

Interactive comment on “An Overview on Isotopic Divergences – Causes for instability of Tree-Ring Isotopes and Climate Correlations” by Martine M. Savard and Valérie Daux

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Anonymous Referee #2 Comment on the review from referee 1 Received and published: 1 May 2020

First, I would like to thank the authors for conducting this synthesis. The authors did a great job on synthesizing and explaining all the different sources of divergence caused by multiple factors recorded in Carbon and Oxygen isotopes in the wood.

At the beginning of this review, the authors explain the differences between the “divergence” topic in the tree ring community versus the divergence that can be found in

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isotopic measurements in Tree rings. I see why the Authors are attributing the term divergence to the examples they show. However, it is not clear if the term divergence is the correct term. It is fine to use this term as long the authors make sure that they are referring to the divergence to the climate signal and eventually highlight that this “issue” falls into the problems we as scientists have when we want to interpret the isotopic records in Tree rings. I do appreciate the sections where they make recommendations and a strong call to the good practices so future researchers can take this advice to minimize the chances of losing the climatic signal.

REPLY – We sincerely thank referee 1 for the constructive comments and suggestions compiled above and below. Regarding the usage of ‘divergence’, we agree with the referee that this term should be restricted to describing tree-ring isotopic departures from climatic parameters. That is what we rigorously do in the manuscript. The introduction explains lines 30-32: When correlations between climatic parameters and tree-ring proxies show periods of instability such that correlations weaken, become non-significant or change in signs, the relationship between proxies and climatic data shows a ‘divergence’. Further down (lines 44-45): The present article deals with the ‘isotopic divergence’, which we define here as the middle- to long-term (>10 years) loss or change in signs of correlations between a climatic parameter and tree-ring isotopic ratios (d13C, d18O, or rarely d2H).

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