

## ***Interactive comment on “Influence of North Pacific Decadal Variability on the Western Canadian Arctic over the past 700 years” by François Lapointe et al.***

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We would like to thank the referee 2 for the detailed comments.

General comments

We tried to clarify the text in order to better explain that we make a comparison of a varved record with PDO observations/reconstructions, AND (and not or) that this observation leads us to suggest that PDO had an influence over the western Arctic over the last centuries.

We feel that the abstract is correct but we rewrote parts of it (highlighted in yellow).

C1

Specific comments

- Introduction: We now provide more information about the objectives.

- Section 2.2: this sections has been changed; the last paragraph of the introduction was transferred in a new section 2.1 (highlighted in yellow).

- Section 3.3: Spectral analysis: Do you think spectral analysis can also be influenced by the origin of the data (tree-ring, varved records) AR: Yes it can. Since these are annual archives they use to have significant spectra at higher frequencies range (1-5 year cycles), that might be confused with white noise. However, for the longer variability (>10 years), should not have such an impact.

Using the raw data and applying spectral analysis, we get similar results (see figure below): the decadal (19-26) and multidecadal (67-87) signals are also observed.

- Comments: suggesting drier conditions during high PDO phases, and vice-versa. AR: we agree that this sentence is hard to understand and we have re-write this sentence (highlighted in yellow).

- P.3 L 16 Where we can see these correlations: Figure 2. Why you speak of this in the introduction: This has been removed.

- P3 L20: This has been moved to the material section. It is indeed better into the material, thanks for this suggestion.

- P7 L5: 5 year-running mean: We agree that we must take into account the degrees of freedom. However, all the annual PDOs, including the PC1, are correlated significantly without any smoothing. In that respect, we applied a 5 year running mean because it makes sense for comparison purposes since the PDO is a decadal to multidecadal mode of variability.

- P8 L18. We totally agree with this comment that the AO and NPI might share the same signal. We added this in our text.

C2

- P10 L8. suggesting some potential for decadal-scale climate prediction AR: We have changed for: Given the oscillatory nature of the PDO, there is some potential for decadal-scale climate prediction using the kind of record shown here. In that sense, more high-resolution records with longer timescales from this region could be beneficial for future PDO projection.
- P4 L15: In Mantua. This has been added, thanks.
- P4 L17: sentence rewritten. Thank you.
- P5 L13: Now in the reference: Dee et al. Thanks.
- P8 L 14: This sentence has been reworked and highlighted in yellow.
- P8 L17: This has been removed.
- Figure 1 and 2 c: thanks we changed them correctly.
- Figure 3: Yes, the CBEL was shifted 1 year, but there is no lag compared to the NPI (Figure S2). This is now placed in the text.

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C3

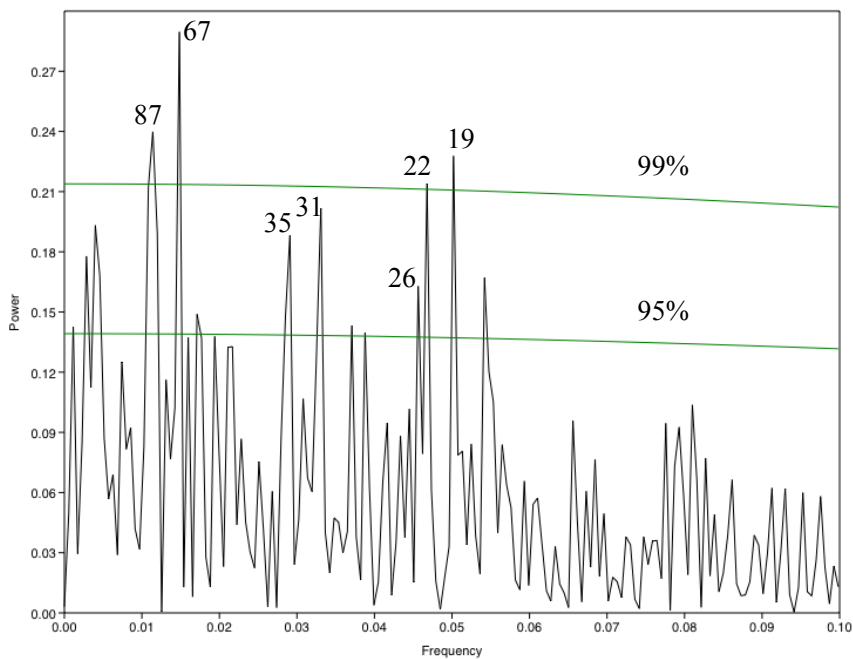


Fig. 1.

C4