Clim. Past Discuss., 11, C759–C760, 2015
www.clim-past-discuss.net/11/C759/2015/

Climate of the Past Discussions

Interactive comment on "Climatic variability and human impact during the last 2000 years in western Mesoamerica: evidences of late Classic and Little Ice Age drought events" *by* A. Rodríguez-Ramírez et al.

S. Davies (Referee)

sjd@aber.ac.uk

Received and published: 22 June 2015

This paper focuses on a high-resolution, multi-proxy lake sediment record from the western edge of the Trans Mexican Volcanic Belt and on the northern frontier of Mesoamerica. Records from this region are very sparse and this high-resolution sequence, spanning the last c. 2,000 years from Santa Maria del Oro represents a valuable extension to the spatial coverage of data from this region. The explanation of the individual palaeoenvironmental indicators is well-justified, clear and concise and these are synthesized effectively. The interplay between periods of human activity and

fluctuations in moisture availability is interesting, also in that there does not appear to be evidence of human occupation during the Colonial period. This point could be expanded upon a little. The drought episodes identified correspond to those previously identified in other sequences, underlining that these are wider regional climatic signals. Of particular note is the wet phase in the 13th-14th centuries and a two part LIA.

Specific Comments Although there is no rise in A. minutissimum during the Colonial period, there is an increase in magnetic susceptibility. Could you comment on whether this is likely to be entirely climatically driven? Do historical records indicate whether there was any occupation in the basin over that time?

It is stated that the lake is currently oligotrophic, with the diatom record indicating earlier phases of eutrophication (based on A. minutissima) linked to human activity. Could you comment on whether the intensity of current activity within the basin is less than would have occurred in those earlier phases?

Can you explain a little more about the Toba Jala identification? Is this based on geochemistry or stratigraphy? Has this been dated elsewhere and how does that age correspond to the age-depth profile here?

I think it would be useful to include discussion (and add to the map in Fig 1) of the recent paper by Bhattacharya et al (2014, PNAS vol 112: 1693-1698) from Aljojuca in the eastern highlands of Central Mexico. As that sequence covers the same time period (with focus on human-climate interactions) it would be a valuable point of comparison.

I attach an annotated pdf with suggestions for improving the English in places and some minor comments for clarification.

Please also note the supplement to this comment:
http://www.clim-past-discuss.net/11/C759/2015/cpd-11-C759-2015-supplement.pdf

Interactive comment on Clim. Past Discuss., 11, 1887, 2015.