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Climate of the Past Discussions

Interactive comment on "Stable isotopic evidence of El Niño-like atmospheric circulation in the Pliocene Western United States" *by* M. J. Winnick et al.

Anonymous Referee #1

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I found this to be a generally well written paper that makes an interesting contribution to the debate about ENSO state in the Pliocene and to the evolving consideration of the climatic evolution of the SW USA. My suggestions for changes are minor and relate mainly to the description of the pedogenic isotope records and the presentation of these in the figures. The new and existing sites are described in section 2.1 and shown in Figs. 1 and 2. At a basic level, the state names should be spelt out for a non-US audience. More importantly, I'd like to see the sites related clearly to modern precipitation gradients (winter vs summer) across the region. Presumably, the site in New Mexico sees at least some summer precipitation (from the NAM) today and the same might apply to the site in Kansas (GPLLJ?)(see line 10, 4.1). I would add this

information to section 2.1. I think this also needs to be linked through to section 4.1 and to Fig. 4. In terms of the presentation of the data (Figs. 2 and 4) I'd recommend plotting the sites in some sort of logical order - I couldn't detect this in the current diagrams - so either W - E might be an option, or by precipitation seasonality (winter, mixed, summer). The significance of summer/tropical vs winter/midlatitude precipitation runs right through to considerations of present and future climate of the region and so should be acknowledged here. Also in relation to the carbonates, was any XRD data obtained to test what type of carbonate it was (calcite/aragonite/ankarite)? Was the assessment about re-precipitation based on SEM work?

Although not the focus of the paper, I think some mention should be made of forcing from the North Atlantic since this is very evident in Pleistocene and early Holocene records from the region.

One minor typographical point, I'd insert 'the' before 'section' in line 6 of 3.1.

Interactive comment on Clim. Past Discuss., 8, 5083, 2012.