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Global and regional evaluation of first two years of Sentinel-3 and the impact of mean sea surfaces and ocean tide corrections.

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The use of a mean sea surface is paramount for deriving sea level anomalies from satellite altimetry. Sentinel-3 offers independent SAR altimetry along new ground tracks and can hence provide independent evaluation of existing mean sea surfaces. We perform an evaluation of the recent available mean sea surfaces using one year of 1 Hz Sentinel-3A data taking into account the shift in temporal average and coverage. Sentinel-3A is now available since February 2016 given a two year record where as the DTU15MSS is an average of altimetry from 1993-2012 with an averaging median year in 2003. Hence, recent models for sea level changes must be introduced in order to account for 14 years of sea level changes which can regionally contribute with a signal on the decimeter scale.
Dedicated coastal evaluation of the ocean tide correction and mean sea surface models in the North Sea and Danish waters are performed by using both Sentinel-3 data from RADS but also DTU retracked 20 Hz Sentinel 3 data to study the impact of SAR altimetry on mean sea surface determination and determination of short wavelength coastal signals which is likely better determined using SAR altimetry than with conventional altimetry which is the base for most current mean sea surfaces.