Supporting Information for

Predictability Limits of North American Winter Precipitation in The Seamless System for Prediction and Earth System Research

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Figures S1-S4

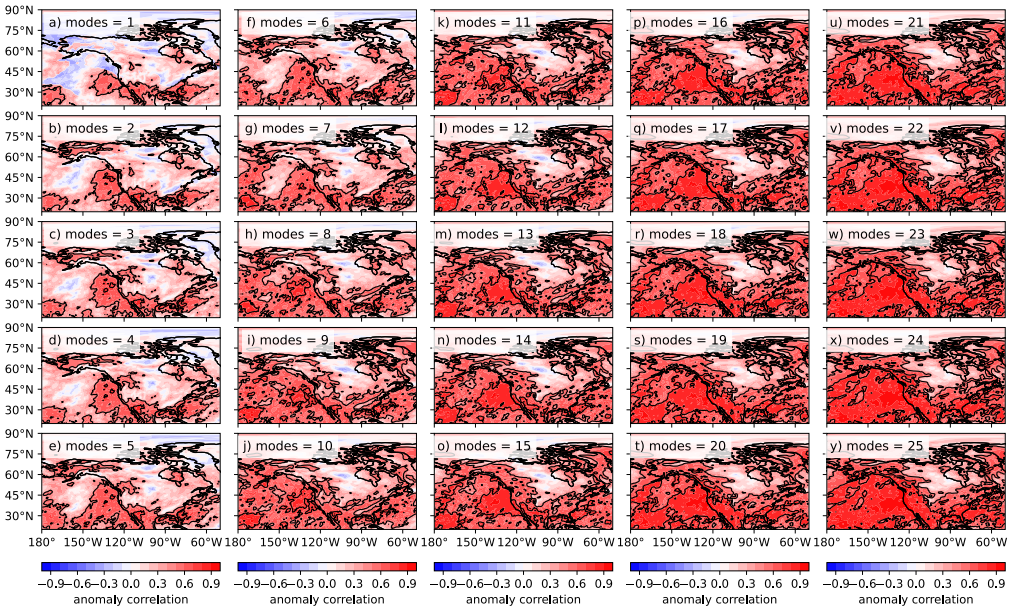

Figure S1. The correlation between ERA5 precipitation and (a) $p_1 v_1$, (b) $p_1 v_1 + p_2 v_2$, (c) $p_1 v_1 + p_2 v_2 + p_3 v_3$ and so forth until panel (y) $p_1 v_1 + \cdots + p_{25} v_{25}$, where each p_i represents an APT pattern and each v_i represents the projection of ERA5 precipitation onto the corresponding q_i pattern (see data and methods in the main text). In other words, each panel shows the correlation between unfiltered ERA5 data and the ERA5 data filtered to the mode indicated in each panel.

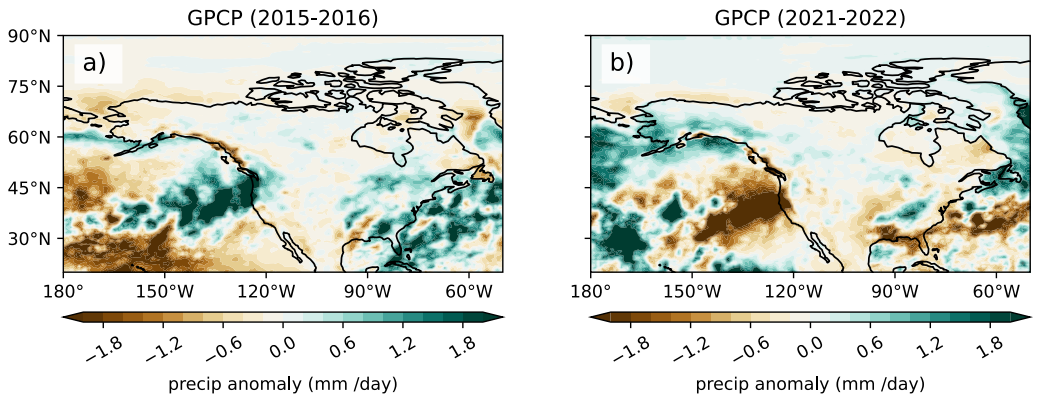

Figure S2. The December-February precipitation anomaly for (a) 2015-2016 and (b) 2021-2022 based on GPCPv3.2 data.

