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# Coastal sea level changes from retracked Jason-1 and Jason-2 altimetry along the coasts of western Africa, western Europe and Mediterranean Sea

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We present results of contemporary coastal sea level changes along the coasts of western Africa, western Europe and Mediterranean Sea, obtained from dedicated satellite altimetry re-processing in the context of the ESA 'Climate Change Initiative Bridging Phase' Sea Level Project. The main objective of this project is twofold: (1) provide sea level products in the coastal areas from reprocessed altimetry data and (2) check whether sea level change at the coast is different or not from that reported in open ocean from conventional altimetry.
High resolution (20-Hz) sea level data from the Jason-1 and Jason-2 missions over a 15-year-long time span (2002-2016) have been considered. These data are based on dedicated re-processing that combines the ALES retracking system of radar waveforms with the improved X-TRACK geophysical corrections at the coast. We estimate sea level trends over the 15-year-long period along the Jason-1/Jason-2 tracks covering the study regions, from the open ocean to the coastal zone in order to follow the regional evolution of the sea level trends. Compared to the 1-Hz sea level measurements from conventional altimetry, the retracked 20-Hz measurements allow us to retrieve valid sea level data very close to the coast (less than 3-4 km to the coast depending on the satellite track). This allows us to compute interannual sea level trends in the coastal zones where no information exists (apart from tide gauge where available).
Results are presented for the three selected regions. In the western African region, the only one long in situ record available from the Dakar tide gauge is within the uncertainty of the altimeter trend value at 4 km away from the coast. In the other two regions, availability of in situ sea level records allows comparing tide gauge-based and altimetry sea level time series, providing some validation of the new coastal products. In terms of trends, results show that over the study period, sea level trends near the coast are sometimes larger than offshore. In order to assess the robustness of the results, detailed analyses are performed at some location to discriminate between drifts in the geophysical corrections and physical processes potentially able to explain the observed sea level trends at the coast.