The manuscript written by Qin and Xie presents the inventories of anthropogenic black carbon emissions in China for the period 1980–2009. Such data are very scarce and therefore the paper is helpful to understand its impacts on both climate change and air pollution. The method is basically correct and the interpretation of the data is sound. However, there are still some important issues that the authors should consider. A revision is needed for publishing in ACP. Detail comments are listed as below:

1. The authors have published another paper on black carbon emissions, that is, Qin and Xie 2011a. What is the major difference between the two papers?

2. Please provide the sectoral emission data for each province from 1980 to 2009.

3. 2.2Emission allocation: As a high resolution emission inventory, the geological information such as the locations of lakes and mountains shall be considered during emission allocation. This is very helpful for the improvement of air quality modeling performance. I would like to see that the authors improve their emission allocation results in the revised manuscript.

4. Line 12-13 on page 32884: "Emission factors for open burning of agricultural wastes were obtained from local experiments (Cao et al., 2007)"
   There are several studies on the emission factors of open burning of agricultural wastes in China, such as Li et al. (2007). I suggest the authors to thoroughly search the literature and include more local experimental data.

5. Line 16-17 on page 32885: "Emission factors for coal, residue and wood burning were from local measurements (Chen et al., 2005, 2006, 2009; Zhi et al., 2008, 2009; Shen et al., 2010)"
   Same as comments above, more local studies shall be included. The references shall also include Environ. Sci. Technol. 2009, 43, 6076–6081.

6. Line 7-9 on page 32886: "Assuming the use ratio and removal efficiency changed linearly from 1995 to 2020, annual EF in these sectors can be inferred by Eq. (6) (Qin and Xie, 2011a)."
   The use ratio and removal efficiency shall change according to the change of control policies and regulations such as emission standards. Therefore, I do not think the assumptions given by the authors here is appropriate. Besides, the emission estimates are for 1980-2009, why do the authors assume the use ratio changed linearly from 1995 to 2020?

7. Table 2 on page 32903: please give the references of the data in this table.

8. Table 5. Chinese application ratio and removal efficiency for various control devices in industry sector in 1995 and 2020.
   (1) What is "Powder-ESP"? I guess it shall be "Power-ESP".
   (2) Why do the authors use data in 1995 and 2020 to estimate emissions 1980-2009?

9. Table 6. Raw emission factors for black carbon in industry sector in China.
The authors only use data from Streets et al. (2001), Bond et al. (2004), and Bond et al. (2007). The Chinese data shall be included, such as Wang et al. (2009).

10. Table 7. Chinese application ratio and removal efficiency for various control devices in power generation sub-sector in 1995 and 2020.

(1) Same as comment 8, “Powder” shall be “power”.
(2) The use ratio of ESP was already 0.95 in 2008. Therefore, the use ratio of scrubber and cyclone shall be much lower than that given in Table 7.
(3) Why do the authors use data in 1995 and 2020 to estimate emissions 1980-2009?

11. Fig. 8: Please add the comparison with Lei (2008).

12. References on page 32889: the two references, Qin and Xie 2011a and Qin and Xie 2011, are same.

13. There are some other typos in the manuscript. Please correct them before submitting the revision.