

Interactive comment on “Precipitation in the Amazon and its relationship with moisture transport and tropical Pacific and Atlantic SST from the CMIP5 simulation” by G. Martins et al.

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Received and published: 10 March 2015

It seems that the paper title, which immediately caught my attention, does not correspond to what was done in the manuscript. This was a bit of a downside to me, as I read it with great interest hoping to learn about new dynamical mechanisms that could justify the general inability of models to produce tropical precipitation. Here I will limit myself to suggest three points where authors could significantly improve their manuscript.

The introductory and discussion sections, for instance, explained well how different

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dynamic mechanisms could be responsible for or linked to tropical south american precipitation, nonetheless, the authors did not explore the already identified mechanisms as possible explanations for the model's biases. Since the authors have the data, can you please show how do CMIP 5 models represent Hadley and Walker circulations?

It is also not clear to me why the authors have moisture transport in the title, but did not mention it at all in the introduction section nor reviewed/cited the recent literature, for instance: Drumon et al. JGR-Atmos (2008), Arraut et al J. Clim. (2012), Zemp et al (2014), Drumond et al, HESS (2014), Boers et al GRL (2014). The analysis shown in figure 10 is not explained enough and it is hard to get conclusions from it. Since the authors have the data, can you please show how do CMIP 5 models represent moisture transport over the continent? I mean, show the actual vector field, and its bias.

I do not think ERA interim moisture convergence can be used as observation. This has lots of error and actually is as bad as the precipitation field from ERA-interim itself. For more details on why one can trust the humidity field (and thus the moisture content and transport) but not the divergence of a reanalysis product see, for instance Arraut et al, J. Clim. (2012). I suggest removing this analysis and using the extra space to further discuss the points above.

I hope to see an improved version of this analysis as it is potentially very interesting.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 671, 2015.

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