

**Post-Doctoral position**  
**Assimilation of SMOS data in hydrological models for flood forecasting**

**Context**

The SMOS (Soil Moisture and Ocean Salinity Satellite ) team at CESBIO is currently seeking a Postdoctoral Research Associate for a one year appointment. The incumbent will develop SMOS data assimilation techniques for flood forecasting over two large basins.

SMOS is the first earth observation satellite providing surface soil moisture from passive L-Band observation. Since its launch SMOS enabled users to monitor many hydrological events (like flooding in the Mississippi, Droughts).The objective of this postdoc is to assess the impact of the use of SMOS data for flood forecasting. SMOS data pre-processing and data assimilation in a hydrological model will applied over the Murray Darling basin in Australia and the Upper Mississippi River basin in the U.S.A.

The mission is in the framework of the ESA's SMOS + Hydrology ITT project that aims to assess the possibilities of using Soil Moisture Ocean Salinity (SMOS) data for operational water management purposes, with an emphasis on operational flood forecasting. The work will be performed within the SMOS team at CESBIO in the frame of a collaborative international research project that also includes Ghent University (Belgium), Princeton University (U.S.A.) and Monash University (Australia).

Main tasks include:

- (1) SMOS brightness temperature pre-processing and observation error quantification. New SMOS brightness temperature products will be defined and produced. The random errors for the different SMOS brightness temperature data sets will be quantified.
- (2) Applying the data assimilation system over the Murray Darling and Upper Mississippi basins. Different assimilation methodologies are developed and tested by project partners in several case studies. The impact of SMOS brightness temperature observations on the accuracy of analyzed soil moisture and forecasted stream flow, flooding and droughts are studied.
- (3) Communications

**Qualifications:**

A Ph.D. in physical science, hydrology, atmospheric sciences or related fields is required. Previous experience with hydrologic modeling or land data assimilation techniques is desirable. Experience in programming and scripting tools is required on Linux environment. Good knowledge of spoken and written English is required. Relevant publications and presentations should be highlighted.

**Duration:** 1 year starting January 2012

**Location :** Centre d'Etudes Spatial de la Biosphère, Toulouse, France

**Contacts:** For any information or application (CV + cover letter), please send an e-mail to the following addresses: [yann.kerr@cesbio.cnes.fr](mailto:yann.kerr@cesbio.cnes.fr); [ahmad.albitar@cesbio.cnes.fr](mailto:ahmad.albitar@cesbio.cnes.fr); [olivier.merlin@cesbio.cnes.fr](mailto:olivier.merlin@cesbio.cnes.fr)

**Relevant links:**

- Project site : <http://www.hydro-smos.be/>
- SMOS @ ESA : <http://www.esa.int/esaLP/LPsmos.html>
- CESBIO : <http://www.cesbio.ups-tlse.fr/>
- SMOS blog @CESBIO : [http://www.cesbio.ups-tlse.fr/SMOS\\_blog/](http://www.cesbio.ups-tlse.fr/SMOS_blog/)