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Improved satellite altimetric data dedicated to coastal areas:

Applications over the Northwestern Mediterranean

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An improved coastal multi-satellite altimetric dataset (MAP-HiReA) with a 10/20 Hz along-track sampling has been derived from routine geophysical data records using a new processing software dedicated to coastal shelf zone applications. The dataset has been validated over the Northwestern Mediterranean Sea with tide gauge records. Cross-comparisons made with a standard regional altimetric product highlight significant qualitative and quantitative improvements: The standard deviations of the differences between altimetric and tide gauge sea level anomalies have been decreased by more than 30 % over the continental shelf of the Gulf of Lions. In addition, the data processed by the new methods are able to detect very small dynamical processes, closer to the coast than the ones observed with a standard altimetric product.

Last but not least, we show two applications using this new improved altimetric dataset:

- Firstly, we assess its ability to resolve coastal circulation in the Corsica Channel at various time scales. We show that it is possible to monitor the surface variability of the Ligurian Provençal current with coastal altimetry.

- Secondly, we show that this new product can be used to validate coastal hydrodynamical models (SYMPHONIE / MFSTEP) and will contribute in the future to a better tuning of the boundary conditions in the simulations.