Reviewer 1

I've reviewed the manuscript by Chen et al, examining fluvial geomorphology evolution caused by the factors like earthquake and dam construction. This manuscript presents interesting study and results, and it is well-written. I only have a few comments as follows:

Thank you for your comments. We have taken your question seriously and carefully processed it. After collecting and analyzing relevant data, we are providing the following response in the hope that it addresses your concerns.

1) What is the resolution of the DSM and the data from WRA that you use and how the resolutions might affect the interpretation of knickpoint locations and migrations?

The DSM data has a 2 to 5-meter resolution, generated using specific sets of aerial photographs. On the other hand, the data from WRA is surveyed at intervals of 5 to 10 meters.

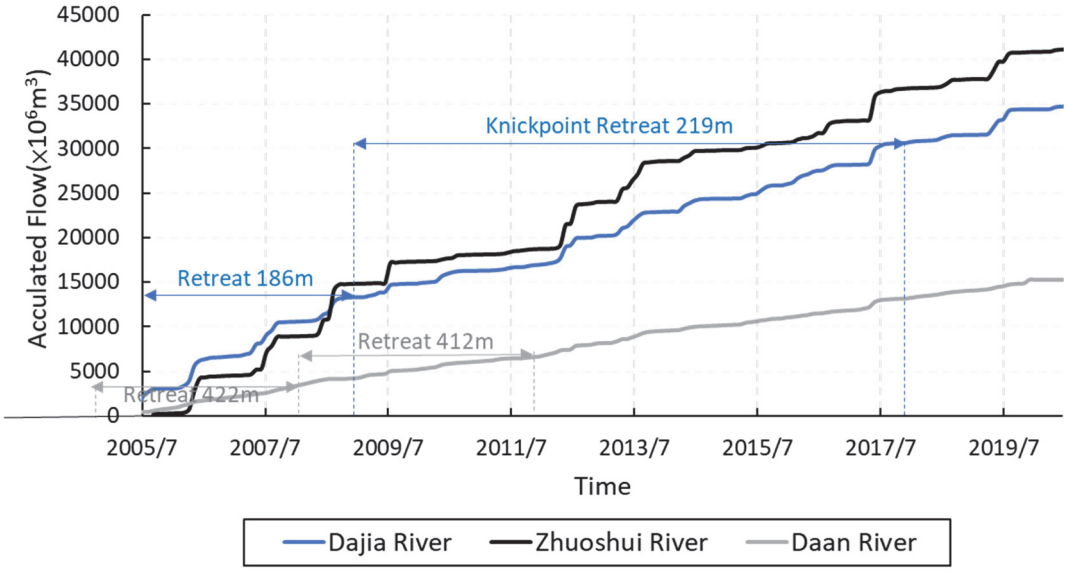
2) Since the study is done by investigating temporal datasets, is there any significant changes in the amount of rainfall or precipitation rate over time that might have also influence/control in fluvial erosion and deposition processes. How can the variation in precipitation (year over year) impact the fluvial geomorphology evolution?

We appreciate the reviewer's interest in our research and the several analytical suggestions provided. Among them, we acknowledge that rainfall and discharge have similar implications, but discharge holds more significance for the analysis of river morphology. Therefore, we have chosen to conduct our analysis using discharge instead of rainfall, and we will provide detailed explanations in the next response.

3) Moreover, do the amount of water flowing out of the dam is consistent year over year? If not, it might have affected the fluvial geomorphology in the downstream portion, and this should also be considered.

We collected the discharge data of outflow from Shigang Dam (Dajia River) and Jiji Dam (Daan River), and the flow data of the Daan River from July 2005 to December 2019. The cumulative flow results show that the increasing trends of the discharge in the Dajia and Zhuoshui Rivers are consistent (as shown in the figure below). Both dams serve the purpose of

controlling water levels for water supply and irrigation. The direct discharge is influenced by the variations in dry and rainy seasons, resulting in intermittent changes in the discharge. In contrast, the flow in the Daan River shows continuously and stable increasing. We observed a positive correlation between the knickpoints retreat distances and the cumulative discharge in the Dajia River and also in Daan River. However, the correlation between flow and retreat distance does not exist when comparing different rivers. Additionally, A relationship between discharge and the changes in channel widening or the incision depth cannot be found.



4) Another factor that seems to be important is geology or lithology variation. It might be good to discuss the lithology variation along the rivers and how it can affect your interpretation in knickpoint locations and migration.

Our view is that although all three river sections have soft rock riverbeds composed of the same interbedded sandstone and shale, the knickpoint migration rates and rock distribution in these sections are not directly linked. The orientation of the rock layers may influence the position of the channel, but only locally. As seen in the example of the downstream of Shihgang Dam in the figure, where the orientation of the rock layers is visibly parallel to the local river channel in a short reach, indicating the influence of the rock layers on the river's position. Because shale has a faster erosion rate, making it easier for channels to be formed. However, in many cases, after shale erosion, the remaining isolated sandstone amplifies the impact of river flow, particle collisions, and vortexes on the isolated sandstone, causing fracturing

and accelerating the detachment of the block. Therefore, the river flow still exhibits a flow direction traverses different rock layers in most conditions.