

Interactive comment on “A criterion to discriminate between solar and cosmic ray forcing of the terrestrial climate” by H. Fichtner et al.

Anonymous Referee #1

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The paper is based on an interesting idea. Unfortunately, little has been done to back it up, except to present some circumstantial evidence from the literature. The paper also suffers from the font. While the authors stress the secondary 22 year period of the cosmic ray flux they neglect the dominant period of 11 years. This Schwabe period, however, is not very striking in the climate examples they give. This suggests that the 20-25 year periods that they quote based on the heterogeneous set of samples have a different, i.e. non-solar, source.

A second problem is that even if both an 11- and a 22-year period were to be present in a robust climate data set, it would still not help to distinguish between cosmic rays and irradiance as drivers, since there is also a persistent 22 year cyclicity in sunspots, so that alternate sunspot cycles differ in strength (e.g. Mursula et al. 2001). As a result

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also the irradiance is expected to fluctuate with a period of 22 years. Here the authors cite the work of Lohmann et al. (2004), who analyzed the irradiance reconstruction of Lean et al. (1995). However, this reconstruction has in the meantime been shown to be outdated. Unfortunately, since the recent cycles constitute one of the rare exceptions to this rule, this hypothesis cannot be directly tested, but it weakens the use of a 22-year cycle to distinguish between forcing mechanisms on a large time scale. Also, the factor of 2 between the Schwabe and Hale periods implies that it is easily possible for an oscillation with a single period to produce both these peaks.

Presentation: The paper reads relatively well, but it mainly repeats published and in some cases well-known results. Also, most figures are simply copied from published papers.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 10811, 2006.

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