

INTERNATIONAL CHRONOSTRATIGRAPHIC CHART

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International Commission on Stratigraphy

v **2023**/06



Series / Epoch Stage / Age S numerical age (Ma)						
¢ong,	Erath Company	16 18 18 18 18 18 18 18 18 18 18 18 18 18	Series / Epoch	Stage / Age	GSSP	numerical age (Ma)
		Quaternary	Holocene M L/E	Meghalayan Northgrippian Greenlandian	No.	present 0.0042 0.0082 0.0117
) L	Pleistocene	<i>Upper</i> Chibanian	4	0.129
		ate		Calabrian	~	0.774
		Su	L/E	Gelasian	<u> </u>	1.80
			DI: U/L	Piacenzian <	1	2.58
			Pliocene	Zanclean	4	3.600 5.333
		(D)		Messinian	<	5.333 7.246
		Neogene	U/L	Tortonian	11.63	
		g		Serravallian	4	13.82
	oic	Š	Miocene [™]	Langhian	<	15.02
	Cenozoic		L/E -	Burdigalian		
	er			Aquitanian	<	20.44
	O			Chattian	<	23.03
		Paleogene	Oligocene Rupel	Rupelian	<	27.82
				Priabonian	<	33.9
				Bartonian	37.71	
Si			Eocene Lutetian		41.2	
Phanerozoic				Ypresian	1	47.8
lue			Paleocene	Thanetian	1	56.0
ha				Selandian	1	59.2
Ф				Danian	1	61.6
					3	66.0
				Maastrichtian	<	72.1 ±0.2
				Campanian	<	83.6 ±0.2
			Upper	Santonian	1	86.3 ±0.5
				Coniacian	<	89.8 ±0.3
	()	<u>S</u>		Turonian	4	93.9
	Zoic	eou		Cenomanian	<	100.5
	Mesozoic	Cretaceous		Albian	4	~ 113.0
			Lower	Aptian		~ 121.4
				Barremian	<	125.77
				Hauterivian	<	~ 132.6
				Valanginian		~ 139.8
				Berriasian		~ 145.0

