General comments:

This manuscript describes a one-dimensional model (i.e. GLM-AED2) study for Lake Mendota which analyzed its long-term changes of anoxia and the driving factors. As a major result, the model showed good performance in reproducing oxygen dynamics, especially the low oxygen concentration in the hypolimnion, in the lake and based on the statistical analysis, it suggested that the physical structure (e.g. Schmidt Stability, onset of stratification, water temperature in the hypolimnion) had a big influence on the spatial and temporal development of anoxia.

This is an interesting and important study, which could be considered for publication after a minor revision. Although there are quite a few studies analyzing hypolimnetic anoxia for inland waters, most of them draw their conclusion based on the short-term measurements and there is still a need to comprehensively illustrate this phenomenon and mechanisms behind its formation based on long-term database. Based on this prospective, this research fills in a research gap. In my opinion, this paper is well organized and its content, especially the discussion part will improve our understanding about anoxia and its future development under climate warming. Detailed comments are shown below.

Detailed comments:

2.1 Study Site: It is better to show a topographic map of this lake, as well as the location for the water quality measurements.

L 115: 1.How you calibrated the hydrological model?

2. From I know for the historical simulation, the inflow discharge is always drawn from the real measurements, instead of hydrological models. Do you have the measured inflow discharge for Lake Mendota?

L 125: How many types of nutrients were included here as the inflow boundary conditions? It is better clarify it here.

L 133: I am not sure whether it is appropriate to define the inflow loading as the mean values from the water column. It means that there is no seasonal changes of DIC and silica, which is unrealistic. Could you explain why you set the inflow DIC and silica in this way?

2.3 Modelling Framework: Just a recommendation, it may be better to combine 2.3 to 2.7 into one part, since all of such content belongs to the model description.

L 198: For water temperature simulation, I supposed the most important parameters should be wind factor and light extinction coefficient. How you defined these two in the model?

L 293: How you calculated GPP? It is better to clarify it here.

L 333: There existed some negative values for Birgean Work in Figure 5, what is the reason for that?

L 371: In Figure 9B, why was the simulated AF represented by dots, instead of box plots as the measured one?

Yours sincerely

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