

Interactive comment on “A physical modeling approach for identification of source regions of primary and secondary air pollutants” by J. C. F. Lo et al.

Anonymous Referee #2

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General Comments: In this paper, the authors describe a simple modeling approach to compute impacts of emissions on the air quality in Hong Kong and the Pearl River Delta region, P.R. China. The paper is certainly interesting and the methods described are innovative and sophisticated. There are, however, some important weak points of this study, that are mentioned in the specific comments.

Specific comments: First of all, and most important, the paper lacks any comparison with real measurement data. At least the main conclusions need to be confirmed, at least qualitatively, with observations (dependence on weather pattern, differences between western and eastern region). Without this, I think the paper should not be pub-

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lished. Second, the method is simple and efficient, but it is not as efficient as it could be. In the given configuration (gridded emission inventory, only two receptor areas), the authors may also consider applying backward ensemble trajectory or backward dispersion modeling schemes, as, e.g., described by Seibert and Frank (ACP 4, 51-63, 2004), Stohl and colleagues (JGR 108 (D12), 4370, 2003) and Wotawa and colleagues (GRL 33, L12806, 2006); the latter work even showing how a gridded emission inventory can be folded with the backtracking results to obtain observed concentrations at a receptor. Third, I think that the computational domain is large enough to utilize wind analysis data available from most state-of-the-art NWP models, which would allow obtaining some real transport climatology compared with the two simplified case studies. Finally, it may be helpful if a native speaker would go through the paper, since the English is, in some parts of the MS, not of sufficient quality.

The emission part of the paper seems to be correct and sophisticated, but this referee is no emission specialist.

Technical Comments: None; there is, as mentioned, a number of typos

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