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Sub-seasonal predictability of extreme European weather events.

The extended-range predictability of European surface weather variables is generally low because of unpredictable transitions in the large scale flow. Forecast skill also depends on the definition of the response variable and constitutes a trade-off between the threshold or extremity of the anomaly one wants to predict, the level of spatial and temporal aggregation and the desired lead-time. This study investigates this trade-off by scoring probabilistic temperature and precipitation forecasts from the ECWMF sub-seasonal system, both raw and corrected with simple Model Output Statistics, against the E-OBS data set. We contrast the unconditional scoring also with conditional scoring as the predictability of distinctive classes of weather events can greatly depend on persistence of the large scale flow, and on regional antecedent conditions, both of which create special configurations in which extremes can occur. With spatial and temporal aggregations specifically tailored for these classes, we investigate if conditional low-frequency predictability can be found and can potentially be exploited to improve sub-seasonal temperature and precipitation forecasts for Europe.

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