Cyclostigma kiltorkense*.

**Age:**

Middle to Upper Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Shujiaping Fm**

**Period: Devonian**

**Age Interval (Map column): D13 (53, 54),** Emsian (late Early Devonian)

**Province:** Guizhou

**Type Locality and Naming:**

The type section is located at a trench between Longdongshui and Shuijiaping villages, 10 km east of Dushan County of Guizhou Province.

It was named by Wang Yu and others in 1964.

**Lithology and Thickness:**

Siltstone. The Formation, 79 m thick, is characterized by dark-gray siltstone intercalated with purplish-red iron-bearing quartz sandstone, grayish-white fine-grained sandstone, and a few beds of oolitic ironstone.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Danlin Formation with a bed of pebbly sandstone near the boundary between the two formations.

***Upper contact:***

***Regional extent:***

**Fossils:**

It contains brachiopods *Euryspirifer sujiapinensis, Otospirifer daleensis*.

**Age:**

Emsian (late Early Devonian)

**Depositional setting:**

It is interpreted as a tidal flat and nearshore facies.

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Sipai Fm**

**Period: Devonian**

**Age Interval (Map column): D13**, Emsian (late Early Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at Malucun Village, south of Sipai Town, Luzhai County, Guangxi.

It was named by Feng Jinlan in 1929.

**Lithology and Thickness:**

Shale. The formation, 149 m thick, is characterized by yellowish-green calcareous shale, siltstone and sandy mudstone intercalated with thin-bedded sandstone and lenses of limestone.

**Relationships and Distribution:**

***Lower contact:***

Its lower boundary is unclear.

***Upper contact:***

***Regional extent:***

The formation is distributed at the area of Luzhai and Jinxiu.

**Fossils:**

The formation contains the *Otospirifer-Athyrisina* Assemblage Zone in the lower part and the *Euryspirifer shujiapingensis* Acme Zone in the upper part.

**Age:**

Emsian (late Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Songlingou Fm**

**Period: Devonian**

**Age Interval (Map column): D1-2,** Early to Middle Devonian

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Dazhaimen, west of Shidian County, Yunnan Province.

It was named by Yang Jikai in 1984.

**Lithology and Thickness:**

Limestone. The Formation is divided into two Members:

The lower, Xibiantang Member, is characterized by grayish medium- to thick-bedded limestone intercalated with dolomitic limestone, purple gray thin bedded clayey limestone and calcareous mudstone, 60-100 m thick.

The upper, Malutang Member, is characterized by yellow clayey limestone, calcareous mudstone and bioclastic limestone, 88 m thick

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the underlying Shabajiao Dolostone Formation.

***Upper contact:***

***Regional extent:***

**Fossils:**

The lower, Xibiantang Member contains ammonoids *Mimagoniatites fecundus,* brachiopoda *Strophochonetes* spp.

The upper, Malutang Member yields abundant brachiopods: *Emanuella inflata, Bifida lepida, Eoreticulariopsis* sp., *Strophochonetes* sp.

**Age:**

Early to Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Songjiazhai Fm**

**Period: Devonian**

**Age Interval (Map column): D22 (30),** Givetian (late Middle Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Songjiazhai of Jinping County, Yunnan Province.

It was named by the Sixth Team of Second Geological Survey of Yunnan Province (unpublished).

**Lithology and Thickness:**

Shale. The formation, 240-300 m thick, is characterized by dark-gray to black shale intercalated with black thin-bedded limestone.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Maludong Formation.

***Upper contact:***

It has an unknown upper boundary.

***Regional extent:***

It is distributed in an area of Songjiazhai-Jingping Counties.

**Fossils:**

The formation contains brachiopoda *Leptaena* sp., and tentaculites *Nowakia otomari*.

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

It is interpreted as a relatively deep-water facies.

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Songyuan Gr**

**Period: Devonian**

**Age Interval (Map column): D3 (73),** Late Devonian

**Province:** Guangdong

**Type Locality and Naming:**

The type section is located at Taoyuan of Meixian County, Guangdong Province.

It was named by the Guangdong Geological Survey in 1977.

**Lithology and Thickness:**

Conglomerate, sandstone. The lower part of the group is composed of grayish-white quartz-rich conglomerate intercalated with quartz sandstone, pebbly sandstone and grayish-purple siltstone.

The upper part of the group is characterized by white and grayish-green quartz sandstone with siltstone.

**Relationships and Distribution:**

***Lower contact:***

It is in unconformable contact on the underlying Precambrian metamorphosed rocks

***Upper contact:***

***Regional extent:***

**Fossils:**

In the Yangjinshi and Youlanzhuang region, the Formation contains plant *Leptophloeum rhombicum*.

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Songzong Gr**

**Period: Devonian**

**Age Interval (Map column): D2-3 (25),** Middle to Late Devonian

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located unknown, and the reference section is at Ranwuya-Laigu, Basuo County of Tibet. It was named by Li Pu in 1955.

**Lithology and Thickness:**

Limestone. The group, 940 m thick, is composed of gray to dark-gray thin-bedded limestone, medium-to thick-bedded dolomitic limestone and clayey limestone, intercalated with siliceous limestone in the lower part.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

The group is conformably overlain by the Lower Carboniferous Qingduo Group and is in fault contact with the Jurassic.

***Regional extent:***

**Fossils:**

It contains brachiopoda *Cyrtospirifer* sp. in the upper part.

**Age:**

Middle to Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Suotoushan Fm**

**Period: Devonian**

**Age Interval (Map column): D13- D 21 (55),** Emsian to Eifelian (late Early Devonian to early Middle Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at a trench of Bianqinggou, Zhaotong of Yunnan Province.

It was named by Xian Shiyuan and Zhou Xiyun in 1974.

**Lithology and Thickness:**

Sandstone. The formation is characterized by grayish-white and yellow medium- to thick-bedded quartz sandstone.

It is about 86 m thick.

**Relationships and Distribution:**

***Lower contact:***

In the type section, it rests conformably on the Bianqinggou Formation.

***Upper contact:***

***Regional extent:***

It is widely distributed in northeastern Yunnan.

**Fossils:**

The formation yields plant and fish fossil fragments.

**Age:**

Emsian to Eifelian (late Early Devonian to early Middle Devonian)

**Depositional setting:**

It is interpreted as a littoral environment.

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Tabo Fm**

**Period: Devonian**

**Age Interval (Map column): D1-**2 (50), Early to Middle Devonian

**Province:** Shanxi

**Type Locality and Naming:**

The type section is located at Weizigou of Tabo, south of Lueyang County, Shanxi. The reference section is between Heyeba and Lingyansi of east bank of Jialingjiang River in Lueyang County.

It was named by Shanxi Regional Geological Survey in 1961, and Du Dinghan et al. quoted it formally in 1986.

**Lithology and Thickness:**

Conglomerate. The formation is composed of gray and variegated conglomerate, pebble-bearing arkose, calcareous arkose and lithic sandstone, with interbeds of dark-gray and greenish-gray sandy slate.

There is a fault in the middle part of the section, the bed succession is not completely outcropping, and the outcropping thickness is more than 536 m.

**Relationships and Distribution:**

***Lower contact:***

It unconformably overlies the Bikou Group.

***Upper contact:***

The top is an angular unconformable contact to the overlying black and gray thick-bedded quartz sandstone of Upper Devonian.

***Regional extent:***

This formation is only distributed in Tabosi to Baiquesi area of Lueyang County.

**Fossils:**

In the calcareous arkose of the middle and upper parts are found tabulata *Coenites* and bryozoan fragments.

**Age:**

Early to Middle Devonian

**Depositional setting:**

**Additional Information**

The Tabo Fm roughly corresponds to the age of Sanhe Group north of Lueyang to Guozhen, although the lithological characteristics and sedimentary facies show a considerable difference.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Talipo Fm**

**Period: Devonian**

**Age Interval (Map column): D3 (33),** Late Devonian

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at the Cow Farm of Zhongzan to Talipo of Batang County, Sichuan.

It was named by Sichuan No 3 Team of Regional Geological Survey in 1977 and was published by Sichuan Compiling Group for Regional Stratigraphical Scale in 1978.

**Lithology and Thickness:**

Limestone. The formation is dominated in lower and middle parts by gray to light-gray thick-bedded to massive dolomitic algal limestone, of which dolomite is distributed as snowflake and fog-like patches; and the upper part of formation is characterized by gray to light-gray massive crystalline limestone intercalated with grayish-yellow and purplish-red marly algal limestone.

To the east of Cangna, the facies changes to sandy slate.

It is 188 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

The formation has a conformable lower contact onto the grayish-white massive crystalline limestone intercalated with stromatopora limestone of the Cangna Fm.

***Upper contact:***

The formation is overlain by brick-red bioclastic limestone of the Baxiangling Fm of Lower Carboniferous.

***Regional extent:***

It is distributed in Dangjizhenna, Zhongzan of Batang County, and to the south it can extend to Zhongdian County of Yunnan.

**Fossils:**

It has no mega fossils.

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Tangaitar Fm**

**Period: Devonian**

**Age Interval (Map column): D31** (11, 12), early Late Devonian

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located in Qigeleikebieli cove, southeast of Tuogemaite, 42 km of north of Atushi County, Xinjiang.

It was named by No 13 Xinjiang Geological Team in 1957, and was published by "The Regional Scale of Northwest China-Xinjiang” in 1981.

**Lithology and Thickness:**

Limestone. The lower part of this formation, 400~500 m thick, is characterized by black to gray limestone intercalated with a few sericitic chlorite schist beds; the upper part, 300~400 m thick, is mainly gray to dark-gray thick-bedded limestone intercalated with calcareous conglomerate.

To the east, in Ayili of Wushi County, the lithology of this formation is characterized by thin-bedded limestone and marl intercalated with calcareous siltstone and thin- to thick-bedded gypsum, and yields brachiopods *Ambocoelia*, *Ilmenia*, and is 224 m thick. The basal part is mainly grayish-black thin- to medium-bedded limestone.

**Relationships and Distribution:**

***Lower contact:***

The formation rests conformably on the Tuogemaiti Fm of Middle Devonian.

***Upper contact:***

The top is in a disconformable contact with Lower carboniferous.

***Regional extent:***

To the east, in Ayili of Wushi County, the lithology of this formation is characterized by thin-bedded limestone and marl intercalated with calcareous siltstone and thin- to thick-bedded gypsum, and is 224 m thick. The basal part is mainly grayish-black thin- to medium-bedded limestone.

**Fossils:**

It yields brachiopods *Atrypa*, *Hypothyridina*, *Schizophoria*, *and Cyrtospirifer*.

In Taxintuokemake, the formation yields coral Megaphyllum, Phillipsastrea, Iowaphyllum.

The brachiopods from the Suyueke south slope of Kalatashitage studied by Yang Shipu can be divided into two assemblages: *Hypothyridina semilukiana* and *Undispirifer undiferus*.

To the east, in Ayili of Wushi County, the formation yields brachiopods *Ambocoelia*, *Ilmenia*.

**Age:**

early Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Tangding Fm**

**Period: Devonian**

**Age Interval (Map column): D13 D 21**, Emsian to Eifelian (late Early Devonian to early Middle Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located in west of Luofu Town of Nandan County, Guangxi.

It was named by No. 5 Prospecting Team of Geological Ministry in 1961.

**Lithology and Thickness:**

Mudstone. The formation, about 430 m thick, is characterized by purplish-gray and grayish-black mudstone with carbonaceous mudstone interbeds, and intercalated with dolomitic marl and quartz sandstone in the top.

**Relationships and Distribution:**

***Lower contact:***

It is conformably underlain by the Yujiang Fm.

***Upper contact:***

It is conformably boverlain by the Luofu Fm.

***Regional extent:***

The formation is mainly distributed in Nandan, Hechi, Wuxu, nanning, etc. Reef intercalations occur in the Dachang area, and siliceous beds occur in the Shanglin area.

**Fossils:**

The formation contains an upward succession of tentaculites from *Nowakia subtilis*, *N. mana*, *N. praecursor*, *N. barrandei*, *N. cancellata*, *N. richteri*, *N. holyensis* to *N. sulcata* zones; ammonoids *Anetoceras-Erbenoceras*, *Latanace- stesnoeggerati*, *Pinacites juglerti* zones; and the upper part yields trilobites of the *Plagiolaria nandanensis* fauna

**Age:**

Emsian to Eifelian (late Early Devonian to early Middle Devonian)

**Depositional setting:**

It is interpreted as an anoxic deep-water facies

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Taozikeng Fm**

**Period: Devonian**

**Age Interval (Map column): D32** (74), late Late Devonian

**Province:** Fujian

**Type Locality and Naming:**

The type section is located nearby Taozikeng, Linbang of Longyan County, Fujian.

It was named by Fujian Regional Geological Survey in 1975.

**Lithology and Thickness:**

Conglomerate. The formation is characterized by grayish-white, grayish-purple, purplish-red, light-gray and grayish-yellow sandy conglomerate, quartz sandstone and siltstone, with some limestones at top.

The total thickness is 760 m.

**Relationships and Distribution:**

***Lower contact:***

The formation has a conformable basal contact to underlying Tianwadong Fm.

***Upper contact:***

The formation has a disconformable contact to the overlying Lindi Fm of Lower Carboniferous.

***Regional extent:***

**Fossils:**

It yields plant fossils *Lepitophloeum rhombicum*, *Konrria* sp., *Sublepidodendron mirabile*, etc.

**Age:**

late Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Tarbagete Fm**

**Period: Devonian**

**Age Interval (Map column): D22 (4),** Givetian (late Middle Devonian)

**Province:** Inner Mongolia

**Type Locality and Naming:**

The type section is located at west mountain Tarbagete of east Wuchumuqinqi, Inner Mongolia Autonomous Region.

It was named by Inner Mongolia Team of Regional Geological survey in 1973 during mapping of the East Wuchumuqinqi Geological Map (scale 1:20000).

**Lithology and Thickness:**

Siltstone, volcanic tuff. The formation is characterized by yellowish-gray and grayish-brown siliceous siltstone, volcanic tuff and tuffaceous breccia intercalated with thin-bedded siltstone.

The outcrop thickness is about 360 m.

**Relationships and Distribution:**

***Lower contact:***

The formation rests conformably on clayey slate of Wenduraobaote Fm.

***Upper contact:***

The formation is covered by Quaternary.

***Regional extent:***

**Fossils:**

It yields abundant brachiopods *Mucrospirifer* spp., *Elytha* sp., *Spinulicosta* sp., *Leptostrophia* sp., *Schuchertella* sp.; bryozoan *Semicoscinium* sp., *Hemitrypa* sp.; coral *Heliophyllum* spp. etc.

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Tatairtag Fm**

**Period: Devonian**

**Age Interval (Map column): D1-2** (14), Early to Middle Devonian.

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at Tatairtag, northwest of Tongguzibulong Village, northeast of Keping, Xinjiang.

It was named by No 13 Xinjiang Geological Team in 1957 and was published by Xinjiang Compiling Group for Regional Stratigraphical Scale (1980).

**Lithology and Thickness:**

Sandstone. The formation is dominated by dark-red fine-grained sandstone and siltstone, green mudstone and sandstone, and red sandstone and siltstone interbeds, and dark-red thin-bedded sandstone, etc., with some occurrences of micro-bedding. It is 61 m in thickness.

**Relationships and Distribution:**

***Lower contact:***

The formation is in a disconformable contact with underlying Tage Fm of Keping.

