

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

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Dear Dr. Clette,

Thank you for your comments.

1. The sunspot data used for this article was taken from the SIDC site, and it is the V2.0 version (the latest on that site), see p. 4711. However, two of the figures (Fig. 5 and Fig. 7) show the previous, older sunspot data, which we used before you directed us to the new sunspot data file. It was our omission. Thus, the figures 5 and 7 must be corrected but all other results do not require any changes.

2. At the sampling rate of 1 month, the nonlinear effects do not play an important role within the SSN/TSI system. This follows from the fact the coherence function between

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SN and TSI exceeds 0.85 at all frequencies below 0.15 cpy (see Fig. 4). At higher frequencies the coherence can be lower but it hardly affects the system because of the much lower energy of the process at those frequencies (see Fig. 2). The monthly means of SN and TSI do not behave in the same manner as the daily values. At the sampling rate of 1 month, the graph similar to that in Fig. 1 of Solanki and Fligge (1999) at the sampling rate of 1 day shows no such non-linearity. Moreover, when SN exceeds 150 (1979-2014), the cross-correlation coefficient between observed monthly TSI and SSN regarded as random variables does not differ significantly from zero (-0.13).

3. Yes, the Wiener's theory of interpolation of random processes and the parametric approach can be used, in particular, for interpolation of time series with data gaps, especially when the gaps are longer than just a few sampling intervals. This issue, however, lies outside the scope of the article.

Again, we are sincerely grateful to you for your comments.

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