



Workshop

State of the Art and Research Gaps in Forecasting for the Weather Driven Energy System

September 12/13 2022, University College Dublin



iea wind

The energy transition brings new challenges for a power system which will have wind and solar as the backbone, and which will have to provide power for other energy vectors and sectors as well. The energy system of the future will therefore be weather driven. The main aim of the workshop is to map the State of the Art in renewables predictions, and to define the research gaps for the coming years. We had a similar activity at the beginning of IEA Wind Task 36 “Forecasting for Wind Energy”, so with the newly expanded scope of IEA Wind Task 51 “Forecasting for the Weather Driven Energy System” we want to repeat this exercise and expand on it. The workshop will bridge the communities, from meteorology to forecast industry, energy engineers and traders. Talks and discussions will switch with interactive discussions in Open Spaces and the playing of an interactive forecasting game (already get familiar with it here).

Your homework: please play the [forecasting game](#) a few times.

The location is at University College Dublin, rooms Cedar/Cypress in the UCD University Club, Belfield, Dublin. The local host is Vikram Pakrashi.

For registration, please see this link: <http://www.conferencemanager.dk/task51workshop>

The workshop is free of charge. Support from the Science Foundation Ireland supported NexSys project is acknowledged.

Agenda

Day 1

9:00-10:30. Session host: Gregor Giebel, DTU

Welcome and **Keynotes:** The power system of Ireland is standing as a prime example of the challenges encountered in the energy transition: high shares of renewables, low transmission capacities elsewhere, and growing demand for transport and heat to come from electricity. Alongside the keynote from Eirgrid, the Irish Transmission System Operator, we have an introduction to Task 51 and a keynote from EPRI.

11-12:30. Session host: Jethro Browell, WP lead, University of Glasgow

Keynote from **Traders:** Physical availability of renewable power is one thing, but in the current setup, the power is traded on the markets. How this is done in the view of changing demands, optimisation across different time scales, the use of storage and the inability to see all data, is the topic of this session.

13:30-15. Session host: Helmut Frank, DWD, or John Zack, UL Renewables

Weather forecasting for renewable power: For timescales from intraday to seasonal, weather prediction plays a major role for the forecast accuracy and reliability. This session will go into the details of new products and new developments in weather forecasting for renewables.

15:30-17. Session host: Corinna Möhrlen, WP lead, WEPROG

Extreme event definition and forecasting: Not only the weather will get more extreme in future climate scenarios, the impacts on the power system also will get more extreme. But what is an extreme event for the power and energy system: extreme weather, or can “boring” weather with low wind and sun constitute problems too? The session starts with a short introduction, followed by an Open Space discussion and presentation of the results in plenum.

Day 2

9-10:30. Session Host: Ricardo Bessa, WP lead, INESC TEC

Data for forecasting: Many forecasting models are data driven, and data is developing into a new commodity for both meteorological and power forecasts. Which parts of the data can be open, how could data markets work, and how to generate simulated data for training the models?

11-12:30. Session host: Gregor Giebel, Operating Agent, DTU

Open Space session: Your opportunity to come with input to the current state and the research gaps in three different applications: minute and hour scale forecasting, intraday and day-ahead forecasting, and week-ahead to season-ahead forecasting. We will separate into discussion groups, and the discussion leaders will report back to the plenum what the individual groups wrote down.

13:30-15.00. David Lenaghan, UK NationalGrid ESO

The **Journey from Deterministic to Probabilistic:** Academia has shown for decades how to prepare probabilistic forecasts, and has shown that using them for decision making would yield benefits. Despite this, and despite the fact that all forecast vendors provide probabilistic forecasts, the use of them at the end users has been hesitant. In this session we discuss how the journey from deterministic forecasts to probabilistic forecasts can work in practice. We round off with playing a [forecasting game](#) motivating the benefits of probabilistic forecasts.

15.10 -17.00. Session host: Gregor Giebel, Operating Agent, DTU

Panel discussion and Q&A based on Open Space results regarding **identification of research gaps** and research overview, defining the final list of research gaps. We will together identify and prioritise the research gaps and future research in the sector.