Dataset Title
UW Passive Cavity Aerosol Spectrometer Probe (PCASP) Data at Snowbank Site

Dataset Author
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Time of Interest
2017/01/08 01:25:00 to 2017/03/05 16:29:00 (All times reported UTC)

Area of Interest
44.423 N, 116.14 W, 2504 m MSL

Data Frequency
0.1 Hz (i.e., 10 s averages)

Data Spatial Type
Point measurement

General Dataset Description
The Passive Cavity Aerosol Spectrometer Probe (PCASP) is an optical particle counter commonly used for making measurements of the aerosol size distribution (Cai et al., AMT 2013). The PCASP is sensitive to particle diameters (D) between 0.12 and 3 µm. In SNOWIE, the PCASP was operated at the Snow Bank Site on a tower provided by Brandal Glenn (Idaho Power). The tower puts the top of the PCASP at approximately 14 ft above the ground. The concentration of particles with diameter larger than 0.5 µm were derived by summing the appropriate channels of a PCASP. A particle refractive index = 1.59, the same as applied in the PCASP calibration, was assumed. The concentration of particles with D > 0.5 µm (N>) can be used to evaluate the concentration of ambient aerosol particles that nucleate ice crystals as a function of temperature. Both cloud temperature and the PCASP concentration are inputs to the calculation. Validation of the calculation is provided in DeMott et al. (PNAS, 2010) and in Peng et al. (ACP, 2014). Orientation of the PCASP into the wind was checked once per hour. Testing in Laramie indicates that the sensitivity of N> to wind direction and wind speed is tolerable. In addition, the concentration of particles with diameter smaller than 0.2 µm, was derived. The latter is symbolized N<.

File Names
UWYO_PCASP_readme_v6.doc
snowie_plot_v6.pdf (time series graphic file)
snowie_plot_v6.txt (timestamped PCASP values $N_<$ and $N_>$ in an ASCII text file)
Space Delineated ASCII Format: PCASP_raw_data_filename, SNOWIEIOP, mo (UTC), dy (UTC), yr (UTC), hr (UTC), mn (UTC), sc (UTC), N< (unit: particles per ambient cubic centimeter), N> (unit: particles per ambient cubic centimeter)

Data Restrictions
None