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EARTH SYSTEM EVOLUTION AND THE MEDITERRANEAN AREA FROM 23 MA TO THE PRESENT

ABSTRACT BOOK

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Foraminiferal assemblages response to environmental changes during the last 130 ka in the Tyrrhenian Sea

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Core ket8011, recovered in the Tyrrhenian sea (Lat. 39° 09.5' N Long. 15° 04.5' E) provides a complete record of the last glacial-interglacial cycle. Planktic and benthic foraminiferal assemblages of this core have been analysed through compositional data analysis (CODA) methods, with the aim of reconstruct palaeoclimatic and palaeohydrological changes in the Tyrrhenian sea during the last 130 kyr.
The cronostratigraphical framework for KET8011 core is based on a composite approach involving the tephrostratigraphical and isotopical record provided by Paterne (1986). For the higher interval of the core planktic foraminiferal events recognised within the Tyrrhenian sea (Di Donato et al., 2008) were also considered. Planktic foraminifera analysis was carried on the >88 micron size fraction. Benthic foraminifera the analysis was carried out on the >65 micron size fraction. Data were analysed by means of Constrained Cluster Analysis (Grimm, 1987) and Relative Variation Biplots (Aitchison and Greenacre, 2002).
Constrained cluster analysis allowed the core KET8011 to be subdivided into 6 compositional zones. On the whole the distribution of planktonic foraminifera follows the $\delta^{18}O$ stable isotopic record. A key feature of planktic assemblages is represented by the trend shown by *Globorotalia inflata*. Relatively high abundances are recorded during interglacial stages, within Zones I and V. By contrast it is very rare or missing from the Tyrrhenian sea from 37 to 15 ka BP, within Composizional zone II. The opposition along the first axis of relative variation biplots of low to mid latitude taxa versus high latitude taxa allows the main source of variability to be related to sea surface temperatures (SST) changes. The trend shown by the first axis scores is coherent with SST's reconstructions obtained from a revised modern analogues technique (Di Donato and Martín-Fernández, 2008) of KET8003 and KET8022 Tyrrhenian Sea cores.
The second axis is mainly related to the behaviour of *Globorotalia inflata.* It is noteworthy the shortness of *G. bulloides* and *N. pachyderma* column points. In particular the distribution of *N. pachyderma* does not seem to be related to SST.
As regards benthic foraminifera, the first axis takes into account compositional changes related to main climatic changes. The first axis scores are in a good agreement with the $\delta^{18}O$ record. Benthic foraminiferal numbers are higher during the last glacial than they are during the interglacials. On the whole the benthic record indicates, for the last glacial, relatively high trophic levels coupled with oxic bottom conditions

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