

## ***Interactive comment on “On reconstruction of time series in climatology” by V. Privalsky and A. Gluhovsky***

**F. Clette**

frederic.clette@oma.be

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In the paper, the authors are still using the original sunspot number series. I would strongly encourage them to use instead the new improved version (V2.0) now officially published on our SILSO web site on July 1st, 2015 (see [sidc.be/silso](http://sidc.be/silso)). This may partly change the results, as some artificial drifts have been eliminated in the time interval that is considered in the paper, bringing the sunspot number in closer detailed agreement with other solar measurements.

Now regarding the relation between the sunspot number (SN) and TSI, the paper does not mention the fact that the relation is not only non-linear but also non-monotonous. While TSI increases (non-linearly) with the SN for SN values < 150, the TSI actually declines with increasing SN for higher activity levels. This is due to the relative contri-

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bution of bright plages and dark spots (which only become dominant at high activity). Therefore, the same value of TSI may correspond to two different SN values. See e.g. figure 1 in Solanki and Fligge 1999, Geoph. Res. Lett., 26/16, p.2465. Can this particular non-monotonous relation pose a problem for the method developed in this paper? It would be worth investigating this aspect and demonstrating that the method remains valid in this special case.

I also note that the approach developed here to correlate the sunspot number with another parallel series could probably also be useful for the cross-calibration of different parallel observers providing their raw Wolf numbers for the statistical construction of the international Sunspot Number, but with missing days and data gaps that are different between observers (thus here, there is a need to "interpolate" due to only partial time overlap, rather than extrapolating). This is a central issue in the processing of the sunspot number, in particular over past centuries. So, this is another possible application where the method proposed here could bring improvements.

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