Hands-on training sessions: Using climate data in energy optimisation modelling

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These hands-on sessions focus on using state-of-the-art climate data for power system modelling. It will show examples (also accessible via Google Colab) that are built on open, Python-based solutions, such as PyPSA. The session will be divided into two blocks, each starting with a short presentation: the first one will provide an overview of PyPSA and the PyPSA-meets-Earth initiative, whilst the second presentation will explore energy modelling from a climate perspective.

The first session will demonstrate how to run a power system model using cloud-optimised data from ERA5, highlighting the use of EarthDataHub (or similar) initiatives. The aim is to provide an overview of the increasing availability of ARCO (analysis-ready cloud-optimised) datasets from an energy modelling perspective.

The second session revolves around using a microgrid model with multiple renewable sources as inputs. Leveraging the capabilities of the PyPSA modelling framework, this example shows how to run and explore the model outputs to answer some climate-driven research questions.

- Tutorial 1: Using cloud-optimised data formats to facilitate porting of climate data into energy modelling
- Tutorial 2: PyPSA-based modelling of a microgrid with hydro turbine