Supplementary materials of paper "Seasonal weather regimes in the North Atlantic region: towards new seasonality?"

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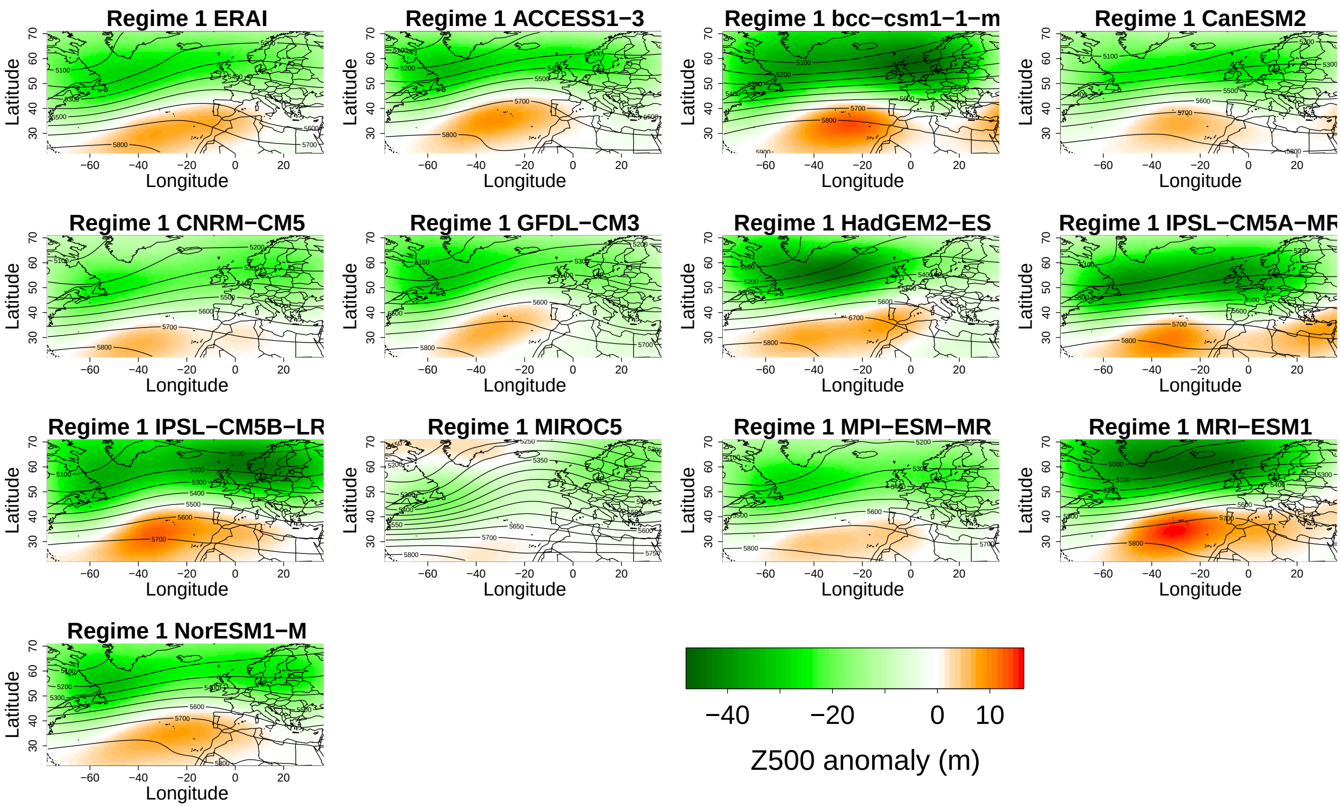

Figure 1. Composite maps of the first regime for ERAI and each climate model. Color shades show Z500 seasonal anomalies (raw Z500 minus the average seasonal cycle) and contours show raw Z500 values according to the regimes.

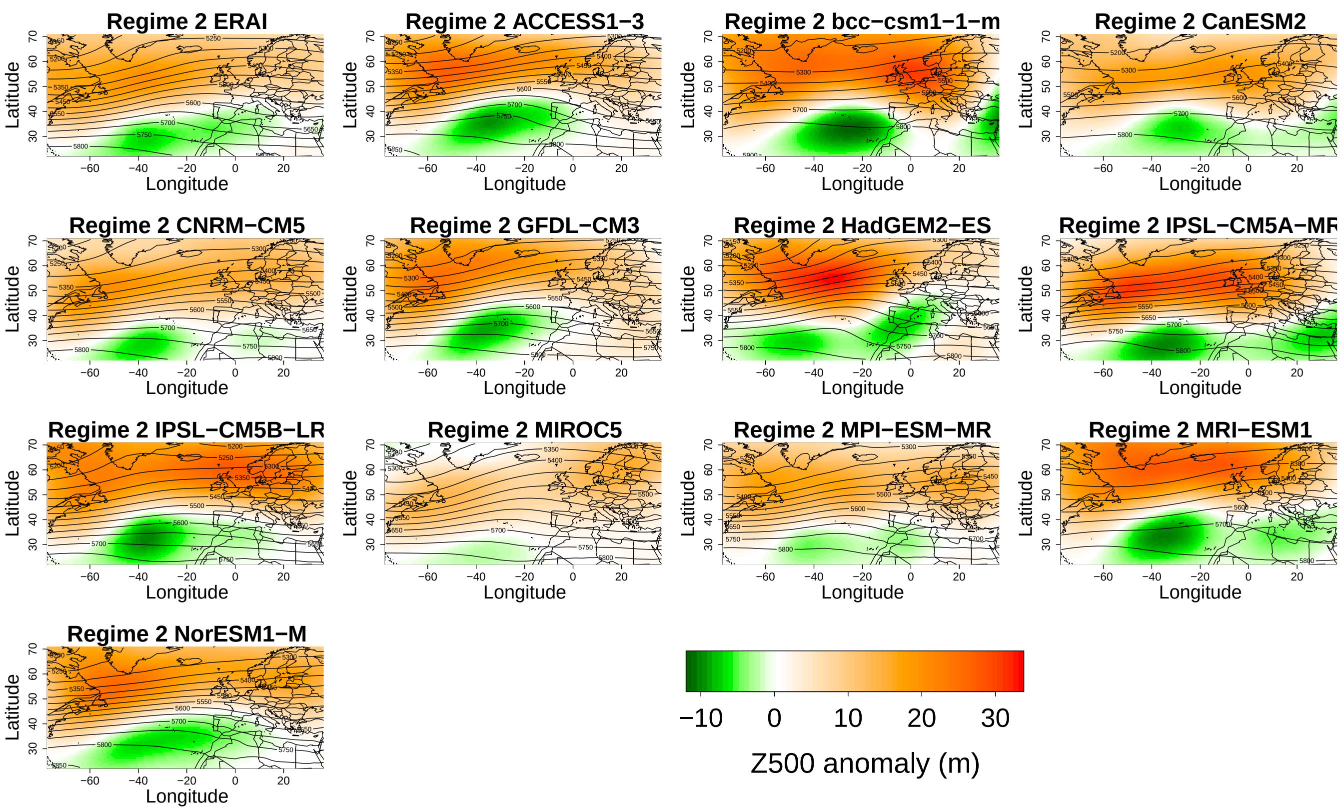

Figure 2. As in Sup. Fig. 1 but for the second regime.

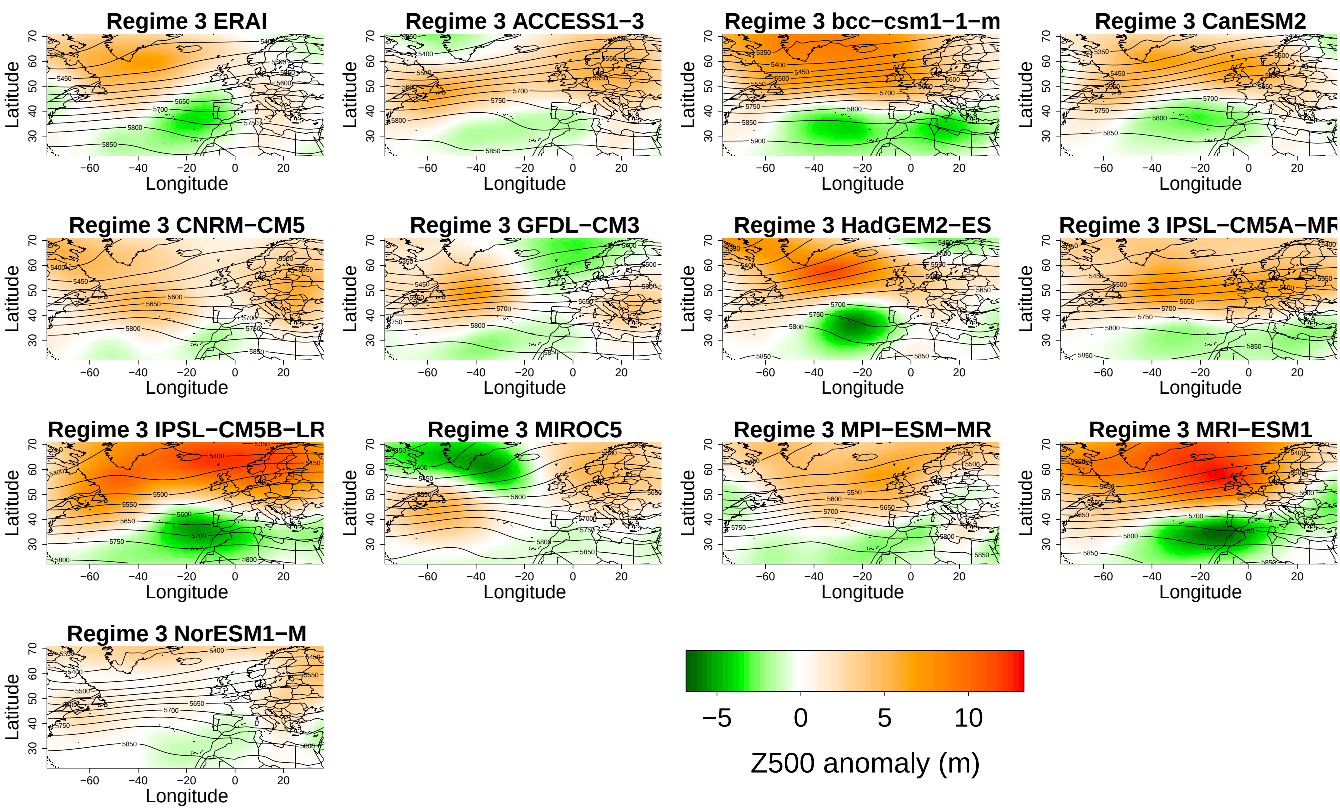

Figure 3. As in Sup. Fig. 1 but for the third regime.

