

**SEA ICE PREDICTION NETWORK (SIPN)
Pan-Arctic Sea Ice Outlook Core Contributions**

by NIPR/UT kimura et al.

June 2015 Report

1. *Contributor Name(s)/Group

Label: NIPR/UT Kimura et al.

Contributors

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2. *"Executive summary" about your Outlook contribution (max 300 words)
Say in a few sentences what your Outlook contribution is and why. To the extent possible, use non-technical language.

The monthly mean ice extent in September will be about 4.58 million square kilometers. Our estimate is based on a statistical way using data from satellite microwave sensor. We used the ice thickness in December and ice movement from December to April. Predicted ice concentration map from July to September is available in our website: http://www.1.k.u-tokyo.ac.jp/YKWP/2015arctic_e.html

3. *Type of Outlook projection
dynamic model statistical heuristic mixed or other: (specify)

4. *September monthly average projection

4.58 million square kilometer

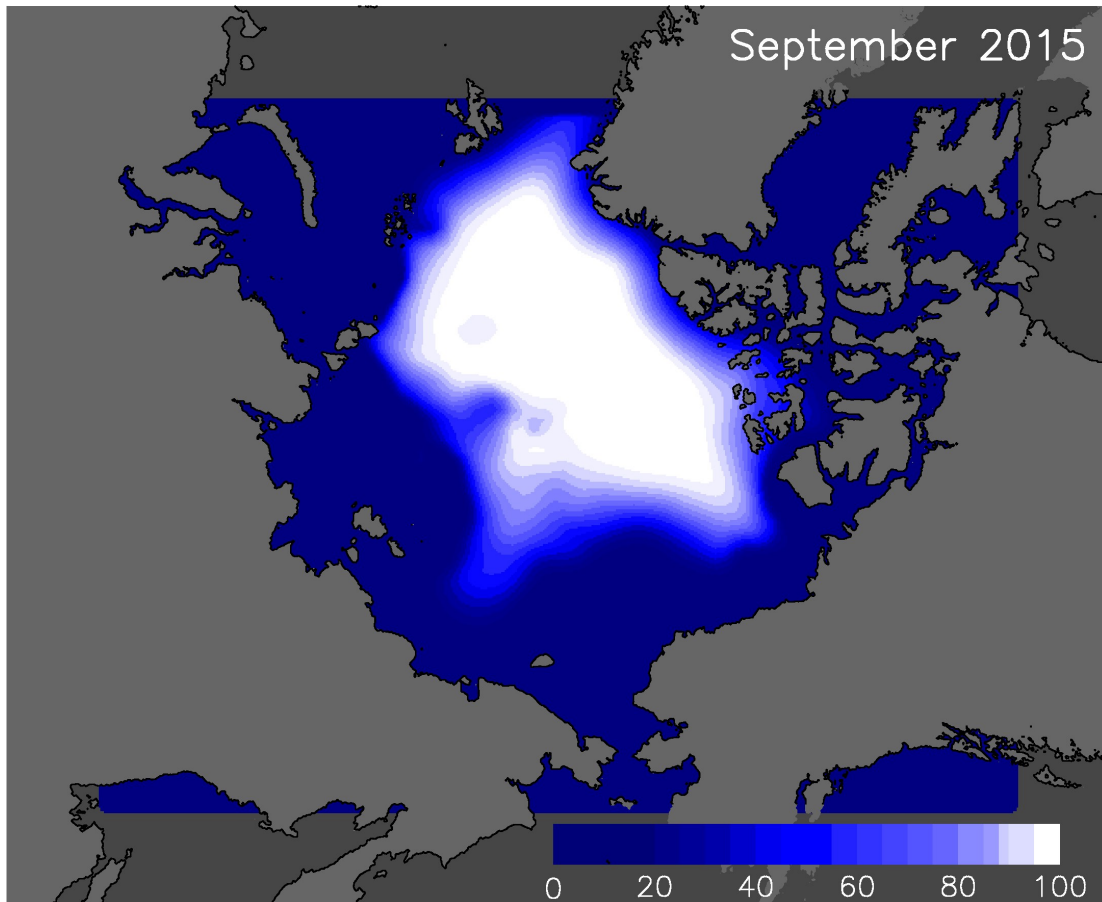


Fig: Predicted monthly mean ice concentration in September 2015.

5. *Short explanation of Outlook method (max 300 words)

We predicted the Arctic sea-ice cover from coming July 1 to September 30, using the data from satellite microwave sensors, AMSR-E (2002/03-2010/11) and AMSR2 (2012/13-2014/15). The analysis method is based on our recent research (Kimura et al., 2013). First, we expect the ice thickness distribution in spring from redistribution (divergence/convergence) of sea ice during winter through spring. Then, we predict the summer ice area depending on the assumption that thick ice remains later and thin ice melts sooner than the average.

For this analysis, we distributed particles homogeneously over the Arctic sea ice on December 1. We traced the trajectories of the particles to the end of April by using the satellite derived daily ice velocity. Based on the relationship between particle concentration on April 30 and ice concentration in summer, we predicted the summer sea ice cover of this year. We also take it into account that thickness of sea ice on the 1st of December calculated by the method of Krishfield et al. (2014) .

References

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.

Krishfield, R. A., Proshutinsky, A., Tateyama, K., Williams, W. J., Carmack, E. C., McLaughlin, F. A., and Timmermans, M. L., Deterioration of perennial sea ice in the Beaufort Gyre from 2003 to 2012 and its impact on the oceanic freshwater cycle, *J. Geophys. Res.*, 119, 1271-1305, doi:10.1002/2013JC008999, 2014.