Supplementary Material for

Impacts of riverine floods on morphodynamics in the Yellow River Delta

Yutao Fu [a,b], Richard G. J. Bellerby [a,b], Hongyu Ji [a], Shenliang Chen [a,*], Yaoshen Fan [c], Peng Li [a]

[a] State Key Laboratory of Estuarine and Coastal Research, East China Normal University, Shanghai 200241, China

[b] Norwegian Institute of Water Research, Bergen, Norway

[c] Yellow River Institute of Hydraulic Research, Yellow River Conservancy Commission, Zhengzhou 450003, China

[*]Corresponding author: Prof. Shenliang Chen

Email: slchen@sklec.ecnu.edu.cn

Contents of this file

Figure S1 to S6.

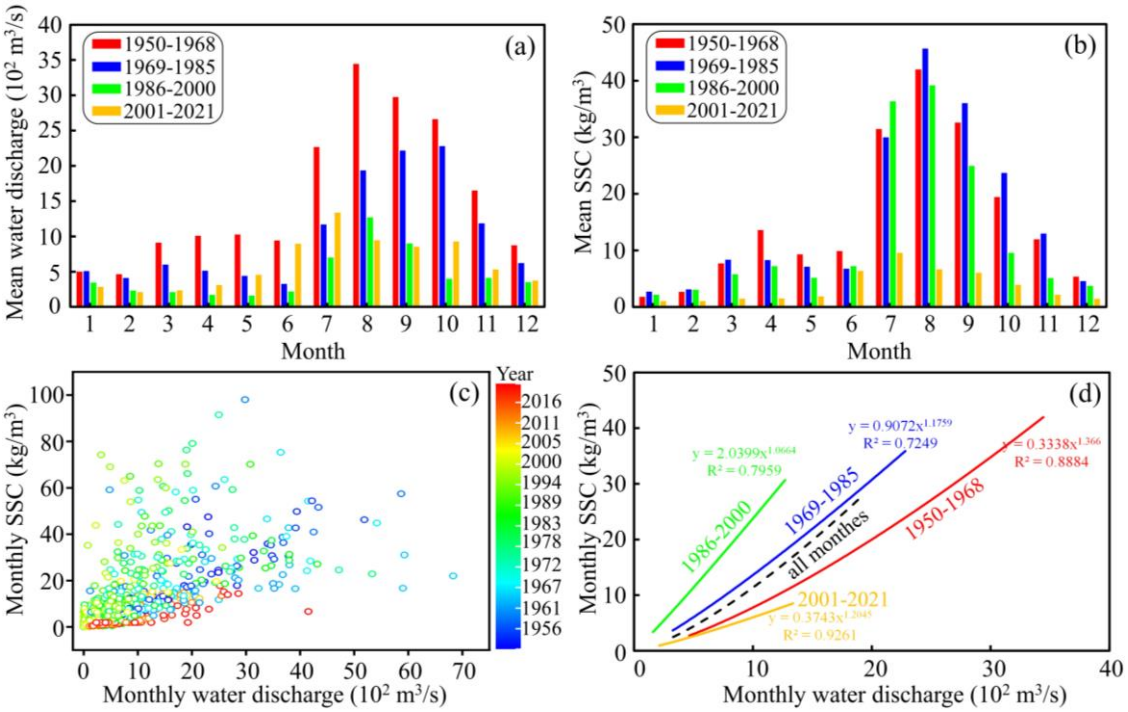


Fig. S1. (a-b) Monthly mean water discharge and SSC at Lijin station during four periods from 1950 to 2021. (c) Relationship between monthly water discharge and SSC and the colormap represents progressive years. (d) Power exponential correlation equations in four stages and whole study period (black dotted line).

