

Final Author Comments to the reviewer's final responses for paper NHESS-2013-188

The authors would like to thank to both reviewers for their detailed review of the paper.

The original comments of both reviewers were combined and additionally numbered. They are attached at the end of this response. Sentences from manuscript are written in italics, the changes are coloured in blue.

1 R1R2: The decision if 12 % coverage of the most affected river sections is a good result or not is left to the reader to decide. For easier judgment the coverage of satellite maps is also added to the last sentence of the abstract. *“The results are compared with those from satellite mapping of the same floods, which successfully covered 18 % of the most affected river sections.”*

2 R1R2: The not completely true statement “natural disasters cannot be prevented” is solved with the proposal of R2: *“natural events are difficult to prevent and to reduce their disastrous effects mitigation measures are indispensable.”*

3 R1R2: The problem that not the whole list of actions, which reduce the risk of natural disasters is given, is solved with the proposal of R1, the word “of” is changed to *“such as”*.

4 R1R2: The word *“collaborative”* in the introduction of Section 3 was deleted as proposed by both referees.

5 R1: The wording “ordinary days” was replaced by a more clear description. The sentence is now: *“In the first week after the announcement, the number of daily views rose to 16 times as many views as on the days before the call.”*

6 R1: 700 views per day is just for Facebook alone, the web page is discussed in the sentence with line numbers 14-15 on page 2864. No cumulative numbers are given as web page and Facebook cannot be directly compared.

7 R1: There was no deadline for volunteered image gathering, as deadlines might work counter-productive when asking people for volunteered data. After two months when no data was submitted anymore it was decided to end the action.

8 R1: We were not studying the ‘disaster memory’, we were just trying to get useful images for flood mapping. Additionally we were working with a relatively small sample of contributors, therefore we consider that graph with exact dates of contributions is not needed.

9 R1: The purpose of the first results was to demonstrate how the contributions are used and especially to encourage others which might not know for the call that they could send their images. The sentence on 2864, line 24-25 was amended in: *“The first results in the form of flood maps were published on the web page and Facebook profiles two weeks after the event to encourage additional potential contributions.”*

The final results were presented on the web and Facebook to inform the contributors how their images were used and to stimulate them to get involved in future similar actions as it is already written in the Discussion (page 2873, lines 6-10).

10 R1: The word usually in *“the author of an image ‘usually’ agreed that his/her intellectual property could be used”* was deleted as proposed.

11 R1R2: To clarify how many contributions we received by volunteers providing images based on the call a) and how many we contacted following the first web-search directly after the floods b) we added a table as proposed. Now the former Table 1 was renamed in Table 2.

Table 1: The number of contributors of volunteered imagery for November 2012 floods in Slovenia.

| | <i>Contacts</i> | <i>Cannot be used</i> | <i>Can be used</i> |
|--|-----------------|-----------------------|--------------------|
| <i>a) the call – volunteered contributions with authorship</i> | <i>10</i> | <i>-</i> | <i>10</i> |
| <i>a) the call – volunteered contributions without authorship</i> | <i>5</i> | <i>5</i> | <i>0</i> |
| <i>b) web search – contacting author</i> | <i>6</i> | <i>1</i> | <i>5</i> |

12 R1: The criteria for the selection of images which were used for flood mapping was the same as described in lines 5-8 on page 2865. The most important criteria for selection is already described in the last sentence: “*It is better if at least two to three roads or parts of a hill are recognizable on the image*”.

13 R1: No. In the first place we were not thinking of using videos, as they have an even worse resolution and larger image distortions, which results in less accurate results.

14 R1: We believe that such details are not needed in the abstract, as the main purpose of the paper was to assess the potential of the method regarding the coverage of the most affected river sections.

15 R1: Which method is superior: the VGI gathering of images or satellite/photogrammetric surveys? It depends on the purpose and money available for flood mapping, therefore we would not like to say which method is superior, only the pros and cons are therefore given. Each potential user of VGI for flood mapping can then decide on his one.

16 R1: You are correct the second strategy has different sampling than the first strategy. We just searched for the most appropriate images and contacted their authors, therefore we contacted only a third of the number of volunteered contributors.

