

Interactive comment on “Does a proxy measure up?: A framework to assess and convey proxy reliability” by F. Garrett Boudinot and Joseph Wilson

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We thank Dr. Griffin for the comments on our manuscript, which describe the utility and novelty of our work for the Climate of the Past readership, while also offering suggestions to improve the clarity and focus of our discussion.

We love the idea of a glossary to explicitly define the terms proposed in our text, which would certainly aid in the dissemination of our ideas. We are happy to include that in the revised manuscript. Additionally, we will add an explicit explanation of CCFs in the abstract to highlight this major theme of our work.

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The issue of geologic time as it influences CCFs is indeed discussed in our manuscript (lines 236), though we agree that such an important aspect of our discussion needs to be mentioned earlier in the discussion, and with more explanation. We will make those changes in the revised manuscript. Similarly, while we do discuss the existence of unknown CCFs (line 266), this idea will be mentioned earlier in our discussion in the revised manuscript, and will also be incorporated into the glossary definition of CCFs. Importantly, it is the ubiquity of unknown CCFs in all proxies that makes potential uncertainty always greater than that reported, highlighted in Fig. 3b.

We appreciate the suggestions to improve Fig. 3b. The revised manuscript will include added descriptors for the y-axis, and new representations (rather than the blue and red bars) of the magnitude of those uncertainties. This should help clarify the relationship between potential and reported uncertainties shown in Fig. 3b.

We agree with the reviewer that our manuscript “does not assess the magnitude of influence of different CCFs on the proxy interpretations;” we see that as specific to individual proxy systems, and the subject of more individual proxy-specific work than our manuscript. For example, Hollis et al. (2019) do indeed describe the magnitude of different CCFs for some proxies – though they lack the term CCF to guide their discussion. We hope that our manuscript provides a framework to encourage and improve such assessments for all forms of measurement in future work.

The PDF comments are very helpful in gauging which sections require rewording or further discussion, and which sections currently read strong and serve as important aspects to convey our ideas. Areas in need of clarifying text will be modified accordingly in the revised manuscript. We recognize and appreciate the thoughtfulness put into those comments.

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