Southern drought and solar power generation

What are wind and solar energy droughts?

As noted by Raynaud et al.5 wind and solar energy droughts can be differentiated into energy supply droughtsthat consider energy generation only,or energy balance droughts that include the co-occurrence of supply droughts with large energy demand.

What is a solar drought?

In contrast to the conventional definition of solar droughts,which concerns only the solar power supply,the expanded SDI considers both solar power supply and energy demand. The energy system can be greatly stressed at a local level when the energy supply is significantly smaller than the energy demand.

What is a power drought?

The power droughts are defined as the extreme low values in power generation availability. We first calculate the averaged wind or solar power resources over a given week for the entire target domain. Here,the solar resource is determined by both radiation and temperature,indicating the solar photovoltaic generation potential.

Does hybridizing wind and solar energy reduce energy droughts?

Jurasz et al. examined the characteristics of energy droughts for wind and solar power in North Africa,finding that hybridizing wind and solar energy significantly reducesthe potential for energy droughts.

With the growing share of the climate-sensitive renewable energy market supply in China, estimating future energy drought risk (ED) is essential.

We assess climate models" ability to simulate these droughts at different horizontal resolutions, ~100 and ~25 km, over Western North America and Texas. We find that these power ...

Keep up with major and minor changes to science policies from the Trump administration with a handy chart from AGU"s Eos magazine. The tracker is sortable by date and one of four ...

Here we present a framework to characterize these events and propose three metrics to comprehensively assess renewable energy quality: resource availability, variability, and extremeness.

However, due to the challenges in hydropower regulation and complex spatiotemporal correlations among resources, the assessment and contributions of various resources to energy ...

On the most basic level, a WSD is simply a period of time over which much less energy than normal is produced due to weather variability. The minimum levels of wind and solar energy ...

With our drought definition, solar radiation droughts occur more often in southern REZs, and while these events may matter to plant owners and regional generation, understanding how...

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Based on observation and simulations, we reveal an anthropogenic exacerbation of global solar drought frequency in the past three decades.

In early June 2022, the National Energy Administration (NEA) announced that it expects of no less than 108 GW of solar PV power generation capacity to be added in 2022. If realized, it ...

Our study suggests a co-benefit of solar energy stability and security toward carbon neutrality, especially in developing nations where the local supply demand imbalance is a major ...

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