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Comment on nhess-2021-12

Martin Murphy (Referee)

Referee comment on "Global ground strike point characteristics in negative downward lightning flashes – Part 1: Observations" by Dieter R. Poelman et al., Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2021-12-RC2, 2021

The authors provide a nice, concise summary of high-speed video observations of negative CG flashes from four locations around the world. My only pre-publication suggestions would be perhaps to consider augmenting the paper with some additional information that apparently should be in the data sets. This includes:

- lines 90-92: statistics on the occurrence of forked strokes, and on the occurrence of and duration of continuing currents (at locations other than the US site, as noted)
- lines 160-161 and other places where the data from South Africa are discussed: comparisons of upward-initiated flashes from the Sentech and Hillbrow towers in Johannesburg with observations from other towers, such as Gaisberg, Peissenberg, and Santis in the Alps, or the CN tower in Toronto. The comparison with the towers in the Alps might be particularly interesting insofar as so much of their lightning occurs in winter, if I am not mistaken, whereas the Johannesburg site is noted in this manuscript as having essentially no winter lightning.
- also related to lines 160-161: is the fact that the South African data set has a much larger percentage of single-stroke flashes than the others partly influenced by the population of upward-initiated flashes in that data set? It would be interesting to know, one way or the other

The only other comment is about references in lines 48-49 – at least some are outdated, and should be updated where possible; the Cummins et al. reference on the NLDN is especially old, and in fact, there’s a brand new paper in the March 2021 Journal of Atmospheric and Oceanic Tech. about the 2013++ NLDN.