



A major change in the sedimentation regime in the late Early Pliocene of the Crotone Basin (Southern Italy) at about 3.7-3.6 Ma.

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The Crotone basin, located in the Ionian side of the Calabrian Arc, houses the thickest and best-exposed Pliocene - Pleistocene sedimentary successions of the recently uplifted southern Italy. The marine sediments of this basin are amenable to high-resolution integrated bio-magnetostratigraphic studies and are therefore particularly suitable to understand the sedimentary/tectonic/climatic interactions and process rates. Here we have reconstructed the Early to Middle Pliocene successions of the southern-deeper part of the basin. The Early Pliocene sediments mainly consist of blue-grey marls with rather good magnetic properties that allow a succession of normal- and reverse-polarity magnetozones within the Gilbert Chron to be determined. The inferred mean sedimentation rate is about 110÷150m/Myr.

During the terminal Zanclean (Early Pliocene), at ca. 3.7-3.6 Ma, a major change in the sedimentation regime occurred consisting in a shift to siliceous sedimentation. The blue-grey hemipelagic marls grade very rapidly into silty siliceous marls (with common sponge spicules and sparse radiolaria and diatoms), characterized by (i) a significant increase in terrigenous fraction and sedimentation rate (about 550÷750m/Myr), and (ii) the appearance of packages of light diatomaceous faintly laminated sediments similar, under certain aspects, to those observed in the Early Pleistocene and considered as the Mediterranean sapropel-equivalent in a terrigenous depositional setting. This shift to siliceous sedimentation is not observed in the western Mediterranean and in the reference Rossello composite section in southern Sicily, where sapropel equivalent sediments first occur at ~ 3.15 Ma. The age of the onset of the siliceous sedimen-

tation in the Crotona basin is coeval with the onset of siliceous deposits in southern Calabria (Rio et al. 1989), in the northern Apennines (Capozzi and Picotti 2003), and possibly in the southern Apennines (Lentini 2005). Apparently, the event is a characteristic feature of the Paleoadriatic Gulf and points to a major modification of the oceanographic conditions east of the emerging Apenninic chain with eutrophic conditions becoming widely established. The siliceous shift in sedimentation is actually remarkably close in time to a phase of major reorganization in the whole Apenninic-Maghrebid chain, responsible for an important migration of the compressional front towards the foreland, known as the “*Globorotalia puncticulata* event” (Patacca and Scandone, 1989; Sartori 1990). We speculate that this major tectonic event is related to the change in sedimentary regime in the Paleoadriatic Gulf, i.e. that the uplift of the Apennine thrust belt associated with the “*puncticulata* event” may have enhanced the silled character of the central and eastern Mediterranean basins. This event may have acted in concert with the inception of the Northern Hemisphere Glaciation, which, according to the recent proposal by Mudelsee and Raymo (2005), initiated around 3.6 Ma.