We sincerely appreciate the reviewer's comments again. In the previous discussion, we received the comment: " *The exclusion of chromophoric dissolved organic matter (CDOM), implemented due to limited observational constraints in the PRE, introduces potential uncertainties, though its influence is likely subordinate in this sediment-dominated system where mineral particles govern light attenuation*". We acknowledge that our initial response may not have sufficiently addressed this important consideration. We would like to provide the following clarifications

First, we have corrected our description of the light attenuation parameterization, which previously omitted the influence of particulate organic carbon (POC). The formulation has now been revised as follows:

"$k_e = k_{ebase} + k_c * a_{cchl} * P_c + k_{sed} * SSC + k_{POC} * POC$
Where k_e is the light extinction coefficient (m^{-1}); k_{ebase} is the background light extinction coefficient of water (m^{-1}); k_c is the phytoplankton-related extinction coefficient (m^2 mg^{-1} Chla); a_{cchl} is the ratio of chlorophyll to phytoplankton carbon biomass; k_{sed} is the SSC-related extinction coefficient (m^2 mg^{-1} SSC); k_{POC} is the POC-related light extinction coefficient (m^2 mg^{-1} POC)."

Our parameterization based on background turbidity, chlorophyll, suspended sediments, and particle organic matter (including riverine and phytoplankton-derived POC) effectively reproduces the observed dissolved oxygen patterns. While CDOM is not explicitly modeled as an independent variable, we recognize that some of its effects may have been implicitly captured during model calibration through our comprehensive parameterization scheme. We fully agree that CDOM plays an important role and warrants more detailed characterization in future studies. In particular, additional long-term CDOM observations would be invaluable for investigating its potential contribution to long-term deoxygenation trends. We have modified the Discussion section in the revised manuscript (Line 627-632) to explicitly acknowledge this factor:

"*The current light attenuation parameterization in our model primarily accounts for the effects of chlorophyll and suspended sediments. Previous studies have demonstrated that CDOM (colored dissolved organic matter) also plays a significant role in light attenuation within the PRE (Cao et al., 2003; Wang et al., 2010), particularly during algal bloom periods. Although our model does not explicitly treat CDOM as an independent variable, its influence is indirectly accounted for within the existing parameterization. However, to accurately quantify CDOM's contribution to oxygen dynamics—including its long-term trends—future work should incorporate an explicit representation of CDOM's effects on light attenuation in the model, alongside sustained observational monitoring of CDOM.* "