



## **Comparing monthly statistical distributions of wind speed measured at wind towers and estimated from ERA-Interim**

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The energy sector is undergoing a major transformation with an increasing share of power supply from variable renewable energy sources and an increasing variability in energy demand in a variable and changing climate. The European Climatic Energy Mixes (ECEM) project will develop a demonstrator to assess how well different energy supply mixes in Europe will meet demand, over seasonal to long-term decadal time horizons, focusing on the role climate has on the mixes. ECEM is funded under the Copernicus Climate Change Service, operated by ECMWF on behalf of the European Union. Many surface climate variables needed to develop energy profiles are provided by the ERA-Interim Reanalysis. Among these profiles, are wind power supply with wind speed at different heights as main inputs to determine periods when the wind power plants are expected to produce more or less than expected. In this view, a preliminary assessment of the monthly statistical distribution of wind speed at the standard height for wind power plants (80 m) has been performed. Time series of wind speed were obtained for the towers at Cabauw in The Netherlands and offshore at Docking Shoal in the North Sea. Reference statistical distributions were built for each month. Similarly, estimated statistical distributions were built using ERA-Interim estimates of wind speed at different levels. One series was built with a power approach and a second with a log approach. The estimated statistical distributions are then compared to the reference for each month. The log approach produces stronger winds than the power approach for both sites. At Cabauw, both approaches do not produce enough large wind speed for all months. At Docking Shoal, the power approach exhibits statistical distributions very close to the reference ones. Those from the log approach are biased towards higher wind speeds.