# Point-to-point actions in response to Anonymous Referee #2

Manuscript #: essd-2025-671

We sincerely thank the Referee #2 for their thoughtful and constructive comments. We have revised the manuscript accordingly. The detailed point-by-point responses are provided below (blue), and the corresponding revisions in the manuscript are marked in red.

## Response to the Reviewer 2:

The study fully leverages the physical mechanisms underlying passive remote sensing of water salinity and the high spatial resolution advantages of optical remote sensing, enabling salinity estimation for inland lakes across China. The lake salinity dataset provided by the research is highly valuable for monitoring biogeochemical processes within lake ecosystems. The manuscript is clearly structured, but a few minor issues still require revision. It could be considered for publication after these revisions are made. These small issues are as follows:

**Reply:** We are very thankful to the reviewer 2, and we appreciate their suggestions and valuable and positive comments for improving the manuscript! We have addressed to all comments to improve the quality of this manuscript.

1) Line 90: The citation order of the figures jumps from Fig. 1 directly to Fig. 10. You may need to move Fig. 10 to the position of Fig. 2, or remove the citation of Figure 10 at this point.

**Reply:** Thank you for your pointing this out. We have removed the inappropriate citation of Figure 10.

**(Page 3, lines 88-89)** "Notably, some years are missing data for Lake Hulun and Lake Juyan due to insufficient SAR imagery or multi-source data matching pairs."

2) Please move the word "Catchment" in Table 1 onto a single line to ensure the integrity of the term.

**Reply:** Thank you for your professional suggestions. We have revised it.

**(Page 4, lines 91-92)** "

Table 1

| Lake name | Coordinates | Catchment area ($km^2$) | Hydrological connectivity | Date | Samples number | Dominant ions |
|---|---|---|---|---|---|---|

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3) The section number 2.5 seems it should be changed to 2.6.

**Reply:** Thank you for your pointing this out! We have corrected the error and rechecked all serial numbers.

**(Page 8, lines 174)** "2.6 Construction of salinity model"

4) In the caption of Figure 3, please remove the comma ',' after "RMSE = 0.82 ppt".

**Reply:** Thank you for your pointing this out! We have revised it.

**(Page 14, lines 298-300)** "Figure 1: (a)-(i) Scatter plots of 30% test data (N = 84) for XGB ($R^2$ = 0.98 and RMSE = 0.58 ppt), RFR ($R^2$ = 0.97 and RMSE = 0.87 ppt), DNN ($R^2$ = 0.97 and RMSE = 0.82 ppt), CNN ($R^2$ = 0.98 and RMSE = 0.79 ppt), and stacking model ($R^2$ = 0.98 and RMSE = 0.60 ppt)"

5) Line 443: Should the square brackets be changed to parentheses?

**Reply:** Thank you for your professional comments. We have made the modification, replacing square brackets with parentheses.

**(Page 27, lines 445-446)** "The K&S model was designed for seawater, and its application to complex ionic lakes (e.g., Lake Chagannaoer) introduces about 5% uncertainty (Figure6 (f7))."