

Interactive comment on “Rapid channel incision of the lower Pearl River (China) since the 1990s” by X. X. Lu et al.

Anonymous Referee #2

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The paper brings interesting data on incision of the second largest alluvial river in China. Field measurements revealed large incision in the period 1990-2003. The measurements are presented in graphs of cross sections and longitudinal profiles. Data on stage-discharge curves are presented giving insight into lowering of the high water levels at similar flow conditions in the period investigated. Furthermore, data on water discharges and sediment loads in the period 1958-2003 are presented.

The paper needs some major revisions to present a round up field case and be ready for publication in HESS.

The main problem to be solved is to present a kind of a sediment budget for the period investigated (1990-2003). The authors are stating (page 2213, line 1 & 2) in the

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discussion section that "Because of lack of data, this paper provides A VERY PRELIMINARY ANALYSIS only from the aspect of sediment depletion." This needs in a way to be overcome in order to publish this paper as a journal paper and not as a conference contribution.

In any case, the title seems to be very promising, and should be broadened to incorporate words such as "sediment depletion" as the main cause of rapid incision.

In Figure 8 data on sediment loads are given, and there is a clear decrease in loads in the investigated period 1990-2003. Are these loads suspended loads or total loads, including bed load ? Please, add some explanation, even though these loads were measured following the related Chinese national standards (page 2209, line 20).

Furthermore, in the paper Zhang et al. (2007a), published in Global and Planetary Change, there are definitely valuable data for this paper with regard to the sediment budget. Also the paper Peng et al. (2003) may have some valuable data as well.

Also, any sediment related data (mean size, maximum size, sorting coefficient, etc.) should be presented.

The same is true for (annual) sediment transport capacity that should be compared to annual sediment extracted through mining from the river (page 2213, line 6) and to average incision, knowing sediment loads. Is this comparison already presented in the paper Zhang et al. (2007a) ?

Figures 2 and 3 are not easily readable when presenting 14 curves in one graph. I would suggest to present less curves but covering the whole period (leaving out at least half of curves).

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