

***Interactive comment on* “Source apportionment of black carbon aerosols from light absorption observation and source-oriented modeling: An implication in a coastal city in China” by Junjun Deng et al.**

Anonymous Referee #2

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The manuscript by Deng et al. compared the source contributions from observation and CMAQ based source apportionment. Results indicate that while the BC predictions by the chemical transport model is an accordance with observations, a difference in source contributions can be observed. Overall, the manuscript is well written and addresses pertinent issues related to BC sources in a coastal city of China. To my knowledge this is one of the few studies which compare BC source apportionment using a source oriented model and observation based data. Such studies are needed as they directly evaluate the emission inventory of a region, with which many analysis and

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action plans to reduce air pollution are formulated. Comments: 1) As the observation data was collected in a single location, how reasonable it is to compare the results with a model simulation of 36X36 Km. In other words, why was a finer domain not selected? At least the authors should discuss the influence of grid resolution on the performance. 2) How reasonable is it to take 500 m as the back trajectory height in all seasons? Shouldn't it be a function of mixing layer height? 3) More details about the cluster analysis carried out can be included. 4) From the CPF analysis, the potential sources to BC in different seasons can be identified, are they similar to the ones in emission inventory? 5) As the idea from back trajectory analysis is to qualitatively discuss local vs regional influence. It would be better if the main manuscript has only CWT and PSCF can be moved to supplementary. 6) What's the source of BC from a sea? Line 310 reads "The South China Sea were the main potential source for BC_{ff} and BC_{bb} during summer." 7) In Figure 9, the methodology used for source apportionment should be included in the title.

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