

# 1 **Reply to Anonymous Referee #1**

2 Note: We include our replies to the referee's comments directly at the respective points in the  
3 text. Referee comments are kept in italics and our replies are kept in normal font style.

4 *The authors stated purpose of this paper is to address the lack of consideration of event-*  
5 *specific flood research which is often published in non-peer reviewed publications ( 'grey*  
6 *literature')* which effectively eliminates approximately 80% (their estimate) of the available  
7 information which would otherwise be available. The authors highlight their experience in  
8 obtaining this lost information from German-dominated governmental publications, and  
9 provide a characterisation of the grey literature which was obtained as a result of the  
10 extensive data mining performed. On a general note, I must commend the authors in their  
11 effort to access and assimilate the large body of information available within the grey  
12 literature. There is no doubt that this information resource is hugely undervalued and  
13 underutilised, and it is therefore encouraging that effort is being made to incorporate the data  
14 into the scientific community. However, I feel that the authors did not utilise the available  
15 information to its fullest potential, predominantly due to limited search scope and analysis of  
16 the information obtained from the search, as outlined below.

17

18 *1. Being an academic within the Government sector myself, I am familiar with the size and*  
19 *scope of grey literature produced by Responsible Authorities. As such, I realise that despite*  
20 *our greatest efforts, the majority of information and relevant reports are often sat on desks*  
21 *and bookshelves rather than listed and available within search engines, predominantly due to*  
22 *issues with confidentiality, lack of resources and awareness of the use of this data to those*  
23 *outside of government departments. This is particularly true for those reports produced prior*  
24 *to the 'digital age'. As such, I feel that there is a fundamental flaw in the data mining process*  
25 *the authors have undertaken within this study. This, perhaps, is not insurmountable, provided*  
26 *the authors can provide an indication of how much (and particularly, what types of) literature*  
27 *may have been missed. If this MS is to be a 'seminal' work, highlighting the use and*  
28 *application of grey literature in flood research, I feel such validation is necessary.*

29 Reply to introductory remarks and comment 1:

1 We thank the referee for the critical thoughts on our study which we find particularly valuable  
2 as the referee formulates them against the background of his/her profound experience in the  
3 government sector and his/her familiarity with the nature of grey literature.

4 We believe that the referee's main points of critique result from an expectation towards a  
5 completeness of the search that differs considerably from the one we are proposing. That is,  
6 the referee expects a representative sample over the entire population of grey (flood)  
7 literature, both with respect to the contextual selection and the type of material included in the  
8 search. Considering the parent population under this expectation the referee argues that the  
9 sample presented in our study is a skewed one. Taken this premise we do agree, however,  
10 taken the purpose of the paper we argue that it is not.

11 Our study aims at identifying flood relevant literature (not only grey) for a particular purpose  
12 (referred to as *Task at Hand* in the manuscript): Understanding trans-basin (and therefore  
13 large scale) flood events in Germany in the period of 1952-2002 in their causes and  
14 consequences. Instead of aiming to conduct a complete search for flood relevant publications  
15 (which we deem too expensive as a task) we rather aim for consistency in the search  
16 approach. We deliberately choose the stringent methodological steps of systematic reviews  
17 that, through strict requirements on the formulation of the task at hand and the documentation  
18 of the entire search strategy, provide reproducible and transparent results (and also the  
19 opportunity to extend and update the search). This task at hand and the expectation of  
20 consistency then impose several logic constraints to the systematic search (sections 2.1.1 and  
21 2.1.2 in the paper):

22 1) Temporal and contextual consistency: The strongest constraint results from the  
23 limitation to a selection of flood events (top 40 trans-basin floods), the search terms  
24 are reflective of the sources, pathways, receptors, consequences.

25 2) Scale consistency: We only consider publications that match the spatial scale of the  
26 flood event. This scale consistency has implications on choice of search tools and  
27 types of references, i.e., the search can only be consistent (in Germany) at the level of  
28 white literature and publicly accessible grey literature of the higher governmental  
29 administration and national or international institutions as outlined in Fig.1 (see also  
30 reply to comment 3). At this level commonly used and publicly available tools for  
31 searching literature are available. Below higher administration the search volume  
32 inflates tremendously as the number of relevant administrative units that would need

1 to be addressed inflates and the search mode would likely need to be extended into  
2 archival search. Under the limitations of the resources of our study this approach is not  
3 feasible as it could not be conducted nationally coherently.

- 4 3) Accessibility consistency: We address the scientific community and therefore take the  
5 perspective of the daily research routines in order to substantiate our finding: That,  
6 with the tools readily available to any researcher, it is possible to access and  
7 incorporate a vast amount of information, more than is usually done in knowledge  
8 synthesis. Therefore any material that was never meant for being publicly accessible  
9 (confidential material...) as well as non-standard references such as media sources  
10 (different modes of search and same problems of coherent coverage as in point 2  
11 above) are excluded from the search.

12 The entire set of constraints is laid out in the paper in section 2.1 (systematic search). Any of  
13 the results and interpretation presented in our study is strictly related to the task at hand and  
14 the search strategy pursued. Taken the concerns of the referee we will make sure that  
15 throughout the paper this scope limitation is presented more clearly to the reader.

