

APPENDIX F

SAMPLE CALMET CONTROL FILE

Burns & McDonnell, Domain 1 - 184x212, 1.5 km resolution
 with MM4.dat, SURF.dat, PRECIP.dat, UP.dat, Jan 6-Dec 29, 1990
 13995 surface station ISURFT=9, 3946 upper air station, IUPT=1
 ----- Run title (3 lines) -----

CALMET MODEL CONTROL FILE

INPUT GROUP: 0 -- Input and Output File Names

Subgroup (a)

Default Name	Type	File Name
GEO.DAT	input	! GEODAT=../../data/geo-d1.dat !
SURF.DAT	input	! SRFDAT=../../data/surf90.dat !
CLOUD.DAT	input	* CLDDAT= *
PRECIP.DAT	input	! PRCDAT=../../data/pm90.dat !
MM4.DAT	input	! MM4DAT=../../data/mm5-bm90.dat !
WT.DAT	input	* WTDAT= *
CALMET.LST	output	! METLST=met90-2.lst !
CALMET.DAT	output	! METDAT=met90-2.dat !
PACOUT.DAT	output	* PACDAT= *

All file names will be converted to lower case if LCFILES = T
 Otherwise, if LCFILES = F, file names will be converted to UPPER CASE
 T = lower case ! LCFILES = T !
 F = UPPER CASE

NUMBER OF UPPER AIR & OVERWATER STATIONS:

Number of upper air stations (NUSTA) No default ! NUSTA = 7 !
 Number of overwater met stations
 (NOWSTA) No default ! NOWSTA = 0 !

!END!

Subgroup (b)

Upper air files (one per station)

Default Name	Type	File Name
UP1.DAT	input	1 ! UPDAT=../../data/up-umn90.dat! !END!
UP2.DAT	input	2 ! UPDAT=../../data/up-1m190.dat! !END!
UP3.DAT	input	3 ! UPDAT=../../data/up-jan90.dat! !END!
UP4.DAT	input	4 ! UPDAT=../../data/up-ggg90.dat! !END!
UP5.DAT	input	5 ! UPDAT=../../data/up-oun90.dat! !END!
UP6.DAT	input	6 ! UPDAT=../../data/up-top90.dat! !END!
UP7.DAT	input	7 ! UPDAT=../../data/up-pah90.dat! !END!

Subgroup (c)

Overwater station files (one per station)

Default Name	Type	File Name
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Subgroup (d)

Other file names

Default Name	Type	File Name
DIAG.DAT	input	* DIADAT= *
PROG.DAT	input	* PRGDAT= *

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TEST.PRT      output      * TSTPRT=          *
TEST.OUT      output      * TSTOUT=          *
TEST.KIN      output      * TSTKIN=          *
TEST.FRD      output      * TSTFRD=          *
TEST.SLP      output      * TSTSLP=          *

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NOTES: (1) File/path names can be up to 70 characters in length
       (2) Subgroups (a) and (d) must have ONE 'END' (surround by
           delimiters) at the end of the group
       (3) Subgroups (b) and (c) must have an 'END' (surround by
           delimiters) at the end of EACH LINE

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!END!

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INPUT GROUP: 1 -- General run control parameters
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Starting date:  Year (IBYR) -- No default      ! IBYR= 1990 !
                Month (IBMO) -- No default     ! IBMO= 1  !
                Day (IBDY)  -- No default     ! IBDY= 6  !
                Hour (IBHR)  -- No default     ! IBHR= 1  !

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Base time zone      (IBTZ) -- No default      ! IBTZ= 6  !
  PST = 08, MST = 07
  CST = 06, EST = 05

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Length of run (hours) (IRLG) -- No default    ! IRLG= 8592 !

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Run type            (IRTYPE) -- Default: 1    ! IRTYPE= 1  !

