

Comparison between long term (geological) and short term (instrumental) relative sea level data in Italy

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Sea-level change along the Italian coast is the sum of eustatic, glacio-hydro-isostatic, and tectonic factors. The first is global and time-dependent while the latter two also vary with location. The glacio-hydro-isostatic component has been recently predicted and compared with field data at sites not affected by significant tectonic processes (Lambeck et al., 2004). With the aims of estimating the coastal tectonic movements along the Italian coastline, we combine published and new radiometric radiocarbon dates from materials that can be well connected with the Holocene relative sea level using geomorphological markers as core stratigraphy, terraces, tidal notches, beachrocks, and presently submerged archaeological markers (docks, piers, quarries, thumbs, pavements, fishtanks).

MARKERS (connected with sea level)

- Submerged speleothems,
- Core,
- Fossil beach,
- Dendropoma reef,
- Beach-rock,
- Archaeological remains



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LONG TERM UPLIFT RATE : last 10 ka

Rates of Holocene tectonic uplifts were calculated comparing the observed data with the predicted local sea level curves generated from the Lambeck isostatic model (Lambeck et al., 2004). Results show that many sites in central Italy, Sardinia and NW Sicily are stable, (or slowly subsiding for coastal isostatic movements); on the contrary, many places in southern Italy (Southern Calabria and NE Sicily) are uplifting at rates larger than 2 mm/yr or (NE Italy) are subsiding at rates of about 1 mm/yr. The uplift rates are highest at St. Alessio (close to Taormina, Sicily, 2.4 mm/yr) and Scilla (southwestern Calabria, 2.2 mm/yr), areas on opposite sides of the Messina Straits (Antonioli et al., in print). We also provide data from Pozzuoli (Campania) and Pantelleria (Sicily, Bonaccorso et al., 2005) where the high deformation rates are related to volcanic phenomena.

LONG TERM UPLIFT RATE : 125.000 years

Coastal uplift rate calculated from markers of the Last Interglacial highstand, Ferranti et al 2006, Q.Int. Southern Italy Holocene uplift rates are increasing when compared with the long-term uplift rates calculated from the MIS 5.5 highstand (Ferranti et al., 2006). On the contrary in NE Italy, tectonic subsidence (subtracting the anthropic component) shows a slow-down when compared with long-term data.



