Variations in the characteristics of Changjiang sediment discharging into the sea due to human activities

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M-K trends of the sediment load for the Jinsha, Min, Jialing, Wu, and Han Rivers and the Poyang and Dongting Lake system. The temporal-spatial variation trends of the sediment loads of the seven tributaries indicated that the sediment load began to decrease later at upstream locations compared to downstream locations.

M-K trends of the sediment load for different gauging stations of the Changjiang main river. There were significant temporal-spatial differences in the sediment load variations of the Changjiang main river: the sediment load began to decrease later in upstream locations than in downstream locations, and four stepwise reduction stage periods were observed: 1956-1969, 1970-1985, 1986-2002, and 2003-2010.

Before 2003, the clay, silt, and sand sediment fractions entering the sea mainly originated from the upstream Changjiang. After 2003, about 27.1% of the clay component of the sediment entering the sea mainly originated from the upstream of the Changjiang, and more than 55.8% of silt and 74.1% of sand components were supplied by the erosive sediment of the main river channel.

Before 2003, the various sub-catchments as the sources of the sediment entering the sea may be evaluated by analyzing the sediment components in the deposition area; after 2003, the sediment source of the estuarine-coastal deposits associated with the Changjiang could not be represented by the upstream sources alone.