



INTERNATIONAL CHRONO

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International

Eonothem / Eon		Erathem / Era		System / Period		Series / Epoch	Stage / Age	GSSP	numerical age (Ma)	
Cenozoic	Quaternary	Holocene	U/L	Meghalayan	↕			present		
			M	Northgrippian	↕		0.0042			
			L/E	Greenlandian	↕		0.0082			
				Upper			0.0117			
		Pleistocene		Middle				0.126		
				Calabrian	↕			1.80		
				Gelasian	↕			2.58		
			Pliocene		Piacenzian	↕			3.600	
					Zanclean	↕			5.333	
			Neogene	Miocene		Messinian	↕			7.246
		Tortonian			↕			11.63		
		Serravallian			↕			13.82		
		Langhian						15.97		
		Burdigalian						20.44		
		Aquitanian			↕			23.03		
	Oligocene				Chattian	↕			27.82	
					Rupelian	↕				
					Priabonian				33.9	

Eonothem / Eon		Erathem / Era		System / Period		Series / Epoch	Stage / Age	GSSP	numerical age (Ma)		
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	
				Pliensbachian	↕					182.7 ± 0.7	
		Lower		Sinemurian	↕					190.8 ± 1.0	
				Hettangian	↕					199.3 ± 0.3	
				Rhaetian						201.3 ± 0.2	
			Upper		Norian						~ 208.5
					Carnian						~ 227

STRATIGRAPHIC CHART

International Commission on Stratigraphy

v 2018/07

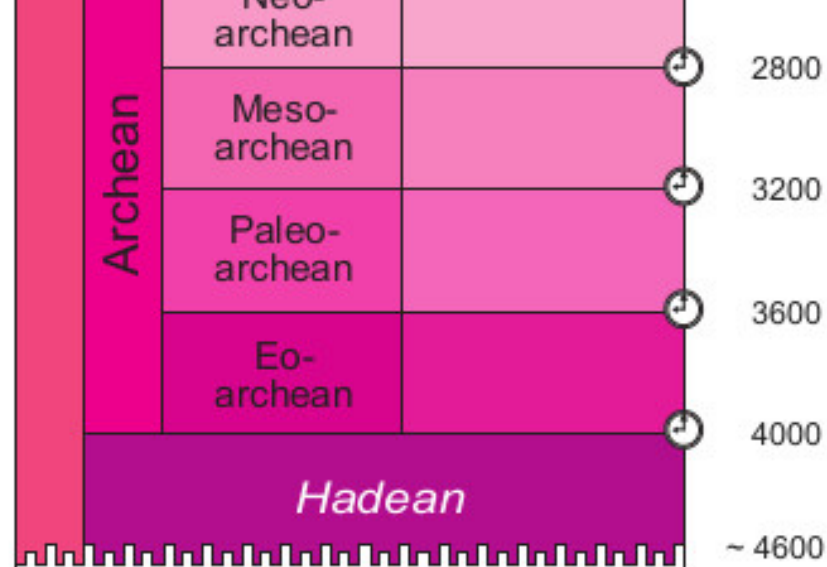
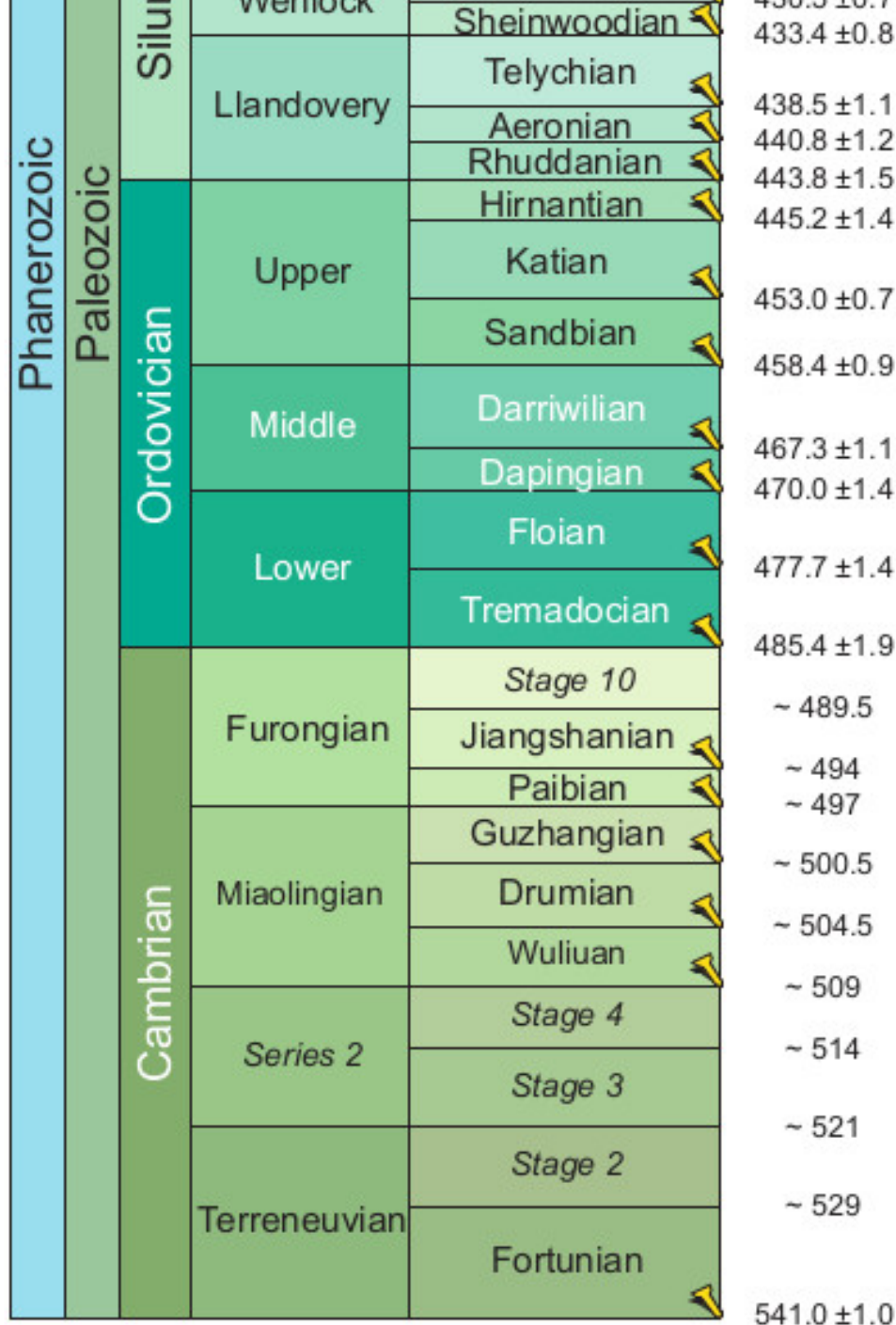


