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**Phytoplankton bloom and its bio-optical characteristics around Ny-Alesund of Svalbard, Atlantic Arctic Sea**

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Arctic and Antarctic regions are issued due to global warming, the warming related to climate change is currently observed by remote sensing which have gave us almost recent global information of the change. Change of marine ecosystem can be inferred from ocean color remote sensing. However, optical properties in high latitude are different from that in mid latitude like temperate water region. Hence, to develop the accuracy of ocean color remote sensing in Arctic Sea, we have assessed ocean around Ny-Alesund, Svalbard sampling bio-optics and phytoplankton since 2006.

Chlorophyll-a retrieved from MODIS/AQUA is compared with sampled chlorophyll-a around Ny-Alesund. There are bits of under- and over- estimating according to the mass of chlorophyll-a, such as  $1 \text{ mg m}^{-3}$ . And water-leaving radiances retrieved from MODIS/AQUA are underestimated by 35% according to in-situ water-leaving radiances. Hence using sampled data of up-to-now, a new experimental algorithm of chlorophyll-a is developed. However, our sampling area did not covered off shore of Svalbard, there is still uncertainty to retrieve chlorophyll-a concentration of off sea

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