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Atmospheric Measurement Techniques Discussions

Interactive comment on "PHIPS-HALO: The airborne Particle Habit Imaging and Polar Scattering probe. Part I: Design and Operation" *by* Ahmed Abdelmonem et al.

D. Baumgardner (Referee)

darrel.baumgardner@gmail.com

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The PHIPS represents a major breakthrough in cloud measurement technology. The concept is not new but the availability of super fast optics and electronics makes it possible. The manuscript is well written (I have attached an annotated version with a few minor edits) with much attention to detail. I have also added in the annotated attachment some questions throughout but will reiterate the major ones here.

1) I don't think sufficient attention has been given to comparing the PHIPS to the CPI and PI-nephelometer. The PHIPS is basically a hybrid of those two instruments and yet very little is said of how the PHIPS is an improvement over the two.

2) The inlet has a very sharp edge to reduce turbulence and shattering but sharp inlets are very sensitive to the angle between the inlet and the flow. Nothing is discussed about angular sensitivity sice it appears the modeling was all done at 0 degrees attack angle. This needs to be addressed.

3) The CPI has an issue that it can only be operated in either small particle or big particle modes since size distributions are negative exponential and high concentrations of small particles will keep the probe busy and only the rare large particle will be detected. How does the PHIPS deal with that?

Please also note the supplement to this comment:
http://www.atmos-meas-tech-discuss.net/amt-2016-42/amt-2016-42-RC1-supplement.pdf

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