Title: PERiLS 2023 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 5 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: 2023/02/16 1430Z to 2023/02/17 0118Z
Location: 32.9137, -87.8689 elevation: 67 m

IOP 2
Time Period: 2022/03/03 0015Z to 2022/03/03 11Z
Location: 34.6038, -91.1962 elevation: 56 m

IOP 3
Time Period: 2022/03/24 1627Z to 2022/03/25 0208Z
Location: 33.123954, -91.381511 elevation: 33 m

IOP 4
Time Period: 2022/03/31 15Z to 2022/04/01 0800Z
Location: 34.724, -86.6463 elevation: 207 m

IOP 5
Time Period: 2022/04/05 1115Z to 2022/04/05 1830Z
Location: 35.799629, -91.140336 elevation: 75 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 with 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. No other processing was performed on the data. Although headings are manually entered and checked, users are encouraged to verify headings before using the data.

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
SNRl_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