



First report of two Mid-Pliocene sapropels (i-cycle 276 and 272) on Italian land sections: a micropaleontological and O and C stable isotope study

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Mid-Pliocene (MIS 117-114) sediments from a land section located in the north-eastern border of the Crotona Basin (Calabria, Southern Italy) have been studied. The chronology of the section is based on integrated calcareous plankton biostratigraphy, O and C stable isotope stratigraphy (obtained on *Globigerinoides ruber* and *C. pachyderma/Uvigerina* spp) and quantitative analysis on benthic and planktonic foraminifera. The interglacials (MIS 117 and MIS 115) present two peculiar intervals with the following features: i) benthic foraminifer fauna is mostly dominated by “low-oxygen tolerant” species (like *Bolivina* and *Bulimina*) whereas “well-oxygenated” species (like *Cibicidoides*) are essentially absent; ii) planktonic $\delta^{18}\text{O}$ and benthic $\delta^{13}\text{C}$ records display very low values; iii) the planktonic foraminifera assemblages show high percentage of eutrophic species (like *Neoglobobulimina*), and a concurrent frequency drop in the oligotrophic, warm surface dwellers *G. ruber* and *Zeaglobulimina* species; iv) siliceous biogenic remains are preserved; v) laminated sediment are present. These data clearly suggest a stressed environment, characterized by eutrophic conditions, dilution of the superficial waters, possibly favoured by increased in fresh-water runoff, and consequent stratification of the water column. This would have led to a higher degradation rate of the organic matter and to the instauration of a low-oxygen environment in the bottom water. These characteristic features are well known in the Mediterranean Pliocene and represent the expression of the Mediterranean sapropel layers in an outer-shelf/upper-slope depositional setting. The two “sapropel-like” layers here studied were correlated to the upper two sapropels (namely the i-cycle 276 and 272) of a cluster described only in the Eastern Mediterranean (ODP Leg 160). Therefore, this is the first report on Italian land sections of these “sapropel-equivalent” layers characterized by a very strong faunal and isotopic expression.