



# Geologic TimeScale Foundation

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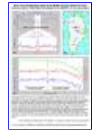



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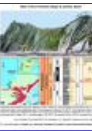
## GSSP Table - Cenozoic Era


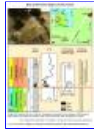
Global Boundary Stratotype Section and Point (GSSP)

Ages from "[Geologic Time Scale 2020](#)" by F.M. Gradstein, J.G. Ogg, M.D. Schmitz and G.M. Ogg, (2020, Elsevier).

Stage	Age (Ma) GTS 2020	GSSP Location	Latitude, Longitude	Boundary Level	Correlation Events		Status	Reference
Cenozoic Era								
<a href="#">Mesozoic Era</a>								
<a href="#">Paleozoic Era</a>								
<a href="#">Precambrian</a>								
<a href="#">All Periods</a>								
Quaternary System								
Holocene Series								
<a href="#">Meghalayan Stage</a>	0.00425	Mawmluh Cave, Meghalaya, India	<a href="#">25.2622°N</a> <a href="#">91.7150°E</a>	Mawmluh Cave speleothem dated at 4250yr bk2 (before AD2000)	Stable isotope profile shows a shift to heavier isotopic values,		Ratified 2018	<a href="#">Episodes 41/4, 2018</a>
<a href="#">Northgrippian Stage</a>	0.008236	borehole NGRIP1 in the central Greenland ice sheet	<a href="#">75.1000°N</a> <a href="#">42.3200°W</a>	1228.67 m depth in NGRIP 1 ice core	Climatic cooling following a period of generally rising temperatures during the Early Holocene		Ratified 2018	<a href="#">Episodes 41/4, 2018</a>
<a href="#">Greenlandian Stage</a>	0.0118	NorthGRIP ice core, central Greenland	<a href="#">75.1000°N</a> <a href="#">42.3200°W</a>	1492.45m depth in Borehole NGRIP2	Climatic -- End of the Younger Dryas cold spell, which is reflected in a shift in deuterium excess values		Ratified 2008	<a href="#">Episodes 31/2, 2008</a> ; <a href="#">J. Quaternary Sci., Vol. 24, pp. 3-17, 2009</a> ; <a href="#">Episodes 41/4, 2018</a>
Pleistocene Series								
Upper Pleistocene Stage	0.126	Taranto, Italy	<a href="#">0.0000°N</a> <a href="#">0.0000°E</a>	63.5 m below surface	Climatic -- Base of the Eemian interglacial stage (= base of marine isotope stage 5e) before final glacial episode of Pleistocene.			<a href="#">Episodes 31/2, 2008</a>
<a href="#">Chibanian</a>	0.78	Chiba, Japan		Base of Byk-E tephra bed	Byk-E tephra; 1.1 m below directional midpoint of Brunhes–Matuyama magnetic reversal (base of Chron 1n)		Ratified 2019	
<a href="#">Calabrian Stage</a>	1.8	Vrica, Italy	<a href="#">39.0385°N</a> <a href="#">17.1348°E</a>	base of the marine claystone overlying the sapropelic marker Bed 'e' (Mediterranean Precession	top of Olduvai magnetic subchron is about 8 m above the GSSP		Ratified 1985	<a href="#">Episodes 8/2, p. 116 - 120, 1985</a> ; <a href="#">Episodes 35/3, p. 388 - 397, 2012</a>

				Related Sapropel, MPRS 176)				
<a href="#">Gelasian Stage</a>	2.58	Monte San Nicola, Sicily, Italy	<a href="#">37.1469°N</a> <a href="#">14.2035°E</a>	base of marly layer overlying sapropel MPRS 250	Magnetic -- Matuyama/Gauss boundary (C2r/C2An) is 1m below GSSP. GSSP level is within Marine Isotope Stage 103.		Definition as base of Quaternary and Pleistocene ratified 2009	<a href="#">Episodes 21/2, p. 82-87, 1998</a>
Neogene System								
Pliocene Series								
<a href="#">Piacenzian Stage</a>	3.6	Punta Piccola, Sicily, Italy	<a href="#">37.2889°N</a> <a href="#">13.4933°E</a>	base of the beige marl bed of small-scale carbonate cycle 77 (MPRS 347)	Magnetic -- Gauss/Gilbert (C2An/C2Ar) magnetic reversal is recorded immediately above the GSSP		Ratified 1997	<a href="#">Episodes 21/2, p. 88-93, 1998</a>
<a href="#">Zanclean Stage</a>	5.333	Eraclea Minoa, Sicily, Italy	<a href="#">37.3917°N</a> <a href="#">13.2806°E</a>	base of the Trubi Formation which corresponds to Insolation cycle 510	Magnetic -- base of the Thvera magnetic event (C3n.4n) is only 96 kyr (5 precession cycles) younger than the GSSP.		Ratified 2000	<a href="#">Episodes 23/3, p. 179 - 187, 2000</a>
Miocene Series								
<a href="#">Messinian Stage</a>	7.25	Oued Akrech, Morocco	<a href="#">33.9369°N</a> <a href="#">6.8125°W</a>	reddish layer of sedimentary cycle number 15	Planktonic foraminifer first regular occurrence of <i>Globorotalia miotumida</i> , and calcareous nannofossil FAD <i>Amaurolithus delicatus</i>		Ratified 2000	<a href="#">Episodes 23/3, p. 172 - 178, 2000</a>
<a href="#">Tortonian Stage</a>	11.63	Monte dei Corvi Beach, near Ancona, Italy	<a href="#">43.5867°N</a> <a href="#">13.5694°E</a>	mid-point of sapropel layer of basic cycle number 76.	Calcareous nannofossil last common occurrence of <i>Discoaster kugleri</i>		Ratified 2003	<a href="#">Episodes 28/1, p. 6 - 17, 2005</a>
<a href="#">Serravallian Stage</a>	13.82	Ras il Pellegrin section, Fomm Ir-Rih Bay, west coast of Malta	<a href="#">35.9139°N</a> <a href="#">14.3361°E</a>	formation boundary between the Globigerina Limestone and Blue Clay Formation	Oxygen-isotopic event (global cooling episode) Mi3b; near calcareous nannofossil LAD of <i>Sphenolithus heteromorphus</i>		Ratified 2007	<a href="#">Episodes, 32/3, 152 - 166, 2009</a>
Langhian Stage	15.99	St. Peter's Pool, Malta or La Vedova, Italy			Base of magnetic polarity chron C5Br			
Burdigalian Stage	20.45	Potentially in astronomically-tuned ODP core			Near FAD of calcareous nannofossil <i>Helicosphaera ampliapertura</i>			

