TITLE: 3-wavelength total aerosol absorption coefficients

AUTHOR(S):

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1.0 DATA SET OVERVIEW:

3-wavelength total aerosol absorption coefficients data for the VOCALS Experiment . Collected on the NCAR C-130.

2.0 INSTRUMENT DESCRIPTION:

The 3-wavelength Radiance Research Particle Soot Absorption Photometers (PSAP) was used to measure light absorption by total aerosols at 470, 530 and 660nm. inside C-130. The air was sampled through the NCAR Inlet. The data have been corrected for the ambient temperature and pressure based on the ideal gas law. Reported values of light absorption are based on Virkkula et al.(2005). Their calibration is being reviewed, and a possibility exists that these reported absorption values may require adjustment later.

3.0 DATA COLLECTION AND PROCESSING:

The 3-wavelength PSAP data have been corrected for the ambient temperature and pressure based on the ideal gas law. Reported values of light absorption are based on Virkkula et al.(2005). Their calibration is being reviewed, and a possibility exists that these reported absorption values may require adjustment later.

Data influenced by droplet shatter have been preserved in files named *withclouds.ict. Data influenced by droplet shatter have been removed in files without "withcloud". The lower detection limits are 0.9, 1.0, 1.1 Mm-1 for the total absorption coefficients at 470, 530 and 660nm, respectively.

4.0 DATA FORMAT:

Data for each flight is supplied in its own file. Filenames are structured as (for example): ABS_C130_20081025_R0withclouds.ict (measured parameter _ C130_data_version_clouds mask . file type). The 10 columns are for 1.UTC Time; 2. UTC Matlab Time; 3. Start Time (UTC); 4. Stop Time (UTC); 5. Mid-point Time (UTC); 6. Total absorption coefficient (Mm-1) at 470 nm; 7. Total absorption coefficient (Mm-1) at 530 nm; 8. Total absorption coefficient (Mm-1) at 660 nm; 9. Total scattering coefficient (Mm-1) at 550nm; 10. Single scattering albedo (SSA= scat/(scat+abs)) at 550 nm. Standard EOL data archive header information is first followed by a NASA-NOAA header information style precluded by "REMARKS =" identifier.

