Corresponding Author: Oleg Melnichenko
oleg@esr.org
Career Status: None of the above
Affiliation/Country: Earth & Space Research, Seattle, WA, USA

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Topic: Critical drivers for ocean salinity science and applications and the future need for high-resolution technologies

Title: Recent Updates to the Multi-Mission Sea Surface Salinity Optimum Interpolation (OISSS) Analysis Version 3.0

Abstract: This presentation provides an update on version 3.0 of the Multi-Mission Sea Surface Salinity Optimum Interpolation (OISSS) analysis. OISSS applies Optimum Interpolation (OI) to integrate SSS observations from the Aquarius/SAC-D, SMAP and SMOS satellite missions, producing weekly SSS fields at 0.25° x 0.25° spatial resolution from 2011 to the present. Compared to the previous release (version 2.0), OISSS v3.0 incorporates SMOS observations (Level 2 OS version 700) across the entire period of the dataset (i.e. not only to fill gaps in SMAP observations as in OISSS v2.0) and all observations are processed at full spatial resolution. The new version implements improved bias-correction algorithms and refined estimates of the signal and error statistics. These developments enhance the effective temporal and spatial resolution of the dataset and improve its consistency across the range of temporal and spatial scales resolved by satellite observations. The improvements are demonstrated through several regional case studies, including river plume variability (e.g., the Mississippi and Amazon), Gulf Stream rings in the Slope Sea, Tropical Instability Waves in the equatorial Pacific, and mesoscale eddies in the subtropical South Indian Ocean. These examples are also used to illustrate the need for higher resolution and more accurate satellite observations.

Author 2: Peter Hacker
Hawaii Institute of Geophysics and Planetology, University of Hawaii, Honolulu, HI, USA

Author 3: Thomas Meissner
Remote Sensing Systems, Santa Rosa, CA, USA

Author 4: Frank Wentz
Remote Sensing Systems, Santa Rosa, CA, USA

Author 5: Julian Schanze
Earth & Space Research, Seattle, WA, USA

Author 6: Jesse Anderson
Earth & Space Research, Seattle, WA, USA