

Supporting information for:

Multidecadal variability of the early winter ENSO teleconnection to Europe and implications for seasonal forecasting

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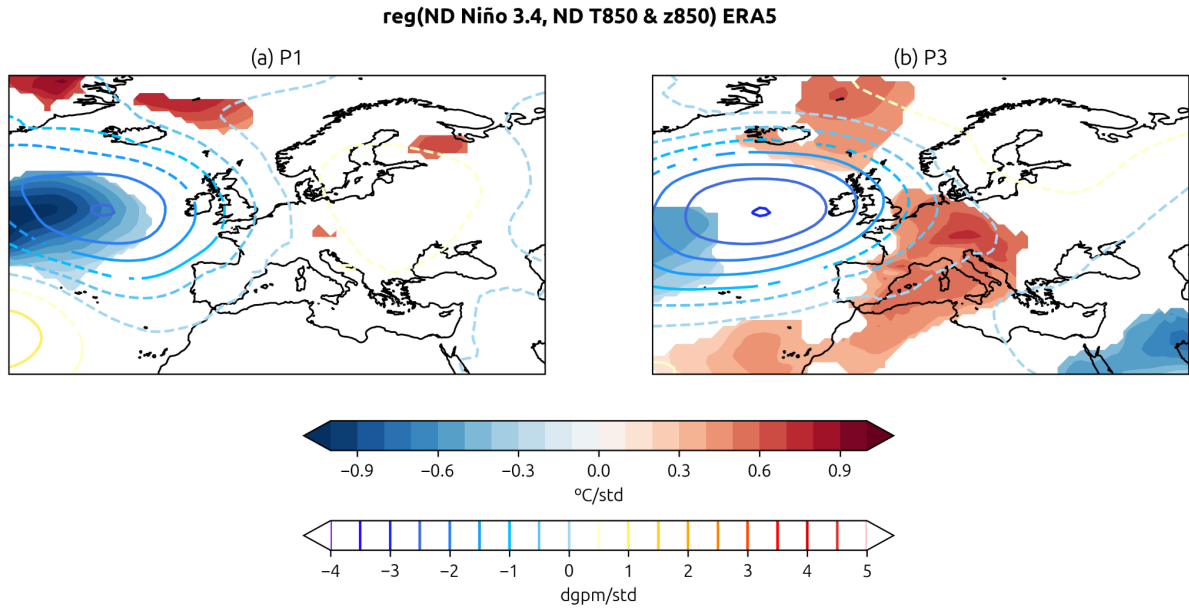


Fig. S1: Regression map of the ND Niño 3.4 index and anomalies of ND T850 (filled contours) and ND Z850 (isolines) for the periods (a) P1 and (b) P3. For the T850 anomaly field, only values at the 90% significance level or higher are shown. For the Z850 anomaly field, values at the 90% significance level or higher are represented with solid isolines, otherwise dashed isolines are shown.

