



Commission de la Carte Geologique
du Monde
Commission on the Geological Map
of the World

INTERNATIONAL STRATIGRAPHIC CHART

International Union of Geological Sciences

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International Commission on Stratigraphy

EONOTHEM EON	ERATHEM ERA	SYSTEM PERIOD	SERIES EPOCH	STAGE AGE	AGE Ma SEPM Spec. Vol. #54 (1995) +/-	STAGE NOTATION	SERIES NOTATION	SYSTEM NOTATION
PHANEROZOIC PH	CENOZOIC CZ	Quaternary	HOLOCENE		0.01		Q ₂	Q
			PLEISTOCENE	Calabrian			Q ₁	
		NEOGENE	PLIOCENE	Gelasian	1.81	GSSP	n ₉	N
				Piacenzian	2.58	GSSP	n ₈	
				Zanclean	3.60	GSSP	n ₇	
			MIOCENE	Messinian	5.32	GSSP	n ₆	
				Tortonian	7.12	GSSP	n ₅	
				Serravallian	11.2		n ₄	
				Langhian	14.8		n ₃	
				Burdigalian	16.4		n ₂	
				Aquitanian	20.5		n ₁	
			OLIGOCENE	Chattian	23.8	GSSP	e ₉	E
				Rupelian	28.5	GSSP	e ₈	
				Priabonian	33.7		e ₇	
		EOCENE		Bartonian	37.0		e ₆	
				Lutetian	41.3		e ₅	
				Ypresian	49.0		e ₄	
				Thanetian	55.0		e ₃	
				Selandian	57.9		e ₂	
		PALEOCENE		Danian	61.0		e ₁	
					65.5	GSSP	k ₆	K
	MESOZOIC MZ	CRETACEOUS	UPPER/LATE	Maastrichtian	71.3	GSSP	k ₅	
				Campanian	83.5		k ₄	
				Santonian	85.8		k ₃	
				Coniacian	89.0		k ₂	
				Turonian	93.5		k ₁	
			LOWER/EARLY	Cenomanian	98.9	GSSP	b ₆	
				Albian	112.2		b ₅	
				Aptian	121.0		b ₄	
				Barremian	127.0		b ₃	
				Hauterivian	132.0		b ₂	
		JURASSIC	UPPER/LATE	Valanginian	136.5		b ₁	
				Berriasian	142.0		j ₇	J ₃
				Tithonian	150.7		j ₆	
				Kimmeridgian	154.1		j ₅	
				Oxfordian	159.4		j ₄	
			MIDDLE	Callovian	164.4		j ₃	J ₂
				Bathonian	169.2		j ₂	
				Bajocian	176.5	GSSP	j ₁	
				Aalenian	180.1	GSSP	i ₄	
				Toarcian	189.6		i ₃	J ₁
		TRIASSIC	LOWER/EARLY	Pliensbachian	195.3		i ₂	
				Sinemurian	201.9	GSSP	i ₁	
				Hettangian	205.1		t ₇	T ₃
			UPPER/LATE	Rhaetian	209.6		t ₆	
				Norian	220.7		t ₅	
				Carnian	227.4		t ₄	T ₂
				Ladinian	234.3		t ₃	
			MIDDLE	Anisian	241.7		t ₂	
				Olenekian	244.8		t ₁	
				Induan	250	GSSP		

EONOTHEM EON	ERATHEM ERA	SYSTEM PERIOD	SERIES EPOCH	STAGE AGE	AGE Ma Subcommissions or other sources +/-	STAGE NOTATION	SERIES NOTATION	SYSTEM NOTATION
PHANEROZOIC PH	PALEOZOIC PZ	PERMIAN	LOPINGIAN	Changhsingian	251.4		p ₉	P ₃
				Wuchiapingian	253.4		p ₈	
			GUADALUPIAN	Capitanian	265	GSSP	p ₇	P ₂
				Wordian		GSSP	p ₆	
				Roadian		GSSP	p ₅	
			CISURALIAN	Kungurian		GSSP	p ₄	P ₁
				Artinskian	283		p ₃	
				Sakmarian			p ₂	
				Asselian			p ₁	
					292	GSSP	c ₇	C
	CARBONIFEROUS	PENNSYLVANIAN		Gzhel'ian			c ₆	
				Kazimovian			c ₅	
				Moscovian			c ₄	
			Bashkirian		320	GSSP	c ₃	
				Serpukhovian	327		c ₂	
		MISSISSIPPIAN		Visean	342		c ₁	
				Tournaisian	354		d ₇	D
			UPPER/LATE	Famennian	364	GSSP	d ₆	
				Frasnian	370	GSSP	d ₅	
		MIDDLE		Givetian	380	GSSP	d ₄	
				Eifelian	391	GSSP	d ₃	
	DEVONIAN	LOWER/EARLY		Pragian	400	GSSP	d ₂	
				Lochkovian	412	GSSP	d ₁	
					417	GSSP	s ₈	S
		SILURIAN	PRIDOLI		419	GSSP	s ₇	
			LUDLOW	Ludfordian		GSSP	s ₆	
				Gorstian	423	GSSP	s ₄	
			WENLOCK	Homerian		GSSP	s ₅	
				Sheinwoodian	428	GSSP	s ₃	
		LLANDOVERY		Telychian		GSSP	s ₂	
				Aeronian		GSSP	s ₁	
				Rhuddanian	440	GSSP		O
	ORDOVICIAN	UPPER/LATE		"sixth stage"		GSSP		
				"fifth stage"		GSSP		
			MIDDLE	Darriwilian	467.5	GSSP		
				"third stage"		GSSP		
		LOWER/EARLY		"second stage"		GSSP		
				Tremadocian	495	GSSP		
						GSSP		
	CAMBRIAN	UPPER/LATE			500		Є ₃	Є
					520		Є ₂	
					545		Є ₁	
		LOWER/EARLY				GSSP		

