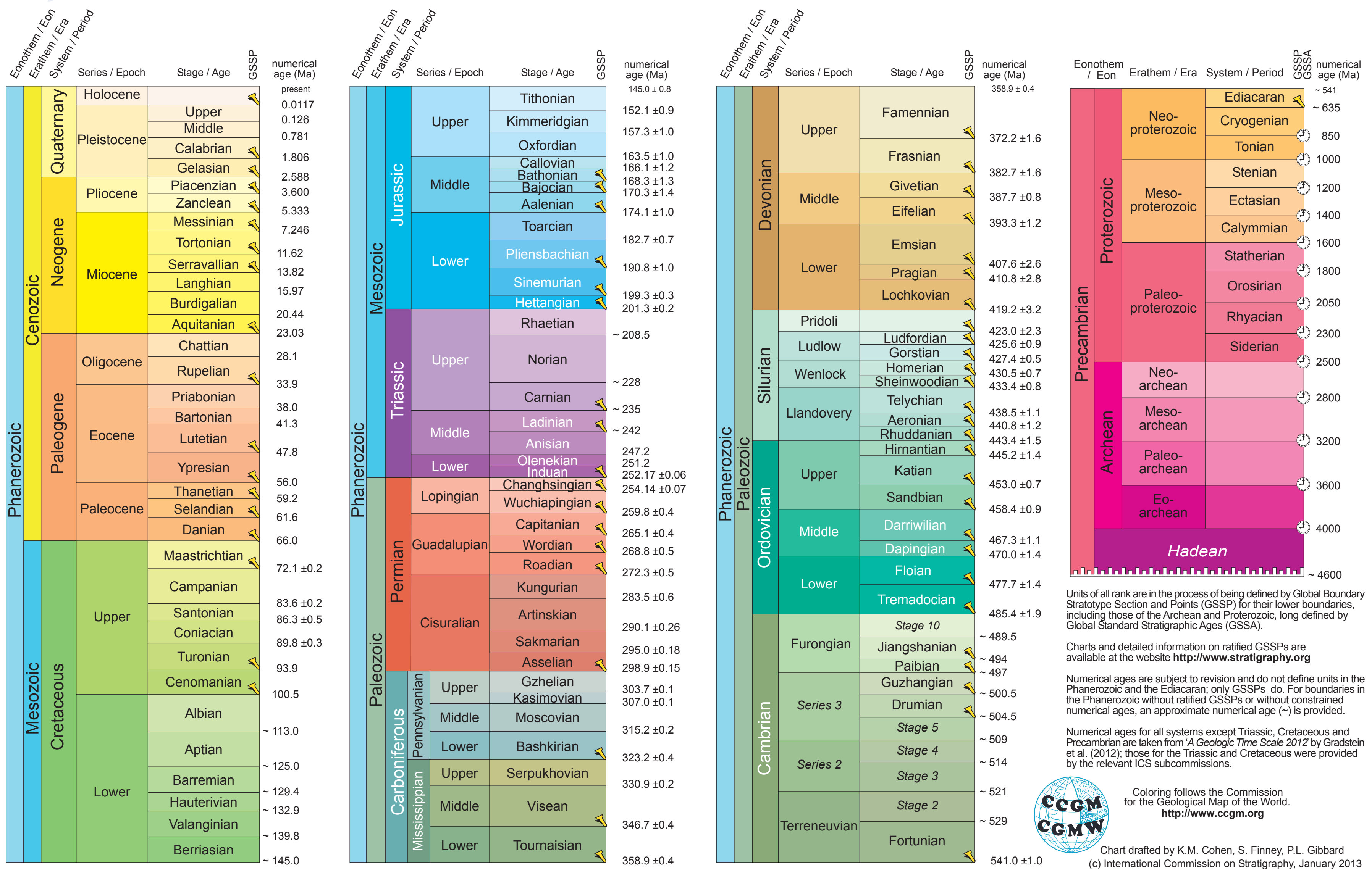




# INTERNATIONAL CHRONOSTRATIGRAPHIC CHART

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International Commission on Stratigraphy



Units of all rank 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>

Numerical ages are subject to revision and do not define units in the Phanerozoic and the Eoarchean; only GSSPs do. For boundaries in the Phanerozoic without ratified GSSPs or without constrained numerical ages, an approximate numerical age (≈) is provided.

