Responds to the reviewer's comments

Dear Editors and Reviewers:

On behalf of my co-authors, we thank you very much for giving us an opportunity to revise our manuscript, we appreciate editor and reviewers very much for their positive and constructive comments and suggestions on our manuscript entitled "**Methodological Considerations in Cover-Collapse Sinkhole Analyses: A Case Study of Southeastern China's Guangzhou City**". (ID: nhess-2020-53). We have studied reviewer's comments carefully and have made revision which marked in red in the paper. We have tried our best to revise our manuscript according to the comments. Attached please find responds to the reviewer's comments, which we would like to submit for your kind consideration.

Responds to the reviewer's comments: Editor:

1. Response to comment:

For instance, the historical analysis, through documentation, reports, witnesses, and aerial photograph analyses is a strong and validated approach in the analysis of geological hazards, but this do not appear significantly from the manuscript. It would be interesting to know more about the sources from where the documented sinkholes have been identified, their reliability, etc.

Response: The description of the historical sinkholes analysis is added in paragraph 2.

86	In Conghua District of Guangzhou City of Guangdong Province, acording to documentary
87	information, more than 400 ground collapses pits have occurred. The first reported sinkhole was in 1991.
88	In recent years, with the gradual enhancement of human activities in the area, the catastrophic collapses
89	also have an increasing trend, which including two major collapse events. The first collapse event occurred
90	around 2000. 84 sinkholes appeared in the eastern part of Conghua district in guangzhou, which was
91	caused by pumping water out of lime mines. The largest sinkhole was about 12 meters in diameter and 3.5
92	meters deep. The second collapse event appeared in the western part of Conghua district in guangzhou
93	from November 2014 to March 2015, which was the object of this study. A total of 49 karst cover-collapse
94	sinkholes were found through on-site investigation and aerial photography by drones. According to
95	information from local residents, the collapse is related to drought and falling groundwater levels.
96	From a geographical perspective, the study area is located on the western margin of Conghua District

2. Response to comment:

Further, when discussing the depth of bedrock in relation with sinkhole occurrence, very few indications are given. Indices exist for sinkholes in order to evaluate their shape, the ratio with depth, etc.

Response: A statistical description of the sinkhole morphological characteristics is added to paragraph 4.1 and figure 4.

"In the study area,35 of the 49 sinkholese circumferences were circular. The main morphometric parameters of these cover-collapse sinkholes are represented in Fig. 4. The eccentricity of sinkhole circumferences(the major-to-minor axis ratios of sinkholes) is usually 1-2; values greater than 2 are rare. The sinkhole diepths range from 1 to 2.5 m. The azimuths of the long axes of all sinkholes show a general 0°-180° and 120°-300° alignment."
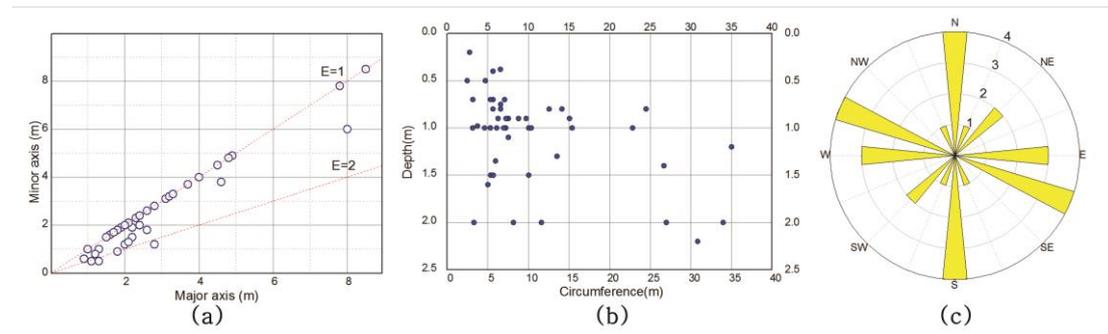

Figure 4. Morphological characteristics of the sinkhole population developed in the study area
(a) The plan-view eccentricity of sinkhole circumferences(the major-to-minor axis ratios of sinkholes), (b) The relationship between depth and circumference (c) Rose diagram of azimuth of the long axes of all sinkholes.

