

Interactive comment on “Lightning Data Analysis of the CMA Network in China” by Feng Li et al.

Anonymous Referee #3

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The manuscript introduces a new lightning detection network for China and presents first analysis of the respective dataset. This is of interest for the scientific community and generally matches the scope of AMT. Before publication in AMT, however, major revisions are necessary.

General comments:

1. What is actually new?

It is often not clear what part of the paper contains new innovations developed by the author. Generally, the authors have to point this out clearly, and provide detailed descriptions for new aspects. Wherever instruments/algorithms/datasets etc. have been already introduced somewhere else, this has to be stated clearly as well, with appropriate references. The respective descriptions within the current paper might then be just summarized, but any modification of existing algorithms etc. has to be

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clarified.

2. What is the scope of the manuscript?

According to the title, it is on "lightning data analysis", which is quite vague. From the manuscript, I see two major aspects: a) description of the network, the lightning retrieval algorithms, accuracies etc. b) first results of lightning distribution over China.

a) description of the network/algorithm. As far as I understand, this paper provides the first description of the CMA LDN and thus will serve as reference for upcoming studies. If this is the case, there are several important aspects missing:

- the description of the network should be given in more detail (physical principle, history of number of stations etc.)
- what are future plans? (maintenance, extension)
- will the data be available for the scientific community?

But if I am wrong here and the description of the network and the algorithm is given elsewhere, this has to be clarified and referenced appropriately. In addition, the respective paragraph might be shortened.

b) first results of lightning distribution over China This part is quite short. If this aspect is meant to be the main focus of this study, it has to be extended considerably. At least a comparison to the LIS climatology with focus on spatial patterns, seasonal and diurnal cycles should be added.

see https://lightning.nsstc.nasa.gov/data/data_lis-otd-climatology.html

Please clarify the main scope of the manuscript, which in any case needs major revisions of the text (adding references + shorten text for existing stuff, provide more details for the new results). The title should point this out as well.

3. References

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Only few references are given to prior work, and many of the given references miss a doi and can not be found, or are in Chinese language. In particular the general introduction to the topic of lightning completely misses the pioneering works of the last century.

Detailed comments:

Abstract: Please carefully revise the abstract after clarifying the overall scope of the manuscript and revising the paper respectively. Try to make the abstract concise, short, but still give one sentence on the scope of the paper in the beginning (before giving any numbers).

Abstract (line 17-18): What does 50% accuracy mean? Lightning occurrence has not necessarily increased, might be just caused by increased detection efficiency (as stated later in the text!)

Introduction: Please provide appropriate references, i.e. the pioneering studies on the respective topic, or easily accessible, english review articles on lightning in general.

Sections 2.1/2.2: Add appropriate references to previous work. What is the physical principle of the lightning detection (frequency, antennas)? Please discuss similarities and differences to other networks like NLDN, WWLLN, LINET). What about IC flashes? Are they detected as well? Can they be discriminated from CG? Discuss! Provide references for M1/M2/M3 methods.

Section 3: Which algorithm was used for the results shown in section 3?

Summary: Revise according to general comment 2.

Figs. 1, 3, 5, 6: What is the reason for the insertion in the lower right corner? This should be skipped or clarified.

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