16 Consequently, for our study completeness needs to be assessed within the search scope and  
17 cannot be validated against an (unknown) parent population of all material. A sensitivity  
18 analysis (as suggested by Ref. #2) is a useful approach for testing the variance in the results of  
19 a model when varying the input parameters within a (sensible) parameter space. For the  
20 method of systematic reviews a variation in the parameters (search criteria) however means  
21 that the task at hand would have to be altered and the search to be fully re-performed. As we  
22 are interested in the very particular perspectives and limitations taken in the search criteria,  
23 the effort for a SA is in our point of view not justified with respect to the expected changes in  
24 results (that are not single standard variables that are easily compared).

25 Within our study we discuss, to which degree the resulting list of references is complete  
26 (under the considered search strategy). However, we acknowledge that our discussion on  
27 possible misses in the search is scattered amongst the methods and results in the paper.  
28 Therefore we will explicitly compile all aspects in a subsection of the results chapter and use  
29 this as a point of reference when discussing the changes in flood reporting over time.

30

1 2. *Related to the point above, due to a lack of validation of the completeness and*  
2 *representative sampling of the grey literature, I feel that the results presented in Figure 4a &*  
3 *6, and conclusions drawn from it (e.g. sentences 23-29 on pg 11071, and further paragraph*  
4 *on page 11072) cannot be made. It is possible that the trends observed in these figures are the*  
5 *result of the dawn of the digital age and data resulting accessibility, rather than a real result*  
6 *of increased reporting. This possibility is alluded to in sentence 23/24 on page 11072, but*  
7 *without validation, I don't feel this conclusion can be drawn, and would disagree with the*  
8 *reasoning dismissing this possibility.*

9 As outlined in our reply to comment 1 the results of our study need to be interpreted under the  
10 search strategy performed. We will carefully check the discussions and conclusions and make  
11 sure that at any instance it becomes clear to the reader, that the conclusions are only valid for  
12 the systematic approach followed in this study, i.e. for material on trans-basin flood events  
13 and the respective scale of these events and types of publications.

14

15 3. *Similarly, I would question the limitation of the search to those produced by high level*  
16 *German authorities only. In my experience, those reports produced by local, regional and*  
17 *district level equivalents in the UK tend to include a larger scale consideration of local events*  
18 *to those in other (often intra-basin) areas. Reports from adjoining countries may also be of*  
19 *use, but given the search terms used in the mining, I feel that such publications would have*  
20 *been excluded. Exclusion of these reports at the very beginning of the data mining may have*  
21 *discounted a great deal of grey information, and may warrant further investigation to ensure*  
22 *this is not the case.*

23 We agree with the referees experience that reports produced by lower level authorities also  
24 include notions on larger flood relevant aspects. However, the large scale picture is in most  
25 cases taken from other (grey) sources and the value of these publications lies in the small  
26 scale description of event processes. In our study we were aiming to match the search with the  
27 scale of the event analysis (trans-basin scale, limited to the territory of Germany). As  
28 highlighted, we also included reports from other countries and international studies; however  
29 the search produced very few relevant hits particularly in the grey section of publications. We  
30 expect that if the native language of the adjacent countries (CZ, PL, FR, NL) is included in  
31 the search more results would be obtained. AT and CH produce reports in German and are  
32 easier to detect (for us) and numerous examples were found. However, in order to be

1 consistent the systematic searches was limited to German authorities as the same level of  
2 search may have been possible for AT and CH but not for other countries. As highlighted  
3 earlier, the approach can be easily extended (both with respect to level of administration as  
4 well as nationally); however this requires an international participation and set up of the study  
5 which is beyond the scope of this paper but certainly a recommendation that can be  
6 formulated as a result of our study.

7 Whilst conducting the search for this study we came to the conclusion that, in order to obtain  
8 a best estimate of the material produced at (all) governmental institutions, a survey (an expert  
9 survey) amongst the producing bodies and custodians of knowledge would be necessary.  
10 Currently we are screening the options for realizing this kind of study. We will include a short  
11 note in the paper outlining this point as a next necessary step to be taken.

12 Rather than only highlighting insufficiencies and barriers we aim to bridge the gap between  
13 producers of flood relevant literature and potential (scientific) consumers i.e. we want to  
14 create a sense of awareness of each others activities and needs. In that we hope that the impact  
15 of our work and efforts will be bidirectional. With the present study we address the scientific  
16 auditorium. In a companion paper using a national medium for publication we will address  
17 the producers and custodians of flood event reports and formulate recommendations for an  
18 increased impact of their output.

