

## Comment on **essd-2021-427**

Isabel L. McCoy (Referee)

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Referee comment on "<sup>3</sup>C<sup>3</sup>ONTEXT: a Common Consensus on Convective OrgaNizaTion during the EUREC<sup>4</sup>A eXperiment" by Hauke Schulz, Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-427-RC1>, 2022

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### General Comments

Schulz succinctly and thoroughly presents a novel, manual identification method and dataset for classifying the four mesoscale morphology cloud patterns thought to dominate the trade wind region. The method utilizes 50 scientists and their knowledge of cloud morphologies to build up a robust dataset of 2-hourly identifications based on satellite data over a two month period that overlapped the recent EUREC4A field campaign. These identifications are designed to give context (hence the clever acronym) to the measurements performed by the plethora of platforms available during the campaign. In addition to presenting the methodology of the identifications, Schulz details the various levels of data that are available to work with (including providing example scripts on GitHub) and demonstrates several ways that these identifications can be used. A particular asset in this paper is the section comparing the manual classifications to previous methods of identifying these cloud types, clearly demonstrating the consistency in identification of the manual method with the more computationally difficult neural network and Iorg/S methods. The effort and thought involved in developing this dataset is commendable. Overall, the manual identifications will be a useful unifier for EUREC4A measurements and will facilitate more precise comparisons between campaign-based and other studies on these cloud types. The detailed presentation of this dataset here will be an excellent resource for the community.

### Specific Comments

Intro/Figures (see technical comments): What is the actual domain that you are covering in the manual identifications? It would be helpful to explicitly call out this region (or regions if you change where you are focusing, e.g., Figure 7) and how it relates to the general region covered by EUREC4A.

Intro: I appreciated the inclusion of the ICON simulations in this effort and find your teaser for later work on this comparison compelling (e.g. sections 2 and 5). However, I did find its integration with the rest of the paper a little abrupt. It might help to explicitly mention in the introduction that you will be looking at high resolution simulations through ICON (it is a surprise when it first appears on line 46) and briefly explain why.

Figures 5 and 6: In general, I think you use level 3 data to produce your analysis (you have it in the GitHub script for Figure 5). It would be helpful to explicitly state in the text

what form of the data you are using in your analysis (as you do for Figure 7) for reproducibility.

Line 162: You say the manual classifications are “naturally more accurate”... how do you reach this conclusion and can you expand on this logic in the text?

### **Technical Comments**

Line 25-32: Worth including the region that you will be examining in the manual classifications and how it relates to the EUREC4A study region.

Line 56: Did you have 50 or 51 scientists? Varies across manuscript.

Figure 4: Suggest noting the lat-lon dimensions in the caption. It would also help to label the sugar, gravel, flower, fish columns explicitly in this first figure at least (not necessarily for all the appendix ones) for easier use.

Line 117: there are more than three platforms involved in the campaign. Suggest removing “the” in front of “three” and referencing Stevens et al. 2020 for a list of all the platforms involved.

Figure 5: Suggest also labeling plots with the platform names.

Figure 7/Line 154-155: Is this the whole domain of the manual classifications? If not, why have you chosen this subset? It looks like it is a little different than the ones used in Bony et al. 2020 and Schulz et al. 2021.