

INTERNATIONAL CHRONOSTRATIGRAPHIC CHART

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International Commission on Stratigraphy

v **2023**/09



	7/4	O LE	, 10°			
£000	Erather American	System Fra	Series / Epoch	Stage / Age	GSSP	numerical age (Ma)
			Holocene M L/E	Meghalayan Northgrippian Greenlandian	No.	present 0.0042 0.0082 0.0117
		Quaternary	Pleistocene	Upper Chibanian	<	0.129 0.774
				Calabrian Gelasian	1	1.80 2.58
		e	Pliocene L/E	Piacenzian Zanclean	1	3.600
			Miocene M	Messinian	<	5.333 7.246
		Neogene		Tortonian	1	11.63
	ojc	leo		Serravallian Langhian	4	13.82
	ozo	_		Burdigalian		15.98
	Cenozoic		L/E	Aquitanian	3	20.44
	O		Oligocene Chattian Rupelian	<	27.82	
		Paleogene		Rupelian	<	33.9
			Eocene	Priabonian	<	37.71
ပ				Bartonian		41.2
Phanerozoic				Lutetian	<	47.8
Jer				Ypresian	<	56.0
har				Thanetian	1	59.2
٩				Selandian Danian	1	61.6
					_	66.0
	Mesozoic	Cretaceous	Upper	Maastrichtian	1	72.1 ±0.2
				Campanian	<	83.6 ±0.2
				Santonian Coniacian	<u> </u>	86.3 ±0.5
				Turonian	1	89.8 ±0.3
					1	93.9
				Cenomanian	<	100.5
				Albian	<	~ 113.0
			Lower	Aptian		~ 121.4
				Barremian	<	125.77
				Hauterivian	<	~ 132.6
				Valanginian		~ 139.8
				Berriasian		~ 145.0

	Series / Epoch Stage / Age Onumerical age (Ma) Tithonian 149.2 ±0.7							
EODO.	Erath	System	Se	ries / Epoch	Stage / Age	GSSP	numerical age (Ma) ~ 145.0	
					Tithonian		~ 145.0 149.2 ±0.7	
				Upper	Kimmeridgian	<	154.8 ±0.8	
		Jurassic			Oxfordian			
			Middle		Callovian	1	161.5 ±1.0 165.3 ±1.1	
				Bathonian Bajocian	3	168.2 ±1.2 170.9 ±0.8		
					Aalenian	<	174.7 ±0.8	
		7			Toarcian	<		
				Lower	Pliensbachian	1	184.2 ±0.3 192.9 ±0.3	
	oic				Sinemurian	4		
	Mesozoic				Hettangian	3	199.5 ±0.3 201.4 ±0.2	
	les				Rhaetian			
	M	Friassic	Upp	Upper	Norian		~ 208.5	
					Carnian	<	~ 227 ~ 237	
ပ		⊥		Middle	Ladinian	<	~ 242	
Z0				Middle	Anisian		247.2	
20				Lower	Olenekian Induan	<u> </u>	251.2	
ıne		Permian	_		Changhsingian	1	251.902 ±0.024 254.14 ±0.07	
Phanerozoic			L	opingian	Wuchiapingian Wuchiapingian		259.51 ±0.21	
ш			Guadalupian		Capitanian	<	264.28 ±0.16	
					Wordian	<	266.9 ±0.4	
					Roadian	<		
					Kungurian		273.01 ±0.14	
				isuralian	Artinskian	<	283.5 ±0.6 290.1 ±0.26	
	oic				Sakmarian	<	293.52 ±0.17	
	Paleozoic				Asselian	3	298.9 ±0.15	
	alec		ian	Upper	Gzhelian		303.7 ±0.1	
	Pa	Sn	van	Kasimovian	Kasimovian		307.0 ±0.1	
			nsy	Middle	Moscovian		315.2 ±0.2	
		Carboniferous	Pennsylvania	Lower	Bashkirian	<	323.2 ±0.4	
		O	an	<u>□</u> Upper	Serpukhovian		330.9 ±0.2	
		Carb	Mississippian	Middle	Visean	<	346.7 ±0.4	
			Mis	Lower	Tournaisian	4	358.9 ±0.4	

	em/E	7 (C) 14 (C)	Series / Epoch			
¢ong.	#6.13 We/3		Series / Epoch	Stage / Age	GSSP	numerical age (Ma) 358.9 ±0.4
		U	Upper	Famennian	<	
				Frasnian	<u> </u>	372.2 ±1.6 382.7 ±1.6
		nia		Givetian	<	
		Devonian	Middle	Eifelian	<	387.7 ±0.8
				Emsian		393.3 ±1.2 407.6 ±2.6
			Lower	Pragian	<	410.8 ±2.8
				Lochkovian	<	440.0 + 2.0
			Pridoli	:	<	419.2 ±3.2 423.0 ±2.3
		Silurian	Ludlow	Ludfordian		425.0 ±2.3 425.6 ±0.9
			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Gorstian Homerian	<	427.4 ±0.5
		II	Wenlock	Sheinwoodian	<	430.5 ±0.7 433.4 ±0.8
				Telychian	<	
			Llandovery	Aeronian	$\overline{\langle}$	438.5 ±1.1 440.8 ±1.2
oi.	O			Rhuddanian	S	443.8 ±1.5
ZC	ZOİ	Ordovician		Hirnantian	<	445.2 ±1.4
Phanerozoic	Paleozoic		Upper		<	453.0 ±0.7
) Ji				Sandbian	<	458.4 ±0.9
_			Middle	Darriwilian	<	467.3 ±1.1
				Dapingian	<u> </u>	470.0 ±1.4
			Lower -	Floian	<	477.7 ±1.4
					<	485.4 ±1.9
		Cambrian	Furongian	Stage 10		~ 489.5
				Jiangshanian	<	
				Paibian	$\overline{\mathbf{q}}$	~ 494 ~ 497
			Miaolingian	Guzhangian	<	~ 500.5
				Drumian	<	~ 500.5
				Wuliuan	<	
			Series 2	Stage 4		~ 509
				Stage 3		~ 514 ~ 521
			Terreneuvian	Stage 2		
				Fortunian	<<	~ 529
						538.8 ±0.2

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			Ediacaran	538.8 ±0.2 ~ 635			
		Neo- proterozoic	Cryogeniar				
			Tonian				
	0		Stenian	1000			
		Meso- proterozoic	Ectasian	1200			
	Proterozoic		Calymmiar	1400			
	ero		Statherian	1600			
U	Prof	Paleo- proterozoic	Orosirian	1800			
bria			Orosinan	2050			
aml			Rhyacian	2300			
Precambrian			Siderian	2500			
	Archean	Neo-		2500			
		archean		2800			
		Meso- archean					
		Paleo- archean		3200			
		Eo- archean		3600			
				4031 ± 3			
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, September 2023

To cite: Cohen, K.M., Finney, S.C., Gibbard, P.L. & Fan, J.-X. (2013; updated) The ICS International Chronostratigraphic Chart. Episodes 36: 199-204.

URL: http://www.stratigraphy.org/ICSchart/ChronostratChart2023-09.pdf