

General comments:

The manuscript titled "Dataset of Stable Isotopes of Precipitation in the Eurasian Continent" (essd-2023-384) effectively compiles stable isotope data from various sources across the Eurasian continent. The data amassed by the authors' research group is notably unique and invaluable. They have meticulously analyzed the meteorological factors that influence stable isotopes in precipitation, considering the diverse climatic conditions across the Eurasian continent. After a thorough review of the data, I am convinced that the quality control measures for the stable isotope data are stringent, rendering it the most comprehensive dataset of its kind globally. The release of this dataset promises to significantly advance research in hydrology and meteorology, particularly concerning stable isotopes in precipitation. I also commend the manuscript for its clear structure and articulate writing style, and I wholeheartedly endorse its publication.

Nevertheless, there are certain aspects that require attention prior to publication. Specifically, the manuscript would benefit from a more detailed explanation of the mechanisms governing the spatial distribution of isotopes. Additionally, the presentation and argumentation within the manuscript could be further refined. Thus, I recommend that the article be considered for publication once these issues are addressed.

Major comments:

1. In the introductory section, the authors address the determinants of stable isotopes in precipitation and their relevance in various domains. However, some arguments lack comprehensiveness and should be meticulously revised and expanded to enhance clarity and thoroughness.

2. In the results and discussion section, the depiction of the connections between meteorological variables and stable isotopes in precipitation could be more precise. Numerous elements affect stable isotopes in precipitation, including water vapour transport, phase transitions of water, and evaporation beneath cloud cover. These elements are reflected in broad-scale atmospheric circulation and local geographical

disparities. It is crucial to avoid overly simplifying the impact of individual factors. For instance, in line 268, the discussion is limited to the effect of temperature on stable isotopes in precipitation, which is inadequate.

Specific comments:

1. In line 35, the reference to "State of the Climate in Asia 2022" is mentioned. It is important to provide specific citations for this reference in the subsequent text.
2. In lines 54-55, the phrase "spatial 'elevation' and 'latitude' effects" should be revised to "elevation effects".
3. In lines 85-88, it is indeed true that observed data are generally more precise than model validations. However, the role of models should not be overlooked, especially on a global scale. It is important to express this in a balanced and reasonable manner.
4. In line 144, for referencing the data, the citation link should be placed after "Water Isotope Network" for better clarity and organization.
5. In line 180, it is suggested to include the assessment of normality distribution for the data, along with the various statistical tests conducted. This will provide a more comprehensive analysis of the dataset.
6. In lines 189-190, it is mentioned that abnormal values were detected in the data. How were these abnormal values handled?
7. In section 4.1, there is a further discussion on the role of extreme stable isotopes of precipitation. It is suggested to consider adding additional content for discussion.
8. In line 209, it is stated that there is an increase in extreme events in the Eurasian continent. It is recommended to include supporting literature references for this argument.
9. In section 4.2, there are several abbreviations for climate types used in the figures to convey important information concisely and effectively. It is suggested to use the full names of the climate types in the text of the article to enhance the readers' understanding of the content.
10. In line 240, the sentence "The substantial reduction..." is incomplete and should be

clarified for better expression.

11. In line 254, when referring to the Köppen climate classification, it is recommended to cite the original references that established this classification system.
12. In line 286, how should we interpret the phrase "more stable pattern"?
13. In line 286, it is suggested to clearly state the range of the influence of atmospheric circulation and oceanic moisture on stable isotopes of precipitation in different regions of the Eurasian continent, as reflected in the data. This will help strengthen the argument and make it more comprehensive.
14. In section 4.3, it is stated that regional differences in stable isotopes of precipitation are attributed to regional differences in meteorological factors. The examples cited from the three references should be elaborated on in detail, specifically relating them to the content of this article.
15. In line 301, the term "Asia and Europe" is used to refer to the Eurasian continent in the title. It is recommended to use consistent professional terminology throughout the entire text.
16. In line 314, how should we interpret the phrase "the resampling process of"? It should be further explained.
17. It is recommended that the author provide more detailed definitions and descriptions for complex concepts and processes in order to help readers better understand them.
18. In the introduction, the article mentions the future application contributions of the dataset. It is suggested to explicitly state these potential scientific application contributions in the discussion section. This will help enhance the impact of your paper.
19. In Figure 6, "H" and "O" are used to represent variables instead of directly using " $\delta^2\text{H}$ " and " $\delta^{18}\text{O}$ ". It is recommended to use the more specific notation of " $\delta^2\text{H}$ " and " $\delta^{18}\text{O}$ " to avoid confusion and ensure clarity in representing the variables.
20. In Figure 8, the representation of the isotope is given as " ^{18}O " instead of " $\delta^{18}\text{O}$ ". It is advisable to clearly indicate the notation as " $\delta^{18}\text{O}$ " to avoid any misinterpretation by the readers.