

## ***Interactive comment on “Exceptional floods in the Prut basin, Romania, in the context of heavy rains in the summer of 2010” by Gheorghe Romanescu and Cristian Constantin Stoleriu***

### **Anonymous Referee #2**

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#### General comments

The paper copes with the exceptional floods that hit Central Europe and particularly Romania in summer 2010. The work shows interesting flood data for the examined area (though partially presented by the authors in previous works), but it does not constitute a clear contribution to the understanding of these phenomena in the Prut basin, also for its complicated river network. In fact, though the work contains a lot of information on water levels and discharges observed during huge floods, these are mainly ranked values, roughly compared to similar past events but not statistically defined. In other terms, the paper is too much focussed to the simple inventory of flood values in several gauge stations, and poor attempts to link them to physical reasons or to proba-

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bilistic interpretation have been made by authors. Thus, the readability of the paper is not good enough, mainly in the paragraph of the results.

### Specific comments

Specifically, though the paper is mainly devoted to flood events, the context of heavy rains of the summer of 2010 (as in the title) is poorly described and could be largely improved. This could be done, for example, by coupling flood diagrams with rainfall histograms, when possible, or by comparing cumulative rainfall values recorded in this event with rainfall that caused other historical floods (also cited in the work). Anyway, the main drawback of the paper is the weak connection between rainfall and floods. In fact, though the period claimed as characterized by intense rainfall is 21 June -1 July 2010, a long set of summer flood (or water level) values is offered to the reader, neither providing any kind of link with triggering precipitation, nor any estimation of the return periods of the rainfall or flood values. Actually, the results are only described by means of simple ranks among critical events. To improve the paper, the paragraph devoted to the results should present at least some evaluations on the estimated frequencies (and not only on critical cases) of the flood values, thus providing more statistical sound to the work. On the other side, the interesting information on water stages and floods overcoming the specific thresholds is described too simply. The valuable data base can be better employed, for example, by combining the temporal overcoming of the higher thresholds in the flood diagrams with the occurrence of the main damages and casualties. This could also provide material for a further interesting discussion on false and missing alarms in the Prut River. Moreover, the work suffers from too much citations, not everywhere appropriate, and from figures affected by some inaccuracies. In brief, though well documented as regards the discharge values, the structure of the work is disorganised enough, with a scarce employment of statistical methodologies and a long section devoted to the results, which consist principally in a list of flood values, with no link to occurrence frequencies. As a result, the scientific approach of the work is not statistically accurate. Thus, a substantial revision of the paper is needed

to improve the quality of the work and provide effectiveness to the flood analysis of the 2010 event in the Prut River.

### Technical corrections

Line 18: avoid the word “etc.” in the abstract; line 34: change “Earth” with “earth”. Lines 61, 153 (and others): I don’t understand if the authors use properly the terms “tidal bore” in rivers, except in the case of backwaters actually induced by reservoirs or confluences. Try to be more accurate. Line 76, Figure 2, legend: change “Km” with “km”; avoid decimal ciphers in elevation values. Line 83: it’s not clear why the mean altitude assume different values. Line 84: from the figure, the maximum width of Prut basin seems not to be 30 km (even in the lower reaches). Improve the sentence. Lines 101-103: the sentence is trivial (except, maybe, for the presence of the several ponds, which should be recalled). Anyway, the differences among the discharges for the various sections seem very small for such a large river. Lines 107-118: The cited methodologies are not useful for analysing floods, but for recording and collecting data. The paragraph contains too much references and not all perfectly focussed on the issue. The sentence needs a better explanation. Lines 126: it’s not usual the call to the Berg intensity scale. If possible, add a reference. Line 132: the CA, CI and CP flood threshold levels should be clearly defined. Line 141: change “1915” with “1914”, as noted in the table 1. Line 144, Table 1: the parameter “0 mira level”, and mainly its unit “mrBS”, should be better explained (or changed). Line 165: the use of the term “significant” should be associated to statistical analysis. Line 175, Figure 4: the values in the legend should not show decimal ciphers. Line 175, Figure 4: can the areal extension of the rainfall analysis be enlarged to the whole Prut basin? Line 177, Figure 5: it’s useless to span the graphs before and after the period 20 June – 31 July, that could be better centered with no temporal amplification. Line 235, figure 6: it’s not useful to extend the graphs after 1 July. Line 274, figure 7: the temporal amplification can be easily avoided. Line 303, figure 8: the temporal amplification is useless. The legend (“X scale, 0-24 hours”) has no meaning. Line 324: the term “significantly”

should be associated to statistical analysis. Lines 325-327: the sentence “This value was recalculated . . .” should be better explained. Line 339: the sentence “. . . allowing the mitigation of 1% . . .” is not clear. Line 373: there are some words repeated (“was eliminated gradually”). Line 430: it can be used directly the acronym “NRL”, previously defined in line 335. References in Romanian language should report the words “(in romanian)” at the end of the citation.

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[Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., doi:10.5194/nhess-2016-289, 2016.](#)

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