***Upper contact:***

The formation has conformably contacts with the overlying Yimugantawu Fm.

***Regional extent:***

**Fossils:**

In the center area of Tage in Keping, red slate and quartz sandstone intercalated with calcareous shale yield bivalve *Edmondia* sp.;

in the Tage and Yinganshan area in Keping are found brachiopod *Lingula* sp., and gastropods *Naticopsis* sp., *Euomphalus* sp.;

in Diggings of Kanji are found plant fossil *Lepidodenodropsis* sp.

**Age:**

Early to Middle Devonian.

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Teheierbasitao Fm**

**Period: Devonian**

**Age Interval (Map column): D12** **(2),** Early Devonian

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located 8 km southeast of Ke'ankuduk, north of Zhifang in east Junggar, Xinjiang Uygur Autonomous Region.

It was named by No 2 branch Team of Xinjiang No 1 Team of Regional Geological Survey in 1977, and Yang Shipu et al quoted it formally in 1981.

**Lithology and Thickness:**

Clastic rocks. The formation, 104 m thick, is composed of purple, grayish-purple and purplish-red clastic rocks and volcanic clastic rocks intercalated with carbonate rocks. It includes tuffaceous sandstone, conglomerate and feldspathic quartz sandstone intercalated with pebble-bearing calcarenite.

The thickness varies from 100 to 134 m.

**Relationships and Distribution:**

***Lower contact:***

The formation is distinguished by its color from the underlying Kokesairgai Fm of Silurian, but they are similar in lithological character.

***Upper contact:***

***Regional extent:***

This formation is distributed in Tashan, Kokesairgai, etc. north of Zhifang, where the lithology is steady and easily recognized in the field.

**Fossils:**

The main fossils are coral *Syringaxon* sp., *Squameofavosites* sp., *Pleurodictyum* sp., *Barrandeophyllum* sp., and brachiopods *Acrospirifer* sp. etc.

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Tianwadong Fm**

**Period: Devonian**

**Age Interval (Map column): D31**  (74), early Late Devonian

**Province:** Fujian

**Type Locality and Naming:**

The type section is located nearby Tianwadong, Linbang of Longyan County, Fujian.

It was named by Fujian Regional Geological Survey in 1975. nearby Tianwadong, Linbang of Longyan County, Fujian.

**Lithology and Thickness:**

Conglomerate, sandstone. It is mainly composed of grayish-white, purplish-red, grayish purple, light-gray and grayish-green quartz sandy conglomerate, quartz sandstone and siltstone, etc. The total thickness of this formation is about 930 m.

**Relationships and Distribution:**

***Lower contact:***

This formation overlies unconformably on Pre-Devonian.

***Upper contact:***

This formation has an upper conformable contact with the overlying Taozikeng Fm.

***Regional extent:***

**Fossils:**

It yields plant fossil *Cyclostigma kiltokense*.

**Age:**

early Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Tiaomajian Fm**

**Period: Devonian**

**Age Interval (Map column): D22** (68,69), Givetian (late Middle Devonian)

**Province:** Hunan

**Type Locality and Naming:**

The type section is located at Tiaomajian, about 35 km southeast of Changsha, Hunan (near the present Dawuwan reservoir of Tiaomajian Town).

It was named by Tian Qijun in 1928.

**Lithology and Thickness:**

Sandstone. This formation is mainly composed of grayish-white, grayish yellow, purplish-red and grayish-purple feldspathic quartz sandstone, sandy shale, silty mudstone and clayey fine-grained sandstone, and occasionally intercalated with pisolitic hematite beds. At the base is a 7.2-m-thick bed of grayish-white massive quartz conglomerate.

In the type section, the total thickness is 156 m.

**Relationships and Distribution:**

***Lower contact:***

The formation is in an unconformable contact with the underlying sandy slate of Wuqiangxi Fm of the Banxi Group (Cryogenian).

***Upper contact:***

The top is in a conformable contact with the overlying Qiziqiao Fm.

***Regional extent:***

This formation is distributed in central and south Hunan. The lithology is consistent through the entire area.

**Fossils:**

The main fossils are fish *Bothriolepis sinensis*, *Hunanolepis tieni*; plants *Sublepidodendron*, *Taeniocrada*?, etc., and bivalves.

In Jinshansi of Zhuzhou, microfossils of spores are recorded from this formation (Zhao Ruxuan et al., 1978).

**Age:**

Givetian (late Middle Devonian)

**Depositional setting:**

**Additional Information**

ron ore is developed in Jiangshui, Daoxian County, Guiyang, southern Hunan, commonly as 1 to 5 beds, although some areas have more than 6 to 7 beds. In the north, Shaoyang, Shuangfeng, Changsha area, there is no iron ore found.

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Tiekuangliang Fm**

**Period: Devonian**

**Age Interval (Map column): D3 (43),** Late Devonian

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located at Huoyanxi of Xinglongchang in Zhenba County, Shanxi.

It was named by Shaanxi Regional Geological Survey in 1988, and Cao Xuanduo formally quoted it in 1990.

**Lithology and Thickness:**

Sandstone. It is composed of gray to blackish-gray thin- to medium-bedded pyrite-bearing fine-grained quartz sandstone intercalated with silty slate and pyritic and hematite beds.

The thickness is 33.4 m.

**Relationships and Distribution:**

***Lower contact:***

The formation disconformably overlies the Sanyoudong Fm of Upper Cambrian.

***Upper contact:***

The top has a conformably contact with the Panlongshan Fm.

***Regional extent:***

In Zhenba, Gaochuan, of eastern Xixiang area, the lithology is consistent, but varies in the pyrite-bearing interbeds. The thickness decreases from north to south, in Xiagaochuan is 25.4 m thick, in Maoyazi is 35 m, and Panlongshan is only 8.5 m thick.

**Fossils:**

It yields plant fossils *Sublepidodendron*, *Eolepidodendron* and spores.

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Tieshan Fm**

**Period: Devonian**

**Age Interval (Map column): D3 (45-47),** Late Devonian

**Province:** Gansu

**Type Locality and Naming:**

The type section is located nearby Tieshan, 15 km southeast of Huixian County, Gansu.

It was named by Ye Lianjun, Guan Shicong in 1944.

**Lithology and Thickness:**

Limestone. The lower part, 246 m thick, is composed of medium-bedded to massive limestone intercalated with thin-bedded limestone and carbonaceous limestone and carbonaceous shale. The upper part, 340 m thick, is characterized by thin-slab-like limestone and clayey banded limestone intercalated with calcareous sandstone, shale and limestone with mud clasts.

The thickness is 836 to 1391 m in Xunyang area, and 781 m in Songshuping area of Shanyang.

**Relationships and Distribution:**

***Lower contact:***

The formation conformably rests on the Yanglinggou Fm of Middle Devonian.

***Upper contact:***

The top is a conformable contact with the Lower Carboniferous.

***Regional extent:***

Tieshan Fm is distributed in central south Qinling, Huixian County to Chengxian County area.

East of Qinling, Xunyang area, the lithological character of Tieshan Fm is mainly composed of thin- to medium-bedded limestone and clayey limestone, intercalated with calcareous sandstone and sandy slate; the lower part yields coral and brachiopods fossils; and the upper part contains brachiopods and a few conodonts of Famennian.

**Fossils:**

The lower part yields coral *Disphyllum*; the upper part yields brachiopods *Cyrtospirifer*, *Tenticospirifer*, *Yunnanella* etc.

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Tongyusi Fm**

**Period: Devonian**

**Age Interval (Map column): D3 (37,38),** Late Devonian

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located at Tongyu River of Shanyang County, Shaanxi.

It was named by Shaanxi Regional Geological Survey in 1980, and Du Dinghan et al. formally quoted it in 1986.

**Lithology and Thickness:**

Metamorphic sandstone. Lower part is characterized by thin- to medium-bedded metamorphic fine-grained quartz sandstone and siltstone intercalated with sandy slate and thin-bedded limestone.

The middle part is composed of silty slate and slate intercalated with siltstone, thin-bedded metamorphic fine-grained quartz sandstone and limestone.

The upper part is dominated by metamorphic fine-grained quartz sandstone, feldspathic quartz sandstone and siltstone intercalated with silty slate and a few sandy limestone beds.

In the Tongyu River section of Shanyang, the total thickness is more than 2480 m; in the Eryu River section, the total thickness is more than 3090 m; and in Zhangjiaping section of Zhashui, the thickness is more than 7046 m.

**Relationships and Distribution:**

***Lower contact:***

In Shanyang to Zhashui area, the Tongyusi Fm conformably overlies on Qingshiya Fm.

***Upper contact:***

In Shanyang to Zhashui area, the top of the Tongyusi Fm is in fault contact with the Eryuhe Fm of Lower Carboniferous.

***Regional extent:***

**Fossils:**

The lower part of Tongyusi Fm yields brachiopods *Chonetes* and crinoid stems (Tongyu River), *Cyrtospirifer* (Zhangjiaping); and the upper part yields plant fossil *Leptophloeum* *rhombicum* (Qingyangou of Eryu River), and above this fossil bed occur abundant spore fossils *Arachaeozonotriletes variabilis*, *Discernisporites micromanifestus*, *Samarisporites comcinnus*, etc., and acritarchs, chitinozoans, scolecodonts, etc.

**Age:**

Late Devonian

**Depositional setting:**

There are two interpretations for its sedimentary environment: one is a progression from shallow-marine to nearshore deposits in a regression sequence (Huishan to Shanyang Map, 1980; Du Dinghan et al, 1986; Shangxian Map, 1988; Yang Zhihua et al., 1991), and another one suggests gravity-flow deposits on a slope and considered to be a prograding sequence. (Liang Jinzhe et al. 1991).

**Additional Information**

The Tongyusi Fm is the highest formation of the Zhashui Gr.

The Tongyusi Fm is bounded by a fault from Hongyansi to Huishan, and has two zones of south and north that are different in lithology and facies. The maturity of the north zone is lower, commonly contains tuffaceous beds, and in Xiaowangjian of Zhouzhi to Houzhenzi area is composed of tuffaceous sandstone, feldspathic quartz sandstone, siltstone and slate, with a thickness of 2587 m. At its base is 12.5-m-thick conglomerate and sandy conglomerate that disconformably overlies on metamorphic rocks of Early Paleozoic. In Lujiayan of Taibai area, the lower part of Tongyusi Fm is mainly composed of feldspathic quartz sandstone and siltstone, yields plant fossil *Sublepidodendron*, its upper part is intercalated with tuffaceous sandstone and slate, and has a thickness of 1550 m.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Tuanbugou Fm**

**Period: Devonian**

**Age Interval (Map column): D2 (51),** Middle Devonian

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Tangbugou, 18 km northwest of Wenxian County, Gansu.

It was named by Zhang Yan in 1961, and Cao Xuanduo formally quoted it in 1990.

**Lithology and Thickness:**

Slate, limestone. This formation is separated from the underlying Shawan Fm by the appearance of shale and calcareous shale intercalated with thin-bedded limestone at a conformable contact. Above that, it is characterized by dark-gray to blackish-gray medium- to thick-bedded micrite limestone, dolomitic-bearing micrite with siliceous nodules, and banded micrite intercalated with thin-bedded limestone and calcareous slate. Its uppermost portion is characterized by thick-bedded to massive limestone with siliceous nodules and banded micrite.

The total thickness is 196.4 m.

**Relationships and Distribution:**

***Lower contact:***

This formation is separated from the underlying Shawan Fm by the appearance of shale and calcareous shale intercalated with thin-bedded limestone at a conformable contact.

***Upper contact:***

The top boundary is the top of a thick-bedded limestone with flint nodules (Cao Xuanduo et al., 1990).

***Regional extent:***

**Fossils:**

The main fossils are coral *Temnophyllum*, *Hexagonaria*, *Alveolitella*, *Natalophyllum*, *Syringopora*, and brachiopods *Emanuella*, *Schizophoria*, etc.

**Age:**

Middle Devonian

**Depositional setting:**

It is interpreted as a carbonate platform facies, because within the limestone are small bedded to hummocky stromatopora reefs.

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Tuogemaiti Fm**

**Period: Devonian**

**Age Interval (Map column): D2 (10-12),** Eifelian to Givetian (Middle Devonian)

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at two isolated outcrops, 6 km northwest of Village Tuogemaiti, and about 42 km north of Atushi County, Xinjiang. The reference section is at Mt. East Alai.

It was named by No. 13 Xinjiang Geological Team in 1955, and was published by "The Regional Scale of Northwest China-Xinjiang” in 1981.

**Lithology and Thickness:**

Tuogemaiti Fm at Mt. East Alai is divided into upper and lower members.

Limestone. The Lower member in the west of Mt. East Alai is composed of dark-gray massive limestone with black cherty interbeds, intercalated with green sericitic schist, tuffaceous sandstone and basic volcanic rock, quartzite and pebble-bearing silty sandstone, and is 1000 m thick.

Schist, limestone. The Upper member in the east of Mt. East Alai has a lower 200 m of black to dark-gray sericitic schist intercalated with thin-bedded limestone, and an upper 200-250 m of dark-gray to light-gray medium- and thick-bedded limestone.

**Relationships and Distribution:**

***Lower contact:***

In the west, this formation unconformably overlies on Silurian.

***Upper contact:***

The top is in a disconformable contact with Lower Carboniferous.

***Regional extent:***

The Lower member of the Tuogemaiti Fm is only distributed in the west of Mt. East Alai and upper reach of Tuoshigan River.

The upper member of the formation is widely distributed in Tangaitar to Tuogemaiti area east of Mt. East Alai.

**Fossils:**

The Lower member yields corals *Cystiphylloides*, *Coenites* ex gr. *variabilis*, *Striatopora saessi*, *Favosites* cf. *goldfissi* var. *eifeliensis*, *Pachyfavosites* aff. *erilius*, *P*. ex gr. *Polymorphus* etc.

The lower part of Upper member yields corals *Tryplasma devoniana*, *T. hercynica*; and the upper part yields corals *Temnophyllum*, *Neospongophyllum*, *Striatopora*, *Alveolites*; and brachiopod *Zdimir*. The ages of fauna in the Lower and in the Upper members are Eifelian and Givetian, respectively.

**Age:**

Eifelian to Givetian (Middle Devonian)

**Depositional setting:**

**Additional Information**

The upper member of the formation is widely distributed in Tangaitar to Tuogemaiti area east of Mt. East Alai, where its upper part is mainly thick-bedded limestone intercalated with a few beds of sericitic quartz schist, yields brachiopods *Stringocephalus*, *Bornhardtina* and corals *Temnophyllum*, *Neospongophyllum,* etc., and is 400-500 m thick; its lower part is mainly limestone and marl interbeds, the bottom is sericitized schist and calcareous schist, yielding coral *Tabulophyllum*, brachiopods *Indospirifer*, *Spinatrypa*, *Productella* etc., is 350-400 m thick, and unconformably overlies on Silurian. Further to the east of Wushigunguntielie River, it is composed of grayish-black thin- to medium-bedded limestone intercalated with thick-bedded marble, crystalline limestone and breccia limestone; yields brachiopods *Stringocephalus*, *Ilmenia*; and the thickness is more than 1868 m.

In the upper reach of Tuoshigan River, under this member is a set of intermediate volcanic rock intercalated with limestone which yields brachiopods *Hypothyridina*, *Atrypa* and coral *Favosites shengi*, and this unit corresponds to the Lower member.

