

The authors of this manuscript explored the current and future wind energy resources in Northern Europe using CMIP6 simulation. This work is interesting as it considered the wake effects on the annual energy production as the wake effects are ignored in all previous studies. The authors also assessed climate change for the 20 years 2031-2050, not at the end of the century, which is more important for the governments and wind farm developers. The subject discussed in the present article is of great importance, and the paper is well-structured and easy to follow. I truly congratulate the authors on this manuscript, which I believe should be considered for publication after minor changes.

The manuscripts, in my opinion, deserve revision on the following issues.

Q1. Paragraph 140. Did they use the wind speed of ERA5 reanalysis dataset? Or ERA5 forecast dataset? The hourly ERA5 reanalysis near-surface wind speed reveals a mismatch at 9:00-10:00 and 21:00-22:00 UTC (<https://confluence.ecmwf.int/display/CKB/ERA5%3A+data+documentation>), which shows an important impact on the research of diurnal cycle. ERA5 also suffers from a general underestimation bias of near-surface winds. Compared with the reanalysis dataset, the forecast near-surface winds show much better agreement between the assimilation cycles, at least on average.

Q2. The caption of Fig.8, also required more details that how to calculate the relative change between the future (2031-2050) and the past (1995-2014). The details would help the readers better understand.

Q3. Paragraph 395, "The wind climate of the CMIP6 models is similar to that observed in this region in terms of wind direction and the phase and amplitude of the diurnal cycle." However, the diurnal cycle was not compared and discussed in the manuscripts. It would be good if the authors could have some figures to compare the diurnal cycle of wind speed from the CMIP6 models and observations.