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Bio-optical properties of Porsnagerfjorden (Norway) waters based on data collected in 2014 and 2015

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Oceanographic data collected in the Arctic are valuable in view of the role of this region in the studies on global climate change and the fact that historically the number of in situ measurements is relatively low. Porsangerfjorden, Norway, is an example of oceanic basin with case 2 water according to the optical classification. Optical data from coastal seas are difficult in interpretation because the concentrations of optically important components can be high, variable, and not covarying with each other. Porsanger Fjord can be divided into three basins: inner, middle and outer, where physical and bio-optical properties of water masses differ. We collected optical data and water samples for phytoplankton pigments, dissolved organic matter, particulate (POC) and dissolved (DOC) organic carbon, and particulate inorganic carbon (PIC) during our two summer expeditions in 2014 and 2015. In this presentation we focus on data collected with WETLabs' ac-9 and ac-s spectrophotometers and ECO-Triplet and ECO-Triplet-w fluorometers. Concurrently with in situ optical measurements water samples were collected in situ and soon afterwards they were filtered in the laboratory at the station, stored and transported for further processing in Poland. Our analysis includes 146 of in situ measurements and discrete water samples: 62 of POC, 52 of PIC, 33 of DOC, 68 of dissolved organic matter and 89 of phytoplankton pigments. During our analysis we compare chlorophyll (Chl_a), dissolved organic matter (CDOM) and carbon concentrations with in situ collected inherent optical properties of sea water to find empirical proxies allowing to estimate various water component concentrations from optical data. Application of these proxies to available bio-optical data allowed us to derive spatial distribution of these water constituents and their variability.
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