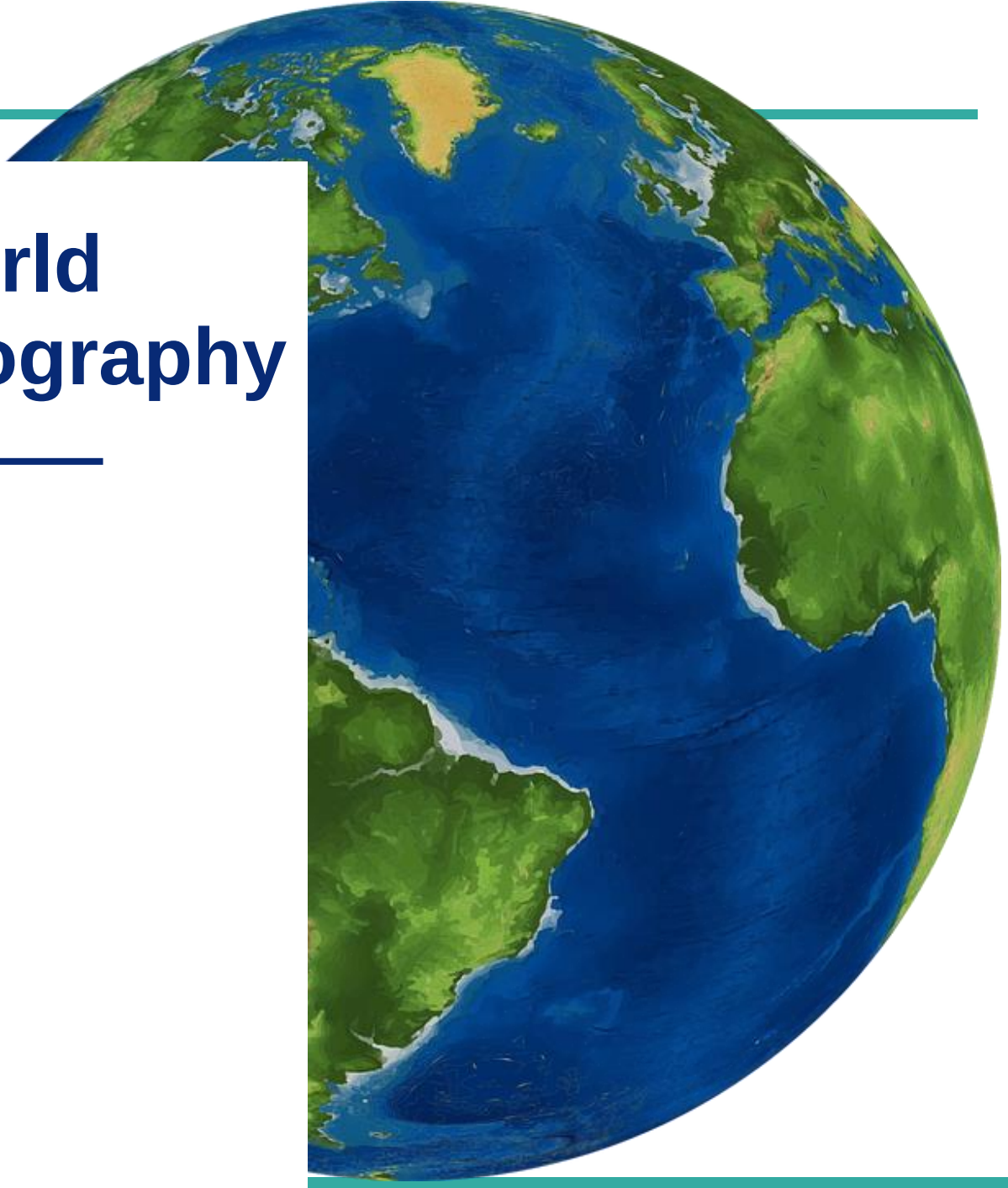
World geography



OCTOBER 14

UNIT 01

Authored by: shivam awad

Logo Name

MOUNTAINS

A mountain is a landform that sharply protrudes above its surroundings and has notable local relief, steep slopes, and a tiny peak region. It's common knowledge that mountains are bigger than hills.

Nearly 27% of the world's land surface is covered by mountains. 80% of the planet's fresh surface water comes from mountans.

Mountains can be divided into a wide variety of categories according to, their time of origin, their height and how they formed.

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Classification on the Basis of Mode of Origin

These were created as a result of the tectonic plates colliding and bending as a result of large-scale plate movements.

There are further classified into :

- **Block mountains**
- **Fold mountains**
- **Dome mountains**
- **Mountains of Accumulations**
- **Circum-erosional/Relict**

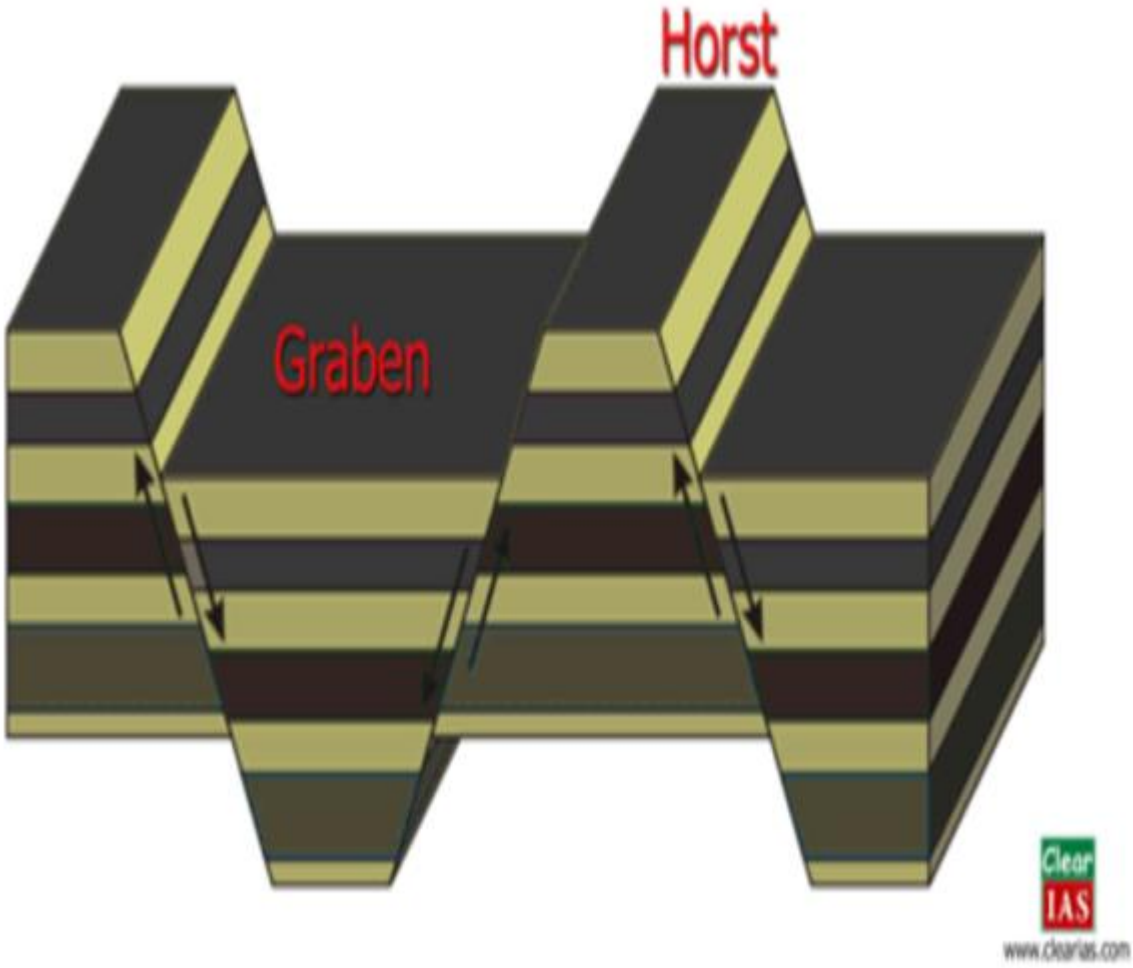
Block Mountains

Block Mountains are also formed by the internal or endogenic earth movements which cause the **force of tension** and **faulting**.

The down-lifting or uplifting of land in between two parallel faults results in the formation of Block Mountains.

A block mountain is also called a **Horst** and the rift valley formed as a result of faulting is called **Graben**.

Higher blocks are referred to as horsts, and troughs as grabens.



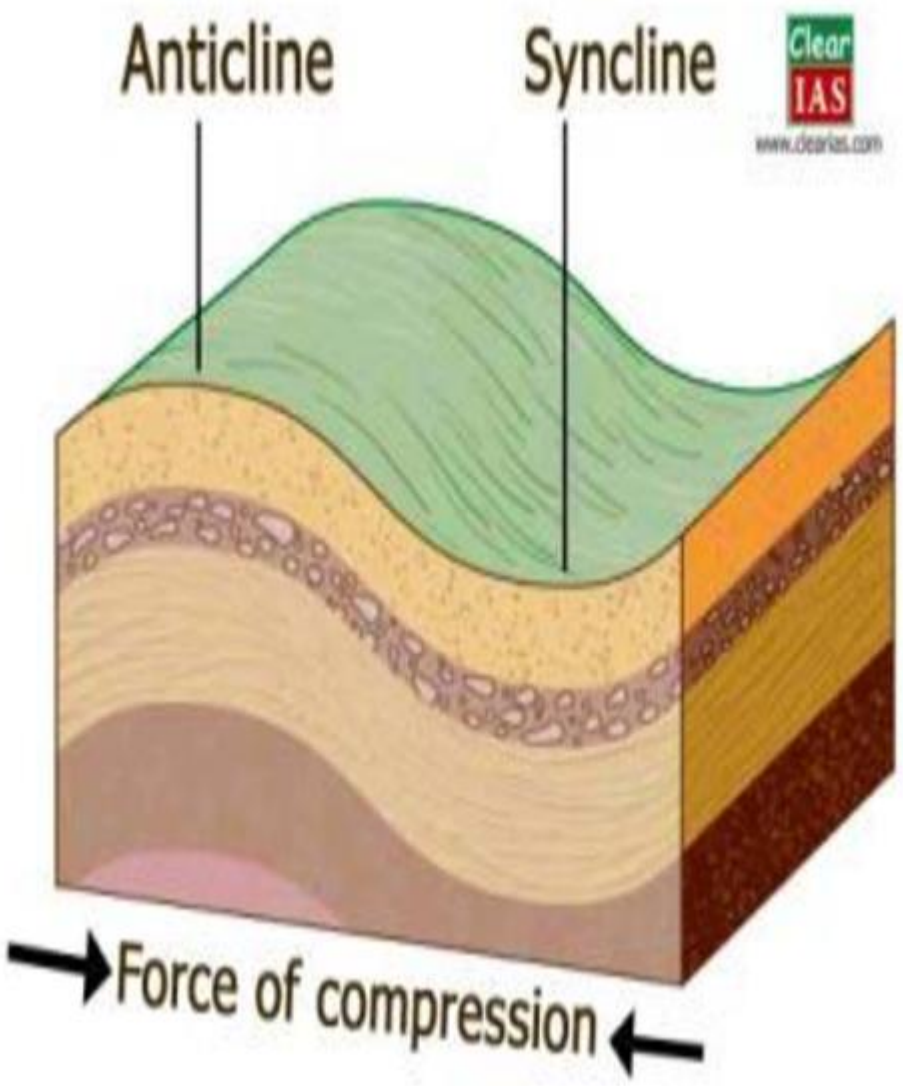
Examples include the **Rhila Rhodope Mountain Range**, **Satpura Range**, **Sierra Nevada Range**, and **Vindhya Range**.

