Review of Yang et al. (2025)

The manuscript by Yang et al. (2025) addresses an important issue in carbon emission reporting, namely the comparison of six different bottom-up inventories using China as a case study. Accurate quantification of CO_2 emissions is critical for developing effective mitigation policies. The authors' approach of including three global inventories and three local inventories makes the comparison meaningful and comprehensive. The manuscript is clearly written and was enjoyable to read. I have the following specific comments that require clarification before the manuscript can be considered for publication

Specific Comments:

Introduction section

I found the introduction engaging, but a few aspects could be elaborated further:

i. Please clarify why China was selected as the case study. Is it solely because China is the world's second largest emitter of CO_2, or also because it provides a unique combination of global and local inventories suitable for comparison? Additionally, given that many similar studies have already been conducted for China, does this choice facilitate comparison with existing literature? Please specify.

ii. The authors have summarized previous studies from China that compared a few inventories. What is the novelty of the present work? Is the use of updated versions of inventories the only advancement, or are there other new aspects? Please state this explicitly.

Result Section

Section 3.1

The authors state that differences among the emission inventories become more pronounced after 2012 and continue to diverge in recent years. However, the manuscript does not provide an explanation for this trend. It would greatly benefit the reader if the authors elaborated on the possible reasons for this divergence—for example, changes in activity data sources, revisions in statistical reporting, or methodological updates within specific inventories. Such context is essential to help readers better understand the evolution of Chinese emissions estimates over time.

Conclusion section

The conclusion could be strengthened by addressing the following points:

What is the main take-home message from this study?

Which inventory performs better overall for China?

Are certain inventories more reliable in high-emission regions versus low-emission regions?

Currently, these questions remain unanswered. I think including these aspects will be helpful for readers, providing them with clearer guidance and enhancing the practical value of the study.

Recommendation: This manuscript has the merit and it presents valuable data. However, it requires above minor revisions to be addressed before considered for the publication in Atmospheric Chemistry and Physics journal.