Sediment Dynamics from the Summit to the Sea
(Proceedings of a symposium held in New Orleans, Louisiana, USA, 11–14 December 2014) (IAHS Publ 367, 297-303, 2014)

Recent changes of suspended sediment yields in the Upper Yangtze River and its headwater tributaries

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Abstract Suspended sediment yields in the Upper Yangtze River and its four headwater tributaries (i.e. Jinsha, Min, Jialing and Wu) have declined significantly during recent decades. Compared with 1956–1970, mean annual suspended sediment yield during 2001–2011 was reduced by 84% in the Upper Yangtze River at Yichang, by 34% in the Jinsha at Pingshan, by 84% in the Jialing at Beibei, by 75% in the Wu at Wulong, and by 48% in the Min at Gaochang. Linking these observed decadal changes of runoff discharge and suspended sediment load to dam construction and multiple environmental rehabilitation projects (e.g. soil-water conservation, reforestation) during the past decades, it can be concluded that the construction of large dams on the main stem and major tributaries of the Upper Yangtze River has played a principal role in the reduction of fluvial suspended sediment yields, while the environment rehabilitation projects may make limited contributions to the changes in suspended sediment yields, except for the Jialing River.

Key words runoff discharge; suspended sediment yield; dam construction; environmental rehabilitation; Upper Yangtze River; Three Gorges Reservoir