

Title: PERiLS 2023 UAH MAPNet Micro Rain Radar (MRR) Dataset

Authors:

Preston Pangle preston.pangle@uah.edu

University of Alabama In Huntsville

Kevin Knupp(PI) kevin.knupp@uah.edu

University of Alabama In Huntsville

1.0 Dataset Overview

The UAH Mobile Atmospheric Profiling Network (MAPNet) Rapidly Deployable Profiling System (RaDAPS) MRR was deployed with RaDAPS for all 5 PERiLS deployments.

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

UAH Utilizes the Metek Micro Rain Radar. The radar can be removed and added to other platforms depending on the needs and configuration.

More information regarding the MRR and RaDAPS system can be found here:

<https://www.nsstc.uah.edu/mapnet/facilities/radaps.php>

3.0 Data Collection and Processing

Data is collected and averaged over 30 seconds. No processing beyond the manufacturer's processing has been completed. Raw spectral moments are recorded by the radar and can be provided upon request.

4.0 Data Format

The UAH RaDAPS MRR data filename convention is MRR_YYYYMMDD.nc where:

YYYY -> year

MM -> month

DD -> day

The file header information is provided below:

Identifier	Meaning	Unit
MRR\ rangegate	height	m
MRR\ spectralclass	Bin # (63 bins total)	none
MRR_H	height	m
MRR_TF	Transfer Function	none
MRR_F	Spectral Reflectivity	dB
MRR_D	Drop Densities	$m^{-3}mm^{-1}$
MRR_N	Number	#
MRR_K	Unused	NA
MRR_Capital_Z	Radar Reflectivity	dBZ
MRR_Small_Z	Attenuated Radar Reflectivity	dBZ
MRR_PIA	Path Integrated Attenuation	dB
MRR_RR	Rain Rate	mm/h
MRR_LWC	Liquid Water Content	gm^{-3}
MRR_W	Fall Velocity	m/s
AVE	Averaging time if applicable	Seconds
STP	Height resolution	meters
ASL	Height of ground level above sea level	meters