



## **Coastal sea level change on the North-Eastern Atlantic shelf from Delay Doppler Altimetry**

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The uncertainty of sea level trend in regional basin and in coastal region is estimated to be well above the 1 mm/yr level of the global sea level change estimation, when derived from conventional satellite altimetry.

Delay Doppler Altimetry (DDA) recently makes accurate sea level measurements up to 1-2 Kilometres from coast possible.

In this work we investigate the North-Eastern Atlantic shelf from Lisbon to Bergen. The first goal is to verify the increase in coastal performances with the DDA processing and the second goal is to study the impact of the new coastal data for sea level change studies.

For the first goal we inter-compare along-track conventionally processed CryoSat-2 DDA (RDSAR) and DDA Cryosat-2 altimeter data using improved coastal processing methods (re-trackers). The results are compared to near-simultaneous data from coastal tide gauge stations. Then we assess separately the long-term performance of both DDA and conventional altimetry data by comparison with the monthly sea level time-series derived from the same tide gauge records and corrected for the land vertical motion. Conventional altimetry data are from the Sea Level Climate Change Initiative (SLCCI) database. Finally we assess the quality of a coastal mean dynamic topography derived from DDA over the time interval 2011-2016 by point-wise comparison with the mean dynamic topography computed from the tide gauge records.