Numerical ages for all systems except Triassic, Cretaceous and Precambrian are taken from 'A Geologic Time Scale 2012' by Gradstein et al. (2012); those for the Triassic and Cretaceous were provided by the relevant ICS subcommissions.

Coloring follows the Commission for the Geological Map of the World. <http://www.cgmw.org>

Chart drafted by K.M. Cohen, S. Finney, P.L. Gibbard (c) International Commission on Stratigraphy, January 2013

Phanerozoic (40/0/5/0)	Cenozoic (5/0/90/0)	Quaternary (0/0/50/0)	Series / Epoch	Stage / Age	GSSP	numerical age (Ma)
Phanerozoic (40/0/5/0)	Cenozoic (5/0/90/0)	Quaternary (0/0/50/0)	Holocene (0/5/10/0)	Upper		(0/5/5/0)
			Pleistocene (0/5/35/0)	Middle		(0/5/15/0)
		Pliocene (0/0/40/0)	Calabrian		(0/5/25/0)	
			Gelasian		(0/5/30/0)	
			Piacenzian		(0/0/25/0)	
	Neogene (0/0/100/0)	Miocene (0/0/100/0)	Zanclean		(0/0/30/0)	
			Messinian		(0/0/55/0)	
			Tortonian		(0/0/60/0)	
			Serravallian		(0/0/65/0)	
			Langhian		(0/0/70/0)	
		Oligocene (0/25/45/0)	Burdigalian		(0/0/75/0)	
			Aquitanian		(0/0/80/0)	
			Chattian		(0/10/30/0)	
			Rupelian		(0/15/35/0)	
			Priabonian		(0/20/30/0)	
	Eocene (0/30/50/0)	Bartonian		(0/25/35/0)		
		Lutetian		(0/30/40/0)		
		Ypresian		(0/35/45/0)		
		Thanetian		(0/25/50/0)		
		Selandian		(0/25/55/0)		
Paleocene (0/35/55/0)	Danian		(0/30/55/0)			
	Mesozoic (60/0/10/0)	Cretaceous (45/0/70/0)	Maastrichtian		(5/0/45/0)	
			Campanian		(10/0/50/0)	
			Santonian		(15/0/55/0)	
			Coniacian		(20/0/60/0)	
			Turonian		(25/0/65/0)	
		Paleozoic (50/0/75/0)	Upper		(35/0/75/0)	
			Cenomanian		(30/0/70/0)	
			Albian		(20/0/40/0)	
			Aptian		(25/0/45/0)	
Barremian				(30/0/50/0)		
Mesozoic (60/0/10/0)	Cretaceous (45/0/70/0)	Hauterivian		(40/0/60/0)		
		Valanginian		(40/0/60/0)		
		Barremian		(30/0/50/0)		
		Aptian		(25/0/45/0)		
		Albian		(20/0/40/0)		
	Paleozoic (50/0/75/0)	Cenomanian		(30/0/70/0)		
		Turonian		(25/0/65/0)		
		Coniacian		(20/0/60/0)		
		Santonian		(15/0/55/0)		
		Cenomanian		(30/0/70/0)		

