Supplementary figures for

Solar cycle impacts on North Atlantic climate

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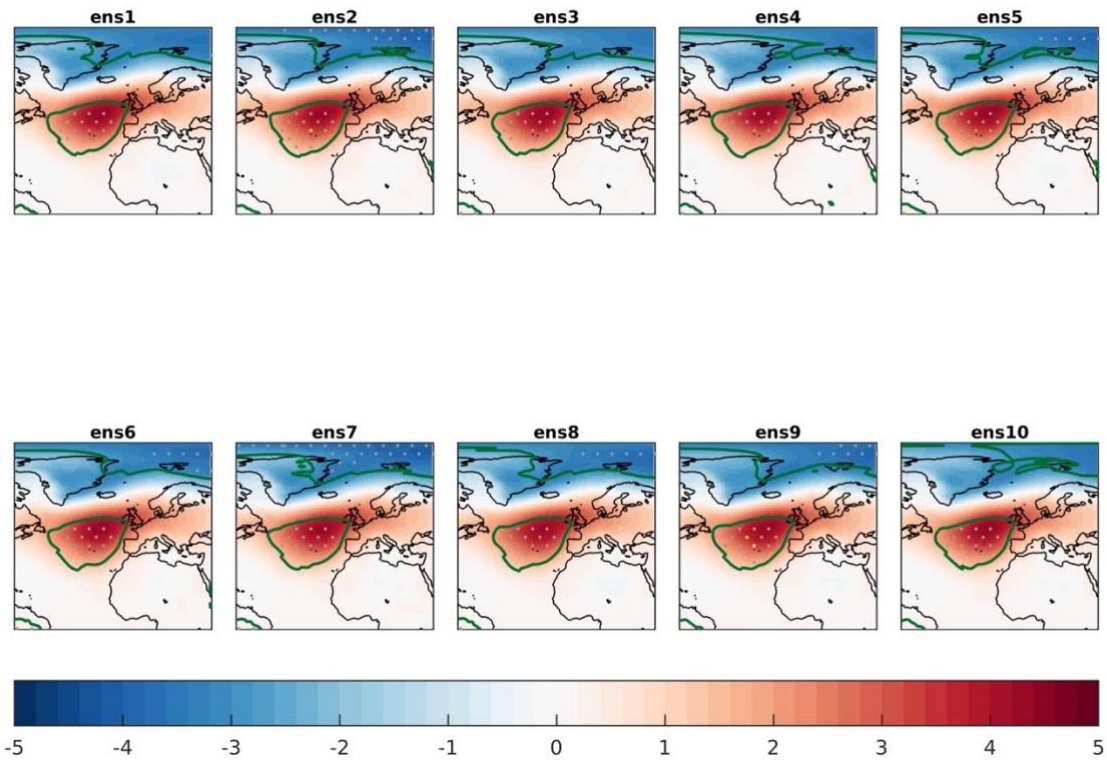
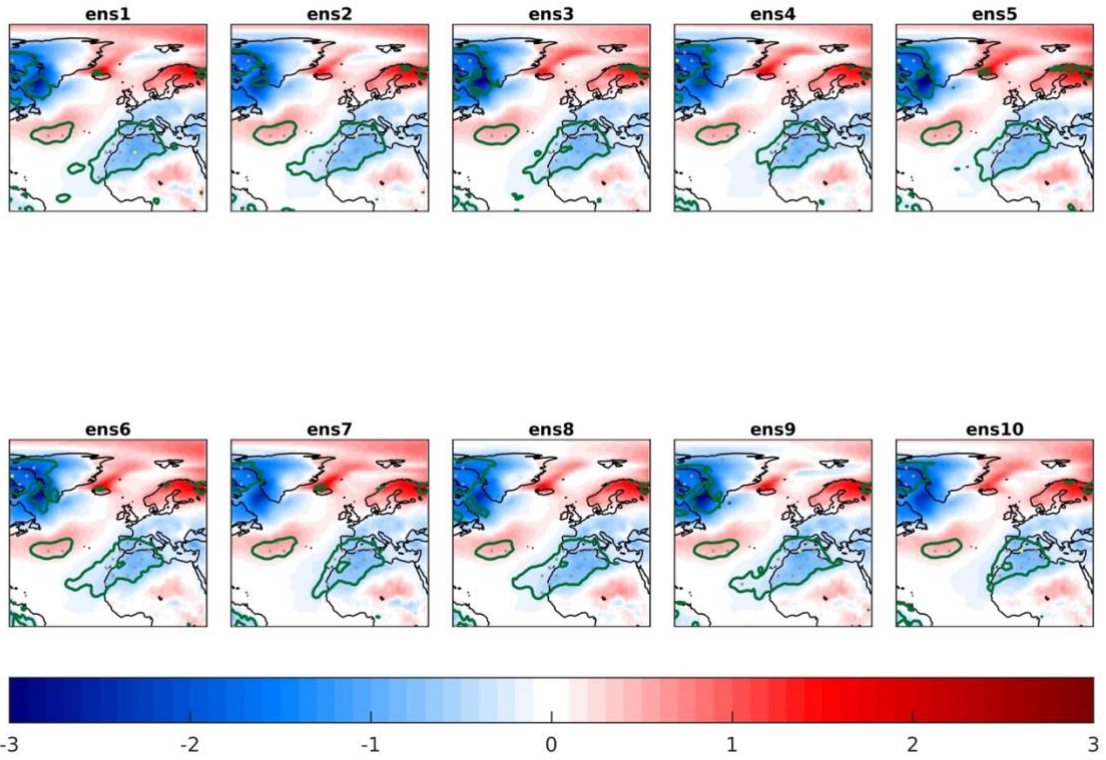
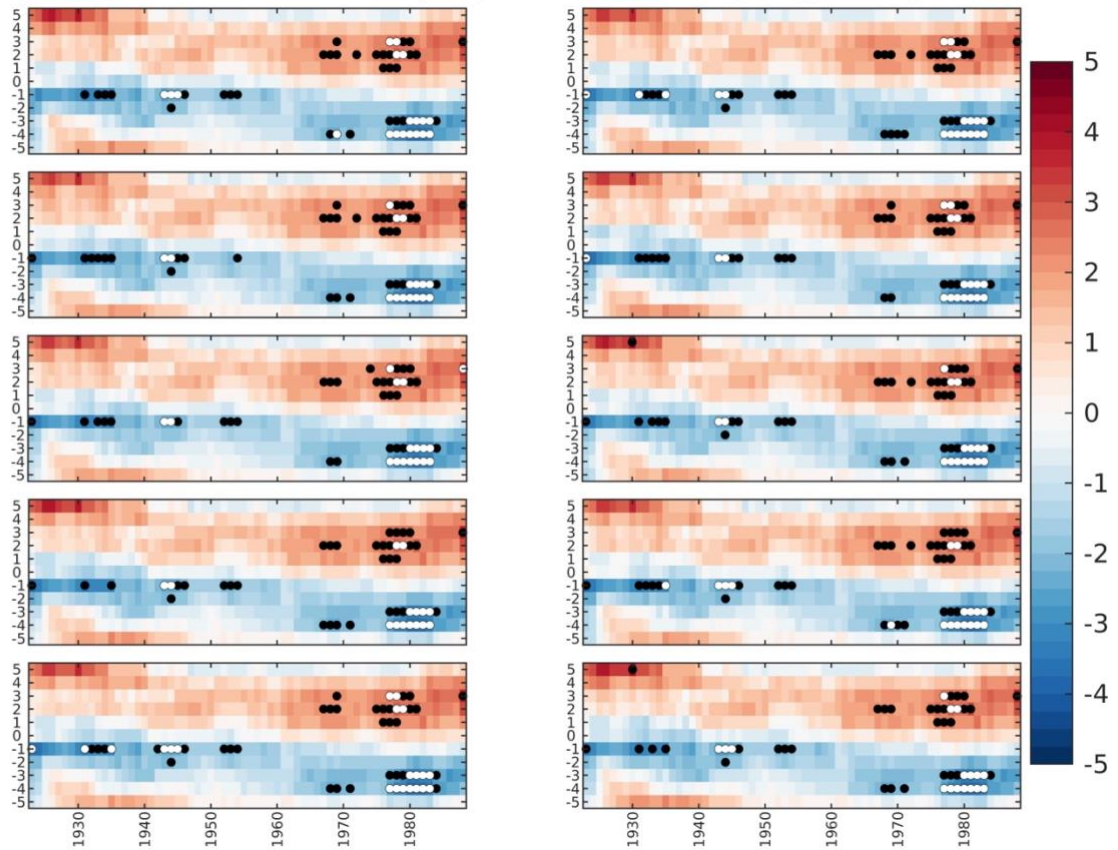
