

The Mediterranean and the Paratethys. New bio-stratigraphic tools for the correlation between these two different realms

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The last decade has witnessed a rapid growth in the high-resolution studies focused on stable isotope stratigraphy and high-resolution calcareous plankton stratigraphy in the Mediterranean area providing new data to link with the oceanic ones. One of the most important result is the construction of integrated biostratigraphic schemes, based not only on the FO (first occurrence) and the LO (last occurrence), but further biohorizons based on the abundance fluctuation of index species, such as: interval of temporary absence (Paracme), interval of particularly abundance (Acme), first common and regular occurrence (FCO, FRO), last common and regular occurrence (LCO, LRO), have been introduced to improve the bio-chronostratigraphic resolution.

During the last 5 years several national and international projects (in different key localities) focused on different time interval of the Miocene Epoch producing a large huge of data on calcareous plankton biostratigraphy and biochronology. These data contributed to improve the paleoceanographic knowledge of the Mediterranean region.

At present the Langhian Epoch represents a key time interval for the Mediterranean and Paratethys paleoceanographic evolution. For this reason, biostratigraphic standard zonal schemes, widely tested on oceanic areas and world-wide suitable until the lower Miocene, resulted of low applicability in the Mediterranean region and thus appropriate schemes were created in the last decays for gaining biostratigraphic resolution.

Recently, an integrated biostratigraphic study on DSDP Site 372 (Balearic Islands, Mediterranean area) produced new paleomagnetic, biostratigraphic (planktonic foraminifera and calcareous nannofossils) and radiometric data very useful for Mediterranean and extra-mediterranean correlation (Haziz et al., submitted; Di Stefano et al. in prep.). In particular, DSDP-Site 372 record spans from chron C5Br up to chron C5AAn and the complete Praeorbulina-Orbulina evolutionary lineage are recorded.

A new detailed integrated study based on paleomagnetic, biostratigraphic and radiometric data of a continuous sedimentary record cropping out in the Styrian Basin (Rögl et al., 2005) offered the unique opportunity for a detailed correlation between Mediterranean and Paratethys. In detail, the Wagna and Ratznei sections (Styrian Basin, Paratethys area) cover the time interval from the Karpatian up to the Badenian (Rögl et al., 2005).

Paleomagnetic data indicate that these two sections span from chron C5Cn.3n up to chron C5ADn (paleomagnetic analysis are still in progress).

The correlation between these two sedimentary records, cropping out in different paleogeographic domains, produced an highly detailed biostratigraphic frame for the Langhian (Karapatian-Badenian) time interval with the recognition of the most important calcareous plankton bio-events. In addition, to the standard bio-horizons, several additional events contributed to construct the biostratigraphic frame. One interesting example, in the Mediterranean and Paratethys realms, is represented by the distribution pattern of *Paragloborotalia siakensis*, which is characterised by alternating diagnostic acme and paracme, useful for regional biostratigraphic correlation.

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