

Interactive comment on “The role of continental shelves in nitrogen and carbon cycling” by K. Fennel

Anonymous Referee #1

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I read the title with interest expecting to see a review paper about C and N cycling on the continental shelves but it turned out that the paper has data for only part of the NE American continental shelf. Several review papers have been published on the global view. Unfortunately the author did not seem to realize that.

Other than the limited scope the paper contains several fatal errors: 1. The author takes the view proposed by Tsunogai that downwelling of dense shelf water in winter transports, say, DIC, offshore. This view has been criticized several times as it does not agree with reality. Only a small portion of the global shelves generates downwelling. 2. The model is also flawed in that, for instance, DON is not taken into account. 3. Figures 2 and 3 are conceptually wrong. Upwelling provides DIN and DIC to support productivity on the shelves. The author mentioned the riverine and aeolian inputs of

C23

nitrogen but totally forgot about the DIN input from upwelling, which globally can be as much as 70%.

Interactive comment on Ocean Sci. Discuss., 7, 177, 2010.