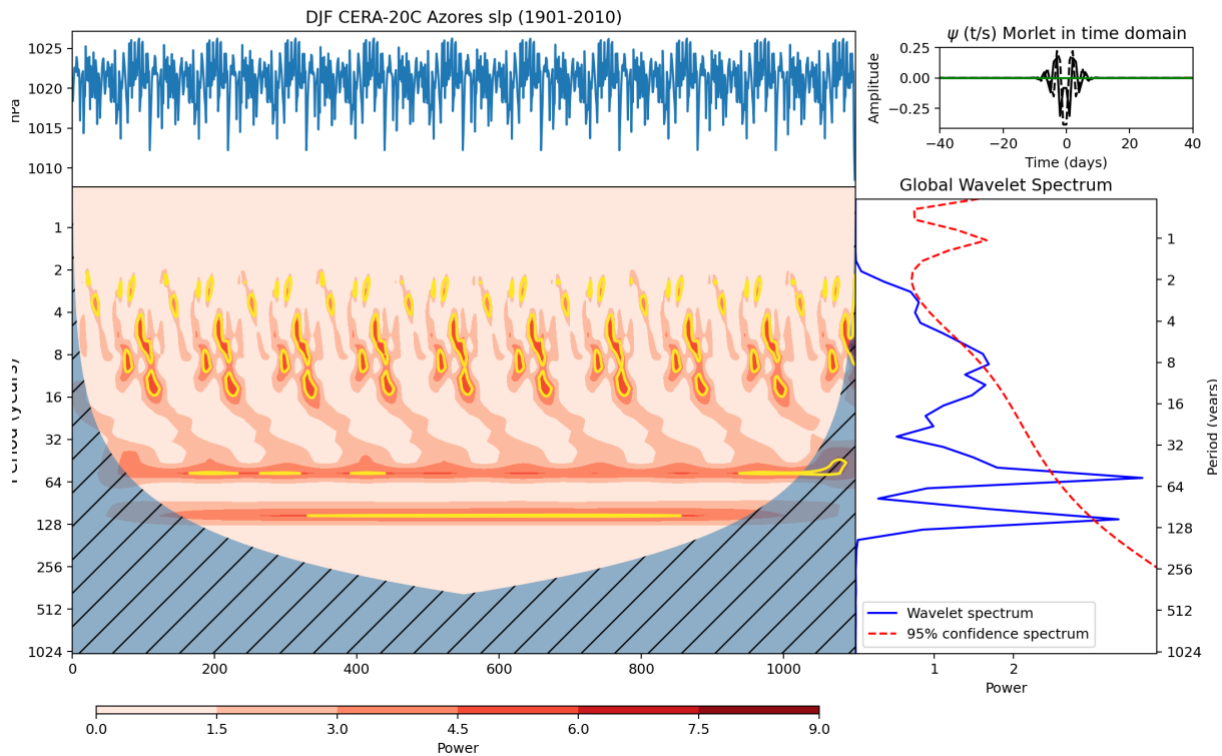
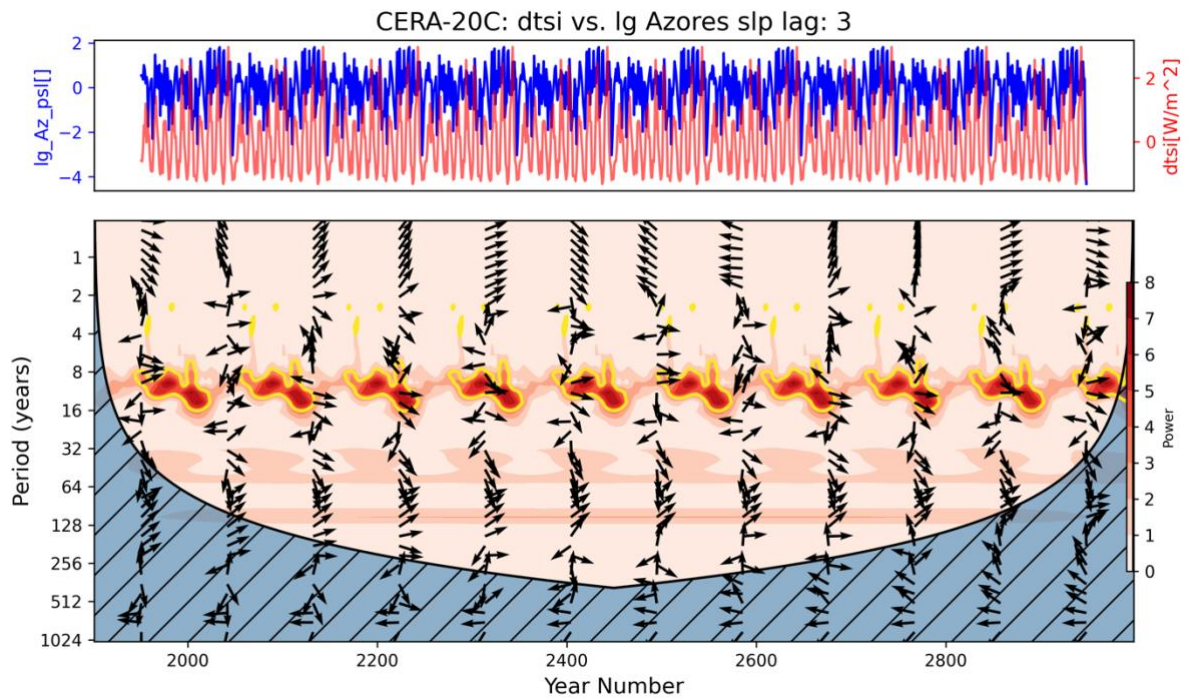
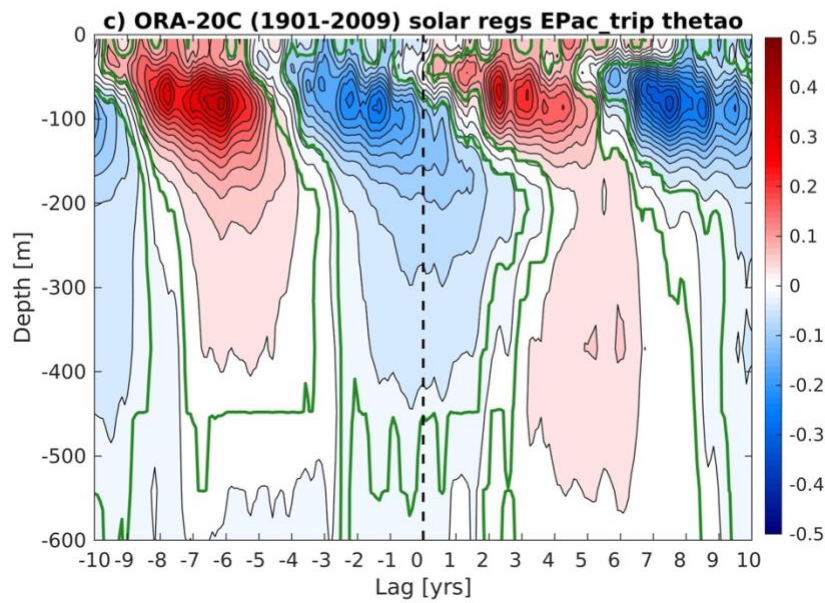