Phanerozoic (40/0/5/0)	Mesozoic (60/0/10/0)	Jurassic (80/0/5/0)	Series / Epoch	Stage / Age	GSSP	numerical age (Ma)
Phanerozoic (40/0/5/0)	Mesozoic (60/0/10/0)	Jurassic (80/0/5/0)	Upper		(30/0/0/0)	
			Tithonian		(15/0/0/0)	
			Kimmeridgian		(20/0/0/0)	
			Oxfordian		(25/0/0/0)	
			Callovian		(25/0/0/0)	
		Middle	Bathonian		(30/0/5/0)	
			Bajocian		(35/0/5/0)	
			Aalenian		(40/0/5/0)	
			Toarcian		(40/5/0/0)	
			Pliensbachian		(50/5/0/0)	
	Lower	Sinemurian		(60/5/0/0)		
		Hettangian		(70/5/0/0)		
		Rhaetian		(10/25/0/0)		
		Norian		(15/30/0/0)		
		Carnian		(20/35/0/0)		
	Paleozoic (40/0/10/0)	Triassic (50/80/0/0)	Middle		(30/55/0/0)	
			Ladinian		(20/45/0/0)	
			Anisian		(25/50/0/0)	
			Olenekian		(30/65/0/0)	
			Induan		(35/70/0/0)	
Upper		Lopingian		(0/35/30/0)		
		Changhsingian		(0/25/20/0)		
		Wuchiapingian		(0/30/25/0)		
		Capitanian		(0/40/35/0)		
		Wordian		(0/45/40/0)		
Permian (5/75/75/0)	Roadian		(0/50/45/0)			
	Kungurian		(10/45/40/0)			
	Artinskian		(10/50/45/0)			
	Sakmarian		(10/55/50/0)			
	Asselian		(10/60/55/0)			
Paleozoic (40/10/40/0)	Carboniferous (60/15/30/0)	Upper		(25/10/20/0)		
		Gzhelian		(20/10/15/0)		
		Kasimovian		(25/10/15/0)		
		Moscovian		(30/10/20/0)		
		Bashkirian		(40/10/20/0)		
	Pennsylvanian (40/10/20/0)	Upper		(30/15/50/0)		
		Serpukhovian		(25/15/55/0)		
		Visean		(35/15/55/0)		
		Middle		(40/15/55/0)		
		Lower		(50/15/55/0)		
Paleozoic (40/10/40/0)	Permian (5/75/75/0)	Lower		(50/15/55/0)		
		Tournaisian		(45/15/55/0)		
		Visean		(35/15/55/0)		
		Serpukhovian		(25/15/55/0)		
		Bashkirian		(40/10/20/0)		
	Carboniferous (60/15/30/0)	Upper		(25/10/20/0)		
		Kasimovian		(25/10/15/0)		
		Moscovian		(30/10/20/0)		
		Bashkirian		(40/10/20/0)		
		Lower		(50/15/55/0)		

Phanerozoic (40/0/5/0)	Paleozoic (40/10/40/0)	Devonian (20/40/75/0)	Series / Epoch	Stage / Age	GSSP	numerical age (Ma)
Phanerozoic (40/0/5/0)	Paleozoic (40/10/40/0)	Devonian (20/40/75/0)	Upper		(5/10/35/0)	
			Famennian		(5/5/20/0)	
			Frasnian		(5/5/30/0)	
			Givetian		(5/10/45/0)	
			Eifelian		(5/15/50/0)	
		Middle	Emsian		(10/15/50/0)	
			Pragian		(10/20/55/0)	
			Lochkovian		(10/25/60/0)	
			Ludlow		(10/0/10/0)	
			Ludfordian		(15/0/10/0)	
	Lower	Gorstian		(20/0/10/0)		
		Homerian		(20/0/15/0)		
		Sheinwoodian		(25/0/20/0)		
		Telychian		(25/0/15/0)		
		Aeronian		(30/0/20/0)		
	Paleozoic (40/10/40/0)	Silurian (30/0/25/0)	Rhuddanian		(35/0/30/0)	
			Hirnantian		(35/0/30/0)	
			Katian		(40/0/35/0)	
			Sandbian		(45/0/40/0)	
			Darriwilian		(55/0/35/0)	
Ordovician (100/0/60/0)		Upper		(50/0/40/0)		
		Middle		(70/0/50/0)		
		Lower		(90/0/60/0)		
		Furongian		(10/0/20/0)		
		Jiangshanian		(15/0/25/0)		
Paleozoic (40/10/40/0)	Cambrian (50/20/65/0)	Paibian		(20/0/30/0)		
		Guzhangian		(20/5/30/0)		
		Drumian		(25/5/35/0)		
		Stage 5		(30/5/40/0)		
		Stage 4		(30/10/40/0)		
	Ordovician (100/0/60/0)	Stage 3		(35/10/45/0)		
		Stage 2		(35/15/45/0)		
		Fortunian		(40/15/50/0)		
		Terreneuvian		(45/15/55/0)		
		Cambrian		(50/20/65/0)		

