Improvements of satellite sun-glint algorithm using concomitant microwave scatterometer-derived wind data

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The residual effect of sun-glint to the measurement of ocean color sensors are often found, although scanner tilt mechanism enables the instrument to avoid sun glint to some extent. The tendency of over-estimation of sun-glint reflectance was found in GLI satellite ocean color data, after applying the traditional sun-glint model of Cox and Munk together with objective analysis wind data. ADEOS-II has provided a good opportunity to improve the glint model, with the help of the simultaneous wind measurement achieved by SeaWinds. Based on the measurement of GLI and SeaWinds, the Cox and Munkąŕs model was re-evaluated, a new relationship between the mean square slope and wind speed was obtained. The new model was consistent with the existed models under different conditions. Weak wind-speed correction for SeaWinds data was carried out before applied to the GLI sun-glint processing, in an attempt to get rid of the discontinuity in weak wind area or coastal area. Some other improvements concern to the properties of GLI sensor and algorithm of atmospheric correction are also introduced. The new algorithm largely improves the availability of pixels and the precision of sun-glint correction from the evaluation of L2 and L3 data products.
Keywords: sun-glint; GLI; Cox and Munk model; Atmospheric correction method;