

## **Title:** PERiLS 2022 UAH MAPNet MIPS 915 MHz Radar Wind Profiler (RWP) Dataset

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### **1.0 Dataset Overview**

The UAH Mobile Atmospheric Profiling Network (MAPNet) Mobile Integrated Profiling System (MIPS) was deployed with the rwp for all 4 PERiLS deployments. This dataset contains all MIPS radar wind profiler consensus data recorded by the radar wind profiler mounted on the MIPS platform. Logbooks are provided for the user's reference for any data collection notes, issues, timing, etc.

#### **IOP 1**

Time Period: 2022/03/22 1400Z to 2022/03/22 2300Z

Location: 32.82905, -88.48475 elevation: 65 m

#### **IOP 2**

Time Period: 2022/03/30 1730Z to 2022/03/31 0132Z

Location: 34.0079941, -88.47614 elevation: 44 m

#### **IOP 3**

Time Period: 2022/04/05 0130Z to 2022/04/05 1940Z

Location: 32.498719, -86.424616 elevation: 151 m

#### **IOP 4**

Time Period: 2022/04/13 1430Z to 2022/04/13 2208Z

Location: 36.53955, -89.7034077 elevation: 85 m

### **2.0 Instrument Overview**

MIPS utilizes a Radiometrics Raptor XBS-BL 915 MHz radar wind profiler. The radar wind profiler onboard MIPS operates by sampling along six beams at 23.5 degrees off-vertical and one vertical beam. Wind profiles are acquired every 5 and 60 minutes to heights from 125 m-5km.

More information regarding the MIPS 915 radar wind profiler and MIPS system can be found here: <https://www.nsstc.uah.edu/mapnet/facilities/instruments/profiler.php>

### 3.0 Data Collection and Processing

The data files provided are Radiometrics processed files. Processed data files are created every 5 and 60 minutes. During some IOPs, the profiler was adjusted to vertical-only mode when heavy convection was overhead. Periods when the profiler was adjusted to this mode is noted in the logbooks accordingly. Vertical moment data is not provided, but can be shared upon email request.

### 4.0 Data Format

NetCDF files are provided. There will be one netCDF file for each time resolution even if the instrument operated for multiple days. The netCDF naming convention is as follows:

MIPS\_915\_YYYYMMDD\_resolution.nc where:

MIPS -> Platform

915 -> Instrument

YYYY -> 4-digit UTC year

MM -> 2-Digit UTC month

DD -> 2-digit UTC day

Resolution -> Time resolution of data (5 minutes or 60 minutes)

NetCDF files include 2-dimensional variables of U, V, W wind components, averaged beam moments, and also includes instrument metadata. The files contain the following parameters:

Identifier	Units	Description
beamElevation	Degrees	Elevation off-Zenith of the beams
number_of_beams	unitless	Number of beams used
decimalTime	hours	UTC decimal time from 00Z
epochTime	seconds	Seconds since 1970/01/01 00Z
Longitude	Degrees	Degrees East
height	meters	Height of record above ground level
latitude	degrees	Latitude of the instrument
longitude	degrees	Longitude of the instrument
altitude	Meters AGL	Elevation of the instrument
lowPRF	microseconds	Low-mode PRF
highPRF	microseconds	High-mode PRF
lowFirstGate	Meters AGL	Height of the first gate for the low mode

highFirstGate	Meters AGL	Height of the first gate of the high mode
lowGateSpace	meters	Gate spacing for the low mode
highGateSpace	meters	Gate spacing for the high mode
u	m/s	U wind component
v	m/s	V wind component
w	m/s	W wind component
qcTag	unitless	Quality control tag for winds, higher is better
Vel_i; i= beam #	m/s	Beams 1-6 radial velocity
SNRI_i; i= beam #	dB	Beams 1-6 radial signal-to-noise ratio
Backscatter_i; i= beam #	unitless	Beams 1-6 radial backscatter
SW_i; i= beam #	m/s	Beams 1-6 radial spectrum width