SEA ICE OUTLOOK

2021 June Report

By ASIC, NIPR

Contributor

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Contributors

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Executive summary

Monthly mean ice extent in September will be about 4.187 million square kilometers. Our estimate is based on a statistical way using data from satellite microwave sensor. We used the ice movement from December to May. Predicted ice concentration map from July 1 to September 20 is available in our website: https://www.nipr.ac.jp/sea_ice/e/forecast/2021-07-06-1/

Type of Outlook method:

statistical

Dataset

Ice velocity: Daily sea-ice velocity of Kimura Dataset (Kimura et al., 2013), during December 1 and May 31 for all AMSR-E/AMSR2 years.

Ice concentration: 10km grid data distributed by Arctic Data archive System (https://ads.nipr.ac.jp)

Prediction of September pan-Arctic extent as monthly average in million square kilometers.

4.187 million square kilometers

Short explanation of Outlook method.

We predicted the Arctic sea-ice cover from coming July 1 to September 20, using the data from satellite microwave sensors, AMSR-E (2002/03-2010/11) and AMSR2 (2012/13-2020/21). The analysis method is based on our research (Kimura et al., 2013). First, we expect the ice thickness distribution on May 31 from redistribution (divergence/convergence) of sea ice during December and May, based on the daily ice velocity data. Then, we predict the summer ice area depending on the assumption that thick ice remains later and thin ice melts sooner than the average.

Pan-Arctic sea ice extent anomaly million square km.
-0.003 (4.187-4.190)

Reference

Kimura, N., A. Nishimura, Y. Tanaka and H. Yamaguchi, Influence of winter sea ice motion on summer ice cover in the Arctic, Polar Research, 32, 20193, 2013.

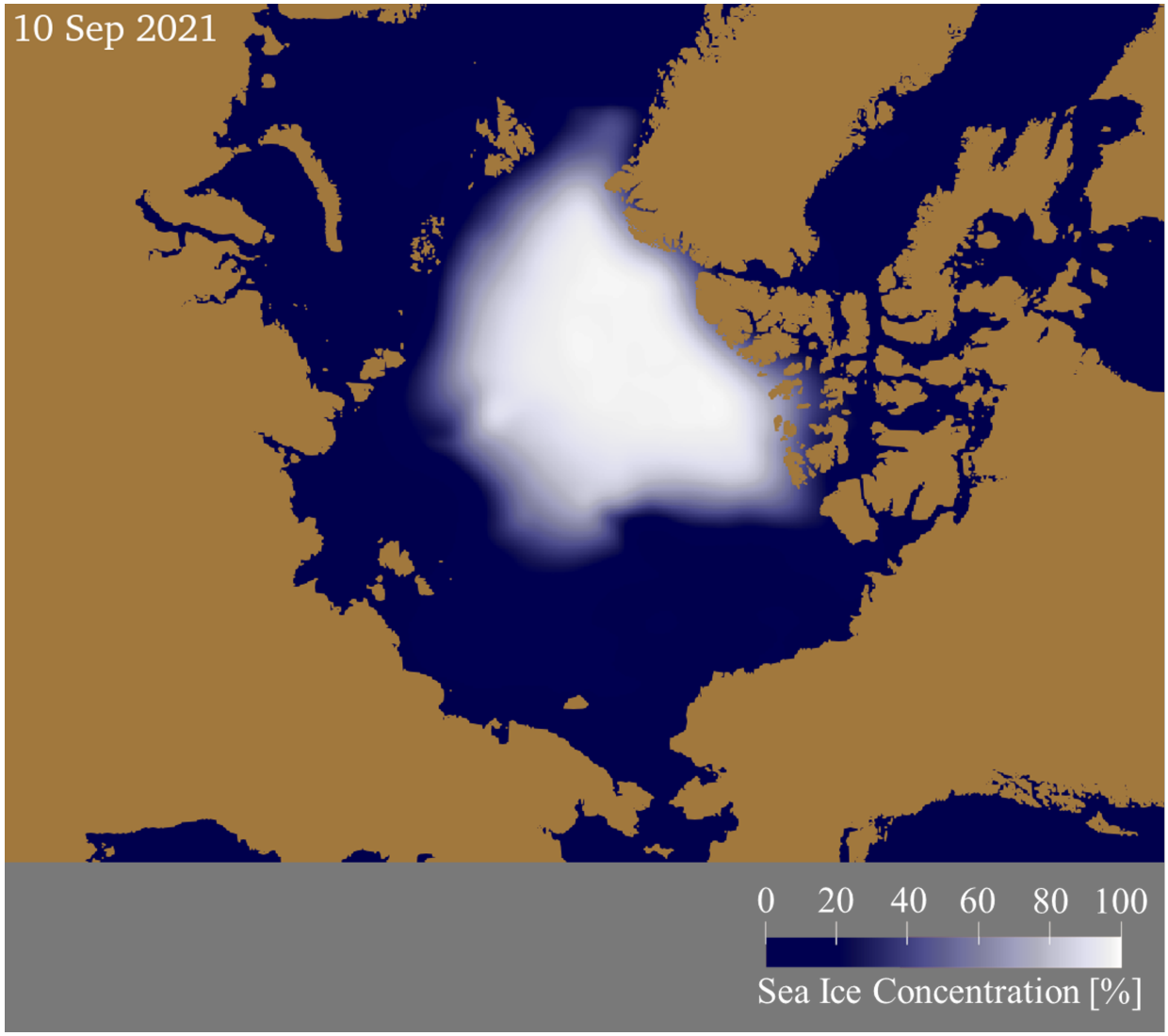

Fig: Predicted ice concentration on September 10, 2021.