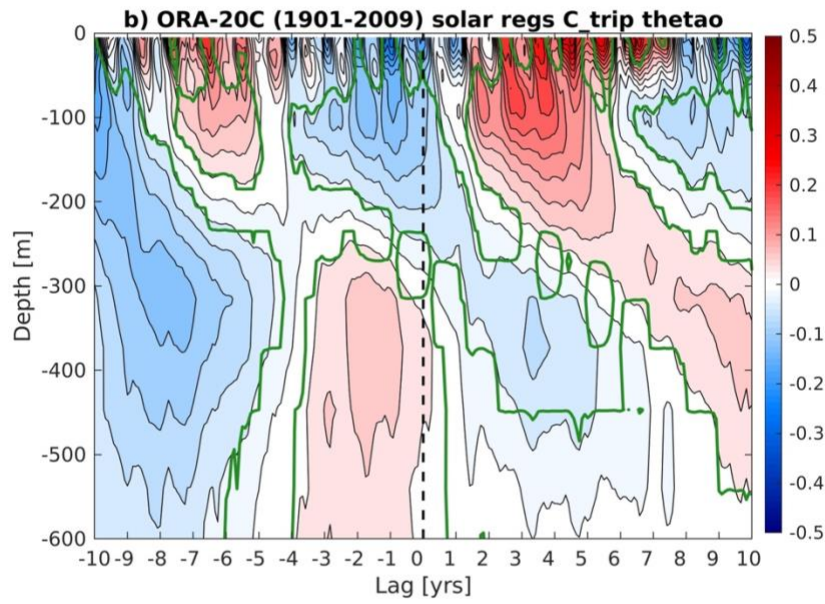
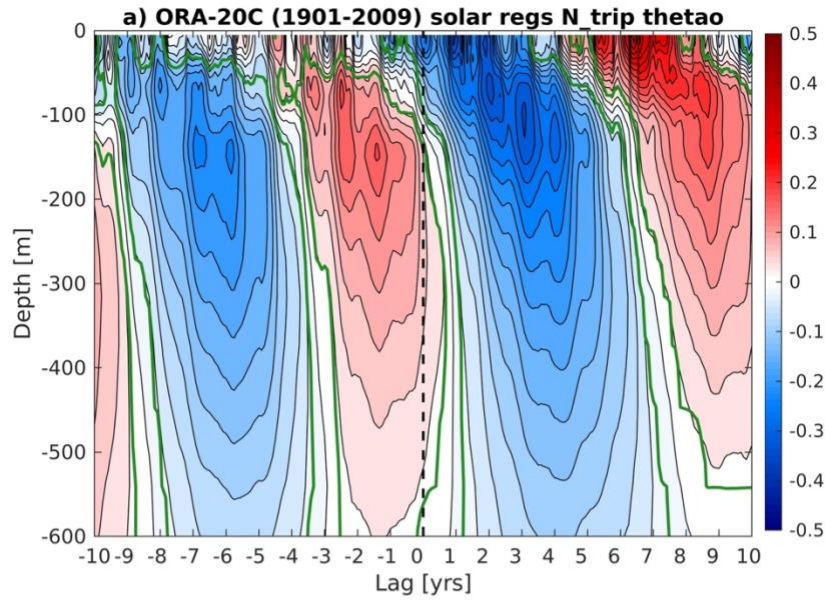
CERA-20C 1901-2010 - solar reg (dtsi) - DJF mslp - Lag: +3

