AERSCREEN Status and Update

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Release history

- Beta version released August 2010
  - 30 day comment period to report bugs, comments, and suggested changes
  - Version 11060 released March 11, 2011
    - Incorporated bug fixes and suggestions from modeling community
  - Version 11076 released March 17, 2011
    - Corrected a bug found in version 11060 related to complex terrain processing
  - Version 11126 released May 6, 2011
    - Modified to read output from AERMAP version 11103
    - Corrected minor bug in subroutine that reads AERSCREEN.INP file

AERSCREEN status as EPA recommended screening model

- AQMG released a clarification memo on April 11, 2011 recommending AERSCREEN as screening model
- SCREEN3 has been recommended screening model

AERSCREEN status as EPA recommended screening model

"*With respect to a screening version of AERMOD, a tool called AERSCREEN is being developed with a beta version expected to be publicly available in Fall 2005. SCREEN3 is the current screening model in the Guideline, and since SCREEN3 has been successfully applied for a number of years, we believe that SCREEN3 produces an acceptable degree of conservatism for regulatory applications and may be used until AERSCREEN or a similar technique becomes available and tested for general application.* "

Appendix W Preamble Part IV, Section C, paragraph 7 pg. 68221

- Preamble implies AERSCREEN will become recommended screening model once released.
- AERSCREEN is screening version of AERMOD, EPA's preferred near-field dispersion model
  - SCREEN3 based on ISCST3 (replaced by AERMOD) and subject to same limitations as ISCST3

AERSCREEN changes since beta release (Version 11126)

- More QA of inputs
  - See Model Change Bulletin #1 on SCRAM for details

- Probe distance now entered in meters instead of kilometers

  - Receptor spacing methodology

- DOMAINXY keyword added to AERMAP input file
  - DOMAINXY is 1.1 times the probe distance

- User can specify up to 10 discrete distances for receptors in addition to regularly spaced receptors

- Corrected bug related to receptor placement for area sources – impacted maximum concentration

AERSCREEN changes continued

- User can specify output filename other than default AERSCREEN.OUT
  - AERSCREEN uses file prefix for maximum concentration file, new AERSCREEN input file and AERSCREEN log file
- AERSCREEN can model NOx to NO_2 conversion using PVMRM or OLM
  - Specify NO_2/NOx in stack ratio and representative ozone concentration with units (ppb, ppm, ug/m3)
- If necessary executables (AERMOD, MAKEMET, AERMAP, and BPIPPRM) are not in current working directory, AERSCREEN prompts for locations of executables
- AERSCREEN checks that BPIPPRM input file has correct process flag and only one stack

AERSCREEN and new 1-hour NO_2 and SO_2 NAAQS

- AERSCREEN can be used to screen sources to determine inclusion/exclusion in refined modeling for NAAQS

  – Conservative: outputs maximum 1-hour concentration, not design value

- If source exceeds NAAQS level with AERSCREEN does not necessarily mean it will violate NAAQS

  – Should consider including in refined modeling

  – Compare results using surface characteristics from station for refined modeling and from source

Future modifications?

- Allow user to input own receptor network
- Modification of AERSCREEN input file

Current input file structure

```
** STACK DATA        Rate      Height     Temp.   Velocity     Diam.      Flow
**                0.1000E+01   61.0000  415.0000   11.0000    5.0000    457647.

** BUILDING DATA    BPIP     Height  Max dim.  Min dim.   Orient.   Direct.    Offset
**                   N       0.0000   0.0000    0.0000    0.0000    0.0000    0.0000

** MAKEMET DATA     MinT     MaxT Speed   AnemHt Surf Clim   Albedo   Bowen  Length  SC FILE
**                 270.00  310.00   0.5   10.000    9    0   0.1400   0.6300  0.1280  "season_3.out"

** TERRAIN DATA     Terrain    UTM East   UTM North  Zone  Nada     Probe     PROFBASE  Use AERMAP elev
**                    Y        535145.7  3658512.5   17     4      10000.0      25.00         N

** DISCRETE RECEPTORS  Discflag   Receptor file
**                        Y         "discrete_rec.txt"

** UNITS/POPULATION   Units   R/U  Population     Amb. dist.   Flagpole    Flagpole height
**                      M      R        0.         50.000        N          0.00

** OUTPUT FILE "AERSCREEN_TERR_NODW.OUT"

** Temporal sector: Winter, flow vector: 110 degrees, spatial sector:  2

CO STARTING
   TITLEONE POINT, TERRAIN, NO DOWNWASH
   TITLETWO "BUILDING.INP"
**           REFINE STAGE 3
   MODELOPT CONC SCREEN
   AVERTIME 1
   POLLUTID OTHER
   RUNORNOT RUN
CO FINISHED
```

Possible future file structure

```
RUNTITLE new test
UNITFLAG M
SRC_TYPE POINT
EMISRATE 1.0 tpy
SRCPARAM 10.0 300.0 15.0 1.0
NOXTONO2 Y olm
NO2STACK 0.8
ozoneval 40 ug/m3
URBANRUR U 100000
AMBIDIST 30.0

DOWNWASH y
BPIPFILE y test.inp
buildhgt 35
buildmax 35
buildmin 15
buildang 90
stackang 0
distance 30

TERRAINF Y
XY_COORD LATLON 35.0 -75.4
XY_COORD UTM 713541.1 78394965.1 17
NADDATUM 4
PROBEDIS 5000.0
DISCRETE Y discrete.txt
PROFBASE 6.4 Y
FLAGPOLE Y 1.0

AMBIMINT 300.1
```

Questions?