EONOTHEM EON	ERATHEM ERA	SYSTEM PERIOD	AGE (Defines these Eras and Periods)	NOTATION SYSTEM	NOTATION ERA
PRECAMBRIAN PC -	PROTEROZOIC PR	NEOPROTEROZOIC	540		NP ₃
			650	GSSA	NP ₂
			850	GSSA	NP ₁
		MESOPROTEROZOIC	1000	GSSA	MP ₃
			1200	GSSA	MP ₂
			1400	GSSA	MP ₁
		PALEOPROTEROZOIC	1600	GSSA	PP ₄
			1800	GSSA	PP ₃
			2050	GSSA	PP ₂
			2300	GSSA	PP ₁
	ARCHEAN AR	NEOARCHEAN	2500	GSSA	NA
			2800		
		MESOARCHEAN			MA
			3200		
		PALEOARCHEAN			PA
			3600		
		EOARCHEAN			EA
		No subdivision into periods			

This 2000 edition of the International Stratigraphic Chart is intended to give a clear picture of the present state of the art in chronostratigraphic subdivisions of geological time, mentioning only units recommended for international use. A typographical distinction is made between **formal**, semiinformal and *informal* units.

The 1986 Guidelines of ICS (COWIE et al, 1986) and their recent revision (REMANE et al, 1996) regulate the definition of the international chronostratigraphic/geochronologic units. The Revised Guidelines were voted by the full commission of ICS as a mandatory document. Both versions of the guidelines stipulate that global chronostratigraphic units are not defined by unit-stratotypes, but their lower boundary only, following the principle introduced with the definition of the base of the Devonian in 1972 (MARTINSSON, 1977). This is indeed the only way to arrive at a global chronostratigraphic scale made of strictly contiguous units.

Phanerozoic global chronostratigraphic boundaries are formally defined by a Global Standard Stratotype Section and Point (GSSP - COWIE et al, 1986), whereas Precambrian chronostratigraphic boundaries are formally defined in terms of absolute ages : Global Standard Stratigraphic Age (GSSA - REMANE et al, 1996). In order to become mandatory, a boundary definition as to be accepted by 60% majority in successive votes, first by the working group responsible for the choice of the GSSP, then by the concerned Subcommission of ICS and finally by the Full Commission of ICS. With its ratification through IUGS, the GSSP or GSSA becomes mandatory.

FORMAL UNITS (in bold characters) are all the those which have their lower boundary defined by a GSSP or GSSA voted by ICS in accordance with the Guidelines and ratified by IUGS. Proposed GSSPs (in bold italic) are pending ratification. **SEMIFORMAL UNITS** (normal characters): Several Subcommissions of ICS (Neogene, Paleogene, Jurassic, Triassic, Permian) have conducted a formal vote by postal ballot about the stage names which should be used and codified by a GSSP. But as long as no GSSP has been formally adopted, these units, recommendable as they are, have no formal status. *INFORMAL UNITS* (in italics) are not formally adopted by the Subcommissions.

The subdivisions used in the present Global Chart, are based on the proposals made by the concerned Subcommissions. Simplified subdivisions have, however been adopted for the Carboniferous and the Ordovician, in order to maintain the necessary homogeneity of presentation. The complete versions were included in the detailed explanatory note. Also some traditional names which are becoming obsolete have been omitted : Lias, Dogger, Malm in the Jurassic and Tertiary in the Cenozoic (the latter already abandoned in the first edition of this chart). "Tertiary" can be used as an informal name like Permotrias.

Numerical ages of the Phanerozoic chronostratigraphic boundaries were provided by Subcommission summaries, compilation in Episodes (1997) by Gradstein & Ogg, or other sources, and are subject to revision.

The letter/number symbols used for divisions down to stage/age rank and the colours of the individual units are established by the CGMW, taking as a basis its Geological Atlas of the World. This chart is updated periodically during its general assemblies occurring within the International Geological Congress and upon ratification of GSSPs by IUGS.

Status of GSSPs in January 2002 (updated by James Ogg)