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Hydrology and Earth System Sciences Discussions

Interactive comment on "On the sources of hydrological prediction uncertainty in the Amazon" *by* R. C. D. Paiva et al.

Anonymous Referee #2

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This paper is interesting for hydrological forecasting improvements in the Amazonas basin taking into account many gauges into Amazonas drainage. However, three several gaps exist in the presentation of the paper: 1. In the paper describe that they use MGB-IPH model and give a citation by Paiva et al., 2011a. However, is not clear in the paper the skill of this model for hydrological simulations (e.g. Nash in the calibration and validation periods). In hydrological application we need know more details over hydrological simulations before use in hydrological forecasting. 2. Rainfall and discharge in the Amazonas basin exhibit contrasting opposition between its regions (see Espinoza et al., 2009 and Espinoza et al. 2010). Thus, is necessary describing better in the paper the different hydrological regimes into Amazonas basin (e.g. how much are different the parameters using MGB? They have relationship with the regimes?).

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Thus, discussions and conclusions should be related to these different regimes. Espinoza JC., et al. 2009b. Contrasting regional discharge evolutions in the Amazon Basin. Journal of Hydrology, 375, 297-311. Espinoza JC., et al. Spatio – Temporal rainfall variability in the Amazon Basin Countries (Brazil, Peru, Bolivia, Colombia and Ecuador). International Journal of Climatology, 29, 1574-1594. 3. For this study we use overall assimilation methods (TRMM, CRU, ENVISAT, etc.). Thus, what is the level of uncertainty into Amazonas basin because if are not describing Hydrological models are not more that mathematical tricks. Thus, my opinion is that this paper is acceptable for this journal only if these three points are highlighted in a new version of the paper. Specific comments: p1/21: not reference in abstract INTRODUCTION Rewrite this including differences hydrological regimes between Andes (for Sol Gauge), North (Neg), South-West (Pur and Mad), South (Tap) and global basin (Am). Is not clear in this section what region is explained. p2/17-24: What region of the Amazonas is describe here p2/25: central Amazonia is referenced with what gauge Am??? P2/29: hydrological forecast systems not necessary replace by HFS METHODS Here exists another gap: in order of explain better the results and understand better the manuscript we need include in this section a description of the data used (6 gauges), mean discharge, mean elevation, drainage area, etc. Include a Table Section 2.1 ESP versus rev-ESP approach need be complete with reference to figure 1 a), b), c) and d); for instance: P4/10: Replace ESP by ESP (Fig. 1a). Same in p4/17, p4/25, p4/27 Suggestion: Improve the Hydrological model section including MGB parameters and skills for each one gauge Results need be rewrite taking into account the differences of regimens into Amazonas basin Conclusions: Not use the word “speculate” when describe conclusions because if not there are perspectives, please change of word or remove these paragraphs

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