

Interactive comment on “Technical note: Space-time analysis of rainfall extremes in Italy: clues from a reconciled dataset” by Andrea Libertino et al.

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We greatly appreciate the insightful comments from the reviewer. The comments from the reviewer have been reproduced in italic below, interspersed with our responses.

This technical note describes a unique extreme rainfall dataset (I-RED) that was compiled for Italy. The introduction nicely explains the complexities of the rainfall data records in Italy and the necessity for a unified dataset. The labor involved in creating such a dataset is appreciated and will be valuable for future research. The I-RED compilation methods is described relatively well, and some initial results are briefly discussed; however, I believe minor revisions are necessary to close some open ques

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tions that a reader may have about the dataset. Specific comments are below.

1. Some discussion is needed on how the rainfall data at these stations is collected, as well as how the practice of recording rainfall data over time may have changed. For example, there may be some stations that reported 24 h rainfall totals for a longer period of time than 1 h rainfall recordings. This additional discussion could be aided by a plot similar to Figure 2d for the shortest (1 h) and longest (24 h) durations. Information on the types of gauges at these stations could be critical to understanding how capable the dataset is at capturing the most extreme rainfall amounts.

3. Figure 2 (b) and (c): These histograms look identical. Is it true that the same number of stations that reported 24 h rainfall also reported 1 h rainfall?

At this stage we provide a unique answer to the two questions, as they deal with the same topic. In general, all the stations have had for the whole operating period a resolution in time amenable for capturing the maxima for all the considered durations. However, some data could have been discarded from the authorities for different reasons, that is why the number of data for the different duration can differ. These differences are quite small, that is why the two histograms in figures 2(b) and 2(c) look similar (see question). We will find a better way to underline these differences in the revised version of the manuscript. We will also add some considerations on the characteristics of the rain gauges.

2. Page 3 Lines 14-15: How frequently were data types (b) and (c) inconsistent with one another, and what would be the source of this inconsistency if it's the same station?

The sources of the inconsistencies could be various, according to the evolution of the monitoring systems of the different regions and often is due to the joint management of interregional basins. The different regional authorities often have adopted different codes/names for the same station, the first step has been thus to identify the presence of duplicate stations with same/similar name covering different time intervals. Sometimes, even for the same station, neighboring regions can provide different data for the

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same years. This can be, e.g., due to the fact that sometimes regions share rainfall data before their validation and official publication. That is why we decided, in case of inconsistencies, to preserve the data from the competent authority.

3. *Table 1: It is unclear what “under request” means here. Does it mean “available upon request”?*

As we explained in the answers to reviewer 1 and Alberto Montanari, we were referring to those cases in which the agencies do not provide data directly on their websites but they provide it “upon request”. In the revised manuscript the “Under request” wording will be substituted by the more explicit “available upon request”.

4. *There are a few typos in the paper, including the following: Page 1 Line 24: “dismantledment” should be “dismantlement”, Page 1 Line 25: “stucked” should be “stuck”, Page 2 Line 2: “metodologies” should be “methodologies”.*

We thank the reviewer for the corrections. The manuscript will be double-checked for typos.

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