Upper Series / Epoch Stage / Age OS Numerical age (Ma) 145.0 149.2 ± 0.7 154.8 ± 0.8 Oxfordian Callovian Bathonian Bathonian Bagiocian 174.7 ± 0.8 174.7 ±		4	(6) (1) (1) (2)		>			
Upper Kimmeridgian 149.2 ±0.7 154.8 ±0.8 Oxfordian 161.5 ±1.0 168.3 ±1.1 168.2 ±1.2 170.9 ±0.8 Aalenian 174.7 ±0.8 Toarcian 184.2 ±0.3 Pliensbachian 199.5 ±0.3 201.4 ±0.2 Rhaetian 201.4 ±0.2 Rhaetian 201.4 ±0.2 Rhaetian 247.2 251.2 251.2 251.2 251.2 251.2 264.28 ±0.16 266.9 ±0.4 Roadian 273.01 ±0.14 283.5 ±0.6 Sakmarian 299.5 ±0.17 Asselian 299.5 ±0.17 298.9 ±0.15 Sakmarian 299.5 ±0.17 298.9 ±0.15 Middle Moscovian 152.2 ±0.2 Middle Moscovian 152.2 ±0.2 152.2	£0,00	Erath	System	Se	ries / Epoch	Stage / Age	GSSP	O ()
Upper Kimmeridgian 154.8 ±0.8 161.5 ±1.0 165.3 ±1.1 168.2 ±1.2 170.9 ±0.8 174.7 ±0.3 ±0.3 ±0.3 ±0.3 ±0.3 ±0.3 ±0.3 ±0.3						Tithonian		
Callovian 161.5 ±1.0 168.2 ±1.2 168.2 ±1.2 170.9 ±0.8 174.7 ±0.8 174.7 ±0.8 174.7 ±0.8 174.7 ±0.8 184.2 ±0.3 199.5 ±0.3 201.4 ±0.2 201.				Up	Upper	Kimmeridgian	<	
Middle Bajocian 165.3 ±1.1 168.2 ±1.2 170.9 ±0.8 174.7 ±0.8 174.7 ±0.8 174.7 ±0.8 184.2 ±0.3 192.9 ±0.3 201.4 ±0.2 Rhaetian ~ 208.5						Oxfordian		
Lower Pliensbachian 192.9 ±0.3 192.9 ±0.3 201.4 ±0.2 Rhaetian - 208.5			O		Middle		1	
Lower Pliensbachian 192.9 ±0.3 192.9 ±0.3 201.4 ±0.2 Rhaetian - 208.5			SSi				3	
Lower Pliensbachian 192.9 ±0.3 192.9 ±0.3 201.4 ±0.2 Rhaetian - 208.5			ā				<	
Lower Pliensbachian 192.9 ±0.3 192.9 ±0.3 192.9 ±0.3 192.9 ±0.3 192.9 ±0.3 192.9 ±0.3 201.4 ±0.2 Rhaetian ~ 208.5 ~ 237 ~ 237 ~ 237 ~ 242 ~ 247.2 ~ 251.2 ~ 25			7			Toarcian	_	1/4./ ±0.8
192.9 ±0.3 199.5 ±0.3 199.5 ±0.3 201.4 ±0.2 Rhaetian ~ 208.5 ~ 208.5 ~ 208.5 ~ 208.5 ~ 208.5 ~ 208.5 ~ 208.5 ~ 208.5 ~ 208.5 ~ 208.5 ~ 208.5 ~ 208.5 ~ 208.5 ~ 208.5 ~ 208.5 ~ 208.5 ~ 208.5 ~ 208.5 ~ 208							-	184.2 ±0.3
Sinemurian 199.5 ±0.3 201.4 ±0.2 Rhaetian 201.4 ±0.2 728.5 728.5 729.5					Lower	Pliensbachian	<	192.9 +0.3
Carnian		oic				Sinemurian	4	
Carnian		OZ				Hettangian	3	
Carnian		es						201.4 ±0.2
Carnian Carn		≥			Upper			~ 208.5
Carnian - 237 - 242 - 242 - 241 - 247.2 - 251.2 - 251.902 ±0.024 - 251.12 - 251.2 - 251.902 ±0.024 - 251.12 - 251.902 ±0.024 - 251.12 - 251.2 - 251.902 ±0.024 - 251.12 - 251.902 ±0.024 - 251.12 - 251.2 - 251.902 ±0.024 - 251.12 - 251.902 ±0.024 - 251.12 - 251.902 ±0.024 - 251.12 - 251.902 ±0.024 - 251.12 - 251.902 ±0.024 - 251.12 - 251.902 ±0.024 - 251.12 - 251.902 ±0.024 - 251.12 - 251.902 ±0.024 - 251.12 - 251.2 - 251.902 ±0.024 - 251.2 - 251.902 ±0.024 - 251.2 - 251.902 ±0.024 - 251.2 - 251.902 ±0.024 - 251.2 - 251.2 - 251.902 ±0.024 - 251.2 - 251.902 ±0.024 - 251.2 - 251.902 ±0.024 - 251.2 - 251.902 ±0.024 - 251.2 - 251.902 ±0.024 - 251.2 - 251.902 ±0.024 - 251.2 - 251.902 ±0.024 - 251.2 - 251.902 ±0.024 - 251.2 - 251.902 ±0.024 - 251.2 - 251.902 ±0.024 - 251.9				L		Norian		
Middle Anisian Lower Lower Lopingian Changhsingian Wuchiapingian Wordian Roadian Kungurian Cisuralian Artinskian Sakmarian Sakmarian Sakmarian Asselian Wordian Kasimovian Middle Moscovian Middle Moscovian Lower Bashkirian Wordian Sakmarian Sakmarian Wordian Artinskian Wordian Sakmarian Sakmarian Wordian Cisuralian Middle Moscovian Wordian Sakmarian Sakmarian Wordian Sakmarian Sakmarian Wordian Sakmarian Wordian Sakmarian Sakmarian Wordian Sakmarian Sakmarian Wordian Sakmarian Wordian Sakmarian Wordian Sakmarian Sakmarian Wordian Sakmarian Sakmarian Wordian Sakmarian Wordian Sakmarian Wordian Sakmarian Sakmarian Wordian Sakmarian Sakmarian Wordian Sakmarian Salvia Wordian Salvia Salv			sic					~ 227
