

Review of Erdmann and Poelman paper on Lightning jumps and dives

This is my second review of this paper, and I find not much has changed in the paper. From the title it appears that the focus on the paper is on how lightning jumps and dives may be used to supply nowcasts of severe weather (hail, tornadoes, wind, etc.). However, the authors themselves show that ~60% of all lightning jump storms are NOT associated with severe weather (~70% are not for lightning dives). Hence, their own analysis shows that using the GEO lightning data we CANNOT use such parameters for nowcasting of severe weather. This should have been the conclusion of the paper – that lightning jumps/dives based on satellite lightning data do not show skill in forecasting severe weather. This negative answer is also important to know.

But then the authors go on a fishing expedition to look for connections between lightning jumps/dives and many other cloud parameters, weather parameters, with no real goal of how to use these relationships. I remind the authors that the journal is about natural hazards and hence the extensive analysis NOT related to severe weather may be better suited for another journal. I would suggest reducing the number of parameters analysed, and to focus on a key research question. Can lightning from GEO be used to supply early warnings of severe weather. Yes or no.

The authors use qualitative descriptions of their results, while for scientific evidence we need quantitative numbers. For example, “overall similar characteristics” (line 8), “can be useful for nowcasting” (line 190), “found to resemble” (line 320), “potentially the most dangerous” (line 324), “resemble” (line 342, 346)

Table 3 shows that most severe weather occurs WITHOUT LJ, while most LJ would give a false alarm if used for warnings of severe weather. Hence, there is no benefit (and maybe even a danger) in using LJ/LD in nowcasting for severe weather warnings. Why not state this?

Figure 1: How can we compare parameters when the normalization hides the actual values? Line 203 states the thunderstorms with LJs cover larger areas than storms with LDs. How can we see this from normalized areas? The min and max values will be different for each subset of data.

Most of the analysis of the cloud parameters is not new, although the lightning data set is new. We know all the connections between severe weather and cloud top, ice, overshooting tops, updrafts, etc. Why another paper on this?

In conclusion, I think this paper is very weak in results, and needs either major revision with a new focus, or should be referred to another more appropriate journal.