



Recent ESA Sentinel-1 Exploitation Activities

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The Sentinel-1 mission is a constellation of two C-band synthetic aperture imaging radars developed as a joint initiative of the European Commission (EC) and the European Space Agency (ESA) within Copernicus. As one of the main objectives ESA carries out a programme of scientific exploitation of the Sentinel-1 mission through a number of R&D projects, trainings, workshops, Massive On-line Open Courses (MOOCs), as well as development of open source toolboxes. Projects within the Research and Development component aim to reinforce development of advanced EO algorithms that will be used in the scientific exploitation of the mission. As an example within the InSARap study the two teams led by DLR (German Space Agency) and Norut (Northern Research Institute) have investigated the interferometric capabilities and performance of Sentinel-1 constellation (cross-InSAR) and provided advanced algorithms for Sentinel-1 TOPS data exploitation in the domains of InSAR and PSI. Another examples of studies exploiting Sentinel-1 mission data is the Sentinel-1 for Science Ocean study led by CLS France which aims to develop improved L2 ocean prototype products serving the ocean user community, and the Sentinel-1 for Science Land studies which have provided deeper insights into the exploitation of Sentinel-1 A/B for the retrieval of land cover classes, vegetation parameters, soil moisture and snow parameters.

One of the key objectives of ESA is also to develop and maintain research tools - scientific software packages. ESA has developed the open source SeNtinel Applications Platform (SNAP) that contains open source toolboxes as plugged-in modules. SNAP is currently able to process data from the Sentinel-1/2/3 - missions, SMOS, ESA legacy missions and many Third Party EO Mission data and it offers a wide range of tools and functionalities. SNAP is currently used by a large community worldwide and the number of downloads has been gradually increasing to reach more than 150.000 by the end of 2017. The Science Toolbox Exploitation Platform (STEP), associated with SNAP, enables the community to communicate with other SNAP users, SNAP developers, to report bugs, access tutorials, and to take part in the testing of beta releases. The STEP website has reached 340.000 visits in the last 2 years, with an average of more than 15.000 visits in the last couple of months.

Another activity of ESA within the range of scientific exploitation activities is the support that ESA provides to the scientific community through workshops, conferences, trainings and MOOCs. As an example the latest International Workshop on Advances in the Science and Applications of SAR Interferometry and Sentinel-1 InSAR (Fringe 2017 Workshop) organised by ESA in Helsinki brought together over 460 participants, reflecting the recent growth of the SAR and InSAR communities fertilised by the widespread open access to Sentinel-1 data. The Workshop has also demonstrated the growing maturity of methods and algorithms in SAR, InSAR and PSI using S-1 TOPS data.

In October 2017 Friedrich-Schiller University in Jena and EOS Jena with the support from ESA have launched the first SAR MOOC 'Echoes in Space' with 3756 registered participants.