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Supplement of

Intermittency of Arctic–mid-latitude teleconnections: stratospheric pathway between autumn sea ice and the winter North Atlantic Oscillation

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List of Figures

1	As in Fig. 3, but showing the beta coefficients (colours) of all detected casual linkages. Note that no simultaneous relationships are shown here, including $\uparrow \text{URALS}_{Dec} \Rightarrow \uparrow \text{V}^* \text{T}^*_{Dec}$ (coloured horizontal line in Fig. 3a).	2
2	The unaggregated version of the half-monthly CEN, equivalent to Fig. S1b after aggregation.	3
3	Pentad version of the monthly (Fig. 3a, S1a) and half-monthly (Fig. 3b, S1b) CENs. A 1% significance level is used in the second step (see Data and Methods 2.2). A maximum lag of 12 pentads (i.e., 2 months) is allowed. Autocorrelation is not used to reject causal linkages in the partial correlation tests here.	4
4	As in Fig. 3, but using AIC with another significance set (5%, 10%, 20%, 30%, 40%, 50%).	5
5	The correlation between October (red) and November (blue) Barents-Kara sea ice indices, and NAO from October to March. Outer grey lines show significant correlations at a 5% level using a two-tailed t-test.	5
6	As in Fig. 3a, but highlighting all ICE-NAO stratospheric and tropospheric pathways.	6
7	Same as Fig. S1a, but additionally showing the occurrences rates of all linkages in the bootstrapping test.	7
8	Results of the pentad CEN analysis assessing relationships between downward longwave radiation (IR), Barents-Kara sea ice (ICE) and Urals sea level pressure (URALS). A maximum lag of 2 pentads is allowed. Autocorrelation is not calculated. Fig. 7 is aggregated from this figure by summing the number of times each linkage appears in individual months.	8
9	Monthly CEN as in Fig. S1a, but with the addition of downward longwave radiation (IR).	9

