

Daniel Wolfe and L.Bariteau
May 05, 2010
Readme for CalNEX 2010

The following is a brief description of the daily routines to run on the PSDAS04 computer, and what are the output files. The programs are all located under D:\CALNEX_2010\Atlantis\Scientific_analysis\programs.

In this document, the following notation has been used:

- *MM*, and *DD* for month and day respectively.
- *YY* or *yyyy* for year.
- *hh*, *mm* for hour and minute.
- *doy* for day-of-year.

I. Sonde

1. Raw data

The output files for the radiosonde system are located on the laptop that you use to perform the sounding. Transfer both dc3db and edt data file to the DAS04 computer under D:\CALNEX_2010\Atlantis\balloon\Raw\ dc3db and D:\CALNEX_2010\Atlantis\balloon\Raw\edt.

2. Processing

CALNEX_sounding.m program reads in *YYMMDDhhmm_EDT_LATLON.dat* file from D:\CALNEX_2010\Atlantis\balloon\Raw\edt
4 plots go to D:\CALNEX_2010\Atlantis\balloon\Processed_Images
ASCII txt files written to D:\CALNEX_2010\Atlantis\balloon\Processed

II. Mailbox

1. Raw data

The output files for the mailbox system are located on the computer in the van (see Mailbox manual). Transfer yymmddhh.raw files to the DAS04 computer under D:\CALNEX_2010\Atlantis\radiometer\Mailbox\Raw\.

2. Processing

CALNEX_mailbox_daily.m reads in hourly files from

D:\CALNEX_2010\Atlantis\radiometer\MailboxRaw\ *YYMMDDhh.raw*

4 plots go to D:\CALNEX_2010\Atlantis\radiometer\Mailbox\Processed_Images

ASCII txt files written to D:\CALNEX_2010\Atlantis\radiometer\Mailbox\Processed

(*CALNEX_2010_micro_h.txt*, *CALNEX_2010_micro_m.txt*, *CALNEX_2010_micro_s.txt*, and *CALNEX_mwr_YYMMDD.txt*)

NOTE: Files are appended to. If you have to run a day twice or out of order, you may want to re-run all days after deleting these files.

3. Mailbox-Sonde comparison

D:\CALNEX_2010\Atlantis\Scientific_analysis\programs\sonde\ *pwv_sonde.m* reads in

D:\CALNEX_2010\Atlantis\balloon\Processed*.txt files created by *CALNEX_sounding.m* to calculate Total PWV for each launch. Data are saved and appended to

D:\CALNEX_2010\Atlantis\balloon\Processed\ *calnex_PWV_sonde.MAT* file to be used for comparison with Mailbox.

D:\CALNEX_2010\Atlantis\Scientific_analysis\programs\sonde\ *MB_sonde_pwv_DEW.m* reads in sonde and Mailbox PWV files and plot them together. It reads

D:\CALNEX_2010\Atlantis\balloon\Processed\ *CALNEX_PWV_sonde.mat* and

D:\CALNEX_2010\Atlantis\radiometer\Mailbox\Processed\ *CALNEX_2010_micro_h.txt* and the plot is saved in

D:\CALNEX_2010\Atlantis\Combined_instruments\Raw_Images\ *CALNEX_MWR_SONDE_pwv.png*

III. Wind profiler

1. Raw data

The output files for the wind profiler are located on profiler PC. There are uncorrected and corrected CNS files with the same name, *WYYdoy.CNS*, in two separate folders. Transfer *WYYdoy.CNS* files to the DAS04 computer under D:\CALNEX_2010\Atlantis\radar\profiler\Raw\.

2. Processing

For profiler plots there are 2 options:

GraphXM is loaded on both the DAS04 computer and profiler PCs. On the profiler PC it reads data from the LAPXM database. On the DAS it can read from the CNS files. Both plot wind barbs. GraphXM can print a gif file at the end.

D:\CALNEX_2010\Atlantis\Scientific_analysis\programs\profiler\Profiler_Motcomp.m reads in the CNS files and will plot images of the radials, SNR, CNS counts, and speed and direction. They are saved to D:\CALNEX_2010\Atlantis\radar\profiler\Processed_Images

IV. Flux

1. Raw data

Flux data are acquired on DAS03 computer, and are transferred automatically by FileManager to DAS04 computer under D:\Data.

