

Terrane Map of Europe

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The terrane geology of Europe has been hotly debated since the terrane concept became popular with the groundbreaking paper by Coney et al. (1980). There still is no concept for Europe on which a majority of geologists would agree, and even the notion of a terrane is differently understood by many. Seventeen years of data compilation resulted in the Terrane Map of Europe (Oczlon 2006), which is a continent-wide attempt to apply a clear-cut terrane definition to first-hand geological data, collected in over 2700 references for every region of the continent. The applied terrane definition is from Keppie (1989), with modifications.

There are large differences in the quality of the data, as well as the data density. Wide parts even remain without any data coverage, in particular the parts of the East European Craton, which are under Phanerozoic cover. The map provides a view on the growth of Europe throughout its billions of years of evolution, applying a self-explanatory colour scheme. It is designed to allow also readers without much background on the geology of Europe to access the basic concepts on the assembly and accretionary history of the continent.

Following Late Paleozoic accretion of Gondwana-derived terranes, almost all of the crust that currently makes Europe was already assembled by ca. 280 million years. Therefore, terrane-description focuses mainly on their Paleozoic and older pre-/syn-accretionary evolution. The younger sutures and ophiolite belts of southern Europe are the result of Meso-Cainozoic opening and closure of small oceanic basins within the previously accreted crust. These sutures are shown with a line-framework that outlines the boundaries of the major Alpine tectonic units.

For a better understanding of terrane-provenance, paleogeographic reconstructions of Earth at 543, 444, 375, 299, and 195 million years are shown on the map. Colors of the various paleo-continent and terranes are the same as on the Terrane Map, allowing easy recognition of the past position of continental fragments that now form part of Europe.

Every terrane or group of terranes with the same provenance and accretion history is described in the map legend with its key attributes. This description is necessarily incomplete and lacks many arguments that lie behind certain assignments. More information can be found in Oczlon et al. (2007), and a simplified version of the map is available on <http://www.geobib.uni-hd.de/terrane/index.html>.

References

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TERRANE MAP OF EUROPE

0 500 km

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VERSION 3
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TIME SCALE

Ages in Million Years (Ma)

NEO-PROTEROZOIC	543	QUATERNARY	1.8
		NEOGENE	24
MESO-PROTEROZOIC	1000	PALAEOGENE	65
		CRETACEOUS	142
		JURASSIC	206
PALAEO-PROTEROZOIC	1600	TRIASSIC	251
		PERMIAN	292
ARCHAEAN	2500	CARBONIFEROUS	360
		DEVONIAN	417
		SILURIAN	442
		ORDOVICIAN	490
		CAMBRIAN	543

- ### BALTICA
- #### CORE OF EUROPE
- TIME OF ASSEMBLY
- SILURIAN (CALEDONIAN NAPPE)
 - NEOPROTEROZOIC
 - MESO-PROTEROZOIC
 - MESO- / NEO-PROTEROZOIC COVER SEDIMENTS
 - PALAEO-PROTEROZOIC
 - ARCHAEAN

- ### GONDWANA-derived
- TIME OF ACCRETION
- NEOGENE
 - PALAEOGENE
 - JURASSIC
 - LATE TRIASSIC
 - CARBONIFEROUS
 - LATE ORDOVICIAN-SILURIAN

- ### LAURENTIA / IAPETUS-derived
- SILURIAN
 - SILURIAN (CALEDONIAN NAPPE: IAPETUS OC. + LAURENTIAN MARGIN)

- ### WEST-SIBERIA / KASAKHSTAN-CONTINENT
- CARBONIFEROUS-PERMIAN
- ### URALS
- CARBONIFEROUS (GONDWANA-derived)
 - LATE DEVONIAN (INTRA-OCEANIC ARC)
 - OCEANIC LITHOSPHERE
 - ACCRETIONARY WEDGE

