

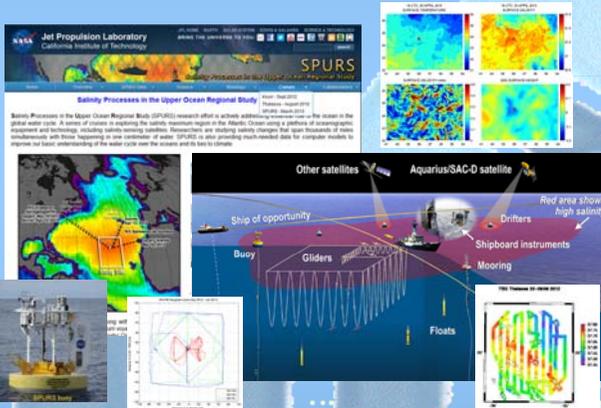
SPURS-MIDAS cruise in the North Atlantic salinity maximum, March-April 2013

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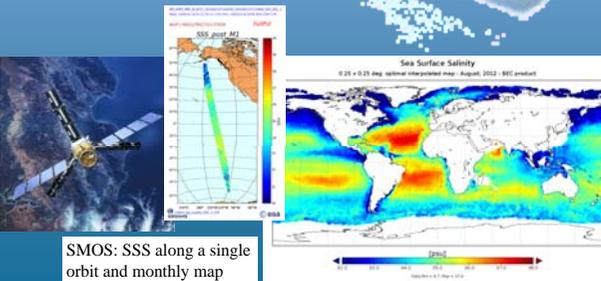
1. SPURS: Salinity Processes in the Upper ocean Regional Study

An international program in 2012-2013 to understand the processes responsible for the formation and maintenance of the salinity maximum associated to the North Atlantic subtropical gyre. <http://spurs.jpl.nasa.gov/SPURS/>



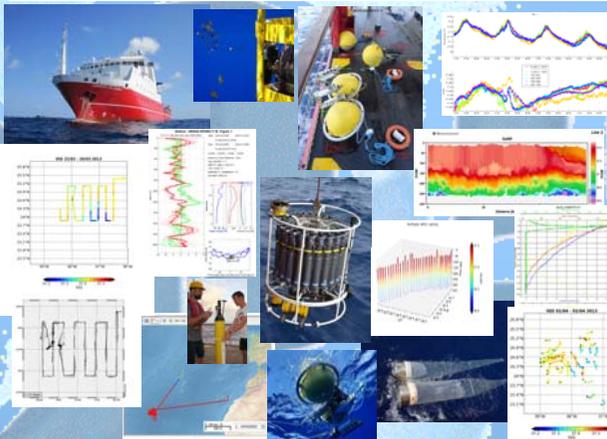
2. SMOS: Soil Moisture and Ocean Salinity

SMOS, launched on November 2009, was the first satellite mission addressing sea surface salinity (SSS) measurements from space. Its unique payload is MIRAS (Microwave Imaging Radiometer using Aperture Synthesis), a two-dimensional interferometer designed by the European Space Agency (ESA) and operating at the microwave L-band. The SMOS Barcelona Expert Centre (SMOS-BEC) serves operationally different kinds of gridded salinity maps and related products to the international research community <http://cp34-bec.cmima.csic.es/>

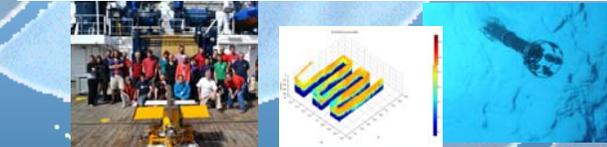


3. SPURS-MIDAS cruise, spring 2013

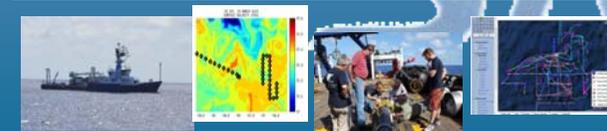
As contribution to SPURS, a cruise on board the Spanish R/V Sarmiento de Gamboa took place on March-April 2013. Scientists from Spain, Ireland, France and the US sampled intensively the mesoscale and submesoscale structures in the SPURS area surface layer, and deployed operational and experimental drifters and profilers to track its temporal evolution and near-surface vertical gradients.



Some SPURS-MIDAS results are presented at OSM 2014 by Busecke et al. (Evidence for the origin of the subsurface salinity maximum in the subtropical North Atlantic, session 073, 27 Feb) and ten Doeschate et al. (Upper ocean variability of temperature, salinity and dissipation during SPURS, poster 1691)



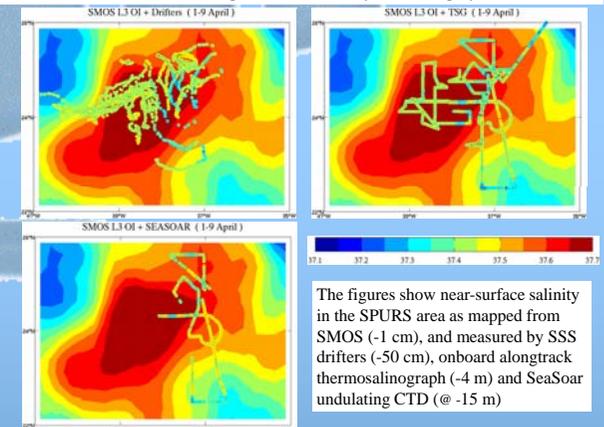
The cruise included a joint workplan and coordinated sampling with the US R/V Endeavor, and contribution from SPURS teams on land in real time data and analysis exchange (see below a SSS simulation by ROMS/JPL and the track of both vessels on 23 March).



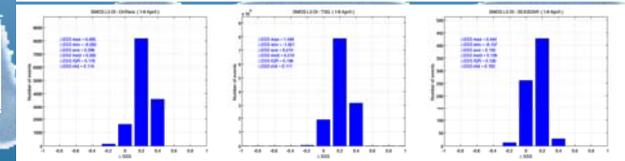
4. SMOS SSS maps compared to in situ data

The SPURS region is expected to be adequate for satellite SSS (SMOS and Aquarius) products validation. It displays the highest salinity values in the open ocean and is subject to moderate variability.

9-days 0.25° optimally interpolated (OI) SSS maps are SMOS-BEC Level 3 products designed to ensure noise reduction, full coverage and enough resolution for large scale ocean studies. We compare a SMOS-BEC map from 1-9 April to different in situ salinity data sets collected during SPURS-MIDAS. The period was chosen near to the end of the cruise to include a complete surface salinity drifters deployment.



The histograms below summarize the statistics of the pixel-point comparison between SMOS SSS and the three in situ data sets. In spite of the different measurement depths within the surface layer, SMOS salinity determinations have in all cases a bias of 0.1-0.2 and a std of 0.1 wrt in situ data. Taking into account that bias removal is an issue still being under improvement as part of the complex SMOS interferometric data processing, the present level of accuracy reached by SSS satellite observations in the SPURS area can be considered as satisfactory. SMOS SSS objective is to deliver monthly salinity maps with 100 km spatial resolution and 0.1 psu uncertainty.



Acknowledgements

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