Fold Mountains

Large-scale tectonic plate collisions cause folding and subduction of land, which leads to the formation of fold mountains.

They are formed due to the **force of compression** arising from endogenic or internal forces.

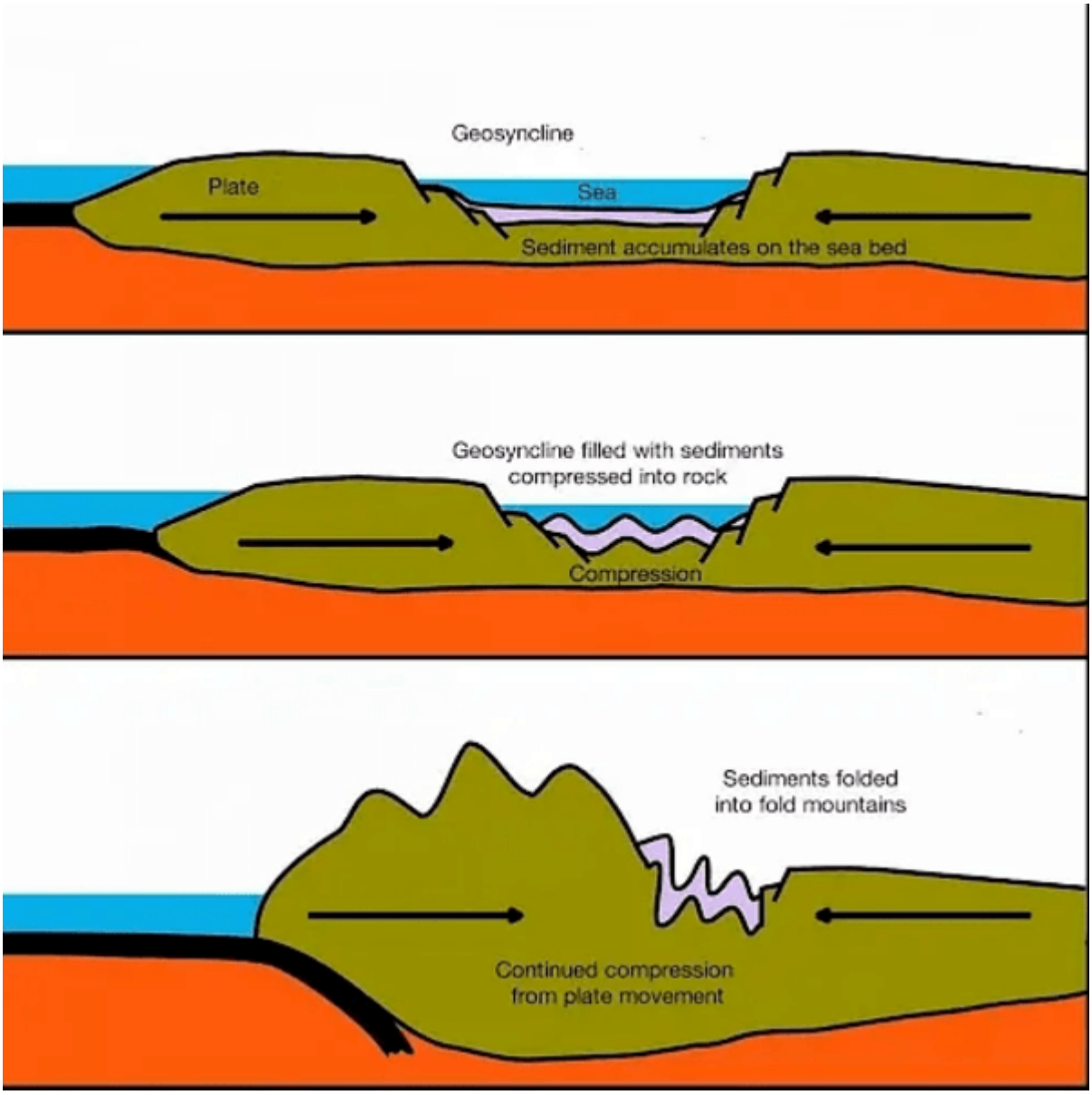
Synclines (trough) and **anticlines** (crest) are part of the Fold Mountains.



The Himalayas, **Rockies**, Andes, **Balkan**, **Jura Mountains**, and **Zagros** are the most prominent fold mountains of the world.

Rocks that formed under intense pressure and at low temperatures, such as sedimentary and metamorphic rocks, make up the majority of fold mountains.

Many fold mountains develop when a layer of ductile minerals, like salt, is underlain.



Mountains Dome

These are created when the top sedimentary rock layers are forced upward by the hot, molten material (magma) emerging from the Earth's mantle into the crust.

They consequently take the shape of a "dome."

Magma rarely reaches the Earth's surface here, unlike a volcano.

Mountains of Accumulations (Volcanic Mountains)

The accumulation of volcanic material creates volcanoes, sometimes referred to as Mountains of Accumulations.

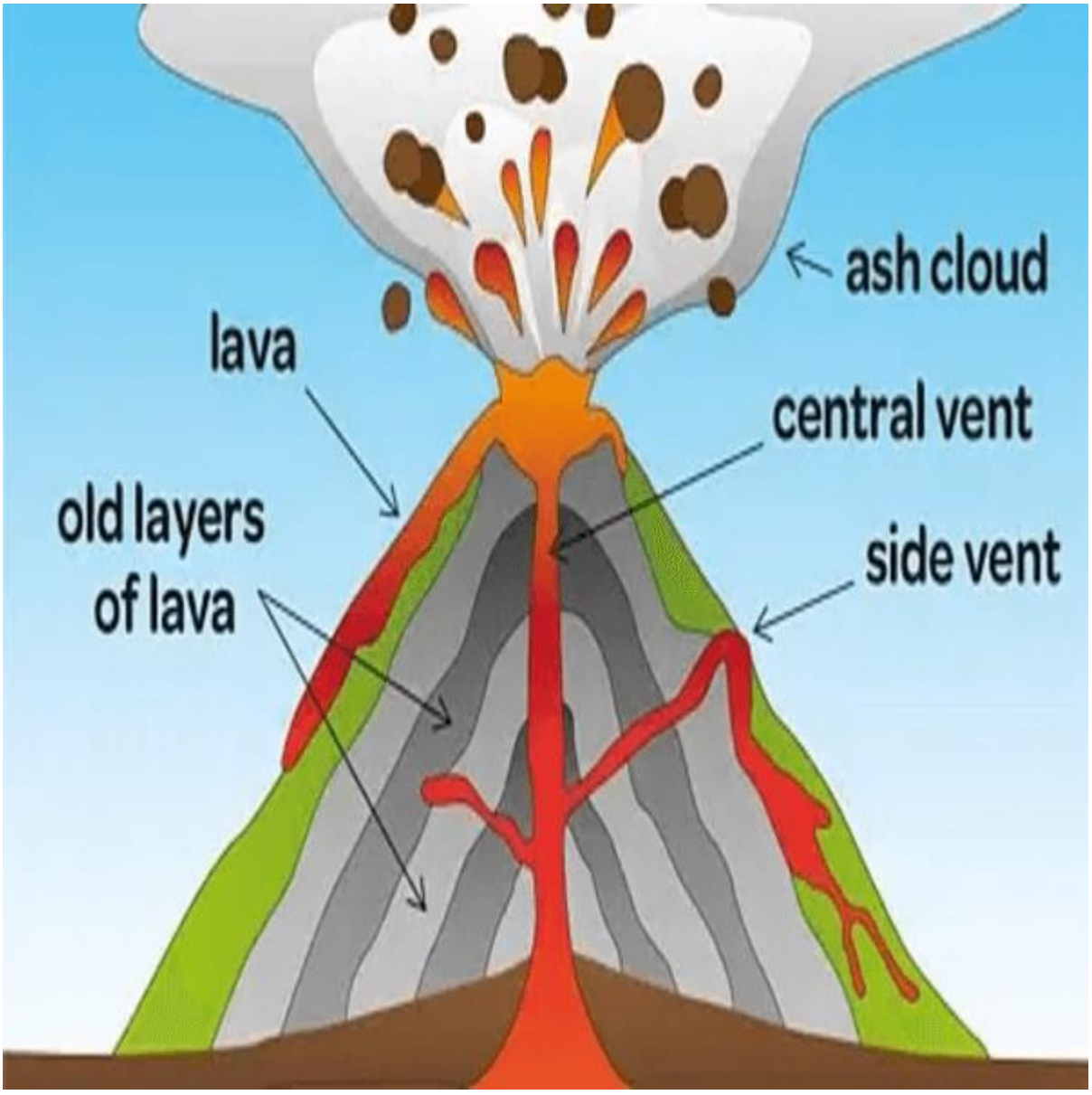
The thrown-out volcanic debris settles in the form of a mountain range around the crater.

A flatter cone with a lower elevation and a softer slope results from thin, simple-composition lava spreading across a vast area.

If the composition is thick and acidic, the result will be a little volcanic cone that protrudes abruptly.

Sometimes the lava is sent out along with ash.

Mount Mauna Loa on the Hawaiian Island of Hawaii, **Mount Popa** in Myanmar, and **Fujiyama** in Japan are examples of it.

