

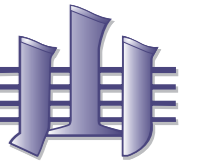


# INTERNATIONAL CHRONOSTRATIGRAPHIC CHART

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International Commission on Stratigraphy

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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	
		Gelasian				2.58
		Miocene		Piacenzian		3.600
				Zanclean		5.333
				Messinian		7.246
		Paleogene	Oligocene	Tortonian		11.63
	Serravallian				13.82	
	Langhian				15.97	
	Burdigalian				20.44	
	Aquitanian				23.03	
	Eocene		Chattian		28.1	
			Rupelian		33.9	
			Priabonian		37.8	
			Bartonian		41.2	
			Lutetian		47.8	
	Paleocene		Ypresian		56.0	
			Thanetian		59.2	
			Selandian		61.6	
			Danian		66.0	
			Mesozoic	Cretaceous	Maastrichtian	
	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
				Callovian		163.5 ± 1.0
				Bathonian		166.1 ± 1.2
		Lower	Bajocian		168.3 ± 1.3	
			Aalenian		170.3 ± 1.4	
			Toarcian		174.1 ± 1.0	
			Pliensbachian		182.7 ± 0.7	
			Sinemurian		190.8 ± 1.0	
	Triassic	Upper	Hettangian		199.3 ± 0.3	
			Rhaetian		201.3 ± 0.2	
			Norian		~ 208.5	
			Carnian		~ 227	
			Ladinian		~ 237	
		Middle	Anisian		~ 242	
			Olenekian		247.2	
			Induan		251.2	
			Changhsingian		252.17 ± 0.06	
			Wuchiapingian		254.14 ± 0.07	
	Permian	Lopingian	Capitanian		259.8 ± 0.4	
			Wordian		265.1 ± 0.4	
			Roadian		268.8 ± 0.5	
			Kungurian		272.3 ± 0.5	
			Artinskian		283.5 ± 0.6	
		Cisuralian	Sakmarian		290.1 ± 0.26	
			Asselian		295.0 ± 0.18	
			Gzhelian		298.9 ± 0.15	
			Kasimovian		303.7 ± 0.1	
			Moscovian		307.0 ± 0.1	
	Paleozoic	Carboniferous	Upper	Bashkirian		315.2 ± 0.2
				Serpukhovian		323.2 ± 0.4
			Middle	Visean		330.9 ± 0.2
				Tournaisian		346.7 ± 0.4
				Mississippian		358.9 ± 0.4
Pennsylvanian		Fortunian		~ 489.5		
		Stage 10		~ 494		
		Jiangshanian		~ 497		
		Paibian		~ 500.5		
		Drumian		~ 504.5		
Paleozoic	Ordovician	Upper	Stage 5		~ 509	
			Stage 4		~ 514	
		Middle	Stage 3		~ 521	
			Stage 2		~ 529	
			Terreneuvian		541.0 ± 1.0	
	Lower	Furongian		~ 489.5		
		Stage 10		~ 494		
		Jiangshanian		~ 497		
		Paibian		~ 500.5		
		Drumian		~ 504.5		

Eonothem / Eon	Erathem / Era	System / Period	Series / Epoch	Stage / Age	GSSP	numerical age (Ma)
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
		Lower	Pragian		410.8 ± 2.8	
			Lochkovian		419.2 ± 3.2	
			Pridoli		423.0 ± 2.3	
			Ludlow		425.6 ± 0.9	
			Gorstian		427.4 ± 0.5	
	Silurian	Wenlock	Homerian		430.5 ± 0.7	
			Sheinwoodian		433.4 ± 0.8	
			Telychian		438.5 ± 1.1	
			Aeronian		440.8 ± 1.2	
			Rhuddanian		443.8 ± 1.5	
		Llandovery	Hirnantian		445.2 ± 1.4	
			Katian		453.0 ± 0.7	
			Sandbian		458.4 ± 0.9	
			Darriwilian		467.3 ± 1.1	
			Dapingian		470.0 ± 1.4	
	Cambrian	Upper	Floian		477.7 ± 1.4	
			Tremadocian		485.4 ± 1.9	
			Stage 10		~ 489.5	
			Jiangshanian		~ 494	
			Paibian		~ 497	
		Middle	Stage 5		~ 500.5	
			Drumian		~ 504.5	
			Stage 4		~ 509	
			Stage 3		~ 514	
			Stage 2		~ 521	
	Lower	Terreneuvian		~ 529		
		Fortunian		541.0 ± 1.0		

Eonothem / Eon	Erathem / Era	System / Period	Stage / Age	GSSP	numerical age (Ma)	
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
	Archean	Neo-archean		2500		
				2800		
		Meso-archean		3200		
				3600		
		Paleo-archean		4000		
				~ 4600		
			Eo-archean			
			Hadean			

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, Permian, Triassic, Cretaceous and Precambrian are taken from 'A Geologic Time Scale 2012' by Gradstein et al. (2012); those for the Lower Pleistocene, Permian, Triassic and Cretaceous were provided by the relevant ICS subcommissions.

Coloring follows the Commission for the Geological Map of the World (<http://www.ccgw.org>)

Chart drafted by K.M. Cohen, S.C. Finney, P.L. Gibbard (c) International Commission on Stratigraphy, April 2016

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URL: <http://www.stratigraphy.org/ICSchart/ChronostratChart2016-04.pdf>

