

What can a 10-m national-scale distribution dataset tell us about China's PV power stations?

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<div class="df_qntext">Why do we provide a 10-m map for China's PV power stations?

To sum up,we provide a 10-m map for China's PV power stations to provide reference data to understand the spatial pattern of China's PV industry. The dataset could also be used for other applications such as prediction of PV's generating capacity and site selection for newly built PV power stations.

<div class="df_qntext">Does China have a spatial map of PV power stations?

Although some researchers released several PV power station maps,most only met a medium resolution of 30 meters 9,10. There thus still lacks a national mapof China's PV power stations with a higher spatial resolution (i.e.,10 meters) that could provide a global understanding of PV's spatial deployment patterns.

<div class="df_qntext">What can a 10-m national-scale distribution dataset tell us about China's PV power stations?

Above all,as the first publicly released 10-m national-scale distribution dataset of China's ground-mounted PV power stations,it can provide data referencesfor relevant researchers in fields such as energy,land,remote sensing and environmental sciences.

<div class="df_qntext">Which land is used for PV power stations in China?

Fig. 1 Examples of PV power stations in China. The land used for PV power stations includes gobi(left),grassland (top),water bodies (right),mountain land (bottom),etc. The objective of this study is to provide the first publicly released 10-m national map of ground-mounted PV power stations of China in 2020.

<div class="df_qntext">How big is China's PV power station?

China's total PV power station area in 2020 was estimated as 2635.64 km². China's PV power generation in 2020 was calculated to be 238.65 TWh. This power amount is equivalent to reducing carbon emissions by 149.63 million tons. Evaluation results favor Sustainable Development Goals and carbon neutrality.

<div class="df_qntext">What is the area of PV power stations in northwestern China?

Our results show that between 2007 and 2019,the area of PV power stations in northwestern China increased to 722.0 km²,with the most rapid increase between 2013 and 2019. Most of the PV power stations in northwestern China are in clusters (i.e.,PV parks),and most of them are small (less than 1 km²).

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To address these issues, this study proposed a novel enhanced PV index (EPVI) for mapping PV power stations across China, and the mapping results were further applied for the ...

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