Natural Hazards and Earth System Sciences Discussions

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC1
https://doi.org/10.5194/nhess-2022-139-RC1, 2022

Comment on nhess-2022-139

Anonymous Referee #1

Referee comment on "Multi-hazard Tropical Cyclone Risk Assessment for Australia" by Cameron Do and Yuriy Kuleshov, Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2022-139-RC1, 2022

Dear editor, I have read accurately the manuscript and I found some criticalities that, in my opinion, should be solved before considering it for publication. In the following you can see my comments for the the Authors.

Dear Authors, I have read accurately your manuscript and I found some criticalities that, in my opinion, should be solved.

First of all, at the beginning of the manuscript could be useful a table with the acronyms used in the text.

Section 1

Line 29: please specify the scale of intensity of TCs.

Lines 42-47: I maintain that could be useful a map showing the LGAs and Australian States (WA, NT, SA, QLD, NSW, VIC, and TAS) and some statistics on LGAs (e.g. number of LGAs, minimum, maximum, mean, and median extension). I suggest adding a study area section describing the physical and economic characteristic of Australia and all the

toponyms cited in Section 3. Moreover, you do not explain at all the TC risk in Australia. It is important to add a part (may be in the study area section) describing the TC risk in Australia.

Lines 53-68: It is not clear if in your study the analysed risks are caused by TCs. It is a cascade approach or not? I do not understand why and how it is possible to obtain TC risk combining surge, flood, wind, and landslide risks.

Section 2

In my opinion in this section must be added a short part describing the difference among variables, indicators, and indexes. May help citing the "Pyramid of Information" of Hammond et al. (1995) or explaining better the IRDS that you cite in your paper.

Moreover, I maintain that the table in Appendix may be reported in Section 2 and I suggest adding in the table the data format and resolution. In addition, I suggest explaining better these data in Section 2.1.

Lines 70-75: If I understand correctly, you started from hazard, exposure, and vulnerability indicators that were combined to obtain hazard, exposure, and vulnerability indexes by using equal weighting for exposure and Pareto front-ranking for vulnerability (and for risk?). Consequently, I suppose, you obtained surge, flood, wind, and landslide risks. And, finally, combing these risks you obtained TC risk. It is correct? Please explain it better. In my opinion the sentence "This data was then joined to LGA map shapefiles in ArcGIS Pro" may be changed in "This data was then combined to LGA map shapefiles in ArcGIS Pro", because "join" is a particular GIS command.

I maintain that Figure 1 do not explain in a correct way the risk mapping process. I suggest separating the part of the figure concerning the four term of equation 1 (risk, hazard, exposure, and vulnerability), as well as the different considered risks (surge, flood, wind, landslide, and TC). Moreover, the figure does not explain clearly the process of transforming the indicators to indexes. I suggest modifying the figure and explaining it analytically. Additionally, I suggest explaining briefly the Pareto ranking and the Figure 2 that, in my opinion, it is not clear. Consequently, I suggest re-writing the Section 2.3.

Section 3

The acronyms of the Australian states are not always evident in the maps. Please modify the maps accordingly.

You cited Pibara region, Mount Isa LGA, major coastal cities, major cities, inner cities, mining industries, urban areas, Maralinga Tjarutja LGA, Darwin, Great Diving Range, Tiwi and Mornigton Islnds, Bisbane, Cairns. Where are located these areas?

Overall, in my opinion the manuscript needs to be improved before considering it for publication.