

## A hemispheric extreme cold winter in 2017/18 controlled by the lowest extent of Chukchi sea-ice

\*Keisuke Ota<sup>1</sup>, Yoshihiro Tachibana<sup>1</sup>, Yuta Ando<sup>1</sup>

1. Graduate School of Bioresources, Mie University

In East Asia 2017/18 winter, the seasonal mean temperature was the lowest recorded since 1988/89. The sea-ice extent of the Chukchi Sea was the lowest in 2017/18. We investigated the influence of the Chukchi sea-ice decline on the hemispheric cold winter viewing from statistical analysis. The Chukchi sea-ice decline was statistically related to East Asia cold winter. Some studies showed that La Niña and sea-ice decline in the Barents and Kara Sea statistically affect to cold winter. We examine the relationship between the statistical effects of the sea-ice decline in the Chukchi Sea and these other factors in 2017/18. The factors of La Niña and the sea-ice decline in the Barents and Kara Sea were not enough as the explanation for abnormal winter in 2017/18. In addition to these two factors, the sea-ice decline in the Chukchi Sea was the well explanation for the cold winter over East Asia in 2017/18. The sea-ice extent of the Chukchi Sea was abnormal in 2017/18. The abnormal sea-ice decline in the Chukchi Sea might statistically affect the cold winter over East Asia in 2017/18.

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