The Lower member of the Tuogemaiti Fm is only distributed in the west of Mt. East Alai and upper reach of Tuoshigan River, and conformably overlies on the Wupatarkan Group of Lower Devonian.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Tuqiaozi Fm**

**Period: Devonian**

**Age Interval (Map column): D31 (70),** Frasnian (early Late Devonian)

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located nearby Village Tuqiaozi of Beichuan County, Sichuan.

It was named by Chen Yuanren in 1978.

**Lithology and Thickness:**

Limestone. This formation is dominated by thin- to medium-bedded grayish-black bioclastic micritic limestone, nodular bioclastic limestone and clayey micritic limestone intercalated with shale.

It is 223 m thick.

**Relationships and Distribution:**

***Lower contact:***

It conformably rests on the Guanwushan Fm.

***Upper contact:***

***Regional extent:***

**Fossils:**

It yields brachiopods *Leiorhynchus* spp., *Striatopugnax triplicata*, *Gypidula beichuanensis*; coral *Peneckiella shawoziensis*, *Paranalivtinella irregulare*; conodonts *Polygnathus asymmetricus asymmetricus*, *P. alatus*; and tentaculites *Decricoconus veschovensis*, *Homoctenus* cf. *longiconica*, *Corona petrovi* etc.

**Age:**

Frasnian (early Late Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Ulusubasite Fm**

**Period: Devonian**

**Age Interval (Map column): D21  (2),**

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at Mt. Kokesairgai of Zhifang, Xinjiang.

It was named by No 2 Branch Team of Xinjiang Regional Geological Survey in 1977, and Hou Hongfei et al. formally quoted it in 1979.

**Lithology and Thickness:**

Sandstone, limestone. It is composed of greenish-gray feldspathic sandstone, thin- to medium-bedded tuff, tuffaceous sandstone and pebble-bearing psammitic bioclastic limestone that can transition to a calcareous conglomerate with limestone nodules along strike. To the northeast of the 1759 high peak of Mt. Kokesairgai, the facies changes to sandy conglomerate intercalated with limestone nodules and bands, and is 117 m thick.

**Relationships and Distribution:**

***Lower contact:***

It conformably overlies on Zhuomubasitao Fm of Lower Devonian.

***Upper contact:***

***Regional extent:***

**Fossils:**

The lower part yields plant fossil *Lepidodendropsis*, and the top contains corals *Endophyllum* sp., *Keriophyllum* sp., *Protomichelinia* sp., etc.

Northeast of the 1759 high peak of Mt. Kaokesaergai the formation yields plant fossil *Barrandeina* sp.; coral *Crassialveolites* sp., *Pachyfavosites* sp., *Endophyllum zhifangense*, *Tyrganolites* sp.; and brachiopods *Leptostrophia* sp., *“Fimbrispirifer*” sp., etc.

**Age:**

The age has been temporarily assigned as Eifelian.

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Wangchengpo Fm**

**Period: Devonian**

**Age Interval (Map column): D31 (53,54),** Frasnian (early Late Devonian)

**Province:** Guizhou

**Type Locality and Naming:**

The type section is located in Wangchengpo area, suburb of Dushan County, Guizhou.

It was named by Ding Wenjiang in 1929.

**Lithology and Thickness:**

This formation of carbonate rocks is divided into two members.

Lower part, the Hejiazhai Member, is composed of gray medium- to thick-bedded dolomite-bearing limestone and limestone, with the base is dominated by thin-bedded calcareous mudstone and carbonic mudstone.

Upper part, the Lujiazhai Member, is characterized by gray limestone and dolomitic limestone intercalated with marl. The total thickness is 212 m.

**Relationships and Distribution:**

***Lower contact:***

The formation rests conformably on the grayish-black medium-bedded limestone of Dushan Fm.

***Upper contact:***

The formation is overlain by the dolomite of Yaosuo Fm.

***Regional extent:***

The formation is widely distributed in Dushan, Duyun, Huishui, Anshun, southeast Guizhou.

**Fossils:**

It has abundant brachiopods *Cyrtospirifer*, *Tenticospirifer*, *Emanuella*, *Atrypa*; and Coral *Temnophyllum*, *Sinodisphyllum.*

**Age:**

Frasnian (early Late Devonian)

**Depositional setting:**

It is interpreted as a platform facies.

**Additional Information**

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Wangguangou Fm**

**Period: Devonian**

**Age Interval (Map column): D31 (48),** Frasnian (early Late Devonian)

**Province:** Hunan

**Type Locality and Naming:**

The type section is located at Wangguangou to Baishiyan, about 12 km southwest of Xichuan County, Hunan.

It was named by The South of Henan Regional Geological Survey of Beijing Geological College in 1961, and is published by "The Regional Scale of South-central China” in 1974.

**Lithology and Thickness:**

Dolomite. The base of this formation is composed of grayish-purple sandy dolomite intercalated with a few beds of earth-yellow calcareous claystone and clayey banded limestone. Clayey limestone intercalated with syngenetic conglomerate can occur in the base of this formation.

Sandstone. The lower part is dominated by grayish-yellow medium- to thick-bedded feldspathic quartz sandstone, mica-bearing fine-grained sandstone and claystone, with interbeds of reef limestone.

Sandstone. The middle part is characterized by grayish-yellow medium- to thick-bedded feldspathic quartz sandstone with interbeds of gray to grayish-purple claystone.

Claystone, Sandstone. The upper part is composed of purple silt-bearing claystone, thin-bedded fine-grained sandstone, shelly limestone and bioclastic limestone.

The middle and upper parts have three intercalated beds of thick-bedded reef limestone.

The total thickness is 206.5 m.

**Relationships and Distribution:**

***Lower contact:***

It conformably overlies on the Baishangou Fm.

***Upper contact:***

***Regional extent:***

Variation of thickness in this formation is similar to that of the underlying Baishangou Fm; the west of Laoguanhe is about 150 m thick, the east could reach to 180 m, and it is 240 m thick in Yongqingshan of Neixiang.

**Fossils:**

The limestone yields coral, stromatopora, brachiopods, and bryozoan fossils; and in middle and upper part, it is characterized by coral *Peneckiella-Donia* assemblage zone.

**Age:**

Frasnian (early Late Devonian)

**Depositional setting:**

It is interpreted as a platform margin bio-reef facies deposit.

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Wangjiacun Fm**

**Period: Devonian**

**Age Interval (Map column): D12-3 (29),** Pragian to Emsian (Early Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located Xiangyangsi, west of Shidian County, Yunnan.

It was named by the No 3 branch Team of yunnan No 1 Team of Regional Geological Survey in 1980, and Tan xuechun, Dong zhizhong, Qin Dehou formally quoted it in 1982.

**Lithology and Thickness:**

Carbonate rocks. It is composed of grayish-black medium- to thick-bedded silty limestone, grayish-yellow calcareous sandstone and silty mudstone intercalated with quartz sandstone.

It is about 100 m thick.

**Relationships and Distribution:**

***Lower contact:***

The formation conformably rests on purplish-red sandy limestone intercalated with calcareous siltstone of Xiangyangsi Fm.

***Upper contact:***

The formation is overlain by dolomite of Shabajiao Fm.

***Regional extent:***

This formation is distributed in Baoshan, Shidian area.

**Fossils:**

The lower part has tentaculites *Nowakia acuaria* zone; and graptolites *Monograptus yukonensis* zone; and the upper part has conodonts of *dehisens* zone.

**Age:**

Pragian to Emsian (Early Devonian)

**Depositional setting:**

It is interpreted as a deep-water basin facies.

**Additional Information**

The Wangjiacun Fm is similar to the underlying Xiangyangsi Fm in lithological character, but they can be differentiated by color, the Wangjiacun Fm is grayish-black to grayish yellow, and the Xiangyangsi Fm is purplish-red before weathering.

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Wangjiadian Fm**

**Period: Devonian**

**Age Interval (Map column): D32-C11** , Famennian (Late Devonian) to Early Carboniferous

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Wangjiadian, 24 km southwest of Zhangxian County, Gansu. The reference section is north of Dazhuang, 40 km west of Zhangxian County, Gansu.

It was named by Xi’an Institute of Geology and Mineral, and Qin Feng, Gan Yiyan formally quoted it in 1976.

**Lithology and Thickness:**

Siltstone. In the Wangjiadian section, only the lower part of this formation outcrops and is dominated by thin-bedded dark-gray clayey siltstone, intercalated with few beds of fine-grained sandstone and clayey limestone, and calcareous siltstone.

The outcropping thickness is more than 1985 m.

Sandstone. In the Dazhuang section located 23 km west of Wangjiadian section, the formation is dominated by dark-gray to dark-greenish-gray thin- to medium-bedded fine-grained quartz sandstone, intercalated with thin-bedded siltstone with four beds of thin- to medium-bedded and lens-like bioclastic limestone; and it more than 778 m thick.

**Relationships and Distribution:**

***Lower contact:***

It conformably overlies on purplish-red, grayish-green fine-grained sandstone and quartz sandstone intercalated with siltstone of Dacaotan Group.

***Upper contact:***

At this section, the top is in a fault contact with Lower Permian.

***Regional extent:***

**Fossils:**

The lower part of Wangjiadian section yields brachiopods *Hunanospirifer ninghsiangensis*, *Cyrtospirifer* sp., *Cleiothyridina kusbassica*, *Ptychomaletoechia* cf. *kinlingensis*, *Plicochonetes* cf. *elegans*, *Rugosochonetes* cf. *hardrensis*, *Semiproductus tykhtensis*, plant fossils *Leptophloeum rhombicum* and spores; and the upper part of the Dazhuang section yields coral-brachiopoda fauna *Beichuanophyllum paragenesis*, *Enniskillenia enniskilleni*, *Sychnoelasma* cf. *konincki*, *Hunanospirifer* aff. *wangi*, *Plicatifera* cf. *zyabrovensis*, *Schuchertella gelaohoensis* etc.

**Age:**

Famennian (Late Devonian) to Early Carboniferous

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Wangjiajie Fm**

**Period: Devonian**

**Age Interval (Map column): D21 (9),** Eifelian (early Middle Devonian)

**Province:** Jilin

**Type Locality and Naming:**

The type section is located at Wangjiajie of Huangyu Town in Yongji County, Jilin.

It was named by Li Dongjin et al. in 1966; Wang Mingzhou et al. formally quoted it in 1973; and Nan Runshan, Guo Shengzhe adopted it in 1992.

**Lithology and Thickness:**

Siltstone, tuff. The lower member is composed of clayey siltstone, feldspathic sandstone intercalated with purple tuff, volcanic breccia and grayish-black limestone.

Limestone. The upper member is dominated by bioclastic limestone and dolomitic limestone intercalated with a few thin-bedded clayey limestone layers and chert nodules.

The total exposed thickness is 876.7 m.

**Relationships and Distribution:**

***Lower contact:***

The lower boundary is not clear.

***Upper contact:***

The top is an unconformable contact with Lower Carboniferous.

***Regional extent:***

This formation is distributed in Huangyu Town of Yongji County, Jilin.

**Fossils:**

The lower member yields coral *Favosites* cf. *goldfussi*, *Thamnopora yangi*, *Syringopora schmidti major*, *Disphyllum* sp.; stromatopora *Dendrostella* sp., *Stachyodes berticulata* etc.

The upper member yields stromatopora *Actinostroma*, *Dendrostella* *wangjiajieensis*; coral *Sociophyllum semiseptatum*, *Pachyfavosites* sp., *Squameofavosites* sp., *Amphipora angusta*, sp. etc.

**Age:**

Eifelian (early Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Wangjialeng Fm**

**Period: Devonian**

**Age Interval (Map column): D1-2 (42),** Early to Middle Devonian

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located at Wangjialeng of Taibai County to Jiashangounao, Tuoliyuan of Liuba County, Shaanxi.

It was named by Shanxi Team of Regional Geological Survey during mapping in 1965, and published by "The Regional Scale of Northwest China-Shaanxi” in 1983.

**Lithology and Thickness:**

Slate. The lower member of this Formation, more than 473 m thick, is composed of dark-gray to blackish-gray carbon-bearing sandy slate and chiastolite-slate intercalated with banded fine-grained sandstone, siltstone and crystalline limestone.

Sandstone. The middle member, more than 2244 m thick, is characterized by purple sandstone and quartz siltstone intercalated with sandy slate, sandy limestone and marl.

Sandstone. The upper member, 644 m thick, is dominated by purplish-gray calcareous sandstone, of which the lower part is intercalated with bioclastic limestone.

**Relationships and Distribution:**

***Lower contact:***

The Wangjialeng section in Taibai County is structurally complex, and its lower boundary and sequence are unclear.

***Upper contact:***

The top is in conformable contact with overlying medium- to thin-bedded limestone of the Changgou Fm.

***Regional extent:***

Taibai County, and East in the Changgou to Laogou area, south of Shanyang County.

**Fossils:**

The upper part of the middle member yields brachiopods *Acrospirifer lungmenshanensis* and *Euryspirifer*; and the upper member yields coral *Squameofavosites.*

**Age:**

Early to Middle Devonian

**Depositional setting:**

**Additional Information**

East in the Changgou to Laogou area, south of Shanyang County, the formation has less complex outcrops with a total thickness of more than 1669 m, although the bottom is not exposed, and its lithology is dominated by yellowish-brown and grayish-green medium-bedded feldspathic quartz sandstone and siltstone, intercalated with pebble-bearing quartz coarse-grained sandstone, conglomerate and a few beds of sandy micritic dolomite. Its lower part yields brachiopod ?*Acrospirifer*. The lithological character is similar to that of the western Taibai area, but component lithologies are more complex, suggesting this area may be nearer to the provenance source.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Weiguan Gr**

**Period: Devonian**

**Age Interval (Map column): D (34),** Devonian

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located n Zhagurilao of Weiguan in Lixian County, Sichuan. The reference section is nearby Huanliangzi of Lixian County, Sichuan.

It was named by Regional Geological Branch Team of Ganzi Geological Team, Sichuan in 1960, and is published by No. 2 of Sichuan Regional Geological Survey in 1975.

**Lithology and Thickness:**

It is a set of very-thick-bedded epi-metamorphic rock. The main lithology is metamorphic quartz sandstone and phyllite, and the upper part has abundant intercalations of thin-beds and lenses of limestone.

The thickness ranges from 271 to 1750 m.

**Relationships and Distribution:**

***Lower contact:***

It conformably overlies on Maoxian Group.

***Upper contact:***

It is in a disconformable contact with overlying Xuebaoding Fm.

***Regional extent:***

The formation is distributed in Pingwu, Songpan, Beichuan, Danba, Maowen, Wenchuan etc. of back-Longmenshan area.

**Fossils:**

Its lower part yields graptolite *Neomonograptus falcarius*, and the upper part contains Tabulata *Favosites*.

**Age:**

Devonian

**Depositional setting:**

**Additional Information**

In Wenchuan, Maowen, Beichuan line, the upper part is interbedded with phyllite, has abundant intercalations of thin-bedded limestone and contains abundant fossils.

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Wenduraobaote Fm**

**Period: Devonian**

**Age Interval (Map column): D13-D21 (4),** Emsian to Eifelian (late Early Devonian to early Middle Devonian)

**Province:** Inner Mongolia

**Type Locality and Naming:**

The type section is located in north of Wenduraobaote and Aobaotinghundi, the west hill of east Wuchumuqinqi, Inner Mongolia Autonomous Region.

