

Dear anonymous referee,

Thank you very much for your valuable comments and constructive suggestions. Having carefully reviewed your feedback, we have gained significant insights and benefited greatly. We believe that revising according to your suggestions will greatly enhance the quality of our study.

For example, after careful consideration, we have revised ambiguous directional terms, such as replacing "Northwest China (NWAR)" with "Shaanxi and Gansu Provinces in the Qing Dynasty (abbreviated as SG)" in the study area description. Corresponding revisions have also been made in the title, abstract, and throughout the manuscript. Furthermore, we have added content on the climatic and agricultural characteristics of Northwest China, clarified the different levels of drought severity across counties based on the varying intensity of government relief measures, and provided quantitative evidence of the success of response measures by showing that the grain harvest scores in 1760 and 1761 recovered to bumper levels.

It is an honor for us to receive your review and guidance. The following are detailed point-by-point modifications made, with all changes already incorporated into the original manuscript. Once again, thank you for your review and feedback!

**Anonymous referee, 24 Feb 2026**

***Title: The spatial scope is unclear. The title says "Northwest China," but the study covers Shanxi and Zhili (North China) while excluding Xinjiang (Northwest China). So the word "Northwest China" in title is inappropriate.***

A: Thank you for your comment. Upon careful consideration, we acknowledge that the study area is located in the eastern part of Northwest China, which lies in the northwestern margin of the traditional Central Plains agricultural zone. However, describing this area involves three cardinal directions ("west", "north", and "east"), making it relatively complex. Moreover, because the natural geographical distribution of drought often does not follow human administrative boundaries, our study area necessarily extends to provinces beyond Northwest China, such as Shaanxi, Zhili, and Henan, in order to reconstruct the natural extent of the drought. For these reasons, the description of the study area in the original manuscript may cause confusion to readers. After careful consideration, we have replaced the previously used "Northwest Agricultural Region of China (NWAR)" with a more intuitive designation: Shaanxi and Gansu Provinces in the Qing Dynasty, abbreviated as SG.

***Section 2.1 Study Area: Considering that the follow analysis is basically based on agricultural harvest conditions and rainy season in North China, it would be helpful to add brief background on local farming systems and rainy season patterns. This helps readers understand how drought timing affected crops.***

A: Thank you for your comment. We have accepted the comment and added the following text to Section 2.1: "Located in the monsoon tail region, the SG area is far from the sea and thus generally

dry, especially north of the Qinling Mountains, where most of Qinghai–Gansu received less than 400 mm of precipitation (Ding, 2010). Precipitation in SG is concentrated in the warm half of the year, which broadly coincides with the growing period of autumn-harvested crops. Winters are cold and dry with scarce precipitation. However, due to interannual variations in the monsoon, a deficit in summer rainfall can lead to drought events that reduce crop yields (Ge, 2011)."

Ding Y.: *Climate of China*, Science Press, Beijing, 307, 2013.

Ge Q.: *Climate change across Chinese dynasties*. Science Press, Beijing, 543-559, 2011.

### ***Section 3.2 (Drought Patterns)***

***Lines 209–214: The discussion of disaster severity within the region is necessary, but the current approach (e.g., criteria for drought level classification) lacks specific technical details. Please add more details.***

A: Thank you for your comment. We have accepted the comment and added sentences regarding the disaster severity in historical documents as follows: "In the RQD, the differences in tax exemption and grain relief efforts across drought-affected areas allow us to distinguish counties with different levels of drought severity. For example, within a region suffering crop failure due to drought: for counties less severely affected, a policy of postponing tax collection for half a year to one year was adopted; for counties severely affected, tax exemption for half a year to one year was implemented; for the most severely affected counties, in addition to a one-year tax exemption, disaster relief grain was provided to the victims for three to four months, in order to sustain their lives and enable them to maintain the capacity for continued agricultural production."

***Line 238: "This confirms the RQD's records..." Do the RQD also include materials from the Qing Dynasty's harvest recording system? Can we say that the harvest record "confirms" RQD records? Or "the harvest record is consistent with RQD records" is more appropriate?***

A: Comment accepted. The above-mentioned mistake has been corrected as suggested.

***Section 4 Discussion: In addition to the current discussion, could the analysis be expanded from the following perspectives?***

***Analyzing the reliability of the current research methodology and data. The paper uses 8 NWAR sites and 26 adjacent sites, but Figure 2 shows uneven distribution of these sites. There are few sites in the western part of Gansu Province. Will this uneven distribution affect the reconstruction results? Additionally, the systematic bias of historical records can also be taken into consideration. As an official document, the RQD may have tendencies to "report good news but not bad news" or "conceal disaster conditions". One suggestion is to add discussion on the limitations of historical materials and how to identify and handle possible missing records, or add a cross-validation with local documents (prefecture and county chronicles).***

***Examining this event from a broader spatial perspective. For example, supplementing the discussion with possible climatic driving mechanisms of the 1759 drought would help place the case study within the framework of global climate change.***

***Deepening the quantitative assessment of social response mechanisms. The paper currently lists detailed measures such as tax exemptions, grain transfers, and work-relief programs, but lacks quantitative analysis of the actual effectiveness of these measures. Therefore, when comparing response differences between cases, there is a lack of common quantifiable discourse for comparison.***

***Given the length limitations of the paper, selecting one of these points for discussion would be sufficient.***

A: Thank you for your comment. We have accepted the comment and added quantitative data on social relief after the 1759 disaster in Section 4.3 as follows: "After the 1759 disaster, a series of response measures—such as lending cattle to disaster-affected farmers to reclaim more land, exempting grain taxes, and distributing grain to victims to ensure the agricultural labor force for the following year—enabled a full recovery of agricultural yields in the affected areas in 1760 and 1761. For example, the grain harvest score in 1760 reached 7.53, which was 2.36 points higher than the 5.17 points in 1759. In 1761, the score reached as high as 8.19, representing a bumper harvest year with a score above 8."

***The bold formatting in the caption of Figure 1 needs to be consistent.***

A: Thank you for pointing out this error. We have corrected the citation.

***What does "Disaster relief" mean in the last row of Table 1? It does not seem to match the subsequent descriptions?***

A: Thank you for pointing out this error. The above-mentioned mistake has been corrected as "Termination of the drought disaster".

***What does "the province" refer to in Line 183?***

A: Thank you for pointing out this error. The above-mentioned mistake has been corrected as "Shaanxi Province".

***The use of "NAR" in Line 193 is inaccurate because the areas such as Yulin mentioned later do not fall within this region. Similarly, "NWAR" in Line 203 is also inappropriate, as Shanxi mentioned in the previous text does not belong to this region.***

A: Thank you for pointing out this error. The above-mentioned mistakes have been corrected as "However, the drought conditions in the whole NAR continued" and "the severe drought from late spring to the midsummer caused irreversible damage to crop growth and caused the low grain harvest in the whole NAR this year".