INTERNATIONAL STRATIGRAPHIC CHART

International Commission on Stratigraphy

ICS

IUGS International Union of Geological Sciences

Eonothem Eon	Erathem Era	Sub-Era	System Period	Series Epoch	Stage Age	Age Ma	GSSP
Phanerozoic	Cenozoic	Quaternary *	Neogene	Holocene		0.0118	
				Pleistocene	Upper	0.126	
					Middle	0.781	
					Lower	1.806	
		Tertiary*		Pliocene	Gelasian	2.588	
					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	61.7 ±0.2	
					Danian	65.5 ±0.3	
	Mesozoic		Cretaceous	Upper	Maastrichtian	70.6 ±0.6	
					Campanian	83.5 ±0.7	
					Santonian	85.8 ±0.7	
					Coniacian	89.3 ±1.0	
					Turonian	93.5 ±0.8	
					Cenomanian	99.6 ±0.9	
				Lower	Albian	112.0 ±1.0	
					Aptian	125.0 ±1.0	
					Barremian	130.0 ±1.5	
					Hauterivian	136.4 ±2.0	
					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	155.7 ±4.0	
			Middle	Callovian	161.2 ±4.0	
				Bathonian	164.7 ±3.5	
				Bajocian	167.7 ±3.0	
				Aalenian	171.6 ±2.0	
			Lower	Toarcian	175.6 ±1.5	
				Pliensbachian	183.0 ±1.5	
				Sinemurian	189.6 ±1.0	
				Hettangian	196.5 ±0.6	
		Triassic	Upper	Rhaetian	199.6 ±1.5	
				Norian	203.6 ±2.0	
				Carnian	216.5 ±2.0	
			Middle	Ladinian	228.0 ±2.0	
				Anisian	237.0 ±2.0	
			Lower	Olenekian	245.0 ±1.5	
				Induan	249.7 ±0.7	
	Paleozoic	Permian	Lopingian	Changhsingian	251.0 ±0.4	
				Wuchiapingian	253.8 ±0.7	
			Guadalupian	Capitanian	260.4 ±0.7	
				Wordian	265.8 ±0.7	
				Roadian	268.0 ±0.7	
			Cisuralian	Kungurian	270.6 ±0.7	
				Artinskian	275.6 ±0.7	
				Sakmarian	284.4 ±0.7	
				Asselian	294.6 ±0.8	
		Carboniferous	Penn-sylvanian	Gzhelian	299.0 ±0.8	
				Kasimovian	303.9 ±0.9	
			Upper	Moscovian	306.5 ±1.0	
			Middle	Bashkirian	311.7 ±1.1	
			Lower	Serpukhovian	318.1 ±1.3	
			Missis-sippian	Visean	326.4 ±1.6	
			Upper	Tournaisian	345.3 ±2.1	
			Middle		359.2 ±2.5	
			Lower			

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Phanerozoic	Paleozoic	Devonian	Upper	Famennian	359.2 ±2.5	
				Frasnian	374.5 ±2.6	
			Middle	Givetian	385.3 ±2.6	
				Eifelian	391.8 ±2.7	
			Lower	Emsian	397.5 ±2.7	
				Pragian	407.0 ±2.8	
				Lochkovian	411.2 ±2.8	
		Silurian	Pridoli		416.0 ±2.8	
			Ludlow	Ludfordian	418.7 ±2.7	
				Gorstian	421.3 ±2.6	
			Wenlock	Homerian	422.9 ±2.5	
				Sheinwoodian	426.2 ±2.4	
			Llandovery	Telychian	428.2 ±2.3	
				Aeronian	436.0 ±1.9	
				Rhuddanian	439.0 ±1.8	
		Ordovician	Upper	Hirnantian	443.7 ±1.5	
				Katian	445.6 ±1.5	
				Sandbian	455.8 ±1.6	
			Middle	Darriwilian	460.9 ±1.6	
				Stage 3	468.1 ±1.6	
			Lower	Floian	471.8 ±1.6	
				Tremadocian	478.6 ±1.7	
		Cambrian	Furongian	*Stage 10*	488.3 ±1.7	
				Stage 9	~ 492.0 *	
				Paibian	~ 496.0 *	
			Series 3	*Stage 7*	501.0 ±2.0	
				Drumian	~ 503.0 *	
				Stage 5	~ 506.5 *	
			Series 2	*Stage 4*	~ 510.0 *	
				Stage 3	~ 517.0 *	
			Series 1	*Stage 2*	~ 521.0 *	
				Stage 1	~ 534.6 *	
					542.0 ±1.0	

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Precambrian	Proterozoic	Neo-proterozoic	Ediacaran	542
			Cryogenian	~630
			Tonian	850
		Meso-proterozoic	Stenian	1000
			Ectasian	1200
			Calymmian	1400
		Paleo-proterozoic	Statherian	1600
			Orosirian	1800
			Rhyacian	2050
			Siderian	2300
	Archean	Neoarchean		2500
		Mesoarchean		2800
		Paleoarchean		3200
		Eoarchean	Lower limit is not defined	3600

Quaternary*: Formal chronostratigraphic unit sensu joint ICS-INQUA taskforce (2005) and ICS.

Tertiary*: Informal chronostratigraphic unit sensu Aubry et al. (2005, Episodes 28/2).

This chart was drafted by Gabi Ogg. Intra Cambrian unit ages with * are informal, and awaiting ratified defnitions.

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*).

International chronostratigraphic units, rank, names and formal status are approved by the International Commission on Stratigraphy (ICS) and ratified by the International Union of Geological Sciences (IUGS).

Numerical ages of the unit boundaries in the Phanerozoic are subject to revision. Some stages within the Ordovician and 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*).

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).