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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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(1) The suggested correlative analyses were investigated initially and we agree that these results should be discussed. Additional analysis was included in the revised manuscript, with a comparison of average d18O values to both the annual accumulation and the precipitation records from the meteorological stations in the vicinity.

(2) Additional discussion of the spatial variation between the Tanggula and Geladaindong ice cores was included in the results. We suggest the distinctive location may result in greater local variation of oxygen-18. We do not agree that this spatial variation weakens the credibility of Tibetan ice cores in general. The relationships between

isotopes and climate parameters are better characterized for the locations in the northern and southern Tibetan Plateau. We also suggest this local variation is not entirely unexpected, given the location at the transition between monsoon- dominated isotope signals (warm season depletion) to the south and temperature-dependent isotope signals (cold season depletion) to the north.

(3) This suggestion is incorporated into the revised manuscript by including comparison to oxygen-18 data from Dasuopu and from Everest.

(4) More details on the core dating were included in the new version. Additional major ions are included in support of the core dating, and comparison with previous mass balance results from the Tanggula Mts was included for validation.

(5) We acknowledge there may be partial melt at the ice core location during warm summers, and have provided additional discussion of possible melt and impacts on the preserved geochemical signals. It is assumed that any surface melt immediately re-freezes within the snowpack, as evidenced by the well-preserved ion variability. Additional geochemical data were added to address this question, and to provide further support of the core dating.

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