Middle Anisian Lower Lower Lopingian Changhsingian Wuchiapingian Wordian Roadian Kungurian Cisuralian Artinskian Sakmarian Sakmarian Sakmarian Asselian Wordian Kasimovian Middle Moscovian Middle Moscovian Lower Bashkirian Wordian Sakmarian Sakmarian Wordian Artinskian Wordian Sakmarian Sakmarian Wordian Cisuralian Middle Moscovian Wordian Sakmarian Sakmarian Wordian Sakmarian Sakmarian Wordian Sakmarian Wordian Sakmarian Sakmarian Wordian Sakmarian Sakmarian Wordian Sakmarian Wordian Sakmarian Wordian Sakmarian Sakmarian Wordian Sakmarian Sakmarian Wordian Sakmarian Wordian Sakmarian Wordian Sakmarian Sakmarian Wordian Sakmarian Sakmarian Wordian Sakmarian Salvia Wordian Salvia Salv			as			Carnian	<	007
Middle Anisian Olenekian Induan Changhsingian Wuchiapingian Wordian Capitanian Wordian Roadian Kungurian Cisuralian Cisuralian Cisuralian Cisuralian Middle Moscovian Lower Bashkirian Wordian Artinskian Cisuralian Cisuralian Cisuralian Cisuralian Middle Moscovian Lower Bashkirian Middle Visean Middle Visean Widdle Visean 346.7 ±0.4			Ţ			Ladinian	<u> </u>	
Capitanian 264.28 ±0.16 266.9 ±0.4 273.01 ±0.14 283.5 ±0.6 290.1 ±0.26 290.1 ±0.26 293.52 ±0.17 298.9 ±0.15 303.7 ±0.1 307.0 ±0.1 307.0 ±0.1 307.0 ±0.1 303.9 ±0.2 303.9 ±	Oic				Middle			
Capitanian 264.28 ±0.16 266.9 ±0.4 273.01 ±0.14 283.5 ±0.6 290.1 ±0.26 290.1 ±0.26 293.52 ±0.17 298.9 ±0.15 303.7 ±0.1 307.0 ±0.1 307.0 ±0.1 307.0 ±0.1 303.9 ±0.2 303.9 ±	0.7				Lower			
Capitanian 264.28 ±0.16 266.9 ±0.4 273.01 ±0.14 283.5 ±0.6 290.1 ±0.26 290.1 ±0.26 293.52 ±0.17 298.9 ±0.15 303.7 ±0.1 307.0 ±0.1 307.0 ±0.1 307.0 ±0.1 303.9 ±0.2 303.9 ±	<u>e</u>				LOWEI	Induan		
Capitanian 264.28 ±0.16 266.9 ±0.4 273.01 ±0.14 283.5 ±0.6 290.1 ±0.26 290.1 ±0.26 293.52 ±0.17 298.9 ±0.15 303.7 ±0.1 307.0 ±0.1 307.0 ±0.1 307.0 ±0.1 303.9 ±0.2 303.9 ±	Jar		an	L	opingian			254.14 ±0.07
Cat.28 ±0.16 266.9 ±0.4 273.01 ±0.14 283.5 ±0.6 290.1 ±0.26 293.52 ±0.17 298.9 ±0.15 303.7 ±0.1 307.0 ±0	<u>d</u>							259.51 ±0.21
Roadian 273.01 ±0.14 283.5 ±0.6 290.1 ±0.26 293.52 ±0.17 298.9 ±0.15 303.7 ±0.1 307.0 ±0.1 315.2 ±0.2 323.2 ±0.4 323.2 ±0.4 330.9 ±0.2 346.7 ±0.4 346.7 ±0.4 346.7 ±0.4 346.7 ±0.4 367.5 ±0.4 346.7 ±0.4 346.7 ±0.4 367.5 ±0.4 346.7 ±0.4 367.5 ±0.4 367.5 ±0.4 346.7 ±0.4 367.5 ±0.4 346.7 ±0.4 346.7 ±0.4 367.5 ±0.4 346.7 ±0.4 346.7 ±0.4 367.5 ±0.4 346.7 ±0.4				Gu	adalunian	•	~	
Cisuralian Cathelian Sakmarian 290.1 ±0.26 293.52 ±0.17 298.9 ±0.15 303.7 ±0.1 307.0 ±0.1 Middle Moscovian Lower Bashkirian 323.2 ±0.4 323.2 ±0.4 330.9 ±0.2 Widdle Visean 346.7 ±0.4		ic		Gu	auaiupiaii			266.9 ±0.4
Cisuralian Cisuralian Sakmarian 290.1 ±0.26 293.52 ±0.17 298.9 ±0.15 303.7 ±0.1 307.0 ±0.1 Middle Moscovian Lower Bashkirian 323.2 ±0.4 323.2 ±0.4 330.9 ±0.2 Middle Visean 346.7 ±0.4			ī				-	273.01 ±0.14
Cisuralian Catherinskian Sakmarian Sakmarian Sakmarian 290.1 ±0.26 293.52 ±0.17 298.9 ±0.15 303.7 ±0.1 307.0 ±0.1 Middle Moscovian Lower Bashkirian 323.2 ±0.4 323.2 ±0.4 330.9 ±0.2 Widdle Visean 346.7 ±0.4			Pel	Ci	ieuralian	Kungurian		283.5 ±0.6
Sakmarian 293.52 ±0.17 298.9 ±0.15 303.7 ±0.1 307.0 ±0.1 Middle Moscovian Lower Bashkirian 323.2 ±0.4 323.2 ±0.4 330.9 ±0.2 Widdle Visean 346.7 ±0.4						Artinskian	4	
Carponide Moscovian Lower Bashkirian 315.2 ±0.2 323.2 ±0.4 330.9 ±0.2 Middle Visean 346.7 ±0.4				Ĭ	iodianan	Sakmarian		
Carponide Moscovian Lower Bashkirian 315.2 ±0.2 323.2 ±0.4 330.9 ±0.2 Middle Visean 346.7 ±0.4		ZO						
Carponide Moscovian Lower Bashkirian 315.2 ±0.2 323.2 ±0.4 330.9 ±0.2 Middle Visean 346.7 ±0.4		60		LE LE				
Carponiferona 315.2 ±0.2 Wississipport		Pal		ania	Upper			
Outpor Serpukhovian Wississibaria Upper Serpukhovian 330.9 ±0.2 Widdle Visean 346.7 ±0.4			S	3 S	Middle			007.0 ±0.1
Outpor Serpukhovian Wississibaria Upper Serpukhovian 330.9 ±0.2 Widdle Visean 346.7 ±0.4			no.	nus		D 11::		315.2 ±0.2
346.7 ±0.4 Lower Tournaisian			ifer	Pe	Lower	Bashkirian	<	323.2 ±0.4
346.7 ±0.4 Lower Tournaisian			oni	an	Upper	Serpukhovian		330 0 +0 3
346.7 ±0.4 Lower Tournaisian			arb	ppi	Middle	\ /i		330.8 IU.Z
			Ca	issi		Visean	<	2467.04
				liss	Lauren	Т		346./ ±0.4
				2	Lower	Iournaisian	<	358.9 ±0.4

