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Climate of the Past Discussions

Interactive comment on "Excursions to C₄ vegetation recorded in the Upper Pleistocene loess of Surduk (Northern Serbia): an organic isotope geochemistry study" *by* C. Hatté et al.

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Hatté et al present a careful organic isotope study on the loess record of Surduk (Serbia). They clearly show the occurrence and dominance of C4 plants during at least 4 episodes in the last glacial period. These have been attributed to the presence of very dry summers that did not allow C3 plants to grow, thus favoring C4 development.

I see several strengths of the manuscript:

- The chronology, based on a great number of carefully conducted radiocarbon dates,

is very well constrained. This is usually a difficult issue for loess sequences.

- The organic isotope evidence is pertinent according to the descriptions on the samples and methodology.

- The main conclusion about the occurrence and dominance of C4 plants in Europe during some episodes of the last glacial period is novel and of broad interests for understanding the past ecosystem changes since most of the earlier studies showed C3-dominant ecosystems for the region. The evidence about the occurrence of significant C4 plants during the cold millennial intervals is of particular importance, adding significant new insights for future interpretations on isotope data.

I have only a few minor suggestions.

- It might be finer to add a figure showing the modern seasonal distributions of precipitation and temperature in the study region because the discussion on the paleoseasonality is a strong aspect of this study.

- It would be more interesting to add a paragraph addressing the role (significant or not) of temperature on the occurrence of the C4-dominance. P201 mentions some published malacology data at/near the site. Adding one or two curves of the malacology assemblages in Figure 4 would help the discussions about the environmental conditions.

Interactive comment on Clim. Past Discuss., 9, 187, 2013.