

Interactive comment on “Nitrogen cycling in the Elbe estuary from a joint 3D-modelling and observational perspective” by Johannes Pein et al.

Anonymous Referee #2

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There are many major issues to this submission:

- 1) There is no/little hydrodynamic calibration. Authors need consider to submit two manuscripts: one for hydrodynamic and one for water quality dynamics.
- 2) Why authors didn't calibrate the water quality for the bottom part, particularly to the oxygen? Ammonia simulation is a little different from the observed one, any justification?
- 3) The model set up and data description is very weak, and need a lot of work to this part. Again, authors need consider to split this manuscript into two manuscripts. Why choose year 2012 and 2013?
- 3) This study is very local, and there is no linkage to broad area? What is the contribu-

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tion of this work the research community? The questions is pretty local, and not novel? Authors even didn't fully answer the questions of introduction part.

4) The mixing diagram was used by Jiang and Xia, 2018 and isn't new. This study is mainly for nitrogen dynamics, however authors want to cover everything. It is a little bit difficult to follow, and authors need think how to make a nice flowchart to this manuscript. Overall, it reads like a modeling or technical report.

There are many minor issues, however I would like authors to take care of major issues now.

Jiang, L. & Xia, M. (2018), Modeling investigation of the nutrient and phytoplankton variability in the Chesapeake Bay outflow plume. *Progress in Oceanography*, 162, 290-302. doi: <https://doi.org/10.1016/j.pocean.2018.03.004>

Interactive comment on Biogeosciences Discuss., <https://doi.org/10.5194/bg-2019-265>, 2019.

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