

**Title:** PERiLS 2023 UAH MAPNet MIPS Microwave Profiling Radiometer (MPR) Dataset

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## 1.0 Dataset Overview

The UAH Mobile Atmospheric Profiling Network (MAPNet) Rapidly Deployable Profiling System (RaDAPS) was deployed with the MPR for all 5 PERiLS deployments. This dataset contains all level II (profiles) radiometer data collected by the RaDAPS radiometer mounted to the RaDAPS platform. Logbooks are provided for the user's reference for any data collection issues, etc.

IOP 1

Time Period: 2023/02/16 1430Z to 2023/02/17 0100Z

Location: 32.6015, -88.1992 elevation: 61 m

IOP 2

Time Period: 2022/03/03 0040 to 2022/03/03 1215Z

Location: 34.21916, -90.95392 elevation: 49 m

IOP 3

Time Period: 2022/03/24 1714Z to 2022/03/25 0245Z

Location: 33.29846, -90.904305 elevation: 36 m

IOP 4

Time Period: 2022/03/31 1840Z to 2022/04/01 0800Z

Location: 35.17621, -87.04821 elevation: 201 m

IOP 5

Time Period: 2022/04/05 1111Z to 2022/04/05 1830Z

Location: 35.77341, -90.34875 elevation: 70 m

## 2.0 Instrument Description

RaDAPS utilizes a Radiometrics MP-3000A microwave profiling radiometer which has 35 brightness temperature channels. Calibration of the MPR utilizing a LN2 target was performed prior to PERiLS on 2023/02/09. Calibration and brightness temperature data can be provided upon request.

More information regarding the RaDAPS MPR and the RaDAPS system can be found here:  
<https://www.nsstc.uah.edu/mapnet/facilities/radaps.php>

### 3.0 Data Collection and Processing

Data is collected every 1-2 minutes. No additional processing outside of Radiometrics processing has been performed. Observation procedure uses Zenith angle retrivals. Following the completion of an observation period, the radiometer automatically performs a tip calibration to calibrate the noise diode temperatures of the moisture channel when under clear skies.

### 4.0 Data Format

NetCDF files are provided of the operational lv2 data. Lv1 data containing brightness temperatures can be provided upon request. File naming convention is as follows:

UAH\_platform\_MPR\_YYYYmmDD\_HHMM.nc where:

UAH -> UAH dataset

platform -> platform data was recorded on

MPR -> MPR data

YYYY -> 4-digit UTC year data was collected

mmDD -> 2-digit UTC month and day data was collected

HHMM -> UTC time data was collected

NetCDF files include the following parameters:

Identifier	Units	Description
epochTime	seconds	Seconds Since 00 UTC 1970 01 01
height	Meters	Height Above ground level
latitude	Degrees	Degrees North
Longitude	Degrees	Degrees West
Altitude	Meters AGL	Altitude of the Instrument
temperature	Kelvin	Temperature Profile
vaporDensity	g/m <sup>3</sup>	Water Vapor Density Profile
liquidWater	g/m <sup>-3</sup>	Liquid Water Content Profile
relativeHumidity	%	Relative Humidity Profile
intergratedLiquidWater	mm	Column integrated liquid water Profile
integratedWaterWaterVapor	cm	Column integrated water vapor Profile
cloudBaseHeight	km	Cloud Base Height
surfaceTemp	K	Surface Temperature

SurfacePressure	mb	Surface Pressure
irTemp	K	Surface IR Temperature
sfcRh	%	Surface Relative Humidity
rainTag	Binary	Flag for Rain
dataQualityTag	Binary	Data Quality Flag