



# INTERNATIONAL STRATIGRAPHIC CHART

International Commission on Stratigraphy



Eonothem Eon	Erathem Era	System Period	Series Epoch	Stage Age	Age Ma	GSSP		
Phanerozoic	Cenozoic	Quaternary*	Holocene		0.0117	🔪		
			Pleistocene	Upper		0.126		
				"Ionian"		0.781		
			Pliocene	Calabrian		1.806	🔪	
				Gelasian		2.588	🔪	
			Neogene	Pliocene	Piacenzian		3.600	🔪
		Zanclean				5.332	🔪	
		Miocene		Messinian		7.246	🔪	
				Tortonian		11.608	🔪	
				Serravallian		13.82	🔪	
				Langhian		15.97	🔪	
				Burdigalian		20.43	🔪	
				Aquitanian		23.03	🔪	
		Paleogene	Oligocene	Chattian		28.4 ± 0.1	🔪	
	Rupelian				33.9 ± 0.1	🔪		
	Eocene		Priabonian		37.2 ± 0.1	🔪		
			Bartonian		40.4 ± 0.2	🔪		
			Lutetian		48.6 ± 0.2	🔪		
			Ypresian		55.8 ± 0.2	🔪		
	Paleocene		Thanetian		58.7 ± 0.2	🔪		
			Selandian		~ 61.1	🔪		
			Danian		65.5 ± 0.3	🔪		
			Cretaceous	Upper	Maastrichtian		70.6 ± 0.6	🔪
					Campanian		83.5 ± 0.7	🔪
					Santonian		85.8 ± 0.7	🔪
	Coniacian					~ 88.6	🔪	
	Lower			Turonian		93.6 ± 0.8	🔪	
				Cenomanian		99.6 ± 0.9	🔪	
				Albian		112.0 ± 1.0	🔪	
				Aptian		125.0 ± 1.0	🔪	
	Mesozoic		Cretaceous	Barremian		130.0 ± 1.5	🔪	
		Hauterivian			~ 133.9	🔪		
Valanginian				140.2 ± 3.0	🔪			
Berriasian				145.5 ± 4.0	🔪			

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Phanerozoic	Mesozoic	Jurassic	Upper	Tithonian		145.5 ± 4.0	🔪	
				Kimmeridgian		150.8 ± 4.0	🔪	
				Oxfordian		~ 155.6	🔪	
			Middle	Callovian		161.2 ± 4.0	🔪	
				Bathonian		164.7 ± 4.0	🔪	
				Bajocian		167.7 ± 3.5	🔪	
		Lower	Aalenian		171.6 ± 3.0	🔪		
			Aalenian		175.6 ± 2.0	🔪		
			Toarcian		183.0 ± 1.5	🔪		
			Pliensbachian		189.6 ± 1.5	🔪		
			Sinemurian		196.5 ± 1.0	🔪		
		Paleozoic	Triassic	Upper	Hettangian		199.6 ± 0.6	🔪
					Rhaetian		203.6 ± 1.5	🔪
					Norian		216.5 ± 2.0	🔪
	Middle			Carnian		~ 228.7	🔪	
				Ladinian		237.0 ± 2.0	🔪	
				Anisian		~ 245.9	🔪	
	Lower		Olenekian		~ 249.5	🔪		
			Induan		251.0 ± 0.4	🔪		
			Lopingian		251.0 ± 0.4	🔪		
	Paleozoic		Permian	Guadalupian	Changhsingian		253.8 ± 0.7	🔪
					Wuchiapingian		260.4 ± 0.7	🔪
					Capitanian		265.8 ± 0.7	🔪
				Cisuralian	Wordian		268.0 ± 0.7	🔪
					Roadian		270.6 ± 0.7	🔪
					Kungurian		275.6 ± 0.7	🔪
			Carboniferous	Pennsylvanian	Sakmarian		284.4 ± 0.7	🔪
					Asselian		294.6 ± 0.8	🔪
					Gzhelian		299.0 ± 0.8	🔪
		Mississippian		Upper	Kasimovian		303.4 ± 0.9	🔪
				Middle	Moscovian		307.2 ± 1.0	🔪
				Lower	Bashkirian		311.7 ± 1.1	🔪
Paleozoic	Carboniferous	Upper	Serpukhovian		318.1 ± 1.3	🔪		
			Visean		328.3 ± 1.6	🔪		
			Tournaisian		345.3 ± 2.1	🔪		
		Lower	Tournaisian		359.2 ± 2.5	🔪		