It was named by Inner Mongolia Team of Regional Geological survey in 1973 during mapping the “East Wuchumuqinqi Geological Map (scale is 1:20000)”.

**Lithology and Thickness:**

Tuff. The lithology is complex and is mainly composed of tuff, crystal lithoclastic tuff, siltstone, feldspathic quartz sandstone and slate. Characteristic markers are the content of thin beds or lenses of limestone that are distributed very steady along strike. Limestone beds can attain 30 m in thickness and commonly are lenses.

The outcropped thickness can reach 1228 m.

**Relationships and Distribution:**

***Lower contact:***

Thin beds or lenses of limestone make it easy to differentiate this formation from the conformably underlying Aobaotinghundi Fm.

***Upper contact:***

***Regional extent:***

**Fossils:**

Characteristic markers are the content of thin beds or lenses of limestone that are distributed very steady along strike and contain abundant Tetracoralla and brachiopods fossils.

The formation yields brachiopods *Tridensilis* app, *"Paraspirifer*" sp., *Narelophyllum* sp., *Cylindrophyllum* sp., *Keriophyllum* sp.; and stromatopora *Anostylostroma* sp., *Trupebostroma* sp., etc.

**Age:**

Emsian to Eifelian (late Early Devonian to early Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Wotuoshan Fm**

**Period: Devonian**

**Age Interval (Map column): D22  (3),** Middle Devonian

**Province:** West Inner Mongolia.

**Type Locality and Naming:**

The type section is located west of Zhusilenghairxi, north side of Badanjilin Desert, West Inner Mongolia.

It was named by Geological Research Party, Ningxia Bureau of Geology and Mineral Resources and Xi’an Institute of Geology and Mineral Resources in 1977, and published by "Regional Report of Yagan Geological Map and Guaizihu Geological Map” (1:200,000) in 1981, and Zheng Zhaochang et al. adopted it in 1982.

**Lithology and Thickness:**

It is characterized by beds of conglomerate and tuffaceous sandstone. The basal part is dominated by gray conglomerate with thick-bedded sandy conglomerate; the lower and middle parts are composed of grayish-green tuffaceous sandstone and calcareous sandstone intercalated with thin-bedded limestone; and the upper part is characterized by dark-gray, grayish-brown, purple and grayish-green thin- to medium-grained feldspathic quartz sandstone, intercalated with medium-bedded coarse-grained feldspathic quartz sandstone. The total thickness is 530 m

**Relationships and Distribution:**

***Lower contact:***

It has conformable contact with the underlying Yikewusu Fm.

***Upper contact:***

It has conformable contact with the overlying Xipingshan Fm.

***Regional extent:***

**Fossils:**

No fossils have been reported.

**Age:**

The age is inferred as late Middle Devonian.

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Wudang Fm**

**Period: Devonian**

**Age Interval (Map column): D1,** Early Devonian

**Province:** Guizhou

**Type Locality and Naming:**

The type section is located at Dapingshan, Mairangzhai of Guiyang City, Guizhou.

It was named by the monographic study Team, Chinese Academy of Geology Sciences in 1965, and Pan Jiang et al. formally quoted it in 1975.

**Lithology and Thickness:**

This formation is a set of varicolored clastic rocks. It is composed of purplish-red, flesh-red and light-gray siltstone, silty mudstone and quartz sandstone, partly with ferruginous or oolitic hematite.

It is 80-120 m thick.

**Relationships and Distribution:**

***Lower contact:***

The formation has a disconformable basal contact to the underlying purplish-red thin-bedded ferruginous clayey siltstone of Gaozhaitian Group of Lower Silurian.

***Upper contact:***

The formation is overlain by light-gray to grayish-white quartz sandstone of Mazongling Fm.

***Regional extent:***

The formation's distribution is limited to nearby Guiyang.

**Fossils:**

The formation yields abundant fish fossils *Kueichowlepis sinensis*, *Sinopetalichthys kueiyangensis*, *Neoduyunaspis minuta.*

**Age:**

Early Devonian

**Depositional setting:**

It is interpreted as a littoral facies.

**Additional Information**

The Wudang Fm represents the lower formation of the Mangshan Group.

**Compiler**

(Xian Siyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Wujiafang Fm**

**Period: Devonian**

**Age Interval (Map column): D22-D31 (69),** late Middle Devonian to Frasnian (Late Devonian)

**Province:** Hunan

**Type Locality and Naming:**

The type section is located at Wujiafang of Taojiang County, Hunan.

It was named by Zhao Ruxuan et al. in 1978.

**Lithology and Thickness:**

Sandstone. It is dominated by quartz sandstone and siltstone, intercalated with sandy shale, pebble-bearing sandstone and sandy conglomerate.

The formation is mainly distributed in Yiyang, Taojiang, Ningxiang, Changsha area, northern Hunan, and is characterized by terrestrial clastic deposits that decrease southward in abundance and grain size as clayey and calcareous sediments increase.

To the north, the Yiyang and Taojiang area is dominated by grayish-white quartz sandstone and purplish-red siltstone, intercalated with a few pebble-bearing sandstones and sandy conglomerates.

The thickness is 500~700 m.

To the south at Cuiping of Ningxiang area, the lower part is mainly siltstone intercalated with sandy shale and marl, partly intercalated with limestone lenses, and the upper part yields a few coral and stromatopora.

Further south further to Leimingqiao, Fukou of Lianyuan, the lower part is composed of shale and siltstone, intercalated with fine-grained quartz sandstone, clayey limestone and bioclastic limestone, yielding abundant brachiopods and coral; and the upper part is mainly grayish-white quartz sandstone intercalated with siltstone and a few sandy limestone lenses, yielding plant fossils, and is about 500 m thick.

**Relationships and Distribution:**

***Lower contact:***

The conformable base to the underlying Yijiawan Fm is placed at the disappearance of clayey limestone and the appearance of calcareous clayey clastics with oolitic hematite.

***Upper contact:***

The upper contact is disconformable to the overlying Yuelushan Fm that begins with a basal conglomerate.

***Regional extent:***

The formation is mainly distributed in Yiyang, Taojiang, Ningxiang, Changsha area, northern Hunan

**Fossils:**

Fossils are dominated by fish and plants, a few bivalves, and inarticulata brachiopods. This formation in Taojiang, Yiyang, Changsha, Ningxiang, north of Liangyuan etc, yields brachiopods *Tenticospirifer*, *Cyrtospirifer*, *Hypothyridina*, *Emanuella*, *Ilmenia*, etc.

**Age:**

late Middle Devonian to Frasnian of Late Devonian, and maybe extends into early Famennian.

**Depositional setting:**

**Additional Information**

**Compiler**

(Tan Zhengxiu)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Wujiashan Fm**

**Period: Devonian**

**Age Interval (Map column): D1 (41),** Early Devonian

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Wujiashan, 6 km northwest of Wangmo Town in Chengxian County, Gansu.

It was named by Gansu Metallurgical and Geological Exploration Company in 1980, and Zhou Weijun formally quoted it in 1983.

**Lithology and Thickness:**

Schist. It is composed of biotite quartz schist, two-mica quartz schist intercalated with banded biotite quartz marble, pebble-bearing two-mica quartz schist, thin- to medium-bedded fine-grained quartz sandstone and quartz feldspathic sandstone intercalated with some beds of pebble-bearing quartz sandstone.

The lower part has intercalations of thick-bedded conglomerate, but the base does not outcrop; and the total thickness is more than 1480 m.

Sandstones possess graded bedding, horizontal bedding and oblique bedding, and the bases of conglomerates possess erosion surfaces; so these possibly originated from density- or turbidity-current deposits.

**Relationships and Distribution:**

***Lower contact:***

The base does not outcrop.

***Upper contact:***

***Regional extent:***

The distribution of the Wujiashan Fm is limited only to the core of Wujiashan anticline, east of Xihanshui.

**Fossils:**

The formation is deeply metamorphosed without any fossil remains.

**Age:**

The age of Early Devonian is inferred from the conformably overlying Qingshuigou Fm that has a typical Middle Devonian coral *Utaratuia.*

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Wunur Fm**

**Period: Devonian**

**Age Interval (Map column): D12-3 (5),** Pragian to Emsian (Early Devonian)

**Province:** Heilongjiang

**Type Locality and Naming:**

The type section is located at 8 km place, north of Wunur in Daxinganling, Heilongjiang.

It was named by Ning Qisheng et al. in 1959.

**Lithology and Thickness:**

Carbonate rocks. The formation is dominated by bioclastic sparite and micrite limestone, intercalated with thin-bedded calcareous siltstone.

The outcropping thickness is 178 m.

**Relationships and Distribution:**

***Lower contact:***

The base is in conformable contact on the underlying Luotuoshan Fm of grayish-black massive sparite limestone with abundant corals and yellowish-green phyllitized slate. Their lithology boundary is easy to differentiate.

***Upper contact:***

***Regional extent:***

The formation is distributed in the Wunur and Zhadunhe River area, Heilongjiang, in an east-north direction strike with sporadic distribution over an area of about 22 km2.

**Fossils:**

Fossils are abundant, and Tetracoralla and Tabulata are most developed, mainly *Dictyofavosites* *microporosus*, *Pachyfavosites vilvaensis*, *Stelliporella*? cf. *ataiformis*, *Favosites goldfussi*, *Amplexiphyllum* sp., *Lyrielasma* sp., *Tryplasma* sp. Part of the formation is a bedded reef.

**Age:**

Pragian to Emsian (Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Wupatarkan Gr**

**Period: Devonian**

**Age Interval (Map column):**

**Province:** Xinjiang

**Type Locality and Naming: S3 (?)-D1  (12),** Early Devonian

The type section is located at the medium to upper reaches of Biedaile River of Wushi County, Xinjiang.

It was named by Xinjiang No. 3 Team of Regional Geological Survey in 1961, and was published by "The Regional Scale of Northwest China-Xinjiang” in 1981.

**Lithology and Thickness:**

Phyllite. The group is characterized by gray, grayish-green and purplish-red phyllite and schistose siltstone intercalated with a few fine- to medium-grained quartz sandstone and limestone.

The exposed thickness ranges from 800 to 3000 m.

**Relationships and Distribution:**

***Lower contact:***

The base does not outcrop.

***Upper contact:***

The top conformably underlies the Tuogemaiti Fm of Middle Devonian.

***Regional extent:***

This group is distributed in south side of Kuokeshale hill.

**Fossils:**

No fossils

**Age:**

The age is temporarily assigned as Early Devonian. The age is inferred herein as Early Devonian based on the overlying Tuogemaiti Fm, therefore it isn't clear yet if it also includes Silurian-aged deposits.

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Wutong Fm**

**Period: Devonian**

**Age Interval (Map column): D32 (71),** Famennian (latest Devonian)

**Province:** Zhejiang

**Type Locality and Naming:**

The type section is located at Wutongshan, northwest of Meishan of Changxing County, Zhejiang.

It was named by Ding Wenjiang in 1914

**Lithology and Thickness:**

Quartzite, sandstone. The Wutong Fm at the Longtan section is 136 m thick, and can be divided into two members.

The lower part, the Guanshan Member, is composed of gray quartzite and quartz sandstone intercalated with purple shale.

The upper part, the Leigutai Member, is characterized by grayish-white, grayish-black and grayish-brown quartz sandstone, siltstone and shale, intercalated with ferruginous and manganese nodules

**Relationships and Distribution:**

***Lower contact:***

The formation has a disconformable contact with the underlying Fentou Fm of Lower Silurian.

***Upper contact:***

The formation has daisconformable contact with the overlying Jinling Fm of Lower Carboniferous.

***Regional extent:***

**Fossils:**

The upper part, the Leigutai Member, yields fish fossils *Sinolepis macrocephala*, *S. wutungensis*, *Asterolepis sinensis*; plant fossils *Sublrpidodendron mirabile*, *Lepidodendropsis hirmeri*, *Leptophloeum* *rhombicum*, etc.

**Age:**

Famennian (latest Devonian)

**Depositional setting:**

It is interpreted as a littoral delta.

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Wuzhishan Fm**

**Period: Devonian**

**Age Interval (Map column): D3 (59,60,63,66),** Famennian (latest Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at Wuzhishan, east of Dachang of Nandan County, Guangxi.

It was named by Zhang Zhaojin in 1941.

**Lithology and Thickness:**

Limestone. The lithological character is dominated by light-gray to gray medium- to thick-bedded clayey banded limestone and nodular limestone, partly intercalated with pebble-like limestone. Generally the lower part shows more banding, whereas the upper part is more nodular.

In Xiangzhou to Hengxian line, the base of this formation often has a pebble-like limestone, which has been named Xiangshan Member (Hou Hongfei et al., 1988), and a bed of black nodular limestone is developed between it and the nodular limestone. The formation thickness averages 150 m.

**Relationships and Distribution:**

***Lower contact:***

The formation has a basal conformable contact to the underlying Liujiang Fm, and is marked by the appearance of nodular or banded limestone.

***Upper contact:***

The formation has a conformable upper contact to the Luzhai Fm of Lower Carboniferous.

***Regional extent:***

This formation is widely distributed over Guangxi.

**Fossils:**

There are a few mega-fossils in the formation. At Daihua of Guizhou and Nandan of Guangxi can be distinguished the ammonoid *Clymenia* zone and *Wocklumenia* zone, trilobite *Dianops-Typhloproetus* assemblage zone, and brachiopod *Dzieduszyckia* assemblage zone. Conodonts are very abundant and include the *Palmatolepis* *gigas* zone to *Siphonodella praesulcata* zone. The section at Zhaisha of Guangxi yields ammonoid *Sporadoceras* etc. At Luofu of Nandan and Lanxu of Daxin area, it contains ostracoda *Ungerella sigmoidle*, *Entomozoe nehdensis* etc.

**Age:**

Famennian (latest Devonian), though some areas may include Frasnian (early Late Devonian).

But in some area of Baping in Nandan, the base of the formation yields the conodont *Polygnathus asymmetricus*, so there it may include the entire Frasnian.

**Depositional setting:**

It is interpreted as a deep-water basin and slope deposits.

**Additional Information**

The Wuzhishan Fm of Delong, Malang, Pohe, of Napo County, Mukui of Guiping, Dachang of Nandan in Guangxi contains trachyte, spilite keratophyre and felsite etc. This would suggest submarine volcanism during the Famennian.

The Wuzhishan Fm records two important geological events:

The first is the Frasnian-Famennian biological event, which is at the base of the Formation, and widely recognized in southern China. Around this level at Luoxiu of Xiangzhou, Guangxi, the sedimentary sequence possesses brecciform limestone, black shale and nodular limestone, with excursions of carbon and oxygen isotopes and iridium element (Hou et al., 1988, Wang et al., 1991, Hou et al., 1992, Yan et al., 1993).

The other event is in the upper Wuzhishan Fm where there commonly is a unit of black shale, about 40 cm thick, that is well developed in Changshun, Mawei of Dushan, Guizhou, Nandan, Shanglin of Guangxi. This event horizon is named the Changshun Shale (Wang Chengyuan, Yin Baoun 1984, Acta Palaeon. Sinica) or Gedongguan Bed (Hou Hongfei et al., 1985, Courier Forsch. Senck.). The shale is considered to be equivalent to the Hangenberg anoxic event and global mass extinction near the Devonian-Carboniferous boundary. In Shanlin area, excursions of carbon and oxygen isotopes and iridium have also been recorded (Bai Shunliang et al., 1988).