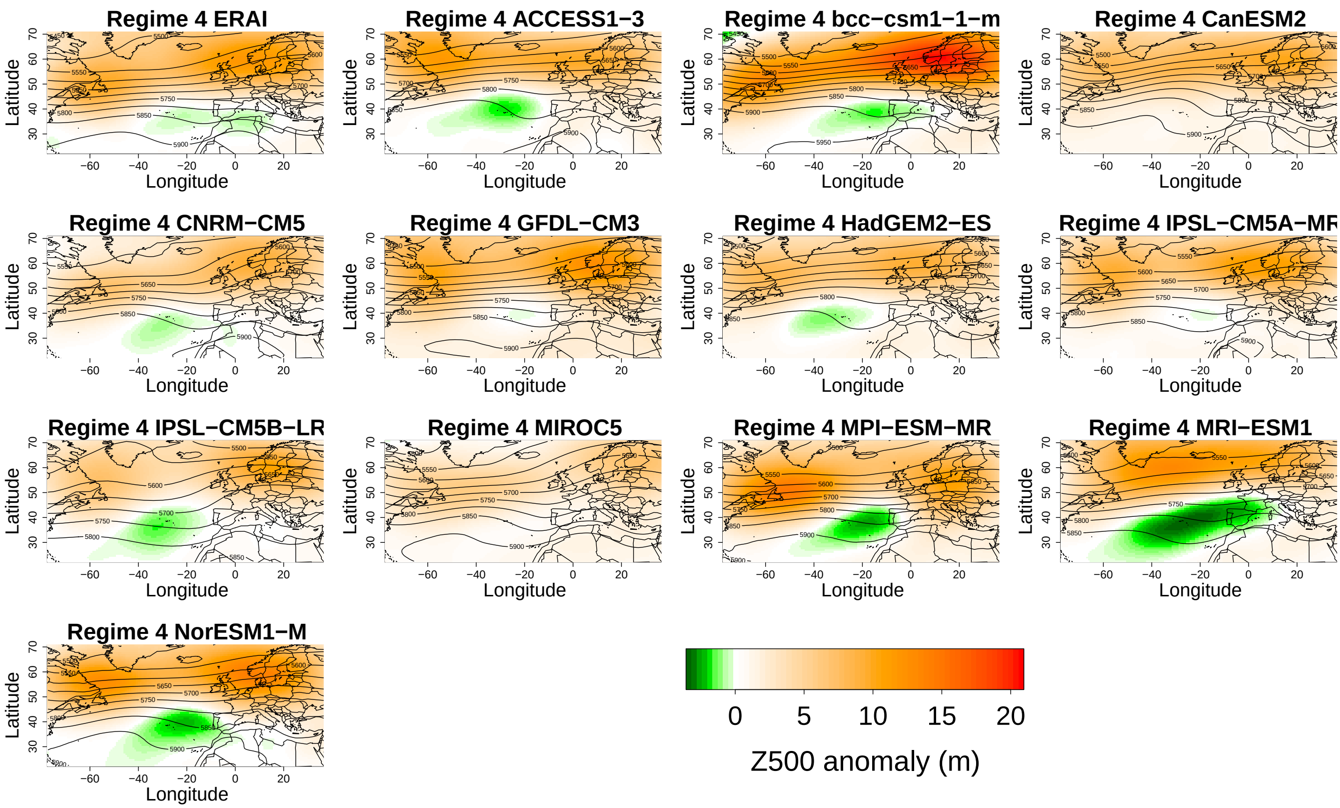

Figure 4. As in Sup. Fig. 1 but for the fourth regime.

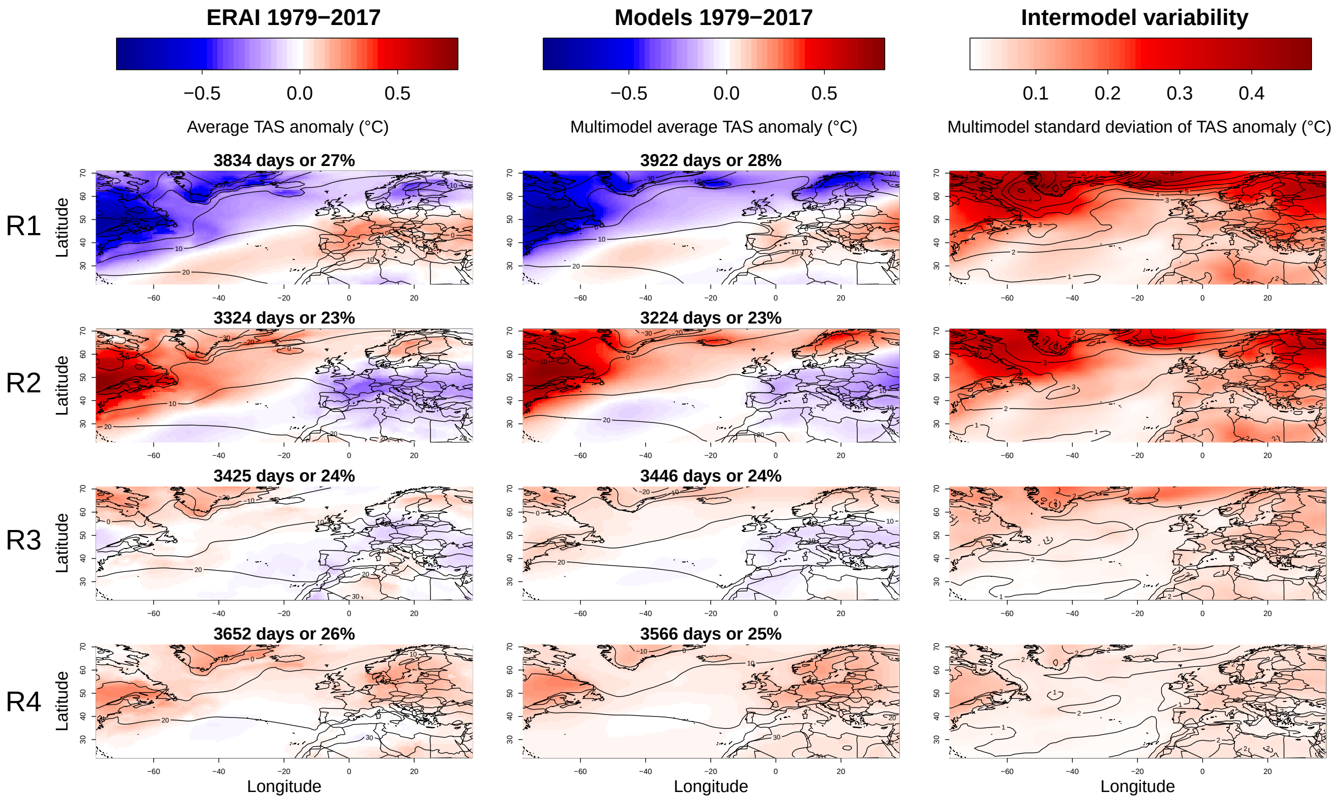

Figure 5. Composite TAS maps conditional to the four regimes (one per row) for ERAI (first column) and climate models (second column; each map shows the average of 12 composite maps; third column shows standard deviation of TAS between the 12 composites). The maps are calculated by averaging the seasonal anomalies (shading) and raw values (contour lines) over the days belonging to the regime. Seasonal anomalies correspond to the raw values minus the average seasonal cycle. The number of days per regime is shown above each map (average of 12 values for the climate models).

