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Supplement of

The 1430s: a cold period of extraordinary internal climate variability during the early Spörer Minimum with social and economic impacts in north-western and central Europe

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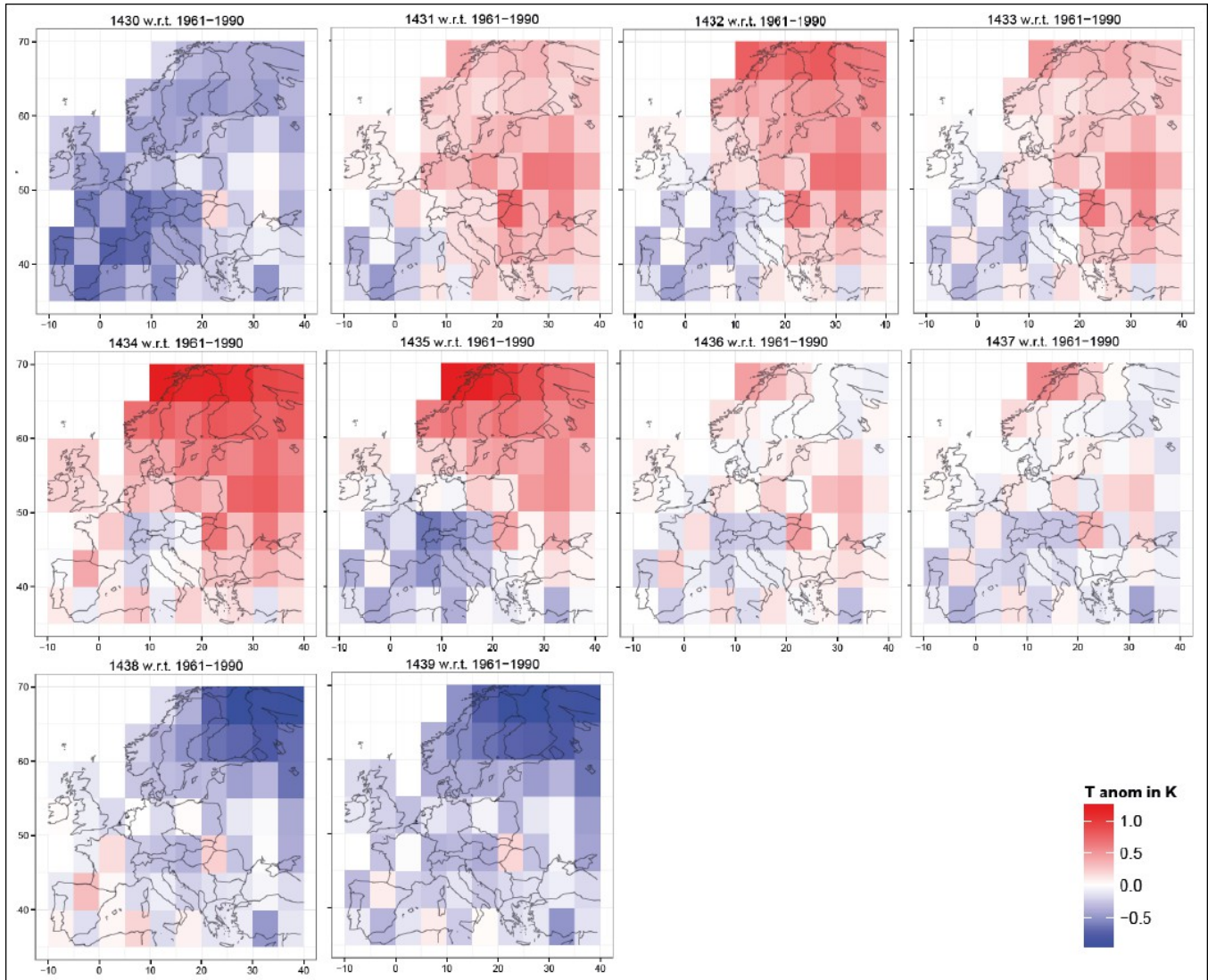


Figure S1: Reconstructed European summer temperature anomalies (w.r.t. 1961-1990) for the years 1430-1439. For further information, see Luterbacher et al., 2016.

