

Interactive comment on “A 900-year New England temperature reconstruction from *in situ* seasonally produced branched glycerol dialkyl glycerol tetraethers (brGDGTs)” by Daniel R. Miller et al.

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Miller et al. presented a well-designed experiment to investigate the seasonality of brGDGT proxies in this paper, which is helpful to understand the mechanism of the potential temperature proxy. The authors reconstructed temperature variation in the past 900 years and suggested they could differentiate anthropogenic and natural changes. I think it is a good try to understand the seasonality of brGDGT proxies, which is worthy to be published. However, there are some problems that the authors need to address before it is accepted for publication.

Main comments: 1. The authors did not construct a transfer function between MBT'5ME and temperature, as they claim their proxy likely reflect September temperature. I suggest the authors try to construct a transfer function to show the temperature variation quantitatively. 2. The authors compared their temperature reconstruction with pollen, hydrogen isotope and other records. The authors better explain difference between September T and pollen-inferred T. If they represent T variation in different seasons,, why do they show similar variation? 3. The authors attributed different trends in reconstructed T and measured T at the Basin Pond to Rotenone treatment. It seems that the Rotenone affected the algal community. What would the changes in algal community affect the bacteria? If bacterial community changed, why the proxy did not reflect temperature? In this case, why the proxy MBT'5ME would reflect over the past 900 years. The examples that the author listed in Section 5.1 were all from surface sediment. Were they affected by anthropogenic activities? Overall, it seems to me that the interpretation is not convincing.

I wish the authors address the concerns in revision.

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Discussion paper

