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Natural Hazards and Earth System Sciences
Discussions

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

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Thank you for your valuable comments, which have led to an improvement in the quality of our manuscript. Below you find a point-by-point reply to all specific questions and suggestions. Q 1: 2.2. Indexes of technology and services: It seems that the indexes are the fundamentalparameters of the database and analysis of this study. The authors could explainmore why these indexes were chosen and justify if the indexes were appropriate andsufficient. What is the mechanism to increase (or decrease) the

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Discussion paper

indexes? A 1: The main principle of the indicators selected in this paper is to be able to reflect the capabilities of different types of sensors, for which this study collects and summarizes the technical parameters of current types of sensors, and refers to the selection of indicators in some satellite online data repositories and the experience of relevant professionals in using them, on the basis of which universal sensor technology and service indicators are established. We will make changes in the manuscript as suggested. Q 2: Table 1: The technical indexes between each remote sensing types are not well separated. A2: In this regard, we will revise the table in the corresponding section of the manuscript to make its presentation clear. Q 3: 3. Methodology: The authors mentioned some evaluation methods and used 2-3 ofthem in this study (the authors stated that TOPSIS and BN were used, but they furthermentioned RSR was used as well, which is confusing). Here the authors could describemore rationale behind their choices (i.e. why they chose these methods over othermethods? What are the advantages and disadvantages of these methods?) A 3: In this paper, TOPSIS and BN are used as evaluation methods, but there is a weight determination in TOPSIS evaluation, and among the various ways of weight determination, RSR is used in this paper. this part of the paper will be revised in accordance with the recommendations, and the choice of methods will be explained. Q 4: 260: Terrestrial or ground mobile measurements provide in-situ observations thatcan be coupled with other type of remote sensing data. On the other hand, thesemeasurements can also serve as ground truth data for validating other remote sensingdata rather than equally play a role in the remote sensing synergies. I am wonderinghow this function of the terrestrial measurements is used and evaluated in the remotesensing coordination system? A 4: In fact your idea is very valuable and meaningful, and it is indeed an aspect that needs to be considered in a collaborative evaluation system, but in this paper we are mainly discussing the evaluation of capabilities in a disaster emergency environment, in which we are considering more the ability of ground measurement techniques to acquire data than their ability to validate data. Q 5: 4.1.2: The authors demonstrated an example of simulation calculations for determiningbetter synergistic pair. Is there any ways to

examine if the determination is reasonable? A 5: In fact we do lack an actual disaster application scenario to validate our experimental scheme for some reasons, so here we take simulations to illustrate the process of using the evaluation method proposed in this paper, and the results can be verified by expert experience, but this is a subjective method, and objectively there is still a need for real application situations to judge the results of the method, which is the shortage in our research and the direction to be strengthened afterwards. Q 6: Table 6: Similar to Table 1, the authors should put lines between different indexes inthe tables. A 6: As with question 2 we would follow the suggestions and revise the table in the appropriate section of the manuscript to make it clear. Q 7: 4.2.2: Similar to 4.1.2, is it possible for the authors to qualitatively or quantitativelyassess if their methods are reliable and appropriate? For example, the BN modelshows the emergency response capacity increase to 60% in their example, but is thereany other ways to validate this model result? A 7: There are numerous nodes and parameters involved in the BN model, and the determination of the ranking, probability and conditional probability of each node in the example of this paper is the result of simulation statistics and can only be used to show that the evaluation network is computationally feasible and informative. In practical applications, the determination of these data is a very important aspect, and its accuracy directly affects the working effect of Bayesian networks. The process of determination relies on a large amount of raw data as a reference for statistical analysis, and also requires a final value based on the actual application, combined with the opinions of different experts. Actual data in this area are still being accumulated, and this is the part that we hope to improve in subsequent studies. Q 8: 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. A 8: We will revise and improve this part of the paper.

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