

INTERNATIONAL CHRONOSTRATIGRAPHIC CHART

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	Series / Epoch Stage / Age S numerical age (Ma)							
4000	1040, 15th 6t,	System	Series / Epoch	Stage / Age	GSSP	numerical age (Ma)		
			Holocene		4	present		
	Cenozoic	ัฐ	1101000110	Upper		0.0117		
		Quaternary	Pleistocene	Middle		0.126		
				Calabrian	1	0.781		
				Gelasian		1.806		
			Pliocene	Piacenzian	1	2.588		
		Neogene		Zanclean	V V V	3.600		
				Messinian	4	5.333		
			Miocene	Tortonian	4	7.246		
				Serravallian	<u> </u>	11.62		
				Langhian		13.82		
				Burdigalian		15.97		
				Aquitanian	<u> </u>	20.44		
	ပ		Oligocene	Chattian		23.03		
		Paleogene		Rupelian	<u> </u>	28.1		
			Eocene	Priabonian		33.9		
				Bartonian		38.0		
ZOIC				Lutetian	<u> </u>	41.3		
Phanerozoic				Ypresian	~	47.8		
an			Paleocene	Thanetian	1	56.0		
2 S				Selandian	1	59.2		
_				Danian		61.6		
	Mesozoic	Cretaceous	Upper		1	66.0		
				Maastrichtian	1	72.1 ±0.2		
				Campanian		83.6 ±0.2		
				Santonian		86.3 ±0.5		
				Coniacian		89.8 ±0.3		
				Turonian	<	93.9		
				Cenomanian	4	100.5		
				Albian		~ 113.0		
			Lower -	Aptian				
				Barremian		~ 125.0		
				Hauterivian		~ 129.4		
				Valanginian		~ 132.9		
				Berriasian		~ 139.8		
						~ 145.0		

	Series / Epoch Stage / Age On age (Ma)							
\$00°5	Erathen	Sylen	Sei	ries / Epoch	Stage / Age	numerical ge (Ma)		
					Tithonian	145.0 ± 0.8		
			Upper		Kimmeridgian	152.1 ±0.9		
		Jurassic			Oxfordian	157.3 ±1.0		
					Callovian	163.5 ±1.0		
				Middle	Bathonian	166.1 ±1.2 168.3 ±1.3		
		as.		iviidule	Bajocian Aalenian	170.3 ±1.4		
		Jur				174.1 ±1.0		
		,			Toarcian	182.7 ±0.7		
	Mesozoic			Lower	Pliensbachian	190.8 ±1.0		
					Sinemurian	S		
					Hettangian	199.3 ±0.3 201.3 ±0.2		
					Rhaetian			
		iassic	Upper		Norian	~ 208.5		
					Carnian	~ 228		
		ı_		Ladinian	~ 235			
Phanerozoic			Middle			~ 242		
02					Anisian Olenekian	247.2		
ē				Lower	Induan	251.2 252.2 ±0.5		
a	Paleozoic	Permian	Lopingian		Changhsingian	254.2 ±0.1		
占					Wuchiapingian	259.9 ±0.4		
			Guadalupian		Capitanian	265.1 ±0.4		
					Wordian	268.8 ±0.5		
					Roadian	272.3 ±0.5		
				Kunguri Artinski	Kungurian			
					Artingkion	279.3 ±0.6		
					Artinskian	290.1 ±0.1		
					Sakmarian	295.5 ±0.4		
					Asselian	298.9 ±0.2		
			ian	Upper	Gzhelian	303.7 ±0.1		
		Carboniferous	/an		Kasimovian	307.0 ±0.1		
			sylv	Middle	Moscovian	045.0.00		
			Pennsylvania	Lower	Bashkirian	315.2 ±0.2 323.2 ±0.4		
			Carbon sissippian	Upper	Serpukhovian			
				Middle	Visean	330.9 ±0.2		
			Miss	Lower	Tournaisian	346.7 ±0.4 358.9 ±0.4		

Equation .	len (E)	, d ,		Д.	
4	11 de 18	Series / Epoch	Stage / Age	GSSP	numerical age (Ma) 358.9 ± 0.4
		Upper	Famennian	~	
	<u>_</u>		Frasnian	<	372.2 ±1.6
	onia	Middle	Givetian	<	382.7 ±1.6 387.7 ±0.8
	Devonian		Eifelian	<	393.3 ±1.2
			Emsian	\$ 1	
		Lower	Pragian	<	407.6 ±2.6
			Lochkovian		410.8 ±2.8
			Lochkovian	<	419.2 ±3.2
		Pridoli		<	
		Ludlow	Ludfordian	<	423.0 ±2.3 425.6 ±0.9
	٦	Ludiow	Gorstian	1	427.4 ±0.5
	Li2	Wenlock	Homerian	1	430.5 ±0.7
	Silurian	TTOTHOOK	Sheinwoodian	1	433.4 ±0.8
	S		Telychian	< 1	
		Llandovery	Aeronian	3	438.5 ±1.1
<u>U</u>			Rhuddanian	<	440.8 ±1.2
200			Hirnantian	<	443.4 ±1.5
Phanerozoic Paleozoic		Upper	Katian	<	445.2 ±1.4 453.0 ±0.7
har	lovician		Sandbian	4	458.4 ±0.9
4		Middle	Darriwilian	<	467.3 ±1.1
	2		Dapingian	1	470.0 ±1.4
	Ō	Lower	Floian	<	477.7 ±1.4
			Tremadocian	4	485.4 ±1.9
		Furongian	Stage 10		
			Jiangshanian	1	~ 489.5
			Paibian	1	~ 494
	Cambrian		Guzhangian		~ 497
				1	~ 500.5
		Series 3	Drumian	1	~ 504.5
			Stage 5		
	L L	Series 2	Stage 4		~ 509
	CS		Stage 3		~ 514
		Terreneuvian	Stage 2		~ 521
			Fortunian		~ 529
				$\overline{\mathbf{N}}$	541.0 ±1.0

		othem Eon	Erathem / Era	System / Period	ഗഗ്ഗ് numerical ഗഗ് age (Ma)		
				Ediacaran	~ 541 ~ 635		
		Proterozoic	Neo- proterozoic	Cryogenian			
				Tonian	850		
			Meso- proterozoic	Stenian	1000		
				Ectasian	1200		
				Calymmian	1400		
			Paleo- proterozoic	Statherian	1600		
					1800		
	ian			Orosirian	2050		
	nbr			Rhyacian	(f) 2300		
	Precambrian			Siderian			
	Pre	Archean	Neo-		2500		
			archean		2800		
			Meso- archean				
			Paleo-		3200		
			archean		3600		
		Eo-		3600			
			archean		4000		
	~ 4600						
	Unite of all replication the process of being defined by Clabo						

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). Charts and detailed information on ratified GSSPs are available at the website http://www.stratigraphy.org

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.

Numerical ages for all systems except Triassic, Cretaceous and Precambrian are taken from 'A Geologic Time Scale 2012' by Gradstein et al. (2012); those for the Triassic and Cretaceous were provided by the relevant ICS subcommissions.

Coloring follows the Commission for the Geological Map of the World. http://www.ccgm.org



Chart drafted by K.M. Cohen, S. Finney, P.L. Gibbard (c) International Commission on Stratigraphy, August 2012