

## B05-O10

### OCEAN SURFACE TEMPERATURE TREND AND ITS IMPACTS ON PHYTOPLANKTON BIOMASS IN THE ARCTIC AND SUBARCTIC REGIONS

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It is expected that besides highly vulnerable to ocean acidification, the Arctic and its subarctic regions (hereafter AnSaR) will experience the most dramatic changes due to more rapid climate warming than any other biomes on earth (Wassmann, 2011). Utilizing satellite-based observations within the period from 1997 to 2014, this work was carried out to elucidate the followings; 1) whether global warming is linearly translated into warming trend of sea surface temperature (SST) in the AnSaR; and 2) possible impacts of SST trends, whether warming and cooling (if any) on the AnSaR phytoplankton biomass indexed by satellite-retrieved chlorophyll-a (CHL).

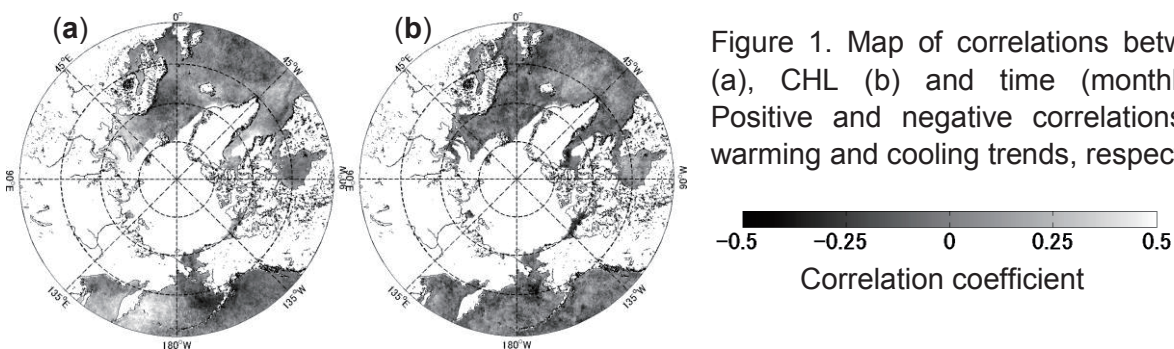


Figure 1. Map of correlations between SST (a), CHL (b) and time (monthly basis). Positive and negative correlations indicate warming and cooling trends, respectively.

Figure 1(a) showed that, regardless of continued global warming, both warming (e.g., in western Bering Sea, Barents Sea) and cooling SSTs (e.g., eastern Bering Sea, Norwegian Sea) were observed. Warming (cooling) SST was however not always followed by increasing (decreasing) trend of CHL (Figure 1(b)). Spatial variation of correlation between SST and CHL will be investigated to delineate the areas where CHL trends are likely due to direct physiological effect of temperature dependent phytoplankton growth (e.g., Eppley, 1972; Behrenfeld and Falkowski, 1997) or due to other climate change-related stressors.