<a href="#">Aquitanian Stage</a>	23.04	Lemme-Carrioso Section, Alessandria Province, Italy	<a href="#">44.6589°N</a> <a href="#">8.8364°E</a>	35m from the top of the section	Magnetic -- base of Chron C6Cn.2n; planktonic foraminifer FAD of <i>Paragloborotalia kugleri</i> ; calcareous nannofossil near LAD <i>Reticulofenestra bisecta</i> (base Zone NN1); Oxygen isotopic event Mi-1.		Ratified 1996	<a href="#">Episodes 20/1, p. 23 - 28, 1997</a>
Paleogene System								
Oligocene Series								
<a href="#">Chattian Stage</a>	27.3	Monte Cagnero, Umbria-Marche region, Italy	<a href="#">43.6466°N</a> <a href="#">12.4677°E</a>	at meter level 197	HCO (highest common occurrence) of planktonic foraminifer <i>Chiloguembelina cubensis</i>		Ratified 2016	<a href="#">Episodes 41/1, p. 17-32, 2018</a>
<a href="#">Rupelian Stage</a>	33.9	Massignano, near Ancona, Italy	<a href="#">43.5328°N</a> <a href="#">13.6011°E</a>	base of a 0.5m thick greenish-grey marl bed 19m above base of section	Foraminifer LAD <i>Hantkenina</i> and <i>Cribohantkenina</i>		Ratified 1992	<a href="#">Episodes 16/3, p.379 - 382, 1993</a>
Eocene Series								
<a href="#">Priabonian Stage</a>	37.7	Alano di Piave section, NE Italy	<a href="#">45.9142°N</a> <a href="#">11.9180°E</a>	Tiziano Bed at 63.57m	Foraminifer LAD of <i>Morozovelloides</i> , Calcareous nannofossil acme of <i>Cribrocentrum erbae</i>		Ratified 2020	<a href="#">Episodes 44/2, p.151-173, 2021</a>
Bartonian Stage	41	Contessa highway section near Gubio, Central Apennines, Italy			provisional: base of magnetic polarity chronozone C18r			
<a href="#">Lutetian Stage</a>	48.1	Gorrondatxe sea-cliff section, Basque Country, northern Spain	<a href="#">43.3796°N</a> <a href="#">3.0143°W</a>	at 167.85 metres in the Gorrondatxe section at a dark marly level	Calcareous nannofossil FAD of <i>Blackites inflatus</i>		Ratified 2011	<a href="#">Episodes 34/2, p. 86 - 108 2011</a>
<a href="#">Ypresian Stage</a>	56	Dababiya, near Luxor, Egypt	<a href="#">25.5000°N</a> <a href="#">32.5311°E</a>	base of Bed 1 in DBH subsection	Carbon Isotope Excursion base, initiation of basal Eocene Thermal maximum ("PETM")		Ratified 2003	Micropaleontology 49/1, p.41 - 59, 2003; <a href="#">Episodes 30/4, p. 271 - 286, 2007</a>
Paleocene Series								
<a href="#">Thanetian Stage</a>	59.2	Zumaia section, northern Spain	<a href="#">43.2996°N</a> <a href="#">2.2609°W</a>	About 78 m above the Cretaceous/ Paleogene boundary; 6.5m above the base of Member B of the Itzurun Formation	Magnetic -- Base of Chron C26n		Ratified 2008	<a href="#">Episodes 34/4, p. 220-243, 2011</a>

<a href="#">Selandian Stage</a>	61.7	Zumaia section, northern Spain	<a href="#">43.2992°N</a> <a href="#">2.2610°W</a>	base of the red marls of Itzurun Formation	Onset of a carbon isotope shift and sea-level drop, 30 precession cycles (~630 kyr) above the top of magnetic polarity Chron 27n		Ratified 2008	<a href="#">Episodes 34/4, p. 220-243, 2011</a>
<a href="#">Danian Stage</a>	66	Oued Djerfane, west of El Kef, Tunisia	<a href="#">36.1537°N</a> <a href="#">8.6486°E</a>	reddish layer at the base of the 50cm thick, dark boundary clay	Iridium geochemical anomaly. Associated with a major extinction horizon (dinosaurs, ammonites, foraminifers, etc.)		Ratified 1991	<a href="#">Episodes 29/4, p. 263 - 278, 2006</a>

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