

General Comments:

This paper describes the different levels of data products from an airborne horizontal pointing aerosol lidar collected during the EUREC4A field campaign. The paper is well written and the data products are well described. However, the preprocessing of the data (Level 1 → Level 1.5) could be concise and some of the figures and tables could be removed without loss of information.

I was not able to access the data from the data archive. The doi s listed in the paper are correct and points to the archive but the data links within the doi pages are invalid or missing.

Specific Comments:

How were cloud base heights determined for the Phase 2 flight legs?

What is the typical aircraft speed? I think this information would be useful for future readers.

How do you separate the clouds along the flight direction? There is no information about clouds along the flight direction? I think you should be able to calculate cloud size distribution along the flight direction as well. Any reason for not including that as part of the L3 product?

Cloud cover from 0-4 km range would be another L3 product of interest.

What is the time resolution of the lidar profiles? P9, Line 7 would be a good place for this information. There is also no information about the horizontal resolution of the profiles. From figure 10, it looks like horizontal resolution is around 20-30 m?

Apparent Backscatter Coefficient (ABC): Why not call it attenuated backscatter coefficient? Or add a statement about how ABC is different from attenuated backscatter coefficient from other lidar (e.g. CALIOP).

Please include the range of viewing angle in a typical flight leg and what is the implication of this viewing geometry on the retrieved cloud size? Are the viewing angle, aircraft attitude parameters included in the raw data? It would be also good to include an equation used to calculate the viewing angle in the text.

Please include values for T0 and T1 since it is mentioned in the text.

It is not clear how the threshold for cloud detection is defined. What is coefficient C_e ? How is C_e used for cloud detection? Could you use a single cloud detection threshold?

How do you define level of soiling? Is it like the entire flight is soiled or not?

How is the uncertainty in AEC for angular deviation calculated?

Is Level 3 data calculated for each flight segment of a flight or entire flight? P24 Line 1 says entire flight but P9 Line 8 says flight segment?

Table 2: I don't think Table 2 is very useful in its current form. Potential data users are very likely not going to be looking for certain flight blocks. They might be more interested in a particular day. Information from Table 2 could be combined with Table 5.

Technical corrections:

P1, Line 22: add "instruments"

P6, Line 8: Change "Prototypical" to "Typical"

P6, Line 13: Change "independently" to "independent"

P6, Line 17: Change (~9h00) to (~9h)

P6, Line 23: Change "A prototypical" to "An example". Same for P9, Line 2.

P6, Line 24: Change "needs" to "questions"

P8, Line 8 and 9: Complete the sentences between two bullet points

P9, Line 8: "For level 3 profiles are averaged over flight segments..." might be clearer if that is what it meant to be.

P11, Line 3: subscript of c for clouds would be more intuitive than n.

P12, Line 3: change "clouds" to "data points"

Equation 4 and 5: use parallel and perpendicular symbol for T0 and T1 respectively to be consistent.

P18, Line 1: typo "considered"

Table 4: B1 values for clear and clogged wind should be 0/1.

P23, Line 2: Separate into two sentences for clarity.

P26, Line 11: Change to "test flight"