



Tailored climate indices can improve seasonal forecasts

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The goal of climate services is to provide information for users, tailored towards their specific interests, which can be achieved with the aid of climate indices. In EUPORIAS, the user needs pose an important topic and the specific needs are central to each climate service prototype. This study addresses the question whether this specific user interest can be employed to improve the skill of a forecast. Many areas show little skill in seasonal forecasts, especially in Europe. We use the example of energy demand to illustrate how the skill of heating degree days (HDD) and cooling degree days (CDD) can be improved by weighting them with the population density and aggregating them by country. Hence, by changing the spatial scale from a grid point approach to country level, the skill of a forecast can change in a positive way. Furthermore, it is investigated how different characteristics of climate indices (count indices versus aggregated indices) compare in a skill analysis. Are indices such as counts of threshold exceedances as skillful as indices aggregated over a threshold when based on the same variable? And how does the skill of these indices compare to the skill of the underlying variable? As user-based information becomes more and more important, these urgent questions need clarifying. Therefore, we used a statistical toy-model which allows us to compare the above mentioned characteristics of climate indices. Multiple skill scores were analyzed in their behavior when applied on the mean variable, a count-based index and an aggregated index. Results indicate that differences in skill only exist when the predictability of the forecast model is high and the thresholds for the index lay at the tail of the distribution. These investigations provide basic information for the user how their index-based forecasts needs to be interpreted.