17 R1: The sentence in lines 19-20 on page 2870 was not taken from somebody else it is just a conclusion.

18 R1: In the section 3.4 on page 2867 the method used for flood delineation from images is described as a manual interactive method of the absolute orientation. The method is in detail described in paper cited (Triglav-Čekada et al, 2011). Already its name implies that a lot of manual work is needed to correctly orient the images in 3D space. The sentence “*...more automation in the post-processing...*” therefore points out that in the future a transition from manual to automatic orientation should be done.

19 R1: We appreciate the proposed technical corrections. They were used as proposed to improve the text.

20 R2: Was deleted as proposed.

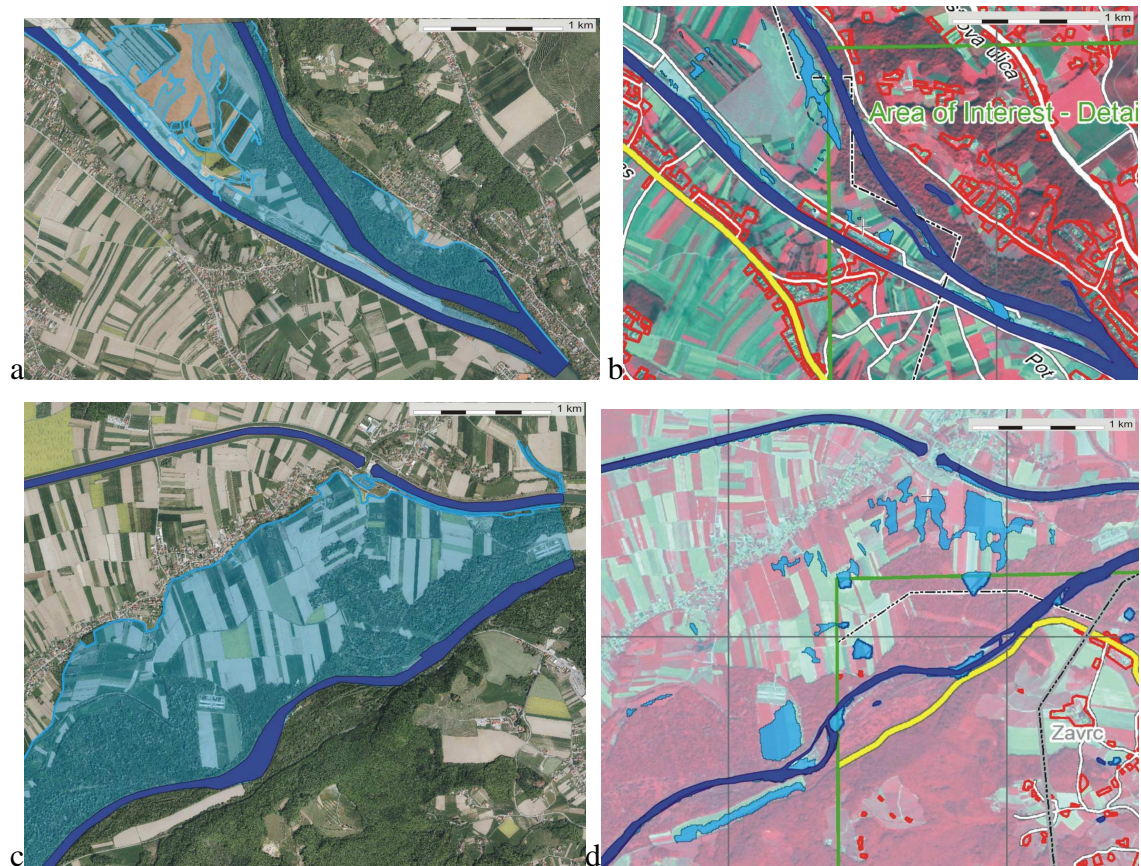
21 R2: The numbers of satellite maps were added as proposed.

22 R2: For what kind of analysis the flood maps can be used, derived from volunteered images or other methods, is already mentioned in introduction. On page 2860, lines 20-21, we say “*Disaster management includes risk reduction by means such as spatial planning ...and an improvement of public awareness (Poser and Dransch, 2010).*” In the Discussion part following sentence was added to again stress the possibilities of flood map usage: “*The derived flood maps can help us improve the public awareness and could be used to amend the spatial plans with actual flood events, etc.*”

23 R1R2: In Figure 2 the roads are now drawn in brown colour. In Figures 4b and 4d the scales are added.



New Figure 2.



New Figure 4.

