SMOS in the SPURS experiment

SPURS field experiment.

The SPURS-MIDAS cruise (Las Palmas de Gran Canaria 16 March 2013 – Ponta Delgada, Açores 17 April) on board the Spanish R/V Sarmiento de Gamboa is a contribution to the SPURS experiment (Salinity Processes in the Upper ocean Regional Study) aimed at understanding the processes that drive the upper ocean dynamics and the role that salinity plays on them in the area of maximum salinity in the center of the North Atlantic subtropical gyre. The experiment is coordinated by WHOI (R. Schmitt) and sponsored by NASA (E. Lindstrom), and includes intensive field work with a large variety of state-of-the-art instrumentation, the use of satellite remotely sensed salinity information (Aquarius and SMOS), as well as dedicated numerical modeling. The SMOS BEC team is one of the participants in SPURS where it will contribute with in situ data acquisition, processing and mapping SMOS salinity data, and a regional implementation of the NEMO model with assimilative and process-based simulations to complement and analyze the processes suggested by the observations.

The Sarmiento will be in the SPURS site together with the US R/V Endeavor in a coordinated program to continue the SPURS field work initiated by the French R/V Thalassa (STRASSE cruise, August-September 2012) and US R/V Knorr (September-October 2012). The main role of our cruise is to run first a general survey for mesoscale mapping of the area by means of TSG, ADCP and undulating CTD (SeaSoar) while the Endeavor is arriving to the site and servicing the moorings and gliders deployed in the September cruise. On the same time we will deploy a total of 48 surface salinity drifters. After this initial survey the Sarmiento will participate in submesoscale high resolution specific samplings, as well as performing

turbulence measurements (ASIP profiler) and a combined CTD stations-SeaSoar sampling for mixed-layer depth evolution studies. Additional opportunity measurements will be done to collect water and plankton samples for chemical and biological objectives from Spanish researchers not belonging to the SMOS-BEC team.

As in previous field studies (Malaspina 2010-2011, STRASSE 2012) we will deploy drifters designed and built by our team to help improving the SMOS products validation by measuring salinity at 50 cm below the sea surface. The SPURS area has the advantage of being quite stable and at the same time displaying the highest salinity values worldwide in open oceans, so that it provides one of the best opportunities for SMOS validation.

SPURS will also be an excellent opportunity to demonstrate the usefulness of SMOS salinity determinations in ocean dynamics studies.

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