

## ***Interactive comment on “Daily GRACE gravity field solutions track major flood events in the Ganges-Brahmaputra Delta” by Ben T. Gouweleeuw et al.***

### **Anonymous Referee #1**

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Dear authors,

This is an interesting contribution to examine daily GRACE solutions that include much richer spectrum than monthly solutions. Visibly high correlation between the daily solutions and runoff data is promising. I would expect many scientific applications are plausible using the daily solutions. However, this manuscript needs some improvement for publications. Please find my comments below.

(P2,L14). Delivery of GRACE L1 takes 11 days as mentioned in introduction. How is it possible to produce the daily solution in 5 days? Do you have another improvement for the L1 data processing?

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(P3,Eq(3-4)). Please explain explicitly about  $k$  and  $N$ .

(3.1 Process dynamics). I understood that two daily solutions differ mostly from realization of matrix  $B$  that is empirically estimated by models. And, Figure 1 shows that solutions are close to each other regardless of models for  $B$ . Why don't you present the variance and co-variance matrix first?

(P5,L4-9). Why the sampling dates of daily solutions are not the same? Is this due to noise so that some daily solutions could not present such nice snapshots? Indeed, GFZ RBF is corrupted more noise as shown in Figures 4 and 9.

(P5, L9 "Due to the different. ."). However, monthly mean of daily solutions need to be compared with monthly solutions. This is important because you examined the LPF of daily solutions. In terms of month-to-month variation, monthly solutions should be superior to monthly mean of daily solutions.

(P5, L30) Correlation coefficients,  $r$ , in Table 1 are based on entire flooding years (am I right?). But you talked about  $r$  during flooding epochs in the text. I was quite confused during reading this part. So, please be clear this. It seems that many  $r$  in the table is not meaningful in the text. You may include  $r$  during flooding events in the table. Furthermore,  $r$  during flooding events are statistically significant? What are  $p$  values?

(The 2007 flood) Similar comments for 'the 2004 flood' are also applied here.

(P7, L18) "..added value of the daily GRACE.." Did you mean ".. the monthly GRACE.." ?

(Figure 10). Explanation for Figure 10 is quite terse. More explanations would be necessary for GRACE audience.

(Figures 4 and 9) Both LPF time series quite differ from each other. This is not consistent with results in Figure 1.

653, 2017.

**HESSD**

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