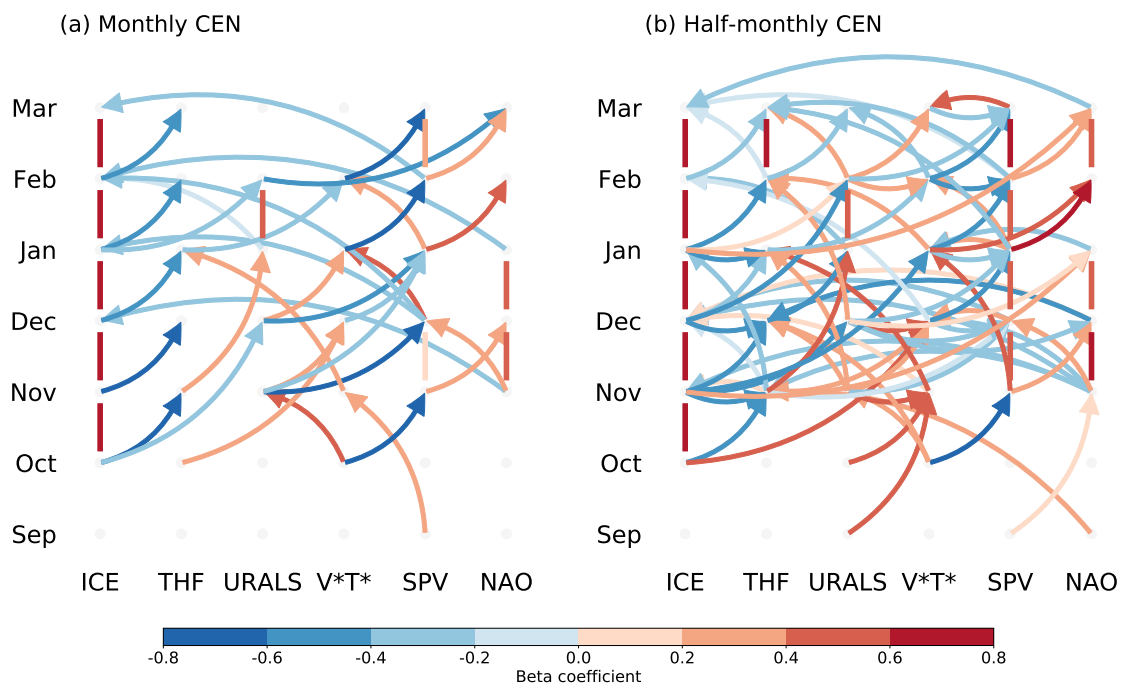


Figure S1: As in Fig. 3, but showing the beta coefficients (colours) of all detected casual linkages. Note that no simultaneous relationships are shown here, including $\uparrow \text{URALS}_{Dec} \Rightarrow \uparrow \text{V}^*\text{T}^*_{Dec}$ (coloured horizontal line in Fig. 3a).

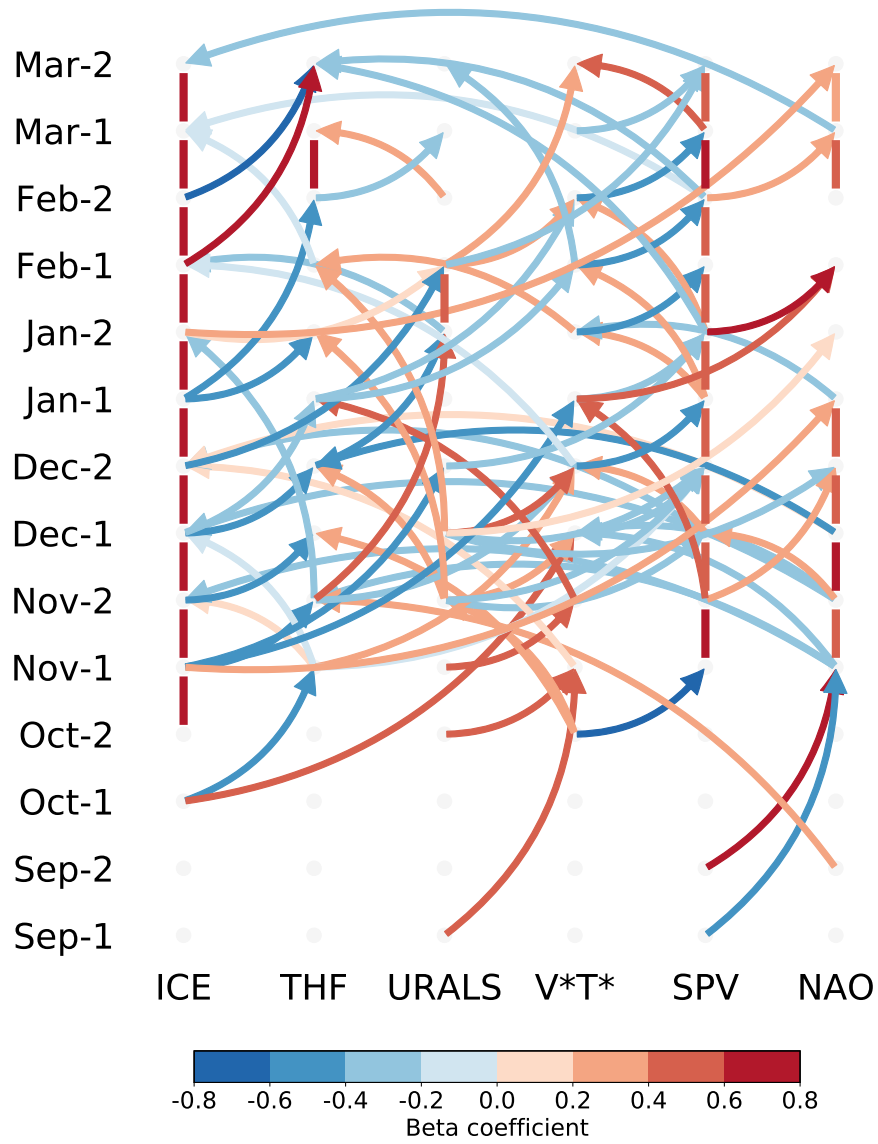


Figure S2: The unaggregated version of the half-monthly CEN, equivalent to Fig. S1b after aggregation.