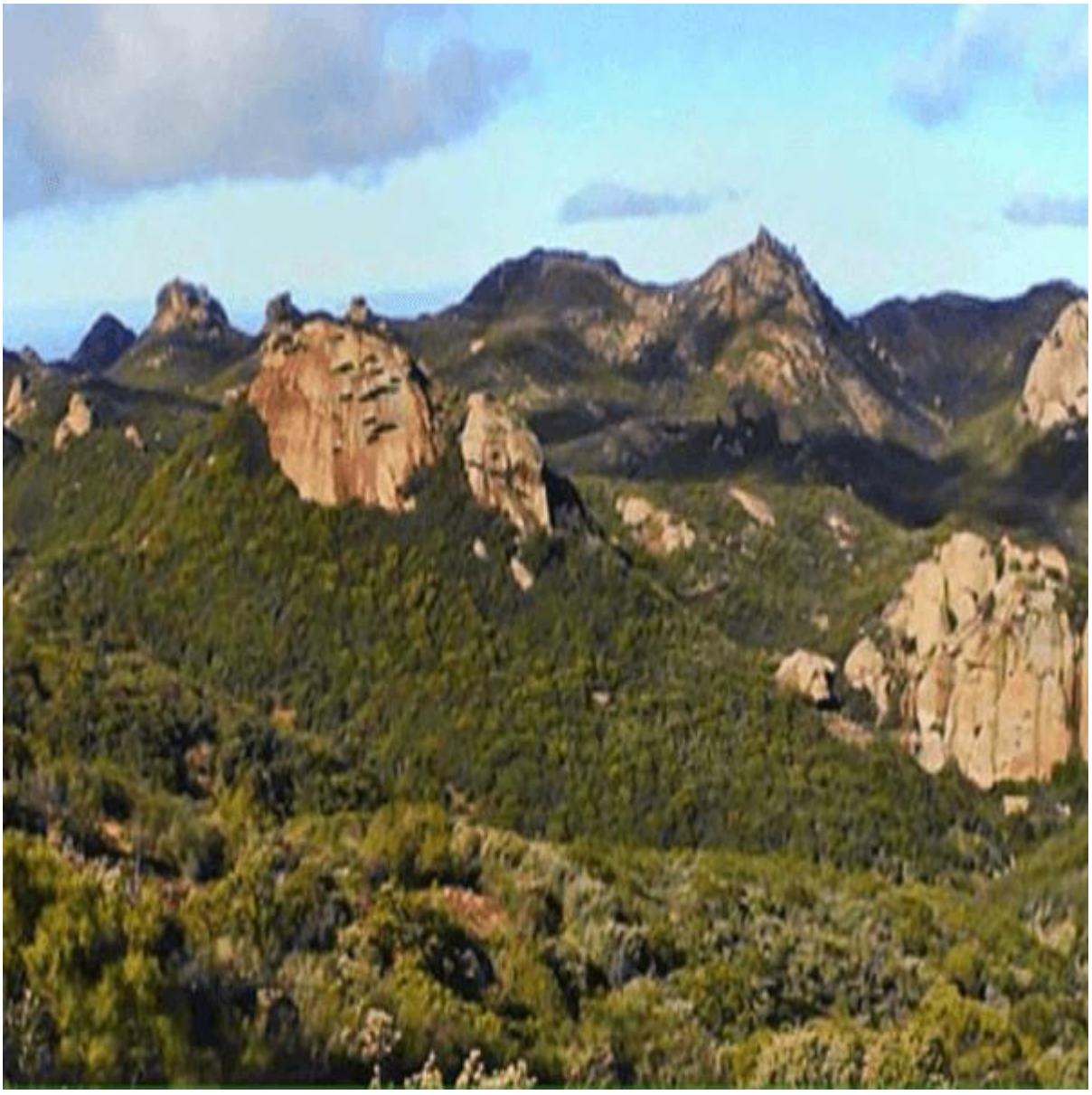


Circum-erosional/ Relict /Residual Mountains

These are the exposed remains of ancient fold mountains caused to denudation (strip of covering).

These can also develop from plateaus that have been eroded into hills and valleys by rivers.

These can be found in India on hills like the **Nilgiri**, **Palkonda**, **Parasnath**, and **Rajmahal**, as well as on mountains like the **Aravalli**, **Vindhya**, and **Satpura**.



Classification on the Basis of Period of Origin

Nine orogenic movements have taken occurred altogether to date.

Some of them took place in the Precambrian era, between 600 and 3,500 million years ago.

The three most recent orogenies are the Caledonian, Hercynian, and Alpine.

Pre-Cambrian Mountains

The Precambrian era, which lasted **more than 4 billion years**, is when these mountains first appeared.

The rocks have been metamorphosed, denuded, and uplifted.

As a result, the relics resemble residual mountains.

Algoman and the **Laurentian mountains** are two examples of this.

Caledonian Mountain

Massive orogenic activities and associated tectonic movements throughout the late Silurian and early Devonian periods led to the formation of the Caledonian Mountains, approximately **430 million years** to **380 million years ago**.

Examples include the **Appalachians**, **Aravallis**, **Mahadeo**, and others.

Hercynian Mountains

The Carboniferous and Permian periods are when these mountains first appeared in Europe, approximately **340 million years** and **225 million years ago**.

The Altai, Asia's Tien Shan, The Vosges, Black Forest Mountains, and the **Ural Mountains** are only a few examples of them.

Alpine Mountains

The Alps, which span over **1,200 kilometres** across **Eight Alpine nations**—**France, Switzerland, Monaco, Italy, Liechtenstein, Austria, Germany, and Slovenia**—are the highest and broadest mountain range system in all of Europe.

These were created by the collision of the African and Eurasian tectonic plates tens of millions of years ago.

Extreme shortening brought on by this event caused marine sedimentary materials to shove and fold into high peaks like the Matterhorn and Mont Blanc.

Classification on the Basis of Height

On the basis of height, mountains can be classified as:

Low Mountains

Low mountains are those that are **less than 700 metres high**.

Mount Chimneytop in Tennessee, USA is an example..

Rough Mountains

Between 1000 and 1500 metres high is called Rough Mountains.

Australia's Mount Donna Buang is an excellent example of this.

Rugged Mountains

Mountains that are rough range in **height from 1500 to 2000 metres**.

India's **Agastya Mala** is an illustration of a rugged mountain.

High Mountains

The high mountains, as their name implies, are often **higher than 2000 metres**.

Kanchenjunga is a typical example for this.

Classification on the Basis of Location

On the basis of location, mountains can be classified as:

Coastal Mountains

Coastal refers to everything that is in the water or on land that is close to the coast. As the name suggests, coastal mountains are ones that are **close to a coastline**.

Examples include the **Rocky**, **Appalachians**, **The Alpine Ranges**, **The Western Ghats**, and **The Eastern Ghats**.

Inland Mountains

The mountains that are **landlocked** are known as inland mountains.

They make up the majority of the mountains we come across.

Examples include **The Vosges and The Black Forest in Europe, The Kunlun, Tienshan**, and **Altai ranges in Asia,** and **The Urals in Russia**.

The Aravallis, Himalayas, and **Satpura** are a few examples of this.

Oceanic Mountains

Oceanic mountains are those that are **found on oceanic and continental shelves**.

If mountains were measured from the ocean floor, **Mauna Kea** (9140 m) would be the highest peak. It is a dormant volcano in the volcanic chain of Hawaii.

Significance of Mountains

Following are the significance of mountains:

A storehouse of natural resources

Large resources of minerals like petroleum, coal, and limestone are found in mountains. The mountains are the main source of timber, lac, medical herbs, etc.

Act as Water Towers

Mountains are referred to as “water towers” because they act as significant headwaters for several rivers and other freshwater sources.

Snowmelt produces streamflow, which eventually finds its way into streams, rivers, lakes, and oceans, where it becomes fresh water. Rehydrating aquifers is another use for this meltwater.

Source of Freshwater

Perennial rivers, which originate in the snow- or rain-covered mountains, are regarded as a crucial source of water. They also perform a variety of functions, including providing water for local residents and aiding with agriculture.

Formation of Fertile plain

When rivers emerge from high mountains, they convey water to lower valleys along with silt. This is in charge of creating fertile plains and supporting operations related to agriculture.

Control Speed of Wind

They aid in reducing the wind’s velocity. The wind blows up the steep slopes, carrying air and clouds with it. As the air pressure keeping them in increases, warm, moist air masses travel up and over a mountain swell.

Natural Political Frontiers

The mountains can also act as natural boundaries between the two countries. They have a prominent role in protecting the country from external threats.

Effects on Climate

They serve as a climatic divide between two adjoining regions. The mountains cause orogenic rainfalls, diversion, and blocking of cold winds, etc.

Major Tourist Destination

The climate, pure air, distinctive flora and fauna, scenic beauty, local culture, history, and tradition, as well as the opportunity to experience snow and engage in winter sports, are just a few of the factors that make mountain regions attract tourists.

Conclusion

One-fifth of the world's area is made up of mountains, and at least one-tenth of all people live there. 26.5 per cent of the continental land area of the earth is made up of mountain ranges. 197 of the 237 countries in the world have mountains. In terms of biodiversity, water, clean air, research, cultural variation, recreation, landscape, and spiritual aspects, mountains are highly valued.

PLATEAUS

Plateau

- **A plateau is a flat-topped table land.**
- **Plateaus occur in every continent and take up a** third of the Earths land**.**
- **They are one of the four major landforms, along with mountains, plains, and hills.**
- **Plateaus, like mountains may be young or old. The Deccan plateau in India is one of the oldest plateaus.**
- **Valleys form when river water cuts through the plateau. The Columbia Plateau, between the Cascade and Rocky mountains in the northwestern United States, is cut through by the Columbia River.**
- **Sometimes, a plateau is so eroded that it is broken up into smaller raised sections called Many outlier plateaus are composed of very old, dense rock formations. Iron ore and coal often are found in plateau outliers.**
- **Plateaus are very useful because they are rich in mineral deposits. As a result, many of the mining areas in the world are located in the plateau areas.**

Model question on Plateaus

Plateaus are of great economic significance. Comment with reference to India And World.

