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Cenozoic sediment flux in the Qaidam Basin, northern Tibetan Plateau, and implications with regional tectonics and climate

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Abstract

As the largest Mesozoic-Cenozoic terrestrial intermountain basin in the northern Tibetan Plateau, the Qaidam Basin is an ideal basin to examine the influences of regional tectonics and climate on sediment flux. Research conducted over the last two decades has provided abundant information about paleoclimatology and tectonic histories. In this study, we used the restoration of seven balanced cross-sections and compiled thickness data of ten outcrop sections and four boreholes to reconstruct the basin boundaries, develop isopach maps, and calculate the sediment flux in the Qaidam Basin. Our results show that the sediment flux in the Qaidam Basin increased gradually between 53.5 and 35.5 Ma, decreased to its lowest value from 35.5 to 22 Ma, increased between 22 and 2.5 Ma, and then increased dramatically after 2.5 Ma. By comparing the changes in the sediment flux with our reconstructed shortening rate in

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