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xiadaminshan Fm**

**Period: Devonian**

**Age Interval (Map column): D22-D31 (5),** Givetian-Frasnian (late Middle to early Late Devonian)

**Province:** Inner Mongolia

**Type Locality and Naming:**

A type section was not given. The Xiadaminshan Formation is a composite from various reference sections.

It was named by Ning Qisen et al. in 1958.

**Lithology and Thickness:**

It is characterized by variegated volcanic clastics, carbonates and terrestrial clastics with various thicknesses ranging from tens to 200 meters.

The lower part, as characterized by Linchang section at Zadunhe River, near Mianduhe of Great Hinggan Mts, is composed of purplish-red tuffaceous lava, bioclastic limestone, white marble and gray green tuffaceous sandstone.

At the left bank of Zadunhe River, the lithologies of the Formation are more complex including volcanic breccia, quartz porphyrite, tuff, tuffaceous sandstone and calcareous sandstone.

**Relationships and Distribution:**

***Lower contact:***

The lower boundary of the Formation is unclear.

***Upper contact:***

***Regional extent:***

**Fossils:**

Linchang section at Zadunhe River, near Mianduhe of Great Hinggan Mts, contains:

coral *Cladopora* sp., *Thamnopora* sp., *Penekiella* sp.,

brachiopoda *Productella* sp., *Cyrtospirifer* sp., and

conodont *Polygnathus varcus.*

At the left bank of Zadunhe River the Formation yields coral *Phillipsastrea* sp., *Pexiphyllum* sp., *Barrandeophyllum* sp.

**Age:**

Givetian-Frasnian (late Middle to early Late Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xiadong Fm**

**Period: Devonian**

**Age Interval (Map column): D13-D21 (62),** Late Emsian to Givetian (Early to Middle Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at Nadaocun Village of Xiadong Town, Qingzhou City of Guangxi Zhuang Autonomous Region.

It was named by Guangxi Regional Geological Survey in 1974 and was published in 1982 by Bai Shuanglian et al.

**Lithology and Thickness:**

Mudstone. The Formation consists of gray to grayish-black thin- to thick-bedded mudstone and silty mudstone, and light-gray and yellowish-green siltstone with a few manganese-bearing mudstone layers.

In the Pingwan of Fangcheng, a thick-bedded conglomerate occurs at the base of the Formation.

It is 500 m thick.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Qinzhou Formation and can be distinguished from the latter by the abundant tentaculite fossils, flysch rhythmites and manganese deposits.

***Upper contact:***

***Regional extent:***

The distribution of the Formation is restricted to a narrow area of 140 km long from Fangcheng to Qinzhou.

**Fossils:**

It contains tentaculite *Nowakia* cf. *concellata, N. otomari;*

ostracod *Hollinella* sp., *Primitia* sp.; and trilobite *Proetus* sp.

**Age:**

Late Emsian to Givetian (Early to Middle Devonian)

**Depositional setting:**

It is interpreted as a relatively deep-water basin paleogeographic setting.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xiaheilonggong Fm**

**Period: Devonian**

**Age Interval (Map column): D1 (7),** Early Devonian

**Province:** Heilongjiang

**Type Locality and Naming:**

The type section is located at West Hill of Heilonggong, Shangzi City of Heilongjiang Province.

It was named by Zhu Songnian in 1961 and was published by Nan Renshan and Guo Shengze in 1992.

**Lithology and Thickness:**

The formation is divided into two members:

The Lower Member, more than 200 m thick, is composed of grayish-black thin-bedded crystalline limestone, grayish-white thick-bedded marble, tuffaceous sandstone, quartz sandstone and slate.

The Upper Member, 895 m thick, consists of alternating of slate and fine-grained sandstone.

In Yincun area, it is characterized by conglomerate, sandy slate and limestone.

**Relationships and Distribution:**

Neither its top nor bottom outcrops.

***Lower contact:***

***Upper contact:***

***Regional extent:***

**Fossils:**

The limestone contains brachiopoda *Leptaenopyxis bouei, Rhitistrophia* sp., *Coelospira* sp., *Cyrtinopsis* sp.; coral *Favosites* sp., *Squameofavosites* sp.; and trilobite *Phacops* sp.

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xiangyangsi Fm**

**Period: Devonian**

**Age Interval (Map column): D1 1-2 (29),** Lochkovian to Pragian (Early Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Xiangyangsi, west of Shidian County of Yunnan Province.

It was named by No. 3 Geological Team of Yunnan Geological Survey in 1980, and was published in 1982 by Tan Xuecun, Dong Zizhong and Qin Dehou.

**Lithology and Thickness:**

Calcareous shale. The Formation is characterized by purplish-red, grayish-green calcareous shale, nodular micrite and few clayey and silty limestones. It is 150 m thick.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Niusiping Formation with the first appearance of shale as its lower boundary.

***Upper contact:***

***Regional extent:***

The Formation is mainly distributed in Baoshan-Shidian area.

**Fossils:**

It contains crinoid *Camarocrinus* cf. *subornatus,*

graptolites *Monograptus* cf. *uniformis angustidens, M. micoden*;

conodont *Ozarkodina r. remscheidensis*; and

brachiopoda *Plectodonta* sp., *Yunnanoleptaena* sp.

**Age:**

Lochkovian to Pragian (Early Devonian)

**Depositional setting:**

It is interpreted as a relatively deep-water basin setting.

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xiaodong Fm**

**Period: Devonian**

**Age Interval (Map column):**Late Emsian to Givetian (Early – Middle Devonian)D13 (70).

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located in Nadao Village, Xiaodong Town, Qinzhou City, Guangxi Province (E108°38′00″; N22°13′00″). Proposed by Guangxi Bureau of Geology & Mineral Prospecting & Exploitation in 1974. Due to the incomplete exposure of the formation and the fault contact with the overlain Shijia Formatiion, there’s been a lack of a complete typical profile.

**Synonym:**

**Lithology and Thickness:**

Sandy claystone. It consists of grey thin to thick claystone, silty-claystone, and light grey to yellow thick siltstone, with carbonaceous-iron-manganese claystone lenses.

Thickness: The typical section is 514 meters thick; and its regional thickness ranges from 412 to 656 meters thick.

**Relationships and Distribution:**

Due to the incomplete exposure of the formation and the fault contact with the overlain Shijia Formatiion, there’s been a lack of a complete typical profile.

***Lower contact:***

Qinzhou Fm (conformable)

***Upper contact:***

Shijia Fm (angular unconformity, Fault contact)

***Regional extent:***

Fangcheng City, Qinzhou City and Lingshan City etc., Guangxi Province.

**Fossils:**

Tentaculites: *Nowakia* cf. *cancellata，N. otomari;*

Ostracoda: *Hollinella* sp.，*Primitia* sp.;

Trilobita: *Proetus* sp*.*

And some brachiopods, bivalves, trilobites and Crinoidea (stems).

**Age:**

Late Emsian to Givetian (Early – Middle Devonian)

**Depositional setting:**

Deep marine basin.

**Additional Information:**

This formation is conformable with the underlying Qinzhou Formation, and the two are more difficult to distinguish in lithology. In general, however, this formation is characterized by tentaculite-bearing, carbonaceous-iron-manganese claystone lenses, and flysch rhythm.

**Compiler**

(Hongfei Hou)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xiaolingpo Fm**

**Period: Devonian**

**Age Interval (Map column): D31 (70),** Late Devonian

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at Xiaolingpo near Tuqiaozi Village along the highway from Ganxi to Shawuzi Town in Beichuan County, Sichuan Province.

It was named by Hou Hongfei and others in 1985.

**Lithology and Thickness:**

Reefal limestone. The Formation is characterized by grayish-white amphiporoid-bearing limestone, reefal limestone, algal-laminated and oncolite limestone. The formation is 266 m thick.

**Relationships and Distribution:**

***Lower contact:***

It is distinguished from underlying Tuqiaozi Formation by the appearance of a 40-cm-thick bed of algal-laminated limestone.

***Upper contact:***

***Regional extent:***

**Fossils:**

It contains stromatoporoid *Clathrodictym* sp., *Anoxtylostroma* sp., *Amphypora* sp., *Paramphipora* sp.; and coral *Pseudozaphrentis tenella-Longmenshanophylloides symmetrica* Assemblage Zone and *Extranella multiseptata-Tuqiaoziphyllum longiseptatum* Assemblage Zone.

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xiaputonggou Fm**

**Period: Devonian**

**Age Interval (Map column): D11 (40),** Lochkovian (Early Devonian)

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Putonggou, 3.2 km east of Zanwa, Ruerga County, Gansu Province.

It was named by the Xi'an Institute of Geology and Mineral Resources in 1974, and was published in 1976 by Qinfeng and Gan Yan.

**Lithology and Thickness:**

Slate. The Xiaputonggou Formation, 175.5 m thick, is composed of dark-grayish slate and siliceous slate intercalated with thin beds or lenses of bioclastic limestone, and its uppermost part consists of medium- to thin-bedded dolomitic bioclastic limestone and sandy limestone with calcareous slate intercalations.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Yanglugou Formation of Silurian Formation.

***Upper contact:***

***Regional extent:***

The formation, with a relatively persistent lithology and thickness, is widely distributed in Luqu, Diebu of west Qinling and north of Ruiergai.

**Fossils:**

The lower part contains conodont *Icriodus w. woschmidti;*

Brachiopoda *Rhynchospirina-Spirigerina* Assemblage Zone,andcoral *Klamannipora coreaniformis-Thamonpora subelegantula* Assemblage Zone; and brachiopoda *Lancemyonia-Machaeratia* Assemblage Zone, and coral *Mesofavosites dupliformis-Favosites brusnitzini-Squameofavosites bohemica* Assemblage Zone.

**Age:**

A Lochkovian age assignment is supported by Rb-Sr whole-rock dating of 409.6 +/-9.8 Ma for the lower part of the *woschmidti* Zone in this Formation.

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xiashibei Fm**

**Period: Devonian**

**Age Interval (Map column): D11 (75),** Lochkovian (Early Devonian)

**Province:** Inner Mongolia

**Type Locality and Naming:**

The type section is located at North Hill of Xiashibei, 65 km of Naman Qi, Zelimu of Inner Mongolia.

It was named by No. 2 Team of Liaoning Regional Geological Survey in 1967 and was published in 1978 by Lioning Compiling Group for Regional Stratigraphical Scale.

**Lithology and Thickness:**

Limestone. The Formation is characterized by grayish-white thick- to massive-bedded marbled limestone and microcrystalline limestone intercalated with clayey slate and a few breccias.

It ranges from about 430 to 1170 m thick.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

***Regional extent:***

This Formation is widespread in central and southeastern Inner Mongolia with incomplete outcrops.

**Fossils:**

It yields coral *Mesofavosites* ex gr*. jilinensis, Favosites fungites, Parathamnopora yongjiensis, Fletcheria camera, Bogimbailites florifer, Zelophyllum* cf. *intermedium, Pseudomicroplasma* sp., brachiopoda and stromatoporoids.

**Age:**

Lochkovian (Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Su Yanzheng)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xiawuna Fm**

**Period: Devonian**

**Age Interval (Map column): D2 (40),** Middle Devonian

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Dangduogou, 24 km northwest of Diebu County of Gansu Province.

It was named by Zhang Yan in 1961 and was published in 1976 by Regional Stratigraphic Scale, Volume Gansu.

**Lithology and Thickness:**

The Formation, 300-400 m thick, is composed of two sedimentary cyclic sequences.

Calcareous sandstone. The lower part of the first cycle consists of gray medium- to thick-bedded calcareous quartz sandstone, clayey siltstone and shale; and the upper part is gray thick-bedded to massive sandstone and bioclastic limestone

Sandstone, limestone. The second cycle consists of a lower part of light-brownish-gray medium- to thick-bedded iron-bearing quartz sandstone and silty limestone with sandy shale, and an upper part of gray medium- to thick- bedded microcrystalline limestone, bioclastic limestone and stromatoporoid-bearing limestone with a few siltstone layers.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

***Regional extent:***

The Formation is widely distributed in the western Qinling Mts. with relatively persistent lithology and thickness of 300-400 m.

**Fossils:**

The upper part of the first cycle contains coral *Dendrostella trigemma-Fasciphyllum crassithecum* Assemblage Zone.

The upper part of the second cycle contains brachiopoda *Geranocephalus xiawunaensis-Scharkovaelites sinensis* Assemblage Zone, *Strigocephalus* Acme Zone, and conodont *Icriodus arkoeensis* in the upper part.

**Age:**

Middle Devonian

**Depositional setting:**

The upward trend of sedimentary environments of each cyclic deposit shows a shallowing from shallow shelf to a carbonate platform.

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xibiantang Fm**

**Period: Devonian**

**Age Interval (Map column): D13-D21 (29),** Emsian to Eifelian (late Early Devonian to early Middle Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at east side of Xibiantang Reservoir of Heyuanzhai Village, Shidian County of Yunnan Province.

It was named by Hou Hongfei and Dong Zhizhong in 1982.

**Lithology and Thickness:**

Limestone. The Formation, 66 m thick, is composed of gray and grayish-yellow medium- to thick-bedded limestone and calcareous mudstone.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Shabajiao Dolomite.

***Upper contact:***

***Regional extent:***

The main distribution of the Formation is at Baoshan, Shidian and Luxi area.

**Fossils:**

The Formation contains brachiopoda *Strophochonetes* spp. and corals.

**Age:**

Emsian to Eifelian (late Early Devonian to early Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xichahe Fm**

**Period: Devonian**

**Age Interval (Map column): D1-2 (45, 46),** Early to Middle Devonian

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located at Dajiagou of Penjia Village, Xundian County of Shaanxi Province.

It was named by Shaanxi Geological Survey in 1980, and was published in 1983 by Paleontological Atlas of Northwest China, Volume San-Gan-Ning.

**Lithology and Thickness:**

Conglomerate, sandstone. The lower part of the Formation is composed of grayish-green and dark-gray siliceous conglomerate intercalated with pebbly feldspar quartz sandstone; and the upper part consists of grayish-green and dark-gray thin-bedded feldspar quartz sandstone and sandy slate with lenses of conglomerate and coarse-pebbly sandstone. The uppermost Formation has slate with dolomitic limestone.

The usual the thickness of the Formation is 190 m, but the maximum thickness reaches 590-670 m in the Gongguan-Huilong area.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

The formation is conformably overlain by the Gongguan Dolomite.

***Regional extent:***

Gongguan-Huilong area, Gongguan-Xichahe area.

**Fossils:**

The uppermost Formation yields bivalve *Grammysia* sp., *Cypricardinia* sp., *Edmondia* sp., and *Glassites* cf. *concentricus*.

**Age:**

The Formation is diachronous in age from Lower Devonian in the Gongguan-Xichahe area to Middle Devonian in the Shangjin-Songsuping area.

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xiejiawan Fm**

**Period: Devonian**

**Age Interval (Map column): D13 (70),** Early Devonian

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at Xiejiawan Village, 500 m south of Ganxi Town, Pingwu County of Sichuan Province.

It was named by Wan Zhengquan in 1974, and published by Chen Yuanren in 1978.

**Lithology and Thickness:**

The Formation is divided into two members.

