



On the detectability of a daily timescale solar – cloud link

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The extent to which solar activity influences Earth's climate over short timescales is currently poorly understood. If a link between solar activity and climate exists it is likely via a mechanism connected to solar irradiance, or the cosmic ray (CR) flux (or possibly a combination of both). This work presents an epoch superpositional analysis clearly isolating the effects of both irradiance and the CR flux to test this hypothesis, and finds no robust evidence of a widespread link to cloud cover. Furthermore, we show through the use of Monte Carlo simulation methods that the approach of epoch superpositional analysis in this manner may be fundamentally limited by sample variability, to the point where the confident detection of a solar – cloud signal is prohibited.