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DETERMINATION OF PHOTOSYNTHETIC PIGMENT PRODUCTION RATE AND DISSOLVED FREE AMINO ACID FROM MELTING PONDS ON ARCTIC SEA ICE

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It is generally known that the Arctic Ocean may significantly affect and be affected by global climate changes. Melt ponds, a common feature of summer Arctic sea ice, of sea ice floes could be an important habitat for phytoplankton and ice algae (Lee et al., 2011). To determine the spatial variation of phytoplankton pigments and Dissolved Free Amino Acids (DFAA) in the various melt ponds, intensive sampling were conducted at two sea ice stations in the western Chukchi sea using the *IBRV Araon* from July 31st to August 25th in 2014. The Melt pond stations were determined based on salinity gradient.

Universally, all phytoplankton contains chlorophyll a, and the concentration of chlorophyll a in water masses directly indicate phytoplankton biomass. The chlorophyll a concentration ranged from $0.02\mu\text{g L}^{-1}$ to $0.7\mu\text{g L}^{-1}$ with a mean of $0.14\mu\text{g L}^{-1}$. In spite of this very variable environment, chlorophyll a fall within the range of values reported in previous studies in sea ice floe of the Chukchi sea.

In addition to phytoplankton contain different accessory pigments, for example other forms of chlorophyll, and carotenoids. High performance liquid chromatography (HPLC) is used to identify the different photosynthetic pigments present in organisms as taxonomic markers. Pigment analysis will allow us to understand the phytoplankton community structure and dominant species distribution in this area. To characterize the DFAA pool composition from melt ponds on Arctic sea ice, we also investigated individual production rate of pigment by ^{13}C tracer experiment, which is a useful tool to estimate the contribution of each phytoplankton classes for total primary productivity. This study will provide us important information that a small fraction of the largely uncharacterized oceanic DOM pool is compound important of Dissolved free amino acids(DFAA).

¹ Lee, S.H, McRoy, C.P., Joo, H.M., Gradinger, R., Cui, X., Yun, M.S., Chung, K.H, Kang, S.H., Kang, C.K., Choy, E.J., Son, S.H., Carmark, E., Whitledge, T.E., 2011. Holes in progressively thinning arctic sea ice lead to new ice algae habitat. *Oceanography* 24, 302-308.