- **The plateaus are famous for minerals. The plateau of France [Massif Central], the Deccan plateau of India, Katanga plateau of Congo [Copper mines], Western Australian plateau [Kimberly Plateau – Diamond mines] and Brazilian plateau [Brazilian Highlands] are very good sources of minerals. Iron, copper, gold, diamonds, Manganese, coal, etc., are found in these plateaus.**
- **East African plateau is famous for gold and diamond mining.**
- **In India huge reserves of iron, coal and manganese are found in the Chotanagpur plateau.**
- **In the plateau areas, there may be several waterfalls as the river falls from a great height. In India, the** Hundru Falls **in the** Chotanagpur plateau **on the river** Subarnarekha **and the** Jog Falls in Karnataka **are examples of such waterfalls. These sites are ideal for hydro-electric power generation.** Angel falls **in Venezuela is also a waterfall that descends down a plateau.**
  [Plateaus are not very useful from the point of view of agriculture. The hard rocks on plateaus cannot form fertile soil but agricultural activities are promoted where lava soils have developed. It is difficult to dig wells and canals in plateaus. This hampers irrigation.]
- **The lava plateaus like Deccan traps are rich in black soil that is fertile and good for cultivation. Example: Maharashtra has good cotton growing soils called** regurs**.**

- **Loess plateau in China has very fertile soils that are good for many kind of crops.**
- **Many plateaus have scenic spots and are of great attraction to tourists. (Grand Canyon, USA, many waterfalls)**

Plateau Formation

- **Tectonic plateaus are formed from processes that create mountain ranges –** volcanism (Deccan Plateau)**, crustal shortening (thrusting of one block of crust over another, and folding occurs. Example:** Tibet**), and thermal expansion** (Ethiopian Highlands)**.**

Thermal expansion

- **Thermal expansion of the lithosphere means the replacement of cold mantle lithosphere by hot asthenosphere).**
- **Those caused by thermal expansion of the lithosphere are usually associated with hot spots. The** Yellowstone Plateau in the United States**, the** Massif Central in France**, and the** Ethiopian Plateau in Africa **are prominent examples.**
- **When the lithosphere underlying a broad area is heated rapidly – e.g., by an upwelling of hot material in the underlying asthenosphere – the consequent warming and thermal expansion of the uppermost mantle causes an uplift of the overlying surface. The** high plateaus of East Africa and Ethiopia **were formed this way.**

Hotspot Volcanism – Hawaiian and Reunion

Crustal shortening

- **The great heights of some plateaus, such as the Plateau of Tibet is due to** crustal shortening.
- **Crustal shortening, which thickens the crust as described above, has created high mountains along what are now the margins of such plateaus.**
- **Plateaus that were formed by crustal shortening and internal drainage lie within major mountain belts and generally in arid climates. They can be found in North Africa, Turkey, Iran, and Tibet, where the African, Arabian, and Indian continental masses have collided with the Eurasian continent.**

Volcanic Flood Basalts – Traps

- **Volcanism Types – Exhalative, Effusive, Explosive, Subaqueous**

- **Volcanic Landforms – Extrusive and Intrusive**
- **Volcanism – Andesitic, Basaltic-Geyser,Hot Water Spring**
- **A third type of plateau can form where extensive lava flows (called** flood basalts or traps**) and volcanic ash bury preexisting terrain, as exemplified by the** Columbia Plateau **in the northwestern United States,** Deccan Traps **of peninsular India,** Laurentian plateau or The Canadian Shield **and the** Siberian Traps of Russia**.**
- **Volcanic plateaus are commonly associated with eruptions that occurred during the Cenozoic or Mesozoic.**
- **Eruptions on the scale needed to produce volcanic plateaus are rare, and none seems to have taken place in recent time.**
- **The volcanism involved in such situations is commonly associated with hot spots. The lavas and ash are generally carried long distances from their sources, so that the topography is not dominated by volcanoes or volcanic centers.**
- **The thickness of the volcanic rock can be tens to even hundreds of metres, and the top surface of flood basalts is typically very flat but often with sharply incised canyons and valleys.**
- **The volcanic eruptions that produce lava plateaus tend to be associated with hot spots. For example, the basalts of the Deccan Traps, which cover the Deccan plateau in India, were erupted 60–65 million years ago when India lay in the Southern Hemisphere, probably over the same hot spot that presently underlies the volcanic island of Reunion.**
- **In North America the Columbia River basalts may have been ejected over the same hot spot that underlies the Yellowstone area today. Lava plateaus of the scale of those three are not common features on Earth.**

Others

- **Some plateaus, like the Colorado Plateau, the Ordos Plateau in northern China, or the East African Highlands, do not seem to be related to hot spots or to vigorous upwelling in the asthenosphere but appear to be underlain by unusually hot material. The reason for localized heating beneath such areas is poorly understood, and thus an explanation for the distribution of plateaus of that type is not known.**

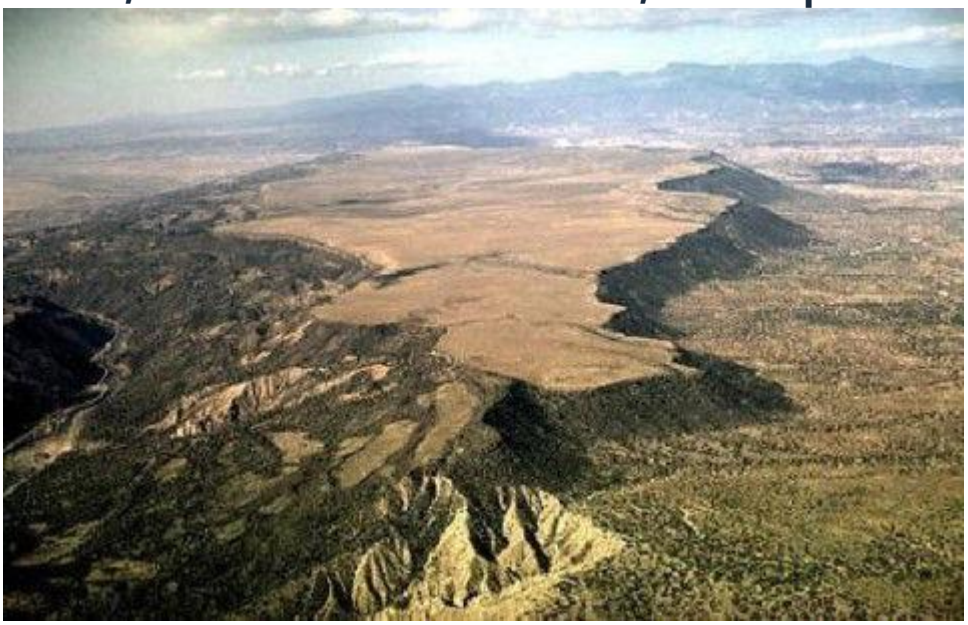
- **There are some plateaus whose origin is not known. Those of the Iberian Peninsula and north-central Mexico exhibit a topography that is largely high and relatively flat.**

Plateau Types

- **There are two kinds of plateaus:** dissected plateaus **and** volcanic plateaus**.**

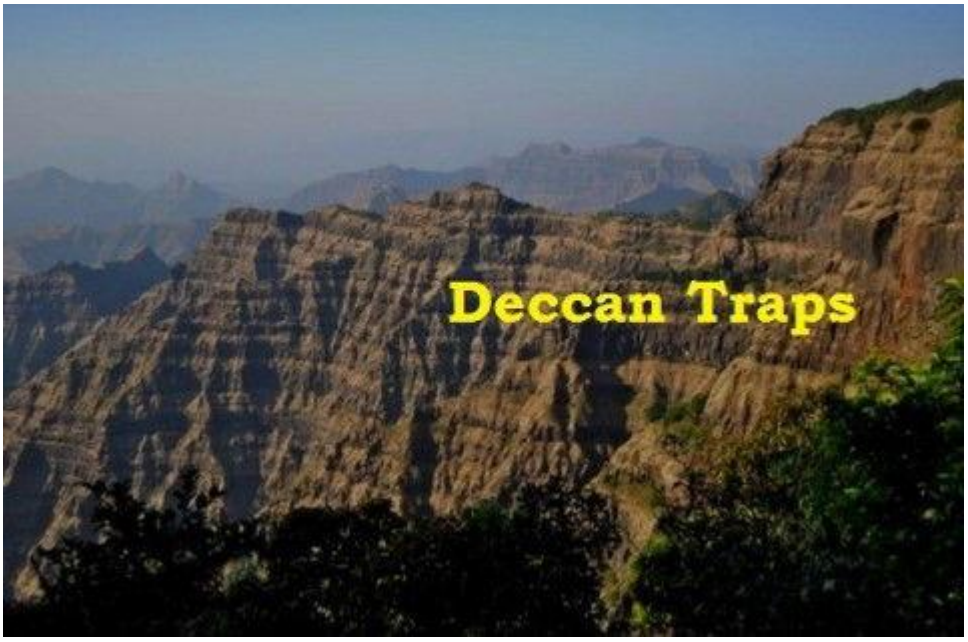
Dissected plateau

- **A dissected plateau forms as a result of upward movement in the Earth's crust.**
- **The uplift is caused by the slow collision of tectonic plates. The** Colorado Plateau**, in the western United States, Tibetan plateau etc. are examples.**



Volcanic plateau

- **A volcanic plateau is formed by numerous small volcanic eruptions that slowly build up over time, forming a plateau from the resulting lava flows.**
- **The** Columbia Plateau **in the northwestern United States of America and** Deccan Traps **are two such plateaus.**



Others

- Intermontane plateaus **are the highest in the world, bordered by mountains. The** Tibetan Plateau **is one such plateau.**
- Continental plateaus **are bordered on all sides by the plains or seas, forming away from mountains.**

Major plateaus of the World

Tibetan Plateau

- Highest and largest plateau **in the world and hence called the** 'roof of the world'.
- **Formed due to collision of the Indo-Australian and Eurasian tectonic plates.**
- **The plateau is sufficiently high enough to reverse the Hadley cell convection cycles and to drive the monsoons of India towards the south. [We will learn this in future posts]**
- **It covers most of the Autonomous Tibetan Region, Qinghai Province of Western China, and a part of Ladakh in Jammu and Kashmir.**
- **It is surrounded by mountains to the south by the Himalayan Range, to the northeast by the** Kunlun Range**, and to the west by the** Karakoram Range**.**

Columbia – Snake Plateau

- **River Columbia and its tributary Snake meet in this plateau.**
- **It is bordered by the** Cascade Range **and** Rocky Mountains **and divided by the** Columbia River.

- **This plateau has been formed as the result of volcanic eruptions with a consequent coating of** basalt lava (Flood Basalt Plateau).

