Author's response to reviews

Title: Causes of death and demographic characteristics of victims of meteorological disasters in Korea from 1990 to 2008

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Author's response to reviews: see over
To
Editor-in-Chief
Environmental Health

Dear Sir:

I am pleased to resubmit my manuscript titled, “Causes of Death and Demographic Characteristics of Victims of Meteorological Disasters in Korea from 1990 to 2008,” to Environmental Health. We have extensively revised the manuscript according to the reviewers’ comments (Please see the attached Response to Reviewers). We would like to thank the reviewers for their insightful comments and helpful suggestions.

The material submitted for publication has not been previously published and is not under consideration for publication elsewhere.

Thank you for your consideration and I look forward to your reply.

Sincerely,
Jae-Yeon Jang, PhD
Professor

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Response to Reviewers’ Comments

Ms: 7086211905269934
Causes of Death and Demographic Characteristics of Victims of Meteorological Disasters in Korea from 1990 to 2008

Reviewer #1

Minor essential Revisions:
1. “To provide a more compelling argument for a change, I suggest reporting number of deaths and average number of deaths per meteorological disaster. The change may be due to the number of event – more floods would result in more deaths due to floods.”

As suggested by the reviewer, we have reported the average number of deaths per meteorological disaster (lines 267–271, p. 13). Changes are marked in blue.

2. “Author makes association between mortality and meteorological disasters, suggest providing some background and discussion of the association of climate change and the occurrence of meteorological disaster.”

As suggested by the reviewer, we have added a description of the association between climate change and the occurrence of meteorological disasters to the Background section (lines 62–65, p. 4).
Reviewer #2

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.”

We have indicated in the text that we re-categorized specific causes of death based on categories described in previous studies and the U.S. CDC’s Disaster-Related Mortality Surveillance (lines 142–146, p. 7).

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).”

(1) We have included a case of driving into a river while the victims were operating a motor vehicle in the category of “Drowning in a river” and a case of being overtaken by a swift stream while driving an automobile in the category of “Drowning in an urban facility”, we have revised Table 2 accordingly. These inclusions did not change the results, since this was the categorization method that we used originally.

(2) As suggested by the reviewer, we have changed the word “Crash” to “Collision” (see Table 3).

3. “P.10, line 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 – deaths per years, broken up by the major disasters (at least flood and typhoon), like Figure 1 but with more tears. It will probably be hard to cram in 19 years of data, but it will give more
Both decade and year-by-year line graphs can offer useful information. Based on the suggestion from the reviewer, we have changed the figure to a year-by-year graph to show continuous time trends. Annual mean deaths by flood and typhoon are presented by lines per decade to show changes over a long period (see Figure 2, lines 162–166, p. 8, and line 224, p. 11).

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 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 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.”

There have been reports on the connection between the rising sea level and the acidification of the ocean in South Korea; however, this statement may have seemed tangential and was therefore removed, according to the reviewer’s comment (p. 13).

5. “A similar concern applies to the next paragraph (p. 13 252-262). Were the change 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 typhoon rose. In sort, 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 limit its ready application in the field.”

(1) We agree with the reviewer’s opinion. Therefore, we have deleted the paragraph (p. 13).
(2) As suggested by the reviewer, we have added a discussion of the frequency of floods and typhoons to the Discussion section (lines 267–271, p. 13).

6. “I cannot speak for the Korean case, but disaster death counts in the 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 States of Louisiana which was counted as Katrina-related in the neighboring States 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 (line 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.”

We agree with the reviewer about the limitations of the death data. In South Korea, civil servants do not consider indirect influences when identifying deaths by meteorological disasters, only taking into account relatively clear causal relationships between meteorological disasters and the accidents or damages that directly caused the deaths. Although the Victim Survey Reports are uniform, there are limitations to the system data, as these do not consider disaster epidemiology. These limitations have been included in the Discussion section (lines 307–310, p. 15).

As suggested by the reviewer, we have added this explanation to the Methods section (lines 106–108 and 112–113, p. 6) and the Discussion section (lines 279–281, p. 13–14).

7. “p.11, line 213. Please change ‘decreasing by one tenth’ to ‘decreasing by nine-tenths’ or ‘decreasing by 90%.’”
We have made the requested change (line 227–228, p. 11).

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?”

As suggested by the reviewer, we have added this explanation in the results section (lines 189–196, p. 9).

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.”

There was limit to present these data in a table, since they are not complete, with some details or information missing.

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.”

We provided a summary of these data in Table 4, since the number of figures and tables would increase exponentially by including a bar chart for the gender data. Therefore, we believe that Table 4 should rather be retained.

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.”

We agree with the reviewer that a map would show the coastal inland provinces and cities much more clearly than a Table. We have changed Table 5 into Figure 1 and have included further descriptions in the Methods section (lines 162–166, p. 8).