Soil salinization in inland river basins of arid zones, driven by improper water resource use, significantly impacts agriculture and ecology. This study examines soil salinity changes in the Shiyang River Basin (2002–2022) using remote sensing and observational data, focusing on the effects of water conservancy projects, irrigation, and climate change. Key findings include: (1) a general increase in salinized areas and worsening salinization, (2) severe salinization in the lower reaches compared to the middle and upper reaches, and (3) human activities, such as rising groundwater levels near reservoirs, agricultural irrigation, and downstream water conveyance, as major contributors to salinization. Effective water resource management holds significant potential to mitigate soil salinization.

While these findings offer valuable insights for future research on soil salinity and its potential links to anthropogenic activities, the conclusions drawn in the study appear insufficiently justified. The analysis would benefit from quantitative work to more robustly support the claims about the role of human activities in salinization. Therefore, I suggest a moderate revision, incorporating a statistical approach to further strengthen the connection between human activities and the observed salinization trends before final conclusions are made. This would enhance the study's credibility and suitability for publication in the journal.

General comment:

One of the key conclusions of the study is that human activities have become a decisive factor in altering the salinization patterns of inland river basins. While this finding is significant, the evidence presented—namely, a simple comparison between irrigation areas and the regional distribution of soil salinization—does not provide sufficient support for such a conclusion. A more rigorous statistical approach is necessary to quantitatively assess the impact of human activities on salinization. For example, a time series analysis comparing the number of water conservancy projects constructed in the basin over the last decade with trends in soil salinization could offer stronger evidence. Similarly, comparing irrigation levels with salinization trends in a statistical manner would help substantiate the argument that increasing salinization is primarily driven by human activities, rather than being solely attributed to natural climate changes over the past decade. This more thorough analysis would significantly strengthen the study's conclusions.

Specific comments:

#1
The "Background Conditions of the Study Area" section would benefit from additional climate information. Providing more detailed climate data in a numeric way, such as temperature, precipitation patterns, and seasonal variations, would offer a clearer understanding of the environmental context of the study area.

#2
For better clarity, I recommend consolidating all data sources into a single comprehensive table. This will provide a more transparent overview of the data leveraged in the study and allow readers to easily assess the different datasets used.

#3
In the discussion section, it would be helpful to include a more thorough examination of the potential limitations of the study. Discussing factors such as data constraints, assumptions, or other uncertainties would strengthen the study's credibility and provide a balanced perspective.

#4
Please specify the country in which the study sites are located. This information is essential for providing geographical context to the research and enhancing its clarity for readers.

#5
In the discussion section, please clarify or justify whether the study region can be considered representative of typical inland river basins. This will help contextualize the findings.