24 R1 (the last comment of R1): The comment C3 was already solved in the Discussion paper version. Some examples were already given, see page 2868, line 16-17, which give enough information on what kind of data were used. If we added all the web links, it would prolong the paper for at least 2 pages, what is neither rational nor economical (as NHESS has page charges).

Interactive comment on “Using volunteered geographical information to map the November 2012 floods in Slovenia” by M. Triglav-Čekada and D. Radovan

R1

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GENERAL COMMENTS

Overall, the topic is very interesting and I consider the manuscript to be ‘good’ but in need of some revision (see Specific comments and Technical corrections). The title is clear and unambiguous. The technical language is understandable with very few exceptions. I also appreciate the logical orientation of the manuscript structure. The text and time taken to explain the ethical consideration of contributors is also very

C862

important and well-communicated. The concept and applied case study serve as a good example in the advancement of the benefits of public contributions as human-sensors as well as to the general discussion on the benefits of public involvement in disaster risk reduction efforts.

The Specific comments and Technical corrections provided will hopefully help resolve remaining issues with the current version and help improve the overall quality of the manuscript. Many of the Technical corrections are merely suggestions for how to improve the language. Both the Specific comments and the Technical corrections contain suggestions for the minor revisions to be considered prior to acceptance.

SPECIFIC COMMENTS

1 R1R2

Within the abstract you provide the quantitative results of the mapping. This is helpful; however, it does not tell your reader what these numbers mean. Is 12% good? Is this quite negligible compared to the satellite mapping results? You have stated in the first sentence that volunteered geographical information represents a promising field. Do the results of your research then support this claim?

Further, it is stated in the abstract that the results of the volunteered images are compared with those of the satellite mapping, but there seems to be something missing. What are the results of the comparison? This might be the most interesting finding and should be provided within the abstract.

2 R1R2

Within the introduction the first sentence states that natural disasters cannot be prevented. If one considers that a disaster is the occurrence of a hazard overlapped with a human interactive element, then this sentence should be changed. If either the hazard or the human element can be removed, a ‘natural’ disaster can be prevented (I add the quotes because of the debate about how ‘natural’ natural disasters are in the first place). A better replacement for this term may be ‘natural phenomenon’ as I assume what you want to communicate is something to the extent that, e.g., one cannot completely eliminate the occurrence of a flood.

C863

3 R1R2

The next sentence should be slightly adjusted. When you say, "Disaster management includes risk reduction by means of spatial planning, technical measures and an improvement of public awareness (Poser and Dransch, 2010)" it appears to imply this is an exhaustive list. The problem is that there are missing elements such as sectoral planning (typically conducted by e.g. water authorities and geological surveys) which is not the same as spatial planning (typically the task of urban planners). To alter the sentence, I suggest simply changing the word 'of' to 'such as' to avoid this implication.

On page 2, sentence lines 23-26 you have a sentence that provides useful information but might be better served as a footnote and not in the main flow of text. If you remove this sentence, this might also provide you a better transition to the next paragraph.

4 R1R2

In Section 3 you mention again that the gathering of the volunteered geographic information was collaborative. What do you mean by this 'collaborative gathering'? Why not just say 'gathering'? Using 'collaborative' implies a particular way in which you have gathered the image (which might be an important aspect of the research to communicate!). If this method is significant to your research, it should be explained. You first mention this in Section 2 and it is reiterated thereafter. Yes, there is a section 3.1 Collaborative gathering of volunteered images. However, it would be beneficial to state explicitly, especially prior to this section, what makes this gathering collaborative. Is it because you involve the public to a certain extent? From the text, as a reader I infer that collaborative extends beyond the collaboration of your team and includes the involvement of the public through their voluntary contributions. But this is not explicitly stated. Even when it is stated that increased collaboration occurs via the number of site visits, this is the first time that you mention collaboration of the public.

5 R1

In Section 3, page 5, line 3 what do you mean by 'ordinary days'? For example, could you clarify this by perhaps eliminating this term and state instead "The first four days after the publication of the call had seven times more views than the days thereafter"?

Also a side note for clarification, the maximum of 700 views per day is for the Facebook

C864

6 R1

group or for both the web page and the Facebook group combined?

7 R1

Quick question for page 5: was any contribution deadline provided for the voluntary contributions? I ask because this might influence the timeline in which the contributions stopped.

8 R1

General comment for thought: It is interesting to observe the rate of contributions over time as this might be correlated with a 'disaster memory' oft discussed in more social disaster-related literature.

