Title: PERiLS 2022 UAH MAPNet RaDAPS 915 MHz Radar Wind Profiler (RWP) Dataset

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1.0 Dataset Overview

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

IOP 1
Time Period: 2022/03/22 1430Z to 2022/03/22 2230Z
Location: 33.233778, -88.643729 elevation: 90 m

IOP 2
Time Period: 2022/03/30 1430Z to 2022/03/31 0215Z
Location: 33.595558, -88.987904 elevation: 87 m

IOP 3
Time Period: 2022/04/05 1023Z to 2022/04/05 1747Z
Location: 32.1659, -86.9086 elevation: 126 m

IOP 4
Time Period: 2022/04/13 1445Z to 2022/04/13 2145Z
Location: 36.40374,-90.1161 elevation: 86 m

2.0 Instrument Overview

RaDAPS utilizes a Radiometrics Raptor XBS-BL 915 MHz radar wind profiler. The radar wind profiler onboard RaDAPS 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 RaDAPS 915 radar wind profiler and RaDAPS 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. Moment data from the vertically pointing periods can be provided upon 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:

RaDAPS -> 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