The Cryosphere Discuss.,
https://doi.org/10.5194/tc-2019-211-RC4, 2020

The Cryosphere Discussions
Open Access
EGU

Interactive comment on "Substantial meltwater contribution to the Brahmaputra revealed by satellite gravimetry" *by* Shuang Yi et al.

Anonymous Referee #4

Received and published: 11 January 2020

The manuscript estimates the snow and glacier melt contribution to the Brahmaputra river basin using Gravity Recovery and Climate Experiment (GRACE) data. The authors use the empirical orthogonal functions (EOF) to decompose hydrological and snow and glacier melt signals. The snow and glacier signal is then compared to the glacier mass balance measured from ICESat.

Specific comments Page 2: Line 40: (Table 1): Glacier and snowmelt contribution to the total discharge of Upper Brahmaputra river basin is 34% from Lutz et al. 2014 in Table 1. Whereas, Lutz et al. 2014 have indicated the contribution to a total runoff as 24.9% (15.9% from glacier melt and 9.0% from snowmelt: Table S3: Basin characteristics). I am not sure where 34% have come from. Please check this. Page 9, 282-286: you are comparing GRACE based estimate (in Gt/year) with other studies (m w.e. /year). Does

Printer-friendly version

Discussion paper

it make sense to also provide the GRACE values in m w.e./year so that the readers can compare the results? Line 9: 301: 33% of GS melt contribution in Brahmaputra river. It is 34% in Page 1, Line40. Please see my first comment in the major comment section

Technical correction Page 1: Line 27: Please add Lutz et al. (2014) in the reference Page 1: Line 31: Please indicate a seasonal aspect of the snow cover here (instead of 'snow coverage' only) Page 1: Line 37: I think the word 'concern' should be 'concerns' here Page 2: Line 56: The last sentence seems a bit off, please elaborate on how the glaciological model suffers from calibration and validation. Page 9, 285: Please specify that GRACE mass balance is from this study. Page 10: Line 287-289: ASTER you mean (Brun et al. 2017). Please specify which publication refer to -5.5+- 2.2 Gt yr-1. Page 10: Line 308: Instead of 'Lutz's model', please indicated 'Lutz et al .2014.

Interactive comment on The Cryosphere Discuss., https://doi.org/10.5194/tc-2019-211, 2019.

Printer-friendly version

Discussion paper