



Examination and comparison of SMOS and MyOcean global salinity data

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The recent availability of satellite remote sensing data of ocean salinity from SMOS, has promoted the oceanographic exploitation of these results and their comparison with other available ocean salinity databases, in order to determine the validity and accuracy of the SMOS measurements. Here, we examine monthly global SMOS salinity data for the years 2010 and 2011, and compare them with monthly global data from the project MyOcean during the above timeframe. The MyOcean project aims to deliver and operate a rigorous, robust and sustainable Ocean Monitoring and Forecasting system of the GMES Marine Service (OMF/GMS) to users for all marine applications. SMOS salinity data were obtained from the CP34 SMOS Barcelona Expert Centre (SMOS-BEC) site. Ten-day average satellite ocean salinity reprocessed data were obtained for 2010 and 2011, at 1 degree resolution from the ascending orbit, and averaged into monthly mean values. MyOcean global salinity data were obtained from the L4 reprocessing for 2010 and 2011, at 1/3 degree resolution. These data were then interpolated to 1x1 degree resolution and compared with the SMOS global monthly salinity data. Over the examined months, the SMOS satellite underestimates global salinity values relative to MyOcean, except for three occasions. In January 2010, SMOS overestimates salinity values (+0.112 psu), while for April 2010 (+0.02 psu) as well as for April 2011 (-0.017 psu) the SMOS satellite is recording similar salinity values as the MyOcean data. During September for both years, the highest discrepancy is observed between the two datasets, with the SMOS satellite recording salinities much lower than the MyOcean data (0.43 psu and 0.516 psu difference respectively). On a monthly basis, SMOS satellite records higher than MyOcean salinity values in the Gulf of Mexico, the delta of the Amazon River, off Rio Grande Brazil, as well as off the Antarctic coast (an overestimation possibly associated with the Antarctic Coastal Current). Lower salinity values were recorded by SMOS, relative to MyOcean, closer to the Antarctic continent, and along the western boundaries of the Australian, African, and North and South American continents. The results of this project provide insights not only for the accuracy and validity of the SMOS ocean salinity product, but also their possible offset from MyOcean data and their pattern detection ability. Further, the observed differences between SMOS and MyOcean salinity data, may provide insight to a changing world, as it may show evidence of climate change as seen by the two data sources.