

Response to Natural Hazards and Earth System Sciences Reviewer 1 (Esthela Salazar)

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Date: 30-March-2022

Dear Esthela Salazar,

Thank you for your positive feedback and comments. We look forward to incorporating your suggestions in a revised manuscript submission. Please find our initial response to your specific comments in **bold**, with revised text in **green**.

Sincerely,

C. Scott Watson (on behalf of all co-authors)

Specific comments:

L22. REFERENCE

We have not included a reference in the abstract; however, we have modified this sentence to reflect the fact that urban expansion was only in the vicinity of ravines in some cases, and considering that we did not specifically map ravines in this study for quantitative analysis.

Quito's historical urban growth totalled ~192 km² 1986–2020 and was primarily on flatter land, in some cases crossed by steep ravines.

L112. Quito is located of the central region of Ecuador

We have added this suggestion. This sentence now reads:

Quito is situated in the central region of Ecuador, just south of the equator in the Inter-Andean Valley of South America at over 2,800 m a.s.l. and is bounded by Pichincha Volcano (4794 m) to the west and steep topography to the east (Fig. 2).

L126. Nayón

We have changed this text to include the accent.

L134. Cartography could be improved

We have made several improvements to the cartography of this figure including: Adding lat/lon grid lines to (b); making the extents of (b-e) the same and labelling this extent on (a); changing 'hydrometeorological events' in (e) to 'flood events' to match the text (in response to RC2); reducing the 'land cover AOI' line thickness on (a-b) so it is clearer where this overlaps the 'Quito (Canton)' boundary; and reducing the thickness of the fault lines.

L161. urban sprawl

We have changed 'urbanisation' to 'urban sprawl'.

L357. Urbanisation (high-very high) at ravines?

The urbanisation at ravines is correct as per the output of Bonilla-Bedoya et al., 2020 cited in the figure caption. We have modified this figure (panel (b)) to clarify that 'High/Very High' corresponds to

the 'F-U' scenario and 'Modified' refers to the 'M-U' scenarios in the figure caption. We also changed 'Ravines' to 'Examples of ravines' to reflect that only selected ravines are labelled.

L396. a,7

We have changed this figure reference to 1a.

L405. Where is the parish boundary?

We have changed the parish boundary label and outline colour on this figure to 'City AOI' to reflect Figure 2.

L447. In my opinion, in each site put the name of zonal administration

We have modified this figure to include the zonal administration location alongside the location of each site.

L455. urban sprawl

Modified as suggested.

'satellite imagery can capture the urban sprawl of a city'