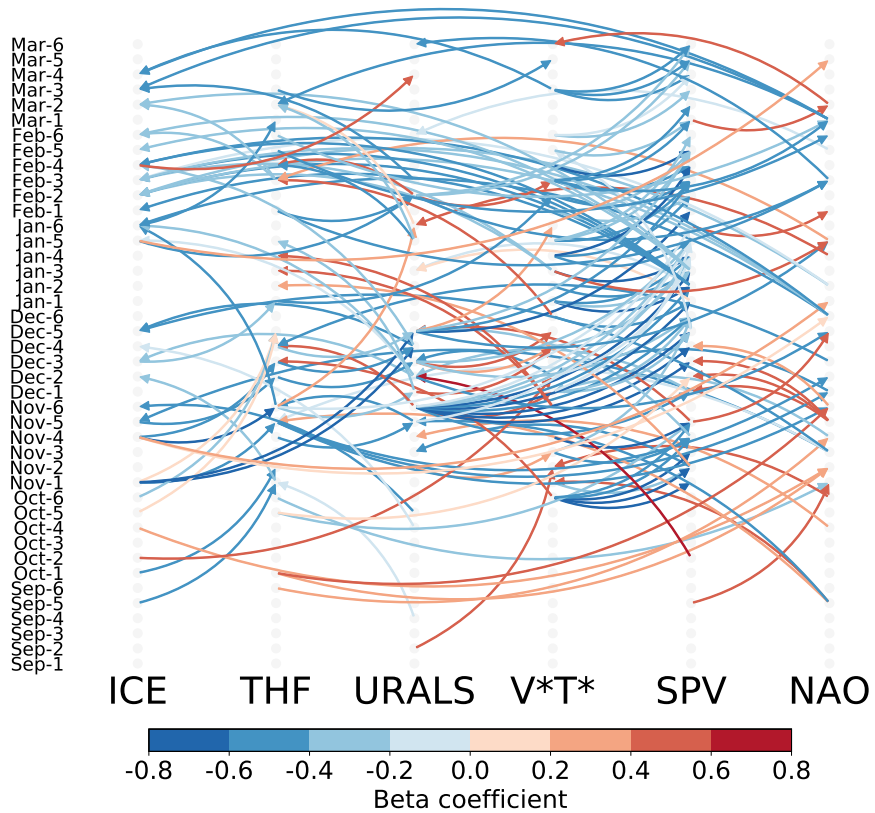


Figure S3: Pentad version of the monthly (Fig. 3a, S1a) and half-monthly (Fig. 3b, S1b) CENs. A 1% significance level is used in the second step (see Data and Methods 2.2). A maximum lag of 12 pentads (i.e., 2 months) is allowed. Autocorrelation is not used to reject causal linkages in the partial correlation tests here.

