

Monday, October 8

Poster Session 1

16:00–18:00

Poster 161

BIO-OPTICAL PROPERTIES OF SURFACE WATERS ON THE EAST GREENLAND SHELF AND IN FRAM STRAIT (ARCTIC OCEAN)

Almost 80% of water exchange between Arctic and global ocean occurs in the Fram Strait, where two optically contrasting water masses are encountered: the West Spitsbergen Current transports warm and saline Atlantic Water (AW) northward, while Polar Water (PW) is carried southward by East Greenland Current. Bio-optical properties of distinct water masses in surface ocean were characterized in study area along a section along 79°N, between Spitsbergen and Greenland, on the east Greenland shelf, and in the Dømmphna Sund in late summer of 2015 and 2016. We observed highest average values of particulate, $ap(l)$ and phytoplankton pigment absorption, $aph(l)$, coefficient at 443 and 670 nm in AW. The average values of detrital absorption coefficient, $ad(l)$, at both selected wavelengths was highest in surface layer affected by sea-ice melt water. On average, the $ap(l)$, $aph(l)$, and $ad(l)$ values were lowest in PW. Phytoplankton biomass was relatively low at the end of summer; and observed average chlorophyll a, Chla, concentration was 1.02, 0.65 and 0.35 $mg \cdot m^{-3}$, in AW, PW and sea-ice melt water, respectively. We derived bio-optical relationships between Chla and $ap(l)$, $aph(l)$. The most significant correlation between, Chla and $aph(443)$, $aph(670)$ was observed in AW and melt water while in PW this relationship was less significant. We have also observed weaker (but statistically significant) correlation between $ad(443)$ and $ad(670)$ in melt water. Derived empirical relationship can be applied as for the efficient method for study phytoplankton dynamics and for improvement of ocean color remote sensing algorithms in the region.

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