Point to Point Response

Issue 1: " I think it would have been great and logic to add one more step having the most realistic scenario for lake Qilin: a free boundary, firn layer and sediment bed. That would create seismograms you can expect to find doing a seismic survey over the lake."

Response: Thank you for this thoughtful suggestion. We agree that incorporating a more realistic model—including a free surface, firn layer, and sediment bed—would better reflect what to expect in real surveys over Lake Qilin. In the revised version, we plan to add such a model as an additional simulation step to generate more representative seismograms and better illustrate the expected wavefield characteristics in an actual survey.

Issue 2: My main concern are the conclusions as to what active seismic method is most effective to survey a subglacial lake. These are based on the modeled synthetic data sets and especially the workload definition seems hypothetical. Although these synthetic datasets offer clear insights as to fold, nr of shots, offset ranges and equipment needed, they ignore the reality of field work.

Response: Thank you for highlighting this important concern. We agree that evaluating workload solely from the perspective of acquisition geometry, geophone numbers, and movement frequency is overly simplified. This aspect of our analysis dose resemble a "desk-based exercise"… In reality, assessing and comparing the workload of different seismic acquisition strategies in Antarctica is very challenging due to the many interrelated factors involved—personnel, weather constraints, and transport capacity, among others. A rigorous quantitative comparison would require far more detailed operational data than we currently have. Therefore, in the revised version, we plan to include a summary of existing Antarctic seismic acquisition practices, focusing on a more objective description of the logistical characteristics of each method (e.g., equipment setup, personnel requirements, duration). This should provide a clearer context for readers without over-interpreting our modeling results.

We also sincerely thank you for recommending relevant papers—these are very helpful, and we will read them carefully and integrate key insights into the revised manuscript.

Issue 3: The figures of the models are generally good and need but sometimes need a better description and more information. Especially the captions seem somewhat hastily formulated with minimal information. This caused me to puzzle as to what is actually been shown.

Response: Thank you for pointing this out. In addition to some figures lacking a colorbar and having unclear captions, we also recognize that the rationale behind key model parameter choices—such as ice thickness, lake water depth, and seismic velocities of ice and bedrock—was not sufficiently explained. This is indeed a critical omission, as such details are essential in a scientific study. In the revised version, we will provide clear justifications for all model parameters and improve figure annotations to ensure greater clarity and rigor.

Issue 4: The figures presenting the field data need better resolution. Also here the captions must be improved.

Response: Thank you for the suggestion. We will improve the resolution of the field data figures and revise the captions to make them clearer and more informative. Additionally, we plan to include processing results from publicly available subglacial lake datasets in the revised paper.

Issue 5: I attach the manuscript with my specific comments.

Response: Thank you very much for your detailed comments and for attaching the annotated manuscript. We truly appreciate the time and effort you've taken to provide such constructive feedback. We will carefully address each of your specific suggestions and incorporate them into the revised version of the paper.