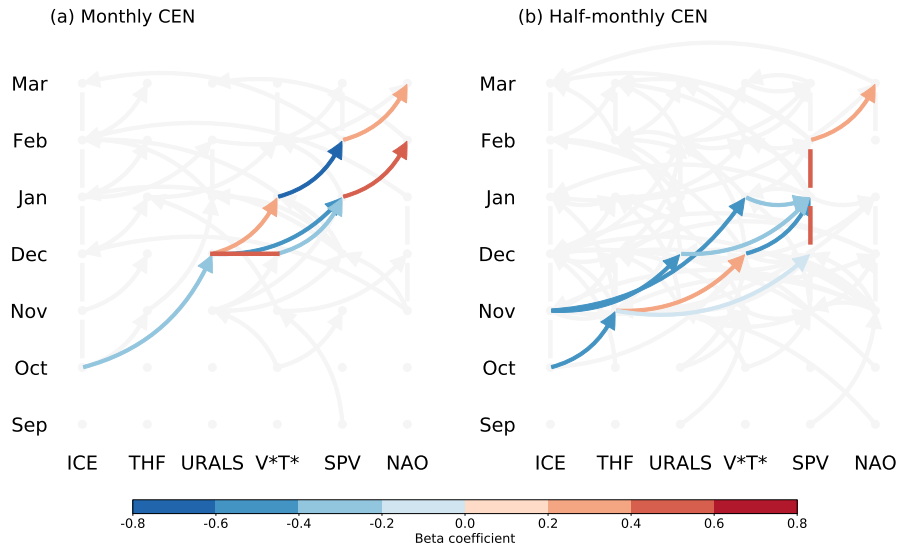


Figure S4: As in Fig. 3, but using AIC with another significance set (5%, 10%, 20%, 30%, 40%, 50%).

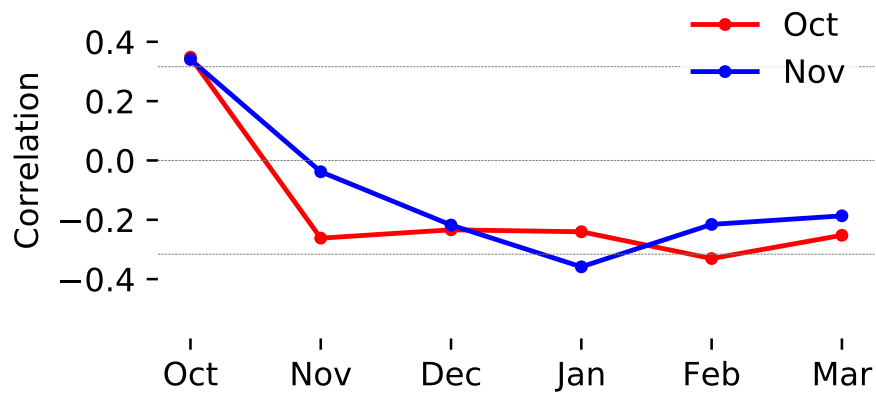


Figure S5: The correlation between October (red) and November (blue) Barents-Kara sea ice indices, and NAO from October to March. Outer grey lines show significant correlations at a 5% level using a two-tailed t-test.

