Review of "Measurement Report: Cloud and environmental properties associated with aggregated shallow marine cumulus and cumulus congestus" by Ewan Crosbie et al.

This measurement report details six marine shallow cumulus cases sampled during the NASA ACTIVATE field campaign during summer months over the western Atlantic Ocean in a comprehensive, inclusive, and scientifically intriguing way. Besides the summary of the aircraft sampling approach and individual measurements, a number of interesting observations regarding shallow convective cumuli in this region are highlighted: 1) there is a lack of correlation between static stability and cloud-top frequency; 2) cluster motion vector does not seem to have an apparent relationship with the shear vector nor the axis of organization; 3) the impact of entrainment on the subadiabaticity of q_L is stronger than that of N_d; 4) cloud DSD broadens with altitude. The report covers a wide range of scientific topics that these measurements can shed light on, including thermodynamical, dynamical, and microphysical features of shallow cumulus. Variations as well as shared attributes across the cases are discussed.

The manuscript is really well written. Individual measurements are clearly described and discussed in scientific contexts. This report should be of great interest to others in the community and serves as foundations for future topic-oriented studies making use of these comprehensively sampled cumulus cases. I think this manuscript is worthy of speedy publication to raise community awareness of the potential in these measurements.

I only have the following minor comments:

- Mesoscale organization, self-aggregation of convective features and aerosol-cloud interactions are the main themes in the introduction, but I did not see much discussion along these lines in the results. Could be worthwhile adding a few statements touching base on these topics.

- Line 135, "Methods" and Data?

- Line 143, could you comment on the representativeness of these cases on the general features of shallow Cu in this region?

- Cloud DSD (lines 197-205), could you add at what Hz is individual measurement taken and the temporal resolution after the two DSDs from FCDP and 2DS are stitched?

- Lines 216-230, similar to the above comment, I think the readers would appreciate the information on the temporal resolution of these measurements (and after stitching).

- Line 295-299, For this cloud/feature tracking method, is there any assumption involved (e.g., decorrelation timescale, threshold for the cross-correlation), in order words, how did you make sure it's still the same cloud/feature that you are tracking (the ~8hr cumulus lifetime in case 2 seems a little suspicious to me in this regard).

- Line 324-325, This is an interesting observation, any speculation on why? Stability? Shear?

- Line 335-336, “near-parallel linear cloud features (cloud streets)” and “near-perpendicular shear vector”, are these two features physically connected or just by coincident, I think the reader will be curious.

- Line 351, reference for this derivation of mixed-layer height?

- Line 363, reference for using 6 K km^{-1} to indicate stable layers?

- Figure 6, wouldn’t it be nicer to be able to see LCL (or MLH) directly from the graph? (also check panel (1) for misprinting).

- Line 499-503, not sure if I follow this argument, how does spatial scale come in to play here, may need to clarify.

- Discussion and Conclusions, you already touched on this by providing a bullet list of interests for future investigations, but I think it’s worth emphasizing/mentioning the strengths of this dataset (i.e., rich in detail and high spatiotemporal resolution that will shift the focus away from statistical description of features in an ensemble sense) in the context of stimulating future topic-oriented studies.