ATSC 595 Air Pollution Modelling
AERMET Meteorological Processor Setup Guide

Feb. 2016
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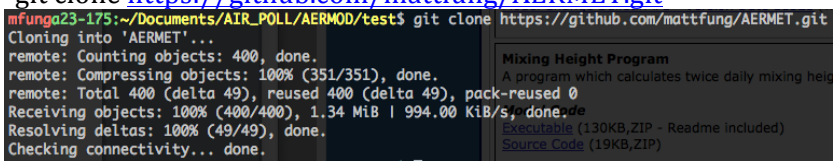
AERMET is a complementary tool for used alongside of AERMOD with the function of converting raw MET data files into binary files suitable for AERMOD ingestion. For UNIX machines (Mac, Linux), the setup process is a lot like setting up AERMOD, namely through downloading source files and compiling with makefile.

There are two options for setup. The former uses git, and downloads v15181 (latest as of Feb 2016). The latter does not require git and may allow you to setup a newer version.

OPTION 1. With Git.

1. Clone the provided git repo containing source files and makefile.
   Open terminal, and navigate to destination of choice.
   "cd /path/to/folder" ex. "cd ~/Documents"

   Clone the following git repo:
   "git clone https://github.com/mattfung/AERMET.git"

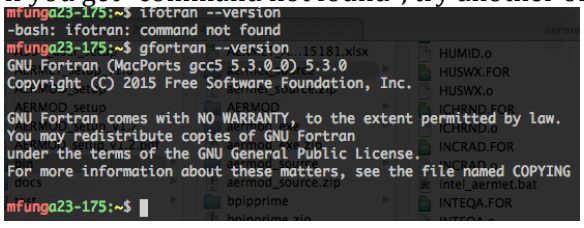


2. A Fortran compiler is needed to setup AERMET. If you have not already done so, please take a mental note of the compiler available in your machine. Most linux distributions have gfortran installed, if you run on a personal mac and have not installed fortran compilers yet, please refer to the gcc & gfortran guide on the course website.

   Generally, the most prevalent open-source compilers are: gfortran, g95.
   Commercial ones: ifortran (intel) pgfotran (Portland Group)

   Check the compiler of your choice by opening terminal, typing:
   "[fortran compiler name] --version" ex. "gfortran --version"

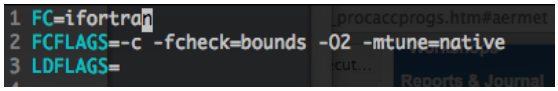
   If you get "command not found", try another one, or install one on your machine.



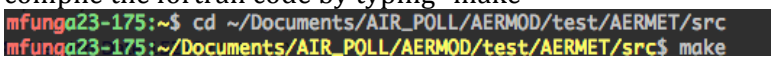
   Please note, if you are running a compiler that is not gfortran, we need to modify the first line of the makefile.

   Navigate to "/AERMET/src" , open "makefile" with the text editor of your choice.

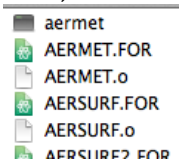
Change the first line of code into "FC=[your compiler]"
ex. "FC=ifortran"



3. Once you are ready, on your terminal navigated to the "/AERMET/src" directory, compile the fortran code by typing "make"



Now, there should be an executable file named "aermet" in the src directory.



4. Download the AERMET test cases at:
http://www3.epa.gov/ttn/scram/metobsdata_procaccprogs.htm#aermet

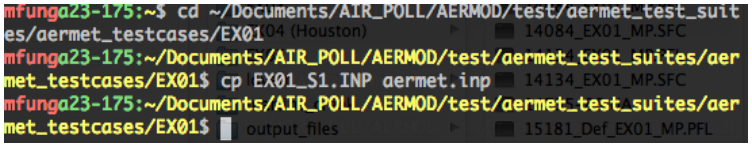
Test Cases
Test Cases README (TXT, 1KB)
Test Cases (ZIP, 173.4MB)

FIXISHD Utility Program (This is no longer needed.)