It would be interesting (though not required) to see a graph or chart depicting the concentration of (or number of) contributions over time since the announcement of the call. If this were created it would also be wise to add in this same chart when radio and television announcements were made.

9 R1

On page 3, line 13 what was the purpose of providing both first and final results? Is there a particular (important) reason for publishing first results? Perhaps there is a good reason for this such as demonstrating visually how the contributions are used and encouraging others to continue to contribute?

10 R1

On page 6, line 3 it is stated that the author of an image 'usually' agreed that his/her intellectual property could be used. What is meant by usually? Did the majority of authors agree and in the case they did not agree then the image was not used?

11 R1R2

How many contributions were actually used out of the 15 received as stated on p.5 line 29? I ask because it is stated on the top of the next page that some authors did not agree to let you use the images for free (which I assume means they were not used, yes?). Additionally, those without an identifiable author were also not used. In total, then how many were used for method (1)?

On page 6, last paragraph you explain "In the first case..." but you do not explain the second case. Was the second case easier because there was more direct contact with an author who is perhaps very interested in volunteering and providing a contribution?

C865

Clarification of the number of contributors: in the end of page 5 you state that you received 15 total contributions. This is stated during the explanation of method (1). However, later on page 7, line 12, it is again stated that there were altogether 15 total contributors. It seems a little odd that when discussing the first method you have 15 contributors (minus those not identified and perhaps also those not willing to let you use their images for free) and then after the second method there are still 15 contributors. If this is really the case, that both methods together yielded 15 contributors who provided images that were used, then this is alright. I ask only because the recurrence of this number seemed odd.

12 R1

On page 7, line 13-16, it would be interesting to know what criteria were used for this selection. I imagine this is different or expanded from the criteria requested in the original call.

13 R1

General comment: were you expecting to also receive videos? Had you thought to ask this within the original call? In the conclusion it is written that "...images and video were gathered using two strategies..." (lines 6-7, p.13). It makes it sound like you specifically set out to gather both from the beginning.

14 R1

On page 9, lines 8-9: this is a good, clear sentence that could even be mentioned within the abstract to communicate the significance of the numbers you are giving.

15 R1

In Section 5, page 11, lines 6-10: this appears to be the first mention of all the methods together. The question I would have then is whether your focus is on making a contrast (highlighting e.g. that the non-traditional method is superior) or stating that it is beneficial to have both the traditional and non-traditional methods together? This is still not completely certain when looking at the conclusion. The conclusion states the pros and cons of both but it is still unclear if you think both should be considered or one in preference to the other. Though in the last sentence of the discussion section you state that both are needed to get a clearer picture, this is something that (if it is a strong point you have made within your research) should be stated within the conclusion.

C866

16 R1

In the same section you have stated that the second strategy "...gives the most acceptable and ready-to-use images for flood mapping..." However, these are images you selected or chose yourself, yes? The first method involved first the selection of the public in providing you the images. Therefore, you are saying that the second method is more effective but you have a direct bias in how affective this is because you are selecting the initial sampling, or gathering, yourself.

17 R1

On page 12, lines 19-20 it is good to mention this statement; however, is it you saying this is important as a result of your research or is this stated also by another author or source? In the first case, it would be better to directly connect this statement to your findings, e.g. "It was evident through the research..." or "...was found to be important because".

18 R1

In Section 6, page 13, lines 22-24 it is not so clear what is meant by "...more automation in the post-processing."

TECHNICAL CORRECTIONS

19 R1

For the content of the abstract it would be helpful to have a smoother transition between the following sentences:

"This is not always possible when applying photogrammetric or remote-sensing methods, as prior to the data acquisition an order to carry out the measurements has to be made." Next sentence: "On 5 and 6 November 2012 almost half of Slovenia was badly affected by floods." Reason for need for smoother transition: it appears you could even start a new paragraph between these two sentences.

In the introduction: The sentence "The public, on the other hand, can help ..." needs some slight modification. When you use 'on the other hand' it should be very clear you making a contrast with something previously mentioned. This is not so obvious and it is questionable whether there needs to be a contrast in the first place (the public is already mentioned in the previous sentence in relation to their involvement in improvement

C867

of public awareness). It would be better to adjust the sentence to something more like, "Additional measures can include the use of volunteered geographical information provided by the public to help define the extent of natural disasters (McDougal, 2012)."