Sandstone. The Lower part, the Meijiayuan Member, 47.72 m thick, is composed of gray thin-bedded fine-grained sandstone and siltstone intercalated with thin beds or lenses of limestone.

Siltstone. The upper part, the Huoshenmiao Member, 247.22 m thick, consists of alternations of calcareous siltstone, shale and limestone with various thicknesses.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Ganxi Formation.

***Upper contact:***

***Regional extent:***

**Fossils:**

The main fossils are brachiopoda *Euryspirifer paradoxus, Otospirifer xiejiawanensis*, andconodonts *Polygnathus perbonus, P*. cf. *gronbergi.*

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xigou Fm**

**Period: Devonian**

**Age Interval (Map column): D13 (51),** Early Devonian

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at the Minbaogou, 25 km northwest Wenxian County of Gansu Province.

It was named by Lin Zhile in 1966, and published by Regional Stratigraphical Scale of Northwest China, Volume Gansu in 1981.

**Lithology and Thickness:**

Shale, limestone. Xigou Formation is characterized by a lower part of blackish-gray to dark-gray shale and sandy shale, dark-greenish-gray siltstone with thin- to medium-bedded clayey limestone and quartz sandstone; and an upper part of dark-gray medium- to thick- bedded limestone with thin-bedded clayey limestone.

The thickness of the Formation varies from 108 m in Malianhe of Linjiang, 192 m in Minbaogou to 459 m in south flank of Huanglong Anticline, Songpan.

**Relationships and Distribution:**

***Lower contact:***

The formation rests disconformably on the Shifang Group with a basal siliceous breccia.

***Upper contact:***

***Regional extent:***

The thickness of the Formation varies from 108 m in Malianhe of Linjiang, 192 m in Minbaogou to 459 m in south flank of Huanglong Anticline, Songpan.

**Fossils:**

The limestone yields coral *Favosites regularissimus, Squameofavosites mironova, S. dubatolovi, Parastriatopora* sp., *Corolites* sp., *Mesofavosites* sp. and *Aulacophyllum* sp.

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xihanshui Gr**

**Period: Devonian**

**Age Interval (Map column): D2-3 (41)**

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at the Leijiaba-Jiangkou of the upper reaches of Xihanshui River, south of Lixian, Gansu Province.

It was named by Yeh Lianjun and Guan Shichong in 1944.

**Lithology and Thickness:**

The Group is characterized by alternations of dark-gray slate, phyllite and calcareous sandstone, that are intercalated with some limestone beds in the middle and upper parts.

The outcropping thickness is more than 8000 m.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

It is in faulted contact to Triassic on south side and to Carboniferous in its north side.

***Regional extent:***

**Fossils:**

The limestone contains brachiopoda *Stringocephalus* sp. *Spinatrypa* sp.,

Coral *Sinodisphyllum* sp., *Acanthophyllum* sp., and conodonts.

A few spores and Antiarchi placoderm fish fossils occur in the lower part of the group.

**Age:**

Middle to Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xikuangshan Fm**

**Period: Devonian**

**Age Interval (Map column): D32 (68, 69),** Famennian (latest Devonian)

**Province:** Hunan

**Type Locality and Naming:**

The type section is located at Xikuangshan Hill near Lengshuijiang City of Hunan Province.

It was named by Tian Qijun (=C.C. Tien), Wang Xiaogin and Xu Zhanyi in 1929.

**Lithology and Thickness:**

Limestone. The Xikuangshan Formation can be subdivided into three members in ascending order:

Lower member, Tuzitang Limestone, 40 m thick, consists of medium- to thick-bedded bioclastic limestone with a few beds of shale.

Middle member, Nitangli Iron-bearing Bed, 5-40 m thick, is composed of yellowish-green shale and chlorite shale with clayey limestone and 1 to 2 beds of purplish-red oolitic hematite.

Upper member, Magunao Limestone, 100-300 m thick, is the main part of the Formation and is composed of nodular limestone and bioclastic limestone intercalated with calcareous sandstone in the middle part.

**Relationships and Distribution:**

***Lower contact:***

The Formation has a conformable contact to the underlying thin-bedded shale-limestone of Changlongjie Shale, and is easy separated based on the appearance of thick-bedded limestone.

***Upper contact:***

***Regional extent:***

The lithology of the Formation is relatively persistent throughout the Hunan Province, but the Nitangli Iron-bearing Bed is only distributed in the area north of Lengshuijiang, with commercial importance in the Ningxiang area.

**Fossils:**

Lower member, Tuzitang Limestone, yields brachiopoda of *Yunnanellina -Yunnanella* Assemblage Zone.

Middle member, Nitangli Iron-bearing Bed, contains brachiopoda of *Hunanospirifer-Yunnanella* Assemblage Zone, bryozoan and crinoids.

Upper member, Magunao Limestone, contains conodont *Palmatolepis rhomboidalis, P. marginifera.*

**Age:**

Famennian (latest Devonian)

**Depositional setting:**

Sedimentary facies analysis indicates that the Tuzitang Limestone is related to storm deposits, that the iron beds are related to a sandy bar which may have shifted from south to north, and that the Magunao Limestone shows a lagoon facies.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xindu Fm**

**Period: Devonian**

**Age Interval (Map column):**

**Province:** Guangxi

**Type Locality and Naming: D21 (67),** Middle Devonian

The type section is located at Hongfan-Shankou area of Renyi Village, Hexian County, Guangxi Zhuang Autonomous Region. It was named by Guangxi Regional geological Survey in 1974

**Lithology and Thickness:**

Sandstone. The Xindu Formation is characterized by a

lower part of siltstone and fine-grained sandstone with shale and dolomitic limestone;

a middle part of fine-grained sandstone with a few limestone and oolitic hematite; and

an upper part of sandstone, siltstone and shale with limestone and 1-3 beds of oolitic hematite.

It is 220 m thick at the type section, and ranges from 50 to 865 m thickness in the region.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Hexian Formation, and overlaps on the margin of Pre-Devonian Old Land at Quanzhou, Xinon, Rongon Rongshui and Luocheng.

***Upper contact:***

***Regional extent:***

The Formation is distributed in the northeast and north Guangxi.

**Fossils:**

The fossils are

brachiopoda *Eospiriferina lachrymose, Xenospirifer fungi, Athyrisina squamosa, Indospirifer quadriplicata, I. maoerchuanensis*;

fish *Hohsienolepis hsintuensis*;

plant *Protolepidodendron scharyanum, Philophyton* sp.;

and ostracods and bivalves.

**Age:**

Middle Devonian

**Depositional setting:**

It is interpreted as near shore to shallow-marine clastic deposits.

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xinghongpu Fm**

**Period: Devonian**

**Age Interval (Map column): D3 (42),** Late Devonian

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located at Gaobozi-Luanshitan area, south flank of Qiantongshan-Yuquanshan Anticline, north of Shancha Village of Fengxian County, Shaanxi Province.

It was named by Shaanxi Regional Geological Survey during mapping the "Shaangxian Sheet (scale 1:200,000)” in 1959, and published in Regional Stratigraphic Scale of Northwest China, Volume Shaanxi in 1962.

**Lithology and Thickness:**

Phyllite, limestone. The Formation is divided into three members. The lithology of each member is composed of grayish-green and gray silty phyllite in its lower part, phyllite and calcareous phyllite with thin-bedded limestone in its middle part, and clayey limestone and crystalline limestone in its upper part.

Total thickness is 1884-2164 m.

In the east Qinling Region, the Formation is characterized by silty slate intercalated with feldspar quartz siltstone and lenses of silty limestone, 1762 m thick.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

***Regional extent:***

The Formation is distributed in the Fengxian, Taibai, Zenglun, Shanyang of South Zone of Middle Qinling Region.

**Fossils:**

The middle and upper members contain

brachiopoda *Atrypa* sp., *Spinatrypa* sp*., Desquamatia* sp*., Schizophoria* sp.;

coral *Disphyllum* sp., *Sinodisphyllum* sp.*, Temnocarinia* sp., *Thamnopora* sp., *Alveolites* sp.; and

stromatoporoids *Actinostroma* sp., *Idiostroma* sp.

In the east Qinling Region, the Formation yields

brachiopoda *Atrypa* sp., *Gypidula* sp., c

oral *Disphyllum* sp. and

conodont *Ancyrodella rountundiloba alata.*

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xipingshan Fm**

**Period: Devonian**

**Age Interval (Map column): D3 (3),** Late Devonian?

**Province:** Inner Mongolia

**Type Locality and Naming:**

The type section is located at western Zhusilenghaierhan, north margin of Badanjilin Desert in western Inner Mongolia Autonomous Region.

It was named by the Cooperative Research Group of Xi'an Institute of Geology and Mineral Resources and Ningxia Geological Team in 1979, and published in 1:200,000 Geological Map and its Explanations, Yagan and Guaizihu Sheets in 1981.

**Lithology and Thickness:**

The Formation is subdivided into two members.

Sandstone. The Lower member outcrop in Xipingshan is composed of purplish-red to brownish-purple medium- to fine-grained sandstone intercalated with few lenses of conglomerate and limestone. It is more than 1560 m thick.

Andesite. The Upper member outcrop in northwest Hulun consists of andesite and andesite breccia with lenses of limestone and marble and is more than 400 m thick.

The relationship between these Lower and Upper members and the age of the Upper member are problematic.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

***Regional extent:***

**Fossils:**

The Lower member contains brachiopoda *Tenticospirifer* spp., *Cariniferella* sp., *Productella* sp.,

coral *?Phillipsatrea* sp., *Disphyllum* sp.

The Upper member yields coral *Thamnopora* sp.

**Age:**

The relationship between these Lower and Upper members and the age of the Upper member are problematic. Late Devonian

**Depositional setting:**

**Additional Information**

The relationship between these Lower and Upper members and the age of the Upper member are problematic.

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xueshan Gr**

**Period: Devonian**

**Age Interval (Map column): D1-2 (20),** Early to Middle Devonian

**Province:** Gansu

**Type Locality and Naming:**

The type section is located at Snow Mountain, Jinyuan County of Gansu Province.

It was named by Li Yuemin and Zhou Wenzhao in 1963.

**Lithology and Thickness:**

Sandstone, siltstone. The Formation at Snow Mountain and Songshan Mt., 3600 m thick, is composed of grayish-green and purplish-red fine-grained sandstone and siltstone intercalated with copper deposits??? and a basal 200-m-thick conglomerate.

The Xueshan Formation near Panshui of Xiaoyin, north of Jintai, is characterized by variegated sandstone, 262 m thick.

In the Laojunshan Hill of Minle, Tongziba River, Gulang, Chouniugou of Wuwei, Xiaoyin of Jintai, the Formation contains more or less medium- to basic lava and tuff, including basalt, basaltic porphyrite, dacite and rhyolitic tuff, representing volcanic activity along a paleo-fault zone.

**Relationships and Distribution:**

***Lower contact:***

This Formation rests unconformably on the Lower Paleozoic.

***Upper contact:***

This Formation is overlain by Shaliushui Formation of Upper Devonian or Lower Carboniferous.

***Regional extent:***

ts distribution is restricted in the north of Qilain Mts.

**Fossils:**

The beds of sandstone contain plant fossils *?Drepanophycus* sp., *?Subbardia* sp., *Taeniocrada* sp.

The Xueshan Formation near Panshui of Xiaoyin, north of Jintai contains plant *Lepidodendropsis* sp.

In the Yangaoshan, southeast of Jintai, the copper-bearing sandstone of the upper part of the formation yields *Protolepidodendron* cf. s*charyanum, Zosterophyllum* sp., *Taeniocrada* sp.

**Age:**

Early to Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xishancun Fm**

**Period: Devonian**

**Age Interval (Map column): D11 (56),** early to middle Lochkovian (Early Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Xishancun Village of Qujing City, Yunnan Province.

It was named by Pan Jiang and others in 1978.

**Lithology and Thickness:**

Sandstone. The Formation, 224 m thick, is characterized by dense quartz sandstone intercalated with yellowish-green and black shale with a basal bed of fine-grained sandstone.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Silurian Miandiancun Formation.

***Upper contact:***

***Regional extent:***

**Fossils:**

The main fossils are

fish *Polybranchiaspis liaojiaoshanensis, Yunnanogaleaspis major, Dongfangaspis qujingensis;*

plant *Zosterophylum* spp.; and

spores, ostracods and gastropods.

**Age:**

early to middle Lochkovian (Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Xitun Fm**

**Period: Devonian**

**Age Interval (Map column): D12 (56),** Pragian (Early Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Xishancun Village of Qujing City, Yunnan Province

It was named by Pan Jiang and others in 1978, and published by Li Xinxue and Cai Chongyang in 1978.

**Lithology and Thickness:**

The Formation is composed of clayey limestone intercalated with a few grayish-black, yellowish-green and grayish-yellow fine-grained sandstone and silty mudstone.

**Relationships and Distribution:**

***Lower contact:***

It has conformable contact on the underlying Xishancun Formation.

***Upper contact:***

It has conformable contact to the overlying Guijiatun Formation.

***Regional extent:***

**Fossils:**

The Formation contains: Fish *Yunnanolepis chii, Eugaleaspis changi, Youngolepis praecursor, Nanpanaspis microculus;* Brachiopoda *Lingula* sp.

**Age:**

Pragian (Early Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Yali Fm**

**Period: Devonian**

**Age Interval (Map column): D32-C11 (24),**

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located at roadside of Zhangdong-Yaleiduo Highway, Nielamu County of Xizang Autonomous Region.

It was named by Zhang Bingao and others in 1973, and published by Wang Yigong in 1974.

**Lithology and Thickness:**

The Formation consists of alternations of gray medium- to thick-bedded limestone, shale and siltstone, and is 61.8 m thick.

In the Bazuo-Kede area of Dinxi County, the Formation is characterized by crystalline limestone of 8.9 m thick, yielding conodonts of *Palmatolepis marginifera* Zone and *Bispathodus sulcata* Zone.

**Relationships and Distribution:**

***Lower contact:***

This Formation rests on the underlying Boqu Group of Devonian.

***Upper contact:***

This Formation is overlain by the Naxing Group of Lower Carboniferous.

***Regional extent:***

**Fossils:**

It contains conodont *Palmatolepis glabra*.

In the Bazuo-Kede area of Dinxi County, the Formation yields conodonts of *Palmatolepis marginifera* Zone and *Bispathodus sulcata* Zone.

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Yanglinggou Fm**

**Period: Devonian**

**Age Interval (Map column):**

**Province:** Shaanxi

**Type Locality and Naming: D2-3 (45-47),**

The type section is located at Yanglinggou of Luohe Village, Xueyang County of Shaanxi Province.

It was named by the First Geological Team in 1964 and was published in the Paleontological Atlas, Volume San-Gan-Ning in 1983.

**Lithology and Thickness:**

The Formation is divided into three parts:

Lower part is composed of grayish-green and yellowish-brown thin- to medium-bedded feldspar quartz sandstone intercalated with purplish-red and grayish-green sandy slate.

Middle part consists of grayish-green to gray calcareous slate with interbeds of thin-bedded bioclastic limestone, dolomitic limestone and feldspar quartz sandstone.

Upper part is characterized by gray to dark-gray thin- to medium-bedded dolomitic limestone, limestone, mudstone and sandy dolomite intercalated with calcareous slate.

It is 595 m in total thickness.

