Review of:

Tropical continental downdraft characteristics: mesoscale systems versus unoganized convection, by K. Schiro and J. D. Neelin

This manuscript assesses the cold pool characteristics associated with organized and unorganized convection over the Amazon, as inferred from GoAmazon campaign data. A valuable inclusion is radar wind profiler measurements of vertical velocity, and assessments of common mixing paradigms. This is an interesting article and I only have minor comments. My most major comment is that I had trouble seeing the same features in Figs 5 and 6 that the authors mention in the main text. I think it is just a matter of re-drafting the figures.

1. abstract: it's worth mentioning that the analysis was focused on the more extreme convection, consisting of 11 isolated cells and 17 MSCs. A sentence discussing the differences between the isolated and organized convection cases would also be useful.

2. line 88: 30-minutes strikes me as a long time span over which to average cold pool changes, which those changes easily happening over shorter time spans. Why did the authors choose this time scale? can they say something here about the ability to resolve temporal evolution? on line 137 you mention averaging over 1 hour, even longer.

3. were all of the cold pools preceeded by unmodified conditions? cold pools tend to cluster.

4. discussion of Figs 2 and 3: do the individual examples all follow the same evolution as is shown for the mean composite?

5. lines 199-200, fig. 3: it is difficult to discern a difference of 700m between 2 separate plots extending up to 17km. I would encourage the authors to try out different plotting formats, perhaps one plot showing both of the mean profiles together up to 17km, and another one zoomed in to the 0-4km range would work, showing all 6 mixing lines. This would help with interpretation of the mixing rates and their differences for the two forms of convection, as discussed in lines 215-225, as well.

6. line 242-243: it is difficult to see the downdraft this sentence is referring to in Fig. 5. perhaps an arrow, or a color scheme emphasizing the stronger downdrafts, would help. the latter might be my suggestion, to use e.g. red for downdrafts less than -1 m/s and yellow for updrafts > 1 m/s. or vice versa, in which case you might have something that relates well to the probability of downdrafts figure in the bottom panel.

I also wonder if it would be useful to blow up the 0-4km altitude range in Figs 5 and 6. The manuscript makes the argument that downdrafts originate from the lower free troposphere, but these figures focus the eye on the upper troposphere. I have trouble distinguishing features mentioned in the text (e.g., lines 260-261) in the figures. One idea might be to make this 6-paneled figures with 3 additional panels added per figure that focus on the 0-5km range.

7. p. 9: I see no discussion of wind shear here. What role if any does the (horizontal) wind profile play in this? line 260-261 would suggest none, is this consistent with conceptual views of MCS organization?

8. line 256: how can downdraft air be positively buoyant? does it overshoot its level of neutral buoyancy?

9. line 263: I have trouble distinguishing this feature. is this occurring between 1-2 hours near the surface?

10. lines 283-296: see also de Szoeke et al 2017 JAS for further corroborating observations from DYNAMO.

lines 359-361: I wonder if sampling can explain why you might find a strong precipitation event without a decrease in surface theta-e, as it doesn't quite make sense to me that this would be the case, unless the decrease in surface theta-e is simply displaced.

minor comments:

line 45: Zuidema et al 2011 should be Zuidema et al 2012
line 71: provides should be provide
line 140-141: the language here is slightly unclear ("drops of -5C or less"). would suggest referencing to an absolute value.
line 167: typo at end
line 257: mention the gravity waves are in the stratosphere

reference:
de Szoeke et al, 2017: Cold pools and their influence on the tropical marine boundary layer. J. Atmos. Sci.,74, pp. 1149-1167, doi:10.1175/JAS-D-16-0264.1