

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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