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Forecasting the weather
- ensemble techniques
in probabilistic weather prediction

Verification of NWP forecasts for the location of the concentrating solar thermal power plant ANDASOL-3

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The successful integration of solar electricity from concentrating solar power plants into the existing electricity supply requires an electricity production forecast for 48 hours to cover the current day and the day ahead. For concentrating solar power plants the electricity production forecast is driven mainly by the direct normal irradiance forecast and - with lower importance - by temperature and wind speed forecasts as well as plant status and operation strategy of the storage and additional heaters.
Meteorological ground-based measurements are obtained from the Andasol location (near Guadix, Spain) and the Plataforma Solar de Almeria (Spain). A verification is performed for commercially available DNI forecasts based on Model Output Statistics (MOS) and for research data sets based on the ECMWF IFS and a WRF meteorological models. Options for the use of satellite-based cloud and irradiance information in an irradiance nowcasting approach are discussed. Additionally, verification results for temperature and wind speed forecasts with respect to the user perspective of a power plant operator are presented.