



Contribution ID: 18

Type: **Poster presentation**

## Short-term sea ice forecast over the Arctic region during 2018 expedition of the Japanese research vessel MIRAI

To observe ocean and sea ice conditions in the Chukchi Sea of the Arctic Ocean, a Japanese research vessel (RV) MIRAI entered the Arctic water from 4 to 25 November 2018 through the Bearing Strait. The Arctic sea ice conditions can change over short timescales due to dynamics and thermodynamics. Leads may open and close in a very short time, and heavy pressure may build up in the compression of compact ice. These short timescale processes have a strong influence on shipping on the ice infested water. Therefore, precise ice distribution prediction in the short-term (10-days scale) is one of the key issues to realize safe and efficient navigation. A high-resolution (about 2.5 km) ice-ocean coupled model is developed for forecasting the short-term sea ice distribution in the Chukchi Sea. European Center for Medium-Range Weather Forecast atmospheric high-resolution 10-days forecasted forcing data is used for the sea ice prediction simulations. Since RV MIRAI navigates to avoid the sea ice as much as possible, a factor to score the forecast skill is considered to be ice edge error which is an averaged distance between forecasted and observed ice edges. The maximum forecasted ice edge error in the ice-ocean coupled model is 16.01 km in the Chukchi Sea with the threshold of 15% ice concentration for the ice edge. It can be said that the present model of 2.5 km grids satisfies the ship crew requirement of ice edge error for 10-days forecast.

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**Track Classification:** Workshop: Observational campaigns for better weather forecasts