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

U. Lombardo

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#1 Specific comments: Emphasis has been placed on one r.c. date – I would air on the side of caution of using a single date. I see however from replies that you will be addressing this issue.

A second radiocarbon age has been added. The text now reads: “In core 398, radiocarbon dating of a wood fragment from the bottom of the lacustrine phase is 5791 ± 155 cal yr BP, while the paleosol that corresponds to the top of the terrestrial phase has been dated 10910 ± 124 cal yr BP. The radiocarbon age of the paleosol is based only on the soluble fraction, because no humins could be retrieved. Therefore, it should be interpreted as the average age of the paleosol and not as the age of its burial.”

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Throughout the article there is mention of fluvial fans. I would also like to see some reference to wider fan literature with regards to their presence in actively subsiding basins (i.e. Wesissmann et al 2010, Hartley et al 2011, Weismann et al, 2013 and references within) as their presence is a key indicator of subsidence, and therefore tectonic processes in the area.

Suggested references have been added. Also the following has been added “In particular, river avulsions take place when the main channel becomes infilled with sediments, triggering the diversion of the river into a new course (Slingerland and Smith, 2004;Buehler et al., 2011). River avulsions are the main mechanism behind the formation of distributary fluvial systems (DFS), which fill alluvial basins (Hajek and Edmonds, 2014;Weissmann et al., 2010;Hartley et al., 2010). High aggradation rates in the main river channel can result from a variety of causes such as i) an increase in the sedimentary load of the river; ii) an increase in the peak water discharge of the river or iii) a decrease in the channel gradient, which can be caused by a rise of the base level or downstream tectonic uplift (Slingerland and Smith, 2004).” And “Central and southern Moxos are covered by many paleolevees belonging to distributary fluvial systems (DFS). This is characteristic of actively subsiding basins (Hartley et al., 2010; Latrubesse et al., 2010; Weissmann et al., 2010; Rossetti et al., 2012; Weissmann et al., 2013).”

You touch upon causal mechanisms of avulsions on the fluvial fans from the literature on the area but I would like to see more generalized texts on fan processes (i.e. descriptions in Weismann et al 2013 and references within). For instance there is no obvious mention of intrinsic elevation differences on the fan driving avulsion processes (e.g. Kraus, 1999; Slingerland and Smith 2004; Buehler et al 2011; Hajek 2014 etc).

Suggested references have been added, see also answer above.

What evidence is there for quick deposition of the clays and silts, explain the interpretation of rapid deposition or is this hypothesized? (P651).

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The text now reads: "This layer of sediments was probably deposited right after the formation of the lake in a quick event, as it contains no organic matter. The sediments could have come from the erosion of the recently formed lake shores. This preliminary data suggests that Lake Rogaguado was formed in the mid- Holocene."

A few short sentences on what you have seen in the past and how that may help with predictions on possible future impacts on changing conditions on either humans, ecology or fluvial/lake form in the area would give the paper an interesting close – the importance of reconstructing the past to help understand future changes is mentioned at the beginning but not really addressed later on.

The end of "Conclusions" now reads: "In addition, this work highlights the need to disentangle the effects of human populations, climate change and neotectonics on the evolution of the LM, in order to better predict the impact of future climate change in the region and develop better adaptation strategies for local communities."

Technical corrections: Although generally the standard of written English is good a few grammatical errors/sentence restructuring is needed. A few of them are listed below: Throughout - Paleo rivers should be paleorivers? Line 19, p636, should be paleo-ecologists Line 25 p639, reorganisation of sentence needed. Line 1, p640, should be criss-crossed. Line 11, p644, Should be stratigraphic. Line 21 – date missing from reference. Line 1, p647, indicate on Figure 5 where the 45 degree turn is. Line 16, p655 should be these layers Line 20, p655, rewording needed Line 20, p656, date missing from reference. Line 11, p657, needs rewording. Line 18, p657, difficult sentence to follow, rewording needed. Line 4, p657 – should be triggered. Figures presented are appropriate and used well in text. An insert map at the larger scale would be beneficial for location purposes of the study area to those who are not familiar with the region. Some of the captions are brief and could do with some further detail (i.e. Figure 5, and explanation of each graph would help clarify what they show). Annotations on some images would also be beneficial, for example in Figure 3 labels and arrows indicating the splay deposits, or highlight the 45 degree turn in Figure 5. Scales are missing on a

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few Figures (8, 9, 10, 12). There are also some axis labels missing (Figure 6C).

All these technical corrections have been addressed in the new manuscript, with the exception of the scale in Fig. 8, as it is a photograph taken in the field, not a map.

ESurfD

2, C466–C469, 2014

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

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