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A synthesis of detrital zircon geochronology in Asian rivers

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Detrital zircon geochronology is widely used to investigate sediment provenance and reconstruct tectono-sedimentary evolution. Because zircons are almost evenly collected from terranes in the drainage basin, detrital zircon geochronology of river sands can provide valuable constraints on the continental crust evolution on a large scale.

Major changes of tectonics and climate have happened in Asia during the Cenozoic, including the uplift of Tibert Plateau and onset of Asian Monsoon. These events have led to a high diversity of weathering and ersoion regimes and sediment sourceto-sink tranpsort processes in Asia. Hence, Asia continent is an excellent natrual lab for applying detrital zircon geochronology. Previous studies have forcused on lots of Asian rivers, such as the Yangtze River, Yellow River, Indus River, Ganges River, etc.

However, some bias in detrital zircon geochronology may exist in these studies, like zircon fertility of source terranes, hydraulic sorting, statistical significance of age data, and subjective judgment based on visual (qualitative) comparison techniques. In this study, we compile literature detrital zircon ages of Asian rivers (Fig. 1), and revisit all the data by some quantitative methods like K-S test, PCA, MDS, etc. The major aim is to reveal the influences of bedrock geology, topography and hydrology features on detrital zircon age spectrums.



Fig. 1 PDP for zircon U-Pb ages in Asian rivers

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