

GU



## Supplement of

## Monitoring the extreme flood events in the Yangtze River basin based on GRACE and GRACE-FO satellite data

Jingkai Xie et al.

Correspondence to: Yue-Ping Xu (yuepingxu@zju.edu.cn)

The copyright of individual parts of the supplement might differ from the article licence.



Figure S1. Percentile duration curves of daily streamflow observations and NDFPI for the 95th percentile floods across (a) the SYRB, (b) the UYRB, (c) the UMYRB and (d) the YRB respectively during 2003-2020. The red dots and blue dots
represent threshold values of daily streamflow and NDFPI for the 95th percentile flood across different regions. SYRB: source regions of Yangtze River basin. UYRB: upper regions of Yangtze River basin. UMYRB: upper and middle regions of Yangtze River basin. YRB: Yangtze River basin.



Figure S2. Comparison between basin averaged NDFPI and daily streamflow observations for the 95th percentile floods in
2020 across (a) the SYRM (observed at Shigu station), (b) the UYRB (observed at Yichang station), (c) the UMYRB (observed at Hankou station) and (d) the YRB (observed at Datong station). Pink rectangles denote the duration period between the thresholds of daily streamflow and NDFPI for the 95th percentile floods and peak streamflow observed at the controlling hydrological stations over different regions. The thresholds of daily streamflow and NDFPI for the 95th percentile floods are represented by the red dash lines and blue dash lines respectively. Note that the scales of streamflow shown in each figure are not always same. SYRB: source regions of Yangtze River basin. UYRB: upper regions of Yangtze

River basin. UMYRB: upper and middle regions of Yangtze River basin. YRB: Yangtze River basin.



20

**Figure S3.** Percentile duration curves of daily streamflow observations and NDFPI for the 99th percentile floods across (a) the SYRB, (b) the UYRB, (c) the UMYRB and (d) the YRB respectively during 2003-2020. The red dots and blue dots represent threshold values of daily streamflow and NDFPI for the 99th percentile flood across different regions. SYRB: source regions of Yangtze River basin. UYRB: upper regions of Yangtze River basin. UMYRB: upper and middle regions of Yangtze River basin. YRB: Yangtze River basin.



Figure S4. Comparison between basin averaged NDFPI and daily streamflow observations for the 99th percentile floods in
2020 across (a) the SYRM (observed at Shigu station), (b) the UYRB (observed at Yichang station), (c) the UMYRB (observed at Hankou station) and (d) the YRB (observed at Datong station). Pink rectangles denote the duration period between the thresholds of daily streamflow and NDFPI for the 99th percentile floods and peak streamflow observed at the controlling hydrological stations over different regions. The thresholds of daily streamflow and NDFPI for the 99th percentile floods are represented by the red dash lines and blue dash lines respectively. Note that the scales of streamflow shown in each figure are not always same. SYRB: source regions of Yangtze River basin. UYRB: upper regions of Yangtze

River basin. UMYRB: upper and middle regions of Yangtze River basin. YRB: Yangtze River basin.

Catchment	Gauge station	n Area	Precipitation	Temperature	Streamflow	Elevation
		$(10^4 \text{ km}^2)$	(mm/yr)	(°C/yr)	(10 m <sup>8</sup> /yr)	(m)
SYRB	Shigu	20.8	525	-0.6	437	4526
UYRB	Yichang	99.3	843	8.1	4186	2676
UMYRB	Hankou	140.6	973	11.3	6929	1911
YRB	Datong	181.1	1094	12.3	8781	1621

Table S1. Long-term hydro-meteorological characteristics of different basin during 2003-2020.

SYRB: source regions of Yangtze River basin. UYRB: upper regions of Yangtze River basin. UMYRB: upper and middle regions of Yangtze River basin. YRB: Yangtze River basin.