

## Intra-seasonal relationship between the Northern Hemisphere sea ice variability and the North Atlantic Oscillation

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An intra-seasonal relationship, including a possible feedback, is investigated between the North Atlantic Oscillation (NAO) and a hemispheric-scale seesaw-like pattern dominant in sea ice variability over the wintertime Northern Hemisphere, with one polarity in the Bering and Labrador Seas and the other in the Okhotsk and Greenland-Barents Seas. Statistical analysis using observational data suggests that a particular phase of NAO and anomalous atmospheric circulation in the Pacific during early winter contribute toward the development of the midwinter hemispheric sea-ice seesaw. In contrast, the ice seesaw tends to damp the preexisting NAO signal during late winter, indicating a reversal of the phase relation between them. This NAO damping may be triggered by the Pacific sea-ice anomalies. Results from numerical experiments generally support this notion and further suggests a stationary Rossby wave train emanated from the North Pacific as a dynamical mechanism for damping the NAO signal.