

Labrador Sea sub-surface density as a precursor of multi-decadal variability in the North Atlantic: a multi-model study

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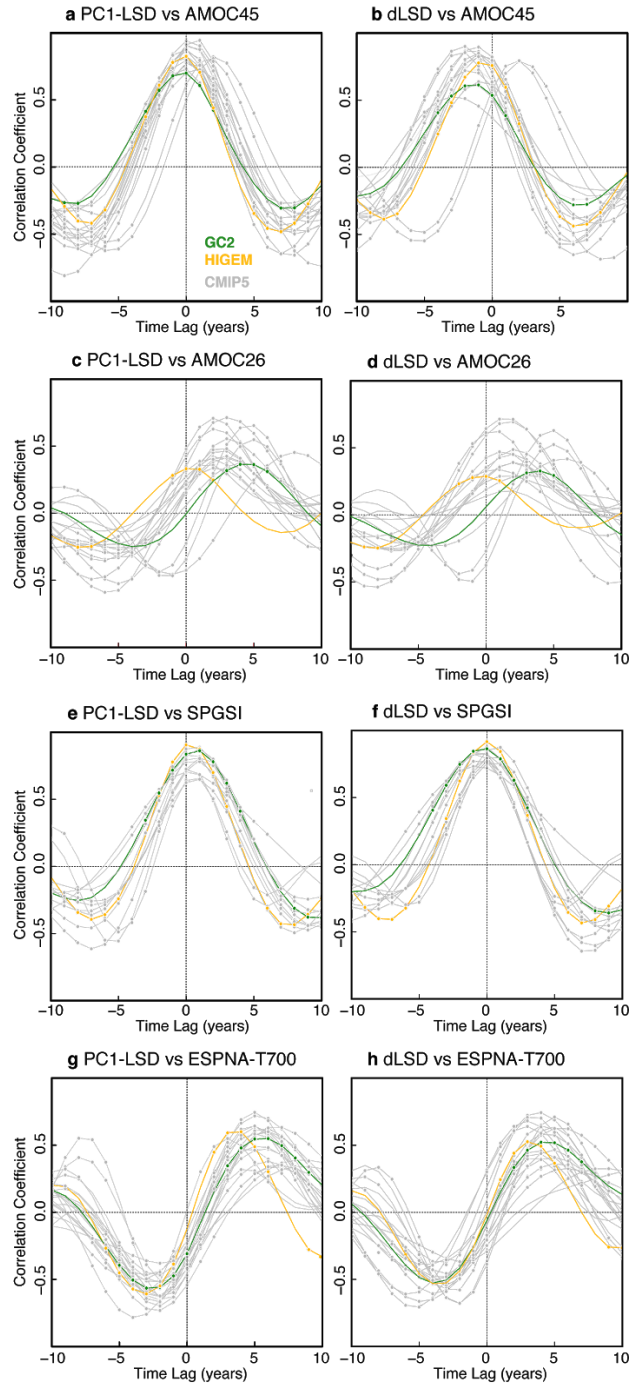
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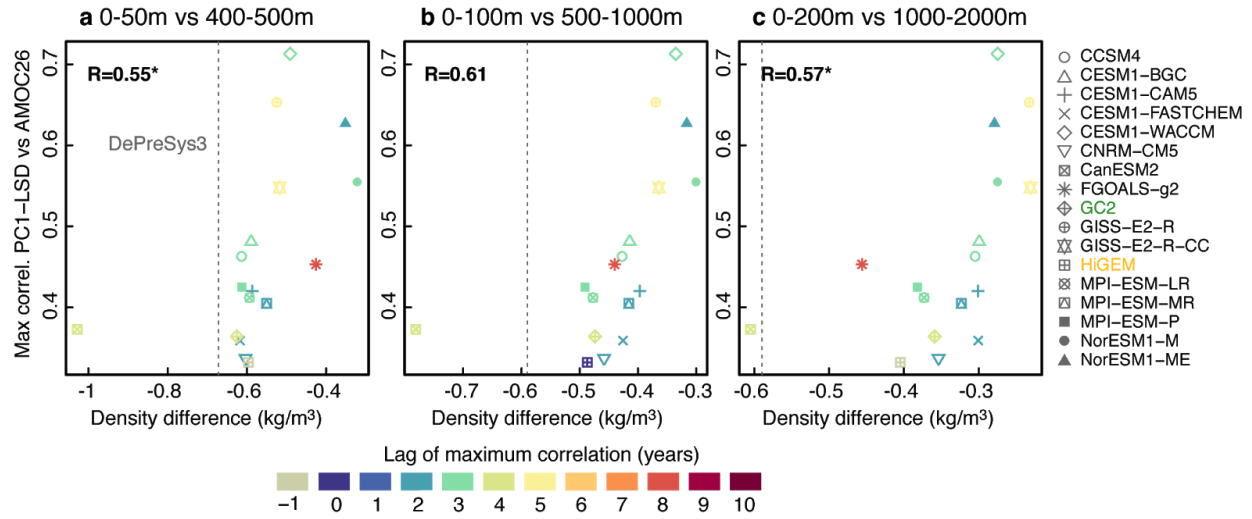
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Supplementary Figures



Supplementary Figure 1: **a** Lead-lag correlations across the picontrol ensemble between PC1-LSD and the maximum AMOC streamfunction at 45°N after the Ekman transport is removed (AMOC45). Correlations are based on 10-year running trends. For positive lags, PC1-LSD leads. Significance is assessed as in Figure 2d and indicated with a circle. **b** The same as in **a** but for dLSD index. **c-h** The same as in **a-b** but with respect to the AMOC26 (without the Ekman component), the SPGSI and ESPNA-T700 indices, respectively.



Supplementary Figure 2: **a** Scatterplot of the maximum correlations at any lag between PC1-LSD and AMOC26N (without the Ekman component) against the climatological mean of the Labrador Sea Density stratification index (computed as the difference of the vertical means in the levels 0-50 m minus the vertical means in the levels 400-500 m; see Fig. 1). The maximum correlations are based on 10-year running trends. The correlation coefficient between the two metrics is shown in the top-left corner. The presence of an asterisk indicates that the correlation is significant at the 95% confidence level. Colors indicate the lag at which the maximum correlation between PC1-LSD and AMOC26 is obtained. The grey vertical lines depict the mean stratification value in the DePreSys3 assimilation run for the reference period 1960-2013. **b-c** The same as in **a** but for stratification indices defined between the levels 0-100 m vs 500-1000 m and 0-200 m vs 1000-2000 m, respectively.