INTERACTIVE ANALYSIS TOOLS (IAT) FOR THE SOIL MOISTURE AND OCEAN SALINITY (SMOS) MISSION

SEPS-GS SMOS E2E Simulator
- SEPS-GS simulates MIRAS instrument scientific and calibration timelines
- It includes also a detailed NIR modeling implemented based on HUT study
- SEPS-GS internal database is synchronized with the latest instrument parameters as measured by CASA
- Output L0 products are in standard DPGS format and can be processed with L1PP (processor prototype) or L1OP (operational processor)

LIPP Processor Prototype
- The SMOS LIPP implements state-of-the-art algorithms to retrieve Soil Moisture from the L1c Brightness temperature obtained as output of the L1PP. It is very configurable via a dedicated GUI. It allows the processing of data over a specific area defined by the user. Source code will be also available.
- A user defined forward model can be easily integrated in the code. A tutorial is available in the Software User Manual providing guidelines for the integration. Input & output products are in standard Ground Segment format
- Dedicated Visualization tools are available

L2PP Sea Surface Salinity (SSS) Processor Prototype
- The SMOS L2PP SSS implements state-of-the-art algorithm to retrieve Sea Surface Salinity from L1c Brightness temperature obtained as output of the L1PP. It is very configurable via a dedicated GUI. It allows the processing of data over a specific area defined by the user. Source code will be also available.
- A user defined forward model can be easily integrated in the code. A tutorial is available in the Software User Manual providing guidelines for the integration. Input & output products are in standard Ground Segment format

SMOS XML Read/Write API
- The SMOS XML R/W API is a library in C++ to read and write SMOS Products and auxiliary file
- The main function of the XML Read/Write API is to equip the DPGS with an efficient, uniform, stable and tested mechanism for the access and creation of the SMOS products, in order to ensure their reliability.
- The use of the XML ReadWrite API is not restricted by the development of the DPGS and its subsystems. It is a public software, freely available to those users interested in accessing the SMOS products.

SMOS Global Mapping Tool (GMT)
- The SMOS GMT provides a macroscopic view for L1 and L2 Products. GMT plots on geographic maps all the L1c and L2 data fields.
- GMT plots on geographic maps selected sectors, L1c and L1b fields
- GMT plots on geographic maps derived values from BT measurements like the First Stokes parameter, the Polarization Index. GMT has different option to manage data overlap over geographic maps.
- Option to filter-out data by incidence angle, by polarization, by antenna number

SMOS Community Microwave Emission Model (CMEM)
- The SMOS CMEM has been developed by ECMWF. It is a forward model for low frequencies passive microwave to compute ToA Brightness Temperature of the Earth surface. Physics parameterizations in based on the used in the L-Band Microwave Emission of the Biosphere (IMEM, Wigneron et al., 2007) and Land Surface Microwave Emission Model (LSMEM, Drusch et al., 2007). Potentially, CMEM can also become a useful tool during the SMOS calibration and validation phase (when reliable SMOS Validation and Retrieval Team (SVRT) members mostly parameterizations, develop new algorithm and calibrate existing ones

The Interactive Analysis Tools (IAT) is a set of software elements that ESA has developed in the context of the SMOS mission ground segment. The IAT presented in this poster will be available for SMOS data users and will be used offline by different SMOS teams according to their specific needs like data processing and monitoring (SVRT), problem investigation (Data Processing Ground Segment team), calibration and validation support (Expert Support Laboratories), long term monitoring and data analysis (Calibration and Expertise Centre team). To know more about the IAT please contact:
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