



Coastal sea surface heights from improved altimeter data in the Mediterranean Sea

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Satellite altimeter data in coastal region need a careful selection of data and corrections, as well as additional processing. The quality of the altimeter derived sea surface heights (SSH) are in error due to the complex nature of echoes returned from rapidly varying land and sea surfaces, causing land contaminations of the satellite footprint. These are in addition to inaccurate resolution of the corrections, the most limiting factors for SSH application in coastal regions.

We analyse the Mediterranean Sea coastal regions using Topex and Envisat altimeter data. We test various selections criteria and alternative corrections for the on-board retracked altimeter data and we retrack waveform data with different retracker procedures. We show that the usual open ocean validity checks are too restrictive near coast and improved data screening strategies avoid removing too many data.

An analysis is performed to estimate how the retracking system improves the altimeter data. The standard deviation of differences between SSHs and geoid heights gives indication on the quality of the retracking algorithm estimate. Large standard deviations indicate significant errors due to contamination near the coastline. An attempt is made to determine to what extend the land and ocean characteristics might affect the altimeter data in coastal regions.

In-situ tide gauge data are compared to time-series of sea level height at normal points along the altimeter tracks. A higher correlation and lower standard deviation of the differences are obtained from the new re-tracked data, as well as more useable points

near land.