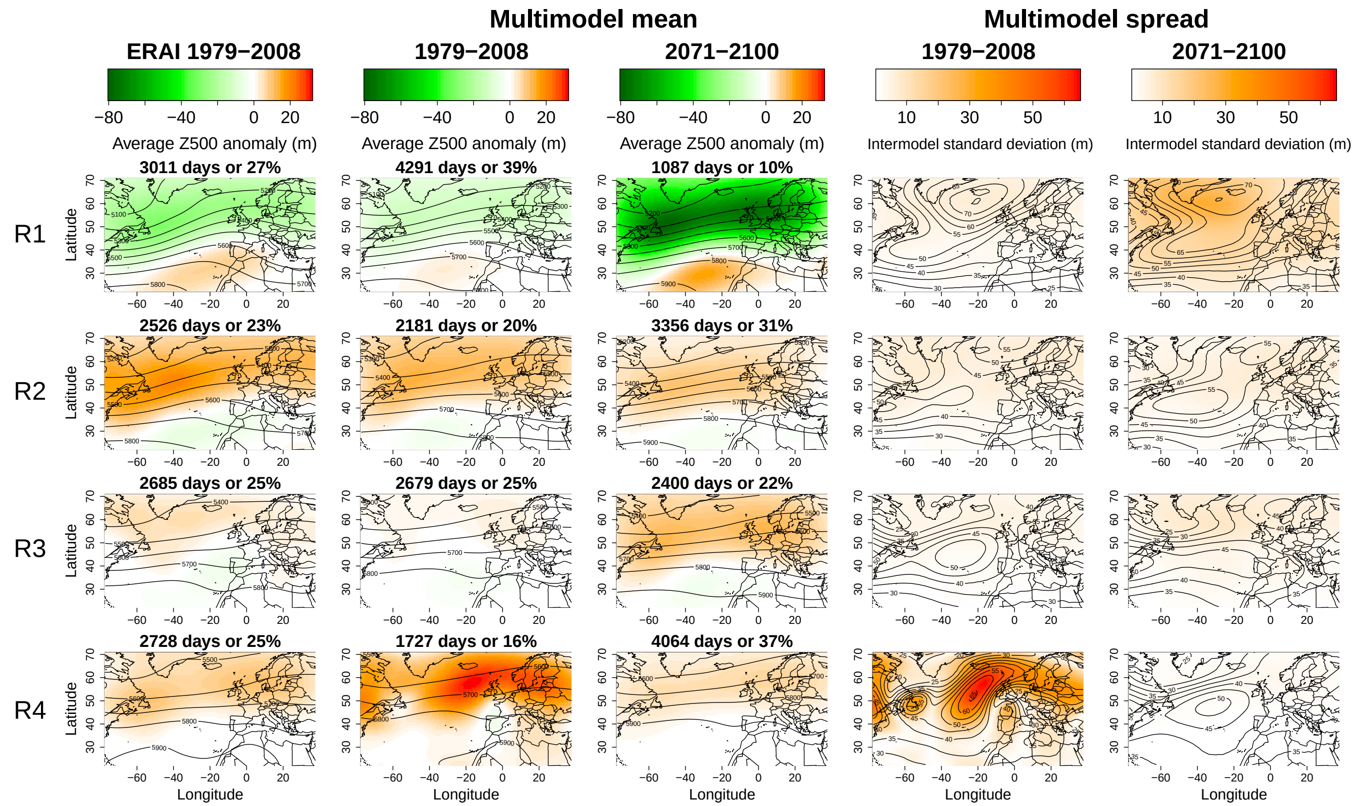

Figure 6. Composite maps of the four regimes (one per row) in the past (1979-2008) for ERAI (first column) and the 12 climate models (second column), and future (2071-2100) for climate models (third column). Color shades show Z500 seasonal anomalies (raw value minus the 30-year average seasonal cycle) and contours show raw Z500 values. The composite maps for climate models are averaged over the 12 composites (the standard deviation is shown for the past (fourth column) and future (fifth column). The number of days per regime is shown above the maps (average of 12 values for the models). The clustering was done over the full time period (1979-2017 for ERAI, 1979-2100 for 11 climate models and 1981-2099 for Hadley). The clustering and calculation of raw Z500 values and seasonal anomalies was done individually for each dataset.

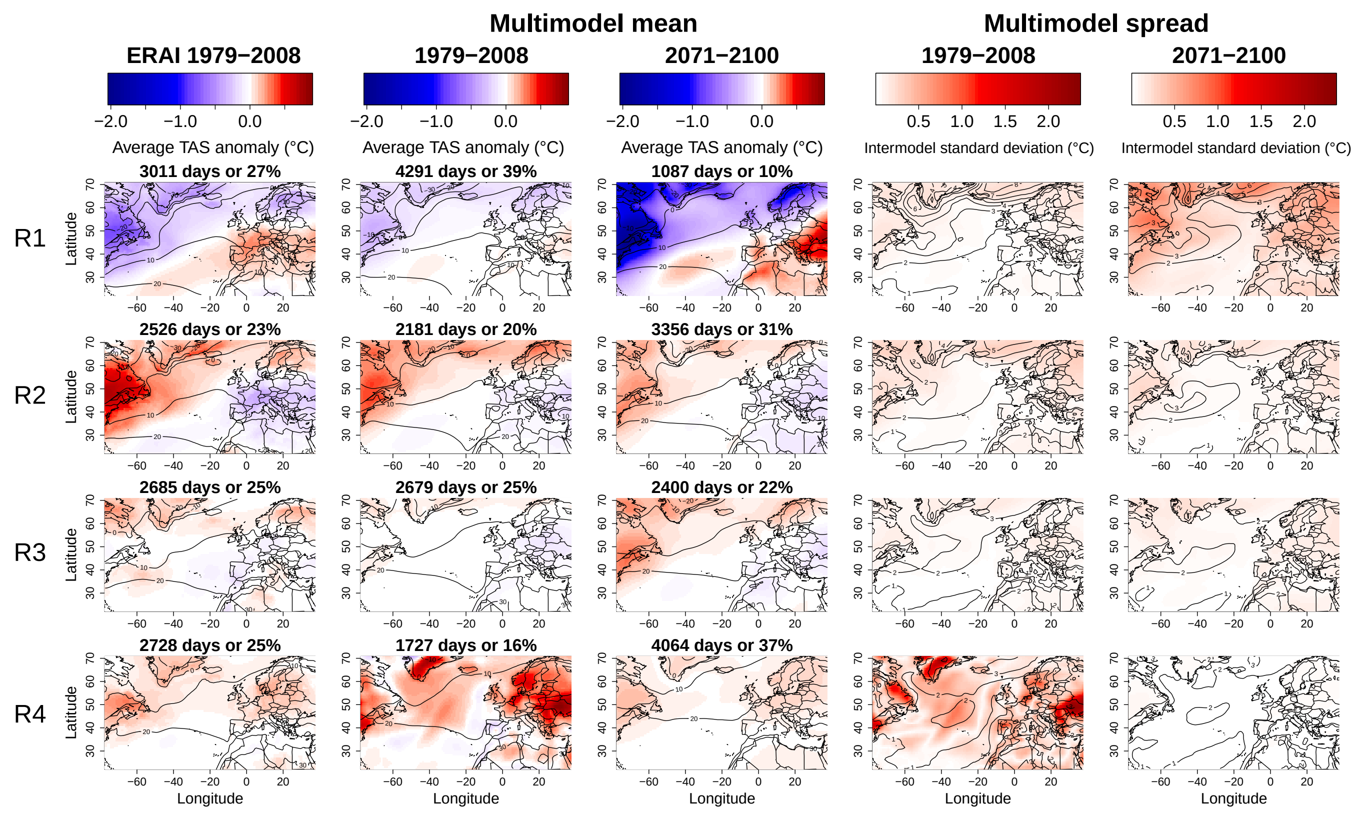

Figure 7. As in Sup. Fig. 6 but for TAS conditionally to the regimes.

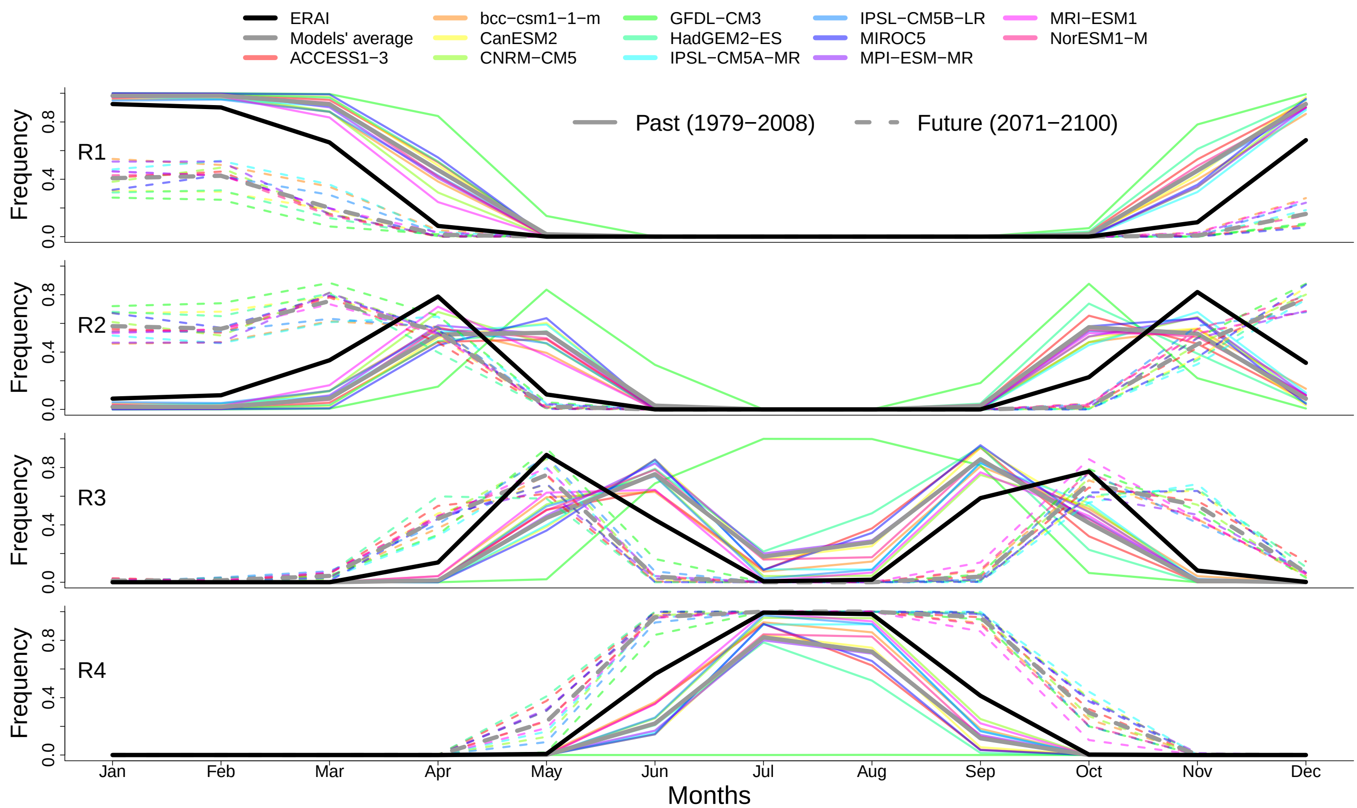

Figure 8. Average seasonal cycle of the four regimes for ERAI and climate models in the past (1979-2008) and future (2071-2100).

