

## ***Interactive comment on “Indexes establishment and capability evaluation of space-air-ground remote sensing cooperation in geo-hazard emergency response” by Yahong Liu and Jin Zhang***

**Anonymous Referee #1**

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This study established an index database for various remote sensing data and analyzed the cooperative observation efficiency and emergency service capability. For the mitigation and rapid responses to geo-hazards, with various remote sensing tools, it is crucial to determine good combinations of the remote sensing tools and datasets. Therefore, this study demonstrates the architecture to establish the database and to determine the usage of good datasets, and it should be valuable for further applications and automation mechanisms. While it is a great work to establish such a database, there are some issues that the authors should consider. Especially, the

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authors demonstrated that they can use the index database to evaluate the cooperative observation efficiency and emergency service capability via different models, but it will be better if the authors provide more analysis and validation to show that the evaluations they proposed are acceptable and appropriate.

In general, the writing of this paper is not that straight forward and could be more polished. In the main text, there are several abbreviations, but most of them are not well explained.

2.2. Indexes of technology and services: It seems that the indexes are the fundamental parameters of the database and analysis of this study. The authors could explain more why these indexes were chosen and justify if the indexes were appropriate and sufficient. What is the mechanism to increase (or decrease) the indexes?

Table 1: The technical indexes between each remote sensing types are not well separated.

3. Methodology: The authors mentioned some evaluation methods and used 2-3 of them in this study (the authors stated that TOPSIS and BN were used, but they further mentioned RSR was used as well, which is confusing). Here the authors could describe more rationale behind their choices (i.e. why they chose these methods over other methods? What are the advantages and disadvantages of these methods?)

Line 260: Terrestrial or ground mobile measurements provide in-situ observations that can be coupled with other type of remote sensing data. On the other hand, these measurements can also serve as ground truth data for validating other remote sensing data rather than equally play a role in the remote sensing synergies. I am wondering how this function of the terrestrial measurements is used and evaluated in the remote sensing coordination system?

4.1.2: The authors demonstrated an example of simulation calculations for determining better synergistic pair. Is there any ways to examine if the determination is reasonable?

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Table 6: Similar to Table 1, the authors should put lines between different indexes in the tables.

4.2.2: Similar to 4.1.2, is it possible for the authors to qualitatively or quantitatively assess if their methods are reliable and appropriate? For example, the BN model shows the emergency response capacity increase to 60% in their example, but is there any other ways to validate this model result?

4.3: The title of this section is analysis, but I do not see much analysis here. Instead, the authors simply summarized their methods and results.

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2020-308>, 2020.