

Interactive comment on “Seasonal dissolved inorganic nitrogen and phosphorus budgets for two sub-tropical estuaries in south Florida, USA” by C. Buzzelli et al.

Anonymous Referee #1

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Journal: BG Title: Seasonal dissolved inorganic nitrogen and phosphorus budgets for two sub-tropical estuaries in south Florida, USA Author(s): C. Buzzelli et al. MS No.: bg-2013-5 MS Type: Research Article

GENERAL COMMENTS

The manuscript “Seasonal dissolved inorganic nitrogen and phosphorus budgets for two sub-tropical estuaries in south Florida, USA” by C. Buzzelli, Y. Wan, P. H. Doering, and J. N. Boyer represents a substantial contribution to scientific progress within the scope of Biogeosciences. The authors compiled seasonal nutrient budgets for two estuarine systems in south Florida for the period from 2002 to 2008 from a wide spec-

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trum of available data and used simple Redfield stoichiometry to infer net ecosystem metabolism and the net result of nitrogen fixation and denitrification. The calculation followed the well-documented LOICZ approach. The extensive data synthesis conducted as part of this effort is extremely valuable for improving our understanding of ecosystem dynamics of coastal regions. The manuscript could benefit from a number of revisions that are suggested below. I recommend this manuscript for publication after moderate revisions.

SPECIFIC COMMENTS

(1) I suggest that both the abstract and the text should specify that CRE drains into Gulf of Mexico and SLE drains into South Atlantic Bight region. (2) In my opinion, calling LOICS a biogeochemical model is misleading. LICZ approach is simply a mass balance calculation algorithm with a systematized notation I would suggest substituting “biogeochemical model” with “approach” or “algorithm”. I would entirely omit the discussion on p. 2379 about LOICZ approach being highly customizable as a mass balance calculation by definition can be applied to any enclosed volume. (3) I see Section 2.2 as entirely superfluous. Gordon et al. 1996 provides an extremely detailed description of the LOICZ framework and there is no need to repeat it here. Fig. 2 is copied directly from Gordon et al. (1996) and has references to equation numbers not in the presented manuscript, but in Gordon et al. (1996), which is unacceptable. The equations in Table 1 are also taken directly from Gordon et al. (1996). The contribution of this study is in how all the terms in the LOICZ budget were constrained and this should be the focus of the Methods section. (4) Section 2.3 is very ambiguous and requires major revisions. The synthesis of existing data that was conducted for the construction of the budgets is impressive and must be documented in a proper way to give justice to the effort. The authors give names of specific monitoring stations but do not specify what monitoring networks these stations belong to. Each monitoring network should be briefly discussed and published references given where information on measurement protocols can be accessed. Each monitoring station and each ge-

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ographic location mentioned in the text should be shown on the map. A publication reference and a brief discussion of the tidal model for CRE used to constrain freshwater input through tributaries and as ground water must be given. A published reference and a description of the hydrodynamic model from which salinity was derived at Shell Point must be provided. It should be explained what DBHydro is and a reference must be provided. I suggest that published references should be added to Table 2. (5) Font size on all figure axes and equations is too small.

TECHNICAL COMMENTS

p. 2378 Line 10: “Biogeochemical Model” should not be capitalized; parenthesis around “DIN and DIP” should be removed

p. 2379 Line 21: incomplete reference Line 24: I think “increased” should be added before “inorganic nutrient loading”.

p. 2380 Lines 6-7: Giordani et al. 2008 describes an application of LOICZ budget to a number of estuarine systems in Itali. I don’t see how this reference is appropriate here. If anything, Gordon et al 1996 could be used, which describes the specifics of the LOICZ calculation.

p. 2381 Lines 6-14: need references

Interactive comment on Biogeosciences Discuss., 10, 2377, 2013.