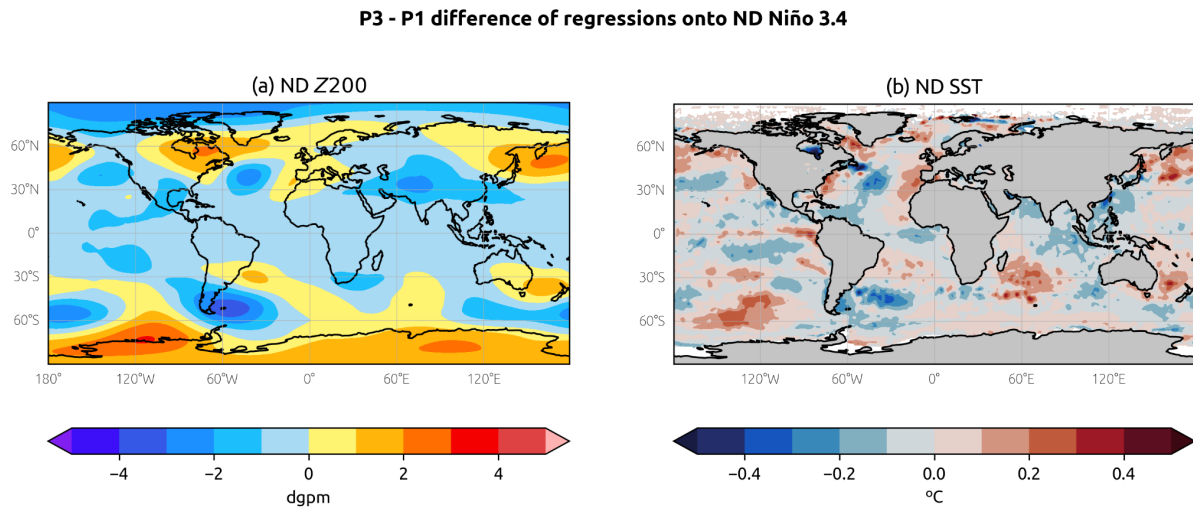


Fig. S2: Difference between the regression maps in P1 and P3 (P3 - P1) of the ND Niño 3.4 index and ND (a) Z200 anomalies, and (b) SST.

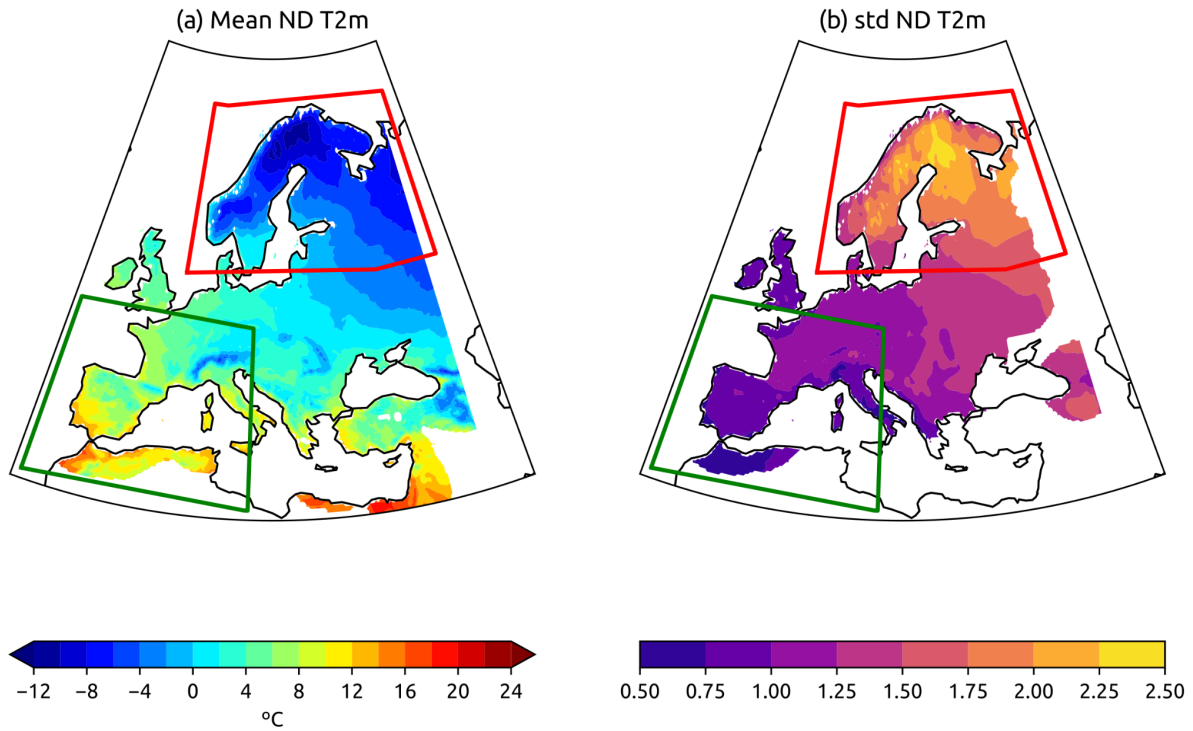


Fig. S3: ND surface air temperature (T2m) climatology in Europe, expressed in terms of the (a) climatological mean and (b) standard deviation, for the period 1950-2022. The NEEU and SWEU domains are shown with a red and green box, respectively.

