The role of atmospheric circulation changes in Western European warm season heat extremes
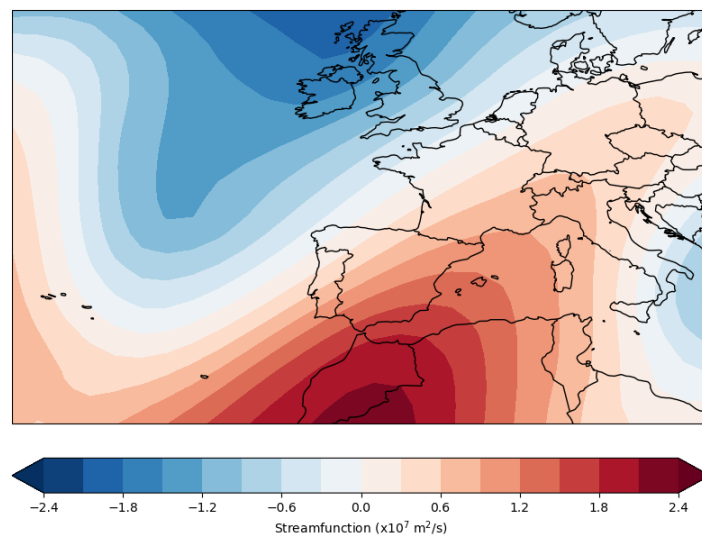
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Supplementary Figures

10 **Figure S1: Analogue streamfunction field corresponding to the fifth percentile threshold for the frequency analysis.**
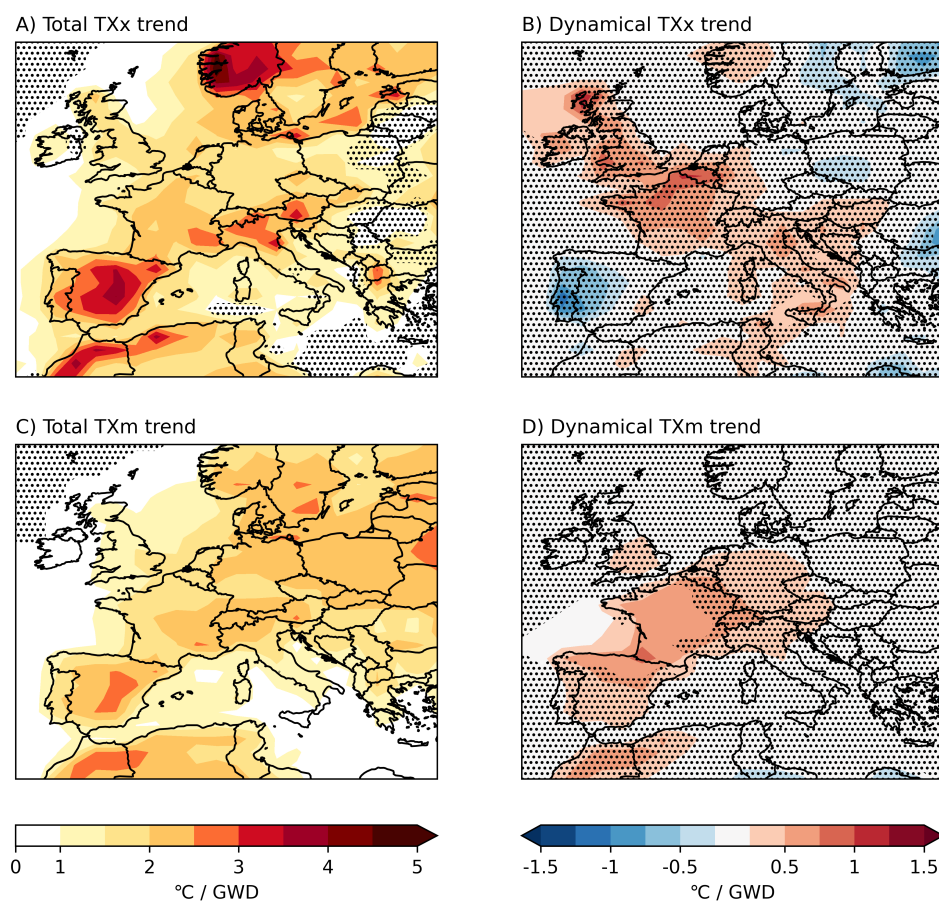
Figure S2: The total trends in spring temperature extremes and the dynamical contributions to these trends, expressed in the amount of warming, in degrees Celsius, per GWD. Dotted areas represent regions where the trend is not significant on a 95% confidence level. Trends are calculated using anomalies instead of absolute temperatures. Anomalies for each day are calculated as the difference with the mean temperature on that day over all years in the 1950–2023 period.