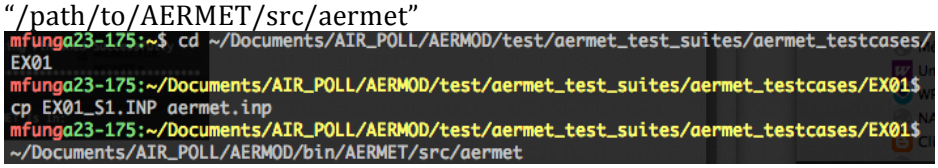
5. In order to test the newly acquired aermet file, unzip the aermet_test_suites folder., preferably under the AERMET folder. Inside the newly unzipped folder is a subdirectory named aermet_testcases.

Let's try running EX01, go into "aermet_test_suites -> aermet_testcases -> EX01"
In order to run aermet files, the file ending with .inp needs to be copied and named "aermet.inp"
Make a copy of EX01_S1.INP called aermet.inp, either on finder or by typing:

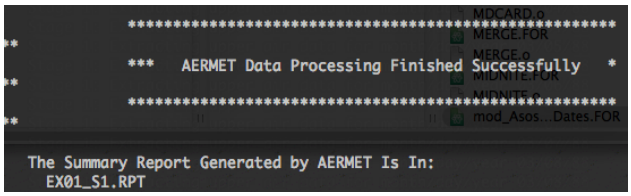
"cd /path/to/aermet_test_suites/aermet_testcases/EX01"
"cp EX01_S1.INP aermet.inp"



Now that your terminal is in the EX01 directory, run aermet by typing:
"/path/to/AERMET/src/aermet"



and aim for…

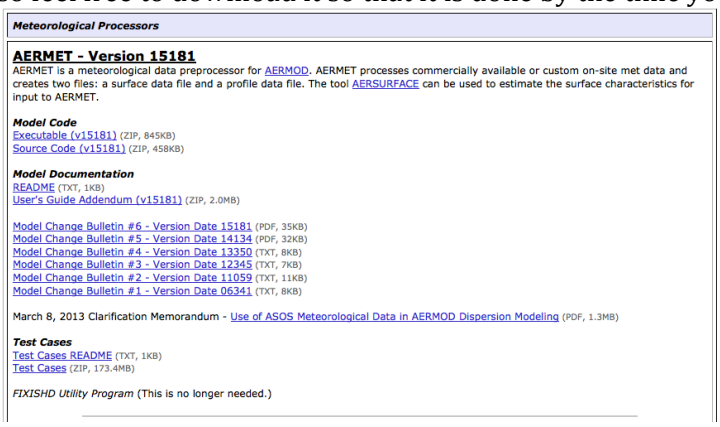


For more debugging information, open EX01_S1.RPT with a text editor

OPTION 2. Without Git.

Preparation:

1. Source code for AERMET could be found here:
   http://www3.epa.gov/ttn/scram/metobsdata_procaccprogs.htm#aermet
   It is a good idea to also download the test suite for AERMET. The file is rather large so feel free to download it so that it is done by the time you compile AERMET.



Meteorological Processors

AERMET - Version 15181

AERMET is a meteorological data preprocessor for AERMOD. AERMET processes commercially available or custom on-site met data and creates two files: a surface data file and a profile data file. The tool AERSURFACE can be used to estimate the surface characteristics for input to AERMET.

Model Code

Executable (v15181) (ZIP, 845KB)
Source Code (v15181) (ZIP, 458KB)

Model Documentation

README (TXT, 1KB)
User's Guide Addendum (v15181) (ZIP, 2.0MB)

Model Change Bulletin #6 - Version Date 15181 (PDF, 35KB)
Model Change Bulletin #5 - Version Date 14134 (PDF, 32KB)
Model Change Bulletin #4 - Version Date 13350 (TXT, 8KB)
Model Change Bulletin #3 - Version Date 12345 (TXT, 7KB)
Model Change Bulletin #2 - Version Date 11059 (TXT, 11KB)
Model Change Bulletin #1 - Version Date 06341 (TXT, 8KB)

March 8, 2013 Clarification Memorandum - Use of ASOS Meteorological Data in AERMOD Dispersion Modeling (PDF, 1.3MB)

Test Cases

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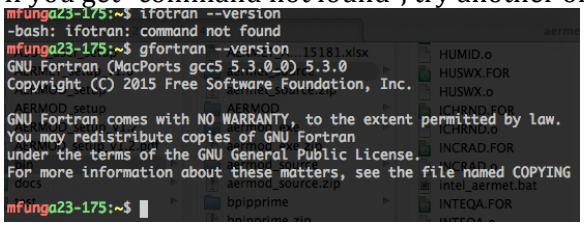
FIXISHD Utility Program (This is no longer needed.)

