MINIMISING UNCERTAINTY OF FUTURE WIND WITH MONTHLY - SEASONAL FORECASTS

Why? What is possible? What is available?

AIM: ***To reduce costs and increase certainty of future power generation (post-construction)***

HOW: ***Using probabilistic forecasts to quantify risk and guide operational decisions***

e.g. Evaluating the risk of extreme events, optimising maintenance schedules, facilitating bank credit

DATA USED: **10-m wind speed** of ECMWF S4 forecast system (**model**) and ERA-Interim reanalysis (**"observations"**)

MONTHLY WIND PREDICTABILITY

of December forecasts issued on the 1st November

SEASONAL WIND PREDICTABILITY

of December – February forecasts issued on the 1st November

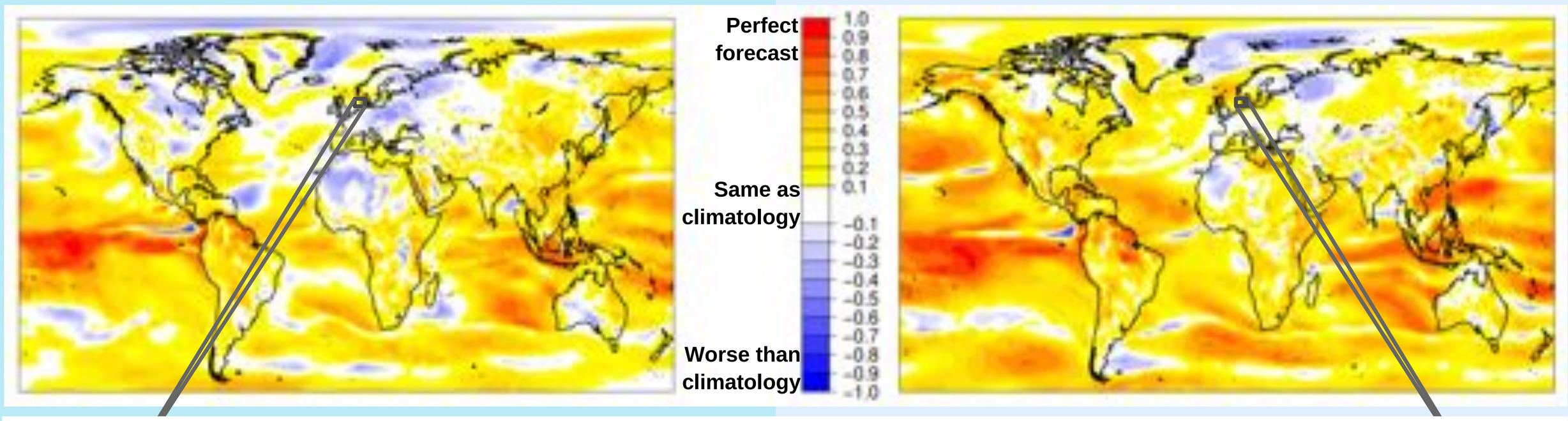

Figure 1. Forecast skill maps: each spatial grid-point shows the wind speed correlation between the forecast anomaly and the "observed" anomaly from 1981-2010, for month of December (left) and winter season (rigth).

CASE STUDY: NORTH SEA WIND
Winter Forecasts

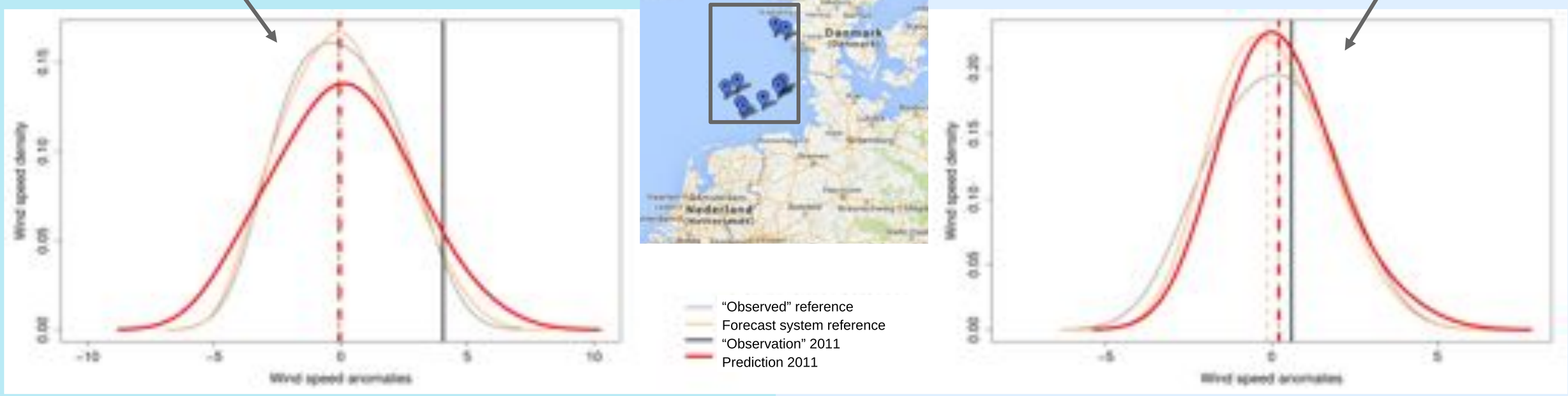

Figure 2. Probability Density Functions (PDFs) of wind speed anomalies for the North Sea region. This shows the comparison between "observed" (light grey curve) and predictions (orange curve) of wind speed anomalies over 1981-2010. Also shown is the "observed" (dark grey vertical line) value for December 2011 (left) and December-to-February 2011-12 (right), and the corresponding predictions (red curve), to illustrate a forecast that would have been issued on the 1st of November 2011.

Improving the forecast: observations needed, wind at nacelle height, local predictions and calibration.

More information: **http://www.arecs.org**

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