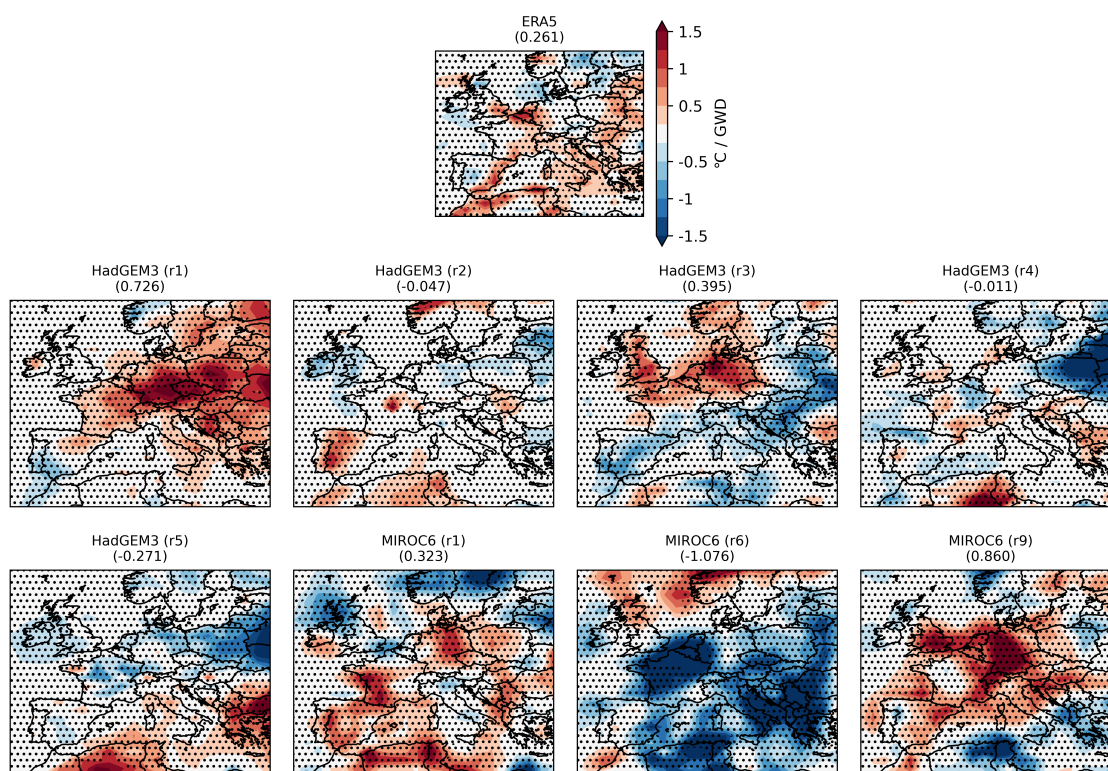
Figure S3: The dynamical components of the TXx trends for ERA5 and eight model ensemble members using data from 1950–2014. Dotted areas represent regions where the trend is not significant on a 95% confidence level. The title of each plot indicates the data source, ensemble member if applicable, and average trend for Western Europe.
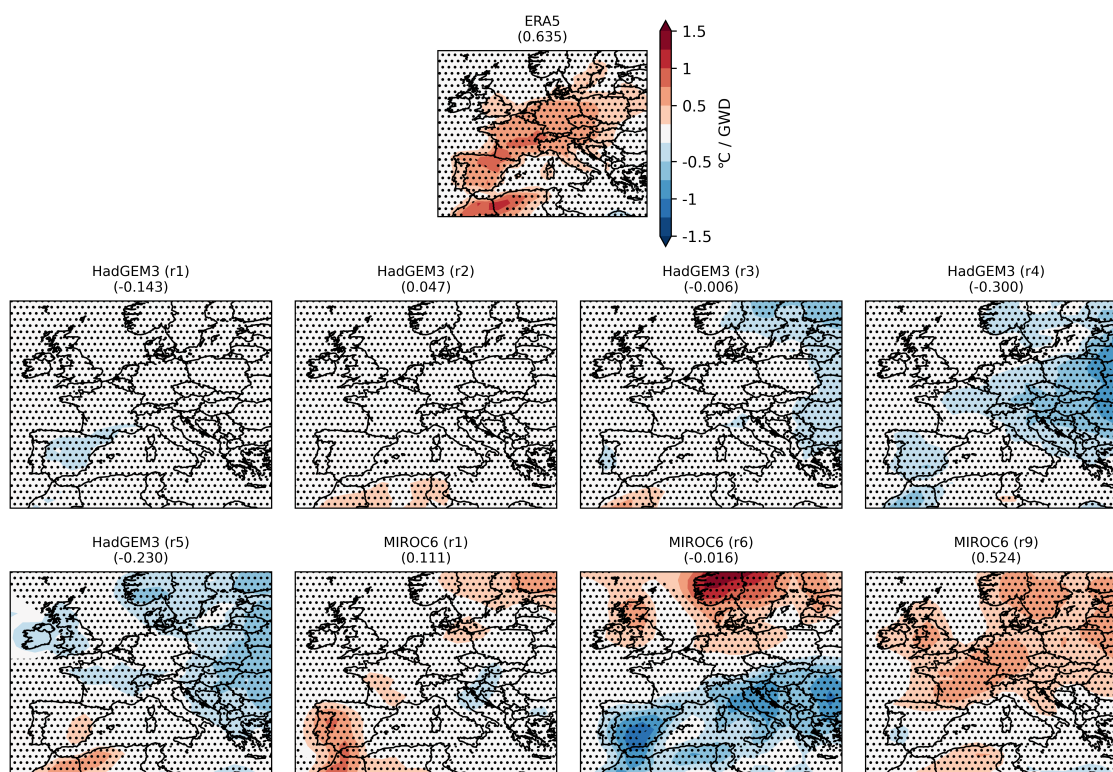
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Figure S4: The dynamical components of the TXm trends for ERA5 and eight model ensemble members using data from 1950–2014. Dotted areas represent regions where the trend is not significant on a 95% confidence level. The title of each plot indicates the data source, ensemble member if applicable, and average trend for Western Europe.
