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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Meteorological context of the onset and end of the rainy season in Central Amazonia during the 2014–15 Go-Amazon Experiment" *by* Jose A. Marengo et al.

Anonymous Referee #1

Received and published: 21 February 2017

This should be accepted (with some mandatory revision) because it was written by the great José Marengo.

The comments that I would require to be answered before acceptance are the following:

Page 1, Line 31: "...and also helping the developing Hadley and Walker circulation." Please either correct or elaborate on this phrase. Why is the Hadley circulation developing? Do you mean within the context of the seasonal cycle? And how does Amazon convection participate in the Walker circulation? My understanding is that the Walker circulation is an Indo-Pacific phenomenon.

P1, L35: Can you support your statement that Atlantic SSTs affect Amazon precipita-

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tion with a sentence or two, similar to your description of the Pacific influence? And I believe it would be of value to describe, again briefly, the nature of the teleconnections in both the Atlantic and Pacific. For example, I understand the Pacific teleconnection works by shifting the Walker Circulation to the east, so during El Nino there is more subsidence over the Amazon. Since I have no idea how the Atlantic influences the Amazon, it would be nice to have an idea. Again, nothing new here, just remind the reader what other studies have concluded with a physical explanation. It is nice to have a picture of what is going on.

2-8: How have people's perceptions been changed? Please explain a little better with some detail.

2-10: I think it should be the plural, "show" but it is a complicated sentence.

2-13: "has"

2-22: "Variability" sentence does not actually make sense. "Variability" suggests variation, not necessarily long-term change.

2-24 "70s"

2-27: "While it is important to know how will be" - badly written

2-29: "season"

2-33: Explain what you mean by, "problems in the hydrology of the region."

3-9: This sentence repeats itself: "This may be due to the poor representation of clouds and land surface-atmosphere interactions or due to role of aerosols and other particles, which are still not well represented in models."

3-14: What do you mean, " Li and Fu (2006) showed that weak and infrequent extratropical cold front penetrations during the transition season also contribute to a delay of the wet season onset?" I presume you mean weaker and less frequent than usual, but if you do, you need to be specific.

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4-2: What? "On the regional scale circulation features, during DJF2015 it did not show signals of..."

4-34: Liebmann and Marengo used gridded rain data.

I give up on the writing. Suffice it to say that it is badly written and needs improvement.

Please use scaleable, or "vector" graphics. Your rasterized graphics appear fuzzy and thus unprofessional.

Figure 2 is not of acceptable quality. In addition to printing it using scaleable graphics, it needs latitudes and longitudes, continental outlines one can see, and perhaps fewer vectors.

6-2: horribly written sentence: " On the regional scale circulation features, during DJF2015 it did not show signals of El Niño in the tropical Pacific while the warm surface waters are already present during MAM 2015..."

6-6: From what do you infer reduced northeasterly trades? Is it from the vectors, even though the quantity present by the vectors is the integral to 500 hpa, or is it from assuming flow nearly parallel to surface contours?

6-5: Assuming that you are using the vectors to make the statement, "The low level circulation over the tropical North- Atlantic and Amazon sectors (Figure 2) showed reduction in the Northeast trades....," I disagree (assuming my guess about the map domain is correct). Yes, along the equator (assuming Fig. 2 is centered on the Equator), there are westerly anomalies, but these are away from the coast (looking at DJF). Along the Atlantic coast and north of the equator, however, the anomalies are near-zero. There are huge positive transport anomalies from the equator into the southern Amazon, which are consistent with above-normal precipitation to the west (south of the equator), as there appears to be anomalous convergence of moisture there (Fig. 2a). So, please explain why this is inaccurate and why your statement is correct.

6-7: Why are Figures 1 and 2 made from seasonal averages, while Fig. 3 is from

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monthlies? Would it not be better and certainly more consistent to use seasonal averages in Fig. 3?

6-10: The authors may have a valid point, but I believe they should hone in more on Brazil. Nothing is discussed east of the GM, so why not just show the longitudes of South America, plus or minus a bit? And perhaps the shading interval on the anomalous maps should be lowered, as with the present interval it doesn't look like much is going on over South America.

6-13: " Therefore, interannual variations of the wet season onset in the Amazon appear to be influenced by changes in large scale and regional circulation over the tropical and Pacific sectors."

6-21: Instead of, "meaning a rainy season shorter than normal" how about, "meaning a rainy season that was shortened at both ends."

Figure 4 is a little disturbing to me because it does not appear the INMET and UEA records match very well the NOAA records. Looking at the bottom record (Manacapuru), there is no rainfall at all within several days of onset, and it continues to rain for at least a week or so after the NOAA end. I know Manaus is a long record and I assume so is Manacapuru, so why not use the daily station data to do the onset and end calculations? You know that the actual station data is the best record available, so I don't see any reason to use NOAA. I think your point could be made more succinctly and more accurately.

6-25: "which are not common for the wet season." This cannot be stated without any sort of justification, such as a reference.

Conclusions: Please make sure your conclusions match your discussion in the Results section. For example, you discussed the change in moisture transport (which I disagreed with), but this discussion did not make it into the conclusions.

Good luck - Brant Liebmann

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