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  0 = Computes wind fields only
  1 = Computes wind fields and micrometeorological variables
      (u*, w*, L, zi, etc.)
  (IRTYPE must be 1 to run CALPUFF or CALGRID)

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Compute special data fields required
by CALGRID (i.e., 3-D fields of W wind
components and temperature)
in additional to regular          Default: T    ! LCALGRD = T !
fields ? (LCALGRD)
(LCALGRD must be T to run CALGRID)

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Flag to stop run after
SETUP phase (ITEST)              Default: 2    ! ITEST= 2  !
(Used to allow checking
of the model inputs, files, etc.)
ITEST = 1 - STOPS program after SETUP phase
ITEST = 2 - Continues with execution of
              COMPUTATIONAL phase after SETUP

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!END!

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INPUT GROUP: 2 -- Map Projection and Grid control parameters
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Projection for all (X,Y):
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Map projection
(PMAP)                      Default: UTM    ! PMAP = LCC !

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  UTM : Universal Transverse Mercator
  TTM : Tangential Transverse Mercator
  LCC : Lambert Conformal Conic

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    PS : Polar Stereographic
    EM : Equatorial Mercator
    LAZA : Lambert Azimuthal Equal Area

False Easting and Northing (km) at the projection origin
(Used only if PMAP= TTM, LCC, or LAZA)
(FEAST)                Default=0.0      ! FEAST  = 0.000  !
(FNORTH)               Default=0.0      ! FNORTH = 0.000  !

UTM zone (1 to 60)
(Used only if PMAP=UTM)
(IUTMZN)                No Default      ! IUTMZN = 0    !

Hemisphere for UTM projection?
(Used only if PMAP=UTM)
(UTMHEM)                Default: N      ! UTMHEM = N    !
    N : Northern hemisphere projection
    S : Southern hemisphere projection

Latitude and Longitude (decimal degrees) of projection origin
(Used only if PMAP= TTM, LCC, PS, EM, or LAZA)
(RLAT0)                 No Default      ! RLAT0 = 36N   !
(RLON0)                 No Default      ! RLON0 = 93.3W !

    TTM : RLON0 identifies central (true N/S) meridian of projection
           RLAT0 selected for convenience
    LCC : RLON0 identifies central (true N/S) meridian of projection
           RLAT0 selected for convenience
    PS  : RLON0 identifies central (grid N/S) meridian of projection
           RLAT0 selected for convenience
    EM  : RLON0 identifies central meridian of projection
           RLAT0 is REPLACED by 0.0N (Equator)
    LAZA: RLON0 identifies longitude of tangent-point of mapping plane
           RLAT0 identifies latitude of tangent-point of mapping plane

Matching parallel(s) of latitude (decimal degrees) for projection
(Used only if PMAP= LCC or PS)
(XLAT1)                 No Default      ! XLAT1 = 33N   !
(XLAT2)                 No Default      ! XLAT2 = 38N   !

    LCC : Projection cone slices through Earth's surface at XLAT1 and XLAT2
    PS  : Projection plane slices through Earth at XLAT1
           (XLAT2 is not used)

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Note: Latitudes and longitudes should be positive, and include a
      letter N,S,E, or W indicating north or south latitude, and
      east or west longitude.  For example,
      35.9 N Latitude = 35.9N
      118.7 E Longitude = 118.7E

Datum-region
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The Datum-Region for the coordinates is identified by a character
string.  Many mapping products currently available use the model of the
Earth known as the World Geodetic System 1984 (WGS-84).  Other local
models may be in use, and their selection in CALMET will make its output
consistent with local mapping products.  The list of Datum-Regions with
official transformation parameters is provided by the National Imagery and
Mapping Agency (NIMA).

NIMA Datum - Regions(Examples)
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WGS-84  WGS-84 Reference Ellipsoid and Geoid, Global coverage (WGS84)
NAS-C   NORTH AMERICAN 1927 Clarke 1866 Spheroid, MEAN FOR CONUS (NAD27)
NAR-C   NORTH AMERICAN 1983 GRS 80 Spheroid, MEAN FOR CONUS (NAD83)
NWS-84  NWS 6370KM Radius, Sphere
ESR-S   ESRI REFERENCE 6371KM Radius, Sphere

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Datum-region for output coordinates
(DATUM) Default: WGS-84 ! DATUM = NAR-C !

