

Interactive comment on “Improvement of RAMS precipitation forecast at the short range through lightning data assimilation” by Stefano Federico et al.

Anonymous Referee #2

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Overall evaluation The paper presents the evaluation of a lightning data assimilation, implemented in the RAMS model. Overall, the manuscript is well written and the methodology and results are well discussed relative to the available international literature. The subject is of high interest. I suggest acceptance of the manuscript, subject to some minor comments and technical corrections, which are summarized in the following.

Minor comments 1. L64-76: I believe that the three paragraphs could be merged in one, as they all present briefly examples of lightning data assimilation studies. 2. I suggest that Table 1 is removed from the manuscript. Instead of presenting this detailed information on the domain configuration of RAMS, it could be of more usefulness for

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the reader to add a simple plot showing the domains or stick to the two figures that are already referenced for giving an overview on domains. The respective description of the domain configuration in L120-126 can remain as is. 3. L123: It would be also proper to include model top in hPa. 4. L151-152: I believe that simply referring to cloud-to-ground (CG) and intra-cloud (IC) lightning is enough, instead of giving the information currently shown in the parentheses. 5. L223-227: This particular part of the manuscript presents a result of the study. Hence, it can be removed from Sec. 2, that is devoted to methodology. It can be moved to the Results section, at the appropriate place. 6. L259-L263: I think that this paragraph could be removed as it reports information that is most probably well known to the interested readers. I leave it up to the authors to decide whether it should be removed or stay. 7. L290-293: Please rewrite this part of the manuscript in a more clear way.

Technical corrections 1. L1: "short-range" 2. L18: "set up" 3. L21, L78, L95, L190: "that occurred" 4. L21: "which were..." 5. L23, L244, L313 and throughout the entire manuscript: "rain gauges" 6. L23, L95: "target region" or "target area" 7. L73: "presented" or "introduced" could be a better choice for this sentence. 8. L75: "performed" instead of "made". 9. L131: The correct terminology is "WRF single-moment six-class microphysics scheme" 10. L174, L322: "setup". 11. L174: "trial and error analysis..." 12. L244: The abbreviation QPF (Quantitative Precipitation Forecast) has not been previously defined, should I have not missed it while reading the manuscript. 13. L249: "with" instead of "being". 14. L267, L484: "competing" instead of "competitor". 15. L298-290: Correct the term to "troughs" (it is now written as "through"). 16. L290: "cut-off low". 17. L495: "WRF-LTNGDA"

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