Hydrol. Earth Syst. Sci. Discuss., 11, C3907–C3908, 2014
www.hydrol-earth-syst-sci-discuss.net/11/C3907/2014/

Hydrology and Earth System Sciences
Discussions

Interactive comment on "Little evidence for super Clausius–Clapeyron scaling of intense rainstorm properties with air temperature" *by* P. Molnar et al.

P. Molnar et al.

molnar@ifu.baug.ethz.ch

Received and published: 19 September 2014

We appreciate the criticisms, comments and suggestions of the referee Peter Berg, and herewith would like to outline what actions we are taking to answer the most important points. A complete response to the referee will follow with the revised manuscript.

1. Event based analysis

Our original intention was to use an identical methodology to previous authors, so that results can be directly compared. The hourly resolution of the analysis came out from this consideration. However, it is true that 10-min rainfall data are available, and we have used them in another recent study published in HESS. The referee is right that the hourly resolution is too coarse to capture real event durations and intra-event

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper

intensity fluctuations accurately. Even more importantly, the peak event intensity on a 10-min resolution has a completely different meaning to a peak hourly intensity. For this reason we have decided to redo the analysis for the 10-min resolution, as the referee suggested. This is lengthy work which is now almost completed. From preliminary results we see that although the main messages have not changed there are some relevant differences to the hourly analysis. In the revision of our manuscript we will focus on these issues.

2. Presentation of data

We agree with the referee that a plot, at least for one example station, of the intensity quantiles and temperature with their fitted relations are necessary. We will add this to the revised manuscript. We have also decided to change the ranges of the convectivity index beta in the figures to capture better the differences between what could be continuously very intense events (e.g. convective events with beta > 0.8) and continuously low intensity events where 10-min intensity rarely exceeds a threshold (e.g. beta < 0.2). This separation is also correlated with event duration, the former being short events. We are also exploring the effect of using quantile regression instead of exponential fitting to binned data as was suggested by the second referee.

3. Investigation of atmospheric variables

For the moment we prefer to keep the section on the analysis of other atmospheric variables, but we are planning to reduce and focus it on connections and relationships that are immediately relevant to our paper, e.g. the relationship of ground precipitation to upper air temperature at 500hPa, etc.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 8923, 2014.