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***Interactive comment on* “Nutrient budgets for large Chinese estuaries and embayment” by S. M. Liu et al.**

Anonymous Referee #1

Received and published: 13 February 2009

Review Manuscript "Nutrient budgets for large Chinese estuaries and embayments"

General Comments: The manuscript provides a large comprehensive dataset of nutrient concentrations in the main rivers and bays of China, covering a large region between 5N-55N latitude. The authors have also calculated nutrient budgets for coastal areas such as estuaries and bays in this region, using the LOICZ approach. However, the manuscript at its present form is not suitable for publication. It needs a general re-organisation of the text and a thorough revision of the English language.

The way it is presented now is more like a government report than a scientific paper, with too much repetition of the information contained in the tables, especially in section 4. You should use the tables as a support for the text.

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The authors should consider re-organising the text so that: 1) it has a shorter abstract
-> it has the same length as the introduction!

2) it has a results section separate from the discussion

3) as well as a conclusions section instead of a summary

4) a section addressing the limitations of the LOICZ modelling approach

The specific and technical comments will be addressed in the next section.

Specific and Technical Comments:

1) English language: The authors should improve the English in the text, starting with the title: you refer to many bays in the text, so you should use the plural "embayments" instead of "embayment" - including the Title of the manuscript.

Page 392

Abstract: as said before, it is quite long, especially compared to the introduction.

Line 12: "...decrease exponentially..." instead of "... in exponential trend..."

Line 18-19: are the estuaries and embayments sinks or sources? It is not clear from the sentence.

Line 24-25: use "nutrients" instead of "nutrient elements"

Page 393

Lines 2-4: This is important information, should not appear only in the end of the text

Lines 11-12: there is a verb missing. Maybe "... food web and PROVOKE more severe..."?

Lines 14-16: Rewrite the sentence. What does "global change in relation to human activities" mean?

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Line 27-end: Rewrite the sentence. Estuaries and embayments can't "mark human disturbance".

Page 394

Lines 4-7: Rewrite the sentence. This is the main objective of the manuscript! Here the biogeochemical data is used to understand the behaviour and nutrient fluxes from coastal China to the NW Pacific.

Material and methods: this section can be simplified by using the existing tables.

Lines 9-17: You don't need to cite all the rivers in the text if they are already listed in table 1.

Lines 19-26: This information is already appearing in table 2.

Page 395

Lines 1-6: this information is already appearing in table 3.

Lines 7-12: Did you use average values of nutrient concentration in rain water? This information is missing, as well as the concentration values.

Lines 13-18: Were all samples collected and analysed exactly the same way? In some rivers there is a big time gap. Some were collected in the early 90's, some more recently. There is no year for the samples from the Huanghe River - see table 2a.

Biogeochemical modeling approach - maybe change the name for "Nutrient budgets - LOICZ approach"?

Page 396

Lines 27-28: Here you should explain why V_g (groundwater) is negligible by citing values. The same for V_w (waste water). Is it negligible because there are no heavy input of waste water in any of the estuaries considered? I don't think this is the case. If you don't have any data for V_w please make it explicit in the text.

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6, S110–S115, 2009

Interactive
Comment

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Interactive Discussion

Discussion Paper



Page 397

Results and discussion - you should consider writing 2 separate sections, one for the results, and one for the discussion. It would improve the readability of the manuscript. For instance, my impression is that you have described all results for rivers, while estuaries and embayments have their results already mixed with a "discussion".

Page 398

Lines 1-6: You should avoid the use of semi-colon (;). This long sentence could be split up into shorter ones to improve the text.

Line 14: "Comparison with..." -> Do you mean "Comparing with..."? Which unpolluted rivers?

Lines 20-21: "10-20 or even more" -> do you mean in China agriculture uses 10 to 20 times more fertilizers? More than European agriculture? You should give some values here for comparison.

Page 399

Line 3: Do not use "etc" in the manuscript. As said before, this section could be much improved. Much of the information in page 399 is a mere repetition of the results shown in tables 2a to 2c. You should describe one nutrient at a time, then describe the ratios, and use the tables as a support.

Lines 5-6: "hot and wet south than in the cool and dry north" -> Do you mean tropical humid and temperate dry climates?

Page 400

Lines 5-8 - This is a repetition.

Lines 22-23: What do you mean? There aren't available datasets for Korean rivers?

Page 401

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6, S110–S115, 2009

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Comment

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Discussion Paper



Line 6: Please change to" ...have increased 17 times in South Korea..."

Page 402

Lines1-4: The sentence is not very clear. Is there more of a sink or source? Are the nutrients being imported or exported?

Lines 5-25: This part could go into a discussion section.

Lines 26-page 403: What is the contribution of this paragraph to the manuscript? Are you budgeting any of these coral reef areas?

Page 403

Line 4: Please use "Comparing"

Line 16: Please use "surpasses"

Line 17: Please use "river water"

Again here The text could go into a separate discussion section.

Page 404

Lines 12-16: Please re-write this sentence. which rivers, estuaries, bays would be heavily affectec by human influence? If the data is not available, how conclusive are the results shown here? This is an important point that should be addressed in the manuscript!

Page 405

Line 13: Please use "Comparing"

Section 4.5 could be a sub-section of the discussion.

Here there is again repetition of the information form table 8.

Page 406

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6, S110–S115, 2009

Interactive
Comment

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Interactive Discussion

Discussion Paper



Line 16: The results "suggest", they do not "demonstrate" since here you are using a model approach!

Line 26: Please avoid using expressions such as "a lot" in a scientific manuscript.

Page 407

Line 26: Please use "Supposing the contribution of BSi..."

Page 408

Summary - This section could be replaced by a "Conclusions" section, where the limitations of the approach use in the manuscript are addressed.

For instance: the lack of data about waste water input, in which areas this would be an important issue for the calculated budgets. the important information, or the main conclusion of the manuscript is lost in the end of this summary -> that primary production in the China seas is supported by nutrient regeneration and exchange with the NW Pacific.

Page 435

Figure 3 caption: just cite (Kim et al. 2004b).

Interactive comment on Biogeosciences Discuss., 6, 391, 2009.

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