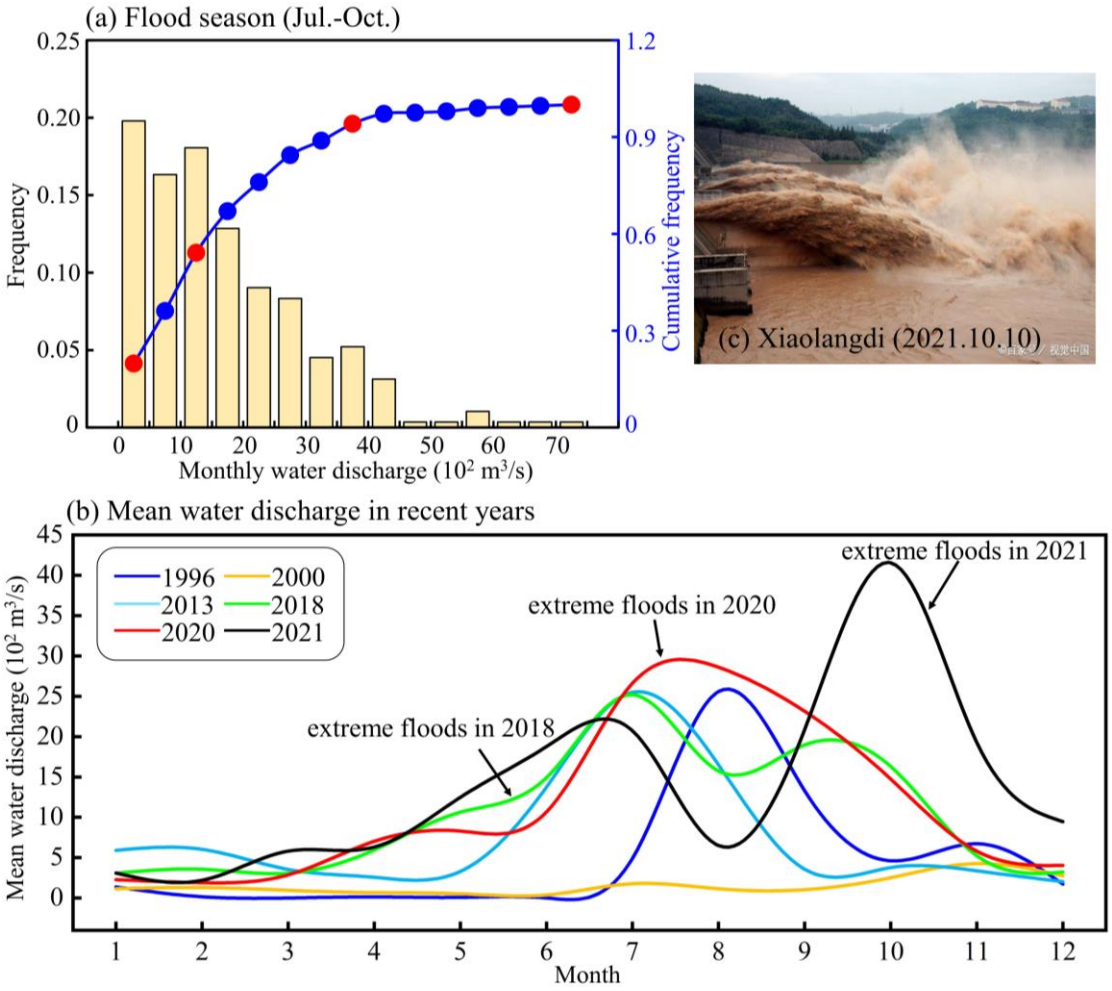


Fig. S2. (a) Magnitude and frequency of monthly water discharge during the flood season (July-October) at Lijin station from 1950 to 2021. The red dots represent four typical water flux levels (500 m^3/s, 1500 m^3/s, 4000 m^3/s and 7500 m^3/s). (b) Mean water discharge in six years. (c) Photo of extreme floods passing taken at the Xiaolangdi reservoir.