	ien/E	11/E/O)	Series / Epoch			
\$CONS.	#6.13 #e/3		Series / Epoch	Stage / Age	GSSP	numerical age (Ma) 358.9 ±0.4
		Devonian	Upper	Famennian	<<	070.0 . 4.0
				Frasnian	<<	372.2 ±1.6 382.7 ±1.6
			Middle	Givetian	<	387.7 ±0.8
				Eifelian ,	<	393.3 ±1.2
				Emsian	<<	407.6 ±2.6
			Lower	Pragian :	1	410.8 ±2.8
				Lochkovian	<	419.2 ±3.2
			Pridoli		S	423.0 ±2.3
		┌	Ludlow	Ludfordian Sorstian	<	425.6 ±0.9
	Paleozoic	ıria	Wenlock	Homerian		427.4 ±0.5 430.5 ±0.7
		Ordovician Silurian		Sheinwoodian 3 Telychian		433.4 ±0.8
			Llandovery	Llandovery Aeronian	<	438.5 ±1.1 440.8 ±1.2
Soic				Rhuddanian : Hirnantian :		443.8 ±1.5
Phanerozoic			Upper	Katian	<u> </u>	445.2 ±1.4 453.0 ±0.7
ha				Sandbian	<	458.4 ±0.9
а.			Middle	Darriwilian	<u> </u>	467.3 ±1.1
				Dapingian :		470.0 ±1.4
			Lower	Floian	<	477.7 ±1.4
				Tremadocian	<	485.4 ±1.9
		Cambrian	Furongian Jiai	Stage 10		~ 489.5
				Jiangshanian ,	1	~ 494
			Miaolingian	Paibian : Guzhangian :	1	~ 497
				Drumian	1	~ 500.5
				Wuliuan		~ 504.5
				Stage 4		~ 509
			Series 2	Stage 3		~ 514
				Stage 3 Stage 2		~ 521
			Terreneuvian	Fortunian		~ 529
					\triangleleft	538.8 ±0.2

