Geophysical Research Abstracts
Vol. 14, EGU2012-2504, 2012
EGU General Assembly 2012

SMOS ocean salinity: improvements and issues after two years of operations

J. Font and the SMOS L2OS Team
Institut de Ciencies del Mar CSIC, Barcelona, Spain (jfont@icm.csic.es, 00 34 932309555)

SMOS (Soil Moisture and Ocean Salinity), launched on November 2, 2009, is the first satellite mission addressing sea surface salinity measurements from space. Its unique payload is MIRAS (Microwave Imaging Radiometer using Aperture Synthesis), a new two-dimensional interferometer designed by the European Space Agency (ESA) and operating at the microwave L-band. In this presentation we address the quality of the salinity products now being operationally delivered, following algorithm improvements achieved from the analysis of two years of data. The pioneer nature of this mission, both from the technological and data processing points of view, implies many challenges and several issues that are still being addressed by the SMOS team. These are mainly related to low level data processing (instrument calibration, stability, interferometric image reconstruction, contamination from external radiation) but also to the retrieval of salinity from radiometric measurements, with the need to correct for other geophysical effects as the impact of sea surface roughness in ocean L-band emission. In the present stage of algorithm development the mission objectives in terms of salinity accuracy (of the order of 0.1 in spatial averages of 100-200 km and temporal windows of one month) have not been reached yet. However, realistic salinity maps have been obtained and preliminary validation tests against in situ data indicate we are approaching our goals. SMOS is a milestone in the route for incorporating salinity to ocean remote sensing, and its unique characteristics (imaging capability, high revisit time, spatial resolution at mesoscale) make it a very valuable potential contributor to future synergistic salinity products, together with the Argo array of profiling floats, surface drifters and voluntary observing ships, and the NASA Aquarius mission launched in June 2011.