

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

Anonymous Referee #2

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Technical corrections: - p. 1539, line 14. "meteorological" by "meteorological" - p. 1546, line 11, "excefsive" by "excessive" - p. 1562, Fig. 4 (a), "Instrumetal" by "Instrumental"

Other suggestions: - fig. 2. b). Annual rainfall totals 1929–2011. Values showed with any smoothing filter would be fine to have a direct observation of climatic droughts. I.e. 11 years moving averages. - fig. 3. a) I would suggest other presentation style. Year by year is not very clear. Smoothing filter could improve it. But other way, considering short number of data, would be a reduction of data to groups of 5 years, or decades, to make easy visualization of climatic anomalies, dry or wet.

Personal comments: This work of historical climatology is good example how documentary sources can help to detection of climatic patterns at high spatial and temporal resolutions for periods or áreas with no instrumental records availability. First ex-

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ploratory Works usually have strong work of archive but modest quantity and relevance of results. It must be considered as a necessary step of research. More complex, rich analysis can be obtained when research is extended to other areas, periods, crossing different proxies...

First steps are no easy, because of uncertainty of research in unknown sources, consequently, with unknown results. In this manuscript, this exploratory process has been made with excellent methods and results.

Concerning results, I recognize first effort to collect data. Then, a complete analysis, with comparative studies with other proxy approaches, or climatic patterns already known is only an indicated or suggested as future steps of research.

About these possible future steps, connection with ENSO events chronologies would be very useful.

Comparisons with other areas may be premature, but usual scenario of teleconnections could be developed with these proxies. For example for mediterranean area (Eastern coast of Spain) I find interesting relations between dry periods showed in manuscript (1780s, 1820s, 1835s) with cold/dry events in this second area.

Other aspect could be studies stronger, is detection of strong rainfall variability at climatic scale. For example, 1830-1850 is a period of strong variability, with succession of dry-wet years. Usually these climatic events produce strong impacts on agrarian society, producing simultaneously different factors of reduction of harvests, but also impacts on infrastructures and/or indirect impacts on public health (epidemics). A very similar period detected is eastern spanish coast was 1760-1800: Malda's Anomaly. First approach to atmospheric circulation processes show interesting results (Llasat & Barriendos, Climatic Change, 2003). Study of these anomalies and possible teleconnections is fruitful because it help to a major understanding of general scale processes. A local intensive research, with local results, can contribute to general knowledge of global processes. this aspect of historical climatology is very positive.

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A last consideration about possible continuity of research: historical climatology usually has problems to obtain proxies with good quantitative support. In the case of small islands, with a clear economic activity focused on sugar production, a potential proxy would be present. I suggest to authors, for future researches, study of statistics or reports about annual production of sugar, related to quality of yearly harvest of sugar-cane. It's possible variations of production be related more or less directly to variations in climatic conditions (rainfall regime). A quantitative series of production could be calibrated with modern statistics and meteorological records. Possible documentary sources for that could be administrative account books of private farmers or companies, statistics of taxes from any administration local or general focused on taxation of sugar production or general trading activity. Even price's fluctuations can be a good indicator of environmental variability.

I hope this research be continued, diversifying documentary sources and promoting similar Works in other islands and locations of this área. Only with a good amount of data series, research take enough critical mass to generate a good knowledge of climate conditions in the past.

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