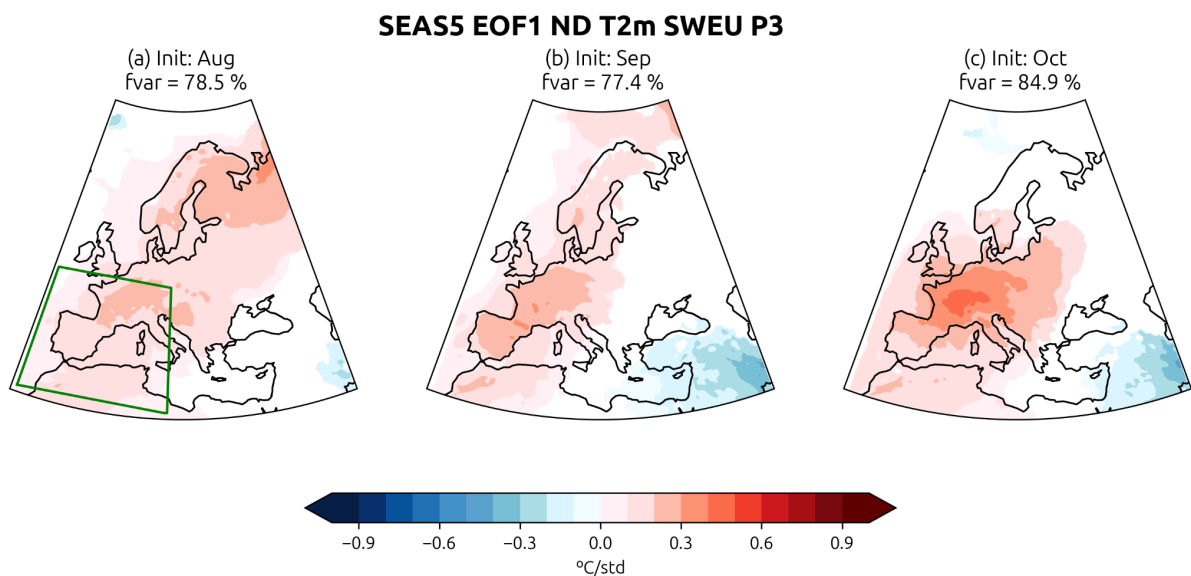


Fig. S4: Leading EOF, in the form of regression map, of the SEAS5 ensemble-mean ND T2m in SWEU in P3 for the (a) August, (b) September and (c) October initialisations. Only values at the 90% significance level or higher are shown. The SWEU domain is shown with a green box in (a).

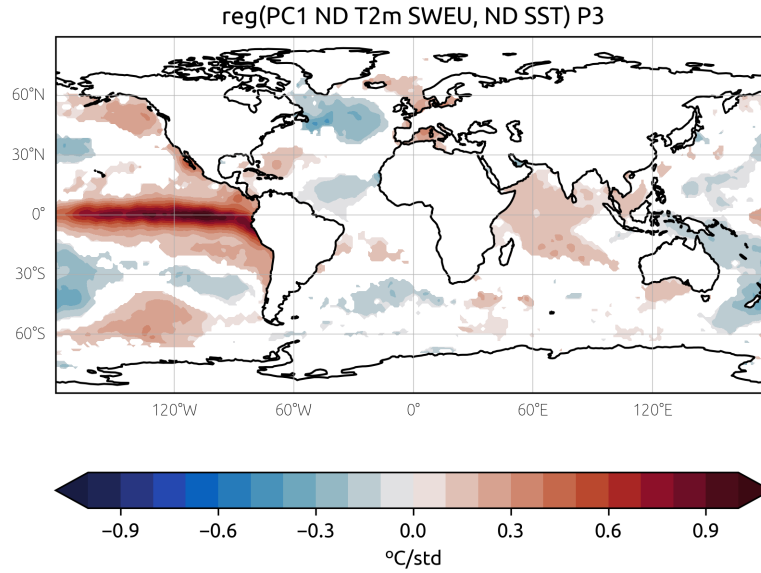


Fig. S5: Regression map of ND SST anomalies onto the leading PC of ND T2m in SWEU for the period P3. Only values at the 90% significance level or higher are shown.

