

## ***Interactive comment on “Application and analysis of debris-flow early warning system in Wenchuan earthquake-affected area” by D. L. Liu et al.***

### **Anonymous Referee #1**

Received and published: 27 October 2015

This paper, “Application and analysis of debris-flow early warning system in Wenchuan earthquake-affected Area” by Liu et al present an interesting approach to the real issue of debris flow forecasting in mountain areas affected by high intensity earthquakes. The authors explain their concept of debris flow forecasting system and present evidences of its utility. The language is comprehensible, however, a thoughtful revision by a native speaker is strongly recommended to improve readability by experts of other fields and the general public. There are other minor revisions recommended as well, detailed below. In general, this reviewer recommend this paper for publication after the interactive review process.

Each question from the online guide is answered independently below.

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Does the paper address relevant scientific and/or technical questions within the scope of NHESS?

A: Yes, early warning systems for debris flows are relevant for natural hazards mitigation and readiness and are under the scope of NHESS.

Does the paper present new data and/or novel concepts, ideas, tools, methods or results?

A: Yes.

Are these up to international standards?

A: Yes.

Are the scientific methods and assumptions valid and outlined clearly?

A: Yes.

Are the results sufficient to support the interpretations and the conclusions?

A: Yes.

Does the author reach substantial conclusions?

A: Yes, however, for better clarity it could be useful to highlight the practical/operational advantages and disadvantages of the geophysical approach over current early warning system based in contributing factors, besides forecasting results.

Is the description of the data used, the methods used, the experiments and calculations made, and the results obtained sufficiently complete and accurate to allow their reproduction by fellow scientists (traceability of results)?

A: Yes.

Does the title clearly and unambiguously reflect the contents of the paper?

A: Yes.

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Does the abstract provide a concise, complete and unambiguous summary of the work done and the results obtained?

A: Yes.

Are the title and the abstract pertinent, and easy to understand to a wide and diversified audience?

A: A revision of the English language is required in order to improve readability.

Are mathematical formulae, symbols, abbreviations and units correctly defined and used? If the formulae, symbols or abbreviations are numerous, are there tables or appendixes listing them?

A: Yes.

Is the size, quality and readability of each figure adequate to the type and quantity of data presented?

A: For better readability of figures 10, 12, 14 and 15 it should be clearly stated in the text (lines 5-12 pp 5863) how warning levels were homologated. Does current EW system based in contributing factors uses the same warning levels as the proposed one based on water-soil mixture density?

Does the author give proper credit to previous and/or related work, and does he/she indicate clearly his/her own contribution?

A: Yes

Are the number and quality of the references appropriate?

A: Yes

Are the references accessible by fellow scientists?

A: Yes

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Is the overall presentation well structured, clear and easy to understand by a wide and general audience?

A: A revision of the English language is required in order to improve readability.

Is the length of the paper adequate, too long or too short?

A: The length of the paper is adequate to the scope of the paper.

Is there any part of the paper (title, abstract, main text, formulae, symbols, figures and their captions, tables, list of references, appendixes) that needs to be clarified, reduced, added, combined, or eliminated?

A: Table 1 should clarify whether it applies only to the new forecast method or both methods. Table 5 and related text (lines 25 to 29 pp 5863) should use standard terminology of true positives/false positives true negatives/false negatives. The authors may be interested in presenting these results in form of confusion tables (Fawcett, Tom (2006). "An Introduction to ROC Analysis". Pattern Recognition Letters 27 (8): 861 – 874. doi:10.1016/j.patrec.2005.10.010). The indexes derived from such tables may improve the clarity of their points.

Is the technical language precise and understandable by fellow scientists?

A: Yes, however language must be improved to meet modern standards.

Is the English language of good quality, fluent, simple and easy to read and understand by a wide and diversified audience?

A: No, it requires a comprehensive revision by a native speaker in order to improve understanding by audiences outside this specific field of research.

Is the amount and quality of supplementary material (if any) appropriate?

A: Not applicable

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