

Title: 2022 PERiLS UAH MAPNet MoDLS Microwave Profiling Radiometer (MPR) Dataset

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1.0 Dataset Overview

The UAH Mobile Atmospheric Profiling Network (MAPNet) Mobile Doppler Lidar and Soundings (MoDLS) was deployed with the MPR for 2 of the 4 PERiLS deployments. This dataset contains all lv2 radiometer data collected by the MoDLS radiometer mounted to the MoDLS platform. Logbooks are provided for the user's reference for any data collection issues, etc.

IOP 1

Time Period: 2022/03/22 1350Z to 2022/03/22 2200Z

Location: 32.799110,-88.162043

IOP 2: Deployed but no MPR data

Time Period: 2022/03/30 1405Z to 2022/03/31 0130Z

Location: 33.2336933, -88.5707833 Elevation: 98 m

IOP 3: Not Deployed

IOP 4: Not Deployed

2.0 Instrument Description

MoDLS 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 2022/03/02. Calibration and brightness temperature data can be provided upon request.

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

3.0 Data Collection and Processing

Data is collected every 1-2 minutes. No data 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 ³	Water Vapor Density Profile
liquidWater	g/m ⁻³	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

5.0 Data Remarks

The radiometer had a V-band failure between IOPs 1 and 2. As a result, no radiometer data is available after IOP 1. In addition, the MoDLS lidar was removed from the platform for repairs prior to PERiLS. Repairs were not completed until after PERiLS. Therefore no lidar data is available for PERiLS from the MoDLS platform.