

## ***Interactive comment on “How different sources of climate databases influence assessment of growth response in dendroclimatic analyses – case study from Lapland” by R. Sitko et al.***

**Anonymous Referee #2**

Received and published: 23 October 2015

This paper examines temperature and precipitation records representative for the Lapland region in northern Sweden and derived from three archetype sources (a) two long-term in-situ records (b) gridded observational data retrieved from the so called KNMI climate explorer (c) multi-centennial records taken from dendroclimatic retrievals.

While the establishment of the cross-correlations between these basically very different records bears the potential to reveal some insights on the robustness of dendroclimatic records the paper is missing a structure to develop the results.

I would appreciate the canonical structure of a paper, namely to examine the data sets against a central hypothesis to be falsified or confirmed depending on the results

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encountered.

To the contrary the authors utilized their certainly sound methods (I fully concur with the positive rating of the two other referees with regard to the applied methodologies) to establish to the best possible extend the correlations, that are to my personal view impressively good among the data sets, but struggle to take conclusions on the findings in the absence of a hypothesis.

I would therefore recommend publication of the paper, but concur with the anonymous referee#1 that within a major review, a better structure is given to the paper. Let me just propose possible hypotheses just to provoke the authors capabilities to make their own and better one

- 1) Dendroclimatic records taken in Lapland are robust enough to reliably reconstruct climate of northern Sweden across the past 500 years
- 2.) Gridded records of temperature and precipitation as derived from the KNMI climate explorer are closer correlated to inertial multi-centennial dendroclimatic records than in-situ station data.
- 3.) Comparison of dendroclimatic records with in-situ station records and blended gridded records of temperature and precipitation demonstrate the control of precipitation and warm temperature spells on growth rates of spruce across northern Swedish Lapland

I do not claim these statements or hypotheses to be particularly smart, but I am sure that the authors can identify the hypothesis they rate suitable to develop their scientific material along.

Finally I concur with the recommendation of referee#1 to also look at the combination of temperature and precipitation, e.g. through SPEI, as they certainly control the growth of spruce in this climate region.

After all I recommend publication of the material presented in a more structured manner

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as indicated above

Minors:

Fig.1: Please improve quality by using another mapping tool to georeferenced the stations

Fig.3: Please improve quality; the legends are not readable due to their tiny size

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Interactive comment on Earth Syst. Dynam. Discuss., 6, 1535, 2015.