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Poster
Following on the coastal altimetry work for Envisat started in the COASTALT project (2008-2012), the NOC coastal altimetry processor is being extended to process data from multiple altimetric missions within the ESA DUE eSurge project for the provision of Earth Observation data in support of storm surge monitoring, modelling and forecasting.
An important calibration and validation site is the area around Venice, where storm surges (locally called ‘acqua alta’) are particularly frequent.
For this validation activity we have processed Envisat and Cryosat data in the area, as well as Jason-2 and Jason-1 (in interleaved orbit) over a wider area in the Northern Adriatic, and compared them with data from the CNR tide gauge at the “Acqua Alta” platform ~14 km from the coast of Venice Lido.
Envisat, Jason-2 and Jason-1 have been processed with the new ALES retracker (see the contribution by Passaro et al. in this meeting), which is included in the eSurge processor. Cryosat-2 data have been retracked with the SAMOSA3 model also included in the eSurge processor. All the comparisons are done at high-rate (20Hz).
The comparison of our retracked data against the standard data in the Envisat and Jason GDRs shows that with the dedicated ALES retracker we can retrieve more and better data closer to the coast. Correlations with the tide gauge data improve especially in the coastal strip (~10-20 km from the coast) but also, slightly, in the open ocean region, as many waveforms in this area suffer from the presence of bright-target-like artefact and therefore do not conform well with the Brown model. 20-Hz noise levels for the ALES-retracked Envisat are flat until about 3 Km from the coastline, as opposed to ~5 Km for the SGDR data. RMS values between ALES and tide gauge are at ~10 cm order of magnitude on the absolute water level (i.e. NOT using anomalies) which is a good result indicating a substantial closure of the SSH equation. Cryosat-2 data show an even better performance very close to the coast, with noise levels compared to the offshore ones up to less the 1 km from the coast, even if unresolved bias problems prevent an absolute RMS calculation so far: the RMS difference with the tide gauge, computed with anomalies, is of the order of 8 cm.
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