



## **Paleoceanographic Reconstruction of the Neo-Tethys from the Eocene to the early Oligocene**

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The period from the middle Eocene to the early Oligocene coincides with one of Earth's most important climatic transitions, namely, the change from Greenhouse conditions to today's Icehouse conditions. This global transition was preceded by a long-term cooling phase consisting of short-term un-correlated variations in numerous marine proxies that attest to instability of the underlying paleoceanographic system. The causes and consequences of such variations are still not clear, but scientific interest in this problem is very keen. The middle Eocene and early Oligocene Neo-Tethys region is particularly interesting because it marks the beginning of the collision between the Arabian and Eurasian Plates. This event, which is still ambiguous in term of dating and modality, represents the closing of the gateway between the Indian and Atlantic Oceans. Therefore, the Neo-Tethys represent a key area for studying global paleogeographic, paleoceanographic and paleoclimatic change. At the moment a clear paleoceanographic reconstruction of the Eocene Neo-Tethys has not yet been achieved. Here I present a possible setting for the Neo-Tethys based on the most representative Italian stratigraphic sections for this period. Magneto-biostratigraphy and astronomical calibration have been used to develop a high-resolution age model. The environmental magnetic properties, calcium carbonate content, microfossil assemblages, stable isotopes, all show short and long-term climatic variations, which depends from the paleoceanography of the Neo-Tethys in relation to the Arabian-Eurasian Collision. The variations in the global circulation and consequent decrease of Indo-Pacific waters into the Atlantic Ocean increased the thermal gradient between low and high latitude and triggered the climate of the globe to the threshold level that drove the cooling trend. I do not exclude that variation in CO<sub>2</sub>, which could also be related to Arabia-Eurasian Collision, detain an important role in the global cooling.