

Revision:

Lightning2EarthCARE: Collocated geostationary lightning and EarthCARE observations of electrically active storms

General comment

The study describes a new multi sensor data subset involving different environmental satellites. This data subset indeed provides new information that is important to understanding physical cloud processes in the tropics. The text is well-written and includes the relevant references.

Specif comments

line 85: “In this study, we use lightning groups to retain fine spatial structure while ensuring a consistent level of detail across”

I suggest rewrite this sentence. This part “to retain fine spatial structure while ensuring a consistent level ...” is very non scientific. If you are interesting in a better spatial location why not use the events. The events are more associate ... maybe “more fine spatial structure” ... of the flash area. Despite de GLM and LI having different resolution, considering the algorithm of flash identification, we should expect less correspondence between the number of events and groups, however, the number of flashes should be equivalent. Also, commonly the thunderstorms severity is associate with measures of flash rate, note group rate. Why not include the flash information in this subset?

Line 155: “to aggregate lightning groups into physically meaningful entities” Try change the “physically meaningful entities” to a text more scientific. Ex. to aggregate lightning groups in cluster ...

Line 170: Fig 2 description is missing. In the figure I think that is missing some legend. There is just legend for red cluster. Another colors is not lighting clusters?

Line 185: “Figure 2 illustrates this issue, showing a case in which one of the identified clusters corresponds to a splitting supercell” I suggest explain better this sentence, What cluster is splitting? I cannot see this supercell in figure 2 directly.

Lines 255–270: What is “storm-level” I could not understand this therm, this idea. I this that is necessary a better explanation about what is “storm-level”.

“It provides storm-level records derived from along-track CPR–lightning associations.”;
“....indicating that the EarthCARE CPR directly overpassed the storm.”

“The CPR sample with the maximum lightning activity defines the lightning storm peak location and time. A land–coast–water surface classification is assigned from the fraction of CPR samples intersecting land within the storm footprint. Lightning statistics for the overpassed storm are computed

relative to the peak time, including total lightning counts within ± 2.5 min and the corresponding mean lightning location, as well as counts within both ± 2.5 min and ± 2.5 km of the CPR track. Temporal storm evolution is characterized at the parent-cluster level using per-minute lightning group counts and mean lightning positions within a ± 1 hour window around the CPR overpass, allowing estimates of storm duration and travel distance.” Is not clear to me the definition of “storm-level”. Ex. “evolution is characterized” ... what this represent, evolution is characterized ... how???

Lines 465: Conclusions. I suggest include in conclusion some new perspective that Lightning2EarthCARE is difference in relation to another satellites subsets, for example, in relation to Precipitation Features dataset. Highlight the characteristic of lighting activity life cycle state evolution (1h after and before), giving some aspect of the life cycle of convection. Maybe some elements more general in chapter can bee move to conclusion.

I suggest close your conclusion with some connection with the literature and not just with the repository.