



The ORKA project: Improving COSMO-DE-EPS for Renewable Energy applications

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Due to increasing portions of power produced from the renewable sources wind and sun, the need for reliable meteorological forecasts to be used in the power production forecasts for these energy sources grows. Large discrepancies between forecast and real power production usually lead to financial loss and sometimes even force the power grid system operators to down-regulate the renewable energy sources for grid safety reasons.

With the aim to improve the complete forecasting chain for wind and solar power production, the research projects ORKA (“Optimierung von Ensembleprognosen regenerativer Einspeisung für den Kurzzeitbereich am Anwendungsbeispiel der Netzsicherheitsrechnungen”) and EWeLiNE (“Erstellung innovativer Wetter- und Leistungsprognosemodelle für die Netzintegration wetterabhängiger Energieträger”) were funded by the German “Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit”. Within these frameworks, power forecasters collaborate with the German Weather Service (DWD) on the one hand and system operators on the other. The ORKA project focuses on the further development of short-term renewable energy forecasts, especially also for grid safety applications. In this context, DWD intends to improve the ensemble weather forecasts of COSMO-DE-EPS with respect to the wind at hub height (about 100 m a.g.) and the solar short-wave radiation reaching the ground. The physical parameterizations schemes in the boundary layer are explored concerning sensitivities of wind and radiation to parameter variations. Parameters with a large influence can then be used to advance the ensemble perturbation method. In addition, the generation of initial conditions for the ensemble shall be adapted in order to increase the ensemble spread in the first forecast hours.

The focus of this presentation is on the modifications of the initial conditions perturbations and on the first new parameter variations studies with COSMO-DE-EPS in the context of ORKA.