Clim. Past Discuss.,
https://doi.org/10.5194/cp-2020-140-AC2, 2021

Climate of the Past Discussions

Interactive comment on "Building a long-time series for weather and extreme weather in the Straits Settlements: a multi-disciplinary approach to the archives of societies" *by* Fiona Williamson

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Received and published: 19 January 2021

Author Response to R2.

I would like to start by thanking the reviewer for their positive and useful comments.

In general, from the open comments and R2 comments, there is a need to tighten and explain some of the more field specific terminology, especially to accommodate those people less familiar with historical terms and phrases. This can easily be done during text editing prior to a potential resubmission.

The majority of revisions relate to the figures and to the 'scientific' latter part of the

article. With regard to figures, R2 suggests to either drop the figures or to embed them more into the narrative with better explanation, the latter their preferred option. I would also be keen to keep the figures and I plan to expand on their inclusion more in a potential revision.

On the specific comments:

Major:

1. Fig 3. Noted on R2's suggestion to include the recent article as a citation and more explanation. I can expand on this at revision stage. The reviewer asks why only Jul-Sept and Aug-Oct were included and not the whole year to show the drought's development? Is no other data for 1877 is available under the ERSST v5 simulations? Response: Yes, April – June has been added.

2. On the further description of the WRF modelling, I have contacted the people responsible for creating these models on behalf of this project, who are based at the Tropical Marine Science Institute (TMSI), NUS. On discussion, we believe that there is no need to explain more on the WRF modelling as it will deviate the context of discussion (which is primarily an historical account and description of a database). Essentially, though we have taken some WRF info for discussion; details about how this was performed, model validations etc are beyond the scope of this paper and would entail a great deal of expansion. What we have decided on is to note that as the creators of the models have been performing extensive WRF modelling we should add more citations to their work, e.g. (Raghavan et al., 2016; Raghavan et al., 2019) and, we can also add the following citation for additional context: Skamarock, W.C., et al. (2008) A Description of the Advanced Research WRF Version 3. NCAR Technical Notes, NCAR/TN-4751STR. (See also: Raghavan, V.S., Nguyen, N.S., Hur, J., NG, D.H.L and Liong, S.Y. (2019): 'Evaluations and Inter-comparisons of Regional Climate Model simulations of Southeast Asian climate: past and future' - Review of current RCM configurations over SE Asia and Singapore', Report submitted to the Centre for

Climate Research Singapore (CCRS), Singapore; Raghavan, V.S., Vu, M. T. and Liong, S.Y. (2016): 'Regional Climate Simulations over Vietnam using the WRF model', Theoretical and Applied Climatology, 126, 161-182. doi:10.1007/s00704-015-1557-0).

3. The reviewer comments that the models cannot have been driven by NCEP reanalysis since the NCEP reanalysis does not go back to 1877. Response: In fact, NCEP reanalyses are now available from 1850 onwards (please refer to the following link which can be included in the article). The WRF model was driven using the reanalyses data obtained from this source. https://climatedataguide.ucar.edu/climate-data/noaa-20th-century-reanalysis-version-2-and-2c

4. The reviewer also asks how the precipitation field was obtained and asks for more detail on the analysis. Response: The WRF model was simulated at a spatial resolution of 18 km. To enable comparison against observation locations, the closest grid point from the WRF model was used. Because the simulations spanned historical climate and that these investigations are not climate change, the WRF model simulations have forced by reanlyses (that are real observations). The author will include this in the article for context.

5. The reviewer asks, are there other comparison data sets (such as 20CRv3) for precipitation in 1877/78? Response: No. 20CRv3 has data for this period but its currently a very course resolution and not useful for Singapore at this stage. A detailed model of this event has not yet been attempted using 20CRv3.

6. The reviewer asks, where can the data be downloaded? Response: The raw rainfall data is available from the author on request. It is not currently available online.

6. The reviewer asks, there is no section 3. Response: The author is not clear what the reviewer means by this comment.

Minor Revisions:

1. Is DJF 1877 actually December 1877 to February 1878 or December 1876 to Febru-

ary 1877? Convention would point to the latter, but then the precipitation figure would precede the SST figure. Response: it is December 1876 to February 1877.

2. Allan et al. 2016 is missing in the reference list. Response: Noted and will be amended.

3. References in the text are often not identical to the reference list: Hsiang 2014 should be Hsiang and Burke 2014, Lee 2017 should be Lee et al. 2017, McNair should be McNair and Bayliss etc. Please carefully check the references. Response: Noted and can be amended.

4. Please also give a very short summary of what is done in the "Conclusions" section. Response: Noted and can be amended.

5. I am not sure about the corresponding policies of the journal, but perhaps the footnotes could be omitted and in turn "Sources" and "References" could be distinguished. Response: the author requests clarity on this from the editor.

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