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**********
                                    POSTUTIL Version 1.56        Level 070627
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 Run Title:
   CLECO, Brame, Nesbitt
   ALM-step1
   Repartitioning of NO3/HNO3



 -------------
 Note:  provide NMET lines of the form   * UTLMET = name * *END*

                              or   * MET1D  = name * *END*

                              or   * M2DRHU = name * *END*
                            (and)   * M2DTMP = name * *END*
                            (and)   * M2DRHO = name * *END*

      and NFILES lines of the form     * MODDAT = name * *END*

      where the * should be replaced with an exclamation point,
      the special delimiter character.


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 INPUT GROUP: 1 -- General run control parameters
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     Starting date:    Year  (ISYR) --    No default   ! ISYR  =  2003 !
                    Month (ISMO) --    No default   ! ISMO  = 1   !
                    Day   (ISDY) --    No default   ! ISDY  = 1   !
                    Hour  (ISHR) --    No default   ! ISHR  = 0   !

     Number of periods to process
                          (NPER) -- No default   ! NPER  = 8740   !

     Number of species to process from CALPUFF runs
                      (NSPECINP) -- No default   ! NSPECINP = 9 !

     Number of species to write to output file
                      (NSPECOUT) -- No default   ! NSPECOUT = 9 !

     Number of species to compute from those modeled
     (must be no greater than NSPECOUT)
                      (NSPECCMP) -- No default   ! NSPECCMP = 0 !
```

When multiple files are used, a species name may appear in more than one file. Data for this species will be summed (appropriate if the CALPUFF runs use different source groups). If this summing is not appropriate, remove duplicate species from the file(s).

Stop run if duplicate species names
are found? (MDUPLCT) Default: 0 ! MDUPLCT = 1 !
0 = no (i.e., duplicate species are summed)
1 = yes (i.e., run is halted)

Data for each species in a CALPUFF data file may also be scaled as they are read. This can be done to alter the emission rate of all sources that were modeled in a particular CALPUFF application. The scaling factor for each species is entered in Subgroup (2d), for each file for which scaling is requested.

Number of CALPUFF data files that will be scaled
(must be no greater than NFILES)
(NSCALED) Default: 0 ! NSCALED = 0 !

Ammonia-Limiting Method Option to recompute the HNO3/NO3 concentration partition prior to performing other actions is controlled by MNITRATE. This option will NOT alter any deposition fluxes contained in the CALPUFF file(s). Three partition selections are provided. The first two are typically used in sequence (POSTUTIL is run more than once). The first selection (MNITRATE=1) computes the partition for the TOTAL (all sources) concentration fields (SO4, NO3, HNO3; NH3), and the second (MNITRATE=2) uses this partition (from the previous application of POSTUTIL) to compute the partition for individual source groups. The third selection (MNITRATE=3) can be used instead in a single POSTUTIL application if a file of background concentrations is provided (BCKGALM in Input Group 0).

Required information for MNITRATE=1 includes:
species NO3, HNO3, and SO4
NH3 concentration(s)
met. data file for RH and T

Required information for MNITRATE=2 includes:
species NO3 and HNO3 for a source group
species NO3ALL and HNO3ALL for all source groups, properly partitioned

Required information for MNITRATE=3 includes:
species NO3, HNO3, and SO4 for a source group
species NO3, HNO3, SO4 and TNH3 from the background BCKGALM file
If TNH3 is not in the background BCKGALM file, monthly TNH3 concentrations are used (BCKTNH3)

Recompute the HNO3/NO3 partition for concentrations?
(MNITRATE) Default: 0 ! MNITRATE = 1 !
0 = no
1 = yes, for all sources combined
2 = yes, for a source group
3 = yes, ALM application in one step

SOURCE OF AMMONIA:

Ammonia may be available as a modeled species in the CALPUFF files, and it may or may not be appropriate to use it for repartitioning NO3/HNO3 (in option MNITRATE=1 or MNITRATE=3). Its use is contolled by NH3TYP. When NH3 is listed as a processed species in Subgroup (2a), as one of the NSPECINP ASPECI entries, and the right option is chosen for NH3TYP, the NH3 modeled values from the CALPUFF concentration files will be used in the chemical equilibrium calculation.

NH3TYP also controls when monthly background ammonia values are used. Both gaseous (NH3) and total (TNH3) ammonia can be provided monthly as BCKNH3/BCKTNH3.

What is the input source of Ammonia?
(NH3TYP) No Default ! NH3TYP = 3 !

0 = No background will be used.
ONLY NH3 from the concentration files listed in Subgroup (2a) as a processed species will be used.
(Cannot be used with MNITRATE=3)

1 = NH3 Monthly averaged background (BCKNH3) listed below will be added to NH3 from concentration files listed in Subgroup (2a)

2 = NH3 from background concentration file BCKGALM will be added to NH3 from concentration files listed in Subgroup (2a)
(ONLY possible for MNITRATE=3)

3 = NH3 Monthly averaged background (BCKNH3) listed below will be used alone.

4 = NH3 from background concentration file BCKGALM will be used alone
(ONLY possible for MNITRATE=3)

NH3TYP	NH3 CONC	NH3 FROM BCKNH3	NH3 FROM BCKGALM
0	X	0	0
1	X	X	0
2	X	0	X
3	0	X	0
4	0	0	X

Default monthly (12 values) background ammonia concentration (ppb) used for HNO3/NO3 partition:

Gaseous NH3 (BCKNH3) Default: -999
! BCKNH3 = 3., 3., 3., 3., 3., 3., 3., 3., 4*3. !

Total TNH3 (BCKTNH3) Default: -999
* BCKTNH3 = 1., 1., 1., 1.1, 1.4, 1.3, 1.3, 1.2, 4*1. *

If a single value is entered, this is used for all 12 months.
Month 1 is JANUARY, Month 12 is DECEMBER.

!END!

NOTICE: Starting year in control file sets the
expected century for the simulation. All
YY years are converted to YYYY years in
the range: 1953 2052

INPUT GROUP: 2 -- Species Processing Information

Subgroup (2a)

The following NSPECINP species will be processed:

! ASPECI = SO2 ! !END!
! ASPECI = SO4 ! !END!
! ASPECI = NOX ! !END!
! ASPECI = HNO3 ! !END!
! ASPECI = NO3 ! !END!
! ASPECI = PMC ! !END!
! ASPECI = PMF ! !END!
! ASPECI = EC ! !END!
! ASPECI = SOA ! !END!

Subgroup (2b)

The following NSPECOUT species will be written:

! ASPECO = SO2 ! !END!
! ASPECO = SO4 ! !END!
! ASPECO = NOX ! !END!
! ASPECO = HNO3 ! !END!
! ASPECO = NO3 ! !END!
! ASPECO = PMC ! !END!
! ASPECO = PMF ! !END!
! ASPECO = EC ! !END!
! ASPECO = SOA ! !END!

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**********
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 POSTUTIL Control File Input Summary ------------------------

                Run starting date -- year: 2002
                                month:   12
                                  day:   31
                             Julian day:  365
            time beginning  -  hour(0-23):   23
                          -      second:    0
                   Run length (periods): 8740


Note: the length of a period is controlled by
     the averaging time selected in the model

Partition between HNO3 and NO3 is computed

NH3 background (in ppb) listed below will be
used alone for the NO3/HNO3 repartitioning
Default background Ammonia (ppb) - NH3  TNH3
    January   =   3.00000000 -999.000000
    February  =   3.00000000 -999.000000
    March     =   3.00000000 -999.000000
    April     =   3.00000000 -999.000000
    May       =   3.00000000 -999.000000
    June      =   3.00000000 -999.000000
    July      =   3.00000000 -999.000000
    August    =   3.00000000 -999.000000
    September =   3.00000000 -999.000000
    October   =   3.00000000 -999.000000
    November  =   3.00000000 -999.000000
    December  =   3.00000000 -999.000000

     Species needed from input file --
                    SO2
                    SO4
                    NOX
                    HNO3
                    NO3
                    PMC
                    PMF
                    EC
                    SOA

     Species written to output file --
                    SO2
                    SO4
                    NOX
```