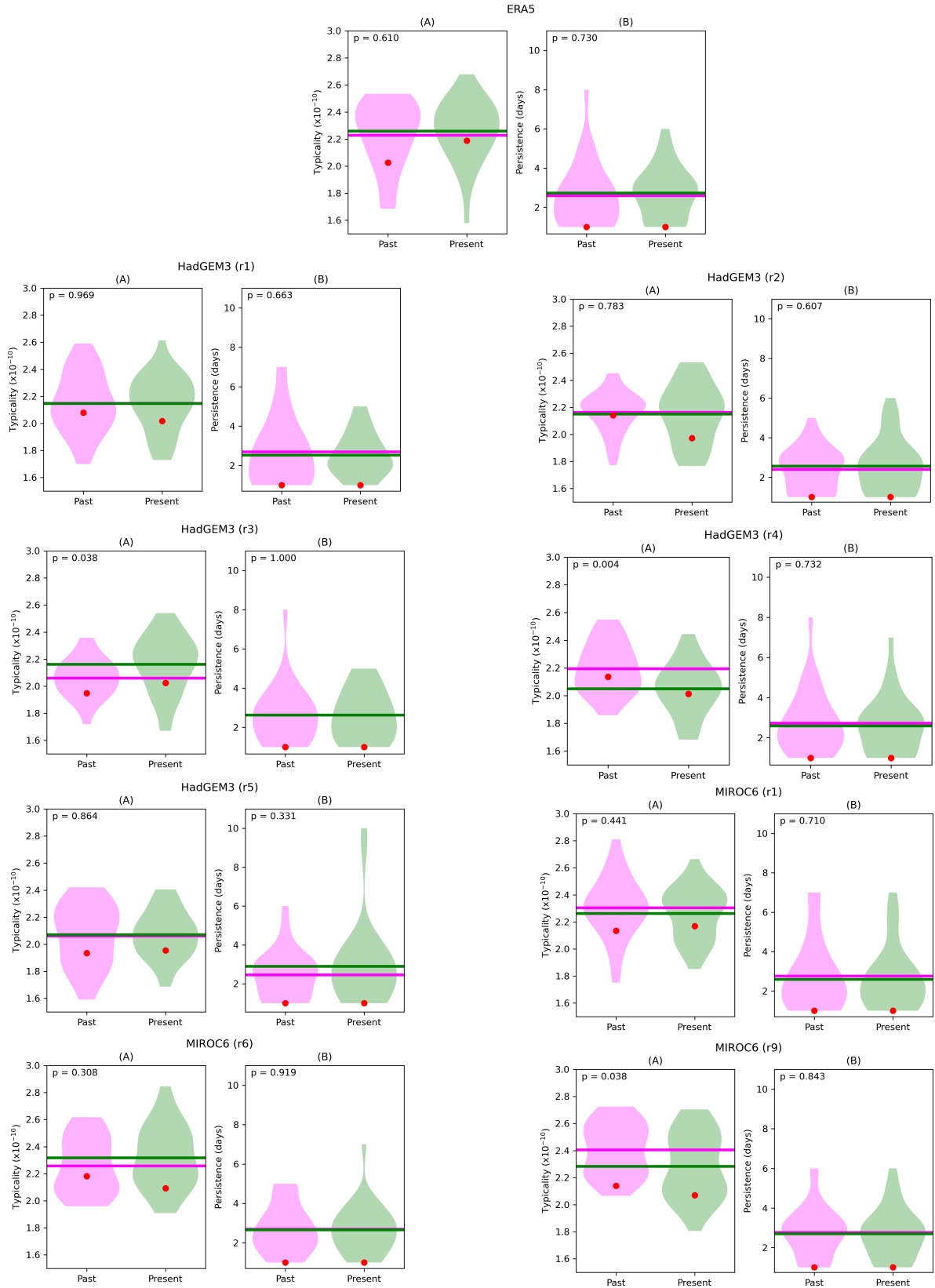
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Figure S5: The changes in typicality (A) and persistence (B) between the past (1950–1979) and present (1985–2014) periods for ERA5 and eight model ensemble members. Red dots indicate the typicality and persistence of the event. The violins show the distribution of the $t_{analogue}$ and $p_{analogue}$ values, whose means are represented by horizontal lines. The p-value indicates the statistical significance of the difference between these means.

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