

We would like to thank both editor and reviewers for their constructive suggestions on how to improve the manuscript. In the following, we provide answers to comments from Referees below.

To anonymous Referee #2, 22 Oct 2022

General comments for the authors' reference:

- 5 I note that this is a revision manuscript. The authors deal with the reconstruction of GRACE/GRACE-FO satellite data, evaluation of the terrestrial water storage anomaly and then apply to monitor the sub-month flood events in the Yangtze River Basin. The manuscript is well written and the results concluded from this manuscript are promising and helpful. Meanwhile, the authors' response is comprehensive and logical with large supported references. The manuscript has been improved largely through the revision. Thus, I
10 think it is ready for publication. I only have several minor suggestions:

(1) Line 34 - Line 36: Please add more references to better show the meaning of this sentence.

Response: As described in Line 34 - Line 36, we have added more references to better show the meaning of this sentence.

- 15 “TWSA derived from GRACE/GRACE-FO satellites comprises all the surface and subsurface water over land, which can be used to monitor the hydrologic variations in response to extreme weather events (Li et al., 2022; Xie et al., 2019a).”

References

- Li, X., Scanlon, B.R., Mann, M.E., Li, X., Tian, F., Sun, Z., Wang, G., 2022. Climate change threatens terrestrial water storage over the Tibetan Plateau. *Nat. Clim. Change*. 12, 801-807.
- 20 Xie, J., Xu, Y.P., Wang, Y., Gu, H., Wang, F., Pan, S., 2019a. Influences of climatic variability and human activities on terrestrial water storage variations across the Yellow River basin in the recent decade. *J. Hydrol.* 579, 124218.

(2) Line 63: an upward trend >> upward trends

- 25 Response: Based on your suggestions, we have replaced “an upward trend” with “upward trends” as described in Line 63.

“It has been found that both the frequency and severity of extreme flood events generally showed **upward trends** in the YRB in recent decades owing to substantial changes in climate, infrastructure and land use (Huang et al., 2015; Liu et al., 2019; Yang et al., 2021; Zhang et al., 2008).”

(3) Line 64: has experienced >> experienced.

30 Response: Based on your suggestions, we have replaced “has experienced” with “experienced” as described in Line 64.

“For example, in Year 2020, the YRB **experienced** one of the most extreme flood events on record.”

(4) Line 388: uncertainty >> uncertainties

35 Response: Based on your suggestions, we have replaced “uncertainty” with “uncertainties” as described in Line 388.

“Furthermore, the **uncertainties** in the observed precipitation and temperature and SMS derived from the GLDAS Noah land surface model can eventually result in some discrepancies between temporally downscaled TWSA at sub-monthly time scales and monthly TWSA estimates derived from GRACE/GRACE-FO satellite data, as described in Fig. 6(a).”

40 (5) Line 476 - Line 477: “The traditional flood monitoring approaches mainly provide useful information about the evolution of flood events over the study region through the measurements of rainfall and streamflow.” This statement is not appropriate and please rewrite this sentence.

Response: Thanks for your valuable suggestions. As described from Line 476 to Line 477, we have carefully checked and rewritten this sentence to make it clear.

45 “The traditional flood monitoring approaches can provide useful information about the evolution of flood events over the study region through the measurements of rainfall and streamflow.”

(6) Line 525 - Line 526: Please check the tense of “involve” shown in this sentence.

Response: Thanks for your valuable suggestion. As described from Line 525 to Line 526, we have carefully checked and changed the tense of “involve” shown in this sentence.

50 “However, as pointed out by previous studies (Landerer et al., 2012; Save et al., 2016; Scanlon et al., 2016), gridded TWSA estimates derived from GRACE/GRACE-FO satellite data **involved** relatively large uncertainty induced by associated measurement errors and signal leakage errors.”

(7) Line 543 - Line 544: Please rewrite this sentence to make it clear.

55 Response: Thanks for your valuable suggestion. As described from Line 543 to Line 544, we have carefully checked and rewritten this sentence to make it clear.

“Overall, the present study shows the great potential of temporally downscaled GRACE/GRACE-FO satellite data in monitoring the extreme flood events.”

(8) The labels of hydrological stations (Yichang and Hankou) in Figure1 are indistinct, please change the color to make them clearly.

60 Response: As depicted in Figure 1, we have changed the colors of these labels to make them clear.

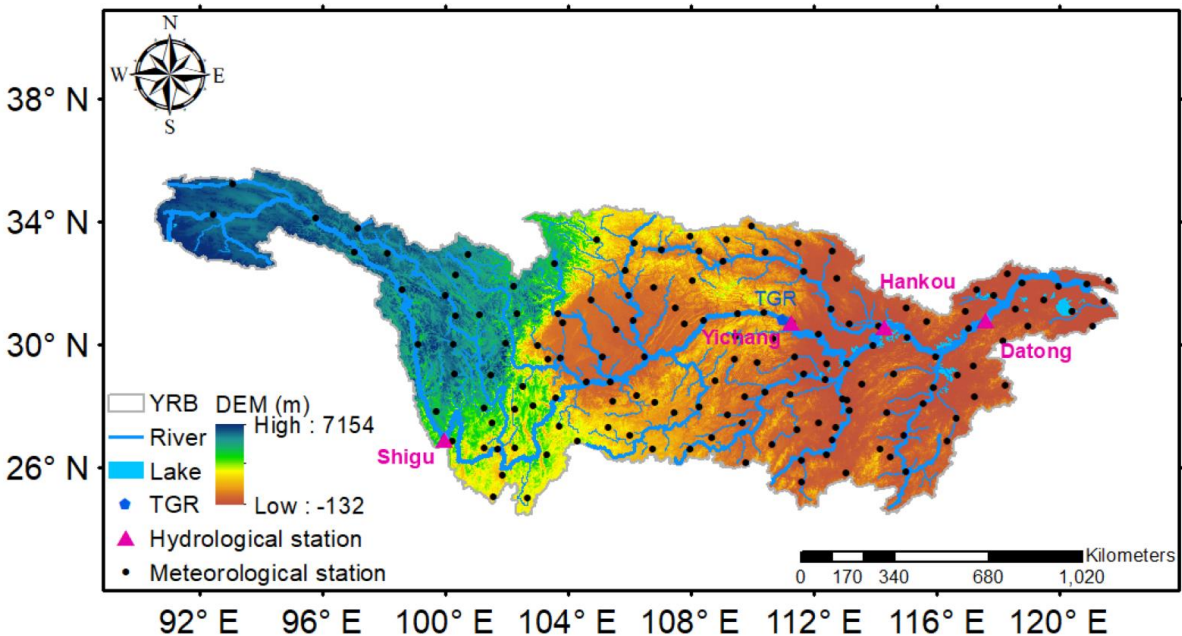


Figure 1: Location of the Yangtze River Basin (YRB) in China and its topography. Distribution of meteorological stations and hydrological stations are also shown in this figure. TGR = Three Gorges Reservoir; DEM = Digital Elevation Model.