**Climate
of the Past**

Discussions

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Interactive comment on "A millennial summer temperature reconstruction for northeastern Canada using oxygen isotopes in subfossil trees" *by* M. Naulier et al.

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Scientific significance: This is clearly an exciting new record, adding to the few millennium long isotope series that are currently emerging. It is a nicely written manuscript using an excellent dataset. Still, I would have liked to see a more critical discussion of the method (see below) as well as using isotope data from subfossil wood in terms of temporal stability of the signal (something I have thought about quite a lot regarding the data we collect in Sweden). As an example, it is stated that the last decade of data is not used due to changes in the growing season, but maybe also the "MWA" was a period of increased/changed growing season? See also my comment below regarding

fluctuations of lake levels. Also, it is interesting of course to compare a new record to others to see how it "performs", but I feel that this new record warrants a deeper discussion of its pros and cons.

Scientific quality: The (cohort) method has been tested before, but personally I feel that the approach, where there is only a slight overlap between to neighbouring (short) cohorts, can possibly introduce some bias, which should be discussed. Could the age of the trees as well as a possible disintegration of the sapwood cause any impacy on the results? Were some trees included in more than one cohort? Also, it is clear from the calibration/verification exercise that the strength of the Tmax signal differs between the periods (e.g. RE and CE values). I think that the impact of this manuscript would improve a lot if the data and methods were addressed a bit more thoroughly.

Presentation quality: The presentation of the data is OK, but slightly more information on the trees used in the study would be beneficial, as well as the methods used. However, I feel that too much text is spent on trying to link the i-STREC to pervious reconstructions and find potential forcings of the observed long-term variability. I would have liked to see a more detailed discussion about the potential impacts of using isotopes from lakeshore trees as temperature indicators (where it has been suggested that fluctuating lake levels can affect the temperature sensitivity), or if the isotope values may be affected by being submerged. Also, I would have liked to see the corresponding TRW chronology (based on the same "cohort" method) from this particular lake to compare with the isotope chronology. It is clear that they differ and the discussion of this could be more informative.

Access review, peer review, and interactive public discussion (CPD) 1. Does the paper address relevant scientific questions within the scope of CP: Yes 2. Does the paper present novel concepts, ideas, tools, or data? Yes, but could be improved with some critical discussion of the data and methods 3. Are substantial conclusions reached? Yes, although a slightly more critical discussion would be beneficial, and may change the conclusions. Also, I'm not fully convinced by the presented figures that solar forc-

ing is the most important forcing. 4. Are the scientific methods and assumptions valid and clearly outlined? OK 5. Are the results sufficient to support the interpretations and conclusions? Would likely change somewhat after revision 6. Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? I'm not fully convinced by the cohort method because of the limited overlap between them, However, this may be clearer if also the time spans of the samples are shown (since I guess that one tree can contribute to several cohorts?). Also, I feel that the discussion of the influence of the AMO (and lack of NAO) is a bit speculative. 7. Do the authors give proper credit to related work and clearly indicate their own new/original contribution? Yes 8. Does the title clearly reflect the contents of the paper? Yes 9. Does the abstract provide a concise and complete summary? OK (but why the Medieval Warm Anomaly??? MWP or MCA) 10. Is the overall presentation well structured and clear? Yes 11. Is the language fluent and precise? Yes 12. Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? Yes 13. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? See previous comments 14. Are the number and quality of references appropriate? Yes 15. Is the amount and quality of supplementary material appropriate? NA