Colorado Plateau

- **It is lying to western part of U.S.A. It is the largest plateau in America.**
- **It is divided by the** Colorado River **and the** Grand Canyon**.**
- **This plateau is an example of intermontane plateau. Mesas and buttes are found here at many places [Arid Landforms].**
- **The plateau is known for the groundwater which is under positive pressure and causes the emergence of springs called** Artesian wells**.**

Deccan Plateau

- **Deccan Plateau is a large plateau which forms most of the southern part of India.**
- **It is bordered by two mountain ranges, the Western Ghats and the Eastern Ghats.**
- **The plateau includes the Deccan Traps which is the** largest volcanic feature on Earth**.**
- **Made of multiple basalt layers or lava flows, the Deccan Traps covers 500,000 square kilometers in area.**
- **The Deccan Traps are known for containing some unique fossils.**
- **The Deccan is rich in minerals. Primary mineral ores found in this region are mica and iron ore in the Chotanagpur region, and diamonds, gold and other metals in the Golconda region.**

Kimberley Plateau

- **Lies in the northern part of Australia.**
- **This plateau is made of volcanic eruption.**
- **Many minerals like iron, gold, lead, zinc, silver and diamond are found here.**
- **Diamond is also found here.**

Katanga Plateau

- **It is lying in Congo.**
- **It is famous for** copper production**.**
- **Other minerals like Cobalt, Uranium, Zinc, Silver, Gold and Tin are also mined here.**

Mascarene Plateau

- **Plateaus also form in the ocean, such as the Mascarene Plateau in the Indian Ocean.**
- **It extends between the Seychelles and Mauritius Islands.**

Laurentian Plateau

- **Lying in the eastern part of Canada, it is a part of Canadian Shield.**
- **Fine quality of iron-ore is found here.**

Mexican Plateau

- **It is called as 'Mineral Store'. Different types of metallic minerals like silver, copper etc. are obtained from here.**
- **World's biggest silver mine Chihuahua is situated in the plateau.**

Patagonian Plateau

- **It is a Piedmont plateau (Arid Landforms) lying in southern part of Argentina.**
- **It is a rain shadow desert plateau.**
- **It is an important region for sheep rearing.**

Altiplano Plateau or Bolivian Plateau

- **It is an intermontane plateau which is located between two ranges of Andes Mountain.**
- **It is a major area of Tin reserves.**

Massif Central

- **This plateau lies in the central France.**
- **It is famous for Grapes cultivation.**

Anatolian Plateau

- **Also known as Asia Minor, most of Turkey lies on this plateau.**
- **It is an intermontane plateau lying between Pontiac and Taurus Mountain ranges.**
- **Tigris – Euphrates Rivers flow through this plateau.**
- **Precious wool producing Angora goats are found here.**

Others

- Spanish Plateau or Iberian Plateau: **It is situated in the middle of Spain. It is a lava plateau. It is rich in minerals like Iron.**

- Loess Plateau**: It is in China. The soil here is made of fine particles brought by the wind. This fine loamy soil is extremely productive. Crops grown in this soil along the** Yellow River **give great yields.**
  Arid Landforms – Erosional, Depositional – Wind, Water Eroded
- Potwar Plateau: **It is situated in northern plateau (Punjab) region of Pakistan. Its average** 'Salt Range' **is located to the south-west of the plateau.**
- Bavarian Plateau: **Southern part of Germany.**
- Ahaggar Plateau: **A small plateau located in Algeria, Sahara**

PLAINS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Introduction

Plains are one of the major landforms of the Earth. A plain is a large stretch of flat land. While plains are typically very even, some may be slightly declining. They are usually formed by rivers and river tributaries. As rivers flow through mountains and hills, their tides tend to erode them. As the rivers flow, they continue to carry these eroded particles with them, known as sediments. Eventually, these sediments are deposited somewhere by the river, and that deposit, over several years, leads to the creation of a plain.

Plains tend to be extremely fertile, and further due to the flatness of the land are extremely convenient for travel purposes, setting up civilization, etc. Due to this, historically, many settlements have made plains their homes. The most famous plain in India is the Indian

Gangetic plains. Plains are often divided into different types based on the way they were created; the major types of planes are:

1. **Structural Plains**
2. **Erosional Plains**
3. **Depositional Plains**
4. **Glacial Plains**

- ## Structural Plains

  Structural plains consist of horizontal flat surfaces of the earth that have been relatively undisturbed. This means that the bed of rocks in that area was naturally in a horizontal fashion and over years was left unaffected, leading the structural plain. They are often formed by a part of the seafloor being raised. Most continental borders contain structural plains.

- ## Erosional plains

  Erosional plains are plains that were formed over numerous years by the gradual erosion of a bed of rocks or any other rock-based structure. This could be due to running water, Glaciers, river tides, etc. When you throw a shard of glass into the sea, when it comes out again after numerous years, it comes out smooth due to repeatedly being hit by the waves. In the same way over time due to being harshly hit by waves or the wind etc., sometimes certain beds of rocks end up eroding and smoothening, giving rise to a large stretch of flat land, i.e. an erosional plain. Ones formed by wind are also known as pedi plains, whereas the ones formed by water and erosion are called pene plains.

- ## Depositional Plains

  Depositional plains are plains that are formed by a deposit of different materials in a specific area over a long period, leading to a flat stretch of land. An image to understand this better would be if one kept depositing soil in a pit repeatedly, over time it would give rise to a flat patch of land instead of the pre-existing pit.

  i.) One of the most famous depositional plains is the alluvial plains. Alluvial plains are formed by rivers depositing sediments over a long period. They tend to be extremely fertile due to the nature of sediments that are deposited by the river. Alluvial plains are quite similar to flood plains. However, flood plains are formed by floods that are currently occurring over a small

patch of land. Over some time, these floods give rise to a large flat patch of land; that is known as an alluvial plain.

ii.) Flood plains, as referred to above, are plains formed by frequent floods. Flood plains over a large period create alluvial plains.

iii.) Lacustrine plains are plains that are created in what originally was the bed of a lake.

iv.) Lava plains are plains created by flowing sheets of lava.

- **Glacial Plains**
  Many times, the movement of glaciers creates plains. They are known as glacial plains. They consist of Sandar plains which are formed by the gradual melting of glaciers that lead to deposits of primarily sand and gravel; and of till plains, which follow the same trajectory of melting as sandar plains but instead, the glacier carries different kinds of till.

Conclusion

Plains are stretches of flat land that are useful to humans for cultivation, settlement as well as easy to transport from. They are usually created by rivers and their tributaries but can also be created via other methods. The major types of plains are erosional plains that are created by the erosion of a bed of rocks or other rock-based structure over some time; structural plains that consist of a bed of rocks that were already present in a horizontal fashion and remained untouched over time usually created by the rise of a part of the sea-bed or continental shelf, depositional plains that are created by deposits of different material in an area over some time, primarily by rivers and their tributaries, and finally glacial plains that are created due to the melting of glaciers in a specific place and the deposit of the sediments within those glaciers.

RIVERS

A river is a naturally flowing freshwater watercourse that runs towards an ocean, sea, lake, or another river.

The world is home to numerous major rivers that play crucial roles in the ecosystems, economies, and cultures of the regions they flow through.

These rivers have shaped landscapes, supported civilizations, and influenced the development of societies throughout history. They continue to play significant roles in regional environments and economies.

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Major Rivers of the World

Flowing bodies of freshwater that empty into seas, oceans, lakes, and reservoirs are referred to as rivers.

Major rivers of the world are crucial for providing drinking water, irrigation, transportation, and hydroelectric power generation, as well as for a variety of leisure activities like swimming and boating. The whole continents of the world are traversed by numerous rivers and their tributaries.

Water covers around 70% of the Earth’s surface and can be found in rivers, lakes, streams, and seas. Here are some of the major rivers of the world, listed by continent.

Africa


Mediterranean Sea
EGYPT
Nile River
Red Sea
SUDAN
Blue Nile River
White Nile River
SOUTH SUDAN
ETHIOPIA
UGANDA
Lake Victoria
INDIAN OCEAN
N
W
E
S

RIVER NILE

Considered to be the longest river in the world. The length of the Nile River is roughly 6650 kilometers. Lake Victoria is assumed to be the river's origin. The river's course passes through Egypt, Uganda, Ethiopia, Kenya, Tanzania, Rwanda, the Democratic Republic of the Congo, Eritrea, Burundi, Sudan, and South Sudan. The Blue and White Niles are the river's two tributaries.

RIVER CONGO

The only river to cross the equator twice is the Congo River. It is originally known as the Zaire River. It has a length of 4700 Km. It travels in a curving pattern across the continent of Africa. With some sections reaching depths of over 700 feet, it is also the deepest river in the entire globe.

ORANGE RIVER

The Orange River is the longest in South Africa. It starts in the Drakensberg in neighboring Lesotho, where it is also known as the Senqu River. It travels across South Africa before entering the Atlantic Ocean. The Orange River is a component of the border between Lesotho and South Africa as well as between Namibia and South Africa.

From the river's source and the Atlantic Ocean, it travels 1,365 miles. The river was known as Gariep by the first residents, and Groote Rivier by the Dutch. Nonetheless, Colonel Robert Gordon gave it the name Orange River in 1779 in recognition of William V of Orange. Via the Orange River Project, the Orange River supports mining, manufacturing, and agriculture. The alluvial deposit on the river was where the first diamond in South Africa was found.

LIMPOPO RIVER

The Limpopo River originates in southern Africa's central regions. It extends to a length of about 1,087 miles before flowing eastward toward the Indian Ocean. It has a 415,000-square-kilometre drainage basin. It is the Limpopo River that divides South Africa from Botswana and Zimbabwe.

The river starts at the confluence of its two tributaries, the Crocodile and Marico Rivers; its principal tributary in Botswana is the Notwane River. The Limpopo Basin is also home to numerous mining operations. Nonetheless, flooding has resulted in losses and damages.

NIGER RIVER

Flows through West Africa, passing through countries like Nigeria, Niger, Mali, and Guinea discharging through a massive delta, known as the Oil Rivers, into the Gulf of Guinea. The **Niger River** is the principal river of western Africa, extending over 2,500 miles (about 4,180 km). The Niger is the third longest river in Africa, exceeded only by the Nile and the Congo Rivers (also known as the Zaïre River). Its main tributary is the Benue River.

ZAMBEZI RIVER

The “Big River” sustains the lives of many iconic African species, including elephants, buffalo, hippos, antelope, and crocodiles, as well as the people who live between its modest source in the Zambian highlands and the Indian Ocean. It passes through parts of Angola, Namibia, Botswana, and Zimbabwe.

As it moves eastward, the Zambezi gains momentum and supplies plenty of electricity to many of the communities in its basin. Zambia and Zimbabwe receive power from the Kariba Dam, while Mozambique and South Africa are lit up by the Cahora Bassa Dam. These two hydroelectric plants are among the biggest in Africa. Victoria Falls is undoubtedly Zambezi’s most noteworthy feature.

