

General

This is a commendable exercise in interpretation of tall tower aerosol results. In the introduction an overview over tall tower aerosol data interpretation (e.g., Brown et al., 2013;Heintzenberg et al., 2013;Heintzenberg et al., 2008;Andreae et al., 2015) should put the present approach into perspective. The main weakness is a lack of quantification of the scales that are derived from the study.

Language

The English still needs substantial improvements. Examples: transform of PM2.5, associated with each other among cities, vertical height, surface layer is closely related, change rules, variation rules of temperature, were in effect,

Recommendation

Accept after revision according to comments

Detailed comments

Page	Line	Comment
14891	1	What is “regional compound pollution”?
14891	4	“Secondary chemical reactions” have not been introduced by Chinese scientists. Refer to appropriate textbooks instead.
14892	8	Particle size distribution should be listed under “Physical methods”
14982	22	There are established concepts in atmospheric dynamics that could be applied here more specifically such as footprints (e.g., Schmid, 2002;Foken, 2008)
14983	24	More specific information about the PM2.5 measurements are requested: Total time period, temporal resolution, uncertainties
14984	3	More information is requested on the PM10 sampling: PM10 inlet characteristics (as function of wind speed), start/stop of the 24 h samples.
14984	20	Definition of “seasons”
Fig.	2	Typo in legend
14984	15	Uncertainties of the chemical analyses are missing
14984	24	Why should a temperature profile “correlate” with height?
14985	12	Details on hourly PM10 measurements are missing
14985	22	Is there no seasonal variation in turbulent intensity?
Fig.	5	Why are only fall data discussed and shown in Fig. 5?
14986	8	How can aerosol particles emitted near the ground “accumulate” at 120 m during the night?
14986	14	It should be possible to calculate the PBL height throughout the day and relate the vertical particle profiles to that height throughout the day.
14986	18	The reader still does not know where the PM10 data come from, are they the sum of all analyzed chemical components
14987	5	Of what use are the coefficients of divergence?
14987	25	Due to potentially high chlorine losses Cl as marker for sea salt is rather uncertain (Klockow et al., 1979).
14988	17	Are all seasons combined in the CMB modeling?
Fig.	7	The filtering results do not look convincing in comparison to the unfiltered data. The wild swings in the filtered data need to be justified and need to be explained in terms of the underlying meteorological processes.
14903	3	Do not report more significant figures in concentration than what corresponds

		to the uncertainty of the data, here certainly no more than 2 significant figures
14903	13	Explain what you mean with “special stratification” in terms of standard boundary layer meteorology
14903	20	Here and previously in the text the term regional scale needs to be quantified
14904	20	What do you mean by “better”? (also on page 14902 26)

Literature

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