

Abstract for 4th COSPAR Scientific Assembly 2016
Istanbul (July-August 2016)
Scientific Event A2.1: Scientific Exploitation Of New Missions And Heritage Data
Sets (Essential Climate Variables) In Oceanography And Cryosphere

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

Authors:

David Cotton: Satellite Oceanographic Consultants, United Kingdom
Thomas Moreau, CLS, France
Eduard Makhoul-Varona: IsardSAT, Catalonia
Mònica Roca: IsardSAT, Catalonia
Paolo Cipollini: National Oceanography Centre, NERC, UK
Mathilde Cancet, Noveltis, France
Francisco Martin: Starlab, UK
Luciana Fenoglio-Marc: Technical University of Darmstadt, Germany
Marc Naeije: Technical University of Delft, The Netherlands
M. Joana Fernandes: University of Porto, Portugal.
Marco Restano, SERCO/ESRIN, Italy
Américo Ambrózio, DEIMOS/ESRIN, Italy
Jérôme Benveniste, ESA-ESRIN, Italy

The ESA Sentinel-3 satellite, within the Copernicus programme, will be 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 will be complemented by a Microwave Radiometer (MWR) to provide a wet troposphere correction, and will operate 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, will allow 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, highlight the key deliverables and discuss 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 first phase of the project, which involves a review of the current “state of the art” for SAR altimetry, establishes the “reference” delay-Doppler processing and echo modelling /retracking and agrees the specifications for the Test Data Sets to be evaluated in the first part of the project.