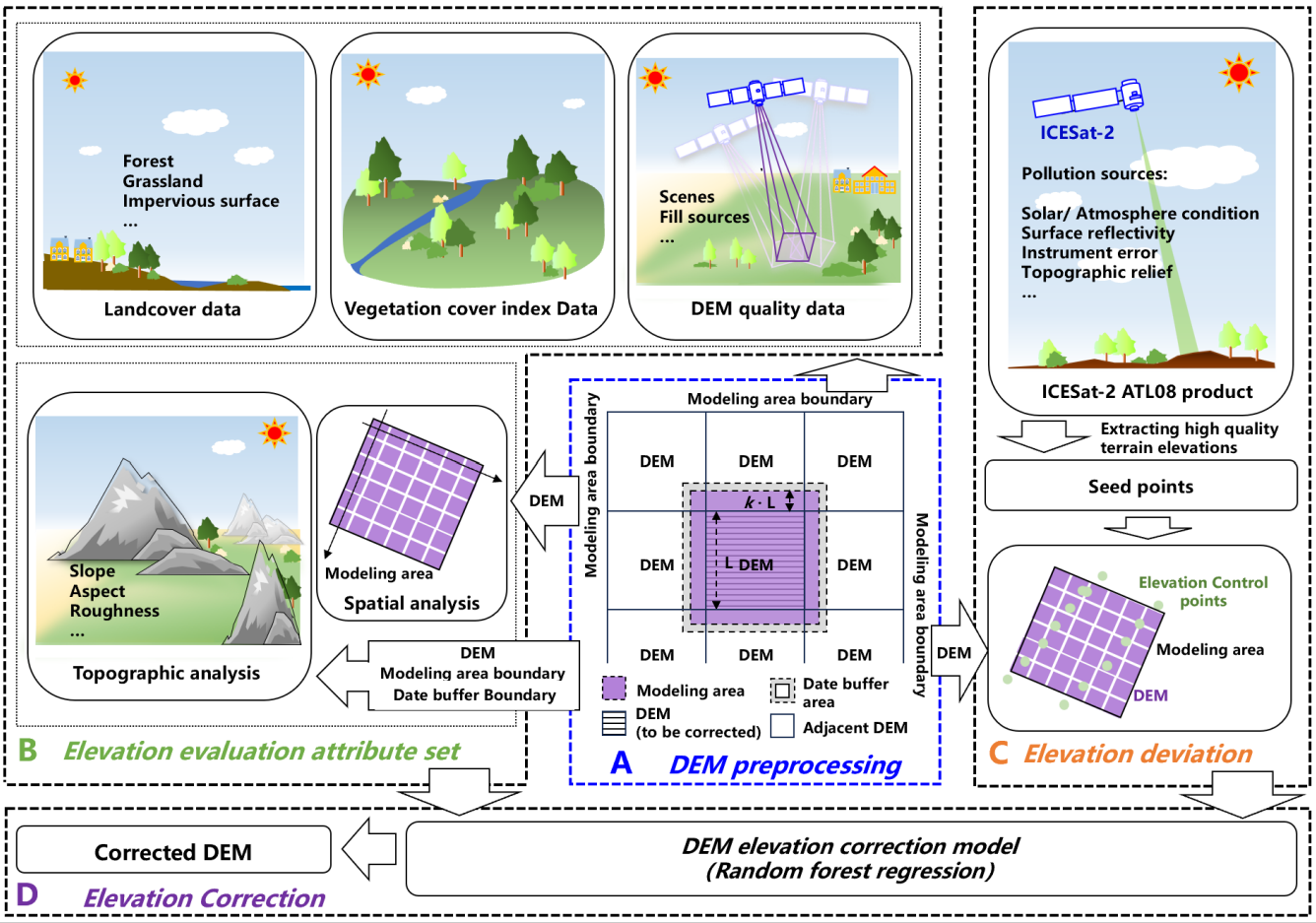
Reviewers Comments:

The paper is well written, and I have only a few minor suggestions:
Thank you for your affirmation about our research and paper.

1) **In section 3.4 (GDEM Elevation Correction), the part on random forest regression could be expanded with more details, such as parameter selection, and supported by additional references. Additionally, I couldn't find the random forest in Figure 3, which raises some curiosity about its role in the overall correction process.**

Response:
Thank you for your suggestion. We have revised some descriptions to present more details about random forest regression. Meanwhile, we have revised the Fig. 3.



