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Improved Weather Forecasts for Energy Operations – the German Research Project Gridcast

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With increasing share of wind and photovoltaic power production in relation to the total power production, reliable and accurate forecasts of these energy sources are essential for transmission systems to operate in a secure way. Furthermore, the interaction between meteorology and energy industry provides the main optimization potential. Within the research project Gridcast, the Deutscher Wetterdienst (DWD) addresses these challenges in collaboration with Fraunhofer Institute (IEE) and the four German transmission system operators (TSO),
Amprion GmbH, TenneT TSO GmbH, 50 Hertz Transmission GmbH and TransnetBW GmbH to improve the weather and power forecasts for wind turbines and PV plants and to develop new forecast products, especially focusing on the grid stability.
All participants work close together to improve power forecasts.

The overarching goal of the project is to improve wind and PV power forecasts by combining improved power forecast models and optimized weather forecasts. DWD focuses on nowcasting, data assimilation and model uncertainty. During the project, the numerical weather prediction systems ICON-EPS and COSMO-DE-EPS (global and regional Ensemble Prediction Systems) of DWD will be generally optimized towards improved wind power and PV forecasts. This includes the investigation whether the assimilation of new types of data (e.g. Synop data) can lead to improved weather forecasts. Concerning probabilistic forecasts, the focus also lies on stochastic physics. Another important aspect of the project is to integrate the probabilistic information into decision making processes by developing user-specified products. In this paper an overview of the project Gridcast is given and first results are presented as well.