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The record of the Upper Pleistocene eustatic sea level fluctuations along the coasts of Campania and Lucania (southern Italy): the state of knowledge and perspectives for future researches

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Abstract

During the last decades researches on the geomorphologic and stratigraphic record of sea level fluctuations along the Tyrrhenian and Ionian coasts of the southern Apennine chain have been carried out by a group of geologists of the University of Naples Federico II – Department of Earth Science.

Three main topics have been developed:

- The reconstruction of the Upper Pleistocene eustatic sea level fluctuations have been drawn and local sea level curves have been reconstructed in those areas characterized by tectonic stability during the Late Quaternary. The main results concern the reconstruction of the sea level position during the climatic oscillations of the Oxygen Isotope Stages 5 and 3. In particular, in the Sorrento Peninsula, a double fluctuation of the sea level at the beginning of substage 5e is testified by the presence of a pair of bioerosive notches at + 6.5 and +8 m a.s.l. respectively, recurring in many sites of the coast; similar sea level marks, at the same altitude a.s.l., are also present along other shorelines of Campania and Lazio (Riccio et al., 2001). Another sea level highstand is ascribed to the end of substage 5e by means of Th/U dating of a calcareous concretion associated with the correlative sea level mark, a wave cut bench at +3.5m a.s.l. (Iannace et al., 2003). Further U-series dating and geochemical analyses performed on carbonate concretions associated with others erosional and depositional sea level marks suggest an eustatic sea level position very close to the present one at the beginning of the Oxygen Isotope Stage 3 (Iannace et al., 2003).
- The rate of tectonic uplift during the Late Quaternary have been reconstructed for those areas where the Upper Pleistocene shorelines is present at altitudes different from the eustatic ones (Iannace et al., 2001; Esposito et al., 2002).

The reconstruction of the long term (Pliocene -Pleistocene) geomorphologic and tectonic history have been carried out in those areas where raised marine terraces are present in a staircase arrangement, such as at the Mt. Bulgheria headland, in southern Cilento (Ascione A., 1998; Ascione & Romano, 1999) and at the Capri island (Barattolo et al., 1992). These researches allowed the uplift and subsidence movements of coastal sectors as well as the phases of block faulting to be recognized and chronologically ordered. Moreover, where each marine terrace of a steep-like sequence was dated, the mean rate of the vertical movements during different time spans has also been estimated. The reconstruction of the geomorphologic history and tectonic behaviour at a regional scale have also been drawn for some coastal sector of the Apennine chain (Amato A., 2000; Brancaccio et al., 1991; Brancaccio et al., 1995).

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