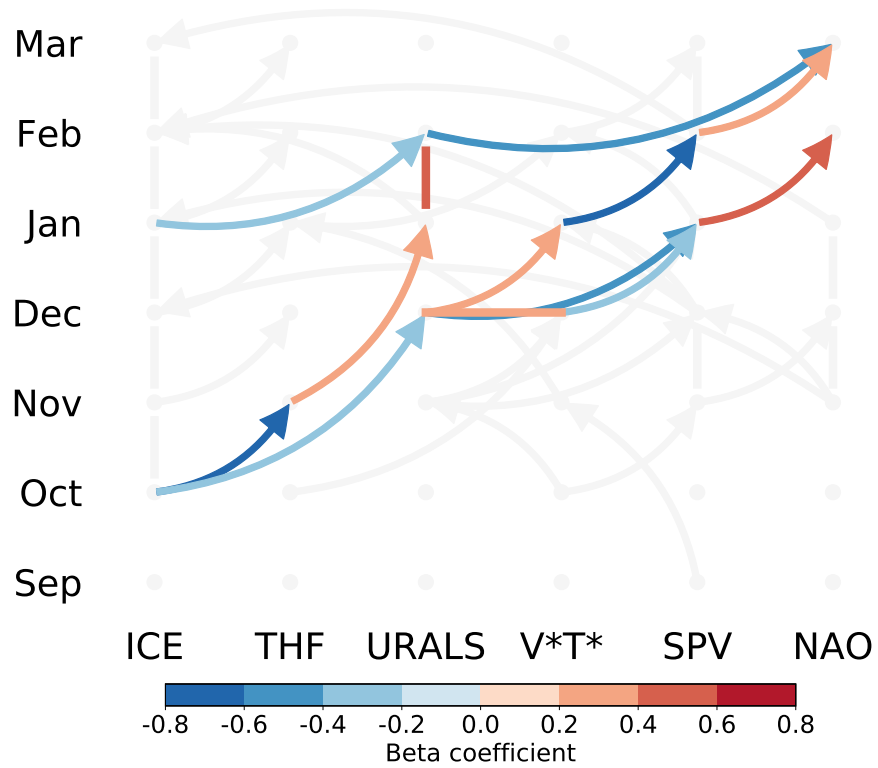


Figure S6: As in Fig. 3a, but highlighting all ICE-NAO strato-spheric and tropospheric pathways.

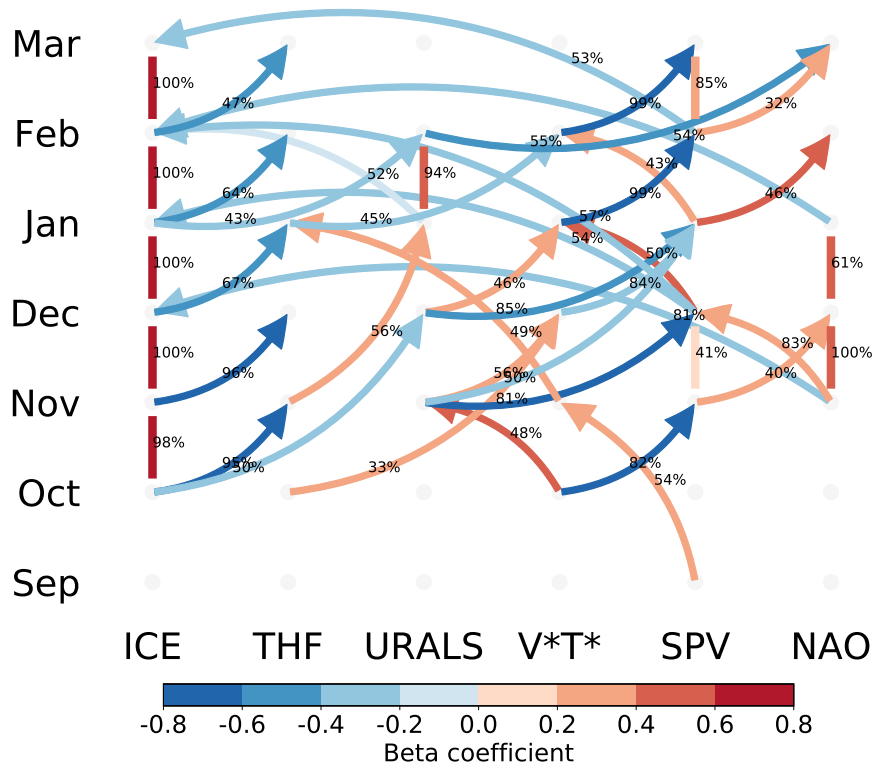


Figure S7: Same as Fig. S1a, but additionally showing the occur-rences rates of all linkages in the bootstrapping test.

