

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC2  
<https://doi.org/10.5194/nhess-2022-20-RC2>, 2022  
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## Comment on nhess-2022-20

Anonymous Referee #2

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Referee comment on "Enhancing disaster risk resilience using greenspace in urbanising Quito, Ecuador" by C. Scott Watson et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2022-20-RC2>, 2022

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The authors provide interesting research on the role of green spaces in disaster risk reduction (DRR) in the city of Quito (Ecuador). The city has undergone significant expansion in recent decades, a trend that is also expected in the future. In addition, the area is affected by the intersection of numerous natural hazards, such as landslides, floods, volcanoes, and earthquakes. To ensure the safety of the inhabitants, it is essential to work now to ensure efficient measures in response to these hazards. The authors analyse the role of green areas as potentially useful places in the case of emergencies. To do this, they propose an approach that integrates many techniques to break down the (complex) problem into parts that can be analysed individually, then making a useful synthesis for urban management. More specifically, the authors combined various remote sensing techniques, from satellite monitoring to digital models, to study a variety of issues in detail. I found the work well structured in its parts and pleasant to read.

I propose a minor review, in which I invite the authors to clarify some points.

line 49: It might be interesting to mention more clearly the selected sustainable development goals (SDG).

Figure 1: There is no reference to figure 1a in the text.

Line 109. "In this study, we define a style of greenspace relevant to disaster risk reduction that is quantifiable using optical satellite data". I think it would be interesting to add a couple of lines here describing the type of style sought.

Section: lines 136 - 154. Well done section. However, I would expect to find the same logical line in the text as in Figure 2 (or the opposite). For example, Figure 2d is now mentioned in the text before Figure 2c.

Figure 22: "Hydro-meteorological events" refers to floods? Because Line 138 refers to floods.

Line 171 refers to mud-flows. Perhaps they could be mentioned in the section between line 136 and 154.

Line 181. I think it would be useful to read before chapter 3.1 a short section that would briefly summarise what the following separate chapters will cover. In other words, to immediately understand the logical line followed by the authors to achieve the objectives described in lines 106-110. A few lines are enough. The feeling I had in my first reading was that I was not clear what to expect in the methodology.

Line 183. Do the authors mean 3a?

Section 3.1. In this section the urban expansion from 1986 to 2020 is analysed using land cover classification based on satellite imagery. My question is: in figure 2b, the authors already show a map of urban expansion from government data. Why this was not enough? Maybe because of the resolution? I think it is useful to explain further.

Section 3.1. Is this analysis carried out for Land Cover AOI only? Please specify.

Line 221. Clarify the 2 AOIs as per lines 124 and 125.

Section lines 220 - 235. Why were GCP and CP not used? I think this issue needs to be better explained in the text.

Line 272: interesting use of TWI. My fear is that using it for a highly urbanised area will cause a lot of bias. This issue should be better discussed later in the chapter on results and discussion.

Chapter 3.4.2: Did you validate or measure the accuracy of the results? The use of an orthophoto in some sample areas is sufficient.

Line 341: In your estimation, are these results in line with government data on urban expansion?

Figure 6: Looking at the boxplots in 6a and 6b I notice that the city will tend to lower in elevation and occupy more sloping areas. Is it correct? This fact should be described in the text. Consider adding some lines in line 464.

Line 418. This fact could be remarked in the conclusions

Figure 9b and c: I suggest the use of PDFs, which better describe distributions with high presence of outliers.

Line 448: top ten? Hard to make sense just by reading the caption. Trying to make the caption self-explanatory

Line 547-548. Enrich this concept.

Line 554: enrich the discussion by describing the limitations arising by the use of low-resolution data.

Line 565: cite some numbers (square metres expressed in line 517?)