

## General comments:

This manuscript analyzes and compares six bottom-up inventories and assesses their uncertainty. This work compares different inventories from international and domestic teams, and it will be useful to the global stocktake and accurately assess China's CO<sub>2</sub> emissions. The topic is interesting and meaningful, but many statements and explanations in the manuscripts are not rigorous enough. I suggest more modifications and improvements before acceptance.

## Special comments:

- 1 Is it reasonable to use the mean and SD to assess the uncertainty of these emission inventories?
- 2 Activity data and emission factors are the two important factors that influence the emission inventory. I also suggest adding this important information to Table 1, although point, line, and area source proxies are listed.
- 3 Chinese government also reports national greenhouse gas emissions to the UNFCCC. I think it is better to compare the national CO<sub>2</sub> emissions between government-reported data and the six bottom-up inventory data mentioned in this study.
- 4 Line 168-174. Many studies report that China's emissions peaked in 2013 or 2014, so the first phase is better set as 2000-2013 or 2014. Also, the second phase is mainly due to the air control policy, besides the adjustment of energy and industrial structure.
- 5 Line 180-185. Although the global stocktake is held every five years, the stocktake assesses the achievement of NDCs of each country. Also, the baseline year of the Chinese 2020 and 2030 carbon reduction targets is 2005. I suggest the authors rewrite these sentences.
- 6 Figure 4. Point and line sources of CAMS originated from EDGAR (Table 1). Why is the line source information lost in Figure 4d, especially in western China? Furthermore, the map of means (Figure 4f), most of the line and area information was lost.
- 7 Figure 5c. Why are there some squares with high values in the west and northeast China?
- 8 Figure 7. Why is the CEADs province data nearly ten times higher than other inventories in Shanxi Province?
- 9 Figure 8. EAGAR and MEIC are the highest and lowest inventories for national CO<sub>2</sub> emissions, but these values varied at the provincial level. What are the key factors that affected these results? For example, CAMS had the highest values in Liaoning, Hubei provinces and Shanghai but the lowest in Hebei and Shandong provinces.
- 10 Figures S1&S2, Why do SD and CV for Hubei and Guangdong decrease sharply in 2023?
- 11 Table 1. Why can CAMS report the data in 2026 when it was published in 2023?
- 12 Line 104. What does "BP plc" mean?

13 Table S1. Please add a footnote for “1” mentioned in the transport sector.