2. A Fortran compiler is needed to setup AERMET. If you have not already done so, please take a mental note of the compiler available in your machine.

   Generally, the most prevalent open-source compilers are: gfortran, g95.
   Commercial ones: ifortran (intel) pgfotran (Portland Group)

   Check the compiler of your choice by opening terminal, typing:
   "[fortran compiler name] --version" ex. "gfortran --version"
   If you get "command not found", try another one, or install one on your machine.



3. Once you know which compiler you are using, unzip the source file to the location of your choice. Since UNIX cannot run .exe binary files, we need to compile an executable from the fortran source files available in your newly unzipped folder.

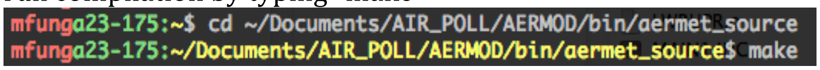
   Navigate into your directory and with the text editor of your choice, create a text file named "makefile" (without .txt or any other extension) and paste the text found in Appendix. A

   ! Please note, if you are running a compiler that is not gfortran, modify the first line of the makefile code into "FC=[your compiler]"
   ex. "FC=ifortran"

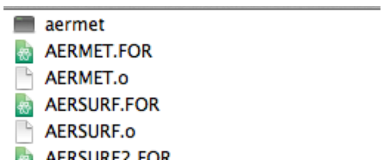
4. Modify file named "mod_AsosCommDates.for" into "modAsosCommDates.FOR"

5. Open terminal, navigate to the folder by typing:
“cd /path/to/aermet/sourceFolder”
ex. “cd /User/mfung/Documents/aermet_source”

run compilation by typing “make”



6. Now, inside ‘aermet_source’ folder, there should be an executable file named ‘aermet’



7. In order to test the newly acquired aermet file, unzip the aermet_test_suites folder. Inside the folder should be a folder named aermet_testcases.

Let’s try running EX01, go into “aermet_test_suites -> aermet_testcases -> EX01”
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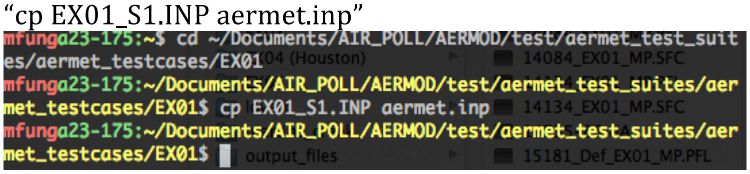
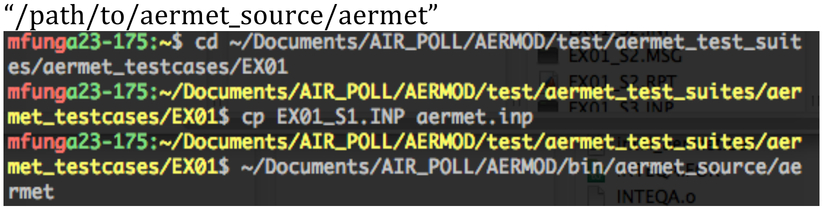
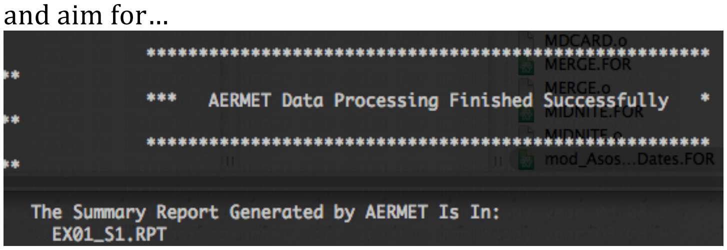


