



Interactive comment on “Tree-ring width wavelet and spectral analysis of solar variability and climatic effects on a Chilean cypress during the last two and a halfmillennia” by N. R. Rigozo et al.

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1. Co-authors agree to accept the reviewer’s suggestion. Thus, in the manuscript to be sent again to the magazine, the last paragraph of the introduction was altered in function to the reviewer’s comments.
2. In the article it is mentioned that the species *Fitzroya cupressoides* is sensitive as much to temperature as to precipitation, as presented in the detailed studies of Lara et al. 2000 e Lara and Villalba,1993.
3. The multitaper method is based on a “local” eigen expansion to estimate the spectrum in terms of the solution of an integral equation. This is equivalent to using the weighted average of a series of direct-spectrum estimates based on orthogonal data

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windows (or the taper is a discrete prolate spheroidal sequence) to treat both the bias and smoothing problems (Thomson, 1982).

The choice of Morlet wavelet for being better than other wavelets is in the sense of being more adapted to our signals according to the approach on wavelet choice presented by Torrence and Compto (1998), Percival and Walden (2000) and other authors. The Calculation of the confidence level of the peaks is well presented by Torrence and Compto (1998). We didn't find necessary to enter in details for this, because we presented two excellent references of the methodology of analysis by wavelet, Torrence and Compto (1998), Percival and Walden (2000).

4. Results

4.1. We didn't think it is a repetition of the first part of the methodology, as the reviewer says, being more a complementation to justify the results that we found in our analyses.

4.2. Ok. The sentence will be replaced by: "It may be observed in the spectrum that there is no domination of long periods over the short ones, or, in other terms, the long periods do not hide the low periods in the spectrum. The nature of this distribution suggests a favorable response on tree growth rate in Osorno, Chile, to environmental factors for short and long periods.

4.3. Ok. This sentence will be omitted. 4.4. This figure shows a high resolution of the signals of short periods (of 2 to 6 years) that is not so clear in figure 3.

4.5. In this point we agree with the reviewer, however we present a hypothesis that we believe to be probable, but there should really be made more studies in order to confirm if this hypothesis is true or not.

5. The question of the 11 yr cycle to be or not to be more powerful in the spectrum didn't minimize its importance on the possibility of its influence on tree rings and its possible effect on climate. Then, the question of being more powerful or not is a matter of opinion, because for us it is very important, because in the analyses it presents a high

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level of confidence. About the study of the phase of the solar signal in relation to tree rings, it was observed that in the 80 yr cycle, when compared with the sunspot number, it happens an anti-phase between the two series. Really that was not mentioned, but a figure can be increased showing that, in case the reviewer finds it pertinent. In relation to phase of the 11 yr signal, it was not done due the signal being observed in the year 101, approximately, as there is no direct measurement of the sunspot number at that time it is a difficult to study the phase between the two series, but this doesn't prevent from emitting hypotheses, which is usually done in science.

6. The behavior of the solar activity in the past is of great importance in space geophysics at the present time, because we need to know as was the behavior of the Sun in the past and which were the impacts of its variability (or its real role) on our planet and one way for this kind of study is the proxies that they can illustrate this question. To our understanding there is still has a lot to do and many studies should really be made on this subject. The reviewer should understand that not all the answers are not yet found in instrumental measurements, because they are recent and express information on very short periods of the history of our planet, not showing the variability of larger periods than the length of the measured data, without which it is not possible to affirm the behavior of those phenomenon in a distant past or future.

7. About the references that are mentioned in the text and don't appear in the bibliography, this was already corrected and they were added to the reference list, thanks.

References

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