

## ***Interactive comment on “AMALi – the Airborne Mobile Aerosol Lidar for Arctic research” by I. S. Stachlewska et al.***

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We are thankful to the Anonymous Referee # 1 for additional comments to which we response in the following.

Referee: Most of the authors reply can be accepted, but I still have some comments you may want to take into account for the final version: Page C6618: Clouds do not 'glaciate', their droplets freeze.

Authors: It will be done, as suggested.

Referee: Page C6619: Did you really measure a laser polarization of 99.99%? I don't believe that the laser has such a high depolarisation. But if you added a Glan Taylor polarizer in your optical set-up it will give you very high depolarisation. This is the

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answer! The whole explanation is too long. I would suggest just mentioning the Glan Taylor.

Authors: Indeed, this is a typing error it was 99.9%. We will shorten this explanation and leave only the part mentioning the Glan Tylor.

Referee: SN 15 is more than enough, no doubt, but now the whole chapter about it gets long! Please shorten.

Authors: It will be shortened.

Referee: Page C6620-21: Eye safety: I still think this part is too long and contains mostly what is given in a laser safety standard. On the web I found: "For most of the world the applicable laser safety standard is the international standard set by the International Electrotechnical Commission (IEC), and known as IEC 60825 (previously IEC 825). Or European Normative standard known as EN 60825, and each European country will have its own version of this standard with, for example, the British Standards version known as BS EN 60825." If you want to refer to a standard why not to an international one everyone can access?

Authors: We will consider the Referees suggestions: shorten and reference to international standard.

Referee: I would suggest to shortly explaining the differences between the wavelengths and telling the consequences for AMALi (2.5 and 2.1 km eye safety distance) and skip the rest. What additional information is given by mentioning the 1 mm and 7 mm aperture for the measurement of the MPE at different wavelengths? The MPE is given in J per m2 and can be used as it is.

Authors: Indeed, we will use the MPE as they are without these additional details.

Page C6621, line 17: 'Lidar dimensions' - not diamensions

Authors: It will be corrected.

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Page C6623: I suggested a table over the PRODUCTS AMALi is delivering, not the evaluation schemes. I did NOT find the NEW TABLE in the ACPD Interactive discussions.

Authors: It is attached as a supplement.

Referee: What happened to the chapters 3 and 4 and 5.1? Will they be shortened or left out?

Chapter 3 and 4 and 5.1 are combined to one section which is also drastically shortened (< 4 pages). Chapter 5 is now containing only subsections 1. the AMALi and the KARL intercomparison, 2. the iterative approach (where section 4.2.2 is now included) and 3. combined nadir-aiming and zenith aiming approach (which is a former section 4.3).

Referee: Figures seem ok now; error bars for Klett retrieval are indeed nonsense since LR uncertainty always gives the largest errors.

Authors: Thank you.

Please also note the Supplement to this comment.

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Interactive comment on Atmos. Chem. Phys. Discuss., 9, 18745, 2009.

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