

# Climate forecasting for energy

4 December 2020

**A free 1-day online workshop is hosted jointly by the S2S4E Climate Services for Energy project and the Open Energy Modelling Initiative on Friday 4 December 2020. The workshop seeks to support the uptake and use of energy modelling and climate information in the energy sector.**

Under the Paris climate agreement, governments have committed to limiting global temperature rise this century to well below 2°C. Decarbonising energy is widely seen as a major step towards achieving this commitment, which will increase the reliance on renewable electricity generation – particularly from wind and solar energy.

Renewable energy production is weather-dependent, and it can therefore be difficult to anticipate how much electricity will be produced at any given time in advance. Integration of renewables thus poses new challenges for the management, operation and design of power systems. Climate information is essential to answer that challenge.

Sub-seasonal to seasonal (S2S) climate forecasts on timescales of weeks to months ahead have the potential to support better management of weather-related risk amid the growth of renewable energy. Examples of possible applications include: maintenance scheduling, energy trading, security of supply estimation, and storage management. Effective use of S2S forecasts for energy can help to reduce risk, enhance profitability, and speed up the transition to renewable energy.

The use of climate data (particularly S2S forecasts) in energy applications is a rapidly developing field of research and innovation, but major challenges remain due to the complexity of the information involved.

The “Climate forecasting for energy” workshop seeks to address these challenges by discussing:

- the science basis of climate forecasting,
- the use of climate data in energy modelling and decision making, and
- state-of-the-art research advances in the use of climate data in energy modelling.

## Register to attend

To attend the workshop, please register at the following link: <https://bit.ly/2TT7NIE>

## Participate

Workshop attendees are strongly encouraged to contribute to the discussion by presenting their own work, experience, and ‘needs’ from climate information in energy applications. Please indicate this in the registration form to receive more information, and/or follow the instructions below.

### Presentations

Energy system modellers and energy analysts are invited to present during the afternoon session (15:20 CET), which will consist of 6 lightning talks of up to 8 minutes each, followed by 2 minutes for questions.

To submit a presentation, please follow the instructions provided in this link: <https://bit.ly/32qS16j>

### Posters

To submit a poster that showcases your work, please contact [s2s4e@bsc.es](mailto:s2s4e@bsc.es).

The call for presentations and posters will close on **Friday 27 November**, and these should be submitted before the workshop, by Wednesday 2 December.

Note that submitting a poster or presentation will not automatically register you to attend. Please ensure that you also register to attend the workshop.

### Recording permissions

The workshop will be recorded, and the recordings will be made available after the event through the S2S4E channels (website, YouTube and social media).

Participants can license their contribution under a Creative Commons CC BY 4.0 license at the time of registration. This will permit the associated video recording to be uploaded to YouTube for a wider audience and downstream reuse. In addition, presenters can optionally license their presentations and posters under a Creative Commons CC BY 4.0 license. This will also facilitate their dissemination and reuse.

Attendees and presenters should note that open licensing is optional.

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## Agenda

### Morning

**The S2S4E project: Science and results from a major new climate-forecasting programme, specifically tailored for the energy sector**

- 10:00** Welcome and introduction
- 10:05** An overview of climate information and its application to energy
  - The science of climate forecasting [Prof. Paco Doblás-Reyes, BSC]
  - The S2S4E climate service and Decision Support Tool [Dr Albert Soret, BSC]
  - Using climate forecasts in decision-making [Dr David Brayshaw, University of Reading]
- 11:10** Panel discussion: Supporting the use of climate forecasts in energy [chair: Dr Jana Sillmann/Erlend Hermansen, CICERO]
- 11:30** Break
- 12:00** Research advances and emerging opportunities
  - Weather pattern forecasting: why, how, and its applications for renewables [Dr Llorenç Lledo, BSC]
  - Seamless blending of forecast timescales: applications for hydropower [Dr Ilias Pechlivanidis, SMHI]
  - Machine learning multi-model ensembles to enhance energy forecasting skill [Dr Paula Gonzalez, University of Reading]

### 13:00-14:00 Lunch Break & Poster Session

*During the lunch break, an interactive **poster session** will be available.*

*All participants are invited to share their research on the use of climate information in energy-system applications and models. [Registration for this is essential.](#)*

### Afternoon

**Joint session - S2S4E/OpenMod: Climate forecasting for energy-modelling - science, tools, models, issues and data**

- 14:00** Welcome and introduction
- 14:10** Practical use of climate data for energy
  - A brief practical introduction to the use of climate forecast data: what is a climate forecast, data sources, calibration and evaluation [Dr Andrea Manrique, BSC]
  - Converting climate forecast data to energy and understanding weather drivers [Dr Hannah Bloomfield, University of Reading]
- 15:00** Break
- 15:20** Research presentations

*Participants are invited to **present** their research on the use of climate information in energy-system applications and models. Each talk must last no more than 8 minutes, with 2 minutes for questions. [Registration for this is essential.](#)*
- 16:20** Panel discussion
- 16:50** Wrap up
- 17:00-18:00** **After-workshop virtual drinks & poster session**

*After the presentations, the interactive poster session (from lunchtime) will be available for an additional hour. All participants are invited to use this session to continue informal discussion, contact presenters, and view posters.*

Scientific organising committee: David Brayshaw and Hannah Bloomfield (University of Reading); Robbie Morrison, Ekaterina Kasilova, Alex Kies, Anne Fouilloux and Martin Dorenkamper (OpenMod); Isadora Jimenez, Albert Soret and Andria Nicodemou (BSC); Erlend Hermansen and Jana Sillmann (CICERO).