

Interactive comment on “Synoptic and Mesoscale atmospheric features associated with an extreme Snowstorm over the Central Andes in August 2013” by Marcelo Zamuriano et al.

Anonymous Referee #3

Received and published: 26 November 2019

General Comments This manuscript provides a detailed overview of the synoptic and mesoscale patterns associated with a high impact snowstorm over the Andes of southern Peru and Bolivia in August 2013. The manuscript is very well organized and generally well written, although many paragraphs are quite short and could be expanded/combined. The data, methods, and analyses are all appropriate and conclusions are consistent with the results. The discussion section, however, could be strengthened considerably, as there are only a handful of other papers referenced, and comparison of results with other published literature could be beneficial. Many of the figure panels are very small and difficult to read/interpret and some enlargement could be helpful.

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Specific Comments p. 2, line 2: A number of recent studies (e.g., Romatchske and Houze 2013, Mohr et al. 2014, Endries et al. 2018) have demonstrated that much of the precipitation in the central Andes of Peru and Bolivia is stratiform and not exclusively convective. p. 2, line 23: How is the spatial distribution of snowfall clear? p. 4, line 16: Incomplete sentence? p. 7, lines 15-19 and Fig. 6: The grey shading is somewhat confusing as there is a class of >100% and >1.0 m corresponding to grey in Figs. 6a and 6b. Suggest removing this grey class from the legend. The colors for the graduated circles are also a bit hard to interpret but this is partly ameliorated by the graduate size. Adding an inset map for the La Paz vicinity could help? It could be placed in the southern Altiplano/northern Chile? p. 9, lines 1-10 and Fig. 10: It is not clear what the ending heights (pressure or amsl) for the different panels. Please clarify. p. 11, lines 17-20: What is the rationale in support of there being daytime and nighttime convection during this event? If no strong evidence then suggest changing "convection" to "precipitation" or "snowfall." p. 12, lines 14-15: Again, what evidence is there to support the assertion that there was nighttime convection? Per first comment, recent work has demonstrated that nighttime precipitation across the region is mainly stratiform. Are there any manual or acoustic snowfall observations from Chacaltaya or Zongo in Bolivia?

Technical Comments p. 3, line 20: Consider replacing "trustful" with "reliable"? p. 4, line 4: s not needed in "conditions" p. 8, line 18: "analysis suggest" should be changed to "analysis suggests" p. 9, line 16: Avoid use of apostrophes (doesn't) p. 10, line 5: Period not needed after 24 p. 10, line 7: Change "A colder lake restrict" to "A colder lake restricts" p. 11, line 9: Missing "of" between "relationship" and "PV"? p. 11, line 13: Missing "the" between "for" and "Vuille"? p. 12, line 16: Incomplete sentence

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2019-286>, 2019.

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