

EGU22-8608

<https://doi.org/10.5194/egusphere-egu22-8608>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



## Climate change impact on wind and PV power generation characteristics in Europe

**Yvonne Scholz** and Ronald Stegen

Institute of Networked Energy Systems, DLR German Aerospace Center, Stuttgart, Germany

Climate change may alter long term averages as well as short term extremes of solar irradiation and wind speed distributions. Resulting changes in the performance of wind and solar power generation capacities can impact returns on investments and security of power supply. To assess this impact and enable robust energy system planning, we use climate scenarios from global and regional climate models on an hourly basis to calculate renewable power generation potentials with our *Energy Data Analysis Tool* EnDAT. We investigate the development of key parameters of wind and solar power generation: annual capacity factors, minimum and maximum generation, duration of periods with extremely low generation and ramp rates. Results show that while changes are small at European average, significant changes can occur at country level. We present model results and discuss uncertainties associated with the climate scenarios and wind and solar power technology parameters as well as capacity distribution. Future research will include demand scenarios and the impact of climate change on “Dunkelflaute”-events in Europe.