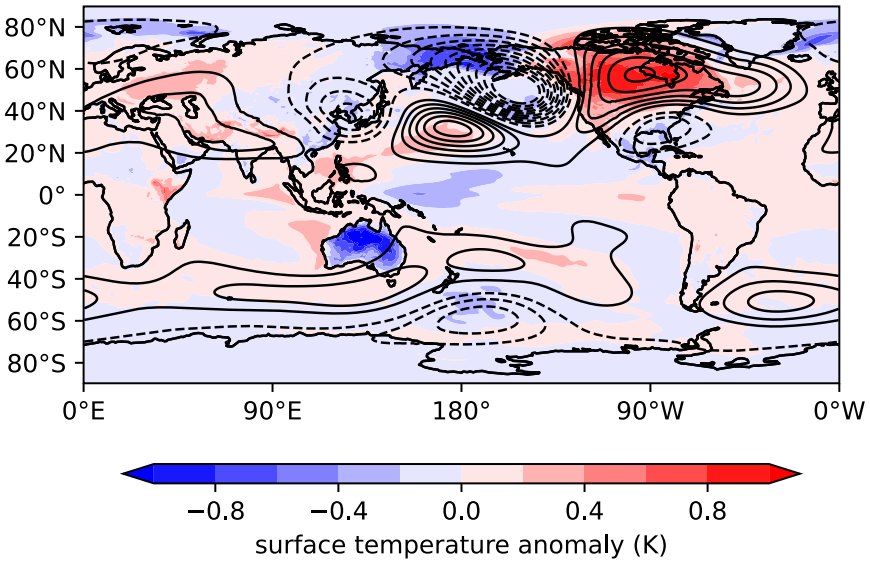

Figure S3. Partial regression of sea surface temperature (shading) and 500 hPa geopotential height (contours) onto the standardized time series formed by projecting sea surface temperature anomalies onto the mode 2 pattern in Fig. 1g. The regression coefficient was computed by pooling all the time, lead and ensemble members from SPEAR into one dimension. The trend and the Nino3.4 index were linearly removed from the data prior to the computation of this regression map. The contour interval for geopotential height is 2.5 m and the zero contour is omitted.

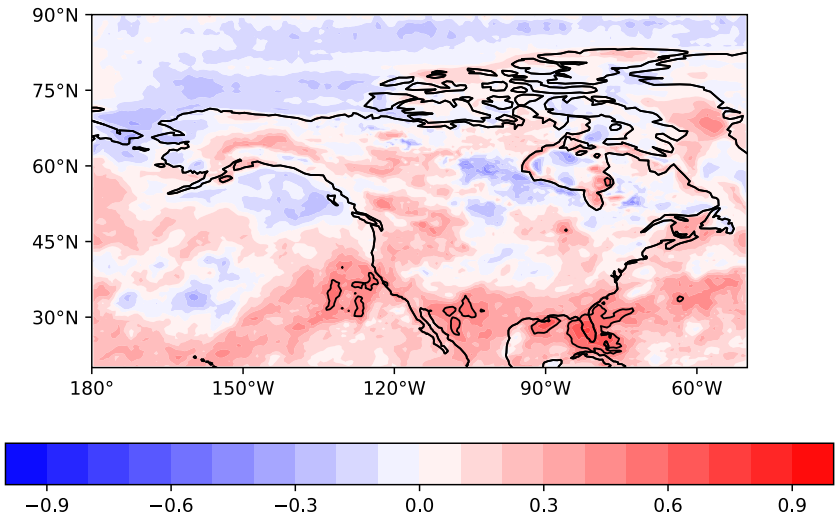

Figure S4. The December-February anomaly correlation between the SPEAR precipitation hindcast data and GPCPv3.2 data over the period 1991-2023. Contours outline regions where the correlation exceeds 0.5.