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## ***Interactive comment on “Evaluating flood potential with GRACE in the United States” by T. Molodtsova et al.***

**T. Molodtsova et al.**

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Dear Editor and Reviewers,

We are thankful for the time and effort that you gave to reviewing this manuscript. We consider all suggestions for improvement relevant and important and we will edit the manuscript to address them. Please find our response to the expressed concerns below.

Anonymous Reviewer 1

General comment 1

I suppose it would also help to include the RFPI equation in the Data and methodology

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section, which would save a reference check.

Re: We agreed with the reviewer and will add the RFPI equation into the Data and Methodology section of the manuscript.

#### General comment 2

Further, in the Discussion section, the authors state they expect the RFPI to be especially useful in developing countries with less dense hydrological monitoring networks. While perhaps a valid observation in itself, based on the US analysis or the one example of a flood event in East Africa, it seems unfounded. In all, the paper appears to lack cohesion. The case-study of flood risk detection in developing countries, now presented as an add-on to the US analysis, should either be omitted or expanded with other examples or additional (ROC) analysis, using the (global) DFO data base. If included in the Results section, it should at least be referred to in the paper title and also be introduced in the Data and methodology section

Re: Thank you for the constructive comment. In the developing countries the DFO database mainly includes the mass media reports, which makes the suggested ROC analysis less reliable in comparison to the US. However, this makes the US data very useful for model validation for future extension for developing countries flood risk monitoring. We however agree that the Juba-Shabelle case study seems out of place in the manuscript; we shortened study description and moved it into the Discussion section. Note that we did that in view of Reviewer 2 comment: “The results for the Juba-Shabelle region are an interesting addition”

#### Specific comments and Technical corrections

Re: We are grateful for the specific comments and technical corrections. All of them will be incorporated into the revised manuscript.

Reviewer 2 (Dr. Reager)

#### Specific comments

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1) Though the authors mention the use of RL05 GRACE data, the actual GRACE data set used is not described in detail. The authors should have something like “GRACE RL05 from the CSR processing center was used and is available at [grace.jpl.nasa.gov](http://grace.jpl.nasa.gov)”.

Re: In the revised manuscript, we will add the description of GRACE data.

2) Scale factors are now commonly applied to GRACE data to get something that is effectively at 1-deg resolution. These are available on the GRACE Tellus website. Have these been applied here? If so please describe briefly.

Re: Yes, the scaling factors were applied. To clarify the issue for the reader, the following edits will be incorporated into the Manuscript.

3) The results for the Juba-Shabelle region are an interesting addition, and Figure 7 nicely shows the maps and the timeseries of events. Would it be worthwhile to show any maps or timeseries examples within the US for consistency?

Re: To reconcile this suggestion with the First Reviewer’s suggestion to remove the J-S study from the manuscript, we shortened the J-S study description and moved it to Discussion section. Also we will add the similar example for the US territory for cohesion.

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 6977, 2015.

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