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Biogeosciences Discussions

Interactive comment on "An iron budget during the natural iron fertilisation experiment KEOPS (Kerguelen Islands, Southern Ocean)" *by* F. Chever et al.

Anonymous Referee #1

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This paper presents a detailed evaluation of iron data from the KEOPS experiment. The concentration data for dissolved and total dissolvable Fe are presented, and placed into a box model framework to calculate various rates of input and output and transformation (dissolved to particulate Fe).

The data looks reasonable considering the proximity to sedimentary (primarily resuspension) sources of dissolved and particulate Fe. The modeling reveals that lateral advective input is the dominant term in the budgets, however the lateral velocities are presented without variance estimates. Including velocity variance in the calculations is likely to yield large variance in the Fe fluxes. And, since lateral advection is the

largest term, this would generate larger variance estimates for the various fluxes that are calculated by difference. I recommend a thorough evaluation of the model flux estimates that incorporates the lateral velocity variances, followed by an evaluation of the statistical significance of all calculated fluxes.

One of the problems with modeling such a dynamic region is whether to assume the system is at steady state. I see no serious discussion of this issue. Only by assuming steady-state can one calculate the E and F fluxes.

To be continued.....

Interactive comment on Biogeosciences Discuss., 6, 6803, 2009.