

Interactive comment on “Airborne measurements of nucleation mode particles I: coastal nucleation and growth rates” by C. D. O’Dowd et al.

Anonymous Referee #1

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General comments

This paper deals with airborne measurement of nucleation mode particles and here especially the determination of the growth rates of newly formed particles. Therefore the paper addresses relevant scientific questions within the scope of ACP. In the paper, novel data is presented and substantial conclusions are reached. Used scientific methods and assumptions are valid and clearly outlined, and the results are more or less sufficient to support the interpretations and conclusions. The description of the experiments is sufficiently complete. Proper credit to related work is given and the authors clearly indicate their own new and original contributions. The title clearly reflects the contents of the paper, the abstract provides a concise and complete summary, the overall presentation is well structured and clear, and the language is fluent and precise.

However, the expression 'aerosol formation' should be replaced by 'particle formation', 'new particle formation' or 'aerosol particle formation'. Some parts of the paper need to be clarified (see below) and the figures are far too small. The number and quality of references are appropriate.

Specific comments

page 8099, line 21: remove '..., although sulphuric ... events.' or re-write sentence to make meaning more clear.

page 8101, line 2: change '... in Canada by the De Haviland Canada 1979' to '... in Canada by De Haviland Canada in 1979'

page 8101, line 22: 'flow rate' or 'flow velocity' ?

page 8102, line 14: change '..., we got an idea of ...' to '..., we got an estimate of the ...'

page 8103, section 2.3: As no data regarding gas measurements is presented, authors may consider to remove the whole section.

page 8104, line 23: change '... that aircraft ...' to '... the aircraft ...'

page 8105, line 25 to page 8106 line 9: Is this text referring to figure 4 ? If yes it should be mentioned in the text.

What does the statement 'The level of intensity ... the order of 10^6 cm^{-3} ' imply ?

page 8106, section 3.2.1: The authors should comment on the bi-modality of SD1 and the 'disappearing' of the second mode.

page 8107, line 26: change '... were assumed to a result ...' to '... were assumed to be a result ...'

page 8107, section 3.2.3 The whole section is somewhat unclear in both, writing and content. E.g.: - The authors may consider to take the second mode out of their considerations as it spoils the argumentation, i.e. growth in the same air-mass but different

source regions does not sound right ?! - What is the meaning of '... was higher than 100 nm/h in 2 min ...' or '... - 40 nm/h which is equivalent to 7 nm diameter' ?

- page 8108, line 10, change '...due to coagulation' to '...due to reduced coagulation'

- page 8108, line 11, change '...due to condensation' to '...due to reduced condensation'

- page 8108, line 26, the sentence 'Our Lagrangian ... production event', should be re-written as it is both, hard to read and understand.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 8097, 2006.

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Interactive Discussion

Discussion Paper