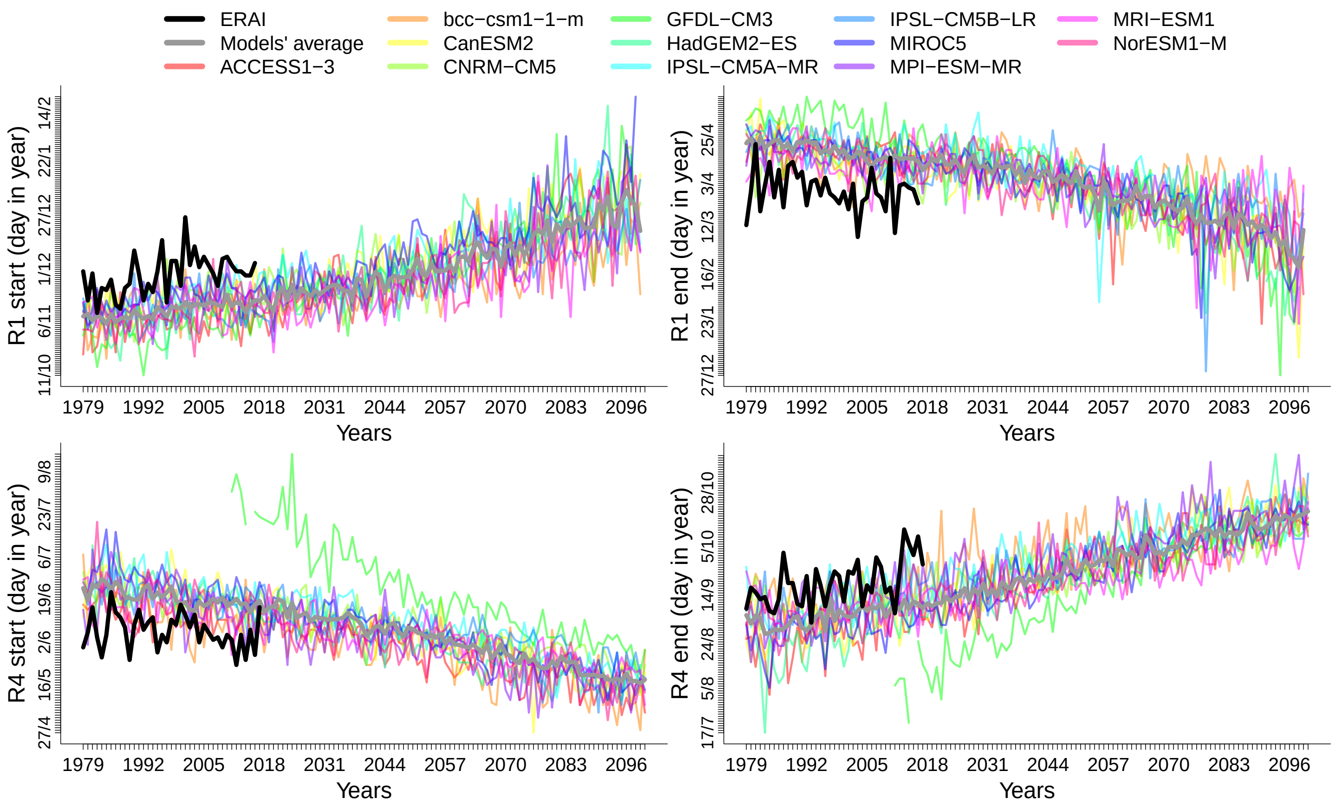

Figure 9. First and last dates of R1 (winter conditions) and R4 (summer conditions) occurrence in ERAI (1979-2017) and climate models (1979-2100).

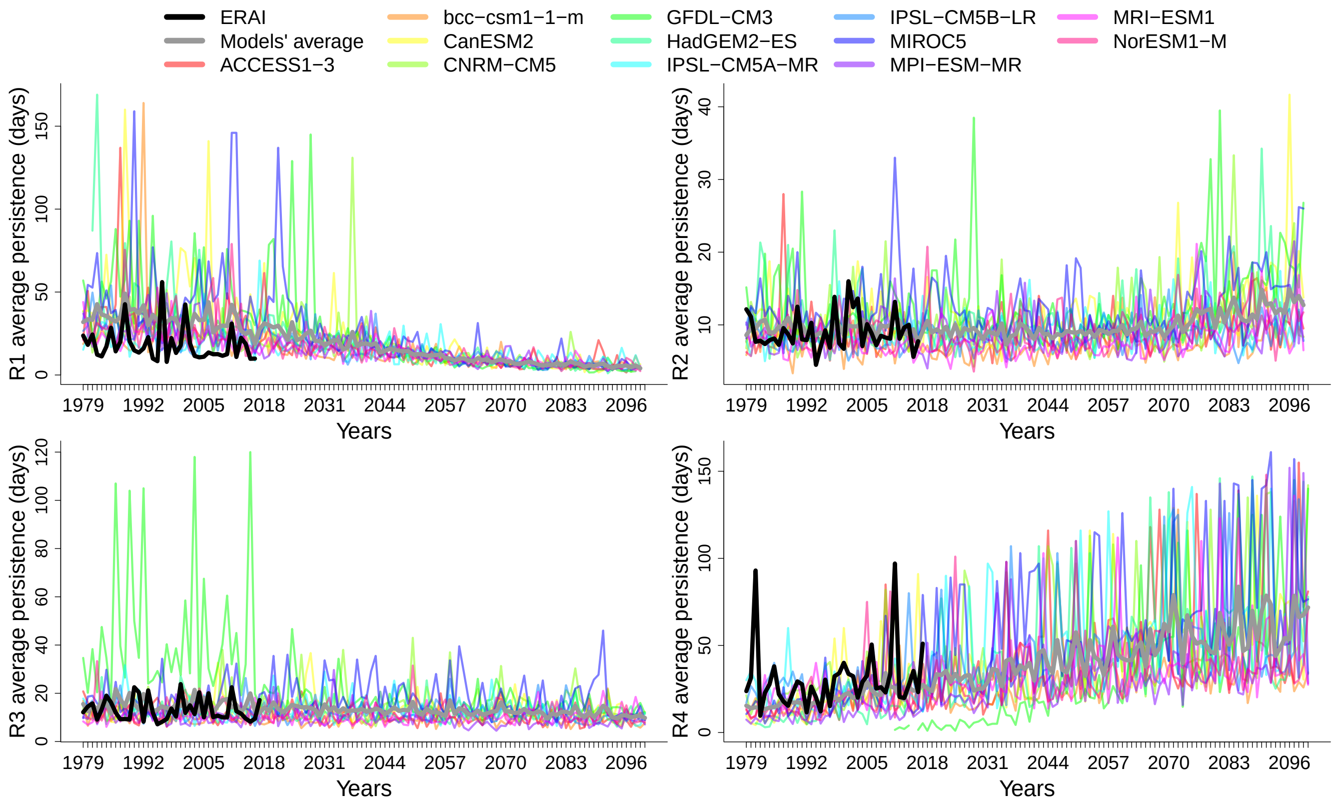

Figure 10. Average persistence of the four regimes in ERAI (1979-2017) and climate models (1979-2100).

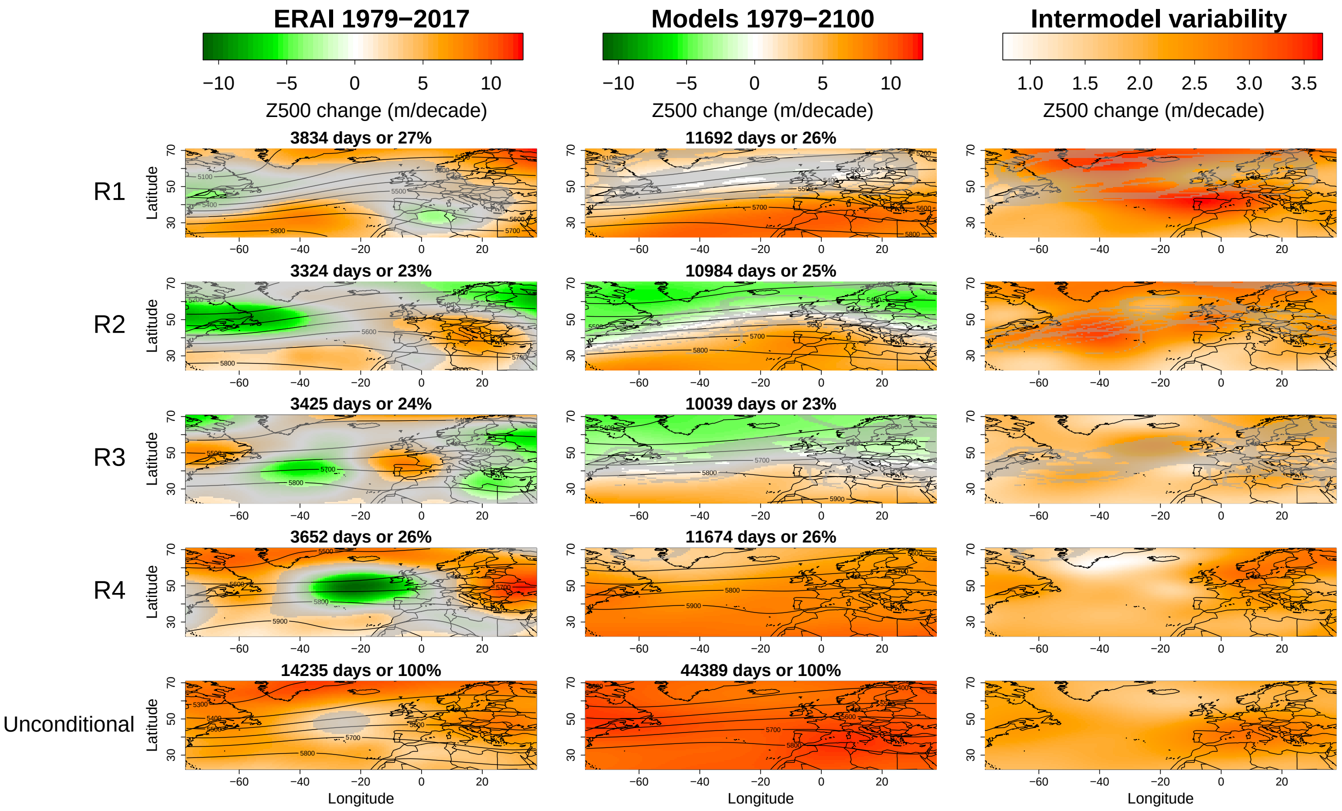

Figure 11. Maps of linear trends by regime (one per row) for ERAI (first column) and climate models (second column; third column: standard deviation). Color shades show trends and contours show raw Z500 values according to the regimes. The number of days per regime is shown above the maps (average of 12 values for the climate models). Multimodel results are represented through the mean of the trends (slope and p-value). Grey areas correspond to trends that are not significant (p-value > 0.05).

