

Interactive comment on “Cloud condensation nuclei in pristine tropical rainforest air of Amazonia: size-resolved measurements and modeling of atmospheric aerosol composition and CCN activity” by S. S. Gunthe et al.

S. S. Gunthe et al.

Received and published: 6 August 2009

References:

Andreae, M. O.: Correlation between cloud condensation nuclei concentration and aerosol optical thickness in remote and polluted regions, *Atmos. Chem. Phys.*, 9, 543-556, 2009.

Andreae, M. O. and Rosenfeld, D.: Aerosol-cloud-precipitation interactions. Part 1. The nature and sources of cloud-active aerosols, *Earth Science Reviews*, 89, 13-41, 2008.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

Andreae, M. O., Rosenfeld, D., Artaxo, P., Costa, A. A., Frank, G. P., Longo, K. M. and Silva-Dias, M. A. F.: Smoking rain clouds over the Amazon, *Science*, 303, (5662), 1337-1342, 2004.

Feingold, G., and Siebert, H.: Climatologies of Cloud-related Aerosols: Cloud-aerosol interactions from the micro to the cloud scale, pp. 319-338. Cambridge, MA, The MIT Press, ISBN 978-0-262-012874, Edited by Jost Heintzenberg and Robert J. Charlson, 2009.

Feingold, G.: Modeling of the first indirect effect: Analysis of measurement requirements, *Geophysical Research Letters*, 30, (19), 2003.

Feingold, G., Remer, L. A., Ramaprasad, J. and Kaufman, Y. J.: Analysis of smoke impact on clouds in Brazilian biomass burning regions: An extension of Twomey's approach, *Journal of Geophysical Research-Atmospheres*, 106, (D19), 22907-22922, 2001.

Frank, G. P., Dusek, U. and Andreae, M. O.: Technical Note: Characterization of a static thermal-gradient CCN counter, *Atmos. Chem. Phys.*, 7, (12), 3071-3080, 2007.

Kinne, S.: Climatologies of Cloud-related Aerosols: Part 1: Particle number and size, pp. 37-57. Cambridge, MA, The MIT Press, ISBN 978-0-262-012874, Edited by Jost Heintzenberg and Robert J. Charlson, 2009.

Kreidenweis, S. M., Petters, M. D. and Chuang, P. Y. (2008a). Cloud particle precursors, 291-318. Cambridge, MA, The MIT Press, ISBN 978-0-262-012874, Edited by Jost Heintzenberg and Robert J. Charlson, 2009.

Kuwata, M., Kondo, Y., Miyazaki, Y., Komazaki, Y., Kim, J. H., Yum, S. S., Tanimoto, H. and Matsueda, H.: Cloud condensation nuclei activity at Jeju Island, Korea in spring 2005, *Atmospheric Chemistry and Physics*, 8, (11), 2933-2948, 2008.

Petters, M. D. and Kreidenweis, S. M.: A single parameter representation of hygroscopic growth and cloud condensation nucleus activity, *Atmospheric Chemistry and*

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)

Physics, 7, (8), 1961-1971, 2007.

Pöschl, U., Rose, D. and Andreae, M. O.: Climatologies of Cloud-related Aerosols: Part 2: Particle Hygroscopicity and Cloud Condensation Nuclei Activity, pp. 58-68. Cambridge, MA, The MIT Press, ISBN 978-0-262-012874, Edited by Jost Heintzenberg and Robert J. Charlson, 2009a.

Reutter, P., Trentmann, J., Su, H., Simmel, M., Rose, D., Wernli, H., Andreae, M. O. and Pöschl, U.: Aerosol- and updraft-limited regimes of cloud droplet formation: influence of particle number, size and hygroscopicity on the activation of cloud condensation nuclei (CCN), Atmos. Chem. Phys. Discuss., 9, (2), 8635-8665, 2009.

Roberts, G. C., Andreae, M. O., Zhou, J. and Artaxo, P.: Cloud condensation nuclei in the Amazon Basin: "marine" conditions over a continent?, Geophysical Research Letters, 28, (14), 2807-10, 2001.

Roberts, G. C., Artaxo, P., Jingchuan, Z., Swietlicki, E. and Andreae, M. O.: Sensitivity of CCN spectra on chemical and physical properties of aerosol: a case study from the Amazon Basin, Journal of Geophysical Research|Journal of Geophysical Research, 107, (D20), LBA37-1-18, 2002.

Rose, D., Gunthe, S. S., Mikhailov, E., Frank, G. P., Dusek, U., Andreae, M. O. and Pöschl, U.: Calibration and measurement uncertainties of a continuous-flow cloud condensation nuclei counter (DMT-CCNC): CCN activation of ammonium sulfate and sodium chloride aerosol particles in theory and experiment, Atmospheric Chemistry and Physics, 8, (5), 1153-1179, 2008a.

Rose, D., Nowak, A., Achtert, P., Wiedensohler, A., Hu, M., Shao, M., Zhang, Y., Andreae, M. O. and Pöschl, U.: Cloud condensation nuclei in polluted air and biomass burning smoke near the mega-city Guangzhou, China - Part 1: Size-resolved measurements and implications for the modeling of aerosol particle hygroscopicity and CCN activity, Atmos. Chem. Phys. Discuss., 8, (5), 17343-17392, 2008b.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

Sinha, B., Huth, J., Hoppe, P., et al.: Composition and mixing state of wet season tropical rain forest aerosol: A single particle study combining optical microscopy, SEM-EDX, NanoSIMS and AFM, in preparation, 2009.

Shinozuka, Y., Clarke, A. D., DeCarlo, P. F., Jimenez, J. L., Dunlea, E. J., Roberts, G. C., Tomlinson, J. M., Collins, D. R., Howell, S. G., Kapustin, V. N., McNaughton, C. S. and Zhou, J.: Aerosol optical properties relevant to regional remote sensing of CCN activity and links to their organic mass fraction: airborne observations over Central Mexico and the US West Coast during MILAGRO/INTEX-B, *Atmos. Chem. Phys. Discuss.*, 9, (3), 12519-12558, 2009.

Sorooshian, A., Murphy, S. N., Hersey, S., Gates, H., Padro, L. T., Nenes, A., Brechtel, F. J., Jonsson, H., Flagan, R. C. and Seinfeld, J. H.: Comprehensive airborne characterization of aerosol from a major bovine source, *Atmospheric Chemistry and Physics*, 8, (17), 5489-5520, 2008.

Wang, J., Lee, Y. N., Daum, P. H., Jayne, J. and Alexander, M. L.: Effects of aerosol organics on cloud condensation nucleus (CCN) concentration and first indirect aerosol effect, *Atmospheric Chemistry and Physics*, 8, (21), 6325-6339, 2008.

[Interactive comment on Atmos. Chem. Phys. Discuss.](#), 9, 3811, 2009.

[Full Screen / Esc](#)

[Printer-friendly Version](#)

[Interactive Discussion](#)

[Discussion Paper](#)