# Change on UV-absorbing compounds during phytoplankton bloom in the Amundsen Sea, Antarctica

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To understand physiological response of phytoplankton communities under various environments in the Amundsen Sea, we measured the particulate organic carbon (POC) and mycosporine-like amino acids (MAAs; UV-absorbing compounds) at 16 stations (including re-visit 3 stations) on the Amundsen polynya and marginal sea ice zone (MIZ) using RV-ARAON from Jan. 1 to Jan. 15, 2014. *Phaeocystis* sp. dominated in Amundsen polynya center region, but diatom relatively dominated in MIZ. Carbon uptake rate showed the different values between polynya center and MIZ. The average carbon uptake rate ranged between 50.5 (±2.1) μgC L-1d-1 and 56.2 (±13.7) μgC L-1d-1 at Amundsen polynya center (st. 14) and MIZ station (st. 4), respectively. Because phytoplankton community (Phaeocystis sp.) have changed their metabolisms during phytoplankton bloom, the carbon uptake rate changed the value with a mean 60.8 (±5.5) μgC L-1d-1 at polynya center by re-visit to station 4 after 12 days. POC concentration showed the maximum values at surface chlorophyll maximum layer (SCM) with a mean 47.3 (±5.3) μM on the Amundsen polynya center which were occured the phytoplankton bloom. However, low values (mean= 14 (±11.2) μM) of POC concentration was shown at MIZ stations which dominated the diatom (including some *Phaeocystis* sp.). The lower MAAs:chla ratio were found in the polynya center (11.4) but the higher were observed in the MIZ (41.9), respectively. The high MAAs:chla ratio of phytoplankton community in the MIZ have been stimulated by light availability and osmotic pressure due to the surrounding sea ice melt rather than polynya center where has more stabilized physical condition. After the peak season of phytoplankton bloom, the MAAs:chla ratio was increased upto 36.9 in polynya center which was dominated by phaeocystis sp. Therefore, phytoplankton bloom stage in Amundsen Sea seems to be influenced by physiological metabolisms change of phytoplankton community like their carbon uptake rates and secondary compounds synthesis in the phytoplankton cells.