Reviewer’s report

Title: Causes of Death and Demographic Characteristics of Victims of Meteorological Disasters in Korea from 1990 to 2008

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Reviewer: Gregory Fayard

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Major Compulsory Revisions: NONE

Minor Essential Revisions:

1) p. 7, line 134 “Therefore, specific causes of death were also re-categorized considering the situations surrounding these deaths.” Were these causes of death re-categorized by the authors or by the local Korean authorities? Please clarify.

2) Previous research, by Jonkman & Kelman (2005) and myself (2010), show that drowning often occur during floods while victims are operating a motor vehicle. I could not figure out how you classified cases of driving into a river or being overtaken by flooded waters while driving an automobile. I assume these were classified as drowning (either drowning in a river or drowning in an urban facility), but I am not sure. Please clarify. (Also in Table 3 you should use the word “Collision” instead of “Crash” for consistency’s sake).

3) p. 10, lines 209-210. Why did you use decades to show time trends? Why not use a continuous measure, such as a year-by-year line graph to show changes across time? Why not use 5-year periods instead of decades? Were there years with outlying data (e.g. particularly strong typhoon years)? I suggest a bar graph or line graph showing total meteorological-related deaths per year, broken up by the major disasters (at least flood and typhoon), like Figure 1 but with more years. It will probably be hard to cram in 19 years of data, but it will give more information.

4) I find the connection between disaster deaths and climate change tenuous in this paper. On page 13, lines 247-251, the authors mention changes in sea level and population, but the causal connection between these variables and the typhoon deaths in Korea are weak. The purpose of this paper is not truly to make this correspondence between global environmental changes and Korean deaths. However, the case would be made stronger with relevant facts. For instance, were there a sea level rise in the Korean Peninsula? Were the seas around Korea acidified? Was there population growth in the coastal areas of Korea, particularly vis-à-vis inland areas?

I suppose it makes the paper seem more stylish and policy-oriented to draw a line between disasters in Korea and climate change but the discussions of
climate change (i.e. p. 4) seems more tangential than well-integrated with the results of the paper.

5) A similar concern applies to the next paragraph (p. 13 252-262). Were the changes in composition of meteorological deaths—from floods to typhoons—a result of meteorology or disaster preparedness? The authors mention that Korea made “relatively poor preparations for typhoons in comparison” to floods. Other than the number of fatalities, what evidence do the authors have that this is the case? Suppose the country was equally prepared for both floods and typhoons, but the typhoons in the 2000s were much stronger than the 1990s. While this might lend some support to a global climate change argument, it doesn’t mean that Korea was necessarily poorly invested in prevention of typhoon deaths in comparison to flood deaths.

Also in this same paragraph, there needs to be a citation or numeric figure to support the conclusion that frequency of floods decreased and frequency of typhoons rose.

In short, the Discussion does a solid job in describing the types of deaths, particularly drowning, and in describing the breakdown of deaths by gender; however, the application of the results to the wider policy arena, meaning environmental policy and disaster prevention, are loose and tentative. The implications of this research are not clear, which limits its ready application in the field.

6) I cannot speak for the Korean case, but disaster death counts in the United States are often highly subjective, variable, arbitrary, inconsistent, and of mysterious origin. For example, after Hurricane Katrina, a death from a fire that occurred in the State of Louisiana which was counted as Katrina-related would not necessarily have been counted as Katrina-related in the neighboring State of Mississippi. The Combs et al article (citation number 22) talks about this topic I think. I think one should always be skeptical of disaster death counts as truly reflective of the health burden of disasters.

It seems Korea has an organized commitment to descrying and recording deaths from these meteorological events. Nevertheless, that does not mean the counts are complete, that each local agency uses the same criteria for including deaths, or that there are clear rules for what is disaster-related. I think the authors must describe in more detail what criteria the authorities used for the Victim Survey Reports. I think the paragraph on p. 14 (lines 268-277) needs to be strengthened and part of it placed in the Methods section, although it is alright to repeat it in the Discussion.

7) p. 11, line 213. Please change “decreasing by one tenth” to “decreasing by nine-tenths” or “decreasing by 90%”.

Discretionary Revisions:

1) It might be interesting to break up the gender rate by cause of death. For example, what is the death rate for men versus women in structural collapse
versus drowning in a river?

2) I do not know if this data is available, but it would be more informative if we knew what kind of structure collapsed, or what time of day the drowning occurred, or the source of electric current for electrocutions. I suppose the authors did not include this information because it was simply not available from the current source.

3) Consider a Bar Chart for the gender portion of Table 4. It would show the disaster type and men and women’s rate side-by-side for each one.

4) It would be difficult to do, but a map of some kind would show the coastal/inland provinces and cities much more clearly than Table 5. I suppose it would be hard to do without color, but the impact would be far greater if shown in map form.

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.