Summary:

This paper proposes a method to reconstruct the water level–storage (WLS) relationship of reservoirs by estimating storage capacity loss due to sediment accumulation. The method is applied to a cascade of nine reservoirs along China's Wujiang River, and the reconstructed WLS curves are validated using water balance analysis and DEM-based surface data. Overall, the framework presented in this study provides useful insights and offers practical value for reservoir management to a certain extent. However, the manuscript would benefit from further refinement to improve its clarity, logical flow, and rigor before it can be considered for publication. In particular, some sections of the paper would benefit from a smoother transition between sentences and a clearer presentation of the methodology and results. Below, I outline specific comments and suggestions for the authors' consideration.

Major Comments:

1. I recommend that the authors consider adjusting or restructuring the paragraphs in the Introduction section. The logical flow and overall storyline of the Introduction are currently not entirely smooth. For example, the authors state that "Estimating the storage capacity loss induced by sediment accumulation and reconstructing the WLS curve provides a new direction for the second category of methods," but no clear background or justification is provided to connect this statement with the earlier discussion. Prior sentences only mention that sediment accumulation leads to reservoir storage loss, without adequately building the context for why reconstructing the WLS curve becomes a new methodological direction. Additional examples of logical inconsistencies are noted in my minor comments section.

2. I suggest that the authors add appropriate references throughout the manuscript, particularly when providing background information in the Study Area and Data section (e.g., indicating the sources of the data) and in the Methodology section. Providing references would enhance the transparency and credibility of the study. In addition, it would be helpful if the authors could clarify the rationale behind the selection of the study area and the specific reservoirs.

3. For Equations (1) and (2), the authors make certain assumptions to simplify the derivation. Given that the loss rate (LR) is a key indicator in this manuscript, I suggest that the authors provide more detailed explanations of these assumptions for the benefit of the readers. In particular, it would be helpful to clarify why these assumptions were made, how they affect the methodology, and whether there are existing references that support or justify them.

4. I suggest that the authors consider creating a table listing all abbreviations used throughout the manuscript for easier reference. Additionally, while the abbreviations for each reservoir are defined and used in the figures and text, the writing in Section 4.1 inconsistently switches between full names and abbreviations. For consistency and to improve readability, I recommend using the reservoir abbreviations throughout the text, especially since the figures present the abbreviations as well.

5. The discussion section should be strengthened and expanded. Specifically, the authors could provide a more detailed comparison of their WLS curve reconstruction method with other existing approaches. Additionally, the current discussion (Lines 491–499) may not be sufficient to fully demonstrate the reasonableness of the reconstructed WLS curves. I encourage the authors to elaborate further on the topic of "Reasonableness and uncertainty in reconstructed reservoir WLS curves".

6. Could the authors elaborate on the potential policy implications of this study? How can decision-makers apply these findings to real-world water resource management?

Minor Comments:

1. Lines 60 – 63; and 69: Please add appropriate references.

2. Lines 102 – 105: Consider rewriting these sentences for clarity, as the meaning feels vague based on the previous paragraph. In the earlier paragraph, the authors mention that the first method involves topographic surveys to estimate reservoir storage capacity. However, these lines suggest that most reservoirs have not yet conducted storage capacity estimations. Please clarify — do you mean that most methods have not directly estimated storage capacity?

3. Lines 114 - 116: Please add appropriate references.

4. Lines 116 - 118: The logical flow is not smooth; no prior background about flood regulation has been introduced. Please consider revising for better connection and clarity.

5. Line 133: What is meant by “flood prevention operation”? Is this intended to mean "flood control operation"? Please clarify.

6. Line 151: A period is missing after “Fig. 1.”

8. Line 171 and Figure 1: Should “GLT” be corrected to “GLQ”? Please double-check.

7. Line 223: Again, a supporting reference is needed here.

8. Lines 239 – 240: Please ensure the formatting of symbols is consistent with the rest of the manuscript.

9. Line 270: Please specify a unit for “V_{rain}.”

10. The symbol "i" is used with different meanings across equations. Please consider using distinct symbols to avoid confusion and ensure consistency.

11. Line 311: "Figure. 3" should be corrected to "Fig. 3." Please ensure consistent formatting of figure references throughout the manuscript.

12. line 411: “Section 3.2” should be “Section 4.2” ?

13. Line 487: Please add a space before "On the other..."

14. Lines 507 – 509: Please double-check these sentences for accuracy and consider rewriting them for clarity.