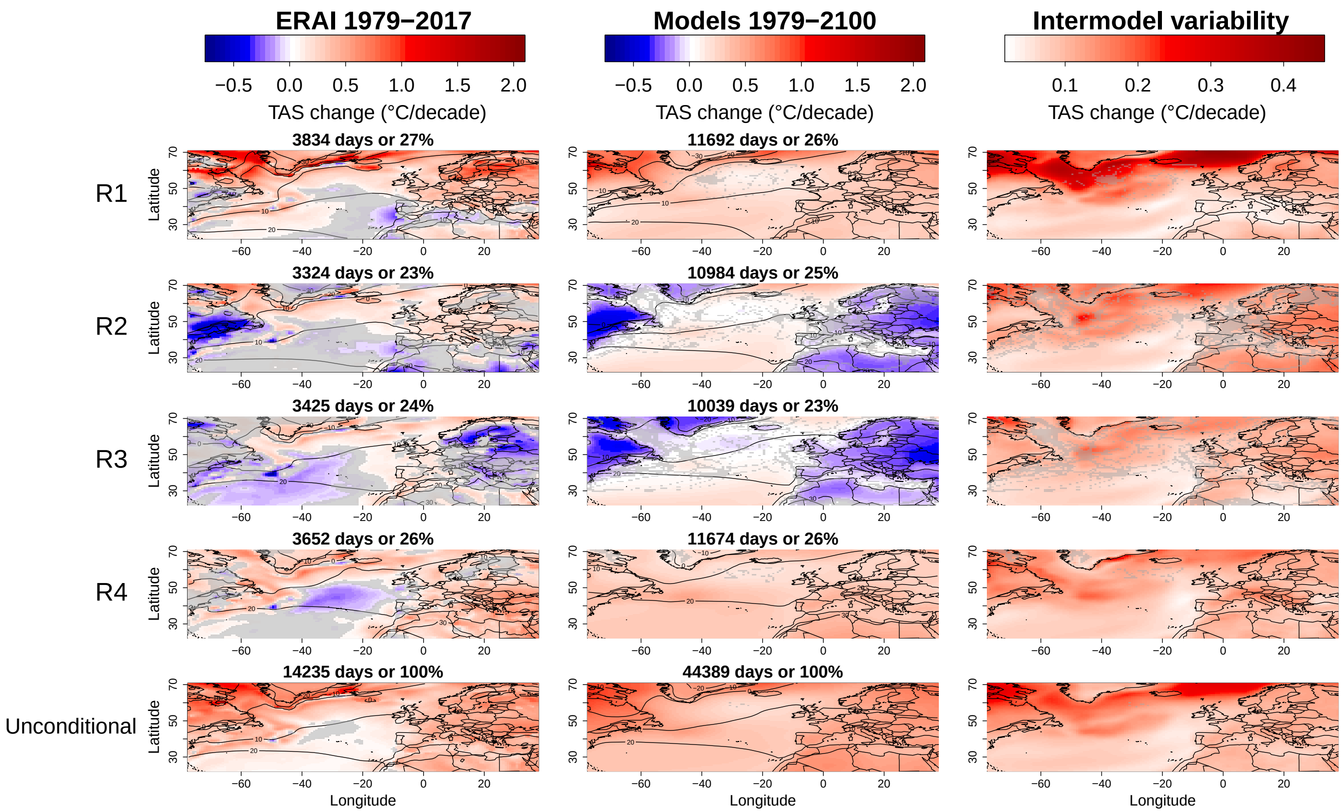

Figure 12. As in Sup. Fig. 11 but for TAS.

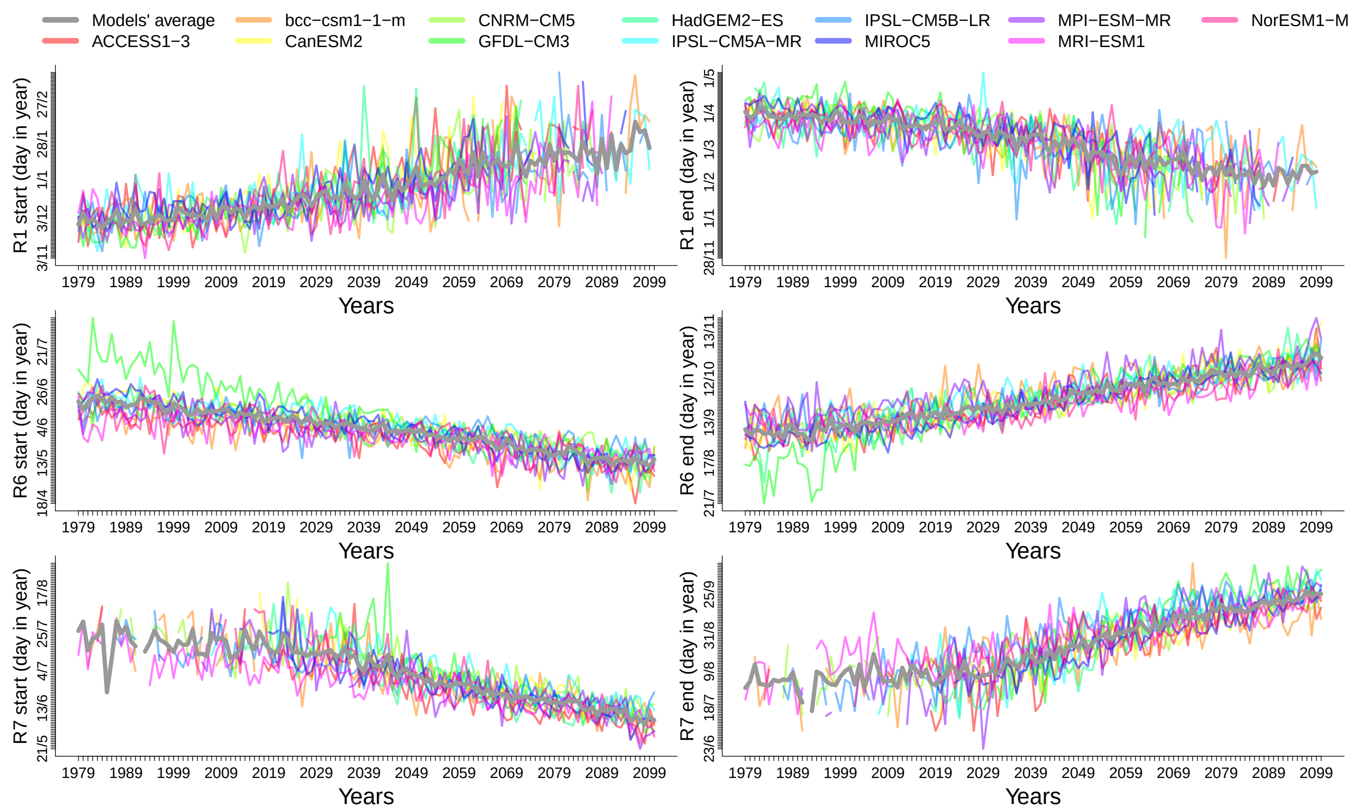

Figure 13. As in Sup. Fig. 9 but with seven regimes (R1, R6 and R7 shown).

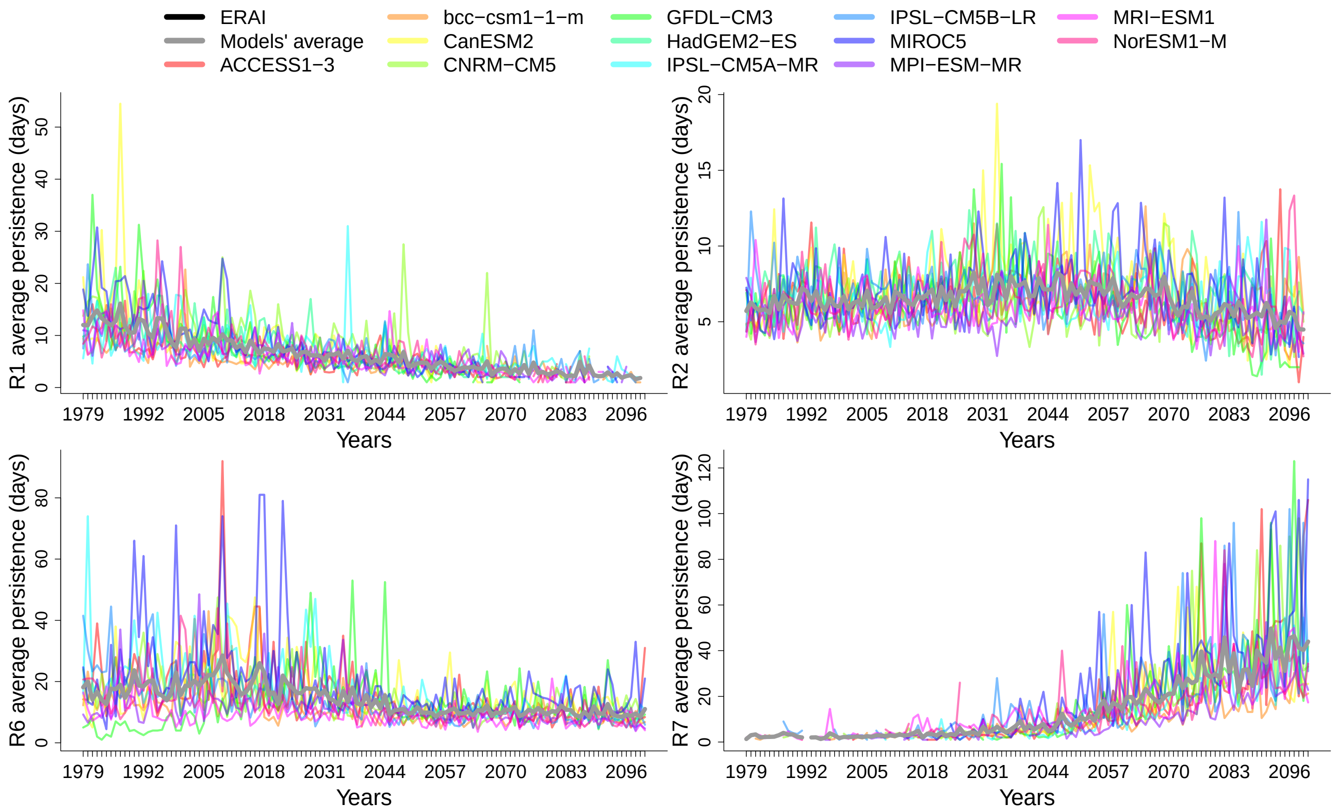

Figure 14. As in Sup. Fig. 10 but with seven regimes (R1, R2, R6 and R7 shown).

