

EGU2020-12934

<https://doi.org/10.5194/egusphere-egu2020-12934>

EGU General Assembly 2020

© Author(s) 2020. This work is distributed under the Creative Commons Attribution 4.0 License.



Future projections of photovoltaic power generation on climate change simulated by CORDEX II multi-RCMs over East Asia

Changyong Park, Dong-Hyun Cha, Seok-Woo Shin, Gayoung Kim, and Taehyung Kim

Ulsan National Institute of Science & Technology (UNIST), School of Urban and Environmental Engineering, Ulsan, Korea, Republic of (parkcy@unist.ac.kr)

East Asia is a highly industrialized region with high CO₂ emissions from fossil fuel use. Therefore, to achieve the goal of the Paris Agreement on CO₂ reduction, an increase in the production of renewable energy such as photovoltaic (PV) and wind power generation is required in this region. Most renewable energy production is directly affected by weather and climate. This study projected changes in future PV power generation and climate variables affecting them using CORDEX phase 2 RCMs with 25km horizontal resolution forced by HadGEM2-AO GCM over East Asia. The present change and future projection of PV potential production (PVpot) depend critically on changes in surface-downwelling shortwave radiation (RSDS). In the analysis of recent changes in PVpot over East Asia using the ERA5 reanalysis data, PVpot overall increased slightly. For PVpot projections using the high-emission scenario during the late 21C, RegCM4 is expected to increase, while the other RCMs will decrease. The results of this study will help to develop policies for efficient future production of renewable energy over East Asia by presenting the projection of future photovoltaic power generation on a detailed regional scale.