

**Title:** PERiLS 2023 MIPS Ceilometer Dataset

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## 1.0 Dataset Overview

The UAH Mobile Atmospheric Profiling Network (MAPNet) Mobile Integrated Profiling System (MIPS) ceilometer was deployed for all 5 PERiLS deployments.

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 Description

UAH Utilizes Vaisala CL51. Measurements are made every 15 seconds with 30 m gate spacing. The ceilometer is a pulsed laser that operates at 0.905  $\mu\text{m}$ . The beamwidth is 1.06 mrad. The range is from 0 to 15 km, vertical resolution is 10 m and time resolution is 15 s.

More information regarding the MIPS ceilometer and the MIPS system can be found here:  
<https://www.nsstc.uah.edu/mapnet/facilities/mips.php>

## 3.0 Data Collection and Processing

Data is collected every 15 seconds in tabular format. No processing has been completed.

#### 4.0 Data Format

Data is converted to netCDF format. One file is created for each day operated. The file naming convention is as follows:

clo -> indicates ceilometer data  
YYYY -> year  
MM -> month  
DD -> day  
.nc -> file extension

The netCDF files include the following data:

Identifier	Units	Description
epochTime	seconds	Seconds Since 00 UTC 1970 01 01
height	meters	Height above ground level
backscatter	$1 \cdot 10^5$ srad/km	sensitivity-normalized backscatter
CB1	ft	1st cloud base height detected
CB2	ft	2nd cloud base height detected
CB3	ft	3rd cloud base height detected
status	unitless	Status of detection (0-3: # of cloudbases; 4: full obscuration - no base detected; 5: partial obstruction; 6: indeterminate or missing)
Status	unitless	Status of detection (0: ok; 1: warning; 2: alarm)
scale	unitless	Scaling factor applied to backscatter
resolution	meter	Height resolution of backscatter data
tilt	degrees	Ceilometer tilt off zenith
background	mV	Background light