

Interactive comment on “Optical properties of pristine ice crystals in mid-latitude cirrus clouds: a case study during CIRCLE-2 experiment” by J.-F. Gayet et al.

Anonymous Referee #1

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General comments : The Polar Nephelometer data associated with Cloud Particle Imager measurements are appropriately utilized to study the occurrence of the 22° peak in the scattering phase function of cirrus ice crystals. The level of this paper is good, since the kind of in situ cloud measurements proposed is original and very useful for validation of remote sensing measurements.

Minor comments and questions that need answers included in the text: Page 24766, line 25: For a better comprehension of the text, authors should define the unusual (or not common) parameter ‘halo ratio’.

Page 24768, line 5: Concerning preferred orientation of ice crystals (in horizontal

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plane) many previous 'old' studies (eg. Jayaweera, 1965, Ono, 1969, Platt, 1978) have shown that crystals fall with their greater projected area facing the direction of fall. Thus, under certain conditions, long columns, needles, and thin plates tend to remain almost horizontal, ie C axis of plates tend to be vertical, while C axis of long columns and needles tend to be horizontal. Consequently, not only plates could explain high level of CALIOP backscattering.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 24763, 2010.

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