Horizontal grid definition:

Rectangular grid defined for projection PMAP,
with X the Easting and Y the Northing coordinate

No. X grid cells (NX) No default ! NX = 184 !
No. Y grid cells (NY) No default ! NY = 212 !
Grid spacing (DGRIDKM) No default ! DGRIDKM = 1.5 !
Units: km

Reference grid coordinate of
SOUTHWEST corner of grid cell (1,1)

X coordinate (XORIGKM) No default ! XORIGKM = -168.000 !
Y coordinate (YORIGKM) No default ! YORIGKM = -134.000 !
Units: km

Vertical grid definition:

No. of vertical layers (NZ) No default ! NZ = 10 !
Cell face heights in arbitrary
vertical grid (ZFACE(NZ+1)) No defaults
Units: m
! ZFACE = 0.,20.,40.,80.,160.,320.,640.,1000.,1500.,2200.,3000. !

!END!

INPUT GROUP: 3 -- Output Options

DISK OUTPUT OPTION

Save met. fields in an unformatted
output file ? (LSAVE) Default: T ! LSAVE = T !
(F = Do not save, T = Save)

Type of unformatted output file:
(IFORMO) Default: 1 ! IFORMO = 1 !

1 = CALPUFF/CALGRID type file (CALMET.DAT)
2 = MESOPUFF-II type file (PACOUT.DAT)

LINE PRINTER OUTPUT OPTIONS:

Print met. fields ? (LPRINT) Default: F ! LPRINT = F !
(F = Do not print, T = Print)
(NOTE: parameters below control which
met. variables are printed)

Print interval
(IPRINF) in hours Default: 1 ! IPRINF = 1 !
(Meteorological fields are printed
every 1 hours)

Specify which layers of U, V wind component
to print (IUVOUT(NZ)) -- NOTE: NZ values must be entered

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(0=Do not print, 1=Print)
(used only if LPRINT=T)           Defaults: NZ*0
! IUVOU = 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0 !
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Specify which levels of the W wind component to print
(NOTE: W defined at TOP cell face -- 10 values)
(IWOUI(NZ)) -- NOTE: NZ values must be entered
(0=Do not print, 1=Print)
(used only if LPRINT=T & LCALGRD=T)
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                                           Defaults: NZ*0
! IWOUI = 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0 !

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Specify which levels of the 3-D temperature field to print
(ITOUI(NZ)) -- NOTE: NZ values must be entered
(0=Do not print, 1=Print)
(used only if LPRINT=T & LCALGRD=T)
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                                           Defaults: NZ*0
! ITOUI = 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0 !

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Specify which meteorological fields
to print
(used only if LPRINT=T)           Defaults: 0 (all variables)
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Variable	Print ?	
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	(0 = do not print, 1 = print)	
! STABILITY	= 0	! - PGT stability class
! USTAR	= 0	! - Friction velocity
! MONIN	= 0	! - Monin-Obukhov length
! MIXHT	= 0	! - Mixing height
! WSTAR	= 0	! - Convective velocity scale
! PRECIP	= 0	! - Precipitation rate
! SENSHEAT	= 0	! - Sensible heat flux
! CONVZI	= 0	! - Convective mixing ht.

Testing and debug print options for micrometeorological module

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Print input meteorological data and
internal variables (LDB)           Default: F           ! LDB = F !
(F = Do not print, T = print)
(NOTE: this option produces large amounts of output)

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First time step for which debug data
are printed (NN1)                 Default: 1           ! NN1 = 1 !

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Last time step for which debug data
are printed (NN2)                 Default: 1           ! NN2 = 1 !

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Testing and debug print options for wind field module

(all of the following print options control output to wind field module's output files: TEST.PRT, TEST.OUT, TEST.KIN, TEST.FRD, and TEST.SLP)

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Control variable for writing the test/debug
wind fields to disk files (IOUTD)
(0=Do not write, 1=write)         Default: 0           ! IOUTD = 0 !

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Number of levels, starting at the surface,
to print (NZPRN2)                 Default: 1           ! NZPRN2 = 0 !

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Print the INTERPOLATED wind components ?
(IPR0) (0=no, 1=yes)          Default: 0      ! IPR0 = 0 !

