Hydrology and Earth System Sciences Discussions

Hydrol. Earth Syst. Sci. Discuss., referee comment RC1
https://doi.org/10.5194/hess-2022-177-RC1, 2022

Comment on hess-2022-177

Anonymous Referee #1

Referee comment on "Technical Note: Space–time statistical quality control of extreme precipitation observations" by Abbas El Hachem et al., Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2022-177-RC1, 2022

Review HESS
Title: Technical Note: Space-Time Statistical Quality Control of Extreme Precipitation Observations
Author(s): Abbas El Hachem et al.
MS No.: hess-2022-177
MS type: Technical note

Overview

The contribution is presenting a methodology to identify outlyers in precipitation measurements and to verify if the values aree plausible. The methodology is based on neighbouring stations for comparison, checking several time aggregations and utilizing external measurements from radar or water level gauges. The basic idea is that precipitation values are similar for neighbouring stations with short distances and getting more different with larger distance. This is being modeled with geostatstical methods.

General Remarks

The authors give a good explanation of the statistical methodology, but there are some shortcomings in the applied section:
- the ancillary data are introduced "as is" without acknowledging their quality
- there are several figures which are not cited but part of the contribution: here clearly textual explanation is missing I assume that the authors have a clear idea about the value of the figures, and they should share these ideas more explicitly with the readers
For this reason, a careful major revision should be performed in order to increase the quality of the description for the practical section up to the quality level of the theoretical section.

Specific Remarks
line 93: RW data have two properties which need to be discussed before use:
- they are hourly data
- the quality is varying over the years
line 99: the term "kernel density estimation with a Quartic shape" deserves more explanation for a better understanding
Figure 1: an explanation for the colouring with a scale would be useful
line 147: the quantitative criteria for comparison with radar data and with discharge data should somewhere be explained
line 152ff: a flow chart would be more helpful for the reader to follow the steps of the algorithm. In particular, the limit of loops is not obvious in the current list.
Section 4.1: a discussion of figure 4 and table 2 is missing here - or move the figures back to section 3.1
line 238: why are minute data here directly comparable to hourly sums? What are your criteria and where do you expect them to have limitations?
Tables 3 and 4 have never been cited or explained! Please add appropriate sections for explanation and discussion!
Figures 9 to 12 have never been cited or explained! Please add appropriate sections for explanation and discussion!
lines 266+267: please be more precise in your description.
line 275: the statement should be supported by at least a figure
line 280-281: what length of time interval? Please expand on this!

Detailed corrections
line 56: should read additionally instead of additional
line 57: "is done" should be deleted
line 62: should read "Germany-wide"
line 85: citation of reference incorrect - should be "Kaspar et al. (2013)"
line 90: I assume you mean: radar derived rainfall images
line 124: better: "... is used, a method ..."
line 150: "were" should read "Where"
line 169: "is" should read "are"
line 171: spelling: hypothesis
line 176: delete "are"
line 211: "reflects" should read "reflect"
line 213: "an" should read "a"
Figure 3: spelling of "skewness" is wrong
line 241: spelling of "catchment"
line 244: replace "is" by "this" or reformulate
line 257: replace "have" by "has"
line 262: replace "were" by "where"
line 272: please add "s" to "investigate"
line 276: should read "convective rainfall processes" or should be reformulated
line 288: "this" should read "these"
line 320: reference incomplete: please add all co-authors!