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CENTRO NACIONAL DE
ENERGIAS RENOVABLES
NATIONAL RENEWABLE
ENERGY CENTRE



WIND ENERGY DEPARTMENT

LocalPred: ACCURATE FORECASTS FOR WIND ENERGY



LOCALPRED IS AN ADVANCED WIND ENERGY FORECASTING SYSTEM DEVELOPED BY CENER CONTINUOUSLY SINCE 2002.

This prediction system was originally designed for complex terrain wind farms being developed and validated for many different environments since it began to be operational in 2003: flat and complex terrain, continental areas, near shore areas and offshore wind farms. LocalPred is based on multi-model ensemble technology, using various numerical weather prediction (NWP) models as input and different statistical algorithms. LocalPred is able to produce accurate wind power predictions for the next hour up to seven days ahead. It includes algorithms based on Support Vector Machines, Canonical Correlation, ARMA, etc with the strategy of combining alternative

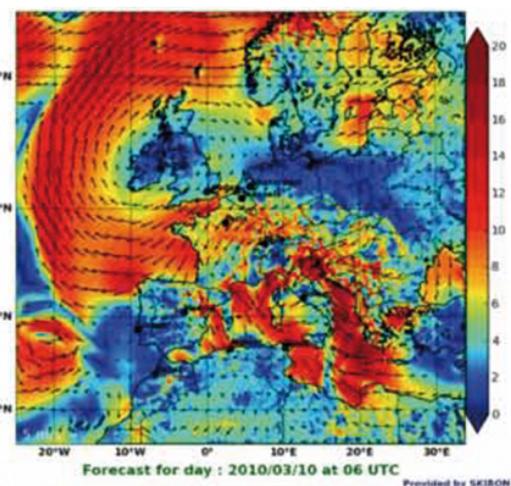
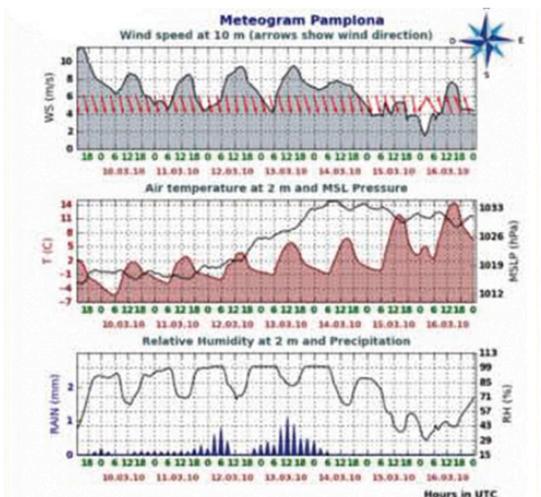
forecasts obtained through the different available NWP and statistical algorithms. CENER operational experience shows that an optimized forecast can be obtained through the combination of predictions weighted in a clever way. This optimization principle is applied for all forecasts, from one hour ahead forecasts to seven days ahead. On the other hand the use of several parallel forecasts ensures an extremely high reliability of the system, without losses of predictions due to failures of a single NWP provider.

Besides, Cener has developed a new methodology to analyze the accuracy of the forecasts under the point of view of the time misalignment. The Temporal Distortion Index (TDI), is presented as a very useful tool that allows deeper knowledge of the prediction models and, therefore, an optimal combination of them.

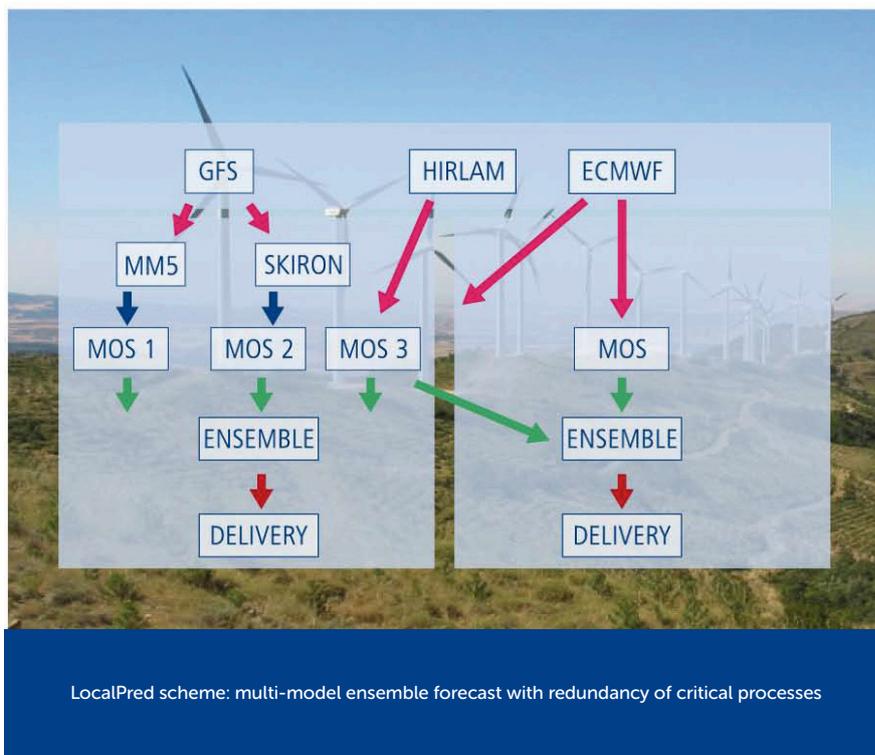
- Wind power predictions for the next hour up to the next seven days.
- Widely validated since 2003 in flat terrain, complex terrain, coastal areas and offshore.
- It can operate with or without online measurements.
- Operational experience in Spain, France, United Kingdom and China.
- LocalPred includes non hydrostatic mesoscale numerical weather prediction models (SKIRON), operated

at CENER that can be configured for any area of the world.

- LocalPred system can be adapted to any available meteorological forecast and if there is no available NWP, LocalPred can produce them for you with the mesoscale models included in the system.
- Frequency of forecasts and time of delivery can be adapted to the customer needs.
- Solar radiation forecasts available for photovoltaic plants and solar thermal power plants.



- Forecasts for promoters, wind farm owners, market agents, utilities and system operators.
- LocalPred has been validated in the framework of EU ANEMOS project.
- Robust against wrong data and extreme errors thanks to multi-model combination.
- Wind power forecasts can be produced from the first day of operation of your wind farm.
- 100% reliability (delivery on time) in the last two years of operation due to the redundancy of critical processes and an automated management system of the forecasts.
- Forecasts for the daily and intra-daily markets customizable for any market rules or administrative requirements.
- LocalPred can deliver forecasts for a single wind turbine, wind farms or regions in any country of the world.



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