Review of "SHEDIS-Temperature: Linking temperature-related disaster impacts to subnational data on meteorology and human exposure" by Sara Lindersson and Gabriele Messori

Over Assessment

The authors present a newly constructed database of temperature-related disaster impacts, which combines meteorological and demographic inputs to provide detailed hazard and exposure data, which is usefully output on different levels (i.e., country, region and also grid point level for heat/cold wave indicators) to satisfy the requirements of a diverse range of end-users.

I was impressed with the rigorous methodology used to provide such a comprehensive dataset that will surely prove invaluable for stakeholders involved in risk mitigation and adaptation (e.g., design of resilience strategies). I think the effort put in to remove inconsistencies in for example EM-DAT will be especially appreciated.

The paper is thorough, the methodology is mostly clear, and the results usefully showcase outputs from the dataset. I think the paper is well suited for publication in ESSD and does not require much in the way of changes for the final version.

I have just a few comments concerning the 'Data and methods' section which I think the authors should clarify and provide some additional detail in the manuscript to ensure the approach is easily followed. These specific (line-by-line) comments are provided below:

Specific Comments

L108: What does GADM stand for? Should this acronym be spelled out here?

L118-119: I find this difficult to conceptualise. Perhaps it could be explained first what the difference between GADM polygons and GDIS subdivisions is? And how the former yields the latter?

Using France as an example, how does the administrative subdivisions (demarcated in red; https://gadm.org/download_country.html) differ to those in Fig. 1C? They look much the same to me.

L210-211: If I understood correct, linear detrending is only performed on a copy of the data for percentile estimation. These values are then carried across when detecting heat/cold waves on the non-detrended data.

I wondered what the sensitivity is in detecting extremes if no detrending was instead performed when calculating the daily percentiles? Presumably if there is a statistically significant upward trend, the values for earlier and later years would largely cancel out anyway when calculating a mean over all years.

If the rate of warming is however not uniform over time (e.g., no trend over first 20 years but strong upward trend for the last 10 years), then I could envisage a greater impact on the resultant percentile values (detrended v non-detrended). Perhaps the justification for detrending the data for percentile estimation could be expanded to point this out, assuming this thinking is correct?

L213-214: Another sentence I'm not sure I understood. 'Adding back the temporal mean of the daily maximum and minimum time series to the detrended values' → Is this to help preserve the shape of the seasonal cycle which might be lost when detrending? The temporal mean being the daily averages over 30 years (and not the length of the moving window I assume?). Further to my last point that the earlier and later years might often largely cancel out, adding these (non-detrended) values back to the detrended values is therefore presumed not to lead to any inconsistencies?

Some additional clarification I think is warranted here, as I think its very difficult to follow what the authors have done exactly.