

## **Data Format Documentation**

Instrument: PARSIVEL

The PARSIVEL data set consists of the following ASCII formatted files:

- `parsivel*_spectrum.txt`: spectrum observations
  - contains number of particles measured within each diameter and velocity class (see APPENDIX A for class definitions)
  - for each of the 32 diameter classes there are 32 possible velocity classifications (i.e., a total of 1,024 classifications)
  - also contains temperature recorded within the Parsivel sensor
- `parsivel*_dsd.txt`: drop size distribution for each diameter class each minute hydrometeors were detected (see APPENDIX B for class definitions)
- `parsivel*_rainParams.txt`: integrated rainfall parameters for each minute hydrometeors were detected
- `parsivel*_snowtable.txt`: total snowfall measured for a continuous period of precipitation

Level 1A: spectrum files

Format: ASCII

Format of each line:

year, month, day, hour, minute, second, temperature (°C), number of particles within each diameter and velocity class (1,024 total classifications)

Level 3: drop size distribution (DSD) files

Format: ASCII

Format of each line:

year, day of year, hour, minute, drop\_concentration ( $\text{m}^{-3}\text{mm}^{-1}$ ) for each of the 32 diameter classes each minute

Level 3: Integral rain parameters

Format: ASCII

Format of each line:

year, day of year, hour, minute, total number of drops, total drop concentration ( $\text{m}^{-3}$ ), liquid water content ( $\text{g m}^{-3}$ ), rain rate ( $\text{mm h}^{-1}$ ), reflectivity (dBZ), mean mass-weighted diameter (mm), maximum drop diameter (mm)

Level 3: snowtable files

Format: ASCII

Format of each line:

year, day of year, beginning of precipitation (HH:MM), day of year, ending of precipitation (HH:MM), number of snowfall observations (minutes), maximum snowfall rate (mm/hr), total unmelted snowfall for the period (mm), and temperature (°C)

**APPENDIX A: Level 1A Data**

Volume-equivalent diameter classification:

Class Number	Class Average (mm)	Class Spread (mm)
1	0.062	0.125
2	0.187	0.125
3	0.312	0.125
4	0.437	0.125
5	0.562	0.125
6	0.687	0.125
7	0.812	0.125
8	0.937	0.125
9	1.062	0.125
10	1.187	0.125
11	1.375	0.250
12	1.625	0.250
13	1.875	0.250
14	2.125	0.250
15	2.375	0.250
16	2.750	0.500
17	3.250	0.500
18	3.750	0.500
19	4.250	0.500
20	4.750	0.500
21	5.500	1.000
22	6.500	1.000
23	7.500	1.000
24	8.500	1.000
25	9.500	1.000
26	11.000	2.000
27	13.000	2.000
28	15.000	2.000
29	17.000	2.000
30	19.000	2.000
31	21.500	3.000
32	24.500	3.000

Velocity classification:

Class Number	Class Average (m/s)	Class Spread (m/s)
1	0.050	0.100
2	0.150	0.100
3	0.250	0.100
4	0.350	0.100
5	0.450	0.100
6	0.550	0.100
7	0.650	0.100
8	0.750	0.100
9	0.850	0.100
10	0.950	0.100
11	1.100	0.200
12	1.300	0.200
13	1.500	0.200
14	1.700	0.200
15	1.900	0.200
16	2.200	0.400
17	2.600	0.400
18	3.000	0.400
19	3.400	0.400
20	3.800	0.400
21	4.400	0.800
22	5.200	0.800
23	6.000	0.800
24	6.800	0.800
25	7.600	0.800
26	8.800	1.600
27	10.400	1.600
28	12.000	1.600
29	13.600	1.600
30	15.200	1.600
31	17.600	3.200
32	20.800	3.200

**APPENDIX B: Level 3 Data**

Volume-equivalent diameter classification (corrected for drop shape):

Class Number	Class Average (mm)	Class Spread (mm)
1	0.064	0.129
2	0.193	0.129
3	0.321	0.129
4	0.450	0.129
5	0.579	0.129
6	0.708	0.129
7	0.836	0.129
8	0.965	0.129
9	1.094	0.129
10	1.223	0.129
11	1.416	0.257
12	1.674	0.257
13	1.931	0.257
14	2.189	0.257
15	2.446	0.257
16	2.832	0.515
17	3.347	0.515
18	3.862	0.515
19	4.378	0.515
20	4.892	0.515
21	5.665	1.030
22	6.695	1.030
23	7.725	1.030
24	8.755	1.030
25	9.785	1.030
26	11.330	2.060
27	13.390	2.060
28	15.450	2.060
29	17.510	2.060
30	19.570	2.060
31	22.145	3.090
32	25.235	3.090