In the Section 3.4,
"*The random forest regression function (fitrensemble) of the MATLAB platform was directly used for its processing efficiency and compatibility, and its recommended/default setting values (including the number of trees was 100, etc.) were adopted.*"
has been revised to

"*The random forest regression function (fitrensemble) of the MATLAB platform was directly used for its processing efficiency and compatibility. The function can be viewed and downloaded via https://ww2.mathworks.cn/help/stats/fitrensemble.html. The method of function was selected to bootstrap aggregation (bagging, random forest) (Breiman, 2001). For this method, we adopted the recommended/default setting values for the parameter selection, including the tree number (100), learners (tree), etc.*"

Breiman, L.: Random Forests, Machine Learning, 45, 5-32, 10.1023/A:1010933404324, 2001.

2) In section 4.1 or the abstract, it would be helpful to include more specific details about the new data, such as the spatial and temporal resolution. You might also consider creating a table summarizing the characteristics of the input and output data to allow users to quickly reference these features.

Response:
Thank you for your suggestion. Maybe our description was not detailed and clear enough. We have added more specific details about the new data.

In the Section 4.1,
After "*Based on the presented scheme, we corrected the ASTER GDEM elevation with ICESat-2 altimeter data and then stored the corrected ASTER GDEM product (IC2-GDEM) in the GeoTIFF format (.tif) with the same projection and datum as the ASTER GDEM (Xie et al., 2024).*",
"*The resolution of IC2-GDEM is about 30 m (grid). The survey date of its main source data is between 2000-2013, and its elevation correction source is from ICESat-2 laser altimeter data with the survey date from 2018-2022. More details about the data source of the IC2-GDEM are listed in Table 2.*"
has been added

Table 2 Characteristics of input and output data

Data Type	***Data name***	***Resolution***	***Description***
DEM data	*ASTER GDEM V3*	*~30 m (grid)*	*Input data, main source data, survey date: 2000 - 2013*
Satellite laser altimeter data	*ICESat-2 ATL08*	*~100 m (along the ground track)*	*Input data, main source data, survey date: 2018 - 2022*
Landcover data	*FROM-GLC10*	*~10 m (grid)*	*Input data, auxiliary data, survey date: 2017*
Vegetation cover index data	*GFCC30TC*	*~30 m (grid)*	*Input data, auxiliary data, survey date: 2015*
DEM data	*IC2-GDEM*	*~30 m (grid)*	*Output data*

3) **The discussion in section 4 is somewhat limited, especially in sections 4.1 and 4.2, where it primarily presents results. It might be beneficial to discuss why the Corrected ASTER DEM Product showed greater improvement in Europe compared to other regions. Also, it seems there is no LDEM data for Asia and Africa, which could introduce uncertainties in validation—this could be worth discussing as well.**

Response:
Thank you for your suggestion. It's a beneficial discussion for our study and paper. We have added the related discussion.

In the Section 4.2,
After "*After the elevation correction, the errors of the ASTER GDEM elevation are reduced by more than 45%, and the maximum reduction ratio exceeds 70%.*"
has been revised to
"*There are two main reasons for this the inconsistency in elevation accuracy improvement among the different continents. The first is that there are significant differences in the quality of ASTER GDEMs across continents. The second is that the topographic relief and the landcovers across continents are different. These influencing factors are also the important evaluation attributes in the correction model of DEM elevation."*

In the Section 4.3,
After the 5th paragraph,
"The absence of LDEM data in Asia and Africa (difficult to obtain for free) is a noteworthy consideration. The lack of such data in these continents could introduce uncertainties, as the validation relies on the available LDEM data. To reduce the impact of these uncertainties, we also used the other satellite laser altimeter data with global coverage, i.e., ICESat altimeter data, as another source of the validation data in this study. The resolution and accuracy of the ICESat altimeter data may not match those of LDEM data. This means that the validation of finer topographic details in Asia and Africa may not fully account. Despite this gap, the similar validation accuracy between the two data is advantageous, particularly given the average reduction ratios close to 47%. This similarity suggests that ICESat altimeter data can serve as a reliable alternative and a beneficial supplement for areas lacking LDEM data."
has been added.