



## **Mediterranean calcareous plankton stratigraphy of the last 10ky**

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Mediterranean sediment records are particularly suitable for studying intensity and evolution of the major climatic fluctuations occurred during the last 10ky. The Mediterranean Sea is a small and marginal basin that registers and amplifies the smallest climatic changes occurring at mid-latitudes. Signals obtained by abundance variations of calcareous plankton (planktonic foraminifera and calcareous nannofossils) represent a common tool for past environmental investigations.

The Holocene sedimentary sequences from the eastern Mediterranean Basin are generally characterised by the occurrence of a organic carbon rich-layer (sapropel S1), which is sometimes constituted by two dark lobes (S1a and S1b) with a lighter-coloured central segment (S1 interruption). There is no a clear lithological equivalent in the Tyrrhenian Sea and in the Sicily Channel to the S1 layer. However, abrupt faunal, floral, isotopic and palaeomagnetic changes seem to occur during the equivalent time interval.

An high-resolution calcareous plankton study has been carried out on five Mediterranean cores sampled every 1 or 2 cm: gravity core (C90/C836) recovered in the eastern Tyrrhenian margin; ODP Hole 963D in the Sicily Channel; ODP Sites 964, 969 and 968 collected on a W-E transect along the eastern Mediterranean. The age model of core section (C90/C836) was reconstructed by <sup>14</sup>C AMS dating of the core top, petrographic analyses (major and trace elements) of 6 tephra layers and magnetic secular variations (Iorio et al., 2004). The chronological framework of 963D was assessed on

the basis of a linear interpolation between three dated horizons (Sprovieri et al., 2003). Analyses of eastern Mediterranean Sites 964, 969 and 968 took into account only the dark layers which were previously ascribed to S1 (Emeis et al., 2000).

Planktonic foraminifera distribution patterns show strong similarity and selected ecobio-events might be used for regional correlations. Over the last 6 kyr BP, we noted sharp decreases in the abundance of several species, such as *Globorotalia truncatulinoides*, and a distinct acme interval of *Globigerinoides quadrilobatus*. Between 10 and 6 kyr BP, which largely corresponds to the S1 deposition interval, further diagnostic changes in the foraminifera assemblages are recorded. In the Tyrrhenian Basin and in the Sicily Channel the lithological signature of S1 is missing but the micropaleontological signal is very clear. A double peak of *Globigerinoides ruber* indicates the time interval relative to S1a and S1b. An abrupt increase in abundance of *Globorotalia inflata* was recorded during the time interval relative to the sapropel interruption.

Among calcareous nannofossil assemblages, distinctive abundance peaks of *Florisphaera profunda* mark the S1 layers of the eastern Mediterranean Basin (Sites 964, 969 and 968), as already showed in previous study (Castradori, 1993). Such a signal is not so evident in the Sicily Channel (Hole 963D), where intervals corresponding to S1a and S1b lobes are characterised by abundance decrease of *Gephyrocapsa muelleriae* and concomitant increases of warm-water, oligotrophic taxa. Conversely, these taxa respectively increase and decrease during the sapropel interruption.

## References

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