

Call for Papers – Remote Sensing of Environment Special Issue

ESA's Soil Moisture and Ocean Salinity Mission – Achievements and novel applications after 5 years in orbit

We are inviting submissions to a special issue of Remote Sensing of Environment that will focus on the achievements and novel application after 5 years in orbit of the European Space Agency's Soil Moisture and Ocean Salinity (SMOS) Mission.

PLEASE NOTE: In a first step we invite interested authors to submit an abstract (max 2 pages) of the intended paper by 30 January 2015 to susanne.mecklenburg@esa.int. On the basis of the submitted abstracts the guest editors will short-list 15-25 papers that will be invited to submit a full paper through the RSE/EES homepage with a deadline of 26 June 2015.

The SMOS mission, launched in November 2009, is the European Space Agency's (ESA) second Earth Explorer Opportunity mission. The scientific objectives of the SMOS mission directly respond to the need for global observations of soil moisture and ocean salinity, two key variables used in predictive hydrological, oceanographic and atmospheric models. SMOS observations also provide information on the characterisation of ice and snow covered surfaces and the sea ice effect on ocean-atmosphere heat fluxes and dynamics, which affects large-scale processes of the Earth's climate system.

Soil moisture observations further our knowledge about processes in the water and energy fluxes at the land surface – atmosphere interface and provide information on storage of water (surface and root zone), water uptake by vegetation (root zone), fluxes at the interface (evaporation) and the effect of these on run-off. This knowledge is important to improve meteorological and hydrological modelling and forecasting, water resource management, the monitoring of plant growth, and contributes to the forecasting of hazardous events such as floods.

Ocean salinity measurements aid the characterisation of global ocean circulation and its seasonal and inter-annual variability and are thus an important constraint in ocean (-atmosphere) models. SMOS observations improve seasonal to inter-annual (ENSO) climate predictions and the estimates of ocean rainfall and thus the global hydrological budget. They also aid the monitoring of large-scale to meso-scale salinity events and improve monitoring of sea-surface salinity variability. The latter is needed to better understand ocean-atmosphere interactions and characterise the distribution of bio-geochemical parameters in the ocean's surface and upper layers.

In 2015 the SMOS mission will have been in orbit for more than 5 years. Substantial progress has been made over recent years, in particular with regard to improving data product quality, also reflected through an increasing number of users and applications. Hence the **overall objective of this special issue is to**

- Provide an update to the science community on the **current performance of the mission**, the data quality achieved for the level 1 brightness temperature and the level 2 soil moisture and ocean salinity data products after substantial algorithm improvements. This will include the analysis of the latest campaign results.
- Emphasise the recent **evolution of novel SMOS data products and applications**, including the synergistic use of SMOS data with other data sources. To date, SMOS observations have been used by rather distinct scientific and operational communities covering a wide range of applications in oceanography, land surface hydrology, and meteorology.
- Assess the **potential of SMOS data for the generation of long-term data sets**, since both soil moisture and ocean salinity have been identified as Essential Climate Variables. This will also, but not exclusively, include research being done in collaboration with other space-borne L-band sensors, such as NASA's Aquarius and SMAP missions.

We seek contributions and especially encourage papers that focus on the following topics:

- SMOS mission status (Level 1 brightness temperature and Level 2 soil moisture and ocean salinity data quality, Radio-Frequency Interference detection and mitigation, evolution of retrieval algorithms)
- Calibration and validation activities over land, ice, and ocean
- Cryosphere applications over land and ocean
- Status and development of Level 3 and 4 data products
- Operational applications using SMOS data
- Novel data products using SMOS data
- Inter-calibration and comparison with other sensors
- Synergistic use of SMOS measurements with other satellite derived and in-situ data over land and ocean, in particular Aquarius and SMAP but also other sensors
- Long-term data sets and Essential Climate Variables over land and ocean

Schedule

Abstract submission	30 January 2015
Invitation to submit full paper	27 February 2015
RSE/EES portal opens	27 March 2015
Deadline for submission	26 June 2015
Acceptance deadline	27 November 2015
Expected publication date	15 January 2016

The guest editors are:

- **Yann Kerr**, Centre d'Etudes Spatiales de la BIOSphère (CESBIO), Toulouse, France, Yann.Kerr@cesbio.cnes.fr
- **Nicolas Reul**, IFREMER, Toulon, France, nicolas.reul@ifremer.fr
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- **Susanne Mecklenburg**, European Space Agency, ESA-ESRIN, Frascati, Italy, susanne.mecklenburg@esa.int

For the full papers:

All manuscripts should be prepared in strict accordance to the Remote Sensing of Environment **Guide for Authors** that is available on the RSE/EES homepage, <http://ees.elsevier.com/rse/>.

Papers will be peer-reviewed in accordance with the journal's established policies and procedures. Internal review prior to submission to RSE is encouraged. Contributors should suggest at least three potential reviewers who are expert in the subject matter and can act as unbiased referees.

The selection of final papers will be made by the guest editors on the basis of peer reviews, relevance to the special issue, and attention to the information provided here and on the RSE website.