

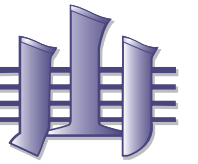


INTERNATIONAL CHRONOSTRATIGRAPHIC CHART

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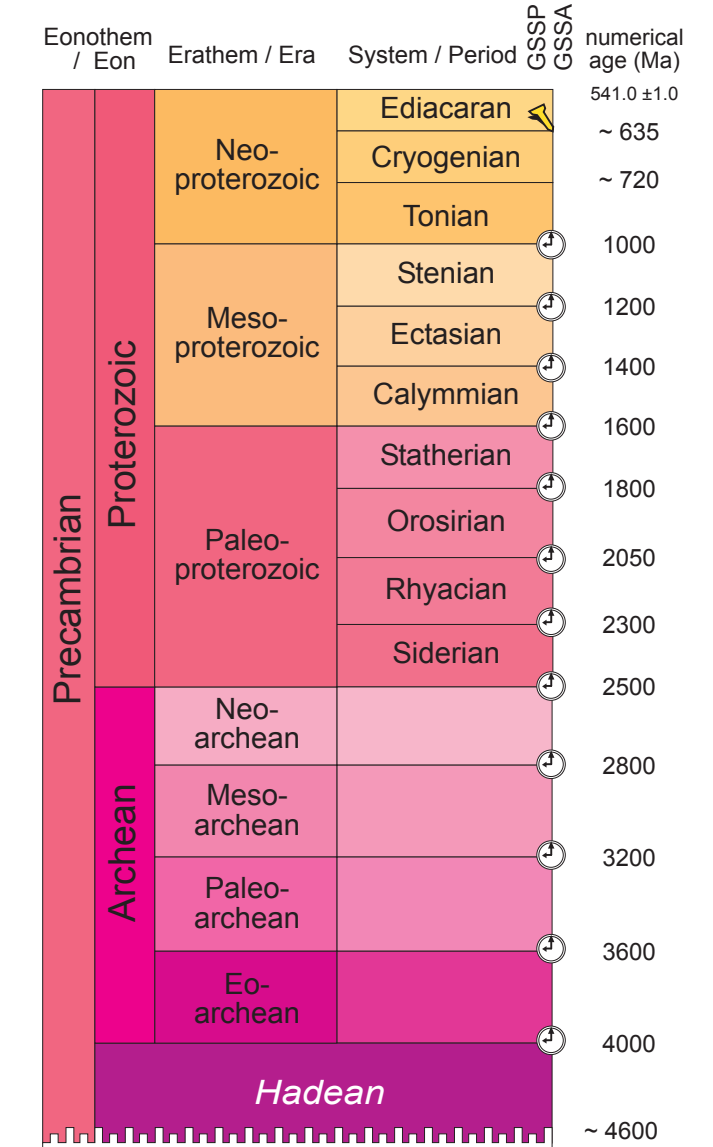
v 2017/02



Eonothem / Eon	Erathem / Era	System / Period	Series / Epoch	Stage / Age	GSSP	numerical age (Ma)		
Phanerozoic	Cenozoic	Quaternary	Holocene			present		
				Upper		0.0117		
				Middle		0.126		
			Pleistocene	Calabrian		0.781		
				Gelasian		1.80		
		Neogene	Pliocene	Piacenzian		3.600		
				Zanclean		5.333		
			Miocene	Messinian		7.246		
		Tortonian			11.63			
		Serravallian			13.82			
	Langhian			15.97				
	Burdigalian			20.44				
	Paleogene	Oligocene	Aquitanian		23.03			
			Chattian		27.82			
			Rupelian		33.9			
			Priabonian		37.8			
		Eocene	Bartonian		41.2			
			Lutetian		47.8			
			Ypresian		56.0			
			Thanetian		59.2			
		Paleocene	Selandian		61.6			
			Danian		66.0			
			Mesozoic	Cretaceous	Maastrichtian		72.1 ± 0.2	
					Campanian		83.6 ± 0.2	
					Upper	Santonian		86.3 ± 0.5
						Coniacian		89.8 ± 0.3
	Turonian					93.9		
	Lower	Cenomanian				100.5		
		Albian				~ 113.0		
Aptian					~ 125.0			
Barremian					~ 129.4			
Hauterivian					~ 132.9			
Valanginian			~ 139.8					
Berriasian			~ 145.0					