Print the TERRAIN ADJUSTED surface wind
components ?
(IPR1) (0=no, 1=yes)          Default: 0      ! IPR1 = 0 !

Print the SMOOTHED wind components and
the INITIAL DIVERGENCE fields ?
(IPR2) (0=no, 1=yes)          Default: 0      ! IPR2 = 0 !

Print the FINAL wind speed and direction
fields ?
(IPR3) (0=no, 1=yes)          Default: 0      ! IPR3 = 0 !

Print the FINAL DIVERGENCE fields ?
(IPR4) (0=no, 1=yes)          Default: 0      ! IPR4 = 0 !

Print the winds after KINEMATIC effects
are added ?
(IPR5) (0=no, 1=yes)          Default: 0      ! IPR5 = 0 !

Print the winds after the FROUDE NUMBER
adjustment is made ?
(IPR6) (0=no, 1=yes)          Default: 0      ! IPR6 = 0 !

Print the winds after SLOPE FLOWS
are added ?
(IPR7) (0=no, 1=yes)          Default: 0      ! IPR7 = 0 !

Print the FINAL wind field components ?
(IPR8) (0=no, 1=yes)          Default: 0      ! IPR8 = 0 !

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!END!

INPUT GROUP: 4 -- Meteorological data options

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NO OBSERVATION MODE          (NOOBS) Default: 0      ! NOOBS = 0 !
  0 = Use surface, overwater, and upper air stations
  1 = Use surface and overwater stations (no upper air observations)
      Use MM5 for upper air data
  2 = No surface, overwater, or upper air observations
      Use MM5 for surface, overwater, and upper air data

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NUMBER OF SURFACE & PRECIP. METEOROLOGICAL STATIONS

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Number of surface stations   (NSSTA) No default      ! NSSTA = 14 !

Number of precipitation stations
(NPSTA=-1: flag for use of MM5 precip data)
                              (NPSTA) No default      ! NPSTA = 130 !

