

Seasonal sea ice forecast and surface and sub-surface water mass properties around Chukchi Plateau: A case study focusing on the summer 2016 to 2018 using GloSea5

Byoung Woong An¹, Kyoung-Ho Cho², Hyeong-Jun Jo¹, Pil-Hun Chang¹, Jo Han Lee¹ and Yoon Jae Kim¹

¹National Institute of Meteorological Sciences

²Korea Polar Research Institute

Accurate prediction of the Arctic summer sea ice remains crucial in most numerical models. It is because small changes within the atmosphere or the ocean can cause major changes in the areal extent and thickness of the sea ice. Such changes, in turn, will have pronounced effects on the ocean and atmosphere through modification of the albedo, the ocean-atmosphere heat and momentum exchanges, and the oceanic salt flux. It has been conducting seasonal forecasts with the coupled global seasonal forecast system named GloSea5 operated by National Institute of Meteorological Sciences (NIMS). Here we verify the sea ice forecast skills and assess water column properties around the Chukchi Plateau. To investigate the temporal and spatial accuracy of the seasonal prediction of the Arctic sea ice extent, we use CTD data measured in August from three consecutive years starting 2016 carried out by Korea Polar Research Institute (KOPRI). It shows that the stratification of GloSea5 is not well suited for the seasonal forecast, in particular, the separation from a cold-fresh surface layer and a warm-salty intermediate layer is weak. We conclude that the seasonal sea ice forecast accuracy can be improved by more accurate representation of the spatio-temporal distribution of water masses.