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Interactive comment on “Spatial and temporal variability of sources of ambient fine particular matter (PM_{2.5}) in California” by S. Hasheminassab et al.

Anonymous Referee #1

Received and published: 12 September 2014

This manuscript described the spatial and temporal variability of sources of ambient PM_{2.5} in California. It is a nice summary about PM source apportionment using a comprehensive dataset collected at multiple ambient monitoring stations across the state. The results will provide useful information for future epidemiological studies and help us improve the current understanding of the relationship between PM sources and health effects. The publication in Atmospheric Chemistry and Physics is recommended after the following comments are addressed.

1. On page 20048, the authors state that previous studies are impacted by the limited number of sampling locations and short measurement periods. The readers may not

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know the background information about those studies. Could you please select 2 or 3 out of 10 papers cited here and briefly describe their limitations? How do they compare to your data (8 sites and 6 years)?

2. Did you run the PMF model separately for 8 sites? Or you used all daily-averaged data in one input file for the PMF model? Please clarify.

3. On page 20050, the authors state that PMF analyses were conducted by a larger dataset between 2002 and 2013 for LA and Rubidoux, but average source contributions between 2002 and 2007 were calculated. Did you use any data between 2008 and 2013 for LA and Rubidoux in the input file when running the PMF model? If so, does that affect the PMF results as the measurement period is not consistent among different sites? Also, the PM sampling interval varies across 8 sites (every third day versus every sixth day). How did you prepare the concentration and uncertainty profiles in terms of data structure alignment? Did you use any values to replace those missing data points caused by different measurement period and sampling interval? Blank cells are not accepted by EPA PMF model 3.0.

4. On page 20051, could you please describe where PM filter weighing and chemical analysis were conducted? By EPA staff? On-site? Or samples were transported to other laboratories?

In addition to the comments mentioned above, the following changes in the manuscript are suggested.

Page 20046 Line 2: dp → subscript p

Page 20048 Line 29: replace CAL EPA with Cal EPA (to be consistent with the abbreviation used in acknowledgements)

Page 20050 Line 7: remove (SoCAB) as it is not used in the following sections

Page 20050 Line 8: LA should be defined when Los Angeles appears for the first time

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Page 20051 Line 13: replace positive matrix factorization (PMF) with PMF (it has been defined previously in the introduction section)

Page 20051 Line 26 and 20052 Line 2: BDL is defined twice and differently (w/ and w/o the)

Page 20053 Line 12, 16, 18: replace relative humidity with RH as it has been defined previously

Page 20058 Line 3: remove (CMB) as it is not used in the following sections

Page 20058 Line 18: replace relative humidity with RH

Page 20060 Line 15, 19: replace relative humidity with RH

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 20045, 2014.

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