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Mechanisms of hyperconcentrated flood propagation in a dynamic channel-floodplain system

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Highlights:

- A downstream increasing discharge peak occurs in hyperconcentrated floods, for which the floodplain effects remain poorly known.
- Numerical experiments are done to unravel how a channel-floodplain system reacts to a hyperconcentrated flood process.
- A 2-D depth-averaged fully coupled model of non-capacity sediment transport is deployed.
- The typical feature of channel erosion and floodplain deposition can be reproduced.
- The interaction between channel and floodplain deformation and their impacts on the flood hydrographs are thoroughly discussed.

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