

Title: VORTEX-SE 2018 MIPS Microwave Profiling Radiometer (MPR) Dataset

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1.0 Dataset Overview

The UAH Mobile Integrated Profiling System (MIPS) was deployed for 1 IOP (IOP 3) during the 2018 VORTEX-SE. When not deployed, MIPS was stationed at SWIRLL on the UAH campus. Data was continuously collected when located at UAH. During IOP 3, MIPS was struck and damaged by lightning. Therefore, there is no MIPS data after IOP 3. For IOPS where MIPS was located at UAH and operational, the UAH berm surface measurements should be used. This station is located just a few feet behind MIPS at UAH.

IOP 3

Time Period: 2018/04/03 2125Z to 2018/04/04 0235Z

Location: 34.712, -87.706

2.0 Instrument Description

MIPS utilizes a Radiometrics MP-3000A microwave profiling radiometer which has 35 brightness temperature channels.

3.0 Data Collection and Processing

Data is collected every 1 minute. No data processing has been performed.

4.0 Data Format

There is 1 MPR data file for each day. The filename format is YYYY-MM-DD_HH-mm-SS_v2.csv where:

YYYY -> 4-digit year

MM -> Month

DD -> Day

HH -> Hour of file creation

mm -> Minute of file creation

SS -> Seconds of file creation

lv2 -> MPR Code

csv -> file extension

The 35-Channel MPR logs data differently than the UAH MoDLS 12-channel MPR. So, please keep this in mind when working with the data. Data files begin with a header that describes each

column of data. It then provides units for each variable and procedure file. Grid spacing is 50 m and observations extend to 10 km.

Each line of data is referenced by a certain record type. Record types define what type of data is logged. Refer to table 1 for description of record types. Record types are found in the 3rd column. Radiometrics recommends sorting data by record type to have logical blocks of data.

Sample data is provided below:

3870,03/19/18 15:37:09,31,03/19/2018 15:37:07, 3443.4657, -8638.7828, 3.4000,Good
Fix,2,11, 213.2,1

3871,03/19/18 15:37:10,201, 288.5300, 91.0400, 981.6800, 288.8700,0,1

3872,03/19/18

15:37:39,401,Zenith,288.530,288.024,287.635,287.354,287.227,287.142,287.135,286.955,286.935,286.713,286.474,286.265,286.055,285.769,285.541,285.021,284.330,283.805,282.950,282.506,281.950,281.250,280.688,280.019,279.302,278.677,276.913,275.302,273.543,272.015,269.970,267.965,266.230,264.791,263.264,261.904,260.321,258.789,256.881,254.901,252.980,251.503,250.167,248.286,246.618,244.809,243.191,241.568,239.880,238.032,236.188,234.330,232.795,231.193,229.542,228.061,226.406,224.591,1

3873,03/19/18 15:37:39,402,Zenith, 11.936, 11.976, 12.330, 12.369, 12.201, 12.091, 12.095, 12.245, 12.063, 11.716, 11.460, 11.008, 10.644, 10.404, 9.976, 9.427, 9.196, 8.548, 7.909, 7.231, 6.667, 6.624, 6.535, 6.514, 6.112, 5.738, 4.741, 4.153, 3.556, 2.999, 2.597, 2.279, 1.930, 1.602, 1.263, 0.953, 0.750, 0.655, 0.542, 0.433, 0.339, 0.266, 0.228, 0.157, 0.134, 0.106, 0.090, 0.080, 0.068, 0.055, 0.045, 0.037, 0.032, 0.035, 0.030, 0.012, 0.008, 0.003,1

3874,03/19/18 15:37:39,403,Zenith, 0.019, 0.031, 0.043, 0.042, 0.040, 0.037, 0.035, 0.031, 0.027, 0.023, 0.023, 0.020, 0.022, 0.018, 0.014, 0.014, 0.018, 0.016, 0.012, 0.013, 0.015, 0.017, 0.014, 0.016, 0.015, 0.014, 0.020, 0.020, 0.018, 0.022, 0.017, 0.016, 0.013, 0.014, 0.014, 0.011, 0.011, 0.015, 0.007, 0.005, 0.001, 0.001, 0.000, 0.001, 0.001, 0.009, 0.007, 0.009, 0.009, 0.002, 0.002, 0.005, 0.002, 0.000, 0.001, 0.001, 0.004, 0.000,1

3875,03/19/18 15:37:39,404,Zenith, 91.040, 90.736, 94.008, 95.705, 96.471, 95.759, 95.460, 96.167, 96.366, 96.244, 96.731, 96.213, 96.960, 98.665, 96.626, 96.369, 95.890, 94.485, 93.560, 90.666, 90.133, 89.635, 89.389, 89.537, 89.805, 90.010, 90.425, 95.998, 89.682, 80.493, 72.867, 65.417, 57.095, 50.169, 45.567, 37.541, 32.983, 30.822, 31.034, 26.247, 27.156, 24.543, 24.252, 23.092, 27.418, 24.756, 23.794, 25.067, 25.717, 24.906, 22.982, 20.057, 17.340, 16.464, 14.426, 13.424, 12.323, 11.128,1

3876,03/19/18 15:37:39,301, 2.647, 0.000, 0.000,1

Column

0 -> Record

- 1 -> Date/Time
- 2 -> Record Type

Record Type	Description
31	GPS time/date/position Data
201	Surface: Tamb, RH, pressure, Tir, and rain sensor
401	Temperature vector retrieval data record (profile)
402	Vapor Density vector retrieval data record (profile)
403	Liquid Density vector retrieval data record (profile)
404	Relative Humidity vector retrieval data record (profile)

Table 1. Record Type Description

5.0 Data Remarks

Record numbers may skip numbers within the data files. This is because occasionally, data files would be created prior to arriving on site. If this happened, data while the vehicle was in motion was omitted from the file. Therefore, data files only include data when vehicle was completely deployed on site.