

## Title – NOAA PSL CL31 Ceilometer Backscatter and Cloud Base Height Data

### Authors

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### 1.0 Data Set Description

This dataset contains data from two CL31 ceilometers manufactured by Vaisala that were deployed during the Propagation, Evolution and Rotation in Linear Storms (PERiLS) experiment in Columbia, LA, and Courtland, AL. The ceilometers are operated continuously since the middle of February 2022. In this dataset, data until 31 August 2022 are available so far. More data will be added. The data sets contain backscatter profiles, cloud base heights, and visibility.

- Data status: Final
- Time period:
  - Columbia, LA: 8 February 2022 – 31 August 2022
  - Courtland, AL: 11 February 2022 – 31 August 2022
- Physical location:
  - Columbia, LA: 32.124322 N, 92.055569 W, 20 m above mean sea level
  - Courtland, AL: 34.66 N, 87.35 W, 187 m above mean sea level
- Data Frequency: continuous
- Data set restrictions: none

### 2.0 Instrument Description

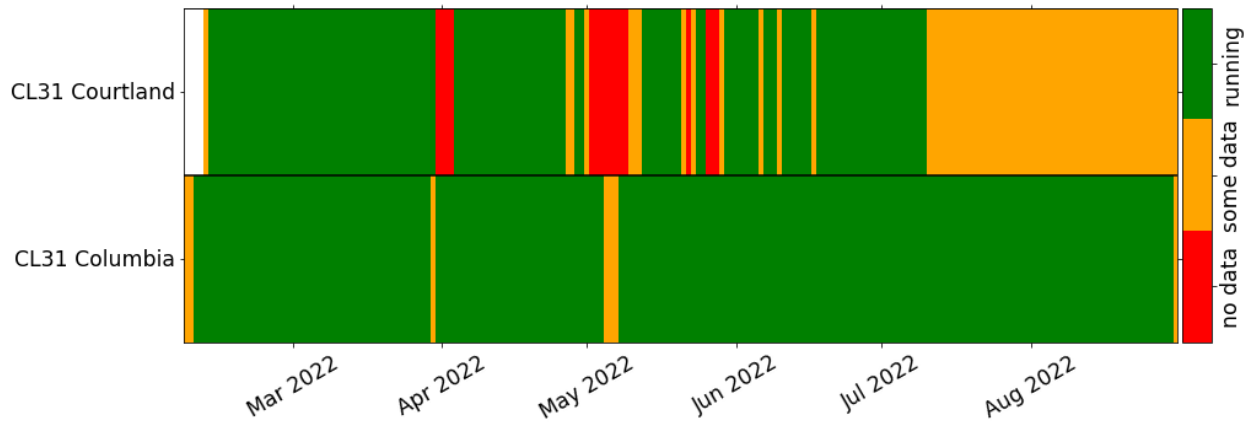
The ceilometers measure vertical profiles of backscatter using laser technology. From the backscatter profiles, cloud base height and vertical visibility are determined using with the Vaisala software CL-view. For details on the instrument specifics and the methods, see the manufacturer manual (cl31usersguide.pdf).

### 3.0 Data Collection and Processing

Data are collected continuously. No data processing outside of the Vaisala software was performed.

Data availability is given in Fig. 1 for the period February 8 to August 31 2022. Short data gaps occurred due to power failures, and AC and laptop issues. At Courtland, a weed vine was partially blocking the ceilometer window reducing the backscatter signal, between July 10 and August 30 2022. Because of this, the automatic cloud base height detection in CL-view hardly

detected any cloud bases during this period. Data during this period are not recommended for use without further processing by the user.



#### 4.0 Data Format

The data format is the original Vaisala format (.DAT). For a description of the format see the manufacturer manual. To convert the .DAT file format to netcdf format, the open source command line Python program ‘cl2nc’ (<https://github.com/peterkuma/cl2nc>) can, for example, be used.

The file naming conventions for the .DAT files are as follows:

NOAA\_PSL\_CL31\_Columbia\_yyyymmdd\_HH.DAT  
 NOAA\_PSL\_CL31\_Courtland\_yyyymmdd\_HH.DAT

with

yyyy: Year

mm: Month

dd: Day

HH: Hour when the first sample was written to the file

The time stamp of all data is in UTC.

List of files transferred:

NOAA_PSL_CL_31_Columbia_20220208_22.DAT	NOAA_PSL_CL_31_Columbia_20220228_00.DAT	NOAA_PSL_CL_31_Columbia_20220320_00.DAT
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NOAA_PSL_CL_31_Columbia_20220211_00.DAT	NOAA_PSL_CL_31_Columbia_20220303_00.DAT	NOAA_PSL_CL_31_Columbia_20220323_00.DAT
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## 5.0 Data Remarks

None

## 6.0 References

None

## 7.0 Appendix

### GCMD keywords

EARTH SCIENCE	SPECTRAL/ENGINEERING	LIDAR	LIDAR BACKSCATTER		ca776e14-fc3d-4044-9d1a-fd7c07569399
EARTH SCIENCE	ATMOSPHERE	CLOUDS	CLOUD PROPERTIES	CLOUD BASE HEIGHT	1f0765e3-4ea3-42be-8ed5-3e26bdebb219
EARTH SCIENCE	ATMOSPHERE	AIR QUALITY	VISIBILITY		9337898d-68dc-43d7-93a9-6afdb4ab1784