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Validating SMOS ocean salinity using in situ and operational ocean model data in the Tropical Atlantic

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We report on validation studies of SMOS sea surface salinity (SSS) in the Atlantic in relation to the cal/val of SMOS. First order validation of SMOS SSS is performed at Level 2 and targets large surface salinity signatures in the Atlantic such as the meridional gradient of SSS, the SSS maximum in the Atlantic subtropical gyres and freshwater plumes from large rivers (e.g. Amazon). More precise validation of the SMOS SSS at the 0.1 psu level specified by GODAE requires the development of Level 3 monthly SSS gridded products from SMOS and corresponding in situ data.

We first present comparisons of in situ SSS from ARGO and PIRATA in the Tropical Atlantic, showing good consistency between the two data sources. The important relation between SSS, precipitation and evaporation is tentatively explored but made difficult by the dearth of in situ SSS data close to the surface. Recent results are presented from a trans-oceanic hydrographic cruise in the tropical Atlantic during the SMOS commissioning phase in January-February 2010. This shows good agreement between Argo and the ship-based SSS measurements, and with operational ocean model output from the UK Met Office FOAM system. Finally, a brief account is provided on recent work concerned with the development and testing of experimental 'lab-on-a-chip' conductivity-temperature (CT) microsensors to measure SSS close to the air-sea interface, and provisional plans for further deployments linked to the launch of Aquarius in 2011.