



Tailored seasonal climate predictions for wind energy users

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Climate predictions tailored to the wind energy sector represent an innovation to better understand the future variability of wind energy resources. These predictions can be beneficial for a number of decision-making processes in the wind industry such as the grid management or the planning of maintenance works. However, the large amount of complex information that arises from the seasonal forecasting makes difficult their application by wind energy users. The main goal of this work is the development of tailored climate information that can be afterwards used as a tool to inform wind energy users.

Probabilistic seasonal forecasts of 10-meter wind speed from the ECMWF System 4 have been used. As these predictions are affected by biases, we have applied three different bias-adjustments: simple-bias correction, calibration method and quantile mapping. After this step, we have evaluated their relative merit as a function of their impact of the characteristics of the forecast error and the usability of the resulting forecasts.

The resulting post-processed seasonal predictions will be used as input in a transfer model that translates climate information into wind power capacity factor. The transfer model is based on a multivariate regression of wind speed and temperature and produces probabilistic seasonal predictions of capacity factor, a widely used indicator for the wind energy users. The quality of these predictions as well as their benefit to the wind energy users should be further explored in different regions around the world.