

## ***Interactive comment on “Neotectonics, flooding patterns and landscape evolution in southern Amazonia” by U. Lombardo***

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Thank you very much for your comments, here are my answers to the specific points that you raise

<“Up to now, paleoecological reconstructions in the Bolivian Amazon have been mostly <based on pollen and charcoal archives from lakes located outside the margins of the <LM (Mayle et al., 2000; Burbridge et al., 2004; Whitney et al., 2011; Urrego et al., <2013)”. What about the recent studies from Lagunas San José (Whitney et al. 2013), <El Cerro and Frontera (Whitney et al. 2014)? Admittedly these records do not extend <back beyond the late Holocene, but they are located in the central/western Llanos de <Moxos.

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I did not include these papers because they reconstruct the last two millennia and, therefore, do not cover the period in which the most important changes took place, during the mid to late Holocene. I will change the paragraph above to make it more clear and add “of the Holocene” after “reconstructions”. I will also add the recently published Carson et al. 2014 to the list, as the only study coming from the LM.

<“These archives have been interpreted as the result of changes in climate and pre-<Columbian human impacts, implicitly assuming that other factors, such as neotectonics, <did not play an important role in the evolution of the landscape during the <Holocene”. I would not say that these studies are ignorant of geomorphology. There <is often in-depth consideration of changes in sedimentation regime brought about by <river/lake evolution and changes in water inputs/flooding regime. However, I would <agree that there is little/no discussion of larger-scale tectonic patterns. The records from <Noel Kempff Mercado National Park are from lakes located on the Brazilian Shield east <of the LM and arguable represent a much less geomorphologically/tectonically dynamic <landscape than the LM.

The main point that I want to stress is that tectonic activity seems to have played an important role in the evolution of the LM landscape and that this is an aspect that has often been overlooked by paleoecologists, despite the fact that uplift events during the Holocene were already identified by several scholars (Dumont, Hannagart, Plafker, Allenby)

<Radiocarbon dating: It appears that most of the dating of your soil cores comes from <Single r.c. dates taken from a basal position in the core or from a single palaeosol <horizon, which you use as a relative age marker horizon across sites. I’m concerned <that this limits your ability to comment on the timing of events. In the L. Rogaguado <core, you have presumably interpolated a straight line from the r.c. date to the surface <and assumed that the surface represents 0 years BP. How confident are you that sedimentation <rates in the lake have been consistent between these two points? Gaining a <better chronology of the timing of major depositional events in the late Holocene

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may be important for determining whether increased discharge is in fact a result of higher precipitation regime. At the moment, the discussion of the timing of these events is a bit vague, referring to the mid to late Holocene. It would be nice to have a table reporting the full radiocarbon data from your lake core (i.e. date in radiocarbon years plus error, calibrated age range, lab codes and details of the method used to calibrate your dates).

Following your observations, this information about the r.c. age will be added. However, the only objective of the reported r.c. ages is to identify the moment of the formation of the lake, which, from a stratigraphic point of view, can be located between the terrestrial phase and the lacustrine one. I will add a further r.c. age which I recently obtained from the paleosol located below the clay layer. However, no humins could be extracted from the organic matter so only the humates could be dated. This age therefore represents an average age of the period of soil formation and cannot be used to identify the exact time of the deposition of the clay layer.

“The damming of the valleys that formed these lakes was likely caused by the infilling of the valleys’ bottom with sediment

I don’t understand this observation. The infilling of the valley bottom would not form a lake. These are ria lakes which formed because of the change of the slope caused by the uplift.

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Interactive comment on Earth Surf. Dynam. Discuss., 2, 635, 2014.