

The authors have addressed many of my comments on the original version of the manuscript to a large degree, but some key issues remain.

Please do a search for “CONTROL” in text and figure labeling and make sure all are changed to “CLOSED” for example, Table 2 annotation of “CONTROL” needs to be changed to “CLOSED”.

- a) Related to previous comment: Further detail is needed regarding the statistics of POCs that do not reclose in order to distinguish among several scenarios. In particular, the size of the subset of POCs that essentially run off the cloud deck needs to be quantified

Since only 12 POC cases reclose out of 141, nearly all the “ends” are going off the edge of the cloud deck. To reduce the ambiguity of what “end” and “end time” of POC means in the text, suggest replace “end” with “exit cloud deck” in text and esp. in caption for Table 1 and captions for Figures 5, 7 in the paper.

- b) **Inadequate response to previous comment:** B) Retrievals of cloud properties from areas of broken cloud have high uncertainties

Authors' response:

We agree that the uncertainties of cloud property retrievals inside POCs may be problematic, however the primary reason we include the nighttime results - i.e. we expect that if we see similar patterns in both the daytime and nighttime results, we suspect that the changes found in the different cloud properties are real and not due to uncertainty resulting from broken cloud. To clarify this, we added lines 161-164:

“Overall, uncertainties in microphysical retrievals inside POCs (Coakley et al. 2005) are unavoidable. However, the nighttime retrievals provide an independent comparison to the daytime retrievals that can lend confidence to the patterns, not magnitudes, in the daytime microphysical patterns and alleviate concerns about daytime retrievals due to broken cloud (Coakley et al. 2005).”

Effectively, this is use of bad data to check for consistency with bad data. Reviewer 2 also expressed major concerns about the nighttime retrievals of cloud properties. In the authors' response to Reviewer 2 “Yes, LWP and N are derived at night, and, because of the

differences in day and night retrievals of COD and re, we find the magnitude of LWP and N are smaller at night than during the day. However, we have not found any studies that have evaluated the validity of deriving LWP and N from nighttime retrievals.”

Authors do not seem to understand that VIS/IR satellite retrieved cloud properties in areas of broken cloud (and especially in broken cloud at night) have such high uncertainties that they are **effectively unusable for properties such cloud amounts, droplet effective radii, optical depths, cloud altitudes, cloud liquid water, and column droplet number concentrations.**

Given the issues, suggest remove all material related to nighttime retrievals and limit all daytime retrievals to areas of high cloud fraction. This is an area where the satellite retrievals cannot stand in for in situ measurements from aircraft. The paper’s credibility is substantially weakened by inclusion of such problematic data.

c) Related to author’s clarification of “before” and “after” periods:

Authors’ response: Regarding the “before” period - it ends 10 minutes before the cloud transition, and the “after” period represents 10 minutes after POC end.

Lines 129-130 have been modified to clarify this: “The trajectories are run forward and backward from 10-minutes before POC development up to 6 hours before POC development and 6 hours after POC dissipation.”

Figure 14-16, utilize POC characteristics “After” POC end which for 129 of the 141 POCs means the POC went off the edge of the cloud deck. Please clarify how one can obtain *any cloud characteristics* in the hours after a POC has moved off the edge of the cloud deck?

New Comment: Please clarify: Lines 465-473: While evidence that most POCS do not reclose before moving off of the edge of the cloud deck is in the paper, for finding in paper that POCs “tend to accelerate the StCu to Cu transition and not to reclose...”, *evidence specially related to accelerating is not presented, nor is the definition of acceleration made clear in this context.* Mention is made of Yamaguchi et al. (2017) LES paper but that is not evidence from *this study*.