Earth Syst. Sci. Data Discuss., referee comment RC2
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Comment on essd-2021-427

Anonymous Referee #2

Referee comment on "C^{3}ONTEXT: a Common Consensus on Convective OrgaNizaTion during the EUREC^{4}A eXperimenT" by Hauke Schulz, Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2021-427-RC2, 2022

General Comments

Schulz clearly and concisely presents C3ONTEXT, a dataset quantifying the meso-scale cloud patterns manually identified during the recent EUREC4A field campaign. This data set is innovative and calculated with great care, and its results are compellingly presented. The data set will be of use to provide a standardized view of the cloud organization state during EUREC4A to augment measurements from other coincident platforms. Schulz also shows that results from this manual classification compare well with results from two commonly used approaches, which is another useful aspect of this manuscript.

Specific Comments

Could you also clarify how many times a scene was classified as 'other'? This information is interesting as well for quantifying how comprehensive these four patterns are, how often patterns are hybrid / or in transition from one pattern to another, etc. This information is implicitly present, e.g. in Fig. 5 and Fig. 7, but could merit a brief but explicit clarification. Someone not familiar with these patterns might jump to the conclusion that these patterns are nearly always present.

The comments about storm-resolving models felt a bit interspersed throughout the manuscript, and it might merit a very short subsection bringing these results together. While not the focus of this manuscript, these comments are interesting, such as line 65."This supports the assumption that larger features are better reproduced in storm-resolving simulations than features of smaller scales, like Sugar", and foreshadow future work using these models.

Figure 6:

- It would be useful to add information to Fig. 6 to ease comparison with the Bony et al 2020 Iorg/S quadrants. In Line 150, you label the quadrants (e.g. Fish in the upper

right corner), and perhaps such a labeled grid could be added to Fig. 6.

- I also find the symbols a bit small and sometimes hard to distinguish the colors/patterns. The figure is, however, striking regarding the good agreement between the manual classification and the deep neural network.
- Could you elaborate briefly on the lack of patterns identified in the bottom right corner? e.g. why flowers are more centered (line 150)?

Figure 7:

- Can you explain why the deep neural net seems to identify a higher area fraction covered by each pattern? It also seems like there is a higher area fraction covered by each pattern for the IR (center bar) than the visible (left bar)

Could you clarify the smallest rectangle an identifier can use? Or are the rectangles of fixed size?

It might be worth considering contextualizing the size of the domain for manual classifications with the two main stages of EUREC4A: Boulevard des Tourbillons and Trade-wind alley, and possibly the EUREC4A circle and ATR rectangle.

Technical Comments

Line 120. Small typo Boulevard des Tourbillons (and extra m). Might give translation (eddy boulevard) as well.

Clarify 50 vs. 51 (on line 55) researchers

The acronym is fantastic!