2. Processing

Under D:\CALNEX_2010\Atlantis\Scientific_analysis\programs\flux\, there are two main M-files. *AUTOflux_eval_CalNEX_2010.m* is the MATLAB program designed to run automatically, whereas *MANUALflux_eval_CalNEX_2010.m* is the code which allow the user to manually look at the data and plots with Matlab. Both programs are very similar and differ slightly due to their usage (see *Auto_flux_eval_readme_v05032010.doc* for more specific details).

The codes take approximately 12 minutes to run and display graphics in MATLAB figure windows. *AUTOflux_eval_CalNEX_2010.m* (if setup in the task scheduler) will run daily and save ascii files and plots under D:\CALNEX_2010\Atlantis\flux\Processed and D:\CALNEX_2010\Atlantis\flux\Processed_Images.

It then zips the ascii data files, plots, and log files and sends it to PSD ftp server (if internet connection available).

In a similar fashion, the *MANUALflux_eval_CalNEX_2010.m* performs the same process as *AUTOflux_eval_CalNEX_2010.m* but gives the user the option to activate or not certain features, like saving the plots, or ftping the data back to Boulder.

3. Processed data and images

Refer to *Auto_flux_eval_readme_v05032010.doc* for more specific details on the 1-min daily ASCII files saved under *D:\CALNEX_2010\Atlantis\flux\Processed*, and for the images saved under *D:\CALNEX_2010\Atlantis\flux\Processed_Images*.

V. Ceilometer

1. Raw data

Ceilometer data are acquired on DAS04 computer under *D:\Data\ceilometer*.

2. Processing

Under *D:\CALNEX_2010\Atlantis\Scientific_analysis\programs\ceilo*, there are two main M-files. *Auto_CT25_daily_process_CalNEX_2010.m* is the MATLAB program designed to run automatically, whereas *Manual_CT25_daily_process_CalNEX_2010.m* is the code which allow the user to manually look at the data and plots with Matlab.

Auto_CT25_daily_process_CalNEX_2010.m (if setup in the task scheduler) will run daily and save ascii files and plots under *D:\CALNEX_2010\Atlantis\ceilometer\Processed* and *D:\CALNEX_2010\Atlantis\ceilometer\Processed_Images*.

It then zips the ascii data files, plots, and log files and saves it in *D:\CALNEX_2010\Atlantis\flux\Processed* to be sent to PSD ftp server (if internet connection available). Note: For now, the ftp is done when *AUTOflux_eval_CalNEX_2010.m* program runs automatically after *Auto_CT25_daily_process_CalNEX_2010.m*.

Manual_CT25_daily_process_CalNEX_2010.m performs the same process as *Auto_CT25_daily_process_CalNEX_2010.m* but asks for the filename the user wants to look at. The user can also change some the options to activate or not certain features, like saving the plots for instance.

3. Processed data and images

The data saved under *D:\CALNEX_2010\Atlantis\ceilometer\Processed* have the following format:

- *cloudbase_yyyy_mm_dd_doy.txt* is the conversion of the raw hexadecimal data into ASCII format.

1 N, where N=number of cloud layers (0-3) or a code (4-5) for marginal clouds

- 2 Height of the first layer in meters (NaN unless N>0)
- 3 Height of the second layer in meters (NaN unless N>1)
- 4 Height of the third layer in meters (NaN unless N>2)
- 5 Hour
- 6 Min
- 7 Sec
- 8 Day Of Year

• *backscatter_YYYY_MM_DD_Doy.mat* are raw variables saved into a binary MAT-file form. To retrieve the data, use the *load* function of Matlab.

- 1 UTC time in decimal hours
- 2 Range of each gate in m
- 3 Sensitivity normalized backscatter coefficient in the unit $\text{srad}^{-1} \cdot \text{km}^{-1}$

From the binary MAT-files, daily graphs are produced and saved in the folder
D:\CALNEX_2010\Atlantis \ceilometer\Processed_Images.

- *backscatter_YYYY_MM_DD_Doy.png* is the time-height color plot of the ceilometer backscatter.
- *cloudbase_YYYY_MM_DD_Doy.png* is the time-height plot of the cloud base.

VI. General comment

Periodically check LACIE to see that files from D:\ are being backed-up on the LACIE which has the same directory structure as the DAS04 computer. Not all files are backed-up to the Lacie automatically, so you might have to perform some of this manually.