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Coastal sea level change from Sentinel-3A SRAL over the U.S. Eastern seaboard

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Several satellite missions are planned or have been launched to contribute to our understanding of coastal oceanography and to observe sea level, a variable of high societal importance. One of those satellites is Sentinel-3A, which was launched in February 2016, giving near-global coverage at 27-day repeat cycle and carrying Ku- and C-band synthetic aperture radar altimeter (SRAL). SRAL has enabled more reliable remote sensing of coastal ocean sea level with a higher resolution than conventional altimetry. Here, the ability to robustly discern coherent sea level changes with Sentinel-3A SRAL products is evaluated at the oceanographically complex coastal regions of the Atlantic coast of North America.

We used RADS (Radar Altimeter Database System) L2 product to calculate sea surface height anomaly (SSHA) at a set of comparison points (CP)—interpolating the measurements onto nominal ground tracks—within 250 km around selected tide gauges (TG). We compared these CP with TG measurements and ECCO2 Cube92 model output to determine the correlations and obtain spatial scales and patterns of decorrelation between the SRAL observations and the other source of data (in situ and the model).