Asia


CHINA
Yarlung Zangbo (Tsangpo)
Lhasa
New Delhi
NEPAL
Subansiri
BHUTAN
Brahmaputra
Agra
Yamuna
Ganges
Lucknow
Kathmandu
Ghaghara
Gandak
Kosi
Teesta
Jaipur
Banas
Chambal
Kanpur
Gomti
Ganges
Guwahati
Surma
Barak
Betwa
Allahabad
Varanasi
Patna
Tamsa
Farakka
BANGLADESH
Jamuna
Son
Dhaka
Damodar
Hooghly
Padma
Meghna
Indore
Bhopal
Kolkata
Mouths of the Ganges
INDIA
MYAN
Bay of Bengal

GANGES RIVER

Bangladesh and India are traversed by the Ganges River. The river is 2510 kilometers long and a notable landmark, but it is better known for its profound religious importance.

The Ganges is regarded as the most revered body of water in the world in Hindu culture and religion. In mythology, the river represents the goddess Ganga, who was the offspring of the mountain deity Himalaya.

BRAHMAPUTRA RIVER

China, India, and Bangladesh are all countries that the Brahmaputra River passes through over a distance of 2,391 miles (3,848 km). It runs towards the east through the Tibet Autonomous Region of China from its source in the mountains then into India. The stream drains into the Bay of Bengal from that location. It travels across Bangladesh and Assam during that time.

Also read: *Transboundary rivers of India*

INDUS RIVER

Next on the list is the Indus River, which flows across China, India, and Pakistan for a distance of 2,243 miles (3,610 km). It has twenty significant tributaries and is the largest and most important river in Pakistan. It originates in the Tibetan plateau, close to Lake Mansarovar and the Himalayas, flows through the Indian provinces of Jammu and Kashmir, and then across all of Pakistan before emptying into the Arabian Sea, a branch of the Indian Ocean.

Also Read: *Indus Valley Civilization, Indus River and Tributaries, Major River systems in India*

YELLOW RIVER

This huge river, which has a length of 5464 Km also known as the Huang He, is named after the color of its water. The color is caused by massive amounts of loose debris. Its basin is considered the birthplace of ancient Chinese civilization. It has enormous symbolic and practical significance for the country.

MEKONG RIVER

It stretches about 5,000 kilometers from its source on the Tibetan Plateau to the Mekong Delta. The longest river in Southeast Asia and the seventh longest in all of Asia is this transboundary river. The river, which is known by several names, flows through six Asian nations: China, Vietnam, Laos, Myanmar, Thailand, and Cambodia.

65 million people are living in the Mekong Basin, 80 percent of whom reside in the lower basin. With over 20,000 plants and 800 different species of fish, the river is likewise incredibly diverse.

IRRAWADDY RIVER

Myanmar is traversed by the Irrawaddy River, which runs from north to south. At a length of 1,348 miles, it is both the longest river in the nation and the most significant body of water for commerce. The Irrawaddy River rises at the meeting of the Rivers N'mal and Mali. It travels southward before draining into the Andean Sea through the Irrawaddy Delta. A region of about 255,000 square kilometers is drained by the river.

The Irrawaddy River is home to a variety of creatures, including 43 different species of fish. The river provides water for rice irrigation and is a significant means of export and import transit. Notwithstanding the concern expressed by environmentalists, work is still being done along the river to build seven hydroelectric dams.

SALWEEN RIVER

A 1,491-mile-long river called the Salween originates in the Tibetan Plateau. It enters the Andaman Sea in Southeast Asia after passing through three nations. It drains a 320,000-square-kilometre watershed that is spread throughout China, Myanmar, and Thailand.

Almost 7 million people live along the Salween, one of the longest free-flowing rivers in the world, and are spread across 13 different ethnic groups. Moreover, the river is home to 25% of all animal species in the world, as well as 140 fish species and 7000 plant species. UNESCO rates the upper section of the river, which is in China, as the most biodiverse temperate ecosystem on Earth.

YANGTZE RIVER

The Yangtze River is the third-longest river in the world and the longest river in the world to run entirely within one nation. It has a length of 6300 Km. Moreover, it is Asia's longest river. One-third of China's population is residing in the Yangtze River basin. The Chinese government has long believed that the river's source is the Tuotuo tributary in the Tanggula Mountains.

Recently it is indicated that the headwaters of the Dam Qu tributary are located on Jari Hill, which is where the Yangtze River's source lies. The Yangtze River, which drains into the East China Sea at Shanghai, is formed when these and other tributaries come together.

YENISEI RIVER

The Yenisei River originates in Mongolia and travels north before emptying into the Kara Sea in the Arctic Ocean via the Yenisei Gulf. Along the way, it drains a sizable portion of Siberia. The Yenisei begins in the Russian city of Kryzyl at the meeting of its headstreams, By-Khem (rising in the Eastern Sayan Mountains) and Ka-Khem (rising in Mongolia).

It then runs for 3,487 kilometers until finally draining into the Kara Sea. One of the main Yenisei headwater tributaries, the Angara River drains Lake Baikal. It enters the Yenisei near Strelka in Russia after leaving Lake Baikal.

RIVER IRTYSH

The main tributary of the Ob River, the Irtysh River, has its origins in the glaciers of the Altai mountains in the Chinese region of Xinjiang, which is close to Mongolia. It eventually meets the Ob near Khanty-Mansiysk, western Siberia, Russia, and flows northwest into Kazakhstan before emptying into the Arctic Ocean.

The river's whole course spans around 4,248 km. Along with its banks, there are several significant cities in China, Kazakhstan, and Russia. The river is a crucial conduit for the movement of people and goods throughout the nations through which it flows.

URAL RIVER

The Ural River is a 2,428 km long river that flows through Russia and Kazakhstan along the continental divide between Europe and Asia. It is also known as the Zhayyq River in the local Kazakh language. The Caspian Sea, the most enormous

inland sea in the world and located between Europe and Asia, is where the river drains after its source in Russia's Ural Mountains near Mount Kruglaya.

The digitate delta, or tree-like structure, of the Ural River, which is visible as it enters the Caspian Sea, is a notable characteristic of the river. The words "Europe" and "Asia" are engraved into permanent monuments that are placed on either side of the Ural River bridge in Orenburg, Russia.

LENA RIVER

The Lena River spans the entirety of Russia's boundaries and is 2,668 kilometers long. It can be found in the north, where there is a wealth of wildlife and natural resources, including gold. The river originates in the Baikal range, just to the east of the actual Baikal Lake, and travels primarily through the Russian Republic of Sakha before finally joining the Yenisei River and making a vast arc up to the Laptev Sea, which is a part of the Arctic Ocean, where it empties.

RIVER AMUR

The Heilong Jiang, commonly known as the Amur River, is the tenth-longest river in the world. It forms the border between northeastern China and Russia. It has a length of 4480 Km. The word Amur is thought to have originated from a term meaning "water". The Chinese word Heilong Jiang translates to "black dragon river."

OB-IRTYSH

The Ob-Irtysh also referred to as the Ob River, is one of the three major Siberian rivers, together with the Yenisei and the Lena. It starts in the Altas Mountains and empties into the Arctic Ocean. It has a length of 5410 Km.

RIVER EUPHRATES

The Euphrates River, which spans over 2,800 km, is regarded as Western Asia's longest river. The river rises in the Armenian Highlands in southeast Turkey. It flows through Syria and Iraq to meet the Tigris River and eventually empties into the Persian Gulf.

RIVER TIGRIS

It was one of the primary water sources that helped Mesopotamia and other ancient cultures develop. The Tigris River, which flows 1,750 km from its source in the Armenian Highlands to its mouth in the Persian Gulf, is Western Asia's second-largest river after the Euphrates River.

The Tigris River drains an area of around 375,000 square kilometers and passes through Turkey, Syria, and Iraq (including Iran). Nearly the whole length, the Tigris River and Euphrates River are parallel.

Europe


GERMANY
POLAND
CZECH REPUBLIC
Brno
Morava
Váh
Thaya
Danube
SLOVAKIA
Lech
Isar
Inn
Augsberg
Munich
Vienna
Bratislava
AUSTRIA
Tisa
Debrecen
HUNGARY
Budapest
Marcal
Mura
Slo
Zala
Szeged
Crisul Alb
Somes
Mures
Buzau
Siret
Prut
Chernivtsi
SWITZERLAND
ROMANIA
Drava
Zagreb
Novi Sad
Sava
CROATIA
Galati
Braila
Arges
Ialomita
Bucarest
Olt
Vedea
Craiova
ITALY
BOSNIA &
HERZEGOVINA
Belgrade
Sarajevo
Drina
Great Morava
Osam
SERBIA
Danube
Adriatic Sea
BULGARIA
MACEDONIA
Tyrrhenian
Sea
Aegean
Sea
About 1,000 miles (1,60

DANUBE RIVER

It is one of the s most important shipping lanes in Europe. It plays a key factor in the settlement patterns and political development of Central and South-Eastern Europe. It originates at the meeting of the Brigach and Breg rivers, close to the German town of Donaueschingen, in the Black Forest region of Germany.

It flows for 2,850 kilometers. Germany, Austria, Hungary, Serbia, Bulgaria, Croatia, Slovakia, Moldova, Ukraine, and Romania are among the ten European countries that the river flows through. Ultimately, the Danube River empties into the Black Sea through the Danube Delta.

It is referred to as Donau in Germany and Austria; known as Dunaj in Slovakia and Ukraine, Dunărea in Romania, Dunav in Croatia, Serbia, and Bulgaria, and Duna in Hungary. Many cultural artifacts, including Greek myths, Romanian melodies, and even contemporary novels, memorialize its importance.

RIVER ODER

The Oder River is the second-longest river in Poland, measuring roughly 840 km. Its source is in the rocky highlands of the eastern Czech Republic. It runs through Poland's western region before forming a boundary with Germany. The Peene, Wina, and Dziwna branches all drain into the Baltic Sea, while the river's main branch empties into the Szczecin Lagoon.

DNIEPER RIVER

The Dnieper River is the fourth-longest in Europe with a length of around 2,200 km. It comes from the Valdai Hills, which are close to the city of Smolensk in Russia. More than 32,000 tributaries of the Dnieper River are thought to exist. Berezina, Bilozerka, Drut, Desna, Prypiat, Sozh, Myareya, Samara, Sula, and Vyazma are a few of its tributaries.

RIVER VOLGA

The Volga River is the main river in western Russia. It extends 3,530 kilometers from its source in the Valdai Hills to the Caspian Sea, the biggest inland body of water in the world. It encompasses a significant portion of the Volga area. A little more than half of Russia's population resides in the Volga River Basin.

Four of the ten largest cities in Russia are located along the river's full course. One of the greatest rivers in the world due to its historical, cultural, and economic significance. In the past, the Eurasian Civilization came together near the Volga River. It also has some of the biggest reservoirs in the world and provides a significant portion of the direct and indirect livelihood for millions of people.