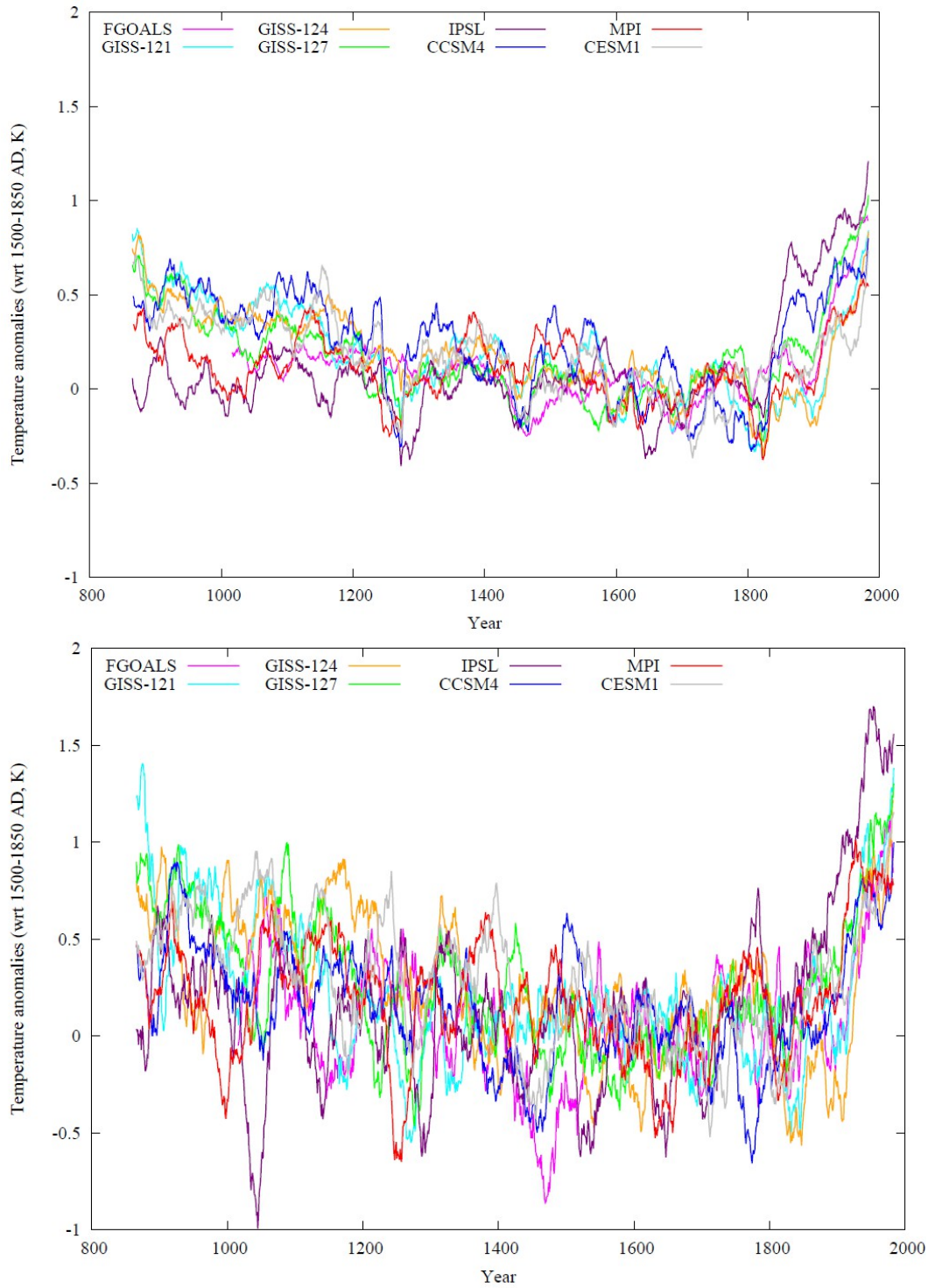


Figure S2: Time series of summer (JJA; top) and winter (DJF; bottom) temperatures averaged over Europe (8°W - 22°E , 41 - 55°N) simulated by the models in Tab. 2. Values are given as anomalies w.r.t. 1500-1850.

