

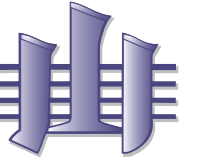


INTERNATIONAL CHRONOSTRATIGRAPHIC CHART

www.stratigraphy.org

International Commission on Stratigraphy

v 2015/01



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
				Calabrian		0.781
			Neogene	Pliocene	Gelasian	
		Piacenzian				2.58
		Miocene		Zanclean		3.600
				Messinian		5.333
				Tortonian		7.246
		Paleogene	Oligocene	Serravallian		11.63
	Langhian				13.82	
	Burdigalian				15.97	
	Aquitanian				20.44	
	Chattian				23.03	
	Eocene		Rupelian		28.1	
			Priabonian		33.9	
			Bartonian		37.8	
			Lutetian		41.2	
			Ypresian		47.8	
	Paleocene		Thanetian		56.0	
			Selandian		59.2	
			Danian		61.6	
			Maastrichtian		66.0	
						72.1 ±0.2
	Mesozoic	Cretaceous	Upper	Campanian		83.6 ±0.2
				Santonian		86.3 ±0.5
				Coniacian		89.8 ±0.3
				Turonian		93.9
				Cenomanian		100.5
			Lower	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
				Oxfordian		157.3 ±1.0
			Middle	Callovian		163.5 ±1.0
				Bathonian		166.1 ±1.2
				Bajocian		168.3 ±1.3
				Aalenian		170.3 ±1.4
				Toarcian		174.1 ±1.0
			Lower	Pliensbachian		182.7 ±0.7
				Sinemurian		190.8 ±1.0
	Hettangian			199.3 ±0.3		
	Rhaetian			201.3 ±0.2		
					~ 208.5	
	Triassic	Upper	Norian		~ 227	
			Carnian		~ 237	
			Ladinian		~ 242	
			Anisian		247.2	
			Olenekian		251.2	
		Lower	Induan		252.17 ±0.06	
			Changhsingian		254.14 ±0.07	
			Lopingian		259.8 ±0.4	
			Wuchiapingian		259.8 ±0.4	
			Capitanian		265.1 ±0.4	
	Permian	Guadalupian	Wordian		268.8 ±0.5	
			Roadian		272.3 ±0.5	
			Kungurian		283.5 ±0.6	
			Artinskian		290.1 ±0.26	
			Sakmarian		295.0 ±0.18	
		Cisuralian	Asselian		298.9 ±0.15	
			Gzhelian		303.7 ±0.1	
			Kasimovian		307.0 ±0.1	
			Moscovian		315.2 ±0.2	
			Bashkirian		323.2 ±0.4	
	Carboniferous	Pennsylvanian	Serpukhovian		330.9 ±0.2	
			Visean		346.7 ±0.4	
Middle						
Lower						
Tournaisian				358.9 ±0.4		
Mississippian						

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
				Givetian		387.7 ±0.8
				Eifelian		393.3 ±1.2
				Emsian		407.6 ±2.6
			Middle	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
	Lower	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		
	Silurian	Upper	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	
		Middle	Floian		477.7 ±1.4	
			Tremadocian		485.4 ±1.9	
			Stage 10		~ 489.5	
			Jiangshanian		~ 494	
			Paibian		~ 497	
	Ordovician	Upper	Drumian		~ 500.5	
			Stage 5		~ 504.5	
			Stage 4		~ 509	
			Stage 3		~ 514	
			Stage 2		~ 521	
		Lower	Stage 2		~ 529	
			Fortunian		541.0 ±1.0	
			Terreneuvian			
			Series 2			
			Series 3			
Cambrian	Paleozoic	Ordovician	Upper	Katian		453.0 ±0.7
				Sandbian		458.4 ±0.9
				Darriwilian		467.3 ±1.1
				Dapingian		470.0 ±1.4
				Floian		477.7 ±1.4
			Middle	Tremadocian		485.4 ±1.9
				Stage 10		~ 489.5
				Jiangshanian		~ 494
				Paibian		~ 497
				Drumian		~ 500.5
Lower	Stage 5		~ 504.5			
	Stage 4		~ 509			
	Stage 3		~ 514			
	Stage 2		~ 521			
	Stage 2		~ 529			

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	
					3200	
		Meso-archean			3600	
					4000	
					4600	
		Paleo-archean			~ 4600	
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, 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.cgmw.org>)

Chart drafted by K.M. Cohen, S.C. Finney, P.L. Gibbard (c) International Commission on Stratigraphy, January 2015

To cite: Cohen, K.M., Finney, S.C., Gibbard, P.L. & Fan, J.-X. (2013; updated) The ICS International Chronostratigraphic Chart. Episodes 36: 199-204.

URL: <http://www.stratigraphy.org/ICSchart/ChronostratChart2015-01.pdf>

