Workshop
Minute Scale Forecasting
for the Weather Driven
Energy System

Forecasts of wind and clouds are important inputs for the control and value of renewable power plants. The forecasts on a time resolution of minutes or seconds are typically data driven, looking at upstream plants, all-sky images of clouds or direct measurements of wind by lidars. Therefore, to facilitate the dissemination of information about minute scale forecasting products, skill, applications, issues, and best practices to members of the electric energy community, we invite you to a Minute Scale Forecasting workshop with the goal of gathering information about methods used to produce the forecasts, the current state-of-the-art skill and uncertainty in forecasting for variables on high temporal resolution, current and planned research activities intended to improve the current level of skill, types of public and private sector operational forecasting products, the range of minute scale applications in the energy community and the quantified or perceived value obtained from those applications, the sensitivity of user's application performance to variations in forecast skill, and the unmet minute-scale forecasting-related needs or desires of the energy user community.

The workshop takes place as the collaboration of the International Energy Agency's (IEA) Wind Task 51, entitled "Forecasting for the Weather Driven Energy System", IEA Wind Task 52 Lidars, IEA Wind Task 50 Hybrid Power Plants, IEA Wind Task 44 Wind Farm Flow Control and IEA Photovoltaic Power Systems Programme (PVPS) Task 16 Solar Resource. The venue is Risø, Denmark, on the campus of the Technical University of Denmark (https://www.dtu.dk/om-dtu/kontakt-og-besoeg/find-vej/dtu_risoe_campus).

Please note: this session layout reflects current thinking. If you want to present something fitting to the general topic of minute scale forecasting of renewables, please contact the organisers (aeish@dtu.dk) and we will find a place for you.

Registration: https://www.conferencemanager.dk/workshopminutescaleforecastingfortheweatherdrivenenergysystem

April 10/11, 2024 | Risø, DK, building 112   DRAFT AGENDA
All times are Central European Summer Time (UTC+2)

Wednesday, April 10, 2024	
09:00 − 10:30	**Welcome and Keynote** Chair: Gregor Giebel - Welcome by workshop organizers and local hosts - Keynote(s) on History, Current Status and Challenges of Minute Scale Forecasting - Is there a good definition of "Minute scale forecasts"? - Q&A discussion with input from participants and their expected benefits of this workshop
10:30 −10:45	**Networking Break**
10:45 −12:15	**Methods of minute scale forecasts and their uncertainty** Chair: Aeishwarya Baviskar Presentations by forecast producers or researchers - Artificial Intelligence / Machine Learning methods - Probabilistic forecasts - Uncertainty of the forecasts, and maximum useful horizons for minute scale resolution - Numerical Weather Prediction based methods - Correlations between solar and wind forecasts

12:15 –13:15	Lunch
13:15 –14:45	**Applications of minute scale forecasts for control, ramps and extreme events** Chair: Jie Yan Presentations by forecast producers or researchers - Ramps and extreme event forecasts - Control for wakes, power plant control and power system control - Energy management system for hybrid power plants including storage - Accuracy requirements for different applications - Valuation of the accuracy of the forecasts
14:45 – 15:00	Networking Break
15:00 – 16:30	**Open Space Discussion** Facilitated discussion around the presented topics, discussing research gaps
18:30	Informal dinner gathering (self-paid, pay for it on the registration page)

Thursday, April 11, 2024	
9:00 – 10:30	**Data driven solar forecasting** Chair: Andreas Kazantzidis Presentations by academia, companies - Sky cameras and sky-camera networks - Input from satellites - Use of surrounding solar plants for input - Hybrid methods
10:30 – 10:45	Networking Break
10:45 – 12:15	**Data driven wind forecasting** Chair: Frauke Theuer (or Elliot Simon?) Presentations by academia and companies - Lidars and radars - SCADA based forecasts - Combination of observers - Spatio-temporal correlation of wind farms
12:30 – 13:15	Conclusions and Lunch