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CLOUD DATA OPTIONS

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Gridded cloud fields:
                              (ICLOUD) Default: 0      ! ICLOUD = 0 !
ICLOUD = 0 - Gridded clouds not used
ICLOUD = 1 - Gridded CLOUD.DAT generated as OUTPUT
ICLOUD = 2 - Gridded CLOUD.DAT read as INPUT
ICLOUD = 3 - Gridded cloud cover from Prognostic Rel. Humidity

```

FILE FORMATS

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Surface meteorological data file format
                              (IFORMS) Default: 2      ! IFORMS = 2 !
(1 = unformatted (e.g., SMERGE output))
(2 = formatted   (free-formatted user input))

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Precipitation data file format
 (IFORMP) Default: 2 ! IFORMP = 2 !
 (1 = unformatted (e.g., PMERGE output))
 (2 = formatted (free-formatted user input))

Cloud data file format
 (IFORMC) Default: 2 ! IFORMC = 2 !
 (1 = unformatted - CALMET unformatted output)
 (2 = formatted - free-formatted CALMET output or user input)

!END!

 INPUT GROUP: 5 -- Wind Field Options and Parameters

WIND FIELD MODEL OPTIONS

Model selection variable (IWFCOD) Default: 1 ! IWFCOD = 1 !
 0 = Objective analysis only
 1 = Diagnostic wind module

Compute Froude number adjustment
 effects ? (IFRADJ) Default: 1 ! IFRADJ = 1 !
 (0 = NO, 1 = YES)

Compute kinematic effects ? (IKINE) Default: 0 ! IKINE = 0 !
 (0 = NO, 1 = YES)

Use O'Brien procedure for adjustment
 of the vertical velocity ? (IOBR) Default: 0 ! IOBR = 0 !
 (0 = NO, 1 = YES)

Compute slope flow effects ? (ISLOPE) Default: 1 ! ISLOPE = 1 !
 (0 = NO, 1 = YES)

Extrapolate surface wind observations
 to upper layers ? (IEXTRP) Default: -4 ! IEXTRP = -1 !
 (1 = no extrapolation is done,
 2 = power law extrapolation used,
 3 = user input multiplicative factors
 for layers 2 - NZ used (see FEXTRP array)
 4 = similarity theory used
 -1, -2, -3, -4 = same as above except layer 1 data
 at upper air stations are ignored

Extrapolate surface winds even
 if calm? (ICALM) Default: 0 ! ICALM = 0 !
 (0 = NO, 1 = YES)

Layer-dependent biases modifying the weights of
 surface and upper air stations (BIAS(NZ))
 -1<=BIAS<=1
 Negative BIAS reduces the weight of upper air stations
 (e.g. BIAS=-0.1 reduces the weight of upper air stations
 by 10%; BIAS= -1, reduces their weight by 100 %)
 Positive BIAS reduces the weight of surface stations
 (e.g. BIAS= 0.2 reduces the weight of surface stations
 by 20%; BIAS=1 reduces their weight by 100%)
 Zero BIAS leaves weights unchanged (1/R**2 interpolation)
 Default: NZ*0
 ! BIAS = 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0 , 0

!

Minimum distance from nearest upper air station
 to surface station for which extrapolation
 of surface winds at surface station will be allowed
 (RMIN2: Set to -1 for IEXTRP = 4 or other situations
 where all surface stations should be extrapolated)

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Default: 4.      ! RMIN2 = -1.0 !

Use gridded prognostic wind field model
output fields as input to the diagnostic
wind field model (IPROG)      Default: 0      ! IPROG = 4 !
(0 = No, [IWFCOD = 0 or 1]
1 = Yes, use CSUMM prog. winds as Step 1 field, [IWFCOD = 0]
2 = Yes, use CSUMM prog. winds as initial guess field [IWFCOD = 1]
3 = Yes, use winds from MM4.DAT file as Step 1 field [IWFCOD = 0]
4 = Yes, use winds from MM4.DAT file as initial guess field [IWFCOD = 1]
5 = Yes, use winds from MM4.DAT file as observations [IWFCOD = 1]
13 = Yes, use winds from MM5.DAT file as Step 1 field [IWFCOD = 0]
14 = Yes, use winds from MM5.DAT file as initial guess field [IWFCOD = 1]
15 = Yes, use winds from MM5.DAT file as observations [IWFCOD = 1]

Timestep (hours) of the prognostic
model input data (ISTEPPG)      Default: 1      ! ISTEPPG = 1 !

RADIUS OF INFLUENCE PARAMETERS

Use varying radius of influence      Default: F      ! LVARY = F!
(if no stations are found within RMAX1,RMAX2,
