

SMOS: ALMOST 2 YEARS IN ORBIT, FIRST RESULTS AND SUCCESSES

Yann KERR

Director of CESBIO (Centre d'Etudes Spatiales de la BIOsphère)

CESBIO (CNES/CNRS/UPS/IRD),
Toulouse, France
yann.kerr@cesbio.cnes.fr

Abstract. The SMOS (Soil Moisture and Ocean Salinity) satellite was successfully launched in November 2009. This ESA led mission for Earth Observation is dedicated to provide soil moisture over continental surface (with an accuracy better than $0,04 \text{ m}^3 / \text{m}^3$) and ocean salinity. These two geophysical features are important as they control the energy balance between the surface and the atmosphere. Their knowledge at a global scale is of interest for climatic and weather researches in particular in improving models forecasts.

The purpose of this communication is to present the mission results after more than one year in orbit as well as some outstanding results already obtained. A special attention will be devoted to level 2 products and in particular to soil moisture.

The SMOS instrument measures the passive microwave emission of the Earth surface at a frequency of 1,4 GHz (L-band). It has been demonstrated that this frequency is well adapted to monitor surface soil moisture (first 5 cm). The instrument is an interferometer and provides brightness temperatures with an average resolution of 40 km, at several angle and dual polarizations (H and V). It means that a point at the surface is seen several times with different incidence angles. Data are acquired at two times in a day at 6 am and 18 pm (local time) and insure a complete coverage of the Earth surface in 3 days.

This presentation shows in detail the first SMOS in flight results. The retrieval schemes have been developed to reach science requirements, that is to derive the surface soil moisture over continental surface with an accuracy better than $0,04 \text{ m}^3 / \text{m}^3$. Over the ocean the goals are not yet satisfied but results are already getting close to the requirements.