

# Widespread decrease in wind energy resources found over the Northern Hemisphere

December 6 2018

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Asia's biggest wind farm, the Dabancheng wind farm in China's Xinjiang province. Credit: Gang Huang

As climate change is becoming a greater matter of concern, efforts on mitigation are being undertaken by the world community. Developing clean and renewable energy is a major component of those efforts for its significant contribution to reducing carbon emission to the atmosphere compared with fossil fuel. In 2016, renewable energy contributed more than 19 percent to global energy consumption. Of all the renewable energy sources, the wind is key in terms of installed electricity generating capacity, which is only exceeded by hydropower.

Wind energy is a natural resource characterized by instability. Previous studies mainly focus on the assessment of wind energy reserves, but it's not clear how wind energy evolves over time.

A collaborative of researchers has now published a study focusing on the change in wind energy resources and model simulation ability, revealing a widespread decline in wind energy resources over the Northern Hemisphere. Using station observation data, the study finds that approximately 30 percent, 50 percent and 80 percent of the stations lost over 30 percent of the wind power potential since 1979 in North America, Europe, and Asia, respectively. The study also reveals that global climate models (GCM) cannot replicate the long-term changes in wind energy, indicating wind energy projections based on GCM simulations should be used with careful consideration to the model performance.

"Our study is one of the first comprehensive assessments of the GCM-based winds against surface observations over multiple continents. We found that the decline of wind energy is a widespread and potential global phenomenon. In addition, the finding that the climate models have a notable deficiency in simulating [wind energy](#) is an important conclusion that needs further attention," said Qun Tian, the lead author of the paper.

**More information:** Qun Tian et al, Observed and global climate model based changes in wind power potential over the Northern Hemisphere during 1979–2016, *Energy* (2018). [DOI: 10.1016/j.energy.2018.11.027](https://doi.org/10.1016/j.energy.2018.11.027)

Provided by Chinese Academy of Sciences

Citation: Widespread decrease in wind energy resources found over the Northern Hemisphere (2018, December 6) retrieved 25 April 2024 from <https://phys.org/news/2018-12-widespread-decrease-energy-resources-northern.html>

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