The thickness varies from 330 to 1300 m in Xunyang, 219 m in Songsuping of Sahnyang, and more than 298 m in Wafangba of Fenxian.

**Relationships and Distribution:**

***Lower contact:***

The formation rests conformably on the Dafenggou Formation.

***Upper contact:***

***Regional extent:***

The thickness varies from 330 to 1300 m in Xunyang, 219 m in Songsuping of Sahnyang, and more than 298 m in Wafangba of Fenxian.

**Fossils:**

The middle and upper parts contain

brachiopoda *Stringocephalus* sp., *Desquamatia* sp., *Spinatrypa* sp.; and

coral *Temnophyllum* sp., *Fasciphyllum* sp., *Pseudomicroplasma* sp., *Alveolitella* sp.

**Age:**

It is diachronous in age from Middle to Upper Devonian.

**Depositional setting:**

It is interpreted as a varying sedimentary environment from restricted platform, open platform to slope margin.

**Additional Information**

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Yangmaba Fm**

**Period: Devonian**

**Age Interval (Map column): D13-D22 (70),** Emsian to Eifelian (late Early Devonian to early Middle Devonian)

**Province:** Sichuan

**Type Locality and Naming:**

The type section is located at Kumaliu of Yangmaba Village, Jiangyou County of Sichuan Province.

It was named by Zhu Seng in 1942.

**Lithology and Thickness:**

The Formation, 128 m thick, is characterized by a lower part of gray calcareous sandstone and bioclastic limestone with sandy shale and limestone, and upper part of *Zdimir* brachiopod bearing bioclastic limestone.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

***Regional extent:***

**Fossils:**

It contains four brachiopod assemblage zones, in ascending order:

*Xenospirifer nitidus-Athyrisina obesa* Zone,

*Otospirifer sichuanensis-Luanquella striatula* Zone,

*Neocoelia* *sinensis-Chuanostrophia scirtula* Zone and

*Zdimir* Acme Zone;

three coral assemblage zones, in ascending order: *Zonophyllum beichuanense-Calceola gangxiense* Zone, *Cyathophyllum sichuanense-Haplothecia flata* Zone and *Utaraturia sinensis* Zone; and

conodont *Polygnathus serotinus* Zone.

**Age:**

Emsian to Eifelian (late Early Devonian to early Middle Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Yaosuo Fm**

**Period: Devonian**

**Age Interval (Map column): D32 (53, 54),**

**Province:** Guizhou

**Type Locality and Naming:**

The type section is located at Yaosuo Village of suburban of Dushan City, Guizhou Province.

It was named by Ting Ven-Kiang in 1929.

**Lithology and Thickness:**

The Formation is divided into three members.

The lower, Shifangpo Member, consists of dolomitic limestone and dolomite and is 374 m thick.

The middle, Wuliqiao Member, is composed of limestone and siliceous rocks.

The upper, Doshi Member, is characterized by ostracod-bearing limestone and is 212.4 m thick.

**Relationships and Distribution:**

***Lower contact:***

The formation rests conformably on the Wangchengpo Formation, and its base is easy distinguished by the appearance of grayish-black medium-bedded dolomitic limestone.

***Upper contact:***

***Regional extent:***

The Formation is widely distributed in southern and southeastern Guizhou.

**Fossils:**

**Age:**

Famennian (latest Devonian)

**Depositional setting:**

It is interpreted as lagoon and tidal flat environments.

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Yarang Fm**

**Period: Devonian**

**Age Interval (Map column): D21 (66)**

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at roadside, 3.5 km of Beiliu City of Guangxi Zhuang Autonomous Region

It was named by Wang Yu and others in 1965.

**Lithology and Thickness:**

Limestone. The Formation, about 400 m thick, is characterized by bioclastic limestone with bird-eye structures, dolomitic limestone and arenite sandstone with dolomite.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Guitang Formation with a bed of fine-grained quartz sandstone at its base.

***Upper contact:***

***Regional extent:***

The Formation is distributed in Beiliu area, representing a facies lateral shifting change of Gupa and Gucha Formations at west side of Dayaoshan Mts.

**Fossils:**

The lower part contains brachiopoda *Eospriferina lachrymose-Athyrisina* Assemblage Zone and coral *Utarauia sinensis*, and the upper part has a few coral *Dendrostella* sp.

**Age:**

Eifelian (early Middle Devonian)

**Depositional setting:**

It is interpreted as an open to semi-restricted platform setting.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Yaxier Gr**

**Period: Devonian**

**Age Interval (Map column): D1? (22),** Early Devonian?

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located at the south hill of Lazhulong-Yaer Lake area, Rutu of Xizang Zhang Autonomous Region.

It was named by Zhang Bingao and He Guoxiong in 1984.

**Lithology and Thickness:**

Sandstone. The Group, 330 m thick, is composed of grayish-white quartz sandstone and grayish-black to grayish-white siliceous limestone intercalated with marble.

**Relationships and Distribution:**

***Lower contact:***

It rests probably disconformably on the Lower Silurian.

***Upper contact:***

It is overlain conformably by the Lazhulong Formation.

***Regional extent:***

The Formation is mainly seen in the South Hill of Luzhulong-Yaxier Lake of Rutu area, Tibet.

**Fossils:**

No fossils are reported.

**Age:**

Early Devonian?

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Yidade Fm**

**Period: Devonian**

**Age Interval (Map column): D22-D31 (57),** Givetian-Frasnian (late Middle to early Late Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located near Yutade Village of Panxi County, Yunnan Province.

It was named by Sun Yunzhu in 1945.

**Lithology and Thickness:**

Limestone, shale. The formation, 345 m thick, is composed of dark-gray to grayish-black thin- to medium-bedded clayey limestone intercalated with few shale beds, and with a set of 20 m thick brown shales at the base.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

***Regional extent:***

**Fossils:**

It contains abundant leiorhynchid brachiopoda.

**Age:**

It is diachronous in age from Upper Givetian to Frasnian (late Middle to early Late Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Yijiawan Fm**

**Period: Devonian**

**Age Interval (Map column): D22 (68, 69),** Middle Devonian

**Province:** Hunan

**Type Locality and Naming:**

The type section is located at Yijiawan of Xiangtan City, Hunan Province.

It was named by Tian Qijun (=Tien C. C.) in 1938.

**Lithology and Thickness:**

Shale, limestone. The Formation is mainly characterized by shale, siltstone and mudstone with a few clayey limestone layers or lenses of limestone in the lower part and clayey limestone in the upper.

The thickness of the Formation varies from tens meters to 200 m in Shaodong, Leiminqiao of Lianyuan, Xiangxian, Ningxiang, Taojinag and Liuyang; and more than 200 m to 537 m in Maotang of Lianyuan, Tiaomajian of Changsha.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

The upper part may consist of more interbeds of clayey limestone and bioclastic limestone when it is overlain by Qiziqizo Limestone or Huanggongtang Dolomite.

***Regional extent:***

The thickness of the Formation varies from tens meters to 200 m in Shaodong, Leiminqiao of Lianyuan, Xiangxian, Ningxiang, Taojinag and Liuyang; and more than 200 m to 537 m in Maotang of Lianyuan, Tiaomajian of Changsha.

**Fossils:**

It contains abundant fossils such as

brachiopoda *Chonetes* *supragibbosa* Assemblage Zone and *Strigocephalus* Assemblage Zone, and

coral *Endophyllum-Stringophyllum* Assemblage Zone,

as well as bivalves, stromatoporoids, and crinoids.

**Age:**

Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Tan Zhenxiu)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Yikewusu Fm**

**Period: Devonian**

**Age Interval (Map column): D21 (3),** Middle Devonian

**Province:** Inner Mongolia

**Type Locality and Naming:**

The type section is located at western Zhusilenghaierhan, north margin of Badanjilin Desert in western Inner Mongolia Autonomous Region.

It was named by the Cooperative Research Group of Xi'an Institute of Geology and Mineral Resources and Ningxia Geological Team in 1977, and published by Zhang Yan in 1981.

**Lithology and Thickness:**

The Formation can be divided into two parts:

Shale, sandstone. Lower part, 219.13 m thick, consists of alternations of brownish-yellow calcareous shale and yellowish-brown thin-bedded calcareous fine-grained sandstone.

Sandstone, limestone. Upper part, 567.04 m thick, is composed of grayish-brown thin-bedded calcareous fine-grained sandstone intercalated with sandy limestone and siliceous limestone and chert at the top,

**Relationships and Distribution:**

***Lower contact:***

The Formation rests conformably on the Zhusileng Formation and differs from the latter by its brown and yellowish colors in contrast to the Zhusileng Formation colors of grayish-green and purplish-red.

***Upper contact:***

***Regional extent:***

**Fossils:**

It contains brachiopoda *Uncinulus* spp., *Skenidium polonicum, Undispirifer* sp.; trilobite *Coniproetus* sp.; and coral *Cyathophyllum* sp., *Tabulophyllum* sp., *Endophyllume* sp.

**Age:**

Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Yimugantawu Fm**

**Period: Devonian**

**Age Interval (Map column): D31 (14),** Frasnian (early Late Devonian)

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at the middle of Yingan Hill, northeast of Keping, Xinjiang Uygur Autonomous Region.

It was named by No 13 Geological Team of Xinjiang in 1957, and published in Northwest China Regional Stratigraphical Scale (Xinjiang Volume) in 1980.

**Lithology and Thickness:**

Siltstone. The Formation, 503 m thick, is characterized by dark-red and grayish-green siltstone and fine-grained sandstone. It contains two 1.5-m-thick beds of brown sandy shelly limestone in the Pijiangcun Village, and 17-cm-thick malachite-bearing siliceous limestone in north side of Kazimage Hill.

**Relationships and Distribution:**

***Lower contact:***

The Formation rests conformably on the Tatairtag Formation.

***Upper contact:***

***Regional extent:***

**Fossils:**

**Age:**

Frasnian (early Late Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Yuelushan Fm**

**Period: Devonian**

**Age Interval (Map column): D3 (69),** Late Devonian

**Province:** Hunan

**Type Locality and Naming:**

The type section is located at Kuntao Pavilion-Wulun Pagoda of Yuelushan Hill, Changsha City, Hunan Province. It was named by Tian Qijun (=Tien C. C.) in 1928.

**Lithology and Thickness:**

Terrestrial clastics. The formation, 250 m thick, is mainly characterized by terrestrial clastics, consisting of a lower part of thick-bedded sandstone with conglomerate; and an upper part of gray, grayish-white and yellow thin-bedded fine-grained sandstone intercalated with shale, siltstone and a bed of oolitic hematite.

**Relationships and Distribution:**

***Lower contact:***

The Formation rests disconformably with a basal conglomerate on the Wujiafang Formation.

***Upper contact:***

***Regional extent:***

The Formation is mainly distributed along the south side of Jiangnan Old Land and widespread in Changsha-Ningxiang area.

**Fossils:**

It contains a few fragments of coral *Disphyllum* sp., “*Atrypa*” sp. *Yunnanella* sp.

**Age:**

Late Devonian

**Depositional setting:**

It is interpreted as a littoral environment.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Yujiang (=Yukiang) Fm**

**Period: Devonian**

**Age Interval (Map column): D13 (63-66),** early Emsian (late Early Devonian)

**Province:** Guangxi

**Type Locality and Naming:**

The type section is located at Liujing Railway Station, Hexian County of Guangxi Zhuang Autonomous Region. It was named by Zhao Jinke (=Chao K.K.) in 1947.

**Lithology and Thickness:**

Clayey limestone. The Formation is divided into three members:

Lower, Shizhou Member, 106 m thick, characterized by shelly clayey limestone, mudstone and siltstone;

Middle, Daliancun Member, 12 m thick, of gray limestone and clayey limestone; and

Upper, Liujing Member, 45 m thick, of dark-yellow clayey limestone and mudstone intercalated with purplish-red limestone.

The Formation is only distributed in the south of Liuzhou, northwest Guangxi and southeast Yunnan. It consists mainly of mudstone and siltstone in northwest Guangxi and southeast Yunnan. In the Dale of Xiangzhou, the northern end of distribution area of the Formation, it is composed of sandstone but only the uppermost clayey limestone of 10 m thick can be correlated with Liujing member.

**Relationships and Distribution:**

***Lower contact:***

The Formation rests conformably on the Nagaoling Shale in most areas, but onlaps unconformably on Upper Cambrian with basal conglomerates.

***Upper contact:***

***Regional extent:***

The Formation is only distributed in the south of Liuzhou, northwest Guangxi and southeast Yunnan. It consists mainly of mudstone and siltstone in northwest Guangxi and southeast Yunnan. In the Dale of Xiangzhou, the northern end of distribution area of the Formation, it is composed of sandstone but only the uppermost clayey limestone of 10 m thick can be correlated with Liujing member.

**Fossils:**

It contains abundant fossils:

Brachiopoda is characterized by *Rostrospireifer* fauna and can be divided into two successive assemblage zones: *Rostrospirifer tonkinensis-Dicoelostrophia crenata* Assemblage Zone and *Eosophragmophoria sinensis-Parathyridina tangnae* Assemblage Zone.

Corals are characterized by *Xystriphylloides nobilis-Heterphaulactis semicrassa* Assemblage Zone. The Bivalves *Ptychopteria* *(Actinopteria) producta, Mytilarca* cf. *chemungensis, Phestioidea obtuse*;

Trilobites *Gravicalymeae* sp., *Lobopyge* sp., *Schzoproetoides* sp.;

Conodont *Polygnathus dehiscens*;

and ammonoids, tentaculites and bryozoans.

**Age:**

early Emsian (late Early Devonian)

**Depositional setting:**

The lithology and fossils suggest that the environment of north area is a tidal flat setting; and the south shows subtidal evidence in that a bioherm was developed locally.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Yunshan Fm**

**Period: Devonian**

**Age Interval (Map column): D22 (72),** late Middle Devonian

**Province:** Jiangxi

**Type Locality and Naming:**

The type section is located at Yunshan Hill, Xiashanxu Village of Yudu County, Jiangxi Province.

It was named by Jiangxi Regional Geological Survey in 1966.

**Lithology and Thickness:**

Sandstone. Yunshan Formation, 500 m thick, is composed of grayish-white quartz, feldspar quartz sandstone, pebbly sandstone and quartz conglomerate intercalated with grayish-green siltstone and shale.

**Relationships and Distribution:**

***Lower contact:***

It is unconformable in contact with underlying Cambrian.

***Upper contact:***

***Regional extent:***

It is mainly distributed in the south Jiangxi Province: Yudu, Chongyi and Xingfeng area.

**Fossils:**

It contains plants *Barrandeina* cf. *duslinna*, *?Protolepidodendron* sp., *Bucheria* sp., *Lepidodendropsis* sp., ?*Zosterophyllum* sp.,

a few fish *Bothriolepis* cf. *kwanggtungensis.*

**Age:**

late Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Yuntaiguan Fm**

**Period: Devonian**

**Age Interval (Map column): D22** , late Middle Devonian

**Province:** Hubei

**Type Locality and Naming:**

The type section is located near Yutaiguan Temple of Dongqiao Town, Zhongqiang County, Hubei Province.

It was named by Yu Jianchang and Su Wenpo in 1929.

**Lithology and Thickness:**

Sandstone. The Yuntaiguan formation, 50-70 m thick, is characterized by a set of light-red and grayish-white pure quartz sandstones.

**Relationships and Distribution:**

***Lower contact:***

It may have a disconformable contact on the underlying Silurian.

