Reviewer’s report

Title: Assessing the magnitude and uncertainties of the burden of selected diseases attributable to extreme heat and extreme precipitation under a climate change scenario in Michigan for the period 2041-2070

Version: 0 Date: 16 Oct 2018

Reviewer: Yuming Guo

Reviewer's report:

- The manuscript aims to estimate the burden of disease from climate in Michigan, USA. It is an interesting study. However, the method used in the study still need to be explained or improved. A big concern is that the authors used some exposure-response functions from previous studies in other study locations rather than in Michigan. For some exposure-response estimates (e.g. Extreme heat- Emergency department visits association), the author only chose the relative risk estimate from one study in other study regions. I'm wondering if it's too arbitrary.

The authors may wish to consider the following couple of comments:

1. The title might not be suitable because this study only concentrated on the burden of disease from climate in Michigan. Better to add "in Michigan, USA" or ": A case-study in Michigan, USA."

2. Line 51: Probably 2.90 is more appropriate than 2.9 here. How much precision do you actually have on this estimate here and in Table 3?

3. Line 102: The authors stated they selected studies of U.S. populations in climates similar to that of Michigan. But the exposure-response associations varies by both climate characteristics and other vulnerability factors (e.g. race, income, education, … , etc.). How did the authors consider the differences in vulnerability factors between Michigan and the study locations of selected studies? And what is the standard of the "climates similar to that of Michigan"?

4. Line 107: Why chose the threshold of 32.2°C and 35°C? Did any studies shown the health effects have a big leap when the temperature was higher than 32.2°C and 35°C? I have a bit concern whether this method is appropriate. See the paper from Antonio (2015): Mortality risk attributable to high and low ambient temperature: a multicountry observational study.
5. Line 112: It would be necessary to explain more in detail about the content written in the sentence which starts the "Based on an ensemble…"

6. Line 156: The study used the exposure-response associations by one study by Gronlund et al here. Have the authors done a literature search? (The same question in Line 159, and Line 166)

7. Line 159: The same question. How did the author consider other socio-economic differences between Rhode Island and Michigan? This will strongly influence the exposure-response estimates.

8. Line 161: "same-day maximum temperature". How did the authors consider the lag effects of the high temperature (often lasts 2-7 days)?

9. Line 206: What is the source of the definition of "±49 % for low, -99 % to -50 % or 50 % to 199 % for moderate, and -10 0% or 200 % for high "? Could the authors show some references to support the method?

10. Line 238: "reviewed elsewhere". Line 246: "may exist." The authors should add the references.

11. Line 375-379 and Line 385-387. Did the estimates include the 95% CI? The point estimates may be insufficient.

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