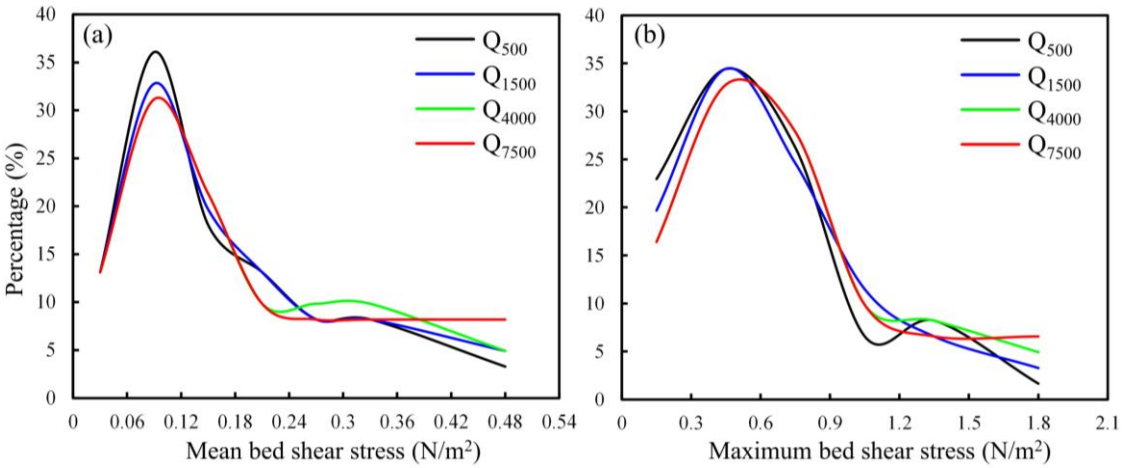


Fig. S3. Frequency distributions of modeled mean and maximum bed shear stress in four scenarios.

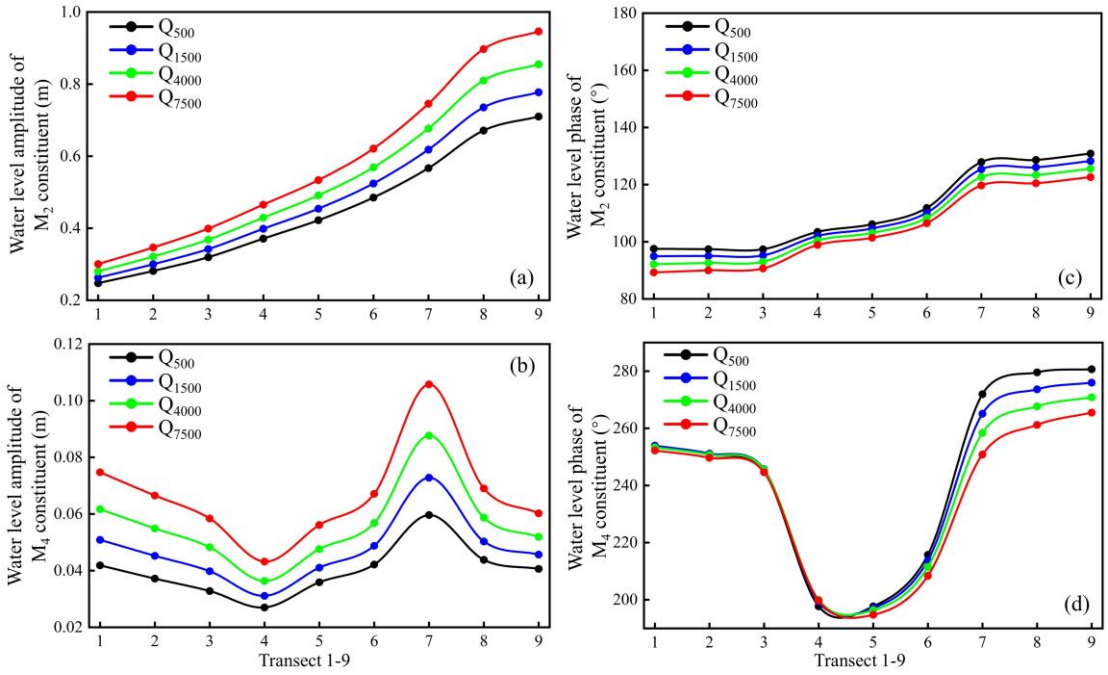


Fig. S4. Amplitudes and phases of two principal tidal harmonic constituents of modeled water levels over the 9 cross sections, (a, c) M_2 constituent, (b, d) M_4 constituent.