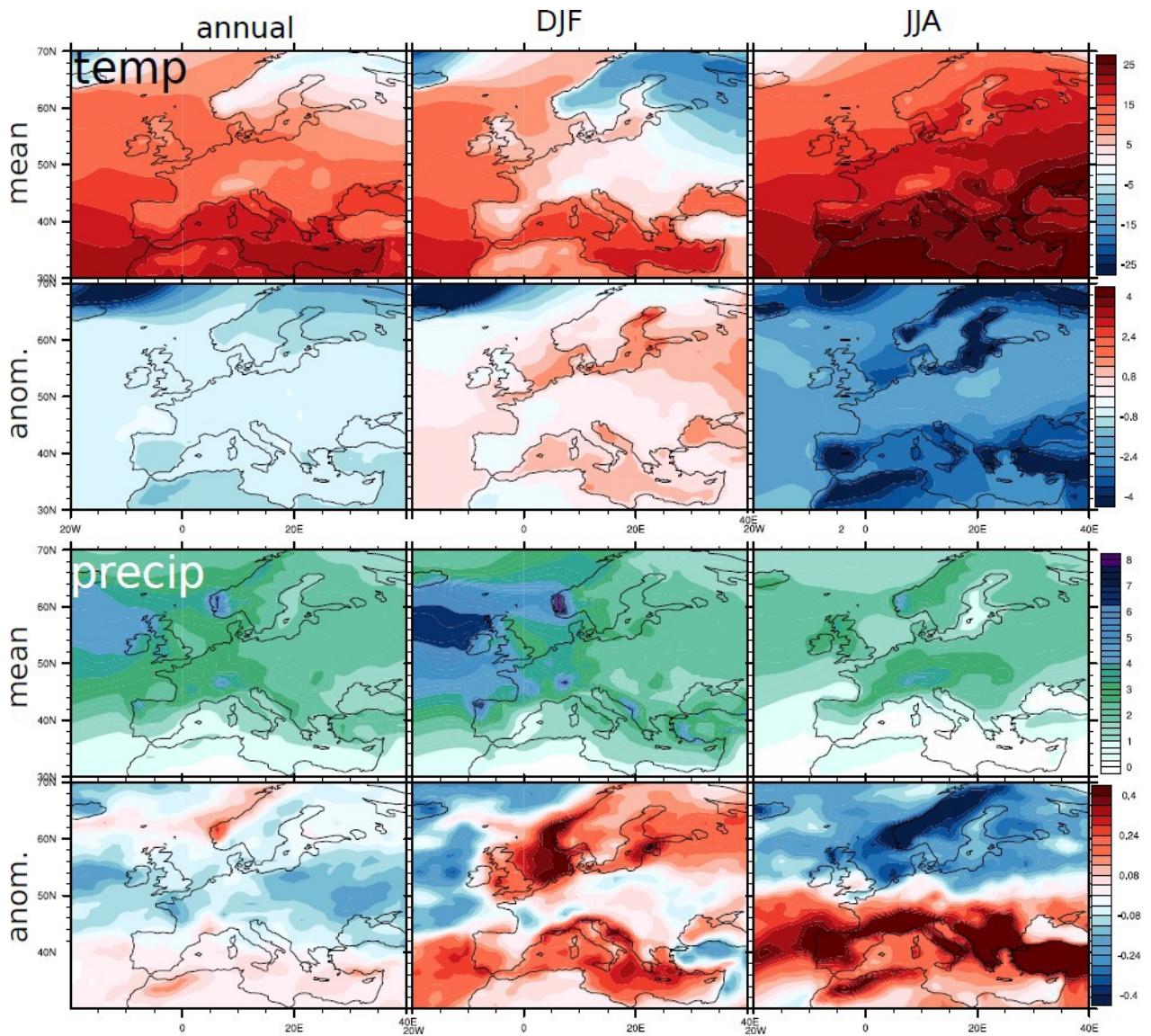


Figure S3: Maps of surface temperature (top; °C) and precipitation (below; mm/day). Shown are annual (left), DJF (middle) and JJA (right) averages based on the transient simulation (years 850–1849) with CESM. First row: mean for all years. Second row: mean anomalies for the ten years after the strongest three volcanic eruptions (30 years in total; 1258-1287, 1453-1482 and 1816-1845) compared to all years.