or RMAX3, then the closest station will be used)

Maximum radius of influence over land
in the surface layer (RMAX1)      No default      ! RMAX1 = 40. !
Units: km

Maximum radius of influence over land
aloft (RMAX2)      No default      ! RMAX2 = 40. !
Units: km

Maximum radius of influence over water
(RMAX3)      No default      ! RMAX3 = 40. !
Units: km

OTHER WIND FIELD INPUT PARAMETERS

Minimum radius of influence used in
the wind field interpolation (RMIN)      Default: 0.1      ! RMIN = 0.1 !
Units: km

Radius of influence of terrain
features (TERRAD)      No default      ! TERRAD = 12. !
Units: km

Relative weighting of the first
guess field and observations in the
SURFACE layer (R1)      No default      ! R1 = 5. !
Units: km
(R1 is the distance from an
observational station at which the
observation and first guess field are
equally weighted)

Relative weighting of the first
guess field and observations in the
layers ALOFT (R2)      No default      ! R2 = 5. !
Units: km
(R2 is applied in the upper layers
in the same manner as R1 is used in
the surface layer).

Relative weighting parameter of the
prognostic wind field data (RPROG)      No default      ! RPROG = 0. !
Units: km
(Used only if IPROG = 1)
-----

Maximum acceptable divergence in the
divergence minimization procedure
(DIVLIM)      Default: 5.E-6      ! DIVLIM= 5.0E-06 !

Maximum number of iterations in the
divergence min. procedure (NITER)      Default: 50      ! NITER = 50 !

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Number of passes in the smoothing procedure (NSMTH(NZ))
NOTE: NZ values must be entered
Default: 2, (mxnz-1)*4 ! NSMTH =
2 , 4 , 4 , 4 , 4 , 4 , 4 , 4 , 4 , 4 , 4 !

Maximum number of stations used in each layer for the interpolation of data to a grid point (NINTR2(NZ))
NOTE: NZ values must be entered Default: 99. ! NINTR2 =
99 , 99 , 99 , 99 , 99 , 99 , 99 , 99 , 99 , 99 , 99 !

Critical Froude number (CRITFN) Default: 1.0 ! CRITFN = 1. !

Empirical factor controlling the influence of kinematic effects (ALPHA) Default: 0.1 ! ALPHA = 0.1 !

Multiplicative scaling factor for extrapolation of surface observations to upper layers (FEXTR2(NZ)) Default: NZ*0.0
! FEXTR2 = 0., 0., 0., 0., 0., 0., 0., 0., 0., 0. !
(Used only if IEXTRP = 3 or -3)

BARRIER INFORMATION

Number of barriers to interpolation of the wind fields (NBAR) Default: 0 ! NBAR = 0 !

THE FOLLOWING 4 VARIABLES ARE INCLUDED ONLY IF NBAR > 0

NOTE: NBAR values must be entered No defaults
for each variable Units: km

X coordinate of BEGINNING of each barrier (XBBAR(NBAR)) ! XBBAR = 0. !
Y coordinate of BEGINNING of each barrier (YBBAR(NBAR)) ! YBBAR = 0. !
X coordinate of ENDING of each barrier (XEBAR(NBAR)) ! XEBAR = 0. !
Y coordinate of ENDING of each barrier (YEBAR(NBAR)) ! YEBAR = 0. !

DIAGNOSTIC MODULE DATA INPUT OPTIONS

Surface temperature (IDIOPT1) Default: 0 ! IDIOPT1 = 0 !
0 = Compute internally from hourly surface observations
1 = Read preprocessed values from a data file (DIAG.DAT)

Surface met. station to use for the surface temperature (ISURFT) No default ! ISURFT = 9 !
(Must be a value from 1 to NSSTA)
(Used only if IDIOPT1 = 0)

Domain-averaged temperature lapse rate (IDIOPT2) Default: 0 ! IDIOPT2 = 0 !
0 = Compute internally from twice-daily upper air observations
1 = Read hourly preprocessed values from a data file (DIAG.DAT)

Upper air station to use for the domain-scale lapse rate (IUPT) No default ! IUPT = 1 !
(Must be a value from 1 to NUSTA)
(Used only if IDIOPT2 = 0)

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Depth through which the domain-scale
lapse rate is computed (ZUPT)      Default: 200. ! ZUPT = 200. !
(Used only if IDIOPT2 = 0)         Units: meters
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Domain-averaged wind components
(IDIOPT3)                          Default: 0      ! IDIOPT3 = 0  !
  0 = Compute internally from
      twice-daily upper air observations
  1 = Read hourly preprocessed values
      a data file (DIAG.DAT)

