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EDITED AND REVIEWED BY  
David Howe Wood,  
University of Calgary, Canada

\*CORRESPONDENCE  
Lefeng Cheng,  
✉ chenglefen@gzhu.edu.cn

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# Editorial: Impacts of complex terrain on wind power output and mechanisms to improve prediction accuracy

Lefeng Cheng<sup>1\*</sup> and Linfei Yin<sup>2</sup>

<sup>1</sup>School of Mechanical and Electrical Engineering, Guangzhou University, Guangzhou, Guangdong, China, <sup>2</sup>College of Electrical Engineering, Guangxi University, Nanning, China

## KEYWORDS

accurate wind power forecasting, renewable-energy grid connection and consumption, wind turbine parameter optimization, data-driven approach, economic scheduling considering wind power fluctuations

## Editorial on the Research Topic

Impacts of complex terrain on wind power output and mechanisms to improve prediction accuracy

Random and intermittent shocks generated by large-scale wind farms continue to affect the safe and stable operations of power systems significantly (Hong et al., 2024; Li et al., 2024); hence, it is necessary to investigate the impacts of complex terrains on wind power outputs and mechanisms to improve their prediction accuracies. To this end, we host this Research Topic that contains nine final articles. Among these works, Kristianti et al. investigated the influences of air flow features on alpine wind energy potential. Man et al. proposed a multidevice wind turbine power generation forecasting model aimed at wind farms. Zhang et al. present a meta reservoir computing method while Konstantinou and Hatzigiorgiou establish a model combining convolutional neural networks and DeepSHAP to enhance the accuracy of wind power forecasting. Wang et al. present an incremental feedforward collective pitch control method for the wind turbine. Zhou et al. propose an interval model for the wind turbine power curve. Xu et al. survey some energy management strategies for a loop microgrid with wind energy prediction and energy storage systems. Wang and Liao propose a short-term hybrid prediction model for wind speed prediction. Finally, Gao et al. present a detailed review of the interval reservoir computing approach and examine some case studies. Overall, these articles cover a wide range of research topics and provide highly valuable research methods and models that are expected to serve as excellent references for researchers working on related research topics, particularly those related to the impacts of complex terrains on wind power outputs and mechanisms to improve their prediction accuracies.

## Author contributions

LC: formal analysis, funding acquisition, project administration, supervision, writing–original draft, and writing–review and editing. LY: formal analysis, validation, writing–original draft, and writing–review and editing.

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Li, B., Dong, Y., Jiao, X., Chen, X., Li, B., and Ji, L. (2024). Study on the calculation method of electrical quantity for connection line open-phase operation of wind farm connected to MMC-HVDC Considering negative sequence current suppression. *Int. J. Electr. Power and Energy Syst.*, 159, 110056. doi:10.1016/j.ijepes.2024.110056