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Abstract Title: Evaluating the performance of Sentinel-3 SRAL SAR Altimetry in the Coastal and Open Ocean, and developing improved retrieval methods – The SCOOP Project.

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The ESA Sentinel-3 satellite, launched in February 2016 as a part of the Copernicus programme, is the second satellite to operate a SAR mode altimeter. The Sentinel 3 Synthetic Aperture Radar Altimeter (SRAL) is based on the heritage from Cryosat-2, but this time complemented by a Microwave Radiometer (MWR) to provide a wet troposphere correction, and operating at Ku and C-Bands to provide an accurate along-track ionospheric correction. Together this instrument package, including both GPS and DORIS instruments for accurate positioning, allows accurate measurements of sea surface height over the ocean, as well as measurements of significant wave height and surface wind speed.

SCOOP (SAR Altimetry Coastal & Open Ocean Performance) is a project funded under the ESA SEOM (Scientific Exploitation of Operational Missions) Programme Element, started in September 2015, to characterise the expected performance of Sentinel-3 SRAL SAR mode altimeter products, in the coastal zone and open-ocean, and then to develop and evaluate enhancements to the baseline processing scheme in terms of improvements to ocean measurements. There is also a work package to develop and evaluate an improved Wet Troposphere correction for Sentinel-3, based on the measurements from the on-board MWR, further enhanced mostly in the coastal and polar regions using third party data, and provide recommendations for use.

At the end of the project recommendations for further developments and implementations will be provided through a scientific roadmap.

In this presentation we provide an overview of the SCOOP project, highlighting the key deliverables and discussing the potential impact of the results in terms of the application of delay-Doppler (SAR) altimeter measurements over the open-ocean and coastal zone. We also present the initial results from the project, including:

- Key findings from a review of the current “state-of-the-art” for SAR altimetry,
- Specification of the initial “reference” delay-Doppler and echo modelling /retracking processing schemes,
- Evaluation of the initial Test Data Set in the Open Ocean and Coastal Zone
- Overview of modifications planned to the reference delay-Doppler and echo modelling/ re-tracking processing schemes.