

We would like to thank the anonymous referee for the valuable comments.

Responses to specific comments:

*- P 30376, L 27: What is meant by the term “calibrated with the ERA-40 reanalysis”? Is it correct that the statistical reconstructions are only used up to 1957, and ERA-40 data thereafter? This should be stated more explicitly. The analysis is then affected by (at least) the same inhomogeneity problems as other studies based on reanalyses only (as described in the introduction), is it not? This should be discussed somewhere in the manuscript.*

Correct, data after 1957 are from ERA-40 and are affected by inhomogeneity problems. However the comparison with 20CR (which has different inhomogeneities) shows that the results are not significantly affected by the choice of the data set, because the period is long enough to make the influence of the inhomogeneities negligible; a possible exception is temperature in the upper troposphere, but we already pointed out in the paper that the reliability of the temperature field is lower in any data set compared to geopotential height or wind. A sentence was added to section 2.2 and another sentence was added to section 5.3 in order to make this point more clear.

*- P 30378, L 6: I think the treatment of ENSO and volcanic eruptions should be explained before mentioning the statistical methods.*

We moved the part with the ENSO/volcanic filter description accordingly.

*- P 30378, L 23: I find this part on the TSI trend somewhat confusing. What is the conclusion for the present study?*

The “background” TSI trend is debated and basically unknown. Similarly, its spectral characteristics are unknown. Our study uses the sunspot number, which may have a different trend behaviour than TSI. Anyways, to assess whether or not the TSI variability is the main solar forcing goes beyond the scope of the paper, which does not investigate the physical mechanisms.

- P 30382, L 17: *A very similar analysis of the 20CR data was performed in a recent paper by Sirocko et al. (2012), leading to similar results (as expected). This paper should be cited here.*

There is a paper in press at *Env. Res. Lett.* that found flaws in the analysis of Sirocko et al. (2012). We therefore did not include it in our study.