

Parallel Session C: Climate Change Impacts

C3: Implications for renewable energy

Future projections of wind speed and wind power over CORDEX-East Asia

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China has set ambitious goals for the development of wind energy to meet the increasing energy demand. Many studies have assessed the potential wind energy in Chinese continental areas for historical periods. However, few studies have focused on future projections of climatology and variability of wind speeds and wind power in China. We analyze ensemble simulations of regional climate model CCLM over CORDEX-East Asia at 50 km resolution, focusing on wind speed and wind energy potentials. The analysis is based on 3-hourly 10 m wind speeds from four GCM-CCLM Chain simulations during 1950 - 2100. The quality of historical wind speeds during 1981-2005 reconstructed by CCLM was assessed by a comparison with ERA5 reanalysis dataset. Quantile mapping based on Weibull distribution has been used to bias-correct simulated to the ERA5 reanalysis dataset. The climatology, variability, and extreme climate of wind and wind energy over the BYS are spatially and temporally investigated, including mean changes in annual and seasonal wind energy.

Keywords: wind energy, future projection, CORDEX-East Asia, Bias Correction