Upper air station to use for
the domain-scale winds (IUPWND)     Default: -1    ! IUPWND = -1  !
(Must be a value from -1 to NUSTA)
(Used only if IDIOPT3 = 0)
-----

Bottom and top of layer through
which the domain-scale winds
are computed
(ZUPWND(1), ZUPWND(2))             Defaults: 1., 1000. ! ZUPWND= 1., 1000. !
(Used only if IDIOPT3 = 0)         Units: meters
-----

Observed surface wind components
for wind field module (IDIOPT4)     Default: 0      ! IDIOPT4 = 0  !
  0 = Read WS, WD from a surface
      data file (SURF.DAT)
  1 = Read hourly preprocessed U, V from
      a data file (DIAG.DAT)

Observed upper air wind components
for wind field module (IDIOPT5)     Default: 0      ! IDIOPT5 = 0  !
  0 = Read WS, WD from an upper
      air data file (UP1.DAT, UP2.DAT, etc.)
  1 = Read hourly preprocessed U, V from
      a data file (DIAG.DAT)

LAKE BREEZE INFORMATION

Use Lake Breeze Module (LLBREZE)
                                Default: F      ! LLBREZE = F  !

Number of lake breeze regions (NBOX)
                                ! NBOX = 0  !

X Grid line 1 defining the region of interest
                                ! XG1 = 0.  !
X Grid line 2 defining the region of interest
                                ! XG2 = 0.  !
Y Grid line 1 defining the region of interest
                                ! YG1 = 0.  !
Y Grid line 2 defining the region of interest
                                ! YG2 = 0.  !

X Point defining the coastline (Straight line)
(XBCST) (KM) Default: none      ! XBCST = 0.  !

Y Point defining the coastline (Straight line)
(YBCST) (KM) Default: none      ! YBCST = 0.  !

X Point defining the coastline (Straight line)
(XECST) (KM) Default: none      ! XECST = 0.  !

Y Point defining the coastline (Straight line)
(YECST) (KM) Default: none      ! YECST = 0.  !

Number of stations in the region   Default: none ! NLB = 0  !

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(Surface stations + upper air stations)

Station ID's in the region (METBXID(NLB))
(Surface stations first, then upper air stations)
! METBXID = 0 !

!END!

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INPUT GROUP: 6 -- Mixing Height, Temperature and Precipitation Parameters
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EMPIRICAL MIXING HEIGHT CONSTANTS

Neutral, mechanical equation
(CONSTB) Default: 1.41 ! CONSTB = 1.41 !
Convective mixing ht. equation
(CONSTE) Default: 0.15 ! CONSTE = 0.15 !
Stable mixing ht. equation
(CONSTN) Default: 2400. ! CONSTN = 2400.!
Overwater mixing ht. equation
(CONSTW) Default: 0.16 ! CONSTW = 0.16 !
Absolute value of Coriolis
parameter (FCORIOL) Default: 1.E-4 ! FCORIOL = 1.0E-04!
Units: (1/s)

SPATIAL AVERAGING OF MIXING HEIGHTS

Conduct spatial averaging
(IAVEZI) (0=no, 1=yes) Default: 1 ! IAVEZI = 1 !

Max. search radius in averaging
process (MNMDAV) Default: 1 ! MNMDAV = 5 !
Units: Grid
cells

Half-angle of upwind looking cone
for averaging (HAFANG) Default: 30. ! HAFANG = 30. !
Units: deg.

Layer of winds used in upwind
averaging (ILEVZI) Default: 1 ! ILEVZI = 1 !
(must be between 1 and NZ)

OTHER MIXING HEIGHT VARIABLES

Minimum potential temperature lapse
rate in the stable layer above the
current convective mixing ht.
(DPTMIN) Default: 0.001 ! DPTMIN = 0.001 !
Units: deg. K/m

Depth of layer above current conv.
mixing height through which lapse
rate is computed (DZZI) Default: 200. ! DZZI = 200. !
Units: meters

Minimum overland mixing height
(ZIMIN) Default: 50. ! ZIMIN = 50. !
Units: meters
Maximum overland mixing height
(ZIMAX) Default: 3000. ! ZIMAX = 3000. !
Units: meters
Minimum overwater mixing height
(ZIMINW) -- (Not used if observed
overwater mixing hts. are used) Default: 50. ! ZIMINW = 50. !
Units: meters
Maximum overwater mixing height
(ZIMAXW) -- (Not used if observed
overwater mixing hts. are used) Default: 3000. ! ZIMAXW = 3000. !
Units: meters

TEMPERATURE PARAMETERS

3D temperature from observations or
from prognostic data? (ITPROG) Default:0 !ITPROG = 0 !