HNO3
NO3
PMC
PMF
EC
SOA

Species computed from input species --

PROCESSED MODEL FILE ---------- Number 1

CALPUFF 5.8.4 130731

CALPUFF Input File
Cleco, Brame Energy Center, Nesbitt
2003 Baseline, REV D

Averaging time for values reported from model:
1 HOUR

Number of averaging periods in file from model:
8740

Chemical species names for each layer in model:
SO2 1
SO4 1
NOX 1
HNO3 1
NO3 1
PMC 1
PMF 1
EC 1
SOA 1

msyr,mjsday = 2002 365
mshr,mssec = 23 0
nsecdt (period) = 3600
mnper,nszout,mavgpd = 8740 9 1
xorigkm,yorigkm,nstas = -951.547058 -1646.63708 162
ielmet,jelmet = 462 376
delx,dely,nz = 4.00000000 4.00000000 1
iastar,iastop,jastar,jastop = 288 451 117 274
isastr,isastp,jsastr,jsastp = 1 462 1 376
(computed) ngx,ngy = 462 376
meshdn,npts,nareas = 1 1 0
nlines,nvols = 0 0
ndrec,nctrec,LSGRID = 120 0 F

Source names stored (all files):
type: pt1 - UNIT_1

```
**********    HNO3/NO3 Partitioning  **********
    SO4 is available
    NO3 is available
    HNO3 is available
    NH3 gas is NOT available
    total NH3 is NOT available
   since no NH3gas and no totalNH3 are present
   in any CALPUFF concentration files
   NH3 from BCKNH3 or BCKTNH3 will be used



Chemical species names written to new file:
SO2          1
SO4          1
NOX          1
HNO3         1
NO3          1
PMC          1
PMF          1
EC           1
SOA          1



-----------------------------------------------------------------------------------------------------------------------------
        INPUT FILES

Default Name     Unit No.     File Name and Path
------------     --------     ------------------
POSTUTIL.INP        5       PU_NESBITT_03D.inp
 CALPUFF.DAT        10       cp_nesbitt_03d.dat
    MET.DAT         4       e:\refined cenrap\2003\03met01.met
    (none)          4       e:\refined cenrap\2003\03met02.met
    (none)          4       e:\refined cenrap\2003\03met03.met
    (none)          4       e:\refined cenrap\2003\03met04.met
    (none)          4       e:\refined cenrap\2003\03met05.met
    (none)          4       e:\refined cenrap\2003\03met06.met
    (none)          4       e:\refined cenrap\2003\03met07.met
    (none)          4       e:\refined cenrap\2003\03met08.met
    (none)          4       e:\refined cenrap\2003\03met09.met
    (none)          4       e:\refined cenrap\2003\03met10.met
    (none)          4       e:\refined cenrap\2003\03met11.met
    (none)          4       e:\refined cenrap\2003\03met12.met


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        OUTPUT FILES

Default Name     Unit No.     File Name and Path
------------     --------     ------------------
POSTUTIL.LST        7       pu_nesbitt_03d.lst
   MODEL.DAT        8       pu_nesbitt_03d.flx

WARNING  subr. METQA -- Met data end early
    End of simulation:  200336503 0
```

```
    End of met data  :  200303123 0


Skipping periods in data files
 Start Time  2002 365 23 0
 Data File  ---  Skipped Periods
     1           0


Skipping periods in background pollutant files
 Start Time  2002 365 23 0
 Data File  ---  Skipped Periods
     2           0

WARNING in subr. METQA -- Met data begin late
    Start of simulation:  200236523 0
    Start of met data  :  200303123 0

WARNING  subr. METQA -- Met data end early
    End of simulation:  200336503 0
    End of met data  :  200305923 0


WARNING in subr. METQA -- Met data begin late
    Start of simulation:  200236523 0
    Start of met data  :  200305923 0

WARNING  subr. METQA -- Met data end early
    End of simulation:  200336503 0
    End of met data  :  200309023 0


WARNING in subr. METQA -- Met data begin late
    Start of simulation:  200236523 0
    Start of met data  :  200309023 0

WARNING  subr. METQA -- Met data end early
    End of simulation:  200336503 0
    End of met data  :  200312023 0


WARNING in subr. METQA -- Met data begin late
    Start of simulation:  200236523 0
    Start of met data  :  200312023 0

WARNING  subr. METQA -- Met data end early
    End of simulation:  200336503 0
    End of met data  :  200315123 0


WARNING in subr. METQA -- Met data begin late
    Start of simulation:  200236523 0
    Start of met data  :  200315123 0

WARNING  subr. METQA -- Met data end early
    End of simulation:  200336503 0
```

```
    End of met data  :  200318123 0


WARNING in subr. METQA -- Met data begin late
    Start of simulation:  200236523 0
    Start of met data  :  200318123 0

WARNING  subr. METQA -- Met data end early
    End of simulation:  200336503 0
    End of met data  :  200321223 0


WARNING in subr. METQA -- Met data begin late
    Start of simulation:  200236523 0
    Start of met data  :  200321223 0

WARNING  subr. METQA -- Met data end early
    End of simulation:  200336503 0
    End of met data  :  200324323 0


WARNING in subr. METQA -- Met data begin late
    Start of simulation:  200236523 0
    Start of met data  :  200324323 0

WARNING  subr. METQA -- Met data end early
    End of simulation:  200336503 0
    End of met data  :  200327323 0


WARNING in subr. METQA -- Met data begin late
    Start of simulation:  200236523 0
    Start of met data  :  200327323 0

WARNING  subr. METQA -- Met data end early
    End of simulation:  200336503 0
    End of met data  :  200330423 0


WARNING in subr. METQA -- Met data begin late
    Start of simulation:  200236523 0
    Start of met data  :  200330423 0

WARNING  subr. METQA -- Met data end early
    End of simulation:  200336503 0
    End of met data  :  200333423 0


WARNING in subr. METQA -- Met data begin late
    Start of simulation:  200236523 0
    Start of met data  :  200333423 0
```