Eonothem / Eon	Erathem / Era	System / Period	Series / Epoch	Stage / Age	GSSP	numerical age (Ma)	
Phanerozoic	Mesozoic	Jurassic	Upper	Tithonian		~ 145.0	
				Kimmeridgian		152.1 ± 0.9	
			Middle	Oxfordian		157.3 ± 1.0	
				Calloviaian		163.5 ± 1.0	
				Bathonian		166.1 ± 1.2	
				Bajocian		168.3 ± 1.3	
				Aalenian		170.3 ± 1.4	
			Lower	Toarcian		174.1 ± 1.0	
				Pliensbachian		182.7 ± 0.7	
				Sinemurian		190.8 ± 1.0	
				Hettangian		199.3 ± 0.3	
			Triassic	Upper	Rhaetian		201.3 ± 0.2
					Norian		~ 208.5
					Carnian		~ 227
	Middle	Ladinian			~ 237		
		Anisian			~ 242		
		Olnekian			247.2		
	Lower	Induan			251.2		
		Changhsingian			251.902 ± 0.024		
		Wuchiapingian			254.14 ± 0.07		
		Lopingian			259.1 ± 0.5		
	Paleozoic	Permian	Guadalupian	Capitanian		259.1 ± 0.5	
				Wordian		265.1 ± 0.4	
				Roadian		268.8 ± 0.5	
			Cisuralian	Kungurian		272.95 ± 0.11	
				Artinskian		283.5 ± 0.6	
				Sakmarian		290.1 ± 0.26	
		Carboniferous	Pennsylvanian	Asselian		295.0 ± 0.18	
				Gzhelian		298.9 ± 0.15	
			Mississippian	Upper	Kasimovian		303.7 ± 0.1
				Middle	Moscovian		307.0 ± 0.1
	Paleozoic	Silurian	Upper	Bashkirian		315.2 ± 0.2	
				Serpukhovian		323.2 ± 0.4	
			Middle	Visean		330.9 ± 0.2	
Tournaisian					346.7 ± 0.4		
Lower			Drumian		346.7 ± 0.4		
			Stage 5		~ 504.5		
			Stage 4		~ 509		
			Stage 3		~ 514		
Paleozoic	Devonian	Upper	Fortunian		~ 521		
			Stage 2		~ 529		
			Terreneuvian		~ 529		
		Middle	Frasnian		372.2 ± 1.6		
			Givetian		382.7 ± 1.6		
			Eifelian		387.7 ± 0.8		
			Emsian		393.3 ± 1.2		
		Lower	Pragian		407.6 ± 2.6		
			Lochkovian		410.8 ± 2.8		
			Pridoli		419.2 ± 3.2		
Paleozoic	Ordovician	Upper	Ludfordian		423.0 ± 2.3		
			Gorstian		425.6 ± 0.9		
		Middle	Homerian		427.4 ± 0.5		
			Sheinwoodian		430.5 ± 0.7		
		Lower	Llandovery		433.4 ± 0.8		
			Telychian		438.5 ± 1.1		
			Aeronian		440.8 ± 1.2		
			Rhuddanian		443.8 ± 1.5		
			Hirnantian		445.2 ± 1.4		
			Katian		445.2 ± 1.4		
Paleozoic	Cambrian	Upper	Sandbian		453.0 ± 0.7		
			Darriwilian		458.4 ± 0.9		
		Middle	Dapingian		458.4 ± 0.9		
			Floian		467.3 ± 1.1		
		Lower	Tremadocian		470.0 ± 1.4		
			Stage 10		477.7 ± 1.4		
			Jiangshanian		485.4 ± 1.9		
			Paibian		~ 489.5		
			Guizhangian		~ 494		
			Drumian		~ 497		

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Precambrian	Proterozoic	Neo-proterozoic	Ediacaran	Ediacaran		541.0 ± 1.0	
				Cryogenian		~ 635	
				Tonian		~ 720	
		Meso-proterozoic	Stenian	Stenian		1000	
				Ectasian		1200	
				Calymmian		1400	
				Paleo-proterozoic	Statherian		1600
					Orosirian		1800
		Archean	Siderian	Siderian		2050	
				Rhyacian		2300	
				Neo-archean		2500	
				Meso-archean		2800	
				Paleo-archean		3200	
		Hadean	Eo-archean	Eo-archean		3600	
						4000	
						~ 4600	



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>. 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.

Numerical ages for all systems except Lower Pleistocene, Upper Paleogene, Cretaceous, Triassic, Permian and Precambrian are taken from 'A Geologic Time Scale 2012' by Gradstein et al. (2012); those for the Lower Pleistocene, 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 (<http://www.ccgw.org>)

Chart drafted by K.M. Cohen, D.A.T. Harper, P.L. Gibbard (c) International Commission on Stratigraphy, February 2017



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URL: <http://www.stratigraphy.org/ICChart/ChronostratChart2017-02.pdf>