The last sentence (same paragraph) should also be rephrased. It contains valid information but the order of the phrases is a bit odd. Better would be to write something more like the following: "In this article the example of the Slovenian flood of November 2012 is used to demonstrate the result of flood-extent mapping from volunteered geographical information."

On page 2, sentence line 14 either eliminate the words 'so-called' or put single quotation marks around 'volunteered geographical information'. I am not sure why you need to use the words 'so-called' because your reader could assume that you mean to communicate that the term volunteered geographical information is a contentious term.

On the same line I recommend replacing 'On the other hand' with 'In contrast' for clarity purposes.

Please replace the word 'happen' in line 29, page 2, with the word 'occur'.

Please insert a comma in the last sentence of page 2 after the word 'November'.

When you use the word 'share' perhaps it is better to use the word 'percentage'. This would be clearer to the reader.

In Section 2 please fix the following sentence: "The satellite mapping products, which from now on will be called satellite maps, are referred to the most prominent city on the satellite image. . ." (page 4, lines 12-14). There is ambiguity which might be fixed by changing the wording to the following: "The satellite mapping products, which from now on will be called satellite maps, refer to the most prominent cities on the satellite image. . ."

In Section 3, on page 5, first sentence please replace ". . .in the number of visits. . ." to ". . .via (or from) the number of visits. . ." for clarity purposes.

C868

Use of the word 'we': You should eliminate the use of the word 'we' throughout the text. -E.g. p.5, line 29: instead of "We received a total of 15 contributions. . ." write "A total of 15 contributions were received."

Other examples:

-Change page 6, line 11 from ". . .we tried to contact. . ." to ". . .an attempt was made to contact. . ."

-Change page 6, line 17 from ". . .we were not in a position to know. . ." to ". . .it was not possible to know. . ."

-Change page 6, line 18 from ". . .We contacted six potential contributors of appropriate images" to ". . .Six potential contributors of appropriate images were contacted. . ."

-Change page 11, line 13 from "As we have shown in this study. . ." to "As this study has shown. . ."

-Change page 11, line 19 from ". . .mapping with our method" to (perhaps) ". . .mapping within the research method."

-Change page 12, line 30 from "If we rely only. . ." to "If one relies only. . ."

-Change page 13, line 17 from ". . .we can conclude. . ." to ". . .it can be concluded. . ."

Also please replace the word 'somebody' with 'someone'. It sounds less colloquial.

Please fix the following sentence on page 6, lines 23-26: Suggestion: change from "Those who were aware had on their web pages, which presented the images from different authors, additional disclaimers, mainly stating something like this. . ." to "Those who were aware had on their web pages additional disclaimers providing a statement to the effect of the following: . . ." This sounds less colloquial.

On page 8, line 8 please change "was the most time consuming" to "was exceptionally time consuming". If you use the word 'most' you normally have to clarify most out

C869

of what? (E.g. the most time consuming activity, most time consuming part of the mapping process)

On page 8, line 21, please change the sentence “Actually, the smaller rivers and rivulets were flooding too, but due to generalization, they are not presented on the map” to the following: “Though the smaller rivers and rivulets were also flooded, due to generalization, they are not presented on the map.” This eliminates some of the language that is too colloquial and fixes the verb problem with “. . . were flooding too”.

On page 8, line 24 please move the word ‘also’ before the word ‘observed’.

On page 8, line 28, the sentence is too vague. What is meant by “. . . mostly relate to more than just one web source”? Is this the majority of the blue dots? Or is it better to say, “The blue dots in Figure 1 were determined by multiple web sources.” This would show you are determining the dots by a triangulation of data sources.

On page 8, line 29 the word ‘census’ seems incorrectly used. Perhaps a better word here would be ‘criteria’. It depends on what you want to communicate, but if you are communicating how you are determining the mapping for the most affected river parts and that having three flood-describing locations found within the overview of web sources is a criteria for this then using ‘census’ is out of place.

On page 10, line 28, please move the word ‘also’ after the word ‘has’.

On page 11, line 4, please move the word ‘completely’ before the word ‘succeed’.

In Section 5, page 12, line 3: please replace “. . . that you always have to . . .” with “. . . that one must always . . .”

In the next sentence please change “. . . In our case . . .” to “In the case of this research . . .” and please replace ‘somebody’ with ‘someone’.

In line 7, please replace ‘must’ with ‘necessity’, this sounds less colloquial.