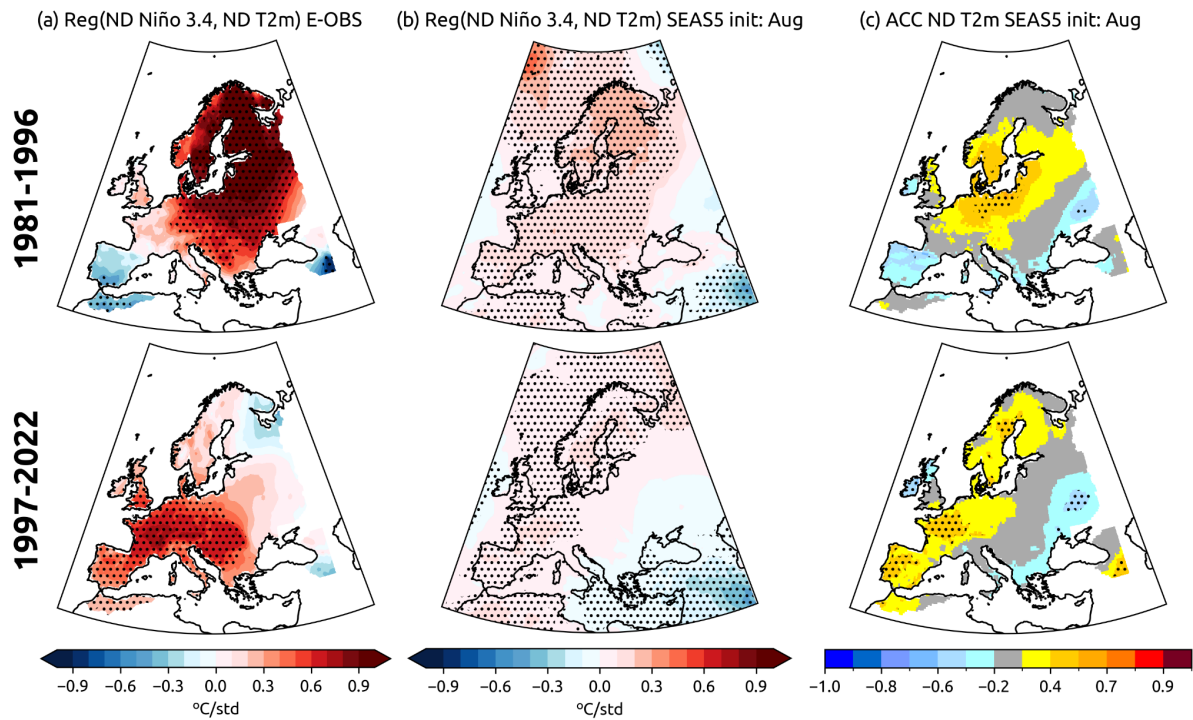


Fig. S6: Regression map of ND T2m anomaly onto ND Niño 3.4 index in the (a) E-OBS observational database and (b) SEAS5 August initialisation. Hatching in (a) and (b) represents significant values at the 90% confidence level (c) SEAS5 ACC for predicting ND T2m anomaly in the August initialisation. Hatching in (c) represents significant skill at the 95% confidence level. Results are shown for the periods 1981-1996 (top row) and P3 (1997-2022; bottom row).

