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Climate of the Past
Dr Raphael Neukom
Institute of Geography
University of Bern
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Re: " 300-years of hydrological records and societal responses to droughts and floods on the Pacific coast of Central America" (cp-2017-30)

Dear Dr Neukom,

On behalf of myself and my co-authors, I would like to thank you and the Reviewers again for the positive comments and helpful suggestions for improving our manuscript. Below we outline how we have addressed their comments and incorporated their suggestions.

Please let us know if you have any questions.

Sincerely,

Reviewer #1, David Nash:

A) Major point

1. Results as introduced in section 4.1/indication of the confidence with which each year in a reconstruction is classified: a 'confidence rating' (from 1-3) could be given following Kelso and Vogel (2007).

1. As recommended, we have included a confidence rating for each year based on Kelso and Vogel (2007). Further information can be found in section 3.5 and in the supplementary information.

B) Minor points

1. Factors which could lead to crop loss or shortages/potential impact of pestilence or conflict on harvest yields

2. The opening paragraph of section 3.4 could make greater cross reference to table 1.

3. Section 4.1 of the script: the authors might consider a little reorganisation to move some of the descriptive material from section 5.1 into section 4.1.

4. Second paragraph of section 5.3: the authors should refer to Adamson and Nash (2014) or Ashcroft et al. (2016) as entry points into this literature.

1. We identified in our sources reports of outbreaks of epidemics (flu, typhus, measles, smallpox and cholera), which we expected would be associated with anomalous climatic conditions. However, as we found no significant relationship between these and anomalous climatic conditions we have inserted a new paragraph discussing this issue (starting on line 24 of page 9).
2. The opening paragraph of section 3.4 now cross-references Table 1
3. We have moved some of our descriptive materials from section 5.1 to section 4.1.
4. The second paragraph of section 5.3 is now more fully referenced.

Reviewer #2, Darrel Kaufman:

Essential additions:

1. A "data availability" section that describes where the primary data (documents and weather station measurements) can be accessed.

2. Primary outcome of the data analyses should be submitted to a public repository and should include the Data Citation. This includes: (a) The hydrological index (y-axis value), type (plot symbol), location, year/season for each documented event in Fig 4. (b) The number and the source of information for each event in Fig. 5.

Recommended:

1. Archiving of the meteorological datasets that were used to compare the reconstruction, especially the precipitation anomalies shown in Fig. 6.

1. A data availability section has been included at the end of the manuscript, indicating the locations where documentary sources and weather station measurements can be accessed.
2. In addition, our data will be available online shortly (using the NOAA National Centers for Environmental Information <https://www.ncdc.noaa.gov/data-access/paleoclimatology-data/datasets>). All datasets requested have been prepared following the NOAA templates and have been sent to the correspondent email. As soon as we receive the link to the datasets, it will be included in the manuscript.
3. The meteorological datasets used in this study have been already archived at the KNMI Climate Explorer, and can be accessed at the following webpage: <https://climexp.knmi.nl/selectstation.cgi?id=someone@somewhere>

Reviewer #3:

Specific comments:

1. The Little Ice Age definitions: rephrasing of sentences for consistency.
2. The complexity of the relationship between hydrological extremes and societal responses is not fully followed-up in the paper.
3. Previous research reconstructing rainfall and extreme events based on ecclesiastical records in Latin America and Spain, specifically Rodrigo and Barriendos, should be referenced in the Introduction.
4. A short explanation of why reconstructions and data collections based on discontinuous sources are not as reliable as the results presented here should be considered.
5. Source-relevant information should be made more prominent in the text – e.g. that the Actas de Cabildo and the Actas Municipales are preserved in 190 volumes is mentioned in the abstract, but in the main text it only appears on p. 9. This information shows how much work was invested into this reconstruction.
 1. The end of the Abstract has been modified to be consistent with the Little Ice Age dates.
 2. We have clarified the types of impacts that our sources enable us to reconstruct and the additional materials that could be consulted for a more extended discussion of impacts and responses.
 3. This has been addressed in lines 22 and 23 of page 3.
 4. We now explain in more detail why discontinuous sources are less reliable (see paragraph starting in line 5 of page 10).
 5. We have made reference more explicitly and earlier in the paper to the sources we have used for the study.