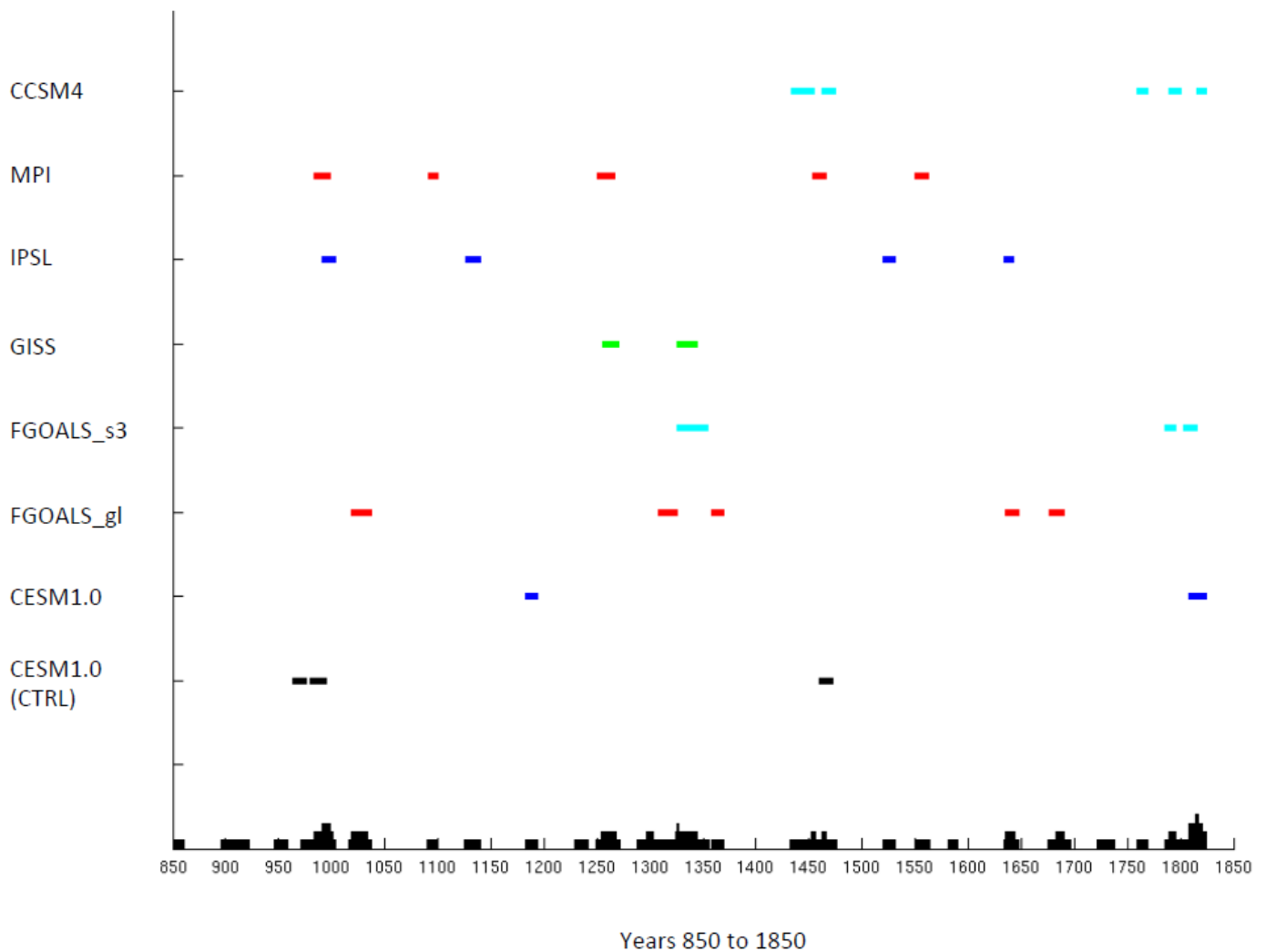


Figure S4: Cold decades over Europe (8°W-22°E, 41-55°N) based on a 10-yr moving window of winter temperatures. A decade is termed cold when at least 5 out of 10 winter seasons show temperatures cooler than mean-1sigma with reference to all winters (yrs 850–1849; CESM CNTRL: the whole length of the simulation, 600 yrs). The last line indicates the total number of counts/decade over all simulations. The threshold 5 out of 10 is chosen so that each model shows at least one cold decade.

References

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