

Thursday, October 11

Poster Session 4

10:30–12:00

Poster 223

QUALITY OF BIO-OPTICAL PRODUCTS FROM OCEAN AND LAND COLOUR INSTRUMENT (OLCI) IMAGERY ON BOARD SENTINEL-3 THE EAST COAST OF AUSTRALIA

OLCI Imagery on board Sentinel-3 was launched in 2016 for continuous water quality monitoring. The reprocessed OLCI level-2 full-resolution products for open-ocean waters have been validated against in situ data from the east coast of Australia, collected in September 2017. The study region is strongly influenced by the Eastern Australian Current which forms eddies that stimulate phytoplankton growth and enhance primary production. Although oligotrophic open-ocean waters are usually dominated by small-sized phytoplankton, mesoscale features such as eddies can generate seasonally favourable conditions for the growth of large phytoplankton cells. We tested the performance of OLCI remote-sensing reflectance, absorption of coloured detrital matter (CDM), and concentration of chlorophyll a and total suspended matter (TSM). The OLCI water-leaving reflectance gave good agreement with in situ reflectance in cyclonic eddies. In anticyclonic eddies, the reflectance was overestimated, mostly in the blue part of the spectrum. The in situ values of chl-a were on average 2 times higher than OLCI values. Results showed that the satellite chl-a estimation was somewhat effective ($R^2=0.53$, slope=1.37, and SE=0.3) in the study area. However, a systematic underestimation of higher chl-a concentrations was found in the region of cyclonic eddies characterised by increased primary production and domination of large-sized phytoplankton. The large cells, that have a greater package effect, are less visible to the bands used in the chlorophyll algorithm. Observed CDM absorption and TSM were very low (mean values of 0.015m⁻¹, and 0.27g·m⁻³ respectively) and poorly remotely estimated ($R^2=0.32$, slope=2.2, SE=0.6 and $R^2=0.14$, slope=2.7, SE=0.9, respectively).

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