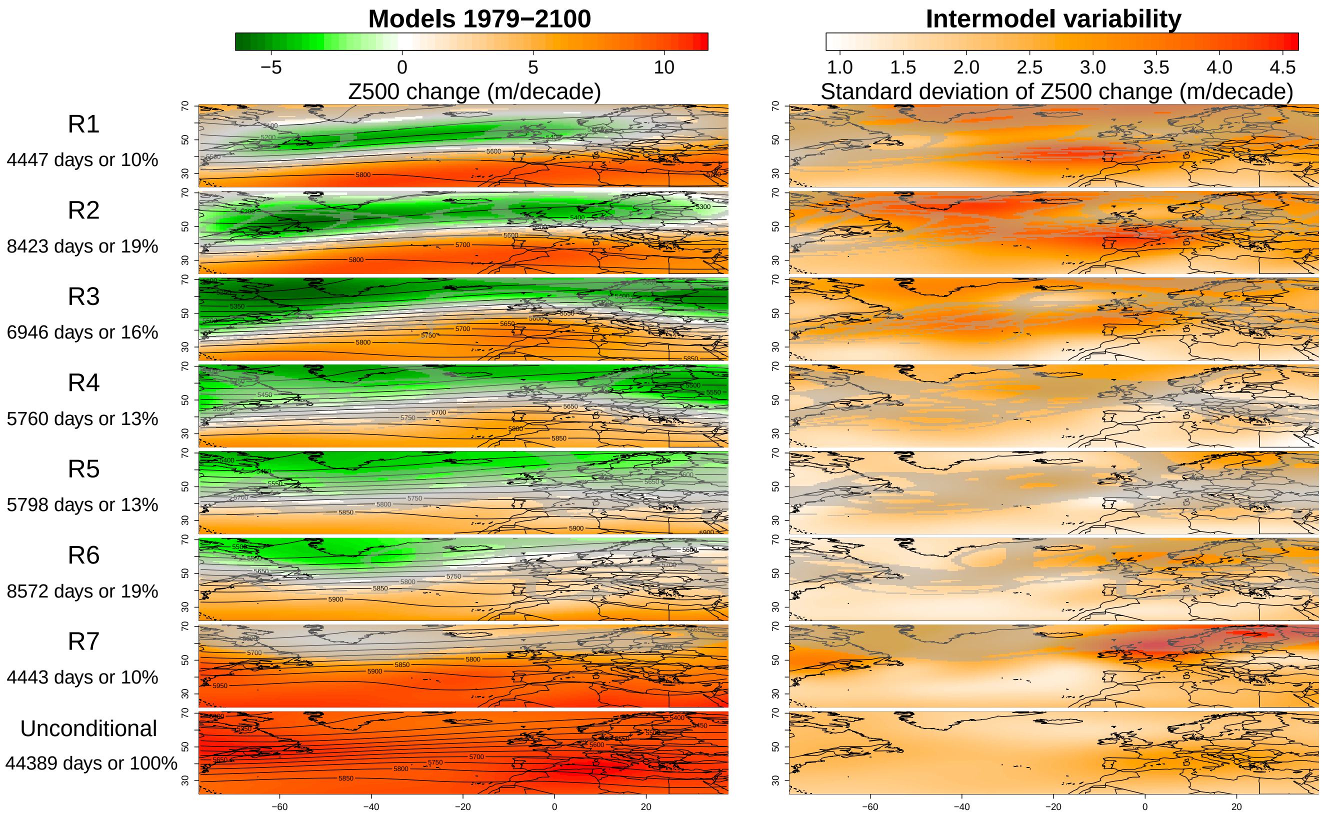

Figure 15. As in Sup. Fig. 11 but with seven regimes for climate models (without ERAI).

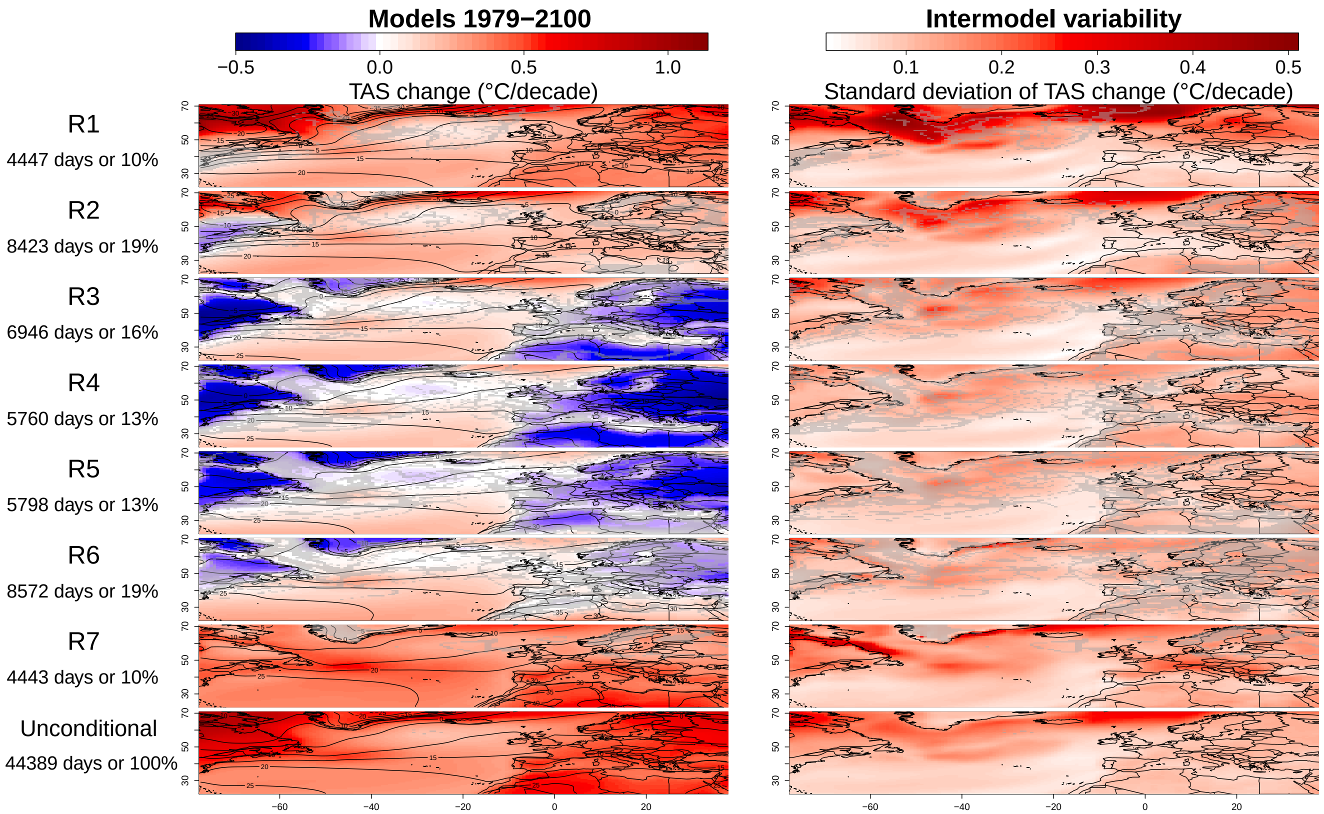

Figure 16. As in Sup. Fig. 15 but for TAS conditionally to the regimes.

