

## ***Interactive comment on* “Extreme climate, not extreme weather: the summer of 1816 in Geneva, Switzerland” by R. Auchmann et al.**

### **Anonymous Referee #1**

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Basically, I think this is a very good case study research paper on a detailed Geneva, Switzerland record for 1816, which emphasizes the importance of subdaily data analyses. Geneva is well-situated for this 1816 study. The methods and results, including the statistics, are well-described and pretty sound, and the paper is well-cited with appropriate references. Therefore, I recommend publication but suggest some minor revisions, mostly in the graphics/visualization. The following are some comments.

- 1) p. 3747. The authors may wish to add some descriptions on the importance of examining sub-daily data for studying appropriate weather/climate impacts.
- 2) p. 3748. How is no further reduction of pressure (constant 10 R) irrelevant as compared to the standard (0 C)?

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3) Overall, description of data and metadata, as well as the methods, are pretty good. With observations twice a day (p. 3749), the record does not get at a complete diurnal temperature analysis as some unique “hourly” observatory stations, and the authors may note this.

4) Base period of 1799-1821 looks fine. Note that Chenoweth (2001, Geophysical Research Letters) conducted a somewhat similar analysis like this and included 1816.

5) I think that the graphics can be much improved. They are clear as currently presented, but if one prints out the manuscript in Black and White (which is common), it would be difficult to analyze the graphs. The authors should revise the graphs so that any printout in black and white can show the graphs clearly. Just to offer some suggestions: a. Fig. 2 can have thicker lines for the standard deviation, and dashed lines for the max/min temperatures. b. Figs. 3, 4, 5, 6 and others, instead of filled red bar graphs, make this a filled red pattern? c. Fig. 4. It would be best to avoid red when mostly displaying precipitation (use blue, purple, brown, green etc.).

6) The description of the temperature results look sound and I like the cloud analysis added in (ex. p. 3753), but I wonder if the negative temperature anomalies/distribution for afternoon could relate to an exposure to the north, or something like that?

7) The weather pattern analyses looks fine. However, Fig. 7 only shows the sea-level pressure anomalies. It would be very useful to also include a map that shows actual sea-level pressure values (mb), as the actual patterns of the highs and lows could be clearly seen.

8) Monte Carlo simulations look fine.

9) I am pleased to see the scatterplots in Fig. 9, but the different color symbols should perhaps also be different symbol types (triangles and squares) to make visualization more apparent. I would expect some non-linearity, particularly on the precipitation, so a Spearman (non parametric) correlation may be useful to add on here.

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I have commented enough to indicate that the study is clearly a very good contribution, and publishable with these minor revisions. Best wishes to the authors.

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Interactive comment on Clim. Past Discuss., 7, 3745, 2011.

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