

Interactive comment on “Variations in the characteristics of Changjiang sediment discharging into the sea due to human activities” by J. H. Gao et al.

Anonymous Referee #1

Received and published: 11 September 2014

Review of ‘Variations in the characteristics of Changjiang sediment discharging into the sea due to human activities’ by Gao et al. This is a very interesting paper. Research such as this describe how humans have changed regional scale sediment transport with implications for biogeochemical cycles with global implications. Papers such as this are needed to place the current and future impacts of such water management change in the context of the past as well as future implications. Overall the paper is well-written and conceptually easy to follow. However as presented here the paper is not ready for publication. Reasons for this are described below. 1. Source and reliability of the data (Section 3.1). While I have no issues per se with the data and its

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sources used here, the data does not appear to have been used in any previous work. There appears to be no references which is strange for a data set that covers a 55 year period. Is this the case? Further, given that the data does not appear to have been used, a much better description is needed. Information such as how the data was collected and how often, sample analysis methods and quality control, how missing data was managed together with methodological consistency described. Without this information the reader does not have confidence in the data. 2. The paper is examining the role dam emplacement has had in altering suspended sediment flux. However, the site map (Figure 1) is near impossible to read given its size and complexity. The reader needs to be able to easily follow the flux downstream. Further, there are no dates in the text (that I could find) when individual dams were completed again so that fluxes could be followed. Maybe a flow diagram would help with this. It is really important to be able to understand the connections and lags in the system. 3. The statistical treatment throughout the paper is very confusing. There is no problem with the description of the Analytical Methods (Section 3.2) but how and where this applied to the data throughout the text is not clear. This is compounded by the straight lines included in the individual plots in Figure 2 which suggest that they are part of the autocorrelation assessment or some other statistical treatment. Later on in Section 4 and 5 differences in sediment output are described and there is the suggestion that these are presented because of statistical similarity or difference but it is never made clear. Also, could any correlations be influenced by poor quality data or data that is poorly temporally consistent (see Comment 1)? This really lets the paper down. 4. Results. I realise that there are a large number of sites and data which are examined in this paper. However, the way the data is presented in the text is near impossible to follow. There are too many sites, numbers and dates for any real understanding to be made by anyone not intimately familiar with the sites and data. The Results need a thorough reworking with (1) a minimum amount of numbers in the text with (2) the data places and summarised in a table or by some other means. Also, examining Figure 2, can something be said about the large variation in output? The variability of sediment transport is worthy

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of some comment in its own right. 5. Other comments. (a) Given the scale and pace of development in the region, what role have changes in hillslope management had in sediment transport? Could changes in vegetation type and cover influenced your finding? Were there hillslope/subcatchment practices that could have influenced sediment transport? (b) Page 9122, Section 4.2, line 11. How did you calculate the load of 503Mt/yr? This does not seem to connect with any other data. Line 26. Do you mean statistically significant? (c) Section 4.3, first para. Do you mean statistically significant? Also, the following work, is it yours or that of Xu (2005). This is unclear. (d) Section 5.1, page 9125, para starting line 17. This paragraph is impossible to follow. The issues surrounding data description as well over confusing data origins make this section difficult to rationalise. Similar comment can be made for Section 5.2

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 9113, 2014.

HESSD

11, C3752–C3754, 2014

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