Dear Editor,

Thank you very much for providing us the opportunity to address reviewer 3's comments on our paper. We have thoroughly revised the manuscript according to these comments and suggestions. Enclosed please find the revised manuscript and the responses to the referees, including a list of changes.

We hope that these revisions have improved our manuscript to make it suitable for publication in the *Earth System Science Data*. If you have any questions or concerns about this paper, please don't hesitate to let me know. We look forward to hearing from you soon.

Sincerely yours,

Xiaoqing Peng and Guangshang Yang

The summary of the changes and responses to the referees' comments are listed below. The page, line, and figure numbers refer to our revised manuscript. The changes have been indicated in the paper using blue font.

Anonymous Referee #3：

Please add the year of the number of HT features in the abstract and conclusion, since it changed with time. Also, please add some content to explain how this dataset might be used by other researchers.

AC: Thank you very much for your suggestions. In the revised manuscript, we have added explanations regarding the number of HT features in different years in the Abstract and Conclusion sections, specifically in lines 29-32: "We further identified that 187 HT features (18%) existed before 2010, while the remaining 874 (82%) were initiated in the recent period. More specifically, 392 sites (37%) were initiated during 2010–2015, and 482 (45%) after 2015," and lines 432-435: "Based on long-term satellite imagery, 874 new HT features were initiated after 2010, accounting for 82% of all HT features. Of these, 392 and 482 were initiated during the periods of 2010–2015 and after 2015, respectively."

Additionally, on lines 38-39 and 437-444 of the updated manuscript, we have included the following: "…such as automated extraction of HT features, susceptibility analysis of HT, and estimating losses caused by HT," and "This first HT inventory for the Qilian Mountains will be fundamental for quantitative assessments that explore the exact causes and underlying thermokarst processes, providing observational data support for automated extraction of HT features, and ultimately enhance the identification and prediction of regions prone to thermokarst processes in the future.

Furthermore, it will facilitate the evaluation of local risk levels, potential economic losses, population casualties, and other impacts, thereby furnishing governmental decision-makers and relevant stakeholders with essential reference materials for mitigating potential risks."

These additions are aimed at illustrating some potential applications and value of this dataset to the readers.