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Interactive comment on "A nitrogen budget for the Strait of Georgia, British Columbia" *by* J. N. Sutton et al.

Anonymous Referee #2

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This manuscript utilizes a variety of information to construct a nitrogen budget for the Strait of Georgia, British Columbia. Anthropogenic sources of nitrogen are estimated from rivers, effluent point sources, aquaculture, and atmospheric deposition. N isotope data from particulate nitrogen samples are used to constrain the sources, sinks, and transformations (mainlyl via primary production and subsequent remineralization in the upper 50m of the water-column) described in the budget. In sum, the anthropogenic sources to the system are shown to be a small contribution in comparison to oceanic sources of nitrogen delivered to the system. The authors conclude that anthropogenic eutrophication is not likely to have a strong effect in this system. Though, it is not exactly a novel finding that the landside nutrients are small compared to the oceanic sources at the scale of the study system (most coastal waters on the west coast of North America exhibit this pattern), it is important with respect to resources and effort

that are being directed towards nutrient management issues. One area where the manuscript could be improved would be to compare/contrast the study system with other well-studied west coast systems to demonstrate that the Pacific is the dominant nutrient source term in most cases.

Overall, the manuscript is well-written and the authors should be commended for their clear and efficient description of the many different types of data used to construct the budget. An identified shortcoming is the lack of a description in the methods for how the uncertainties (standard deviations) were calculated for each budget term. This is important because many of the budget terms, especially the big terms that dominate the budget like the ocean exchanges, have standard deviations that make the budget terms not statistically different from zero. This is a typical problem for many budgeting exercises, and the authors should make the effort to describe how they calculated uncertainties and point to which of the measurements or calculations contribute most to this uncertainty.

Interactive comment on Biogeosciences Discuss., 10, 7135, 2013.