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Signature of the Aleutian-Icelandic seesaw in a general circulation model

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Recent work has demonstrated that the two major surface low pressure centres of the northern hemisphere winter circulation, namely the Aleutian Low and the Icelandic Low fluctuate in unison in late winter. This Aleutian-Icelandic seesaw (AIS) influences the structure of the planetary waves and their propagation into the stratosphere, as well as storm track intensity. Geopotential anomalies originate over the Pacific in early winter and propagate downstream as wave trains to influence the North Atlantic circulation one or two months later.

We analyse the signature of the AIS in seasonal (winter) high-resolution simulations with the atmospheric GCM Arpege, using an ensemble approach. The simulations span the 14 years over the ERA-15 period, and have a well-resolved stratosphere. The externally-forced (ensemble-mean) life-cycle of the AIS is examined, as well as the model internal variability, and the impact of the AIS on the predictability of the North Atlantic circulation.