

Manuscript Review:

Variations in quantity, composition and grain size of Changjiang sediment discharging into the sea in response to human activities

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Paper summary:

In this paper, the authors present research on the change in sediment and grain size in the Changjiang river basin over a time period of anthropogenic change in China.

The study uses long-term datasets (1956-2010) of sediment load and grain size to determine when and where there were changes in sediment load at each sampling station along the tributary rivers and main stem. These changing conditions (such as implementation of dams) can have a great influence on the sediment composition and supply of coastal systems. These impacts are felt throughout the watershed and near-shore environment, but timing of these changes can be different depending on the watershed, reservoir storage capacity and type of disturbance. Therefore, this paper addresses an important subject in global change.

General Comments:

The authors have greatly improved this paper. Through the revision, they tightened the narrative, explained many of the methods and distilled much of the discussion. Additionally, they have clarified the objectives of this paper, which improves the narrative and the motivation for the paper. Overall, they incorporated the previous suggestions very well, and the revised manuscript is much better than the first version of the manuscript.

I have a couple of lingering suggestions overall. First, the manuscript needs to be reviewed again for grammar and word choice. There are some areas where the sentences just do not flow well or the word choice is unusual. Secondly, there are still some lingering problems with Figure 1 (outlined below). I also have suggested some small, specific revisions below. Overall, the authors have made great strides in the clarity of this paper and the revisions are substantial.

Specific Suggestions:

Abstract

- 1) The authors should consider revising the first sentence of the abstract. The sentence does not flow well.
- 2) End of abstract – why do the results show that caution should be taken?

Intro

- 3) Line 91: Is there a citation for the climate change increase in sediment load?

Regional Setting

- 4) Lines 125-127: I think the authors need to use the word sediment sink in this sentence. This idea of sediment sinks and sources could be connected more throughout the paper.
- 5) The description of the stations is must better.
- 6) Lines 138-139: Do the authors know the years when the forest was logged?

- 7) Lines 142-144: The wording in this sentence could be improved.
- 8) Figure 1: The map is still difficult to read, but better than it was. Could the authors make the station numbers larger in the map? I also think that the figure will be very difficult to understand in black and white or for a color blind person because all of the catchments are about the same on the grey scale. The authors also list sites that are not discussed in the paper (e.g. Puding). The authors could get rid of the station labels that are not discussed and save space for making the map more legible.

Materials and Methods

- 9) Line 170: Is this is daily data? Is there any data missing?
- 10) Lines 181-182: What does firmly controlled mean?
- 11) Lines 190-204: This description was a little hard to follow still. The authors should narrow down the discussion to the stations that really need description for understanding the rest of the paper.

Results

- 12) Lines 263-265: Sentence needs to be revised – it is a little confusing.
- 13) Lines 266-268: Did the authors perform any statistical tests to look at the change in sediment load and increase in RSCI?
- 14) Line 269 – slope needs an “e”
- 15) Lines 270-271: Again, I think it would be good to report some sort of statistical tests here. Can you test how much of an effect dams had on the relationship?
- 16) Figure 3: I am not sure how helpful this figure is for the narrative of the manuscript. I think that Figure 2 is enough for this part of the story.
- 17) 281-285: Sentence too long and complex, and should be simplified into two sentences.
- 18) Lines 277-300: This part of the discussion should be simplified. The authors should talk about the upstream rivers as a group instead of naming each one. Just point out the specific rivers that did not fit the trends. The authors could refer the reader to the figures and then get rid of some text that is not easy to read through.
- 19) Line 300: Sentence does not make sense
- 20) Lines 364 – 367: Do the authors have any measure of interannual variability? Residuals?
- 21) Figure 6: How did the authors calculate the boxes? What do they represent?
- 22) Lines 369 -376: Are the ranges presented standard deviations or just the total range of all of the observations? Are the daily values averaged over those years?
- 23) Lines 375-388: Again, I think the authors can simplify the text section and rely more on the figure, using the text to talk more about the general trends.

Discussion

- 24) Lines 398-403: This sediment analysis seems out of place. Should be presented in the methods – Also equation did not show up in the PDF version of this paper.
- 25) Lines 469-472: This sentence does not flow well.