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SAR Processing on Demand Service for CryoSat-2 and Sentinel-3 at ESA G-POD

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The scope of this presentation is to feature the G-POD SARvatore service to users for the exploitation of the CryoSat-2 and Sentniel-3 data, which was designed and developed by the Altimetry Team at ESA-ESRIN EOP-SER (Earth Observation – Exploitation, Research and Development).

The G-POD service coined SARvatore (SAR Versatile Altimetric Toolkit for Ocean Research & Exploitation) is a web platform that allows any scientist to process on-line, on-demand and with user-selectable configuration CryoSat-2 SAR/SARIN data, from L1a (FBR) data products up to SAR/SARin Level-2 geophysical data products. The Processor takes advantage of the G-POD (Grid Processing On Demand) distributed computing platform (350 CPUs in ∼70 Working Nodes) to timely deliver output data products and to interface with ESA-ESRIN FBR data archive (210'000 SAR passes and 120'000 SARin passes). The output data products are generated in standard NetCDF format (using CF Convention), therefore being compatible with the multi-mission Broadview Radar Altimetry Toolbox (BRAT) and other NetCDF tools. By using the G-POD graphical interface, it is straightforward to select a geographical area of interest within the time-frame related to the Cryosat-2 SAR/SARin FBR data products availability in the service catalogue. The processor prototype is versatile, allowing users to customize and to adapt the processing, according to their specific requirements, by setting a list of configurable options. After the task submission, users can follow, in real time, the status of the processing. From the web interface, users can choose to generate experimental SAR data products as stack data and RIP (Range Integrated Power) waveforms.

The processing service, initially developed to support the development contracts awarded by confronting the deliverables to ESA's computations, has been made available to the worldwide SAR Altimetry Community for research & development experiments, for hands-on demonstrations/training in training courses and workshops, for cross-comparison to third party products (e.g. CLS/CNES CPP or ESA SAR COP data products), and for the preparation of the Sentinel-3 Surface Topography Mission, by producing data and graphics for publications, etc. Initially, the processing was designed and uniquely optimized for open ocean studies. It was based on the SAMOSA model developed for the Sentinel-3 Ground Segment using CryoSat data (Cotton et al., 2008; Ray et al., 2014). However, since June 2015, a new retracker (SAMOSA+) is offered within the service as a dedicated retracker for coastal zone, inland water and sea-ice/ice-sheet. In view of the Sentinel-3 launch, a new flavor of the service will be initiated, exclusively dedicated to the processing of Sentinel-3 mission data products. The scope of this new service will be to maximize the exploitation of the upcoming Sentinel-3 Surface Topography Mission's data over all surfaces.

The service is open, free of charge for worldwide scientific applications and available at https://gpod.eo.esa.int/services/CRYOSAT_SAR/ and https://gpod.eo.esa.int/services/CRYOSAT_SARIN/.