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The impacts of the Preceding Wintertime Arctic Oscillation on November seesaw in Northern Extratropical Sea Level Pressure and the possible mechanisms

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The present study suggests that wintertime Arctic Oscillation (AO) plays a significant role in modulating following November circulation. The application of a set of statistical methods shows that a response of November sea level pressure (SLP) to the preceding wintertime AO operates on a hemispheric scale (Choi et al., 2015). At high and middle latitudes, this response is a well-pronounced seesaw in SLP between the Eastern and Western Hemispheres. Winters of the positive AO polarity tend to be followed by positive SLP anomalies spanning the whole Northern Eurasia and negative SLP anomalies extending from the Bering Sea through the Western North Atlantic. Opposite SLP anomalies prevail after winters of the negative AO polarity. The response of November SLP to the preceding wintertime AO closely resembles the first empirical orthogonal function of November SLP. That is, the polarity of the wintertime AO precedes the polarity of the leading mode of variability of November SLP over the Northern Hemisphere. The wintertime AO exerts a 9-month lag impact on November circulation due to the re-emergence of a sea surface temperature anomaly over the western North Atlantic.

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Reference
Choi, Y.-W., J.-B. Ahn, V. N. Kryjov, 2015. November seesaw in northern extratropical sea level pressure and its linkage to the preceding wintertime Arctic Oscillation, Int. J. Climatol., DOI: 10.1002/joc.4431