

Central Asian Solar Rotation





Overview

Hydroclimatic changes over arid central Asia (ACA) are not fully understood, primarily due to the paucity of accurate, high-resolution climatic records. Here we reconstruct hydroclimatic changes over the past.

Did solar activity drive summer temperature variations in Central Asia?

The centennial-scale variability of summer temperature is coherent with records of solar activity, suggesting that solar activity was the main driver of temperature variations in central Asia on the centennial scale.

Did solar activity influence arid Central Asia hydroclimate?

A high resolution (~ 0.8 yr) hydroclimate history over the past 160 years at Lake Karakul (central Asia) was reconstructed. Solar activity and the westerlies were the dominant influences on Arid central Asia hydroclimatic variations.

How does the Sun rotate at the equator?

On the surface, the Sun rotates slowly at the poles and quickly at the equator. This profile extends on roughly radial lines through the solar convection zone to the interior. At the tachocline the rotation abruptly changes to solid-body rotation in the solar radiation zone.

Does solar forcing affect millennial-scale temperature variability in arid Central Asia?

Century-scale temperature variability in ACA is highly sensitive to solar forcing. The millennial- and centennial-scale variability of Holocene climate in arid central Asia (ACA) is poorly understood, due to the lack of high-resolution records, especially of temperature.

How many days is a solar rotation?

Solar rotation is taken to be 27.2753 days (see below) for the purpose of Carrington rotations. Each rotation of the Sun under this scheme is given a unique number called the Carrington Rotation Number, starting from



November 9, 1853.

Why is arid Central Asia so sensitive to climatic changes?

Arid central Asia (ACA; Fig. 1) is very sensitive to climatic changes because of its dry climate, dwindling water resources and fragile ecosystems (Narisma et al., 2007; Sorg et al., 2012).



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[Solar activity and the westerlies dominate decadal hydroclimatic](#)

Solar activity and the westerlies were the dominant influences on Arid central Asia hydroclimatic variations. Stronger westerly intensity and southerly migration of westerly could ...

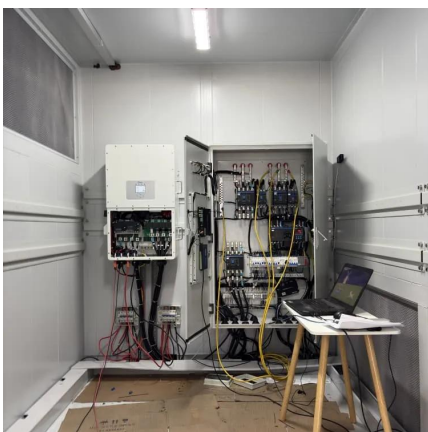
[New paleomagnetic constraints on central Asian kinematics: ...](#)

[1]In order to better understand the tectonic evolution of central Asia under the influence of the India-Asia collision, we carried out a paleomagnetic study of 1500 cores from 106 sites along ...



[Solar radiation transfer for an ice-covered lake in the central Asian](#)

Compared with polar lakes, solar elevation is higher, snow accumulation is much lower, and the ice has more sediment. The ice was all congelation ice with a mean thickness ...



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