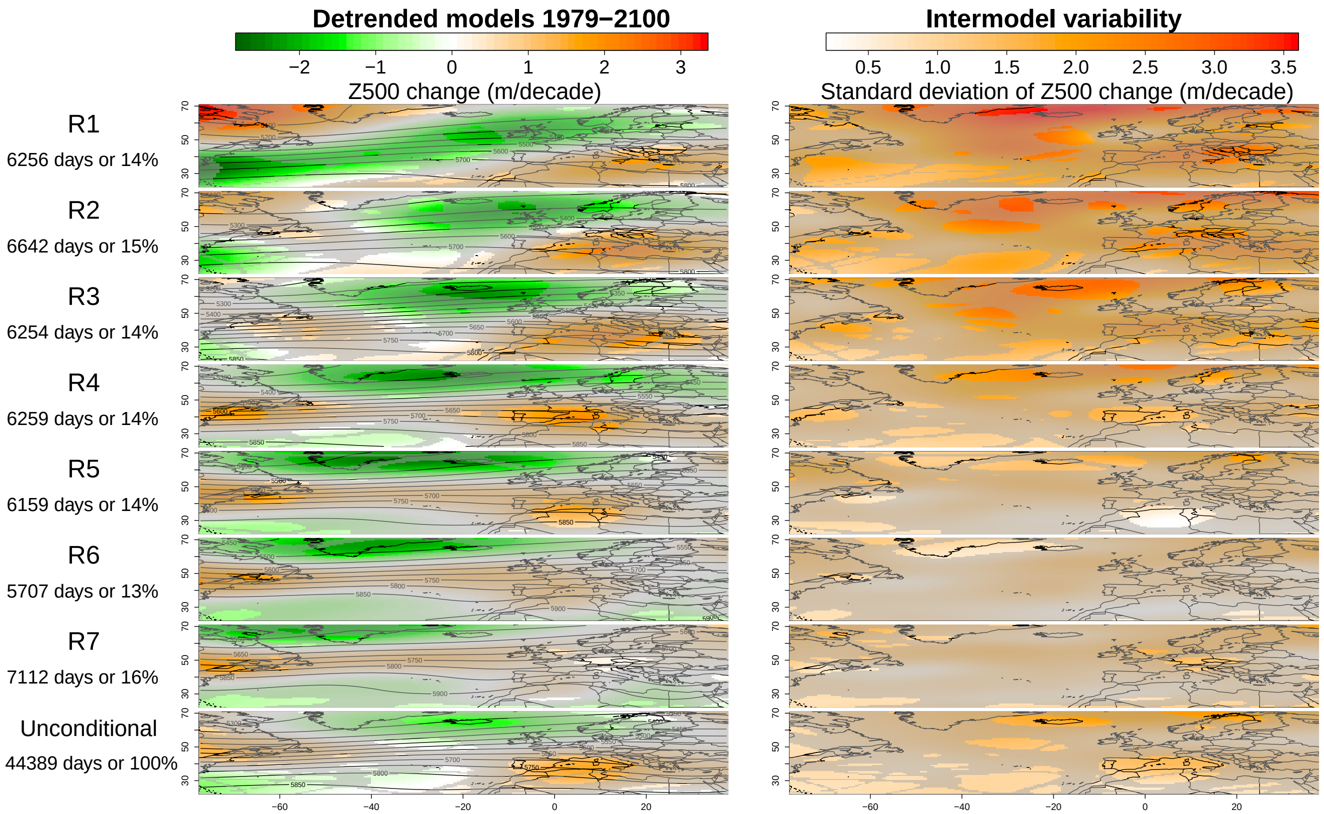

Figure 17. As in Sup. Fig. 15 but after detrending the data from climate models.

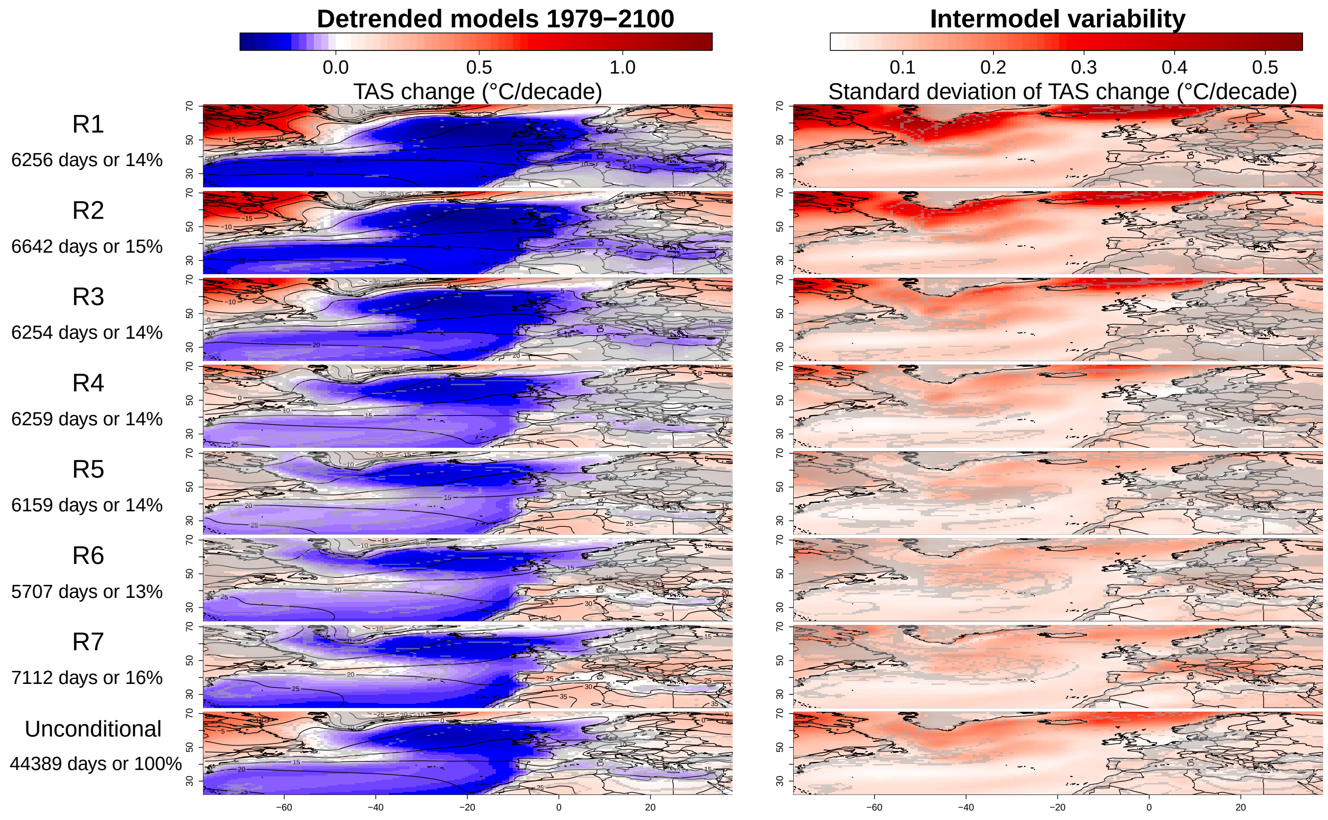

Figure 18. As in Sup. Fig. 17 but for TAS.

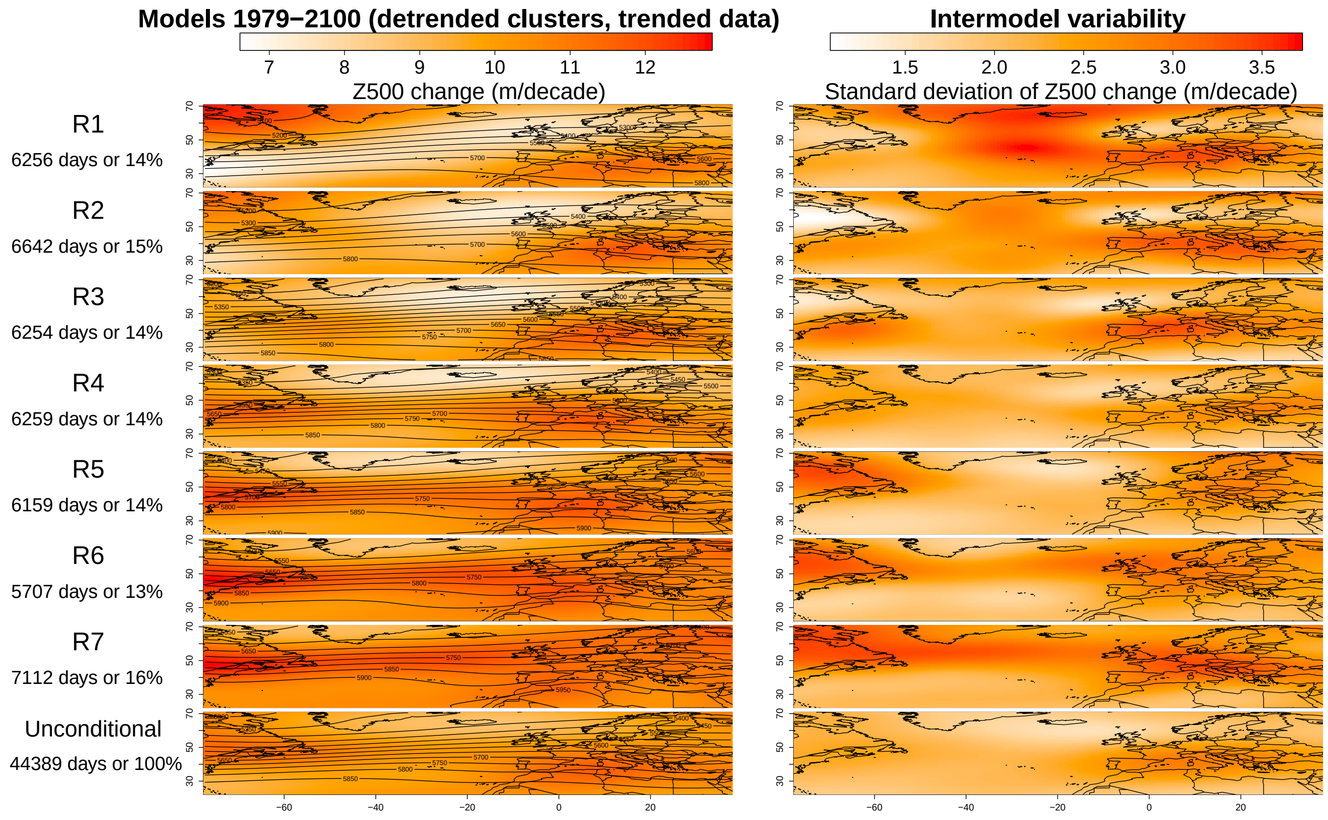

Figure 19. Regime composite maps calculated on Z500, conditionally to the clusters defined on detrended Z500.

