

Phytoplankton bloom in iron limitation environment of the Amundsen polynya, Southern Ocean

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We have conducted three times intensive Antarctic cruises in the Amundsen Sea (west Antarctic) in early (2010/2011 and 2013/2014) and late (2011/2012) austral summertime. These cruises were conducted as a Korea Polar Research Institute (KOPRI) Amundsen project. Amundsen polynya is one of the most productive Antarctic coastal polynya, and high chlorophylls (observed and satellite induced) were concentrated in polynya center rather than in the edge of polynya both in early and late summer. To examine phytoplankton dynamics in severely iron limited environment, the phytoplankton physiological parameters were measured by Fluorescence Induction and Relaxation (FIRE) system. In addition, we carried out iron assimilation experiments on board to demonstrate that iron enrichment responses of natural phytoplankton assemblages. Possible implications of iron limitation and controlling factors of phytoplankton growth in this polynya system will be discussed.