Phanerozoic (40/0/5/0)	Paleozoic (40/10/40/0)	Devonian (20/40/75/0)	Series / Epoch	Stage / Age	GSSP	numerical age (Ma)
Phanerozoic (40/0/5/0)	Paleozoic (40/10/40/0)	Devonian (20/40/75/0)	Upper		(5/10/35/0)	
			Famennian		(5/5/20/0)	
			Frasnian		(5/5/30/0)	
			Givetian		(5/10/45/0)	
			Eifelian		(5/15/50/0)	
		Middle	Emsian		(10/15/50/0)	
			Pragian		(10/20/55/0)	
			Lochkovian		(10/25/60/0)	
			Ludlow		(10/0/10/0)	
			Ludfordian		(15/0/10/0)	
	Lower	Gorstian		(20/0/10/0)		
		Homerian		(20/0/15/0)		
		Sheinwoodian		(25/0/20/0)		
		Telychian		(25/0/15/0)		
		Aeronian		(30/0/20/0)		
	Paleozoic (40/10/40/0)	Silurian (30/0/25/0)	Rhuddanian		(35/0/30/0)	
			Hirnantian		(35/0/30/0)	
			Katian		(40/0/35/0)	
			Sandbian		(45/0/40/0)	
			Darriwilian		(55/0/35/0)	
Ordovician (100/0/60/0)		Upper		(50/0/40/0)		
		Middle		(70/0/50/0)		
		Lower		(90/0/60/0)		
		Furongian		(10/0/20/0)		
		Jiangshanian		(15/0/25/0)		
Paleozoic (40/10/40/0)	Cambrian (50/20/65/0)	Paibian		(20/0/30/0)		
		Guzhangian		(20/5/30/0)		
		Drumian		(25/5/35/0)		
		Stage 5		(30/5/40/0)		
		Stage 4		(30/10/40/0)		
	Ordovician (100/0/60/0)	Stage 3		(35/10/45/0)		
		Stage 2		(35/15/45/0)		
		Fortunian		(40/15/50/0)		
		Terreneuvian		(45/15/55/0)		
		Cambrian		(50/20/65/0)		

### CYMK COLOR CODE

The CMYK color code is an additive model with percentages of Cyan, Magenta, Yellow and Black. For example: the CMYK color for Devonian (20/40/75/0) is a mixture of 20% Cyan, 40% Magenta, 75% Yellow and 0% Black.

The CMYK values are the primary reference system for designating the official colors for these geological units.

The CMYK color code gives the official values only for Cyan (C), Magenta (M) and Yellow (Y).

Users may adapt the codes to other purposes by adjusting the K (grayscale) value to obtain a modified hue. This option allows a flexible use of this reference system.

The conversion from the reference CMYK values to the RGB codes utilizes Adobe® Illustrator® CS3's color function of "Emulate Adobe® Illustrator® 6.0" (menu Edit / Color Settings / Settings).