19

20

21 *4. Considering the range of grey literature available; from brochures and websites to multi*  
22 *million Euro investigations, I feel that there should be some qualification or scoring system*  
23 *for the varying data sources, or at the very least, consideration of the perceived accuracy of*  
24 *each data source (in a similar way to the characterisation of the reports in Table 3). This*  
25 *would be particularly relevant for any openly accessible data base which the authors mention*  
26 *within the Introduction, but would also provide additional significance and novelty to the MS.*  
27 *Validation of the grey literature in this way would allow fellow researchers to gauge the*  
28 *usefulness and relevance of inclusion of grey literature into their own research. The authors*  
29 *may want to consider the approach of Norris et al which may assist in this manner.*

30 We thank the referee for this thoughtful comment. In fact, within this study we have  
31 considered the aspect of credibility of the (grey) sources and have developed a full framework

1 for the assessment of information quality. However, the presentation of the framework and  
2 the respective results is beyond the scope of the paper, which primarily intends to present the  
3 quantity of material at hand. We have prepared a full length paper addressing the issue of  
4 report quality which will be submitted to NHESS-D first week of January 2013 and we can  
5 therefore make a reference to this follow up study in the discussion of our study. Also, the  
6 results of the quality assessment in NHESS-D will be presented in a data supplement.  
7 Therefore, any reader of the paper(s) (i.e., user of the material) will be able to assess both the  
8 amount and the quality of the material. We gladly provide the manuscript to the editor or  
9 referee beforehand to ensure transparency.

10

11 *Technical Comments:*

12 *1. The MS requires a great deal of re-arranging and tidying-up, as a lot of the information*  
13 *within the methods should go in to either the intro or results (e.g. background information on*  
14 *systematic reviews, pgs 11057-11059); the conclusion section is far too long. Separation of*  
15 *the results and discussion may provide a better framework for laying out the MS, as*  
16 *otherwise, I find it long winded. There are also a few odd 'turns of phrase' throughout the*  
17 *MS, which hopefully, would be picked up by the editor.*

18 We acknowledge that the methods section can be separated in parts into the introduction (i.e.  
19 background information on systematic reviews and on the German administrative landscape,  
20 incl. Fig 1). In doing so, we will also consider Ref. #2's suggestion of stratifying the  
21 introduction into subsections and will shorten the writing. Further, as outlined in our reply to  
22 major comment 1, we will include a subsection in the results/discussion chapter that considers  
23 the point of completeness of the search. In this way, we homogenize the single aspects on  
24 completeness already discussed in the paper that are, so far, scattered amongst the methods  
25 and results chapters. As referee #2 considers the paper well written and clear, we will keep the  
26 remaining structure of the paper.

27 *2. Tables & Figures.*

28 *- Generally- why are some figures in colour and others only in black and white? This is*  
29 *especially confusing in Fig 3 a&b.*

30 The colour coding of Figures 3b and 4b were chosen to be identical to allow for easier cross  
31 referencing. We recognize that there is an inconsistency in Figure 6 and will adapt Figure 6 to

1 the same colour codes in order as 3b/4b. This restricts colour usage to only those figures that  
2 differentiate report types and should improve interpretability of the results of the paper.

3 - *Figure 2; I'm not quite sure what this figure is showing. Where there is no black bar*  
4 *present, does that imply there was no publication in that decade? If an event from that decade*  
5 *is published later, is it included in a black bar in another decade, or not represented at all?*

6 The figure shows the percentage of documents that are open accessible (OA) per decade (the  
7 remaining percentage – not shown – then expresses the amount of publications that are not  
8 OA). For one, the percentage is given for the aggregated number of flood events and  
9 respective documents in a decade (Year of Flood, grey bar) and, second, the percentage is  
10 given for the actual years in which the documents were published (Year of publication, black  
11 bar). As highlighted in the text, flood reports are not always published immediately after the  
12 flood and for flood events of the past reconnaissance reports are also produced a long time  
13 after. Therefore the figure highlights that 1) only reports published past 1980 are OA; 2) OA  
14 reports on events prior to 1980 have actually been published past 1980; 3) that the share of  
15 publications with OA increases strongly with time. We realize that the y-axis title of the  
16 figure is ambiguous and will change it to ‘% of open access documents’.

17 - *Figure 5; T 20a/ 50a should be defined in the caption. It would be interesting to know what*  
18 *the regressions for 5b look like for comparison.*

19 We will consider your remarks.

20 - *Figure 6; difficult to grasp, especially so in black & white. Could a change in point shape be*  
21 *used to clarify?*

22 The figure is a colour figure and as highlighted in a reply above, we will homogenize the  
23 colour scheme with that of Fig. 3b and 4b.

24

25 *To conclude, I feel that the premise of the MS is a valid one, but I would question the validity*  
26 *of the search terms and scope of the resulting grey literature obtained. Due to the lack of*  
27 *validation of the choices in search terms/ methods used, I would view the resulting data and*  
28 *analysis to be skewed, and hence, may not support the conclusions and application of the*  
29 *study. Without such validation, I don't feel the MS could be accepted in its current form, nor*  
30 *would it provide a good example for fellow researchers seeking to include the grey literature*  
31 *into their own research.*

1 With our answers to comments one to four we outline that the manuscript follows the  
2 particular purpose of searching for publications relevant to understand trans-basin floods in  
3 Germany. We acknowledge that the manuscript needs to be revised at instances in order to  
4 ensure clarity about the search scope and interpretation of the results. In our replies above we  
5 have outlined the steps we will take to improve the manuscript according to the referees  
6 suggestions.