

# OCEAN OPTICS XXIV

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Poster Session 4

10:30–12:00

## Poster 255

### BIASED SATELLITE REMOTE SENSING REFLECTANCE IN GLOBAL OCEANS

It is critical to assure the data quality of remote sensing reflectance (Rrs) from ocean color satellites for study of ocean biology, especially the long-term ocean climate. Level-3 satellite ocean color products are spatially binned high-quality data records and widely used. In this study, we conducted an independent assessment of SeaWiFS and MODISA Level-3 daily Rrs products in global oceans. An objective quality assurance (QA) model was adopted to quantify the Rrs data quality. It is found that low-quality data are persistently present in some open oceans and marginal seas, including the North Atlantic Gyre (NAG) and Mediterranean Sea (MED). It is also revealed the degrading trends towards the end of missions as well as seasonal variability. The analysis suggests that the Rrs measurements in NAG and MED are subjected to systematic biases. For instance, MODISA Rrs band ratios,  $Rrs(412)/Rrs(443)$  and  $Rrs(443)/Rrs(547)$ , are misrepresented by -5% and +10%, respectively, in NAG. In the Mediterranean, these ratios are also biased by about -10% and +20%, respectively. We argue that these residual biases with satellite Rrs products are likely a consequence of strongly absorbing aerosols present in the atmosphere. We further assessed the impacts of these residual biases on the estimation of chlorophyll a concentration and bio-optical properties (absorption and backscattering coefficients and diffuse attenuation coefficient). In particular, we show that these biases have impacted the long-term ocean chlorophyll trends in open oceans. Necessity is suggested for further calibration and quality assurance of the satellite Rrs data for ocean climate study.

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