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Mean Annual Wake study for a wind farm in the province of Jiangsu (China)

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Local wake impact on flow conditions around wind farms are known to affect significantly wind energy production. We perform here simulations with the WRF model using the Fitch scheme for a wind farm on the Gulf of Tonkin (China). A period of one year is simulated at 333m horizontal resolution, with a daily operational forecasting set-up. Power and wind predictions are obtained and compared with real data provided by the management company. Results show that WRF yields good wind power operational predictions for this kind of wind farms, due to a good representation of the planetary boundary layer behavior of the region and the good performance of the Fitch scheme under these conditions. Significant wake effects are observed for several kilometers downwind from the farm especially in the prevailing wind directions (southeast-east). These results show that this method can provide valuable information for analyzing possible wind farm future locations.