	Egnoth	Erathon/Er	9,96m, 1,8m,	GSSP GSSA	numeric age (Ma		
			Ediacaran	1	538.8 ±0. ~ 635		
		Neo- proterozoic	Cryogeniar	1	~ 720		
		protorozoro	Tonian				
			Stenian		1000		
	O	Meso- proterozoic	Ectasian		1200		
	Proterozoic		Calymmian		1400		
	terc		Statherian		1600		
ian	Pro	Paleo- proterozoic	Orosirian	<u> </u>	1800		
Precambrian			Rhyacian	-	2050		
			Siderian	-	2300		
Pr		Neo-	Oldonan	-	2500		
		archean			2000		
	an	Meso- archean			2800		
	Archean			—	3200		
	₹	Paleo- archean Eo- archean					
					3600		
				_	4000		
	Hadean						
4567							
Units of all ranks are in the process of being defined by Global Boundary							

Units of all ranks are in the process of being defined by Global Boundary Stratotype Section and Points (GSSP) for their lower boundaries, including those of the Archean and Proterozoic, long defined by Global Standard Stratigraphic Ages (GSSA). Italic fonts indicate informal units and placeholders for unnamed units. Versioned charts and detailed information on ratified GSSPs are available at the website http://www.stratigraphy.org. The URL to this chart is found below.

Numerical ages are subject to revision and do not define units in the Phanerozoic and the Ediacaran; only GSSPs do. For boundaries in the Phanerozoic without ratified GSSPs or without constrained numerical ages, an approximate numerical age (~) is provided.

Ratified Subseries/Subepochs are abbreviated as U/L (Upper/Late), M (Middle) and L/E (Lower/Early). Numerical ages for all systems except Quaternary, upper Paleogene, Cretaceous, Jurassic, Triassic, Permian, Cambrian and Precambrian are taken from 'A Geologic Time Scale 2012' by Gradstein et al. (2012), those for the Quaternary, upper Paleogene, Cretaceous, Jurassic, Triassic, Permian, Cambrian and Precambrian were provided by the relevant ICS subcommissions.

Colouring follows the Commission for the Geological Map of the World (www.ccgm.org)



Chart drafted by K.M. Cohen, D.A.T. Harper, P.L. Gibbard, N. Car (c) International Commission on Stratigraphy, June 2023

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URL: http://www.stratigraphy.org/ICSchart/ChronostratChart2023-06.pdf