***Upper contact:***

***Regional extent:***

**Fossils:**

The equivalent of the Formation in Hunan Province contains a few plant fossils of *Protolepidodendron scharyanum.*

**Age:**

late Middle Devonian

**Depositional setting:**

It is interpreted as a near-shore deposits during a marine transgression.

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Zaige Fm**

**Period: Devonian**

**Age Interval (Map column): D21- D31 (55, 56, 61),** Frasnian (early Late Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Dazaige of Wanshoushan Hill, Yiliang County, Yunnan Province, and the reference section is at Xiaoliandeng-Gutuoshan of Songmin County, Yunnan Province.

It was named by Bian Zhaoqiang in 1940.

**Lithology and Thickness:**

Dolomite. This Formation is composed of gray and pink, thick-bedded to massive, crystalline dolomite, partly intercalated with shale and clayey limestone, containing a few fragments of coral *Disphyllum* sp.

It has a maximum thickness of 750 m.

**Relationships and Distribution:**

***Lower contact:***

It lies on the Haikou Formation of Middle Devonian.

***Upper contact:***

It is overlain by the quartz sandstone of the Wanshoushan Fm of Carboniferous.

***Regional extent:***

The Formation is widely distributed at Kunming, Yilian, Songmin, Xuanwei, Xundian in eastern Yunnan.

**Fossils:**

It contains a few fragments of coral *Disphyllum* sp.

**Age:**

Frasnian (early Late Devonian)

**Depositional setting:**

It is interpreted as a lagoon environment.

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Zaijieshan Fm**

**Period: Devonian**

**Age Interval (Map column): D31 (57),**

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located at Yutade Village of Huaning County, Yunnan Province.

It was named by Fang Rensang in 1974, and published in Yunnan Regional Stratigraphical Scale in 1978.

**Lithology and Thickness:**

Dolomite. The Formation is characterized by gray thick-bedded dolomite and dolomitic limestone.

It is 144 m thick.

**Relationships and Distribution:**

***Lower contact:***

It rests conformably on the Frasnian Yidade Formation.

***Upper contact:***

***Regional extent:***

**Fossils:**

The Formation contains occasional brachiopoda *Cyrtospirifer* spp. and stromatoporoids *Ferestromatopora* sp.

**Age:**

Frasnian (early Late Devonian)

**Depositional setting:**

**Additional Information**

The Zaijieshan Formation may correspond to part of Zaige Formation.

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Zhashui Gr**

**Formations in Group**

Niuerchuan Fm, Chigou Fm, Qingshiya Fm, and Tongyusi Fm

**Period: Devonian**

**Age Interval (Map column): D2-3 (38),** Middle to Late Devonian

**Province:** Shaanxi

**Type Locality and Naming:**

The type section is located at Zhaishui area, Shaanxi Province.

It was named by Zhao Yazheng (Y.C. Chao) and Huang Jiqing (T.K. Huang) in 1931.

**Lithology and Thickness:**

The Group is characterized by fine-grained quartz sandstone, feldspar quartz sandstone, siltstone and slate with a few limestone beds.

It has an exposed thickness of 7000-11000 m.

**Relationships and Distribution:**

The Group is faulted in contact with both the underlying and overlying stratigraphic units.

***Lower contact:***

***Upper contact:***

***Regional extent:***

**Fossils:**

The Group contains brachiopods ?*Atrypa* sp. and plants *Leptophloeum rhombicum.*

**Age:**

Middle to Late Devonian

**Depositional setting:**

**Additional Information**

Zhao and Huang named a set of quartzite and slate developed in Zhaishui area as Zhaishui Series and suggested a Sinian-Ordovician in age. On the basis of fossils it was considered to be Devonian in age and is subdivided into several formations, in ascending order, Niuerchuan, Chigou, Qingshiya and Tongyusi formations.

**Compiler**

(Cao Xuanduo)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Zhewang Fm**

**Period: Devonian**

**Age Interval (Map column): D23 (54),** latest Famennian (latest Devonian)

**Province:** Guizhou

**Type Locality and Naming:**

The type section is located at Zhewang Village, Mochong Town of Duyun County, 30 km northwest Dushan City, Guizhou Province. The lectotype is at eastern slop of Baihupo Hill, 3 km northwest Dushan City.

It was named by Guizhou Geological Survey Team in 1967.

**Lithology and Thickness:**

The Zhewang Formation, 43.78 m thick at the Baihupo section, is characterized by dark-gray medium-thick bedded clayey limestone with a few cherts.

**Relationships and Distribution:**

***Lower contact:***

The Formation rests conformably on ostracod-bearing dolostone of the Yaosuo Formation of Frasnian.

***Upper contact:***

***Regional extent:***

The distribution of Zhewang Fm is extensive in southern Guizhou, and also in northern Guangxi and southern Hunan. Throughout these regions, the formation is characterized by a large number of stromatoporoid-bearing limestones.

**Fossils:**

It contains abundant

stromatoporoids: *Stromatocerium sinense, S. guichowensis, Stylostroma sinense, S. Huangjiangensis, Labechia* sp., *Pennastroma* sp.;

tabulata corals: *Chia cystosa, Aulocystella kueichowensis* and *Syringopora* spp.; and

foraminifera: *Septaglomospiranella* sp., *Septalournayella* sp., *Septabrunsina* sp., *Quasiendothyra* sp.

**Age:**

latest Famennian (latest Devonian)

**Depositional setting:**

It is interpreted as a shallow-water platform setting.

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Zhichang Fm**

**Period: Devonian**

**Age Interval (Map column): D13 (58),** Emsian (late Early Devonian)

**Province:** Yunnan

**Type Locality and Naming:**

The type section is located near Zhichang, 10 km south of Wenshan County of Yunnan Province.

It was named by Xian Shiyuan in 1988, and published by Hou Hongfei and others in 1988.

**Lithology and Thickness:**

The formation, 175.6 m thick, is characterized by gray to dark-gray thick- and massive-bedded medium-grained crystalline dolomite.

**Relationships and Distribution:**

***Lower contact:***

The Formation has a conformable contact on the underlying Pojiao Fm and is easy recognized from the latter on the basis of the first appearance of dolomite.

***Upper contact:***

The Formation is overlain by the Gumu Fm.

***Regional extent:***

**Fossils:**

Limestone intercalations at the basal part of the Formation yield *Nowakia praecursor*, and the lower part has some brachiopods *Zdimir* spp. and *Megastrophia* sp.

**Age:**

Emsian (late Early Devonian)

**Depositional setting:**

It is interpreted as a platform margin sedimentary environment.

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Zhifang Fm**

**Period: Devonian**

**Age Interval (Map column): D22 (2),**

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at 800 m northeast of Kokesairgai Peak, north of Zhifang Town, in East Junggar of Xinjiang Uygur Autonomous Region. It was named by Yang Shipu and others in 1981.

**Lithology and Thickness:**

Sandstone, conclomerate. The Formation, more than 90 m thick, is characterized by grayish-green tuffaceous sandstone and conglomerate intercalated with lenses of sandy limestone and with a basal conglomerate.

**Relationships and Distribution:**

***Lower contact:***

The Formation has a disconformable basal contact with the underlying Ulusubasite Formation.

***Upper contact:***

The Formation has a faulted upper contact with overlying Ke'ankuduk Formation.

***Regional extent:***

It has a restricted distribution and is mainly recognized in Kokesairgai and Taheirbasite.

**Fossils:**

It contains plant *Lepidodendropsis* sp.;

coral *Spongophyllum* sp., *Pachyfavosites* sp.; and

brachiopoda *Mucrospirifer* sp., *Productella* sp., *Praewaagenoconcha* sp., *Schuchertella* sp.

**Age:**

late Middle Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Zhongning Fm**

**Period: Devonian**

**Age Interval (Map column): D3 (20),** Late Devonian

**Province:** Ningxia

**Type Locality and Naming:**

The type section is located at Shixia Valley of Baima Village, Zhongning County of Ningxia Hui Autonomous Region.

It was named by Pan Jiang and others in 1980.

**Lithology and Thickness:**

Sandstone. The Formation is composed of purplish-red, grayish-green and white coarse- and fine-grained feldspar quartz sandstone and siltstone, occasionally intercalated with thin-bedded sandy limestone.

The Formation is about 300 m thick.

**Relationships and Distribution:**

***Lower contact:***

It has an unconformable basal contact to the underlying Shixiagou Fm.

***Upper contact:***

It has a disconformable upper contact with the overlying Yanghugou Formation of Carboniferous.

***Regional extent:***

**Fossils:**

It contains fish fossils R*emigolapis zhongningensis, R. major;* and

plant fossils *Lepidophloeum rhombicum, Sublepidodendron mirabile.*

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Zhongpeng Fm**

**Period: Devonian**

**Age Interval (Map column): D3 1 (72),** Late Devonian

**Province:** Jiangxi

**Type Locality and Naming:**

The type section is located at Zhongpeng of Xiashan Village, Yudu County of Jiangxi Province.

It was named by Regional Geological Survey of Jiangxi in 1966.

**Lithology and Thickness:**

Sandstone. The Formation is mainly composed of grayish-white, grayish-green and grayish-purple feldspar quartz sandstone and feldspar sandstone intercalated with purplish-red and yellowish-green siltstone and shale and some beds of calcareous fine-grained sandstone.

It is 300 m thick at the type section.

**Relationships and Distribution:**

***Lower contact:***

***Upper contact:***

***Regional extent:***

The Formation is distributed in the south of Jiangxi: Yudu, Congyi and Xinfeng.

**Fossils:**

It yields plant *Sphenopteridium* sp*., Leptophloeum rhombicum, Cyclostigma kiltorkensis, Sublepidodendron* sp.;

brachiopoda *Tenticospirifer* sp.; and

fish *Bothriolepis* spp.

**Age:**

Late Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Wang Shitao)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Zhulumute Fm**

**Period: Devonian**

**Age Interval (Map column): D22-D31 (1),** Givetian-Frasnian (late Middle to Late Devonian)

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at Zhulumute, south of Hongguleleng in Xinjiang Uygur Autonomous Region.

It was named by the Cooperative Research Team of Chinese Academy of Geological Sciences and Xinjiang Regional Geological Survey in 1973, and published by Hou Hongfei and others in 1979.

**Lithology and Thickness:**

Tuffaceous sandstone. The Formation is characterized by grayish-green tuffaceous coarse-grained sandstone and fine-pebble conglomerate, and has an incomplete recorded thickness of 1300 m.

**Relationships and Distribution:**

***Lower contact:***

The base is in faulted contact onto the underlying Hujierste Formation, which is characterized by a set of normal terrestrial sedimentary sequences.

***Upper contact:***

***Regional extent:***

It is mainly widespread in western Junggar Basin: Bulongguo River, Hebuke River and Zhulumute of Hebukesier County.

Andesite with tuff occurs in the Bulongguoer section and quartz porphyry, andesite porphyry, rhyolite porphyry and basaltic porphyry were recorded in Hebukehe River area.

**Fossils:**

It contains plant fossils *Leptophloeum rhombicum, Lepidodendropsis theodory*, *Sublepidodendropsis* sp., *Cyclostigma kiltorkensis*.

**Age:**

Late Givetian to Frasnian, and perhaps into early Famennian.

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Zhuogedong Fm**

**Period: Devonian**

**Age Interval (Map column): D31 (32),** (early Late Devonian)

**Province:** Xizang (Tibet)

**Type Locality and Naming:**

The type section is located at Zhuogedong of Xiao Banda region, Mangkang County of Tibet Zhang Autonomous Region.

It was named by Third Geological Team of Sichuan in 1972 and published by Sichuan Geological Survey and Nanjing Institute of Geology and Paleontology in 1982.

**Lithology and Thickness:**

Dolomite. The Formation consists of gray to light-gray thin- to massive-bedded dolomitic limestone, clayey limestone and dolomite.

The thickness ranges from 218 to 570 m.

**Relationships and Distribution:**

***Lower contact:***

The formation rests conformably on the Dingzhonglong Fm.

***Upper contact:***

The formation is overlain by the Qiangge Fm.

***Regional extent:***

This Formation is distributed at Jiaseding, Haitong and Bagong of Mangkang County, and at Jiangda and Duojiban of Yanjin County.

**Fossils:**

It contains brachiopods *Cyrtospirifer sinensis, Tenticospirifer tenticulum, Hypothyridina hunanensis*, and corals, stromatoporoids and bivalves.

**Age:**

(early Late Devonian)

**Depositional setting:**

**Additional Information**

**Compiler**

(Xian Shiyuan)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Zhuomubasitao Fm**

**Period: Devonian**

**Age Interval (Map column): D13 (2),** Early Devonian

**Province:** Xinjiang

**Type Locality and Naming:**

The type section is located at north of Zhifang and 1.8 km southeast of Keankuduk in the East Junggar Basin of Xinjiang Uygur Autonomous Region.

It was named by Li Tiande and others in 1977, and published by Hou Hongfei and others in 1979.

**Lithology and Thickness:**

Limestone. The formation, 78 m thick, is composed of grayish-yellow and gray medium- to thick-bedded alternations of sandy limestone and calcareous sandstone. The sandy limestone changes to lenses of limestone along strike.

At the 1.4 km south of Ulusubasite, the base of the Formation has a 1-m-thick conglomerate bed in which the pebbles are composed of dacite porphyry, quartz porphyry and andesite with various sizes and shapes.

**Relationships and Distribution:**

***Lower contact:***

An unconformable basal contact with the underlying Teheierbasitao Fm can be seen at 800 m northeast of Kokesairgai Peak.

***Upper contact:***

***Regional extent:***

At the 1.4 km south of Ulusubasite, the base of the Formation has a 1-m-thick conglomerate bed in which the pebbles are composed of dacite porphyry, quartz porphyry and andesite with various sizes and shapes.

**Fossils:**

It contains abundant brachiopoda "*Paraspirifer*” spp., *Rhytistrophia beckii, Leptaenopyxis bouei, Megakozlowskiella* sp.; and

coral *Syringaxon* sp., *Thamnopora* sp.

**Age:**

Early Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**Zhusileng Fm**

**Period: Devonian**

**Age Interval (Map column): D1-3 (3),** Devonian

**Province:** Inner Mongolia

**Type Locality and Naming:**

The type section is located at western Zhusilenghaierhan, north margin of Badanjilin Desert in western Inner Mongolia Autonomous Region.

It was named by the Cooperative Research Group of Xian Institute of Geology and Mineral Resources and Ningxia Geological Team in 1979, and published by Zhang Yan in 1981.

**Lithology and Thickness:**

Sandstone. The lower part of the Formation is characterized by grayish sericite calcareous sandstone intercalated with thin-bedded fine-pebble conglomerate, with a 3-m-thick bed of thick-bedded conglomerate at base. The upper part is composed of gray, grayish-brown and purplish-red thin-bedded medium- and fine-grained calcareous sandstone with sandy limestone interbeds.

The Formation is 405.89 m thick,

**Relationships and Distribution:**

***Lower contact:***

The base is in disconformable contact on the underlying Silurian.

***Upper contact:***

***Regional extent:***

**Fossils:**

The ammonoid *Anarcestes plebejus,* and corals, brachiopods and trilobites had been described by Zhang (1981,1983) and Li and Zhou (1987), respectively.

**Age:**

Devonian

**Depositional setting:**

**Additional Information**

**Compiler**

(Hou Hongfei)