

## ***Interactive comment on “Historical records of eutrophication in Changjiang (Yangtze) River estuary and its adjacent East China Sea” by F. Cheng et al.***

**Anonymous Referee #2**

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This manuscript has some interesting data from this Yangtze estuary and suggests increasing eutrophication in this estuary. With all the enormous pollution (anthropogenic activities such as dumping of industrial, domestic wastes, land and agricultural runoff), eutrophication is bound to happen. This topic is documented well evident from the 108 publications on eutrophication in Chinese coastal seas.

The introduction is too long on a topic that is well known and could be presented to the point starting around line 16 page on 6264. Literature coverage is acceptable but not adequate; of the 75 references cited ~30% are from the Chinese waters and some are in Chinese.

C2696

The basis of pollution is a multiproxy approach on analyses of two sediment cores from two different regions off China. Standard methodology is used. Pb dating of sediments for pollutants is well known (Oldfield and Appleby, 1984).

Some references on the methodology are listed below:

- Oldfield, F. and Appleby, P.G. 1984. Empirical testing of super (210)Pb-dating models for lake sediments.

- S. Rizzo, S. Basile, A. Caruso, C. Cosentino, L. Tranchina, M. Brai. 2009. Dating of a Sediment Core by 210Pbex Method and Pb Pollution Chronology in the Palermo Gulf (Italy). *Water, Air, and Soil Pollution* September 2009, Volume 202, Issue 1-4, pp 109-120.

- S. Schmidt, J. Tronczynski, N. Guiot and I. Lefevre, 2005. Dating of sediments in the Biscay bay: Implication for pollution chronology. *Radioprotection* 2005, Vol. 40, n° Suppl. 1, pages S655 à S660

- Andrew Seen A E, Ashley Townsend B, Bonnie Atkinson A, Joanna Ellison C, Jennifer Harrison D, Henk Heijnis D. Determining the History and Sources of Contaminants in Sediments in the Tamar Estuary, Tasmania, Using 210Pb Dating and Stable Pb Isotope Analyses. *Environmental chemistry, CSIRO*

Biota analysis is limited to diatoms and silica analyses were not reported. On line 10, page 6273 it is stated that diatom cell abundances are often an early sign of eutrophication. This is not the case always as in Baltic. Flagellates could be these indicators. Grouping of diatom species may be instructive.

However reference to the following excellent works from the Baltic Sea would help in a better interpretation of their data.

\*Baltic Area (only a few are suggested)\*

1. Larsson, U. et al. 1984. *Ambio* 14: 9-14.

C2697

2. Rosenberg et al. 1990. *Ambio* 19: 102-108.
3. Sanden P, Rahm L. 1992. *Environmetrics* 4: 75-103.
4. Wulff and Niem 1992. *Aqua Fennica* 24: 121-140.
5. Smayda, T.J. 1990. *Toxic marine Phytoplankton*, Elsevier London 29-40
6. Rahm, L. et al. 1996. *Mar. Ecol. Prog. Ser.* 130: 221-228.

\*Reference to the following from the Chinese Seas would help in comparative interpretation.\*

1. Zhijun Dai et al. 2011. 1955-2008- Yangtze studies. *Env. Sci. tech.* 2011. 45(1) 223-227.
2. Zhang El. et al. 2010. 150 year study *Jour. Limnol.* 69 (2) 235-241.
3. Guan et al. 2011. 40 year study Yangtze. *Limnology* 12: 47-53.
4. Wang et al. 2011. Nutrient dynamics Yangtze. *Environ. Earth Sci.* 63: 1067-1077.
5. Ma et al. 2011. N: P Three Gorges Reservoir *Sci. Total environ.* 412-413. 154-161.
6. Liu et al. 2012. Yangtze River. *Hydrological Processes.* 26: 570-578.
7. Dai et al. 2012. Ammonia . blooms. *Global Change biology* 18: 1571-1581.
8. Liu et al. 2012. Diatom Ecological response Yangtze. *Ecohydrology* 5: 316-325.
9. Yan XiuLi et al. 2012. Nutrients Jiulong estuary. *Chinese Science bulletin* 57: 2307-2318.
10. Dong et al. 2012. Carbon burial Yangtze . *Global change Biology* 18: 2205-2217.
11. and characterising sediments from the Yangtze area for pollutants is also well documented.

The methodology is not new; that the Yangtze region is polluted is well known. Then

C2698

what is missing is a critical evaluation of the data. If the authors study these above references and interpret their data it would make a comprehensive contribution. Critical analyses of all the data presented in the graphs are necessary. Interactive comment on the biogeochemistry and species would be necessary.

At times results and discussion are mixed up.

In the light of these comments this manuscript needs a good revision to make it a better presentation. Till then it is deferred for publication. I would be happy to see a revised version.

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Interactive comment on *Biogeosciences Discuss.*, 9, 6261, 2012.

C2699