

This study combines multi-source remote sensing data with residual neural networks (ResNets) to develop the first 30 m resolution annual China Forest AGB dataset (1985–2023) with uncertainty quantification. It's a long-term series of AGB data, which is of great significance for estimating forest carbon sink in China.

Comments:

1. Introduction

- The first three paragraphs need to be condensed.
- Line 90–100, It is best to compare the advantages and disadvantages of the existing data. eg: Have you compared international time series data, such as the AGB data of the European Space Agency, etc.
- Why did you choose the ResNet-based deep learning algorithm? You should make it clear, because this is your core technical approach.

2. Methodology & Data

- The GEDI AGBD samples are between 2019 to 2021, and field survey data across China is from the 1990s to the 2010s. How did you deal with the gap in time.
- Given that GEDI data has only been available since 2019, how to ensure the model's predictive ability for the early years (1985–2018) requires a more detailed explanation.

3. Results

- **Spatial pattern of forest AGB:** Figure 6 shows the spatial pattern of AGB in 2023, but it lacks corresponding diagrams for earlier years (such as 1985), making it difficult to visually compare the changes. It is suggested to supplement the AGB distribution map of key years.
- **Trends in AGBD/AGC:** Critique the reported increase in AGBD (95.74 to 122.69 Mg/ha) and AGC stock (5.50 to 13.97 PgC). Are these trends plausible given China's afforestation efforts?
- **Drivers of Change:** Evaluate the partitioning of AGC growth (65.1% forest growth vs. 34.9% expansion). Are these proportions supported by ancillary data (e.g., land-use maps)?

4. Discussion

- You compared trends of different datasets, your data has a long time series, is there more accurate for every year? I think you'd better use field data to verify.
- Although the comparison with GEDI data showed a smaller deviation (0.06 Mg/ha), the comparison with ground survey data showed a larger negative deviation (-19.87 Mg/ha), especially in the tropical rainforest area (-68.57 Mg/ha). This systematic deviation requires more in-depth analysis and discussion.
- Although the paper discusses the influence of different canopy coverage thresholds on AGB estimation in lines 547–555, it does not quantitatively explain the degree of influence of using different thresholds (such as 10% vs. 20%) on the main conclusions of this study. It is suggested to add sensitivity analysis.