32. Barcelona expert centre of the SMOS space mission

MUNICIPALITY
Barcelona

HEADING
With its launching on 2 November from the Plesetsk cosmodrome (Russia), the SMOS has become the first satellite sent into space to measure ocean salinity and the soil moisture of the continents. From May 2010 on it will begin open distribution of the data created with the involvement of Barcelona research teams.

DESCRIPTION OF PROJECT
The SMOS (Soil Moisture and Ocean Salinity) mission of the European Space Agency (ESA) aims to make the first-ever systematic global observations from space of continental soil moisture and ocean surface salinity. Due to the technological complexity involved, no space mission had ever before attempted to measure these variables, which are essential to understanding the water cycle on earth. A new technological concept, microwave interferometric radiometry, based on the same principle as radio telescopes, permitted the design of the instrument on board the SMOS satellite.

The mission was proposed by the ESA in 1998 with considerable participation of Barcelona-based research groups. The main experts in the instrument and its calibration belong to the Technical University of Catalonia (UPC), and the algorithms that transform the radiometric data measured into ocean salinity values were developed under the coordination of the Marine Sciences Institute (ICM) of the Spanish National Research Council (CSIC).

In 2007, CSIC and UPC decided to set up the SMOS Expert Centre on Radiometric Calibration and Ocean Salinity (SMOS-BEC) in Barcelona to bring together the efforts of the Catalan groups involved in the mission. At present some twenty post-doctoral researchers, engineers, doctorate students and technical specialists are directly employed at the centre, housed in the ICM alongside the Olympic Port of Barcelona.

The role of SMOS-BEC focuses on analysing data as it is received, studying the modifications required at different stages of the process to correct any shortcomings and verify their utility by integrating them into predictive models.

ECONOMIC AND TECHNICAL DATA
Contribution by Spain to SMOS funding: over € 70 M
Annual budget of the SMOS Expert Centre in Barcelona: some € 500 M, excluding CSIC and UPC staff
Development of the mission began in 2000, operational phase envisaged from late 2009 to 2013-2015
Extension of the programme to other satellites that include technological improvements is being studied

PROJECT ADDRESS
www.smos-bec.icm.csic.es

RESPONSIBLE
Jordi Font i Ferré, Research Professor at CSIC and Scientific Co-leader of the SMOS Mission.