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Near-surface wind speed statistical distribution: comparison between ECMWF System 4 and ERA-Interim

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In the framework of seasonal forecast verification, knowing whether the characteristics of the climatological wind speed distribution, simulated by the forecasting systems, are similar to the observed ones is essential to guide the subsequent process of bias adjustment. To bring some light about this topic, this work assesses the properties of the statistical distributions of 10m wind speed from both ERA-Interim reanalysis and seasonal forecasts of ECMWF system 4. The 10m wind speed distribution has been characterized in terms of the four main moments of the probability distribution (mean, standard deviation, skewness and kurtosis) together with the coefficient of variation and goodness of fit Shapiro–Wilks test, allowing the identification of regions with higher wind variability and non-Gaussian behaviour at monthly time-scales. Also, the comparison of the predicted and observed 10m wind speed distributions has been measured considering both inter-annual and intra-seasonal variability. Such a comparison is important in both climate research and climate services communities because it provides useful climate information for decision-making processes and wind industry applications.