Data Format Documentation

Instrument: Two-dimensional video disdrometer (2dvd)

Overview:

In support of NASA's GPM mission, a 2dvd was deployed north of Ontario Canada at Environment Canada's Centre of Atmospheric Experiments (CARE) site during the the Canadian CloudSat/Calipso Validation Project (C3VP; Hudak et al. 2006; Petersen et al. 2007). The C3VP was a multi-national, multi-agency field experiment that took place in southern Canada during the winter of 2006 to 2007, and included a variety of ground-based and airborne instruments to provide measurements for improving the modeling and remote sensing of snowfall. This 2dvd, which was contributed by Colorado State University, is a second generation, low-profile version that measures particle size, shape and velocity (Schönhuber et al. 2008) and has been used to obtain an estimate of the density of snow observed during C3VP (Huang et al. 2010). The 2dvd was situated on a platform about 8 feet above ground within a wind abatement fence, which was constructed similar to a Double-Fence Intercomparison Reference (DFIR). This 2dvd data set is filtered based on hourly temperature observations (maximum temperature for the hour must be less than -2°C) taken at the CARE site in order to limit it to only snow observations. The 2dvd data set for snow consists of data processed using Joanneum Research's MAKE_SNO software (Schönhuber et al. 2008).

Table 1. Locations of 2D-Video Disdrometer during C3VP

2DVD	Site Name	Longitude	Latitude	Altitude (MSL)
SN16	CARE	79°46'50.11"W	44°13'59.45"N	251 m

Data Organization:

The 2dvd data set is contained within daily ASCII text files with the following convention,

2dvd_sn16_c3vp_V[YYDOY].flakes_noRA.txt

Where YYDOY = 2-digit year and day of year (e.g., 06364 = 31 December, 2006). These ASCII files contain information on individual snowflakes identified by the MAKE_SNO software, which matches snowflakes imaged by each camera as long as its height measured by each camera is within a certain tolerance, which follows the method of Hanesch 1999).

File Format:

Level 2: flake-by-flake files created with MAKE_SNO (*.flakes.txt)

Format: ASCII

Format of each line (14 fields):
HH:mm:SS.ms, equivalent diameter (mm), volume (mm^3), fallspeed (m/s), cross-sectional area (mm^2), height of line (mm), height in Camera A (mm), height in Camera B (mm) , width in Camera A (mm), width in Camera B (mm), minimum pixel shawdowed in A (pixel #), maximum pixel shadowed in A (pixel #), minimum pixel shawdowed in B (pixel #), maximum pixel shadowed in B (pixel #)

Note: Both A & B Cameras contain 632 pixels.

References

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