

## climate change initiative

# → SOIL MOISTURE NEWSLETTER

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Soil moisture was recognised as an Essential Climate Variable (ECV) in 2010.

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## Aim of the Soil Moisture CCI

The objective of the Soil Moisture CCI project is to produce the most complete and most consistent global soil moisture data record based on active and passive microwave sensors. This novel ECV Soil Moisture product should benefit a wide range of applications and users.

Soil moisture influences hydrological and agricultural processes, runoff generation, drought development and many other processes. It also has an impact on the climate system by controlling land-atmosphere feedbacks. Soil moisture controls evapotranspiration over land, and therefore plays a crucial role in the water, energy, and carbon cycles.

The project focuses on C-band scatterometers (ERS-1/2 scatterometer, METOP Advanced Scatterometer) and multi-frequency radiometers (SMMR, SSM/I, TMI, AMSR-E, Windsat) as these sensors are characterised by their high

suitability for soil moisture retrieval and a long technological heritage. Other microwave sensors suitable for soil moisture retrieval, including the Soil Moisture and Ocean Salinity (SMOS) mission, Synthetic Aperture Radars (SARs) and radar altimeters, are not considered in the first phase of the CCI programme due to their recentness and/or their unfavourable spatio-temporal coverage. Nevertheless, the ECV production system will be set up in such a way as to allow the integration of all these sensors in the next phase(s) of the CCI programme.

A major element of the CCI programme is to actively involve the international community to make sure that the project lives up to the highest scientific standards, and contributes itself to defining these standards. In particular, the project will contribute to tasks of the Global Climate Observation System (GCOS), the World Climate Research Programme (WCRP), the Committee on Earth Observation Satellites (CEOS) and the Group on Earth Observations (GEO).





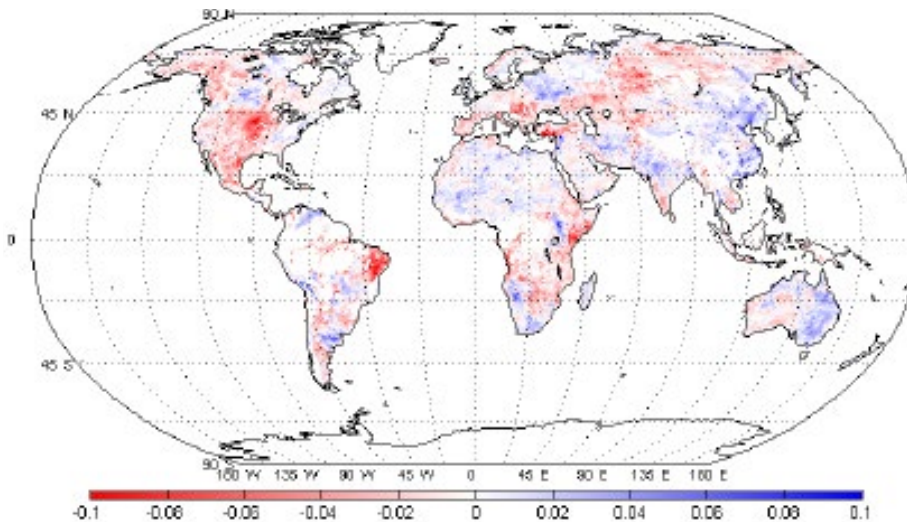
**soil moisture**  
cci

## Some facts and achievements

- > The Soil Moisture CCI project released the first ECV Soil Moisture data set in June 2012, generated within the WACMOS and Soil Moisture CCI projects
- > The ECV Soil Moisture data set version 0.1 presents daily surface soil moisture data in volume metric units [ $m^3m^{-3}$ ] with a global coverage and at a spatial resolution of  $0.25^\circ$
- > Validation activities comprised a Satellite Soil Moisture Validation and Application Workshop that brought together producers and users of satellite soil moisture data, and a Round Robin exercise where nine institutions participated to test and validate active and passive algorithms

## Outreach

- > To date more than 700 users requested the ECV Soil Moisture data set and the demand is steadily increasing
- > A dedicated user requirements analysis showed that all nine GEO Societal Benefit Areas benefit from using soil moisture data at various spatial scales, from local to global
- > Scientists involved in the Soil Moisture CCI project have already published several high level scientific articles with regard to the novel ECV Soil Moisture data set



**Soil moisture anomalies for the year 2012 from the ESA's CCI satellite-based Soil Moisture product. The global soil moisture product has been generated using active and passive microwave spaceborne instruments and covers the 32 year period from 1978 to 2010.**

Reference: Parinussa, R., and Coauthors, 2013: [Global Climate] Soil Moisture [in "State of the Climate in 2012"]. Bull. Amer. Meteor. Soc., 94 (8), S24-S25.



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To download the ECV Soil Moisture data set and obtain more information about the project please visit:

<http://www.esa-soilmoisture-cci.org>