

## INTERNATIONAL CHRONOSTRATIGRAPHIC CHART

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## **International Commission on Stratigraphy**

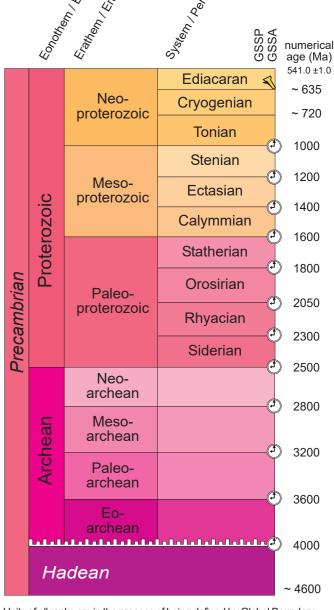
v **2021**/07



	7/4		40°			
\$ COO \$	A STA	System Fra	Series / Epoch	Stage / Age	GSSP	numerical age (Ma)
		Quaternary	Holocene ML/E	Meghalayan Northgrippian Greenlandian	No.	present 0.0042 0.0082 0.0117
			Pleistocene	<i>Upper</i> Chibanian	<b>\$</b> 1	0.129
				Calabrian	<u> </u>	0.774
				Gelasian	3	1.80
			Pliocene	Piacenzian	<	2.58 3.600
		Neogene		Zanclean	1	5.333
			Miocene	Messinian	4	7.246
				Tortonian	<	11.63
				Serravallian	1	13.82
	<u>.</u>	Ž		Langhian		15.97
	Cenozoic			Burdigalian		20.44
	no			Aquitanian	<	23.03
	S		Olimanana	Chattian	<	27.82
		Paleogene	Oligocene	Rupelian	<	33.9
			Eocene	Priabonian	<	
				Bartonian		37.71 41.2
Phanerozoic				Lutetian	<	47.8
ero				Ypresian	<	
a			Paleocene	Thanetian	<	56.0 59.2
日				Selandian	<	61.6
				Danian	<	66.0
	Mesozoic	Cretaceous	Upper	Maastrichtian	<	72.1 ±0.2
				Campanian		
				Santonian	<	83.6 ±0.2 86.3 ±0.5
				Coniacian	4	89.8 ±0.3
				Turonian	4	93.9
				Cenomanian	1	100.5
				Albian	4	~ 113.0
			Lower	Aptian		
				Barremian		~ 125.0
				Hauterivian	<	~ 129.4
				Valanginian		~ 132.6
				Berriasian		~ 139.8 ~ 145.0

	4/4	(6) (1) (1) (1)	, Q	000		
\$00°	Erathen	System From	Se	ries / Epoch	Stage / Age	numerical og (Ma)
		Jurassic			Tithonian	~ 145.0
			Upper		Kimmeridgian	152.1 ±0.9
					Oxfordian	157.3 ±1.0
					Callovian	163.5 ±1.0 166.1 ±1.2
				Middle	Bathonian Bajocian	168.3 ±1.3 170.3 ±1.4
					Aalenian	170.3 ±1.4 174.1 ±1.0
		٦			Toarcian	\$1
					Pliensbachian	182.7 ±0.7
				Lower	FIICHSDACHIAH	190.8 ±1.0
	Si				Sinemurian	199.3 ±0.3
	SZC				Hettangian	201.3 ±0.2
	Mesozoic				Rhaetian	~ 208.5
	Me	Triassic		Upper	Norian	
					Carnian	~ 227
O		F		N 42 1 11	Ladinian	~ 242
<u>Z</u>				Middle	Anisian	247.2
0				Lower	Olenekian Induan	251.2
ane			Lopingian		Changhsingian	251.902 ±0.024 254.14 ±0.07
Phanerozoic		Permian			Wuchiapingian	
ъ					Capitanian	264.28 ±0.16
			Gu	adalupian	Wordian	266.9 ±0.4
					Roadian	273.01 ±0.14
					Kungurian	
		Ф			Artinskian	283.5 ±0.6
	S			isuralian	Sakmarian	290.1 ±0.26
	Zoj				Asselian	293.52 ±0.17
	eo		an	I I w	Gzhelian	200.0 ±0.10
	Paleozoic	Carboniferous	ani	Upper	Kasimovian	303.7 ±0.1 307.0 ±0.1
			sylv	Middle	Moscovian	315.2 ±0.2
			Pennsylvanian	Lower	Bashkirian	313.2 ±0.2 323.2 ±0.4
			an	Upper	Serpukhovian	
			Mississippian	Middle	Visean	330.9 ±0.2 346.7 ±0.4
			SS			340.7 ±0.4

	othen/E	Ster Fra	Series / Epoch		GSSP	numerical
4	4	જે	Series / Epoch	Stage / Age	8	age (Ma) 358.9 ±0.4
		Devonian	Upper	Famennian	<b>4</b>	372.2 ±1.6
				Frasnian	<	
			Middle	Givetian	4	382.7 ±1.6
				Eifelian	<	387.7 ±0.8
			Lower	Emsian	\ \{\	393.3 ±1.2
				Pragian	<	407.6 ±2.6 410.8 ±2.8
				Lochkovian	4	440.0 : 0.0
			Pridoli		<	419.2 ±3.2 423.0 ±2.3
		_	Ludlow	Ludfordian Gorstian	<b>4</b>	425.0 ±2.3 425.6 ±0.9
		jar	Monlook	Homerian	3	427.4 ±0.5 430.5 ±0.7
	Paleozoic	Silurian	Wenlock	Sheinwoodian	1	430.5 ±0.7 433.4 ±0.8
			Llandovery	Telychian	<	438.5 ±1.1
ပ				Aeronian	<u> </u>	440.8 ±1.2
Z0 i				Rhuddanian Hirnantian	3	443.8 ±1.5
Phanerozoic		Ordovician	Upper	Katian	<	445.2 ±1.4 453.0 ±0.7
ha				Sandbian	<	458.4 ±0.9
<u>а</u>			Middle	Darriwilian	<	467.3 ±1.1
				Dapingian	~	470.0 ±1.4
			Lower	Floian	<	477.7 ±1.4
				Tremadocian	<	485.4 ±1.9
		Cambrian	Furongian	Stage 10		~ 489.5
			i dioligiali	Jiangshanian	1	~ 494
			Miaolingian	Paibian Guzhangian	1	~ 497
				Drumian	3	~ 500.5
				Wuliuan	1	~ 504.5
					~	~ 509
			Series 2	Stage 4		~ 514
				Stage 3		~ 521
			Terreneuvian	Stage 2 Fortunian		~ 529
					<	541.0 ±1.0



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, Triassic, Permian and Precambrian are taken from 'A Geologic Time Scale 2012' by Gradstein et al. (2012), those for the Quaternary, upper Paleogene, Cretaceous, Triassic, Permian 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, July 2021

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URL: http://www.stratigraphy.org/ICSchart/ChronostratChart2021-07.pdf