

Interactive comment on “Inter-shelf nutrient transport from the East China Sea as a major nutrient source supporting winter primary production on the northeast South China Sea shelf” by A. Han et al.

Anonymous Referee #1

Received and published: 20 April 2013

Comments:

This study provides estimate of the contribution of nutrient from the East China Sea to the northeast South China Sea in winter. The estimates are derived from combining in situ survey of hydrography, nutrients and chl a (with support from satellite remote sensing), knowledge of flow fields from observation and numerical modelling. The authors made a significant effort to derive the estimation through making best use of the available information from different sources.

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The paper is well written. I only have a few minor points of comments. I recommend the manuscript to be accepted for publication after a minor revision.

1. To further convince a reader about the robustness of the conclusion, one should exam the inter-annual variability, or the sensitivity of the nutrient flux to varying nutrient distribution and oceanic flow. The present work sets a step for the further study.
2. Detail description of the ROMS model is apparently provided in Gan et al (2013) which is not included in the list of references. The model is driven by climatological surface and lateral boundary forcing. I am particularly curious about the initial condition and the length of simulation. Such information should be included in 2.3.
3. Beginning of 3.1: you cannot compare salinity with the observed SST; it is not clear the meaning of temperature increase from 12.1 to 16.9 deg C – apparently this is spatial variation.
4. Beginning of 3.3: the rapid decrease of DIN seaward, is it because lacking of coastal water or the entrainment of Kuroshio water?
5. Section 4.2; the DIN flux is obtained by simply multiplying the average DIN and Tt in the CCC – clearly several significant assumptions are made here but are not explicitly mentioned. Because this is the most critical result of this study, a bit more justification can be very helpful. The 260 error bar is obtained by simply assuming the estimate of Tt has a zero error bar, is this correct? This is an over simplification and I do not feel comfortable to see the 260 error bar even appears in the abstract!
6. Conclusion: should “might be” at least be “may be”?

Interactive comment on Biogeosciences Discuss., 10, 3891, 2013.

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