

# **Digital solar container communication station wind and solar complementarity**





## Overview

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Renewable energy has been used as an alternative solution to fossil fuels aiming to supply the increasing energy demand while reducing greenhouse gas emissions. Solar and wind energy are prominent.

Do wind power and photovoltaic stations complement each other?

Typically, wind power and photovoltaic stations are situated at different locations, necessitating the study and analysis of wind speed-radiation complementarity across various regions. This study focuses on wind power stations and photovoltaic stations in Qinghai and Gansu provinces to explore their complementarity.

What is the complementary coefficient between wind power stations and photovoltaic stations?

Utilizing the clustering outcomes, we computed the complementary coefficient  $R$  between the wind speed of wind power stations and the radiation of photovoltaic stations, resulting in the following complementary coefficient matrix (Fig. 17.).

Is there a complementarity evaluation method for wind and solar power?

Han et al. have proposed a complementarity evaluation method for wind, solar, and hydropower by examining independent and combined power generation fluctuation. Hydropower is the primary source, while wind and solar participation are changed in each scenario to improve power system operation.

Can a solar-wind system meet future energy demands?

Accelerating energy transition towards renewables is central to net-zero emissions. However, building a global power system dominated by solar and wind energy presents immense challenges. Here, we demonstrate the potential of a globally interconnected solar-wind system to meet future electricity demands.



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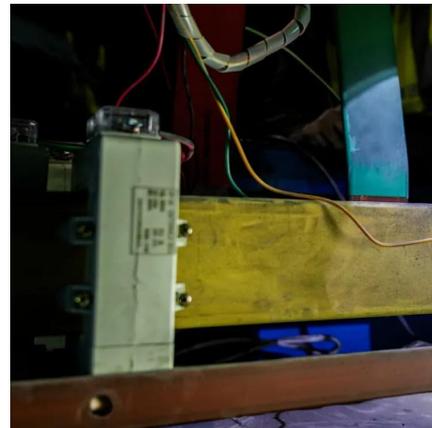


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