



3rd Coastal Altimetry Workshop

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Abstract title

VERTICAL CRUSTAL MOVEMENTS FROM COMPARATIVE ANALYSIS OF SPACEBORNE AND LOCAL SEA LEVEL CHANGE OBSERVATIONS

Abstract text

The sea level is a reference for height determinations. Tide gauges measure relative movement of sea level with respect to the coast. The comparative analysis of two tide gauges produces therefore the relative vertical movement rates. A geographical dependency of sea level rates will affect the crustal rates calculated from the differential tide gauge sea level rates. The knowledge of the time evolution of the ocean dynamic topography allows to correct the tide gauge observations for rate changes in sea level rate and extract the relative vertical movement of the crust. We consider radar altimetric measurements from satellite-missions Topex/Poseidon and Jason1. The altimetric data show strong local variations in the sea level rate in the Mediterranean. The Ionian sea shows a negative anomaly since 1992, changing to a positive sea level change for the recent 10 years interval (1998.5-2007.9). The joint analysis of tide gauge and altimetric data show that Southern Calabria is uplifting at a rate of 1-2 mm/yr, the north western Sicilian coast is stable, and the eastern Sicilian coast is uplifting with rates of 1-2 mm/yr. Contemporaneous observation of tide gauge and satellite altimetry today cover only 10 years, which is a time interval too short to use the differential rates between tide gauge and altimetry for determining absolute crustal movement values. Nevertheless the comparison of the two data sets allows to show that the uplift cannot

be an artifact due to the eustatic anomaly

Topics

04 Integration of altimetry in coastal observing systems and examples of applications

Presentation Preference

Oral

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