

## Received

---

### Your abstract submission has been received

Print

Print this page now.

**You have submitted the following abstract to 100th American Meteorological Society Annual Meeting. Receipt of this notice does not guarantee that your submission was complete, free of errors, or accepted for presentation.**

---

### **SMOS Neural Network Soil Moisture Data Assimilation**

---

**Nemesio Rodríguez-Fernández**, Centre d'Etudes Spatiales de la Biosphère (CESBIO), Toulouse, France; and P. de Rosnay, F. Aires, C. Albergel, M. Drusch, Y. Kerr, C. Prigent, S. Mecklenburg, J. Muñoz Sabater, and P. Richaume

#### **Abstract Text:**

In this presentation we will summarize several years of research on the use of neural networks to retrieve soil moisture from passive microwave radiometers such as the European Space Agency (ESA) Soil Moisture and Ocean Salinity (SMOS) satellite. Neural networks have been found to be an efficient alternative to radiation transfer modelling leading to a new ESA near real time (NRT) soil moisture product for operational applications in hydrology and meteorology. We will also describe how to use a neural network as offline observation operator for efficient data assimilation (DA). This approach was tested using the offline surface-only Land Data Assimilation System (so-LDAS) at the European Centre for Medium Range Weather Forecasts (ECMWF) and using the analyzed soil moisture fields to initialize atmospheric forecasts (Rodríguez-Fernández et al. 2019, Remote Sensing, 11). The positive results of these experiments led to the operational data assimilation of a dedicated SMOS neural network soil moisture dataset in the ECMWF Integrated Forecast System (IFS) starting in cycle 46r1.

**Abstract ID:**

367003

**Abstract Password:**

568706

**Program Selection:**

34th Conference on Hydrology

**Submitter's E-mail Address:**

nemesio.rodriquez@cesbio.cnes.fr

**Preferred Presentation Format:**

Oral

First Presenting Author

***Presenting Author***

Nemesio Rodríguez-Fernández

CNRS

CESBIO

18 avenue E Belin BPI 2801

Toulouse, 31401

CESBIO

18 Avenue Edouard Belin

Cedex 9

Toulouse, 31401

Centre d'Etudes Spatiales de la Biosphère (CESBIO)

18 av Ed Belin

Toulouse, 31406

**Email:** [nemesio.rodriquez@cesbio.cnes.fr](mailto:nemesio.rodriquez@cesbio.cnes.fr)

**Alternate Email:** [nemesio.rodriquez-fernandez@univ-tlse3.fr](mailto:nemesio.rodriquez-fernandez@univ-tlse3.fr) -- Will not be published

**Student?** No

Second author

Patricia de Rosnay

ECMWF

Shinfield park

Reading, Rg2 9AX

**Email:** [Patricia.Rosnay@ecmwf.int](mailto:Patricia.Rosnay@ecmwf.int)

**Alternate Email:** [Patricia.Rosnay@ecmwf.int](mailto:Patricia.Rosnay@ecmwf.int) -- Will not be published

**Student?** No

Third author

Filipe Aires  
LERMA, Observatoire de Paris  
77, avenue Denfert-Rochereau  
Paris, 75014

**Email:** [filipe.aires@obspm.fr](mailto:filipe.aires@obspm.fr)

**Alternate Email:** [filipe.aires@obspm.fr](mailto:filipe.aires@obspm.fr) -- Will not be published

**Student?** No

Fourth author

Clément Albergel  
CNRM  
42,Avenue Gaspard Coriolis  
Toulouse, 31057

**Email:** [clement.albergel@meteo.fr](mailto:clement.albergel@meteo.fr)

**Alternate Email:** [clement.albergel@meteo.fr](mailto:clement.albergel@meteo.fr) -- Will not be published

**Student?** No

Fifth author

Matthias Drusch  
European Space Agency (ESA)  
European Space Agency, ESTEC  
Postbus 299  
Noordwijk, 2200 AG

**Email:** [Matthias.Drusch@esa.int](mailto:Matthias.Drusch@esa.int)

**Alternate Email:** -- Will not be published

**Student?** No

Sixth author

Yann Kerr  
CESBIO  
18 Avenue Edouard Belin  
Cedex 9  
Toulouse, 31401

**Email:** [yann.kerr@cesbio.cnes.fr](mailto:yann.kerr@cesbio.cnes.fr)

**Alternate Email:** -- Will not be published

\* AMS Member

**Student?** No

Seventh author

Catherine Prigent  
Observatoire de Paris  
LERMA  
Paris,

**Email:** [catherine.prigent@obspm.fr](mailto:catherine.prigent@obspm.fr)

**Alternate Email:** -- Will not be published

**Student?** No

Eighth author

Susanne Mecklenburg  
European Space Agency (ESA)  
ESRIN  
Frascati,  
**Email:** [susanne.mecklenburg@esa.int](mailto:susanne.mecklenburg@esa.int)  
**Alternate Email:** -- Will not be published

**Student?** No

Ninth author

Joaquin Muñoz Sabater  
ECMWF  
Sinfield Park  
Reading, RG2 9AX  
**Email:** [Joaquin.Munoz@ecmwf.int](mailto:Joaquin.Munoz@ecmwf.int)  
**Alternate Email:** -- Will not be published

**Student?** No

Tenth author

Philippe Richaume  
Centre d'Etudes Spatiales de la Biosphère (CESBIO)  
18 av Ed Belin  
Toulouse, 31406  
**Email:** [philippe.richaume@cesbio.cnes.fr](mailto:philippe.richaume@cesbio.cnes.fr)  
**Alternate Email:** [philippe.richaume@cesbio.cnes.fr](mailto:philippe.richaume@cesbio.cnes.fr) --  
Will not be published

**Student?** No

---

**If necessary, you can make changes to your abstract between now and the deadline of**

**Thursday, August 8 2019**

.

To access your submission in the future, use the direct link to your abstract submission from one of the automatic confirmation emails that were sent to you during the submission.

Or point your browser to <http://ams.confex.com/ams/reminder.cgi> to have that URL mailed to you again. Your username/password are 367003/568706.

Any changes that you make will be reflected instantly in what is seen by the reviewers. You DO NOT need to go through all of the submission steps in order to change one thing. If you want to change the title, for example, just click "Title" in the abstract control panel and submit the new title.

When you have completed your submission, you may close this browser window.

[Tell us what you think of the abstract submittal](#)

[Home Page](#)

---