Title: PERiLS 2023 UAH MAPNet RaDAPS Ceilometer Dataset

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1.0 Dataset Overview

The UAH Mobile Atmospheric Profiling Network (MAPNet) Rapidly Deployable Profiling System (RaDAPS) ceilometer was deployed 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

RaDAPS 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 μm. 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 RaDAPS ceilometer and the RaDAPS system can be found here: https://www.nsstc.uah.edu/mapnet/facilities/radaps.php

3.0 Data Collection and Processing

Data is collected every 15 seconds in tabular format. No additional 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	$1*e^5$ 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