In line 16, it sounds strange to say “From the described point of view . . .” better may be

C870

to say “In accordance with the above . . .”

In line 17, please insert ‘those’ in front of the word ‘taken’.

In line 24, what is meant by ‘fair’ personal contacts? This is not clear. Perhaps the word could be eliminated.

In Section 6, line 6 please change ‘was begun’ to ‘began’

In the same section, lines 7-8 please include a ‘(1)’ in front of “. . . volunteered contributions . . .” and a ‘(2)’ in front of “. . . a web search . . .”

In the same section, lines 12-15 need to be fixed. These sentences are confusing and should be rewritten. For the rewrite, I recommend the following:

Change “When judging the success of satellite flood mapping it was concluded that 18% of the most affected river sections were successfully mapped by it, due to the fact that . . .” to “When judging the success of satellite flood mapping, it was concluded that 18% of the most affected river sections were successfully mapped. This is due to the fact that . . .” However, in this proposed revision and in the original it is still not clear if you want to communicate that this number (18%) is small. Is it that ‘only 18% of the most affected river sections were successfully mapped’? What does this number mean?

The next sentence is also problematic. You have just made a statement about the satellite images and in the next sentence you say ‘on the other hand’ which implies a contrast. It is not so clear what is meant to be contrasted. Is it that though the satellite images only successfully mapped 18% of the most affected rivers sections, they actually cover 32% of the most affected sections? In this case, please also replace ‘on the other hand’ with ‘however’.

The last two sentences of the conclusion seem to be more appropriate for the discussion section. This is useful information but it is not something that is presented as insight gained as a result of your research. It is written in a way that makes it a

C871

general statement – something that would look more appropriate in a literature review. This should be restated in a way that makes it better connected or interpreted as an outcome of the research.

In the references section the word 'Hidrological' should be changed to 'Hydrological'.

23 R2R1

For Figure 4, both satellite maps (b and d) are missing scales.

For the response to the reviewer's comments for paper: nhess-2013-188 on C3 I disagree. I am a native English speaking reader and I still find it helpful (and indeed mandatory) to include all of the relevant citations at least within the references section, regardless of language.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 2859, 2013.

Interactive comment on “Using volunteered geographical information to map the November 2012 floods in Slovenia” by M. Triglav-Čekada and D. Radovan

R2

Anonymous Referee #2

Received and published: 21 August 2013

General comments

I consider the manuscript a good work although it could be improved. The title is clear, the topic is interesting and well communicated. Some specific comments are suggested.

1 R1R2

Page 2860, line 13: within the abstract you state that “12% of the most ... were mapped” without saying if it is a good result or not.

2 R1R2

Page 2860, line 19: “natural disasters cannot be prevented”. The sentence is not completely true, it is better to change in: natural events are difficult to prevent and to

C946

reduce their disastrous effects mitigation measures are indispensable.

3 R1R2

Page 2860, line 20: It would be better to change in: Disasters management includes risk reduction strategies that involve many studies and activities such as

4 R1 R2

Page 2864, line 1: delete “collaborative”. Volunteered is sufficient, or as an alternative explain the meaning of collaborative.

11 R1R2

Page 2866, line 20: “in the first case”. Do you mean in the case of a web search? It would be better to explain it

In the section 3 you illustrated the two methodologies used to gather images and the number of contributors. I think you can summarize the results for the different methodologies in a table. You can also report the different sources of information (local news, newspapers, blogs, web sources. . .) and the numbers of images you obtain from each of them. If you organized these information in a database you can briefly describe its structure.

20 R2

Page 2870, line 27: delete “In contrast”.

21 R2

In section 4.2, the name of satellite images were reported. I think is better to identify the images also with the number. In figure 1 the satellite images were identified with a number and a letter while in the text you sometimes mention the name of the locality. It is helpful to add also the number and the letter.

22 R2

In section 5, discussion, I think you can explain also the importance of the flooded area maps obtained with your methodology, even if it is a time consuming research and the results are available some months after the events. What kind of analysis can you do with these maps. How do you use them in the mapping of the areas at risk?

23 R2R1

In figure 2 It would be better to draw the roads with another colour different from white. In figure 4b and 4d add the scales.

Please also note the supplement to this comment:

C947

<http://www.nat-hazards-earth-syst-sci-discuss.net/1/C946/2013/nhessd-1-C946-2013-supplement.pdf>

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 2859, 2013.

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