## **Supplementary Material: Variability of surface climate in simulations of past and future**

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Figure S1. Areas considered in the calculation of the modes of variability (Sect. 2 in the manuscript).



Figure S2. As in Fig. 5, but for years of anomalously low precipitation (one standard deviation below the average).



**Figure S3.** Composite of the precipitation anomalies (in mm/day) associated with low precipitation (left) and high precipitation (right) extremes in five regions with Mediterranean climates as in Suppl. Fig. S2 and Fig. 5 in the manuscript.



**Figure S4.** Shown are the scaling exponents  $\beta$  for the selected experiments (rows) and for three variables of interest (columns), fitted between timescales of 4 months and 20 years. White regions indicate zero scaling (i.e., "white" spectra), reddish colors indicate positive scaling ("red" spectra showing increasing variance with timescale) and blue-ish colors indicating negative scaling ("blue" spectra indicating decreasing variance with timescale).



Figure S5. Change in the scaling of the spectral exponent  $\beta$ , as shown on figure S4, in the experiments with respect to the *piControl* experiment.