



INTERNATIONAL CHRONO

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International

Eonothem / Eon		Erathem / Era		System / Period		Series / Epoch	Stage / Age	GSSP	numerical age (Ma)		
Phanerozoic	Cenozoic	Quaternary	Holocene	U/L	Meghalayan	present					
				M	Northgrippian	0.0042					
				U/E	Greenlandian	0.0082					
			Pleistocene	Upper				0.0117			
		Middle				0.126					
		Lower				0.781					
				Calabrian			1.80				
				Gelasian			2.58				
				Piacenzian			3.600				
		Neogene	Pliocene	Zanclean				5.333			
				Messinian				7.246			
			Miocene	Tortonian				11.63			
				Serravallian				13.82			
				Langhian				15.97			
				Burdigalian				20.44			
				Aquitainian				23.03			
				Oligocene				27.82			
					Chattian			33.9			
					Rupelian			37.8			
		Paleogene	Eocene	Priabonian				41.2			
	Bartonian					47.8					
	Lutetian					56.0					
	Ypresian					59.2					
	Paleocene		Thanetian				61.6				
			Selandian				66.0				
			Danian				72.1 ± 0.2				
			Maastrichtian				83.6 ± 0.2				
	Mesozoic	Cretaceous	Upper				86.3 ± 0.5				
			Santonian				89.8 ± 0.3				
			Coniacian				93.9				
Turonian					100.5						
Cenomanian					~ 113.0						
Albian					~ 125.0						
Aptian					~ 129.4						
Barremian					~ 132.9						
Hauterivian					~ 139.8						
Valanginian					~ 145.0						
Berriasian											
Phanerozoic			Mesozoic	Jurassic	Upper						
	Tithonian						152.1 ± 0.9				
	Kimmeridgian						157.3 ± 1.0				
	Oxfordian						163.5 ± 1.0				
	Callovian						166.1 ± 1.2				
	Bathonian						168.3 ± 1.3				
	Bajocian						170.3 ± 1.4				
	Aalenian						174.1 ± 1.0				
	Toarcian						182.7 ± 0.7				
	Pliensbachian						190.8 ± 1.0				
	Sinemurian						199.3 ± 0.3				
	Hettangian						201.3 ± 0.2				
	Triassic	Upper				~ 208.5					
		Rhaetian				~ 227					
		Norian				~ 237					
		Carnian				~ 242					
		Ladinian				247.2					
		Anisian				251.2					
		Olenekian				251.902 ± 0.024					
		Induan				254.14 ± 0.07					
		Lopingian				259.1 ± 0.5					
		Changhsingian				265.1 ± 0.4					
		Wuchiapingian				268.8 ± 0.5					
		Paleozoic	Permian	Guadalupian				272.95 ± 0.11			
	Roadian					283.5 ± 0.6					
	Kungurian					290.1 ± 0.26					
	Artinskian					295.0 ± 0.18					
	Sakmarian					298.9 ± 0.15					
	Asselian					303.7 ± 0.1					
	Carboniferous		Pennsylvanian	Upper				307.0 ± 0.1			
Gzhelian						315.2 ± 0.2					
Kasimovian						323.2 ± 0.4					
Middle					330.9 ± 0.2						
Moscovian					346.7 ± 0.4						
Lower					358.9 ± 0.4						
Bashkirian											
Mississippian	Upper										
	Serpukhovian										
	Viséan										
Lower											
Tournaisian											

CHRONOSTRATIGRAPHIC CHART

International Commission on Stratigraphy

v 2018/07



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Phanerozoic	Paleozoic	Devonian	Upper	Famennian	↘	358.9 ± 0.4		
				Frasnian	↘	372.2 ± 1.6		
				Givetian	↘	382.7 ± 1.6		
			Middle	Eifelian	↘	387.7 ± 0.8		
				Emsian	↘	393.3 ± 1.2		
			Lower	Pragian	↘	407.6 ± 2.6		
				Lochkovian	↘	410.8 ± 2.8		
						419.2 ± 3.2		
			Silurian		Pridoli	↘	423.0 ± 2.3	
					Ludlow	Ludfordian	↘	425.6 ± 0.9
	Gorstian	↘				427.4 ± 0.5		
	Wenlock	Homerian			↘	430.5 ± 0.7		
		Sheinwoodian			↘	433.4 ± 0.8		
	Llandovery	Telychian			↘	438.5 ± 1.1		
		Aeronian			↘	440.8 ± 1.2		
		Rhuddanian			↘	443.8 ± 1.5		
	Ordovician				Upper	Hirnantian	↘	445.2 ± 1.4
						Katian	↘	453.0 ± 0.7
			Middle	Sandbian	↘	458.4 ± 0.9		
				Darriwilian	↘	467.3 ± 1.1		
			Lower	Dapingian	↘	470.0 ± 1.4		
				Floian	↘	477.7 ± 1.4		
			Tremadocian	↘	485.4 ± 1.9			
			Cambrian		Furongian	Stage 10		~ 489.5
	Jiangshanian	↘				~ 494		
	Paibian	↘				~ 497		
	Miaolingian	Guzhangian			↘	~ 500.5		
		Drumian			↘	~ 504.5		
Wuliuan		↘			~ 509			
Series 2	Stage 4				~ 514			
	Stage 3				~ 521			
Terreneuvian	Stage 2				~ 529			
	Fortunian	↘			541.0 ± 1.0			

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Precambrian	Proterozoic	Neo-proterozoic	Ediacaran	↘	541.0 ± 1.0
			Cryogenian		~ 635
			Tonian		~ 720
		Meso-proterozoic	Stenian	↘	1000
			Ectasian	↘	1200
			Calymmian	↘	1400
	Paleo-proterozoic	Satherian	↘	1600	
		Orosirian	↘	1800	
		Rhyacian	↘	2050	
		Siderian	↘	2300	
	Archean		Neo-archean	↘	2500
			Meso-archean	↘	2800
			Paleo-archean	↘	3200
			Eo-archean	↘	3600
				↘	4000
			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.

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.cgmw.org>)

Chart drafted by K.M. Cohen, D.A.T. Harper, P.L. Gibbard, J.-X. Fan (c) International Commission on Stratigraphy, July 2018



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/ChronostratChart2018-07.pdf>