Atmos. Chem. Phys. Discuss., 10, C10759–C10761, 2010
www.atmos-chem-phys-discuss.net/10/C10759/2010/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "A simplified empirical method for determination of aerosol hygroscopicity and composition" *by* C. H. Chan et al.

Anonymous Referee #1

Received and published: 6 December 2010

Comment on: A simplified empirical method for determination of aerosol hygroscopicity and composition

General comment: This manuscript is dealing with feasibilities for a simplified empirical method for the determination of hygroscopicity and composition of aerosol particles. However, the potential of the paper is restrain by linguistic deficiencies. Therefore the manuscript needs thorough revisions.

Specific comments:

1. Reconsider the headline for the manuscript. Does the manuscript describe a method to determine the hygroscopicity and composition of aerosol particles? The conclusion

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speaks about “proves the feasibility of the mathematic method to determine aerosol hygroscopicity”(p. 23639, lines 7 and 8). 2. Used the term “aerosol particles” if it is referred to the solid phase (particles) of the particle-gas suspension (aerosol). This helps to avoid misunderstandings and grammatical inaccuracies, and it can help to improve sentence structures. 3. p. 23627, line 8: “LT” is it an abbreviation used to describe the experiment? It is not used in itself later in the text, thus it is not necessary to be in the text at all. 4. p. 23628, lines 9 to 15: Please, rephrase the sentences. The meaning is not entirely clear. 5. p. 23629, line 6: Mechanisms that contribute to the warming effect are described. It might be good to point out the mechanisms that contribute to the cooling effect of aerosol particles, since it is name specifically in the text. 6. p. 23629, lines 18 to 23 and p. 23633, lines 4 to 8: Avoid long sentences with a complicate structure, they can lead to misunderstandings and leak of clarity. 7. p. 23630, lines 12 to 19: It is not clear in want relation the mentioned measurements are to the work in the manuscript, nor if and how the results of those measurements were taken into account, or if it is merely selection of experimental methods. 8. p. 23630, line 28: What is meant with “aerosol extinction coefficient” in opposite “dry aerosol extinction coefficient”. Is it the “aerosol extinction coefficient” under ambient conditions? Please state this clearly at one point. 9. p. 23631, lines 10 to 27 and p. 23632, lines 1 to 13: Please, make a clear separation between location and related meteorology, and instrumentation. 10. p. 23631, lines 15 to 18: Interesting information, however, it is not necessary for the understanding of the work. Therefore, it should be left out. 11. p. 23632, line 21: Please, state a reference for the value q=1.3. 12. p. 23638, lines 21, 22 and lines 9 to 12: “. . . Method II shown in Fig. 4 indicates the improvement. . .” and “. . . Method I is in good agreement with the results from Method II.” – this seems to a contradiction. Maybe an additional explanation is needed. 13. Figures: It might be good to explain the figures more extensively in the text. 14. Figure 2a: Please, describe more clearly how this aerosol extinction coefficient was determined. 15. Figure 7: Please, describe what is shown in the figure in more detail in the text. It might improve the understanding. Please use different colors and not shades of gray. 16.

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Please, pay attention to correct use of words, sentence structure, right tense and use of singular/plural during revision.

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