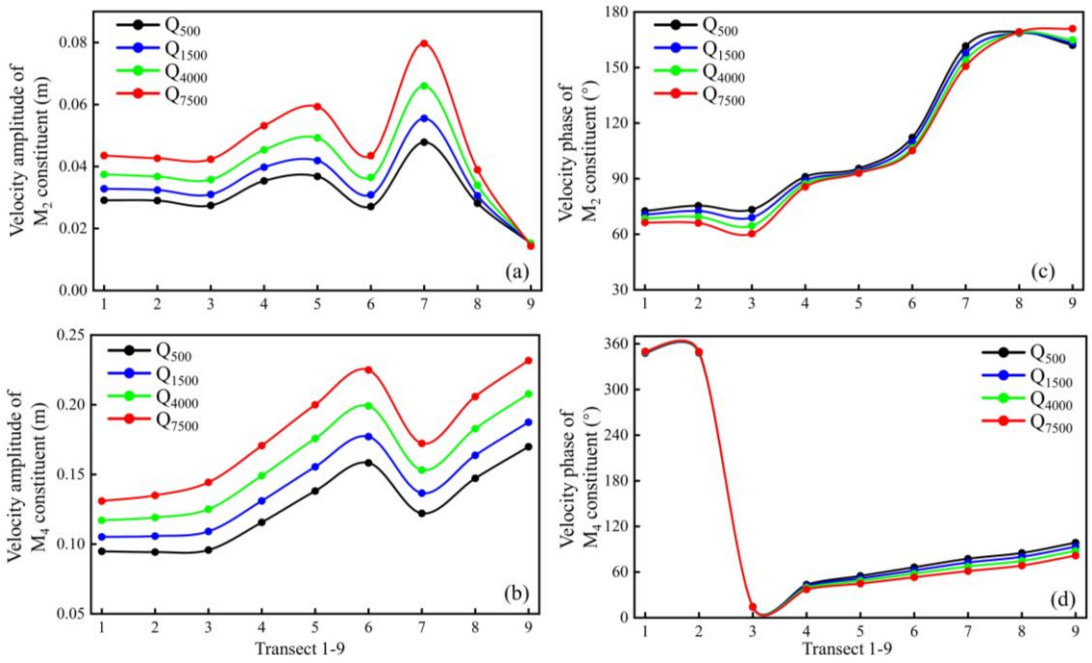


Fig. S5. Amplitudes and phases of two principal tidal harmonic constituents of modeled flow velocities over the 9 cross sections, (a, c) M_2 constituent, (b, d) M_4 constituent.

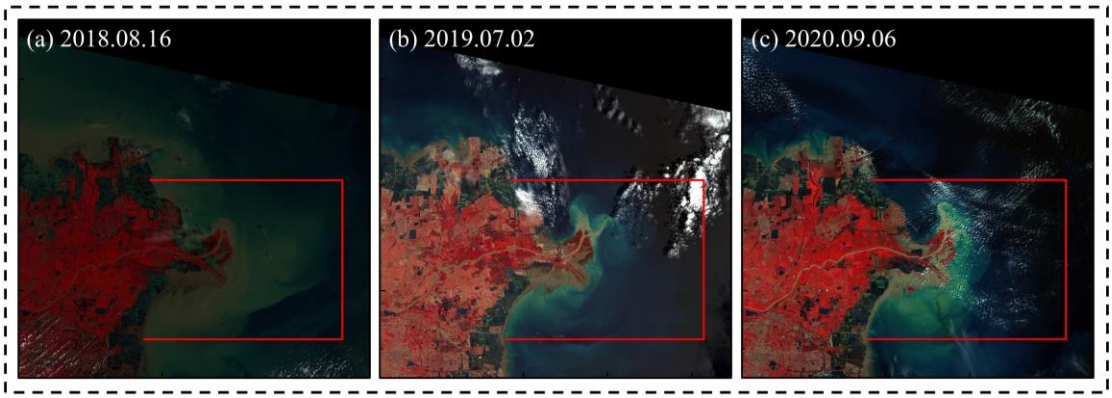


Fig. S6. Landsat satellite images showing spatial patterns of flow-sediment transports during the flood season in the Yellow River Delta. The annual water discharge in these three years was higher than normal years, especially in 2018, 2019 and 2020, the extreme flood events occurred.