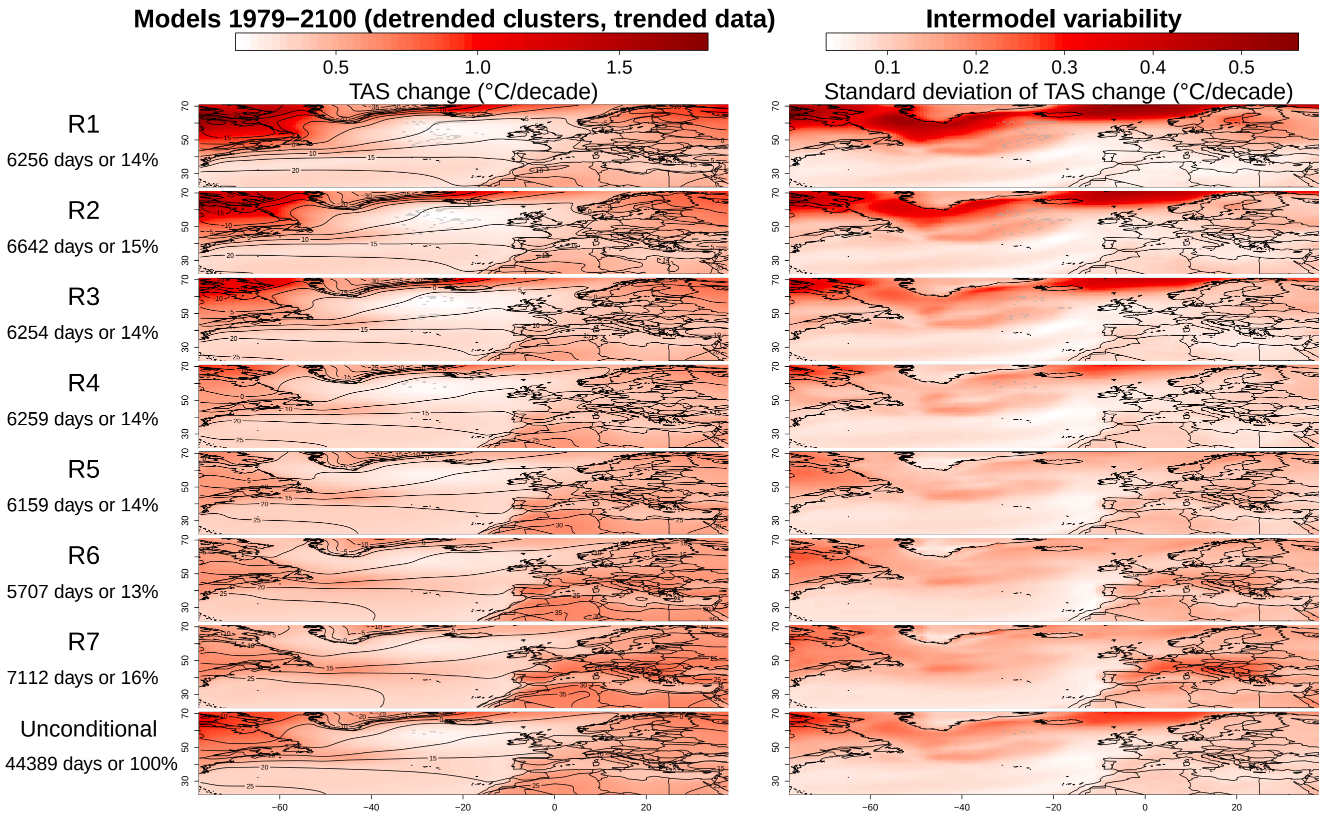

Figure 20. Regime composite maps calculated on TAS, conditionally to the clusters defined on detrended Z500.

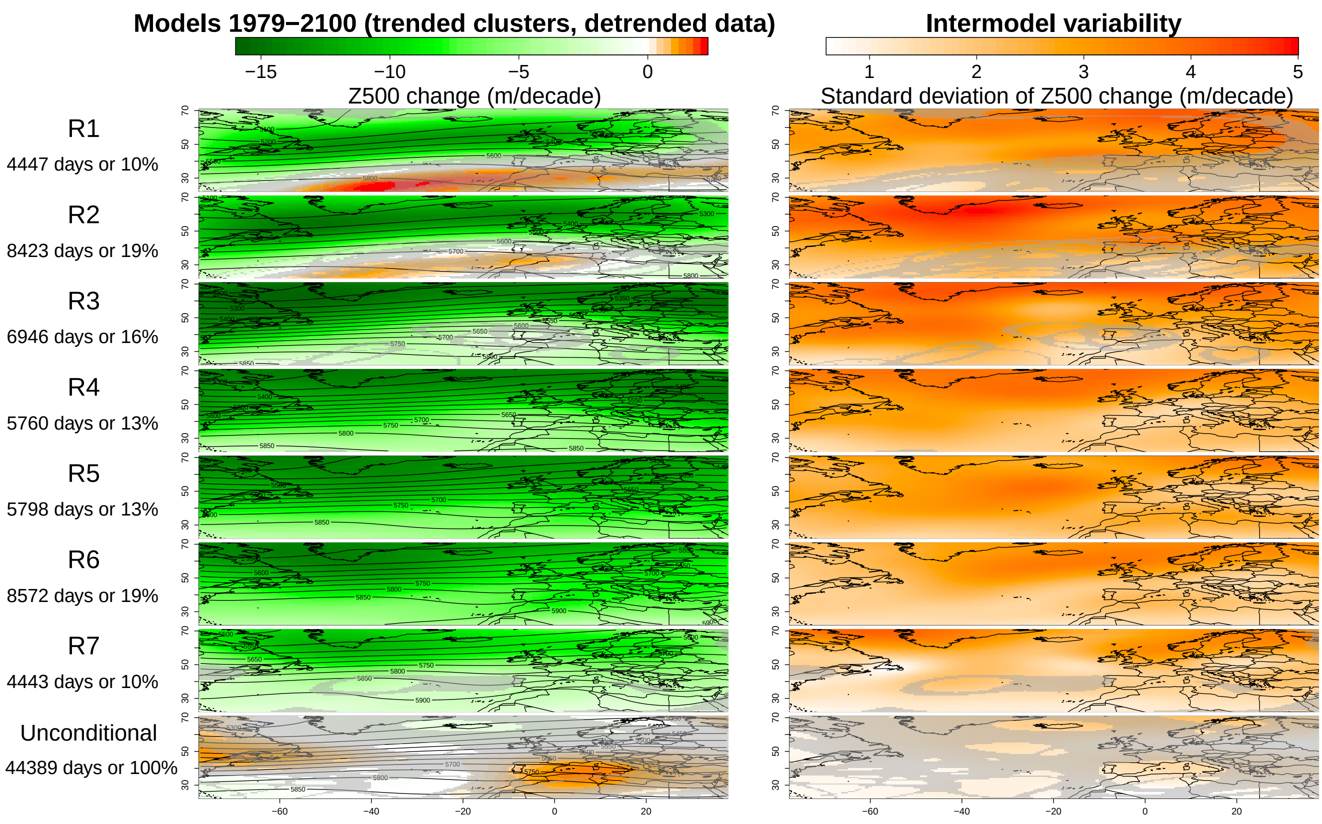

Figure 21. Regime composite maps calculated on detrended Z500, conditionally to the clusters defined on Z500.

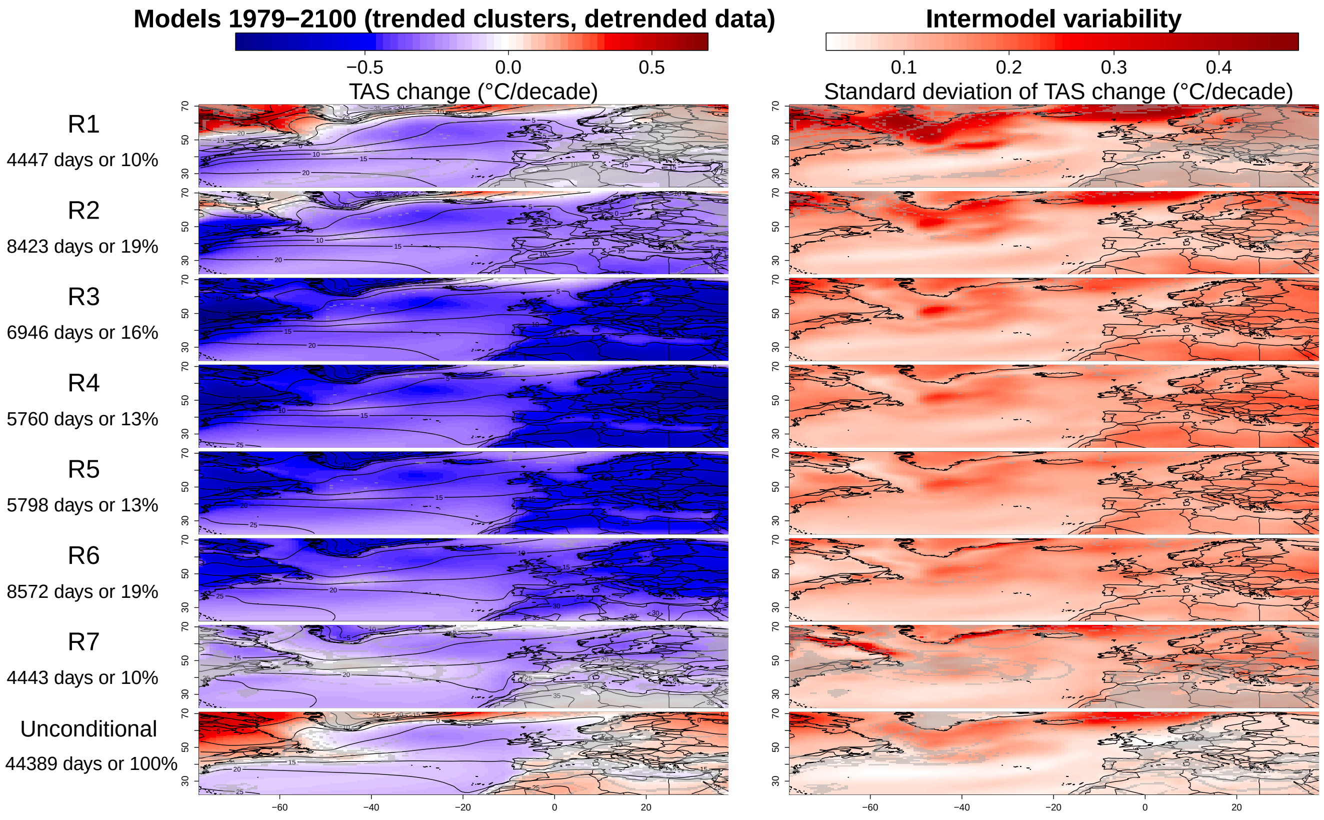

Figure 22. Regime composite maps calculated on detrended TAS, conditionally to the clusters defined on Z500.