Eonothem / Eon	Erathem / Era	System / Period	Series / Epoch	Stage / Age	GSSP	numerical age (Ma)	
Eukaryotic	Phanerozoic	Geological Time Scale	Devonian	Upper	Famennian	358.9 ± 0.4	
					Frasnian	372.2 ± 1.6	
				Middle	Givetian	382.7 ± 1.6	
					Eifelian	387.7 ± 0.8	
				Lower	Emsian	393.3 ± 1.2	
					Pragian	407.6 ± 2.6	
			Lochkovian		410.8 ± 2.8		
			Silurian	Silurian	Pridoli	419.2 ± 3.2	
					Ludlow	Ludfordian	423.0 ± 2.3
						Gorstian	425.6 ± 0.9
					Wenlock	Homerian	427.4 ± 0.5
						Sheinwoodian	430.5 ± 0.7
					Telychian	433.4 ± 0.8	

Eonothem / Eon	Erathem / Era	System / Period	GSSP	GSSA	numerical age (Ma)
Eukaryotic	Phanerozoic	Neo-proterozoic	Ediacaran	↘	~ 635
			Cryogenian	↘	~ 720
			Tonian	↘	1000
		Meso-proterozoic	Stenian	↘	1200
			Ectasian	↘	1400
			Calymmian	↘	1600
			Paleo-proterozoic	Statherian	↘
		Orosirian		↘	2050
		Rhyacian		↘	2300
		Siderian		↘	2500
		Neo-archean			↘

Phanerozoic	Paleogene	Eocene	Rupelian	33.9	
			Priabonian	37.8	
			Bartonian	41.2	
			Lutetian	47.8	
			Ypresian	56.0	
		Paleocene	Thanetian	59.2	
			Selandian	61.6	
			Danian	66.0	
			Maastrichtian	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				

Phanerozoic	Triassic	Middle	Carnian	~ 227		
			Ladinian	~ 237		
			Anisian	~ 242		
		Lower	Olenekian	247.2		
			Induan	251.2		
	Paleozoic	Permian	Lopingian	Changhsingian	251.902 ± 0.024	
				Wuchiapingian	254.14 ± 0.07	
			Guadalupian	Capitanian	259.1 ± 0.5	
				Wordian	265.1 ± 0.4	
				Roadian	268.8 ± 0.5	
		Cisuralian	Kungurian	272.95 ± 0.11		
			Artinskian	283.5 ± 0.6		
			Sakmarian	290.1 ± 0.26		
			Asselian	295.0 ± 0.18		
			Gzhelian	298.9 ± 0.15		
		Carboniferous	Pennsylvanian	Upper	Kasimovian	303.7 ± 0.1
					Moscovian	307.0 ± 0.1
				Lower	Bashkirian	315.2 ± 0.2
					Serpukhovian	323.2 ± 0.4
					Visean	330.9 ± 0.2
Mississippian	Middle		Tournaisian	346.7 ± 0.4		
			Lower	358.9 ± 0.4		



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.

Ratified Subseries/Subepochs are abbreviated as U/L (Upper/Late), M (Middle) and L/E (Lower/Early). Numerical ages for all systems except Quaternary, upper Paleogene, Cretaceous, Triassic, Permian and Precambrian are taken from 'A Geologic Time Scale 2012' by Gradstein et al. (2012), those for the Quaternary, upper Paleogene, 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, J.-X. Fan (c) International Commission on Stratigraphy, July 2018



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URL: <http://www.stratigraphy.org/ICSchart/ChronostratChart2018-07.pdf>