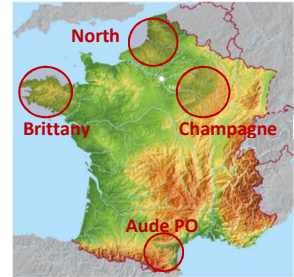


Improving long term wind resource evaluation in France Modelled data vs measured data

The choice of long term sources in France

Modelled Data VS Measured Data

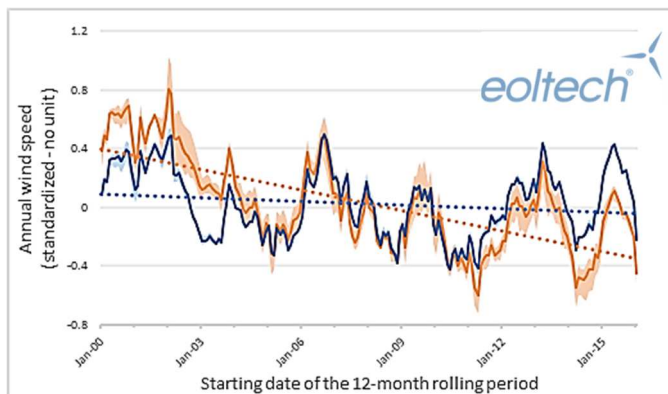
Eoltech has run a study to compare the **two types of datasets commonly used** as long-term reference sources for wind potential assessment processes. The study has been conducted across four of the main areas of wind development in France (North, Champagne, Brittany and Aude-PO). **The first source is reanalysis data** (mainly MERRA-2, a long-term global reanalysis dataset developed by NASA). **The second source offers data from a wind multisource index** based on the combination of consistent data from at least 4 ground meteorological stations in the same area.



The multisource index is considered as the reference dataset. Indeed, if the use of measured data requires a rigorous selection process and continuous control to check the consistency over time (sensitivity to the evolution of the environment), using multiple masts ensures reliable results as the measurements are independent from one another.

Case in point: Long term trends analysis (2000 - 2016) in the Brittany region

— Average stations multisource — Range all stations multisource
— Average MERRA-2 — Range MERRA-2 datasets



Graph 1: Comparison of LT trends - Brittany

This graph represents the annual standardized wind speed (rolling averages) on the period 2000–2016 in Brittany.

It shows significant discrepancies between the MERRA-2-based trend and the reference trend based on multisource information.

Similar deviations have been found for the North and Aude-PO regions, although no bias was observed in Champagne (East area).

Key results and recommendations

The multisource index has allowed to identify a major drift in the long term wind trends in France, showing decreasing long-term wind potential. In three out of the four regions studied, **the wind data proposed by MERRA-2 tend to underestimate the decreasing trend observed** in the wind resource since the beginning of the 2000s. As a result, using MERRA-2 data in France can lead to **biases in long term production projections of 5 % or more.**

Similar tests were performed on other European countries (as Germany) and at this stage no similar biases were observed. However, if the global behavior of reanalysis data seems quite satisfactory in these countries, punctual biases were pointed out in some regions. Even if re-analysis data can be very useful information, we recommend when it is possible, to favour wind measurements from ground stations (at least for France) or to validate regularly modelled data with measured data in order to ensure the reliability of the long term prediction process.