Phanerozoic (40/0/5/0)	Cenozoic (5/0/90/0)	Quaternary (0/0/50/0)	Series / Epoch	Stage / Age	GSSP	numerical age (Ma)
Phanerozoic (40/0/5/0)	Cenozoic (5/0/90/0)	Quaternary (0/0/50/0)	Holocene		254/242/224	254/242/236
			Upper		255/242/211	
		Pleistocene	Middle		255/242/199	
			Calabrian		255/242/186	
			Gelasian		255/242/174	
	Pliocene	Piacenzian		255/255/191		
		Zanclean		255/255/179		
		Messinian		255/255/115		
		Tortonian		255/255/102		
		Serravallian		255/255/89		
	Neogene (0/0/100/0)	Miocene (0/0/100/0)	Langhian		255/255/77	
			Burdigalian		255/255/65	
			Aquitanian		255/255/51	
			Chattian		254/230/170	
			Rupelian		254/217/154	
		Oligocene (0/25/45/0)	Priabonian		253/205/161	
			Bartonian		253/192/145	
			Lutetian		252/180/130	
			Ypresian		252/167/115	
			Thanetian		253/191/111	
Paleogene (0/40/60/0)	Paleocene (0/35/55/0)	Selandian		254/191/101		
		Danian		253/180/98		
		Maastrichtian		242/250/140		
		Campanian		230/244/127		
		Upper		166/216/74		
	Eocene (0/30/50/0)	Santonian		217/239/116		
		Coniacian		204/233/104		
		Turonian		191/227/93		
		Cenomanian		179/222/83		
		Albian		204/234/151		
Mesozoic (60/0/10/0)	Cretaceous (45/0/70/0)	Aptian		191/228/138		
		Barremian		179/223/127		
		Hauterivian		166/217/117		
		Valanginian		153/211/106		
		Berriasian		140/205/96		

Phanerozoic (40/0/5/0)	Mesozoic (60/0/10/0)	Jurassic (80/0/5/0)	Series / Epoch	Stage / Age	GSSP	numerical age (Ma)
Phanerozoic (40/0/5/0)	Mesozoic (60/0/10/0)	Jurassic (80/0/5/0)	Upper		179/227/238	
			Tithonian		217/241/247	
			Kimmeridgian		204/236/244	
			Oxfordian		191/231/241	
			Callovian		191/231/229	
		Middle	Bathonian		179/226/227	
			Bajocian		166/221/224	
			Aalenian		154/217/221	
			Toarcian		153/206/227	
			Pliensbachian		128/197/221	
	Lower	Sinemurian		103/188/216		
		Hettangian		78/179/211		
		Rhaetian		227/185/219		
		Norian		214/170/211		
		Carnian		201/155/203		
	Paleozoic (40/10/40/0)	Triassic (50/80/0/0)	Middle		177/104/177	
			Ladinian		201/131/191	
			Anisian		188/117/183	
			Olenekian		176/81/165	
			Induan		164/70/159	
Upper		Lopingian		252/192/178		
		Changhsingian		252/180/162		
		Wuchiapingian		251/167/148		
		Capitanian		251/154/133		
		Wordian		251/141/118		
Paleozoic (40/10/40/0)	Permian (5/75/75/0)	Roadian		251/128/105		
		Kungurian		227/135/118		
		Artinskian		227/123/104		
		Sakmarian		227/111/92		
		Asselian		227/99/80		
	Carboniferous (60/15/30/0)	Upper		191/208/186		
		Gzhelian		204/212/199		
		Kasimovian		191/208/197		
		Moscovian		179/203/185		
		Bashkirian		153/194/181		
Paleozoic (40/10/40/0)	Pennsylvanian (40/10/20/0)	Upper		153/194/181		
		Serpukhovian		191/194/107		
		Visean		166/185/108		
		Middle		166/199/183		
		Lower		140/190/180		
	Carboniferous (60/15/30/0)	Upper		179/190/108		
		Kasimovian		191/208/197		
		Moscovian		179/203/185		
		Bashkirian		153/194/181		
		Lower		128/171/108		