

## ***Interactive comment on “Documentary-derived chronologies of rainfall variability in Antigua, Lesser Antilles, 1770–1890” by A. J. Berland et al.***

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### General comments

This paper is the first lengthy reconstruction of rainfall variability in the Caribbean for the period prior to the start of systematic meteorological data recording. It uses evidence from a vast collection of UK-based archival materials to identify a number of drier and wetter phases on Antigua. The level of analysis is extremely rigorous and shows a strong critical approach to the interpretation of documentary evidence. The paper is very well written, well-referenced and represents an enormous effort on the part of the authors. The results are clearly and effectively presented and supported by rich suite of illustrative quotations taken from the original documents. In short, this is an excellent paper and I have no hesitation in recommending it for publication.

## Specific comments

Barring a few typos, this paper could be published "as is". However, I have a few observations which the authors may wish to take on board to improve the clarity of the text and to enhance its value to the scientific community.

Page 1536, Lines 12-13 (and others throughout the manuscript): I am very familiar with the problems of describing results for regions where the hydrological year does not coincide with the calendar year, as is the case in Antigua. However, I found the way that "rain-years" are reported in the manuscript to be slightly confusing. It might be clearer if you say 1769-70, rather than 1769-1770, as the latter suggests (to me at least) a year range, rather than a specific rainy season. You might also use similar shorthand when you are referring to ranges of years - so, 1769-1770 to 1853-1854 would become 1769-70 to 1853-54. It took me a good couple of minutes to understand the abstract and I suspect the same may be for other readers.

Page 1539, Line 14: should be 'meteorological'.

Page 1541, Lines 18-20: Some rain-years appear to be classified on the basis of a relatively small number of original quotations. I appreciate that, in some cases, one extremely detailed and "good" quotation can be all that is needed to understand whether a year was relatively dry or wet. I wonder if the authors considered giving "confidence ratings" to the classifications for each of their rain-years? Have a look, for example, at Kelso and Vogel (2007) who give a good example of this process. This would not take a lot of effort, and could be indicated on rainfall chronology figures through the use of different shades for individual bars to indicate differences in confidence. I suspect that the majority of rain-years will be classified with high confidence, but the additional rigour would give readers a better feel for security of your results.

Page 1542, Line 4: Blue Books are mentioned in Table 1 but are not described in Section 3.

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Page 1542, Lines 10-16: Do the authors have any indication about the homogeneity of these instrumental datasets from their archival research? For example, is there any indication as to whether the instrument has always been in the same place? It might be worth commenting on this in the manuscript.

Page 1543, Line 3-6: The authors really should cite the work of Rudolf Brazdil and Christian Pfister here, as they have published most of the general work on the advantages and limitations of documentary evidence. The sentence should read "Limitations to the use of historical archives for climate reconstruction and the aforementioned five-fold classification system have been discussed extensively elsewhere (e.g. Pfister et al. 1999; Brazdil et al. 2005; Endfield 2007; Nash and Grab 2010) and will receive only brief mention here".

Brázdil, R., C. Pfister, H. Wanner, H. von Storch, and J. Luterbacher, 2005: Historical climatology in Europe - the state of the art. *Climatic Change* 70, 363-430

Pfister, C., R. Brázdil, R. Glaser, M. Barriendos, D. Camuffo, M. Deutsch, P. DobrovolnĀj, S. Enzi, E. Guidoboni, O. Kotyza, S. Militzer, L. Rácz, and F.S. Rodrigo, 1999: Documentary evidence on climate in sixteenth-century Europe. *Climatic Change* 43, 55-110.

Page 1546, Line 11: Should this be 'excessive'?

Page 1551, Lines 15-16: Some basic statistical analysis of the comparison between the two chronologies would be really helpful here and add rigour to the investigation. Hopefully the two time series show close agreement, otherwise you may need to do some further explanation.

Page 1551, Line 26: Should be 'documentary'.

Page 1552, Line 17: Should this be 'co-located'?

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