**Climate
of the Past**

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Discussions

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Interactive comment on "Climatic history of the northeastern United States during the past 3000 years" *by* Jennifer R. Marlon et al.

Anonymous Referee #1

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Major comments:

This study conducted a systematic review, assessment, and comparison paleotemperature and paleohydrological proxies from the NE US for the last 3000 years. Based on the comparison and cross-check between different paleotemperature and paleohydroclimate reconstructions from the NE US, the main conclusion that the current warming and wetting trend reflects a reversal of millennial-scale cooling and wetting trends prior to the 1800s was drawn. There are several parts which should be improved. In particular, Figure 5, 6, 7 and related discussion in the manuscript that draw the main conclusion of the study should be revised and polished for a better understanding for readers. In addition, seasonality should be considered when different reconstructions are compared. For example, several records may reconstruct annual temperature, while others reconstructed summer or mean temperature of the warmest month temperature. De-

tailed reconstructed target for each record should be added.

Specific comments:

Figure 4: This figure has 6 panels, adding the a, b, c, d, e, f for each panel is helpful for a smooth reading. Now the order of figure is confusing.

Page15 line 9: Figure 5A, should be Figure 4e (New Long versus Deep Pond water elevations from southeastern MA for the past 7000 yrs).

Page15 line 12: Figure 5B should be Figure 4f (Deep Pond lake-level derived P-E reconstruction versus the mean annual precipitation reconstruction based on the mean of multiple records in the region).

Page15 line 19: Figure 5C should be Figure 4c (observed versus predicted paleohydrological variables, based on proxies found in lake and bog archives, and inferred using space-for-time paleoclimatic transfer functions and validated using cross-validation. Left: pollen data from (Marsicek et al., 2013)).

Page15 line 31: Figure 5D should be Figure 4d (observed versus predicted paleohydrological variables, based on proxies found in lake and bog archives, and inferred using space-for-time paleoclimatic transfer functions and validated using cross-validation. right: testate amoebae data from across North America (Booth, 2008)).

Page16 line 4: Figure 5E should be Figure 4A (instrumental (observed) versus reconstructed values correlated in time. Left: NY PDSI for 1895-2000).

Page 16 line 23: Figure 1I should be Figure 1 or Figure 5I.

Page 16 line 24-26: The mean annual temperature anomalies based on pollen records from across North America from Viau et al. 2006 (Figure 5H) also show a long-term but more subtle decline.

Page 16 line 31-32: add more explanation on the reason why long-term difference between reconstruction by Williams et al. 2011 (Figure 5I) and Viau et al., 2006 (Figure

5H).

Figure 5: the x axis should not contain "0" for CE. Same for Figure 7.

Figure 6: add the loading legend. Which color indicates positive loading? Adding the a, b, c, d to each panel.

Page 17 line 19-26. The sentence is not clear. Does brown line (Figure 6c) means temporal variations of EOF1?

Page 18 line 12: during the past 9000 years should be 900 years. Figure 7c does not show clear long-term trend. Maybe it does not preserve low frequency signal so much.

Page 18 line 14-15: Could you give explanation why there is no correlation between tree-ring based PDSI and varve-based index? Both tree ring and varve records could be calibrated with instrumental data, but they are not correlated. Please give more information on reconstructed PDSI, seasonal PDSI? Or annual? Same as varve-based reconstruction.