

OCEAN OPTICS XXIV

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<https://oceanopticsconference.org>

Monday, October 8

Poster Session 1

16:00–18:00

Poster 137

IMPACT OF DIFFERENT ENVIRONMENTAL COMPONENTS ON LIGHT AVAILABILITY FOR PRIMARY PRODUCERS AT THE GREEN EDGE ICE CAMP

Arctic marine ecosystems are fueled by the production of algal biomass. While the growth of phytoplankton (single-celled algae suspended in seawater) was believed to be largely limited to the period when Arctic Ocean seasonal ice cover was decreasing (Jul–Oct), massive blooms of phytoplankton occurring under sea ice in the spring were recently documented. It is currently impossible to determine the extent of this phenomenon and its contribution, perhaps major, to annual marine primary production, as the mechanisms controlling the dynamics of phytoplankton blooms under sea ice are poorly understood. The most recent observations to understand this phenomenon suggest that phytoplankton growth under sea ice is largely conditioned by access to underwater light, which is determined by the presence of snow, sea ice, leads and melt ponds. However, the impact of clouds on light and, in turn, on the spring bloom dynamics of phytoplankton, has never been closely examined. Yet, the omnipresence of clouds in the Arctic strongly constrains light. Many environmental components were measured at a coastal Baffin Bay location during the Green Edge 2015 and 2016 field campaign. Using in situ and satellite observations, we evaluate how the snow, sea ice, melt ponds, and clouds impact light availability for phytoplankton at a very local scale for the spring and summer seasons.

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