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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Chemical composition of PM_{10} and PM_1 at the high-altitude Himalayan station Nepal Climate Observatory-Pyramid (NCO-P) (5079 m a.s.l.)" *by* S. Decesari et al.

Anonymous Referee #2

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This manuscript presents and discusses chemical composition data for PM10 and PM1, as obtained from the analysis of filter samples that were collected at the Nepal Climate Observatory-Pyramid (NCO-P). The results for PM10 are based on 99 samples that were taken from February 2006 to May 2008 and those for PM1 on 43 samples collected from February 2007 to February 2008. Most of the samples were daytime and night-time samples, with the idea to differentiate between maximized (during day-time) and minimized (during night-time) impact from upslope breezes. The decision to go over to separate daytime and night-time samplings was definitely a good one, as it allowed for a better identification of the sources of the aerosol constituents. The data sets presented in the manuscript are certainly very valuable. I can agree with most of

the discussion of the data. As indicated below, there are, however, a few too gratuitous statements that need to be backed up by appropriate literature references. I also have problems with the interpretation in some cases. The manuscript contains also a number of grammatical and other errors and an occasional unclear sentence.

Specific comments:

1. Page 25494, line 14: "are widely used" is a too gratuitous statement; appropriate literature references are needed.

2. Page 25495, lines 15-16: "typical for biomass burning aerosols and for "rural" aerosols in general" is another example of a gratuitous statement; it should be backed up by literature references.

3. Page 25497, lines 20-22: I cannot follow the reasoning here. The fact that the temporal variation of the different aerosol components is not the same has little to do with the mixing of these components. The temporal variation of the source strengths of the various components may simply not be the same.

4. Page 25500, lines 25-27: There is something wrong with this sentence.

5. Page 25502, lines 16-21: When talking about the geographical distribution of sulphate aerosols, one should consider that these aerosols are essentially secondary aerosols and that there is substantial production of fresh sulphate from the SO2 precursor gas along the transport pathway. Attributing differences between the sulphate and carbonaceous aerosol concentrations to differences in geographical and vertical distribution alone seems not justified.

6. Page 25504, lines 5-6: It should be indicated how the mineral fraction was estimated from the water-soluble calcium concentration. Which multiplication factor was used? And what was the basis for the factor used?

7. Page 25506, lines 10-12: Also here it should be taken into account that sulphate is essentially secondary. See comment 5 above.

8. Grammatical and other technical corrections:

p. 25488, l. 27: replace “are impacted” by “is impacted”.

p. 25489, l. 6, 8, 15, 21: replace “Ramanthan” by “Ramanathan”.

p. 25489, l. 23: replace “Hindman, and” by “Hindman and”.

p. 25494, l. 10: replace “used provide” by “used to provide”.

p. 25495, l. 25: replace “up upslope” by “upslope”.

p. 25500, l. 29: replace “>4000” by “>4000 m”.

p. 25001, l. 10: replace “with to the” by either “with the” or “to the”.

p. 25503, l. 14: replace “the dry” by “in the dry”.

p. 25504, l. 26: replace “aerosol are more” by “aerosol is more”.

p. 25505, l. 20: I presume that “May 2007” should be replaced by “May 2008”.

p. 25510, l. 31-33: There is no reference to this reference within the text, tables or figures. In Table 3b there is a reference to Venkataraman et al., 2007 instead of 2002.

p. 25514, first line of the heading of Table 2: the “3” of “m3” should be in superscript.

p. 25516, second line of the heading of Table 3a: the “-3” of “scm-3” should be in superscript.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 25487, 2009.