

## ***Interactive comment on “First correlated measurements of the shape and scattering properties of cloud particles using the new Particle Habit Imaging and Polar Scattering (PHIPS) probe” by A. Abdelmonem et al.***

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1. A continued discussion on Figure 4.

The Referee wrote:

“... It appears from the figure that the agreement is quite good in the 0-90 angles but there seems to be a shift or bias in the 90-180, particularly 100-130. Is this a misalignment or possibly a polarization issue?”

C1058

Authors' response:

As mentioned in the discussion AC C987, one disadvantage of the used laser is its narrow spectral line width (about 0.15 nm or less). This narrow spectral line width results in the strong fluctuations which are seen on the theoretical curve of the angular scattering intensity of a single particle, Fig. 4 and also Fig. 14. These fluctuations are the strongest in the range 90-180, particularly 100-130, the thing which makes it difficult to obtain realistic calibration factors or to model the measured data using the RTDF. So, the optical system is very sensitive for any, very small, misalignment in this region. The detailed discussion about this problem and the possible solution are discussed in AC C987.

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2. The referee wrote:

Page 27, line 11 “The color code marks the particle number concentration while the black color is reserved for PHIPS data.” I think that a comparison between the PHIPS and CAPS, that would be easier to interpret, would be to calculate the average of median volume diameter from the CAPS, in the size range of the PHIPS, to compare with the PHIPS. If comparing with the CAS, this measures an optical diameter whereas PHIPS is measuring some other size parameter. If comparing with the CIP, you could compare area equivalent diameters.

Authors' response:

The new plots are being prepared to be put in the final version

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