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Discussions

Interactive comment on "Spatio-temporal smoothing of lightning climatologies" by Thorsten Simon et al.

Anonymous Referee #1

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I have read this paper dealing with the lightning climatology in Austria. While the paper is well written, clear and at a high level of English, I am not sure why a model is needed to describe the lightning climatologies, when the raw data is already available to the authors. The authors state that for risk assessment or when climatology is used as a benchmark weather forecast this model will be valuable. But why do we need a model when we have the actual real lightning climatology. If we need to know what the probability is of lightning hitting location A, we can calculate this from the raw data.

In addition, the model is developed using the lightning data itself, and then tries to predict the same lightning data. So the model input and output are not independent of each other. A correct model should use parameters A, B and C to predict D. not A, B and D to predict D. Furthermore, the model should be developed for a specific period, i.e. 1992 to 2000 (for example) and then tested on the year 2001 to see if the model

can reproduce the lightning of 2001. In fact, it would be interesting and valuable to compare the model output (2001) with the real data (2001). How well correlated are the lightning estimates by the model for 2001 (based on a model constructed with input data from 1992-2000) with the real lightning from 2001. That is a legitimate test of the model.

Finally, if the model is a physical model, then it should be applicable to other regions of Austria. How well does this model predict lightning in other regions of Austria (or Europe)? If it is only good for Carinthia, then why bother? Just use the real observed data for risk maps.

Specific comments: Page 2, Line 2: of Austria vary

Line 24: data are

line 30: period are

Page 3, line 1: What is the detection efficiency of the intra-cloud flashes relative to the CG flashes?

line 6: what about the detection efficiency in %?

line 13: data are

line 24: Is it a correct assumption to assume a random process?

Page 4: This reminds me of the KISS principle.....(Keep it Simple, Stupid)

Page 5, line 27: The raw data also shows that the main lightning season is from June until end of August. So what is so great about this model? Why do we need it? To tell us something we already know from the raw data? I don't understand the logic behind the model. What can it tell us that we don't already know.

Page 8, line 21: But if we HAVE the climatology, why do we need this tool?

line 24: I do not understand why this is a useful too when the raw data give a better

estimate of the climatology.

line 26: smooth estimates can also be obtained by averaging the raw data temporally and spatially.

line 27: Why not simply use the real raw data? I do not understand why a model is needed.

Page 12, Figure 2 caption: cells with

Page 13, Figure 3: What are units of y-axis in upper plots?

Page 14, Figure 5: How does this differ from the raw data climatology. Maybe show one next to the other.

Page 15, Figure 7: What are the numbers in the key of the figure on right. 2.1? 7?....

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