Supplementary Figure 1. Solar response in DJF SLP (hPa) at lag +3yrs from a multiple regression analysis of CERA-20C, showing results for each individual ensemble member. Statistical significance as in Figure 1.

CERA-20C 1901-2010 - solar reg (dtsi) - DJF t2m - Lag: +3

Supplementary Figure 2. As figure 2(c) but showing results from individual ensemble-members.

Supplementary Figure 3. Solar response in Azores DJF SLP (hPa) from multiple linear regression analysis with a moving 45-year window for each individual ensemble-member of CERA-20C 1901-2010. X-axis labels identify the central year in the 45-year window. Statistical significance is indicated by the black (90%), white (95%), and yellow (99%) circles.

Supplementary Figure 4. Wavelet power spectrum of DJF CERA-20C Azores slp showing all 10 ensemble members. Statistical significance with respect to a background AR1 red noise is indicated by the yellow contour. Hatching indicates area where edge effects are important. In each panel, the top right diagram presents the Morlet wavelet used in the transform, and the bottom right plot presents the global power spectra (blue curve) and the corresponding global 95% confidence levels (red curve).

Supplementary Figure 5. Cross wavelet power spectra between pairs of DJF timeseries: DTSI vs. CERA-20C Azores SLP, showing all ensemble-members. The Azores index lags the solar index by +3 years. Statistical significance with respect to an AR1 red noise background is indicated by the yellow contour.

a) ORA-20C (1901-2009) solar regs N_trip thetao

b) ORA-20C (1901-2009) solar regs C_trip thetao

c) ORA-20C (1901-2009) solar regs EPac_trip thetao

Supplementary Figure 6. Solar response of monthly-averaged subsurface THETAO ocean temperatures (^{O}C) between 0-600m ocean depth for the boxes identified in figure 10: a) N-trip ; b) C-trip; and c) EPac. Statistical significance at the 95% levels is indicated by the thick green contour. The regressions were performed for 1901-2009 using 10 ensemble members.