ELBE RIVER

The Elbe River is 1,112 kilometers long. It has its beginnings in the southern Krkonose Mountains, which are close to the border between Poland and the Czech Republic. Following Bohemia in the northwest of the Czech Republic, it runs past Germany's eastern border and into the North Sea close to the town of Cuxhaven. Saale, Mulde, Ohre, Vltava, Schwarze Elster, Havel, and Alster are a few of the important Elbe River tributaries.

RIVER RHINE

With a length of almost 1,230 kilometers from its source in Switzerland to its mouth on the North Sea in the Netherlands, the Rhine River is the eleventh-longest in Europe. This transboundary river travels through six nations—Switzerland, Germany, Austria, Liechtenstein, Germany, and the Netherlands. It drains an area of around 185,000 square kilometers.

The Rhine Basin also drains sections of France, Italy, and Belgium. One of Europe's most significant rivers in terms of history, culture, and economy is the Rhine. Over 20% of the world's chemical industry is manufactured near the river, which helps industrial transportation and output. The Rhine and the Danube together formed the northern inland border of the Roman Empire.

RHONE RIVER

The Rhone River begins in the Rhone glacier of the Swiss mountains. It has a length of around 813 kilometers. This swiftly moving river enters Lake Geneva at its eastern end before running through the southeast of France on its way south. The Rhone River splits into the Big Rhone and Little Rhone near the French city of Arles before emptying into the Mediterranean Sea.

THAMES RIVER

The River Thames is a 346 km river that originates at Thames's head in the Cotswold Hills in the county of Gloucestershire. It flows across southern England. After the River Severn, it is the second-longest river in the United Kingdom and the longest in England. The river runs into the North Sea via the Thames Estuary after passing through several well-known cities, including London, Reading, Hendley-on-Thomas, Windsor, and Oxford, where it is also known as the Isis River.

DON RIVER

The Don River is the fifth-longest in Europe with a length of roughly 1,870 kilometres. Then, when it approaches the Volga River, it runs in a southeasterly direction until abruptly turning west to enter the Gulf of Taganrog in the Sea of Azov. Chir, Seversky Donets, Chyornaya Kalitva, Krasivaya Mecha, Khopyor, and Medveditsa are a few of the Don River's tributaries. The Don River and the Volga River are connected by the Lenin Volga-Don Shipping Canal.

North America

RIVER MISSISSIPPI

The Mississippi, Missouri, and Jefferson rivers combine to form the world's fourth-longest river system. It has a length of 6275 Km. The river system drains 31 US states as well as two Canadian provinces.

The Mississippi River runs into the Gulf of Mexico from northern Minnesota. Lake Itasca is regarded to be its source. We get the Mississippi-Missouri-Jefferson River system when we regard the Jefferson River as the Mississippi River's farthest source.

SAINT LAWRENCE RIVER

Its discharge originates in Lake Ontario and empties into the Atlantic Ocean near the Southeast coast of Canada's main continent. The St. Lawrence Seaway, which stretches for approximately 4,000 kilometers (or 2,500 miles), includes the river, which is 1,197 kilometers (744 miles) long. The river was once a basin filled with glaciers that grew larger as the ice flowed away.

MACKENZIE RIVER

The Mackenzie River system is found in North America. It is also the biggest and longest river basin in Canada. From its headwaters in the Finlay River to its drainage into the Beaufort Sea in the Arctic Ocean, the Mackenzie River system travels 4,241 kilometers. Together, the Mackenzie and its tributaries drain a region that makes up nearly 20% of all of Canada's land.

Many of the Mackenzie River's tributaries extend into neighboring Canadian provinces including British Columbia, Saskatchewan, Alberta, and Yukon, even though the Mackenzie River itself fully runs within the Northwest Territories of Canada. The Peace, Athabasca, and Liard Rivers are a few of the Mackenzie River's most significant tributaries. The Lake Athabasca, Great Slave, and Great Bear Lakes are only a few of the lakes that are significant components of the Mackenzie River system.

MISSOURI RIVER

A major tributary of the Mississippi River in the United States.

COLORADO RIVER

Flows through the southwestern United States and northern Mexico, known for the Grand Canyon.

South America

AMAZON RIVER

In terms of total water flow volume, the Amazon River is without a doubt the largest in the world. It has a length of 6575 Km. Its claims to be the second-longest river in the world, however, is widely contested because Egypt's Nile River has long held the title. The debate on the origins of the Amazon is the source of the dispute. The Cordillera Rumi Cruz is where the Amazon started, claims a 2014 study.

PARANA RIVER

One of the world's longest rivers with a length of 4880 Km. The Parana River is found in South America. The Tupi word para the onáva, which means "like the sea," is the source of its name.

ORINOCO RIVER

In South America, the Orinoco River passes through Colombia and Venezuela. In terms of the volume of discharge, it is ranked as the fourth-largest river in the world. Its 1,330-mile length makes it one of South America's longest rivers.

MADEIRA RIVER

One of the principal rivers of South America, the 2,100-mile-long Madeira River flows between Bolivia and Brazil. It is one of the largest and most important tributaries of the Amazon River. The Portuguese referred to it as "Madeira," which translates to "Wood River," but its previous name was the Cuyari River.

The Madeira is created by the confluence of the Mamore and Madre de Dios rivers. This river overflows during the rainy season, rising to a height of 50 feet and submerging the forests on its sides. From arider to more humid, its climate varies as it moves from region to region. After entering the lower plains, the Madeira River empties into the Abuna River.

Australia

MURRAY RIVER

Australia's longest river, the Murray, flows through the southeast of the nation. It travels through New South Wales, Victoria, and South Australia and is 2508 kilometers long. Almost 1.5 million homes in Australia receive their water from this river, which is also used to irrigate nearby fields.

DARLING RIVER

A major tributary of the Murray-Darling system.

Conclusion

The culture of most places of the world is heavily influenced by the larger rivers that they depend on for food and transportation. The majority of the riverside towns and villages have a robust boat industry and travel hundreds of kilometers for fishing and cargo transportation.

Some communities regard certain portions of these rivers as sacred, and only specific methods may be used to access these areas. Fish, reptiles, and huge mammals are just a few of the diverse plants and animals that may be found in the world's rivers.

The melting of glaciers will likely be accelerated by climate change and the resulting temperature rises, which will initially increase water levels but ultimately result in decreased river discharge.

The water quality in many major rivers of the world has already deteriorated to dangerous levels as a result of heavy home, industrial, and agricultural waste pollution. Rapid economic growth and urbanization have contributed to some of this, thus pollution is expected to persist unabatedly.

LAKES AND GLACIERS

There are many remarkable lakes around the world, each with its unique features, ecological importance, and cultural significance.

With climate change playing havoc on all levels of the environment, the lake ecosystems are also largely affected.

Recently, it was reported that the water levels in Lake Titicaca have fallen to historic lows due to climate change.

This article will list down the important lakes of the world continent-wise along with their features.

Table of Contents

Important lakes and their features

A lake is a large body of water that is surrounded by land. It is a type of inland waterway and can be natural or man-made. Lakes can be found all over the world, and they can vary in size, depth, and water chemistry.

They can be formed by a variety of processes, including tectonic activity, glacial melting, volcanic activity, and human activity.

Here are some of the significant lakes from various regions of the world and their distinctive characteristics:

North America

Great Lakes (Superior, Michigan, Huron, Erie, Ontario)

- Location: **North America, shared by the United States and Canada.**
- Feature: **The Great Lakes form the largest group of freshwater lakes in the world by total area. They are important for transportation, recreation, and as a water source for the surrounding regions.**

Great Slave Lake

- Location: **Located in Canada's Northwest Territories.**
- Features: **Great Slave Lake is the deepest lake in North America and the second-largest in Canada. It is surrounded by boreal forests and is important for fishing and traditional Indigenous cultures.**

Great Bear Lake

- Location: **Located in Canada's Northwest Territories.**
- Features: **Great Bear Lake is the largest lake entirely within Canada. It is known for its clear waters and is ecologically significant for various fish species.**

Lake Winnipeg

- Location: **Located in the province of Manitoba in Canada.**
- Features: **Lake Winnipeg is one of the largest freshwater lakes in North America and is known for its diverse aquatic life. It is a vital resource for fishing and water supply.**

South America

Lake Titicaca

- Location: **Andes Mountains, bordering Peru and Bolivia.**
- Feature: **Lake Titicaca is the world's highest navigable lake and the largest lake in South America by volume. It is known for its cultural significance to indigenous communities.**

Lake Maracaibo

- Location: **Venezuela**
- Features: **Lake Maracaibo is one of the largest and oldest lakes in South America. It is connected to the Gulf of Venezuela by a narrow strait. The lake is renowned for its frequent lightning storms known as "Catatumbo lightning," which is considered one of the highest rates of lightning occurrence in the world.**

Lake Poopó

- Location: **Bolivia**
- Features: **Lake Poopó was once the second-largest lake in Bolivia but has experienced significant shrinkage due to climate change and water diversion. It is a saline lake located in the highlands of the Altiplano. The lake is an important habitat for migratory birds.**

Lake General Carrera

- Location: **Chile and Argentina**
- Features: **Also known as Lake Buenos Aires, this lake straddles the border between Chile and Argentina. It is famous for its striking turquoise color and the marble caves found along its shores. These unique natural formations have been carved by the waves over centuries.**

Lake Llanquihue

- Location**: Chile**
- Features: **Lake Llanquihue is one of the largest lakes in Chile and is surrounded by picturesque landscapes, including the Osorno and**

Calbuco volcanoes. It is a popular tourist destination known for its scenic beauty.