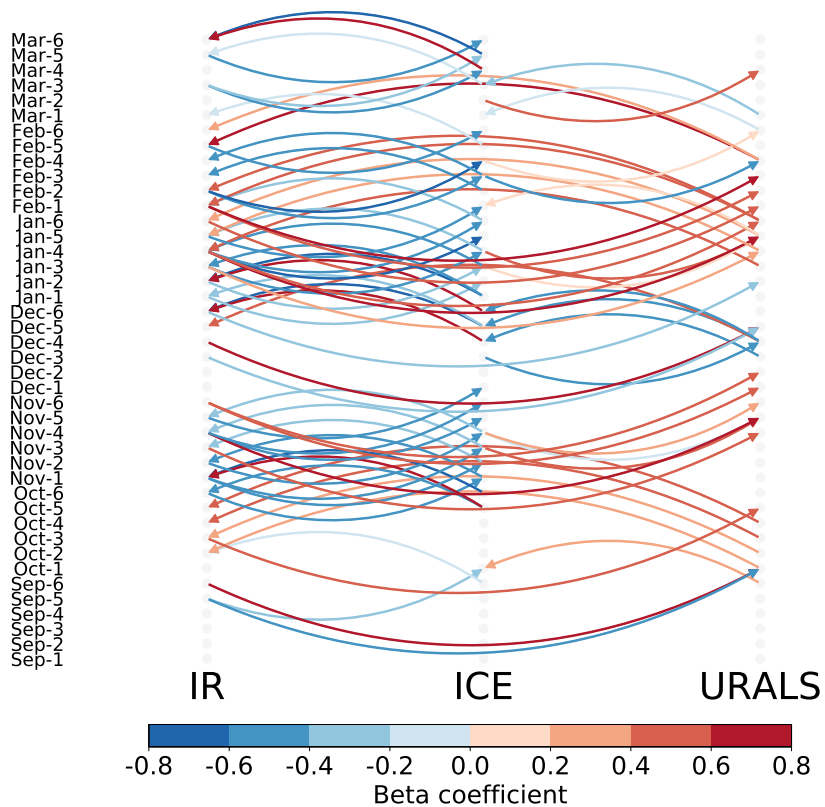


Figure S8: Results of the pentad CEN analysis assessing relationships between downward longwave radiation (IR), Barents-Kara sea ice (ICE) and Urals sea level pressure (URALS). A maximum lag of 2 pentads is allowed. Autocorrelation is not calculated. Fig. 7 is aggregated from this figure by summing the number of times each linkage appears in individual months.

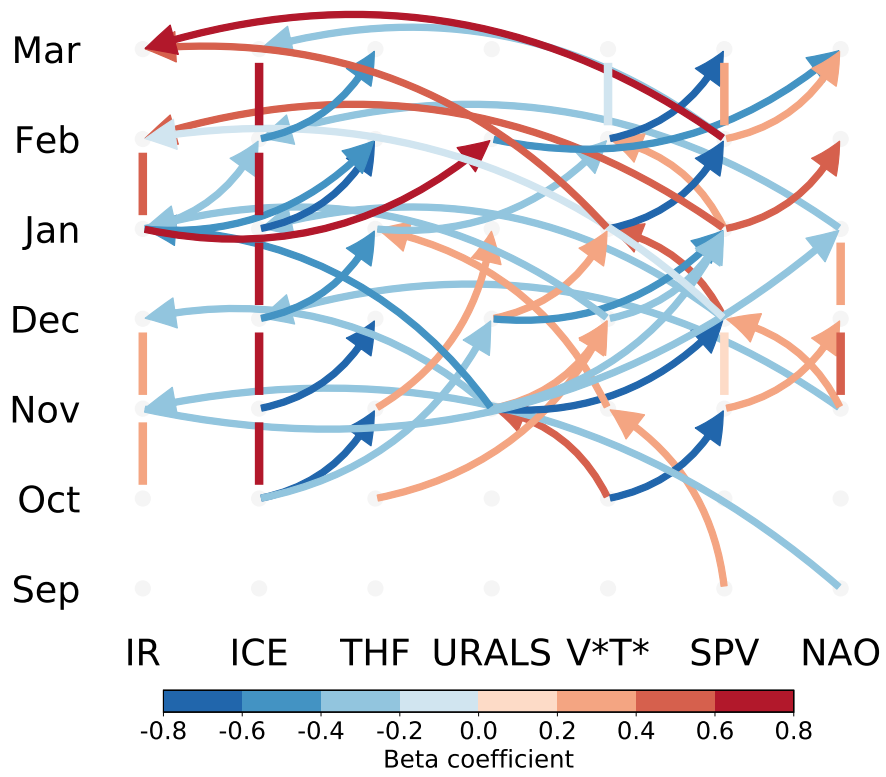


Figure S9: Monthly CEN as in Fig. S1a, but with the addition of downward longwave radiation (IR).