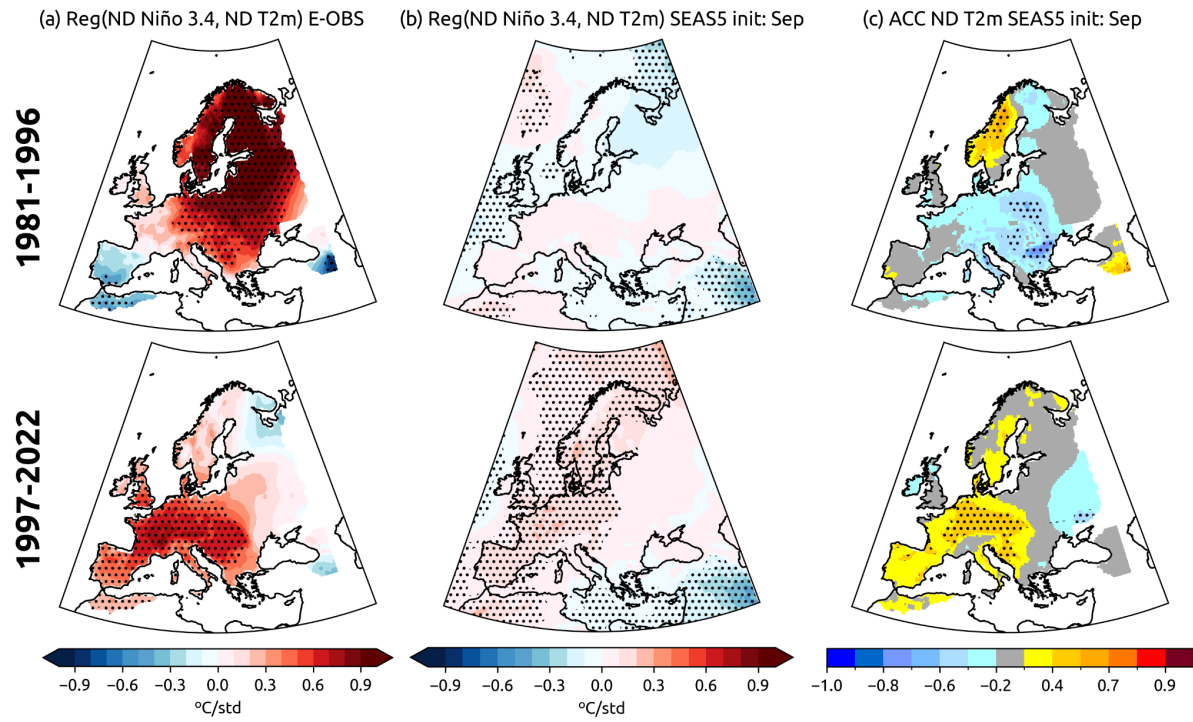


Fig. S7: As in Fig. S6, but for the September initialisation

Climatology differences

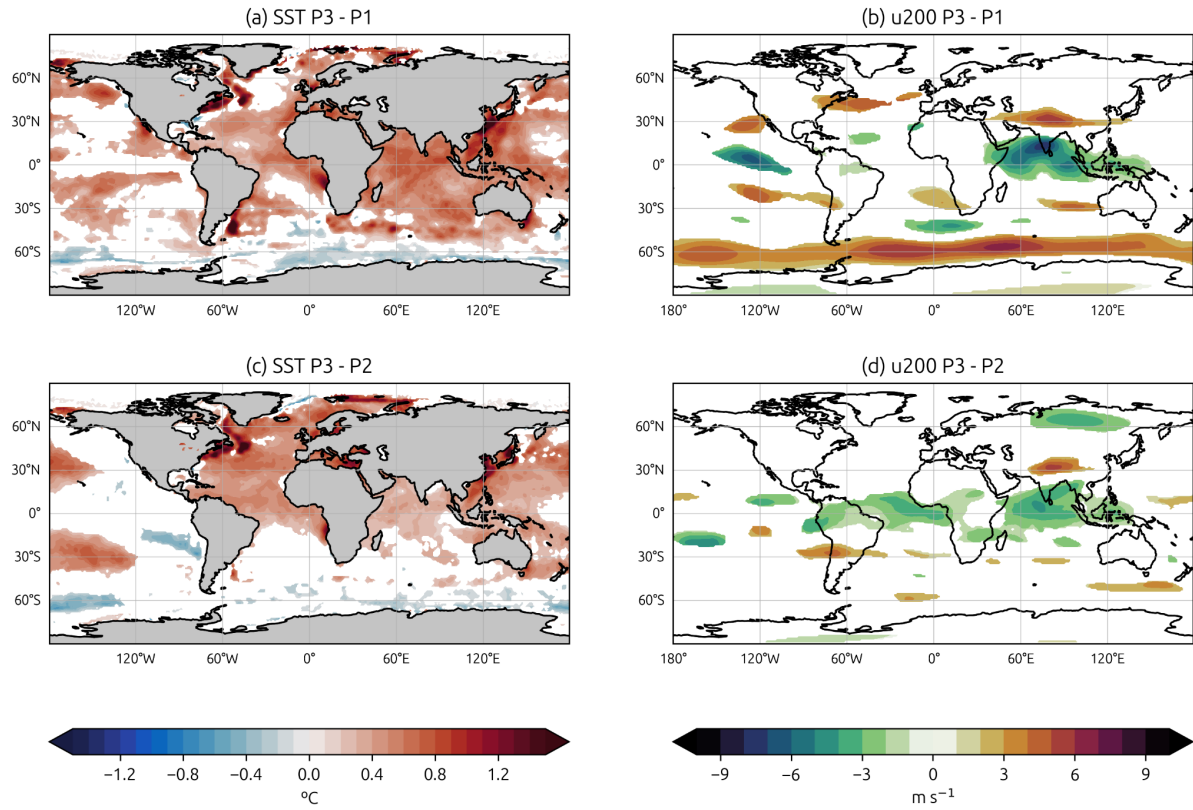


Fig. S8: Climatology difference, computed as the difference of ND means between P3 and P1 (P3 - P1) of (a) SST and (b) u200. (c) and (b): same, but for the difference between P3 and P2 (P3 - P2). Only values at the 95% significance level or higher are shown, according to a two-sided t-test.