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Hydrology and Earth System Sciences Discussions

Interactive comment on "Effects of Three Gorges Reservoir (TGR) water storage in June 2003 on Yangtze River sediment entering the estuary" *by* Z. X. Chu and S. K. Zhai

Anonymous Referee #1

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This paper used the data of water and sediment discharges (daily and monthly) measured by the Yangtze Water Resources Commission to delineate their variations before and after the impoundment of Three Gorges Reservoir (TGR), the world's largest. I have the following questions/comments.

(1) Water discharge from upstream (Yichang or Huanglingmiaodou) is only 45% of total discharge in lower stream (Datong). If the author can provide more data of middle-stream tributaries from Donting Lake, Poyang Lake as well as the Han River, the comparison between Huanglingmiaodou and Datong would be more reasonable. In other words, the author should eliminate the possibility of discharge decreases in middle

stream.

(2) The calculation about reduced sediment load (2456.07 X 10ˆ4 t) in section 4.1.2 is based on the data on 26 May. This calculation can be improved by constructing a rating curve in 1953-2003 or 2000-2003.

(3) Although TGR is one of the major contributors in reducing sediment load, it seems that some other forcings happened before the impoundment of TGR in 2003 judging from Fig. 3c. Sediment concentration in 2002 is already VERY low compared with 1953-2000 average. Upstream dams and reforestation, spatially above TGR and temporally earlier than TGR impoundment, might be potential reasons.

(4). A related paper author should read and cite: Xu K., Milliman, J.D., Yang, Z., and Wang H., 2006. Yangtze Sediment Decline Partly From Three Gorges Dam, EOS, Vol 87. No.19. page 185, 190.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 3, 1553, 2006.