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Phanerozoic	Paleozoic	Devonian	Upper	Famennian		359.2 ± 2.5	🔪
				Frasnian		374.5 ± 2.6	🔪
				Givetian		385.3 ± 2.6	🔪
			Middle	Eifelian		391.8 ± 2.7	🔪
				Emsian		397.5 ± 2.7	🔪
				Pragian		407.0 ± 2.8	🔪
		Lower	Lochkovian		411.2 ± 2.8	🔪	
			Lochkovian		416.0 ± 2.8	🔪	
			Pridoli		418.7 ± 2.7	🔪	
			Ludlow	Ludfordian		421.3 ± 2.6	🔪
			Gorstian		422.9 ± 2.5	🔪	
		Silurian	Wenlock	Homerian		426.2 ± 2.4	🔪
				Sheinwoodian		428.2 ± 2.3	🔪
			Llandovery	Telychian		436.0 ± 1.9	🔪
	Aeronian				439.0 ± 1.8	🔪	
	Rhuddanian				443.7 ± 1.5	🔪	
	Hirnantian				445.6 ± 1.5	🔪	
	Paleozoic	Ordovician	Upper	Katian		455.8 ± 1.6	🔪
				Sandbian		460.9 ± 1.6	🔪
				Darriwilian		468.1 ± 1.6	🔪
			Middle	Dapingian		471.8 ± 1.6	🔪
				Floian		478.6 ± 1.7	🔪
				Tremadocian		488.3 ± 1.7	🔪
		Cambrian	Furongian	Stage 10		~ 492 *	🔪
				Stage 9		~ 496 *	🔪
				Paibian		~ 499	🔪
			Series 3	Guzhangian		~ 503	🔪
				Drumian		~ 506.5	🔪
				Stage 5		~ 510 *	🔪
	Series 2	Stage 4		~ 515 *	🔪		
		Stage 3		~ 521 *	🔪		
		Stage 2		~ 528 *	🔪		
Terreneuvian	Fortunian		542.0 ± 1.0	🔪			

This chart was drafted by Gabi Ogg. Intra Cambrian unit ages with \* are informal, and awaiting ratified definitions. Copyright © 2008 International Commission on Stratigraphy

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Phanerozoic	Proterozoic	Ediacaran	542	🔪	
		Neo-proterozoic	Cryogenian	~635	🔪
			Tonian	850	🔪
		Meso-proterozoic	Stenian	1000	🔪
			Ectasian	1200	🔪
			Calymmian	1400	🔪
	Paleo-proterozoic	Statherian	1600	🔪	
		Orosirian	1800	🔪	
		Rhyacian	2050	🔪	
		Siderian	2300	🔪	
		Neoproterozoic	2500	🔪	
	Archean	Neoarchean	2800	🔪	
		Mesoarchean	3200	🔪	
		Paleoarchean	3600	🔪	
Eoarchean		4000	🔪		
Hadean (informal)		~4600			

Subdivisions of the global geologic record are formally defined by their lower boundary. Each unit of the Phanerozoic (~542 Ma to Present) and the base of Ediacaran are defined by a basal Global Standard Section and Point (GSSP 🔪), whereas Precambrian units are formally subdivided by absolute age (Global Standard Stratigraphic Age, GSSA). Details of each GSSP are posted on the ICS website ([www.stratigraphy.org](http://www.stratigraphy.org)).

Numerical ages of the unit boundaries in the Phanerozoic are subject to revision. Some stages within the Cambrian will be formally named upon international agreement on their GSSP limits. Most sub-Series boundaries (e.g., Middle and Upper Aptian) are not formally defined.

Colors are according to the Commission for the Geological Map of the World ([www.cgmw.org](http://www.cgmw.org)).

The listed numerical ages are from 'A Geologic Time Scale 2004', by F.M. Gradstein, J.G. Ogg, A.G. Smith, et al. (2004; Cambridge University Press) and "The Concise Geologic Time Scale" by J.G. Ogg, G. Ogg and F.M. Gradstein (2008).

\* Definition of the Quaternary and revision of the Pleistocene are under discussion. Base of the Pleistocene is at 1.81 Ma (base of Calabrian), but may be extended to 2.59 Ma (base of Gelasian). The historic "Tertiary" comprises the Paleogene and Neogene, and has no official rank.