3. Response to comment:
Throughout the paper the focus is on cover collapse sinkholes, but clear references to the most widespread sinkhole classification (Gutierrez et al., 2008, 2014) are lacking. Further, in the very last paragraphs of the article, for the first time sagging is mentioned. This needs to be clarified, once again referring to Gutierrez et al., 2014, and explain if actually there is cover sagging or not.
Response: Sinkhole classification (Gutierrez et al., 2008, 2014) is introduced and cited at the beginning of the article. "sagging" in the last paragraphs of the article, was an error and has been deleted.

4. Response to comment:
At the beginning of the discussion section, it is not clear whether in China procedures or guidelines to study and investigate sinkholes are mentioned. Please clarify this point, and discuss it
Response: This is explained at the beginning of paragraph 5

5. Response to comment:
In general, the reference list is quite poor. I am enclosing to this comment a long list of possible additional references that might be useful to the Authors to improve their paper, and have also indicated in the text locally some possible adding. When quoting more than one paper in the text, the references must be listed in chronological order.
Response: Correct it throughout the manuscript.

6. Response to comment:

Figure 1: scale is missing. In the legend, mantle is typed incorrectly, please correct

Response: scale and legend had been corrected, Figure 1 has been redrawn.
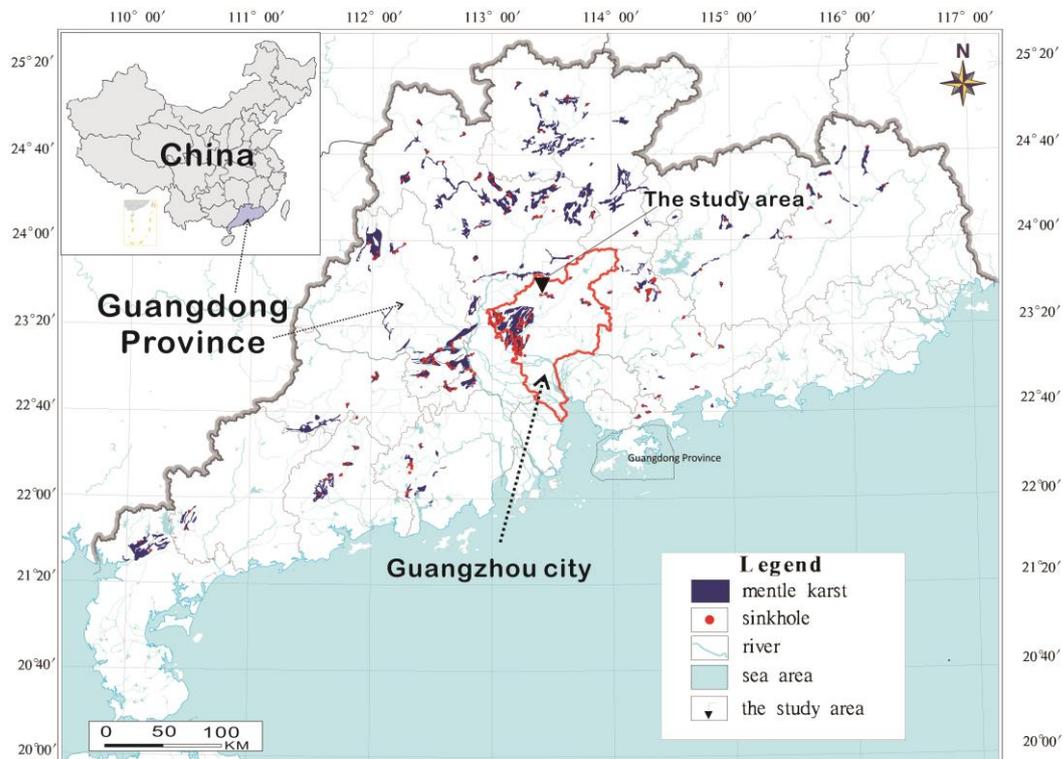
Figure 1. Karst sinkhole (affecting more than 100 people) distributions in China's Guangdong Province

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