

## ***Interactive comment on “The Norwegian forecasting and warning service for rainfall- and snowmelt-induced landslides” by Ingeborg K. Krøgli et al.***

### **Anonymous Referee #1**

Received and published: 15 January 2018

The paper "The Norwegian forecasting and warning service for rainfall and snowmelt-induced landslides" deals with the geo-hydrological EWS in use in Norway and encompasses a detail description of its functioning. The organization of the paper is good and the manuscript itself is well-structured with meaningful images and tables. The paper is quite long and therefore I suggest at least to remove section 3.1, which is interesting but not necessarily relevant for the NHESS audience. If so, you can write the joint composition of the service in the introduction, since you mention it in the abstract.

On the other hand, the authors touch some very interesting topics but do not delve into them. I recommend furnishing some explanations concerning the following important

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points: 1) First, I recommend adding a chart describing the "communication chain", ie to show all the passages from the moment data are acquired and a forecast is made to the final recipients (the population). Also, who is responsible for the communication to the citizen? The mayor? 2) How do you reach the population? Only by voluntary subscription to SMS and email? Is there a TV or radio broadcast? Sirens or cars passing by and giving the alarm? Automatic SMSs to the people in a certain area (even to people who did not subscribed to the notification system and even tourists that do not live in the area)? Smartphone apps? If none of these methods are used, how can you reach a significant percentage of the population with your warnings? 3) I recommend adding an example (probably as a new figure) of a bulletin that you send to the population and/or to the local administrations. Is there an intermediation of the local administrations? If so, when you communicate an alert, do you use the same language for both administrations and population or is the communication to the administration more technical and to the population simpler? 4) It seems that your yellow alert is not very conservative. Some Countries have a similar system, but yellow alerts are issued as many as 100-150 times every year, thus creating obvious false alarms issues. Do you have false alarms problems or maybe the opposite (missed alarms)? How do you cope with false or missed alarms?

The language is generally good although there are ubiquitous errors especially concerning singular and plural forms. I have corrected the text when I spotted them but, since I probably missed some of them, all the authors should carefully re-read all the paper paying particular attention to this issue.

These and other recommendations are listed below:

Table 1: in the warning box change "allow" into "allows". Page 3, line 4: replace the semicolon with a comma. Page 3 line 24: replace hazards with hazard and years with year. P3 I26: replace dike with dikes. P3 I28: add "it" after "that". P3 I29: replace options with option. P4 I20: replace lies with lie. Also add "are" before "to be found". P4 I28: replace fall with falls and freezes with freeze. P4 I29: add "the" before "decrease"

and “increase”. Also, add the final “s” to “contribute” and “river”. P4 I30: replace rises with rise. P4 I32: replace includes with include. P5 I2: remove “s” from “frequents”. P5 I7: “gives” P5 I7: replace “the north of” with “Northern” for similarity to “Western” used before. P5 I9: please explain ice jams in the text. P5 I18: “loose” not “loos”. P6 I6: lives P6 I21: replace mill with million and add in brackets the equivalent in USD. P6 I22: numbers P6 I 32: operates Section 3.1 is interesting but not necessary relevant for the NHESD audience. Consider removing it. If so, you can write the joint composition of the service in the introduction, since you mention it in the abstract. P7 I27: needs P7 I28: define 8, 2: uses 8, 2-6: the authors should provide references for these models and/or furnish a brief explanation. 8, 19: runs 8, 23: add “the” before “parametrisation”. 9, 14: when does the inventory date back to? 9, 30: today’s instead of todays. 9, 28 – 10, 2: this part is not clear. Please explain better. 10, 24: landslides 11, 15: delete “in”. 12, 7: flood forecasters 12, 8: leads 12, 13: if you state that forecasters are always available one would think of a 24h availability. So remove “always”. 12, 15: “Forecasters, when on duty” 12, 31: “twice a day” 13, 5: are available 13, 11: you talk here about orange and red levels, but the reader still does not know what they are. Also, here you explain who forwards the message to whom. I recommend adding a table showing the complete chain of communication from those who provide data and forecasts to the citizen. 13, 14: please furnish an explanation of what CAP is. 15, 4: consists Table 2: change “infrastructure” into “infrastructures” in the red level box. 17, 8: implies 17, 16: relies 17: 18: warns 17, 20-22: this sentence is not clear. Please rephrase. 18, 1: the first “How” should not be written in lower case. 18, 2-4: here I suggest inserting a contingency table with the number of events predicted and occurred (true positive), predicted but that eventually did not occur (false negative), unpredicted and not occurred (true negative) and unpredicted but occurred (false positive). 18, 22. Add a full-stop before “Results” and change “shows” with “show” and “consider” with “considers” (in the latter case the subject is “majority”, which is singular). 18, 26: replace “conducted” with “carry out”. 19, 2: includes 24, 22: identifies 26, 17: replace “if” with “by” 27, 11: remove both commas from this line.

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2017-426>, 2017.

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