Thursday, October 11
Poster Session 4
10:30–12:00

Poster 100

IMPROVING SATELLITE GLOBAL CHLOROPHYLL-A DATA PRODUCTS THROUGH ALGORITHM REFINEMENT AND DATA RECOVERY

A recently developed algorithm to estimate surface ocean chlorophyll-a concentrations (Chl in mg m^{-3}), namely the ocean color index (OCI) algorithm, has been adopted by the U.S. NASA to apply to all satellite ocean color sensors to produce global Chl maps. The algorithm is a hybrid between a band-difference color index (CI) algorithm for low-Chl waters and the traditional band-ratio algorithms (OCx) for higher-Chl waters. In this study, the OCI algorithm is revisited for its algorithm coefficients and for its algorithm transition between CI and OCx using a merged dataset of HPLC and fluorometric Chl. Results suggest that the new OCI algorithm (OCI2) leads to lower Chl estimates than the original OCI for Chl < 0.05 mg m^{-3} but smoother algorithm transition for Chl between 0.25 and 0.40 mg m^{-3}. Evaluation of Chl data products from SeaWiFS and MODISA using in situ data suggests similar accuracy between OCI2 and the original OCI. Similar to the original OCI, the OCI2 algorithm can provide significantly improved image quality as well as improved cross-sensor consistency between SeaWiFS, MODISA, and VIIRS over the OCx algorithms for oligotrphic oceans. Furthermore, data statistics showed that on average, valid Chl retrievals over the global oceans can be increased by 40% (i.e., from the original 5% to the current 7%) with the OCI2 algorithm without sacrificing data quality. Such an increase will not only improve the spatial/temporal coverage but also reduce uncertainties in Chl retrievals.

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