

## Fixed-point observation of diatom biocoenosis and water mass condition in the northern Chukchi Sea during September 2013

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In order to estimate the relationship between diatom flora and water mass condition in the northern Chukchi Sea, fixed-point ocean observation was conducted at Station 41 (72.45N, 168.24W, 56 m water depth) by R/V Mirai (Cruise MR13-06) in 10-25 September 2013. The optical equipment named "Multi-wave length excitation fluorescence photometer (Multi-Exciter)" was applied with CTD observation for the estimation of chlorophyll concentration in each major phytoplankton groups (diatom, green algae, and blue algae). Chlorophyll concentration gradually increased with the weakening of summer stratification by intensified sea-surface wind. The Multi-Exciter showed the clear increase of diatom in upper water column, which were also suggested by size-fractionated analysis of chlorophyll concentration and microscopic observation by scanning electron microscope and light microscope. However, the increase of diatom cell abundance was minor compared to the increase of total chlorophyll concentration. The dominance of large diatom genus *Proboscia* and the increased chlorophyll concentration in one diatom cell were the main causes on the increase of total chlorophyll concentration. The 3-6 fold increase of chlorophyll concentration within 6 hours was rarely observed around chlorophyll maximum layer during the middle observation period, which is probably explained by not only improved habitat environment for diatom but also movement of water masses such as lateral input of high chlorophyll waters.

Keywords: Arctic Ocean, Chukchi Sea, diatom, excitation fluorescence, chlorophyll concentration