

Title: CLAMPS2 Microwave Radiometer Data

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Data content questions can be directed to any author OR to the contacts listed at apps.nssl.noaa.gov/CLAMPS

1.0 Dataset Overview

These files contain 24 hour periods of brightness temperatures and retrieved liquid water path and precipitable water derived from observations collected by the CLAMPS2 microwave radiometer (MWR). The retrieved values are computed by a statistical retrieval based on Turner et al. 2007. These data were collected during the CHEESEHEAD project.

1.1 Date range: 19 September – 11 October 2019

1.2 Location: Prentice Airport Site; 45.54 N, 90.28 W, 475 m elevation

1.3 Estimated data availability



2.0 Instrument Description

The CLAMPS2 platform includes a Radiometrics MP-3000A MWR. The MWR makes spectrally resolved radiance observations in spectral regions that have absorption by water vapor and another gas (in the microwave an oxygen absorption band is used). The spectral regions range of frequencies from 22.0 to 58.8 GHz. In addition to the MWR files, we have also provided accompanying tower files including in-situ surface measurements from a small tower erected above the trailer. Note the presence of the trailer may impact these values.

3.0 Data collection and processing:

This MWR system observes downwelling microwave radiance data (expressed as brightness temperature in units of Kelvin). These brightness temperatures span a range of frequencies from 22.0 to 58.8 GHz. From these observations, time-series of precipitable water vapor (PWV) and liquid water path (LWP) have been retrieved using the statistical method of Turner et al. (2007).

4.0 Data format:

Data are provided in netcdf format. The typical naming convention is clampsmwrc2.a1.YYYYMMDD.hhmmss.cdf, following closely to ARM file naming convention.

Variables provided (only selected variables noted here):

Name	Dimension	Unit
base_time	Single value	Seconds (since 00 UTC 1 Jan 1970)
time_offset	Time	Second (since base_time)
hour	Time	Hours since 00UTC this day
*_sfc	Time	Var. dependent, sfc measurements of T, rh, P
tbsky	Time, Freq.	K, sky brightness temperature
pwv	Time	cm, precipitable water vapor
lwp	Time	g/m ² , liquid water path

5.0 Data Remarks

This instrument was calibrated for this deployment, however it has been known to drift.

6.0 References

Turner, D.D. and coauthors, 2007: Retrieving Liquid Water Path and Precipitable Water Vapor From the Atmospheric Radiation Measurement (ARM) Microwave Radiometers. *IEEE TGRS*, 45, 11.