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Climate of the Past Discussions

Interactive comment on "A 70-yr record of oxygen-18 variability in accumulation from the Tanggula Mountains, central Tibetan Plateau" *by* D. R. Joswiak et al.

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Response to specific comments:

(1) The previous data is now depicted on Figure 4 as suggested, and further discussion of the similarities and differences between the two ice cores is provided in the revised manuscript.

(2) The other locations were added to Fig. 1 as suggested. We agree the manuscript will benefit from additional comparison with other ice core data. Comparison was made to the Puruogangri core as suggested. The TGL05 d18O values were not consistent with the variations in the Puruogangri core, although this may be expected considering

the greater continental climate influence and isotopic temperature dependence at the Puruogangri core location. Thompson et al. (2006) suggested the Puruogangri core is more influenced by continental climate than by monsoon climate processes as evidenced by the similarities between the Puruogangri core and the Dunde core in the northern Tibetan Plateau, and Yao et al. (2006) reported consistent variations between the Puruogangri core and local ground-based temperature data. We have added additional discussion regarding this comparison in the revised manuscript. We also include a comparison of the TGL05 core oxygen-18 data to results from Dasuopu and Everest cores in the new version, since these locations are within a region heavily influenced by monsoon climatic processes.

(3) This shortcoming was addressed through further discussion of the seasonal variability in the ion and isotope signals, and through the addition of the quantitative analysis suggested. The well-preserved soluble ion concentrations likely result from higher concentrations associated with dry deposition during the cold, dry winter, and lower concentrations occurring with the relatively greater amount of summer precipitation. Therefore, we may expect to see the preserved cycles in sulfate and other ions due to deposition in both summer and winter. The isotope signal, however, records mainly summer precipitation. Thus, it appears that the summer isotope signal variability is not sufficient to record large seasonal variations, given the insignificant precipitation amount during the winter seasons.

(4) Monthly data for the meteorological stations are available. We used the correlation with JJAS temperatures to have a direct comparison with results reported for the Geladaindong core, but agree that a comparison with precipitation-weighted temperatures should also be included. This analysis is included in the new version.

(5) These sections were separated in the revised paper as suggested, and the text was improved for better presentation.

In addition to these specific comments, all technical corrections were taken into con-

sideration and included in the revised manuscript.

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