EXAMPLE HEADER and 3 lines of data

PI/DATA CONTACT = Antony Clarke, 1000 Pope Road, Honolulu, HI 96822; email: tclarke@soest.hawaii.edu; 808-956-6215 DATA COVERAGE = START: 20081023060125; STOP: 20081023141925 UTC PLATFORM/SITE = C-130 INSTRUMENT = PSAP LOCATION = mobile DATA VERSION = 1.0 (20090429) REMARKS = VAMOS Ocean-Cloud-Atmosphere-Land Study (VOCALS) REMARKS = Sample Midpoint time yyyymmddhhmmss, UTC REMARKS = Sample Midpoint time Matlab format, UTC REMARKS = Sample Start time, seconds REMARKS = Sample Stop time, seconds REMARKS = Sample Midpoint time, seconds REMARKS = TOTAL470nmabs, Mm-1 REMARKS = TOTAL530nmabs, Mm-1 REMARKS = TOTAL660nmabs, Mm-1 REMARKS = TOTAL550nmscat, Mm-1 REMARKS = SSA REMARKS = missing data NaN **REMARKS = NASA-NOAA HEADER INFORMATION FOLLOWS REMARKS = 42 1001** REMARKS = Clarke, Antony REMARKS = HiGEAR/University of Hawaii REMARKS = Aerosol absorption coefficients measured with PSAP aboard NSF C-130 **REMARKS = VOCALS** REMARKS = 11 REMARKS = 2008 10 15 2008 11 15 REMARKS = 0 REMARKS = Start UTC, second REMARKS = 7 REMARKS = 1111111 REMARKS = -9999 -9999 -9999 -9999 -9999 -9999 REMARKS = Sample Midpoint time yyyymmddhhmmss, UTC REMARKS = Sample Midpoint time Matlab format, UTC REMARKS = Sample Start time, seconds REMARKS = Sample Stop time, seconds REMARKS = Sample Midpoint time, seconds REMARKS = TOTAL470nmabs, Mm-1 REMARKS = TOTAL530nmabs, Mm-1 REMARKS = TOTAL660nmabs, Mm-1 REMARKS = TOTAL550nmscat, Mm-1 REMARKS = SSA REMARKS = 0 REMARKS = 28REMARKS = PI CONTACT INFO: Antony Clarke, 1000 Pope Road, Honolulu, HI 96822; email: tclarke@soest.hawaii.edu; 808-956-6215 REMARKS = PLATFORM: NSF C-130 aircraft REMARKS = LOCATION: Lat, Lon, and Elev data in a separate file REMARKS = ASSOCIATED DATA: N/A REMARKS = INSTRUMENT INFO: A 3-wI Radiance Research Particle Soot Absorption Photometers (PSAP) were used to measure light absorption by total aerosols at 470, 530 and 660nm. REMARKS = The 10 columns are for 1.UTC Time; 2. UTC Matlab Time; 3. Start Time (UTC); 4. Stop Time (UTC); 5. Mid-point Time (UTC); 6. Total absorption coefficient (Mm-1) at 470 nm; 7. Total absorption coefficient (Mm-1) at 530 nm; 8. Total absorption coefficient (Mm-1) at 660 nm; 9. Total scattering coefficient (Mm-1) at 550nm; 10. Single scattering albedo (SSA= scat/(scat+abs)) at 550 nm. REMARKS = The air was sampled through the NCAR Inlet. Light absorption reported at ambient temperature and pressure. Reported values of light absorption are based on Virkkula et al. (2005). Their calibration is being reviewed, and a possibility exists that these reported absorption values may require adjustment later. REMARKS = References: Virkkula A., N.C. Ahlquist, D.S. Covert , W.P. Arnott, P.J. Sheridan, P.K. Quinn , and D.J. Coffman, Modification, Calibration and a Field Test of an Instrument for Measuring Light Absorption by Particles", Aerosol Sci. and Tech., 39, #1, 68 - 83, 2005 REMARKS = DATA INFO: Unit is Mm-1 for all absorption and scattering data. REMARKS = UNCERTAINTY: N/A REMARKS = DM CONTACT INFO: Vladimir Kapustin and Vera Brekhovskikh, Dept. of Oceanogarphy, University of Hawaii at Manoa, 1000 Pope Road, Honolulu, Hawaii 96822; 808-956-7777; kapustin@soest.hawaii.edu REMARKS = PROJECT INFO: VOCALS; 15 October - 15 November 2008, http://www.eol.ucar.edu/projects/vocals; REMARKS = STIPULATIONS ON USE: N/A REMARKS = OTHER COMMENTS: N/A REMARKS = REVISION: R0 REMARKS = R0: No comment on this revision.

UTC MatlabTime Start_UTC Stop_UTC Mid_UTC TOTAL470nmabs_per_Mm TOTAL530nmabs_per_Mm TOTAL660nmabs_per_Mm TOTAL550nmscat_per_Mm SSA UTC UTC sec sec sec Mm-1 Mm-1 Mm-1 ru 20081023060125.0000 733704.2509837963 21655 21715 21685 0.48 0.27 0.03 49.73 0.99 20081023060225.0000 733704.2516782407 21715 21775 21745 0.12 -0.08 -0.30 48.10 NaN 20081023060325.0000 733704.2523726852 21775 21835 21805 0.79 0.37 -0.15 73.79 0.99.

5.0 DATA REMARKS:

None

6.0 REFERENCES:

Virkkula A., N.C. Ahlquist, D.S. Covert , W.P. Arnott, P.J. Sheridan, P.K. Quinn , and D.J. Coffman, Modification, Calibration and a Field Test of an Instrument for Measuring Light Absorption by Particles", Aerosol Sci. and Tech., 39, #1, 68 - 83, 2005