Now that your terminal is in the EX01 directory, run aermet by typing:
“/path/to/aermet_source/aermet”



and aim for…



For more debugging information, open EX01_S1.RPT with a text editor.

```
#APPENDIX A- makefile text
#make sure your indentations are tabs and not spaces.

FC=gfortran
FCFLAGS=-c -fcheck=bounds -O2 -mtune=native
LDFLAGS=

OBJECTS=AERMET.o AERSURF2.o AERSURF.o ASOSREC.o AUDIT.o AUTCHK.o AVGCRD.o
        BANNER.o BULKRI.o CALMS.o CBLHT.o CHRCRD2.o CHRCRD.o CHROND.o CLHT.o
        CLMCRD.o CLOUDS.o COMPDT.o CUBIC.o CVG.o D028LV.o D144HD.o D144LV.o
        D3280H.o D3280L.o D6201H.o D6201L.o DATCRD.o DATER.o DEF256.o DEFINE.o
        DOCLDS.o DTCRD.o EQ_CCVR.o ERRHDL.o FDKEY.o FDPATH.o FETCH.o FLIWK1.o
        FLIWK2.o FLOPEN.o FLOS.o FLSDG.o FLSFC.o FLWRK1.o FLWRK2.o FMTCRD.o
        GEO.o GET620.o GETASOS.o GETCCVR.o GETFIL.o GETFLD.o GETFSL.o GETSFC.o
        GETTEMP.o GETWRD.o GMTLST.o GREG.o HDPROC.o HEADER.o HEAT.o HGTCRD.o
        HR0024.o HTCALC.o HTKEY.o HUMID.o HUSWX.o ICHRND.o INCRAD.o INTEQA.o
        INTHF.o ISHWX.o JBCARD.o LATLON.o LOCCRD.o LWRUPR.o MANDEL.o MDCARD.o
        MERGE.o MIDNITE.o mod_AsosCommDates.o MODEL.o MPCARD.o MPFIN.o
        MPHEAD.o MPMET.o MPOUT.o MPPBL.o MPPROC.o MPTEST.o MRCARD.o MRHDR.o
        MRPATH.o NETRAD.o NR_ANG.o NWSHGT.o OAUDIT.o OSCARD.o OSCHK.o
        OSDTCD.o OSDUMP.o OSFILL2.o OSFILL.o OSHRAV.o OSNEXT.o OSPATH.o
        OSPRNT.o OSQACK.o OSQAST.o OSRANGE.o OSREAD.o OSSMRY.o OSSUMS.o
        OSSWAP.o OSTEST.o OSTRA.o OSWRTE.o OTHHDR.o P2MSUB.o PRESET.o
        PTAREA.o PTGRAD.o RDHUSW.o RDISHD.o RDLREC.o RDSAMS.o READRL.o
        REALQA.o RHOCAL.o RNGCRD.o SAMWX.o SAUDIT.o SBLHT.o SCNGEN.o SECCRD2.o
        SECCRD.o SETHUS.o SETSAM.o SETUP.o SFCARD.o SFCCH2.o SFCCH.o SFCCRD2.o
        SFCCRD.o SFCHK.o SFCWXX.o SFEXST.o SFEXT.o SFPATH.o SFQASM.o SFQAST.o
        SFQATM.o SFTRA.o SMTHZI.o STONUM.o SUBST.o SUMHF.o SUMRY1.o SUMRY2.o
        SUNDAT.o TDPEST.o TEST.o THRESH1MIN.o UACARD.o UACHK.o UAEXST.o
        UAEXT.o UAMOVE.o UAPATH.o UAQASM.o UAQAST.o UATRA.o UAUDIT.o
        UAWNDW.o UCALCO.o UCALST.o VALCRD.o VARCRD.o VRCARD.o WRTCRD.o
        XDTCRD.o XTNDUA.o YR2TOYR4.o YR4TOYR2.o FNDCOMDT.o

all: $(OBJECTS)
        $(FC) $(LDFLAGS) $(OBJECTS) -o aermet

%.o: %.FOR
        $(FC) $(FCFLAGS) $<

clean:
        rm -rf *.o *.mod *.exe aermet
```