



Sea surface salinity as measured by SMOS and by surface autonomous drifters

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The ESA/SMOS (European Space Agency/Soil Moisture and Ocean Salinity) satellite mission provides new measurements of Sea Surface Salinity (SSS) using L-band radiometry. At that frequency, the skin depth is 1 centimeter while most in situ measurements used for the calibration and validation of SMOS measurements are taken at 5 m depth or deeper. A preliminary study based on ARGO vertical profiles (Hénocq et al., JAOT, 2009) has evidenced that vertical salinity differences between 1m and 10m depth higher than 0.1 pss-78 are observed in the 3 oceans, mainly between 0° and 15°N, coinciding with the average position of the InterTropical Convergence Zones characterized by high precipitation rates. Collocations with satellite rain measurement has indicated a correlation between rain history, wind speed and vertical salinity gradients.

In order to better document the variability of the SSS in the top 50cm of the sea surface, the Metocean and the Pacific Gyre companies have instrumented SVP drifters with sensors measuring conductivity at 30-50cm depth. In addition, new light floats named SURPLAS have been built at LOCEAN laboratory to measure conductivity at 15cm depth.

Since January 2010, simultaneous to SMOS, 33 SVP drifters and 9 SURPLAS floats have been deployed by us in the North Atlantic, in the Bay of Biscay, in the tropical Atlantic and in the western tropical Pacific Ocean. Altogether, they recorded measurements during 4800 days. SURPLAS floats have been tied to SVP drifters providing SSS and SST measurements at several depths.

In this poster, we will review the status of the drifter measurements in 2010 and we will analyse the SSS variability observed by the drifters and by SMOS. Regional statistics of the differences between SMOS SSS and surface floats SSS will be compared with the ones between SMOS and ARGO SSS measured at typically 5m depth in order to detect possible influence of the depth of the in situ measurements on the comparisons.