

OCEAN OPTICS XXIV

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Wednesday, October 10

Poster Session 3

16:00–18:00

Poster 127

ABSORPTION BUDGET OF ATLANTIC AND POLAR WATERS IN FRAM STRAIT (ARCTIC OCEAN) IN LATE SUMMER.

Fram Strait is the main gateway for water masses exchange between North Atlantic and the Arctic Ocean. The West Spitsbergen Current transports warm and saline Atlantic Water (AW) northward, while Polar Water (PW) is carried southward by East Greenland Current. Here, we examine the absorption budget across optically contrasting surface waters in the Fram Strait. The contribution of main absorbing constituents: CDOM, phytoplankton pigments and detrital material, into a total non-water absorption, $a_{tot-w(l)}$, was studied during two surveys in August/September 2014 and 2015. In AW CDOM absorption contributed to $a_{tot-w(l)}$ from 77% at 350 nm to 53% at 412 nm. Contribution of CDOM decreased toward longer wavelengths being only 5% at 670 nm. Phytoplankton pigments absorption contributed from 43% at 443 nm to 64% at 670 nm to $a_{tot-w(l)}$. The fraction of detrital absorption to $a_{tot-w(l)}$ in AW varied from nearly 17% at 350 nm to 30% at 670 nm. In contrast, CDOM dominated the absorption budget in PW; its contribution to the $a_{tot-w(l)}$ varied from ca. 95% at 350 nm to 77% at 433 nm, and was still significant (26%) at 670 m. The contribution of phytoplankton pigments to $a_{tot-w(l)}$ was very low in PW except at 670 nm, where it reached 44%. The contribution of detrital absorption to $a_{tot-w(l)}$ in PW was lower than in AW. Sea-ice melt water dilution did not change significantly the proportions between absorbing constituents compared to those observed in PW.

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