Tian et al. used the isotope mass balance model to characterize and quantify reactive nitrogen sources and sinks in the Bohai Sea through the measurements of nutrient, nitrate δ15N and δ18O, and δ15N of suspended matters and sediments. The authors used the results both from their work and previous studies trying to give a more comprehensive estimation of nitrate sources and sinks from various end members. This work would improve the understanding of N cycle in the Bohai Sea, a typical semi-enlosed bay influenced by anthropogenic nitrogen input, I think this manuscript could be accepted after a minor revision. Here, I have some specific comments for this study:

1. I think this study would need a little bit more detail discussing of the model uncertainties. There could be some uncertainties in this isotope mass balance mode due to many assumptions in this study. For example, there are many assumptions for using the end member of sedimentation (section 4.2.5). As the isotope fractionation associated with the processes of assimilation and nitrification is complicated, I think it may not be suitable to give fixed values of δ15N and δ18O to the correlated end members. I suggest to give varying values of δ15N and δ18O with reasonable range when applying to the isotope mass balance mode.
2. In addition, in summer, nitrate was almost depleted in the most area of the Bohai Sea, suggesting an enhanced photosynthesis rate and assimilation rate in this season. The residual nitrate would have high δ15N and δ18O values. It may need to evaluate rationality by adopting average values of nitrate concentrations, δ15N and δ18O in the two seasons when applying to the isotope mass balance model.