Review of Estrada-Ellis et al. "Budget of the total nitrogen in the Yucatan Shelf: driving mechanisms through a physical-biogeochemical coupled model"

General comments:
I reviewed a previous version of this manuscript and noted that the current version of the manuscript was greatly improved from the earlier draft. I commend the authors for the significant revision. In particular, they have added many additional figures to demonstrate the model's skill at reproducing observations in the Yucatan shelf region. I still have some problems with the manuscript though. In particular, I am still not satisfied with the description of how total nitrogen (TN) in the model equates to total nitrogen in the real world. My concern remains that the model is missing nitrogen in the form of dissolved organic nitrogen (DON). The model description continues to be unclear in this regard. How did you set the boundary condition concentrations at the edges of the shelf modeling domain for LDet and Sdet state variables? How did you set the LDet and SDet in rivers and freshwater inputs? In the model, the TN seems to be comprised of DIN and PON (see figure 8). Where is the DON pool accounted for? Please clarify this in the text. Also, now that I see the model-data comparisons for NO3 (Figure 6) it appears to me that the modeled NO3 may be 2-3x lower than the observed NO3 values. It is reported that the mean bias is on the order of -1.7 mmol m-3. The discussion of how this bias may affect the magnitudes of the estimated N budget fluxes is addressed in the appendix. I think these uncertainties should be included in the main text prior to the 'Concluding Remarks' section.

Specific Comments:
pg 2, line 28: replace 'responsible of' with 'responsible for'

Pg 3, line 12: perhaps rephrase this to 'Regarding freshwater inflow, a significant source to the YS is related to submarine groundwater discharge (SGD) …

Pg 3, line 22: insert 'of' between 'some the'

Pg 3, line 26: missing period at end of sentence

Pg 4, lines 19-20: The sources of data for initial and boundary NO3, NH3, and Chl are reported. How did you specify boundary conditions for LDet, SDet, Phy, and Zoo?

Pg 5, line 17: What about LDet and SDet in freshwater and river inputs? Similar to the comment above about the boundary conditions, how did you estimate river inputs?

Pg 7, lines 21-33: move the paragraph discussing model-data comparisons of NO3 before discussing Chl to be consistent with figure numbering and presentation.

Pg 7, lines 32-33: There are other studies besides Xue et al that do report N budgets normalized by area or length. For example, see Walsh et al. 1989 or Lehrter et al. 2013. At a minimum, you could provide the spatial area of your inner shelf and outer shelf domains shown in Table 1or for the boxes shown in Fig. 2a so that a reader could calculate area normalized rates.

Pg 10, line 7: I don't recall seeing SLA defined

END OF REVIEW