Dataset Title
Radiometer Data at Garden Valley Site

Dataset Author
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Time of Interest
20160304-20160501, 20170121-20170308 (Time reported in UTC)
Data are discontinuous due to several outages

Area of Interest
44.091822, -115.957557, 3100 ft MSL

Data Frequency
30-40 seconds

Data Spatial Type
Point measurement

General Dataset Description
The instrument used is the Radiometrics WVR-1100 portable water vapor radiometer. The water vapor radiometer is a dual-frequency, total power radiometer, operating at 23.8 GHz and at 31.4 GHz. These two frequencies allow simultaneous determination of integrated liquid water and integrated water vapor along a selected path. The 23.8 GHz frequency was selected because it is in a reserved frequency band, free from satellite downlink transmissions that could cause erroneous results in sky observations. Atmospheric water vapor has an emission line at 22.235 GHz. To diminish the effects of pressure broadening on the observed brightness, observations are made at the “hinge point” at 23.8 GHz, where the vapor emission does not change with altitude (pressure). Cloud liquid in the atmosphere emits in a continuum that increases with frequency, and therefore dominates the 31.4 GHz observation, whereas water vapor dominates the 23.8 GHz channel. The water vapor and cloud liquid water signals can therefore be separated by observing emissions at these two frequencies.

A blower system directs air across the microwave window in the top of the cover to prevent the formation of dew and accumulation of light drizzle on the window, but is ineffective in rain.

Function / parameter	Value
sample time	user selectable for all instrument functions
accuracy	0.5 K
resolution	0.25 K
radiometric range	0 K to 700 K
radiometer requirements	120 or 230 V~ ±10%, 50 to 60 Hz, 150 watts max, 1 A
dew blower requirements	120 or 230 V~ ±10%, 50 to 60 Hz, 1000 watts, 4A
output	RS232 at 1200 baud; n, 8, 1, to notebook computer; ASCII data files
dimensions	50 x 28 x 76 cm; 58 x 28 x 76 cm with optional azimuth steering mount
weight	17 kg; 21 kg with azimuth steering mount
angular coverage	all sky
pointing slew rate	3 degrees/second (azimuth); greater than 90 degrees/second (elevation)
environmental: operating shipping storage	 -20 to +50C, 0 to 100% RH noncondensing -40 to +70C, 0 to 100% RH noncondensing -40 to +70C, 0 to 100% RH noncondensing
maximum operating altitude	2000 meters

Scan angles included in this dataset (azimuth - elevation): 0-14.9, 0-30.1, 0-90, 0-149.8, 0-165.2, 80-9, 80-12.2, 80-30.1, 80-90

File Names

2016-03-04_20_36_05.txt
2016-03-04_21_06_37.txt
2016-03-05_17_03_10.txt
2016-03-05_22_15_37.txt
2016-03-05_22_40_30.txt
2016-03-06_15_48_05.txt
2016-03-08_06_04_00.txt
2016-03-09_00_54_25.txt
2016-03-10_00_10_30.txt
2016-03-11_03_41_36.txt
2016-03-12_00_02_52.txt
2016-03-13_00_06_54.txt
2016-03-14_00_01_38.txt
2016-03-15_04_40_05.txt
2016-03-16_00_01_51.txt
2016-03-17_05_27_14.txt
2016-03-18_00_01_57.txt
2016-03-19_03_00_18.txt
2016-03-20_00_20_13.txt

2016-03-21_00_16_42.txt
2016-03-22_01_36_12.txt
2016-03-23_01_05_46.txt
2016-03-24_02_48_04.txt
2016-03-24_18_31_37.txt
2016-03-25_00_51_39.txt
2016-03-26_00_01_47.txt
2016-03-27_05_07_33.txt
2016-03-28_01_23_16.txt
2016-03-29_01_24_49.txt
2016-03-30_03_05_25.txt
2016-03-31_04_52_59.txt
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2017-03-02_22_42_32.txt
2017-03-06_16_08_50.txt
2017-03-07_20_48_18.txt
2017-03-14_21_06_49.txt

Data Format

ASCII with fixed-width columns
9 Header Lines
Columns: date, time, TbSky23, TbSky31, TkBB, VapCM, LiqCM, DelCM, AZact, ELact, Tau23, Tau31, Tamb, Rh, Pres, Rain

Data Restrictions

None

GCMD Keywords
ATMOSPHERIC WATER VAPOR