現業海氷予報システム（TOPAZ4）における北極海の海氷予測精度
―2013 年 9 月に発達した高気圧の事例について

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Medium-range forecast skill of sea ice extent in the Arctic Ocean from TOPAZ4 : High pressure system event in September 2013

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Recently, under the significant decreasing trend in summertime sea ice area in the Arctic Ocean, medium-range forecast for sea ice extent in the Arctic Ocean is important issue for the Northern Sea Route. In this study, we evaluate the predictability of summertime sea ice extent within a week range, with TOPAZ4, which is a coupled ocean-sea ice data assimilation system developed at the Norwegian Meteorological Institute. For the extreme weather events in 19-21 September 2013 [Inoue et al. 2015], in which the strong winds associated with a high pressure system occurred in the East-Siberian Sea and sea ice drastically drifted to the onshore, the model successfully forecasted the sea ice drift and the resultant closing of the offshore shipping route at the stage of 2 days ahead. On the other hand, 9-day leading forecast did not predict the closing of the shipping route, implying that the skillful atmospheric forcing is crucial for the skillful prediction of sea ice movement in summer. In fact, the predicted direction of sea ice drift at the stage of 9 day ahead is opposite to the 2-day leading forecast. We also found that the skillfull medium-range prediciton in summertime sea ice extent is related to the initial condition for sea ice thickness, which is mainly determined by dynamical processes of sea ice in the preceding winter [Chevallier and Salas-Melia, 2012; Kimura et al., 2013]. In this presenation, we also show the sea ice prediction skill provided from operational climate forecast system such as NCEP-CFSR, and discuss the limitation of the usage for operational forecast data in the Northern Sea Route navigation.

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