Lake Puelo

- Location: **Argentina and Chile**
- Features: **This lake is located in the Andes Mountains and is shared by Argentina and Chile. It is known for its clear waters, lush surroundings, and opportunities for outdoor activities like fishing and hiking.**

Europe

Lake Geneva (Lac Léman)

- Location: **Switzerland and France.**
- Feature: **Lake Geneva is one of the largest lakes in Western Europe. It is surrounded by picturesque landscapes and is a popular tourist destination.**

Lake Como

- Location: **Northern Italy.**
- Feature: **Lake Como is renowned for its scenic beauty and has been a popular retreat for artists, writers, and celebrities for centuries.**

Loch Ness

- Location: **Scotland, United Kingdom**
- Features: **Loch Ness is known for its association with the legendary Loch Ness Monster, "Nessie." The lake is deep and surrounded by rugged landscapes. It is one of the largest and deepest lakes in the British Isles. The ruins of Urquhart Castle overlook the loch.**

Lake Balaton

- Location: **Hungary**
- Features: **Lake Balaton is the largest lake in Central Europe and is often referred to as the "Hungarian Sea."**

Lake Plitvice

- Location: **Croatia**
- Features: **Lake Plitvice is part of the Plitvice Lakes National Park, a UNESCO World Heritage site.**

Eurasia

Caspian Sea

- Location: **Borders several countries in Central Asia and Eastern Europe.**
- Feature: **The Caspian Sea is the largest enclosed body of water on Earth. It is technically a lake, although it is often referred to as a sea due to its size.**

Lake Baikal

- Location: **Siberia, Russia.**
- Feature: **Lake Baikal is the world's deepest and oldest freshwater lake. It contains about 20% of the Earth's unfrozen freshwater and is home to numerous unique species, including the Baikal seal.**

Africa

Lake Victoria

- Location: **Eastern Africa, bordered by Tanzania, Kenya, and Uganda.**
- Feature: **Lake Victoria is the largest lake in Africa and the world's second-largest freshwater lake by surface area. Nile River begins in the rivers that flow into Lake Victoria.**

Lake Tanganyika

- Location: **Eastern Africa, bordered by Burundi, Tanzania, Zambia, and the Democratic Republic of Congo.**
- Feature: **Lake Tanganyika is the world's second-deepest lake and the longest freshwater lake. It is known for its biodiversity and the unique species that inhabit its waters.**

Lake Malawi (Lake Nyasa)

- Location: **Shared by Malawi, Mozambique, and Tanzania.**

- Features: **Lake Malawi is one of the African Great Lakes and is known for its clear waters and diverse fish species, including the colorful cichlids. It is a UNESCO World Heritage Site and plays an important role in supporting local fisheries.**

Lake Turkana

- Location: **Located in Kenya.**
- Features: **Lake Turkana is the largest desert lake in the world and is known for its unique greenish-blue color. It supports local communities through fishing and is also a site of archaeological significance, with fossil finds indicating early human habitation.**

Lake Nasser

- Location: **Located in Egypt and Sudan.**
- Features**: Lake Nasser is a reservoir created by the construction of the Aswan High Dam. It is one of the largest man-made lakes in the world and plays a role in regulating the flow of the Nile River and providing hydroelectric power.**

Asia

Aral lake

- Location: **Kazakhstan and Uzbekistan**
- Features: **The Aral Sea was once one of the world's largest inland lakes, but due to excessive water diversion for irrigation projects, it has significantly shrunk in size, leading to ecological and environmental challenges. The Aral Sea is now divided into the Small Aral Sea (North Aral) and the Large Aral Sea (South Aral).**

Dead Sea

- Location: **Bordering Israel, Jordan, and Palestine.**
- Features: **The Dead Sea is one of the saltiest bodies of water on Earth. It has high salinity due to its unique geography and high evaporation rate. The mineral-rich mud and water are believed to have therapeutic properties.**

Lake Van

- Location: **Eastern Anatolia, Turkey.**
- Features: **Lake Van is the largest lake in Turkey and one of the largest endorheic (closed basin) lakes in the world.**

Issyk-Kul

- Location:
- Features: **Issyk-Kul is one of the largest alpine lakes in the world. Despite its location in the mountains, the lake never freezes due to its salinity.**

Tonle Sap Lake

- Location:
- Features: **Tonle Sap is the largest freshwater lake in Southeast Asia. It's unique in that its flow changes direction during the monsoon season, leading to seasonal expansion and contraction. The lake is an important fishery and biodiversity hotspot.**

Lake Poyang

- Location: **China**
- Feature: **Lake Poyang is the largest freshwater lake in China and serves as an important habitat for migratory birds and several endangered species.**

Important lakes and their features in India

Dal Lake

- Location: **Srinagar, Jammu, and Kashmir, in the Himalayan region.**
- Features: **Known for its stunning beauty and houseboats, Dal Lake is a major tourist attraction. It is surrounded by picturesque mountains and offers shikara (traditional wooden boat) rides. The lake is also important for local livelihoods, supporting fishing and agriculture.**

Wular Lake

- Location: **Bandipora district, Jammu and Kashmir.**
- Features: **Wular Lake is one of the largest freshwater lakes in Asia. It plays a crucial role in maintaining the hydrological balance of the region**

and supports diverse bird species. The lake's catchment area is used for agriculture and horticulture.

Chilika Lake

- Location: **Coastal Odisha, near the Bay of Bengal**
- Features**: Chilika Lake is the largest coastal lagoon in India and a haven for migratory birds. It is a designated Ramsar site and home to various aquatic species, including the Irrawaddy dolphin. The lake is separated from the sea by a sandbar, making it a unique ecosystem.**

Vembanad Lake

- Location: **Kerala, between Alappuzha and Kochi**
- Features: **Vembanad is the longest lake in India and the largest in the state of Kerala. It is known for its intricate network of backwaters, houseboat tourism, and vibrant ecosystem. The lake is a vital part of Kerala's culture and economy.**

Loktak Lake

- Location: **Manipur**
- Features: **Loktak Lake is the largest freshwater lake in northeastern India and the only floating lake in the world due to the presence of phumdis (floating mats of vegetation). The lake's Keibul Lamjao National Park is a refuge for the endangered Manipur brow-antlered deer.**

Cholamu lake

- Location: **Sikkim**
- Features: **It is the largest high-altitude lake in India. It is very near to the Indo-China border.**

Pangong Lake

- Location: **Ladakh region**
- Features: **Pangong Lake is a high-altitude lake known for its breathtaking blue waters and stunning surroundings. It extends into Tibet (China) as well. The lake freezes during winter, making it accessible by road.**

Harike lake

- Location: **Tarntaran, Ferozpur, and Kapurthala districts of Punjab**
- Features: **Harike is one of the largest man-made wetlands in northern India. It came into existence in 1952 after the construction of a barrage near the confluence of rivers Sutlej and Beas. Harike is a significant abode for the birds migrating from across the international frontiers. It is a Ramsar site as well.**

Pushkar Lake

- Location: **Pushkar, Rajasthan.**
- Features**: Pushkar Lake is a sacred lake and a prominent pilgrimage site for Hindus. It is believed to have been created by Lord Brahma and is surrounded by ghats and temples. The annual Pushkar Fair is a major event held near the lake.**

Sambhar Lake

- Location: **Rajasthan, near Jaipur.**
- Features: **Sambhar Lake is India's largest saline lake and a significant source of salt production. It is also a crucial habitat for migratory birds during winter.**

Lonar lake

- Location: **Buldhana district, Maharashtra**
- Features: **Lonar crater is formed due to the meteorite collision in Pleistocene Epoch. It is a notified Geo-heritage Monument with saline and alkaline water. It is one of only four known hyper-velocity impact craters in basaltic rock anywhere on Earth. The other three basaltic impact structures are in southern Brazil.**

Hussain Sagar Lake

- Location: **Hyderabad, Telangana.**
- Features: **Hussain Sagar Lake is an artificial lake built during the reign of Ibrahim Quli Qutub Shah. It is known for the iconic Buddha statue located on an island in the lake.**

Pulicat Lake

- Location: **Bordering Andhra Pradesh and Tamil Nadu.**

- Features: **Pulicat Lake is the second-largest brackish-water lake in India. It serves as an important habitat for migratory birds and supports local fishing communities.**

GLACIERS

Definition

A glacier is a massive, slow-moving river of ice, formed from the accumulation and compaction of snow over time. Glaciers flow due to the force of gravity and can shape the landscape through erosion and deposition.

Formation

1. Snow Accumulation: ***Glaciers form in areas where more snow falls in winter than melts in summer.***

2. Compaction: ***Over time, layers of snow compress into firn and eventually dense glacial ice.***

3. Movement: ***The weight of the ice causes it to deform and flow outward and downward.***

Types of Glaciers

1. Alpine Glaciers: ***Found in mountainous regions, flowing down valleys (e.g., the Alps, Himalayas).***

2. Continental Glaciers: ***Vast ice sheets covering large land areas (e.g., Antarctica, Greenland).***

3. Piedmont Glaciers: ***Spread out at the base of mountains.***

4. Tidewater Glaciers: ***Terminate in the sea, often calving to form icebergs.***

Structure

- *Zone of Accumulation:* ***Area where snowfall exceeds melting.***

- *Zone of Ablation:* ***Area where melting exceeds snowfall.***

- *Crevasses:* ***Deep cracks in the glacier surface caused by movement.***

- *Moraine:* ***Accumulation of debris (rocks and soil) carried by the glacier.***

Glacial Movement

- *Internal Deformation:* ***Ice crystals deform and flow due to pressure.***

- *Basal Sliding:* ***The glacier slides over the bedrock, lubricated by meltwater.***

Glacial Erosion

- *Plucking:* ***Rocks are lifted and carried away by the glacier.***

- *Abrasion:* ***Rocks and debris embedded in the ice grind against the bedrock, polishing and scraping it.***

Glacial Landforms

- *Cirques:* ***Bowl-shaped depressions where glaciers form.***

- *Arêtes:* ***Sharp ridges between glacial valleys.***

- *Horns:* ***Pointed mountain peaks surrounded by cirques.***

- *U-shaped Valleys:* ***Formed by glacial erosion, contrasting with V-shaped river valleys.***

- *Fjords:* ***Deep, glacially carved valleys flooded by the sea.***

Glacial Deposits

- *Till:* ***Unsorted debris deposited directly by a glacier.***

- *Outwash:* ***Sorted sediments deposited by meltwater streams.***

- *Erratics:* ***Large boulders transported far from their source by glacial ice.***

Impact on Global Climate

- *Albedo Effect:* ***Glaciers reflect sunlight, helping to regulate Earth's temperature.***

- *Sea Level Rise:* ***Melting glaciers contribute to rising sea levels.***

- *Freshwater Storage:* ***Glaciers store a significant portion of the world's freshwater.***

Glacial Retreat and Climate Change

- *Retreat:* ***Many glaciers are retreating due to global warming.***

- *Impact:* ***This leads to reduced freshwater supply, sea level rise, and loss of habitat.***

Current Status and Future Outlook

- *Monitoring:* ***Scientists use satellites and field studies to monitor glacier health.***

- *Adaptation:* ***Communities are developing strategies to cope with the impacts of glacial retreat.***

- *Conservation:* ***Efforts are underway to reduce greenhouse gas emissions and slow the pace of climate change.***

Notable Glaciers

- *Gangotri Glacier:* ***One of the largest glaciers in the Himalayas, source of the Ganges River.***

- *Vatnajökull:* ***Europe's largest glacier, located in Iceland.***

- *Perito Moreno:* ***A major glacier in Patagonia, Argentina, known for***

its dynamic calving.

Conclusion

Glaciers are crucial components of the Earth's cryosphere, influencing global climate, sea levels, and freshwater resources. Understanding and protecting these natural wonders is vital for maintaining ecological balance and mitigating the impacts of climate chang