

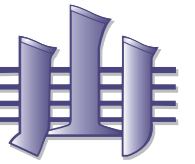


INTERNATIONAL CHRONOSTRATIGRAPHIC CHART

www.stratigraphy.org

International Commission on Stratigraphy

v 2016/10



Eonothem / Eon	Erathem / Era	System / Period	Series / Epoch	Stage / Age	GSSP	numerical age (Ma)		
Phanerozoic	Cenozoic	Quaternary	Holocene			present		
			Pleistocene	Upper		0.0117		
				Middle		0.126		
				Lower		0.781		
		Neogene	Pliocene	Calabrian		1.80		
				Gelasian		2.58		
			Miocene	Piacenzian		3.600		
				Zanclean		5.333		
				Messinian		7.246		
				Tortonian		11.63		
	Serravallian				13.82			
	Langhian				15.97			
	Burdigalian				20.44			
	Aquitanian				23.03			
	Paleogene			Oligocene	Chattian		28.1	
		Rupelian			33.9			
		Eocene	Priabonian		37.8			
			Bartonian		41.2			
			Lutetian		47.8			
			Ypresian		56.0			
		Paleocene	Thanetian		59.2			
			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 ± 0.3 201.3 ± 0.2					
	Triassic	Upper	Rhaetian		~ 208.5				
			Norian		~ 227				
			Carnian		~ 237				
		Middle	Ladinian		~ 242				
			Anisian		247.2 251.2				
		Lower	Olenekian		252.17 ± 0.06 254.14 ± 0.07				
			Induan		259.8 ± 0.4				
			Changhsingian		265.1 ± 0.4				
			Wuchiapingian		268.8 ± 0.5				
			Lopingian		272.3 ± 0.5				
	Paleozoic	Permian	Guadalupian	Capitanian		283.5 ± 0.6			
				Wordian		290.1 ± 0.26			
				Roadian		295.0 ± 0.18			
			Cisuralian	Kungurian		298.9 ± 0.15			
				Artinskian		303.7 ± 0.1			
				Sakmarian		307.0 ± 0.1			
				Asselian		315.2 ± 0.2			
				Carboniferous	Pennsylvanian	Upper	Gzhelian		323.2 ± 0.4
						Middle	Kasimovian		330.9 ± 0.2
					Lower	Moscovian		346.7 ± 0.4	
	Mississippian	Upper	Bashkirian		346.7 ± 0.4				
		Lower	Serpukhovian		358.9 ± 0.4				

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Phanerozoic	Paleozoic	Devonian	Upper	Famennian		372.2 ± 1.6
				Frasnian		382.7 ± 1.6
			Middle	Givetian		387.7 ± 0.8
				Eifelian		393.3 ± 1.2
				Emsian		407.6 ± 2.6 410.8 ± 2.8
			Lower	Pragian		419.2 ± 3.2
				Lochkovian		423.0 ± 2.3
				Pridoli		425.6 ± 0.9
				Ludlow		427.4 ± 0.5
			Silurian	Wenlock	Homerian	
	Sheinwoodian				433.4 ± 0.8	
	Llandovery	Telychian			438.5 ± 1.1	
		Aeronian			440.8 ± 1.2	
		Rhuddanian			443.8 ± 1.5	
	Paleozoic	Ordovician	Upper	Hirnantian		445.2 ± 1.4
				Katian		453.0 ± 0.7
			Middle	Sandbian		458.4 ± 0.9
				Darriwilian		477.7 ± 1.4
				Dapingian		485.4 ± 1.9
			Lower	Floian		~ 489.5
				Tremadocian		~ 494
				Stage 10		~ 497
				Furongian		~ 500.5
				Jiangshanian		~ 504.5
	Cambrian	Series 3	Paibian		~ 509	
			Guzhangian		~ 514	
			Drumian		~ 521	
		Series 2	Stage 5		~ 529	
			Stage 4		~ 529	
	Terreneuvian	Stage 3		~ 529		
	Fortunian		541.0 ± 1.0			

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Precambrian	Proterozoic	Neo-proterozoic	Ediacaran		541.0 ± 1.0
			Cryogenian		~ 635
			Tonian		~ 720
		Meso-proterozoic	Stenian		1000
			Ectasian		1200
			Calymmian		1400
	Paleo-proterozoic		Statherian		1600
		Orosirian		1800	
		Rhyacian		2050	
		Siderian		2300	
		Neo-archean		2500	
		Meso-archean		2800	
		Paleo-archean		3200	
	Archean	Eo-archean			3600
					4000
		Hadean			~ 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, Cretaceous, Triassic, Permian and Precambrian are taken from 'A Geologic Time Scale 2012' by Gradstein et al. (2012); those for the Lower Pleistocene, 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, October 2016

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URL: <http://www.stratigraphy.org/ICChart/ChronostratChart2016-10.pdf>

