

Interactive comment on “A GIS-based monitoring and early warning system for cover-collapse sinkholes in karst terrane in Wuhan, China” by Li Xueping et al.

Anonymous Referee #1

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Dear editor and authors, I have had the opportunity to evaluate manuscript nhess-2017-22 submitted to “Natural Hazards and Earth System Sciences (NHESS)” entitled “A GIS-based monitoring and early warning system for cover-collapse sinkholes in karst terrane in Wuhan, China” and submitted by Li Xueping, Xiao Shangde, Tang Huiming, and Peng Jinsheng. Manuscript deals about an interesting subject; however there is a lack of coherence, order and systematic data description that do not permit its evaluation by a reader. Data is missing, the presentation is not ordered and context data are included along the whole manuscript from previous articles without indicating what is new in this manuscript. The conclusion of the model, without the consideration of the data, does not permit to know if interpretations are supported by data, producing

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that manuscript is difficult to understand and does not have the scientific background, in this moment, for their evaluation to be published in a scientific journal. While further work is still needed, I suggest for the beginning some comments along the next lines related to the manuscript. Figure 1. A geological sketch is needed in order to locate the study area, a continental view can help for the location against only China surface. At figure 2 and 3, I assume that authors should have permission from both journals to include photographs from the cited manuscript, I suggest to editorial team to confirm this subject about the figure rights. The cities referenced where sinkholes has been identified should be included in the map from Fig. 1. The text from page 4 (paragraph from line 15) “so by contrasting cross-sectional maps of the same traverse collected regularly over time by GPR, it is possible to estimate underground soil movement, and this helps to monitor the cave in terms of its formation and development, and thus enables prediction of cover-collapse sinkholes.” Requires some references where this subject has been previously applied. On the other hand, the evaluation of GPR in order to analyze karstic underground features should require to include, at least, some example of the obtained results and the compared evaluation of the same profiles during time to identify the changes related to the GPR record (besides the underground characteristics, soil state can also produce changes in the radargrams). About the dynamic underground water level monitoring is difficult to understand as a generalization that collapse are produced by the pressure increase or the term “the cover layer will be damaged”, this subject requires explanation. About chapter 3.1.1. a geological map, section, borehole distribution or a cross-section should help in the interpretation of the context where the later analysis is carried out. If cross-section is included, the location of the water level should be also interesting to be included. Figure 4 also could require permissions from the journal from where it comes from, the aspect of the figure is not clear and besides the bands of carbonatic rocks, other geological subjects are required to be included. Moreover the bands are assumed to be limestones bands and not karstic bands as are referenced in the figure. Authors indicate that no evidences of karstic processes are in some of them. Moreover the reference to the structural

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setting, fold axis for example, requires being included in the figure. The quality of fig. 5 is not evident, as there is not information that permits to contextualize it, moreover this does not make reference to risk, if there were anything evaluated in this figure should be hazard, peligrosity or susceptibility (not risk distribution). At figure group IV is incorrectly written and there is no sense about what “no suscetibility” means. The rest of the manuscript include description of what is presented to be done, with the considerations of the conclusions but there are not a data integration, comparison or discussion different than the general description. I think that what is presented can be of interest for the community but further work is needed including presentation, description and discussion of data. In this moment is more a general report of what to do, what can be expected and some results without the possibility to be evaluated by readers. In this sense, I suggest to modify significantly the manuscript before further revision.

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