```

- 0 = Use Surface and upper air stations
(only if NOOBS = 0)
- 1 = Use Surface stations (no upper air observations)
Use MM5 for upper air data
(only if NOOBS = 0,1)
- 2 = No surface or upper air observations
Use MM5 for surface and upper air data
(only if NOOBS = 0,1,2)

Interpolation type
(1 = 1/R ; 2 = 1/R**2) Default:1 ! IRAD = 1 !

Radius of influence for temperature
interpolation (TRADKM) Default: 500. ! TRADKM = 500. !
Units: km

Maximum Number of stations to include
in temperature interpolation (NUMTS) Default: 5 ! NUMTS = 5 !

Conduct spatial averaging of temp-
eratures (IAVET) (0=no, 1=yes) Default: 1 ! IAVET = 1 !
(will use mixing ht MNMDAV,HAFANG
so make sure they are correct)

Default temperature gradient
below the mixing height over
water (K/m) (TGDEFB) Default: -.0098 ! TGDEFB = -0.0098 !

Default temperature gradient
above the mixing height over
water (K/m) (TGDEFA) Default: -.0045 ! TGDEFA = -0.0045 !

Beginning (JWAT1) and ending (JWAT2)
land use categories for temperature
interpolation over water -- Make ! JWAT1 = 55 !
bigger than largest land use to disable ! JWAT2 = 55 !

PRECIP INTERPOLATION PARAMETERS

Method of interpolation (NFLAGP) Default = 2 ! NFLAGP = 2 !
(1=1/R,2=1/R**2,3=EXP/R**2)

Radius of Influence (km) (SIGMAP) Default = 100.0 ! SIGMAP = 50. !
(0.0 => use half dist. btwn
nearest stns w & w/out
precip when NFLAGP = 3)

Minimum Precip. Rate Cutoff (mm/hr) Default = 0.01 ! CUTP = 0.01 !
(values < CUTP = 0.0 mm/hr)

!END!

INPUT GROUP: 7 -- Surface meteorological station parameters

SURFACE STATION VARIABLES
(One record per station -- 14 records in all)

	1	2				
	Name	ID	X coord. (km)	Y coord. (km)	Time zone	Anem. Ht. (m)
! SS1	'LITR'	13963	97.603996	-139.875595	6	25.7
! SS2	'FSMT'	13964	-96.884117	-73.375412	6	44.9
! SS3	'PADU'	03816	402.791504	127.533028	6	41.3
! SS4	'JATF'	03940	303.026245	-403.428436	6	31.0
! SS5	'MEMP'	13893	300.736237	-100.272797	6	26.5
! SS6	'COLU'	03945	94.009262	313.062622	6	88.9
! SS7	'KANS'	03947	-122.324356	368.958649	6	97.3
! SS8	'STLO'	13994	255.127701	308.904358	6	56.8

```

! SS9  ='SPRI'  13995   -7.957213   137.474365   6  125.9
! SS10 ='WICH'  03928  -364.561676   190.628525   6  132.1
! SS11 ='TOPE'  13996  -202.120728   342.68457    6   87.7
! SS12 ='OKLH'  13967  -390.206421   -59.849895   6  130.4
! SS13 ='TULS'  13968  -232.102814    25.212069    6   65.0
! SS14 ='DAL5'  03927  -349.228058  -337.048828   6   55.0
-----

```

```

1
  Four character string for station name
  (MUST START IN COLUMN 9)

```

```

2
  Five digit integer for station ID

```

```
!END!
```

```
-----
INPUT GROUP: 8 -- Upper air meteorological station parameters
-----
```

```
UPPER AIR STATION VARIABLES
(One record per station -- 7 records in all)
```

	1	2				
	Name	ID	X coord. (km)	Y coord. (km)	Time zone	
! US1	'UMN '	03946	-53.454887	97.735016	6	!
! US2	'1M1 '	03952	94.1371	-129.197098	6	!
! US3	'JAN '	03940	304.27002	-403.01767	6	!
! US4	'GGG '	03951	-127.144608	-403.801453	6	!
! US5	'OUN '	03948	-379.135193	-77.337212	6	!
! US6	'TOP '	13996	-200.957672	343.02774	6	!
! US7	'PAH '	03816	402.479187	127.888847	6	!

```

1
  Four character string for station name
  (MUST START IN COLUMN 9)

```

```

2
  Five digit integer for station ID

```

```
!END!
```

```
-----
INPUT GROUP: 9 -- Precipitation station parameters
-----
```

```
PRECIPITATION STATION VARIABLES
(One record per station -- 130 records in all)
(NOT INCLUDED IF NPSTA = 0)
```

	1	2			
	Name	Station Code	X coord. (km)	Y coord. (km)	
! PS1	'0001'	030064	200.002518	-9.453245	!
! PS2	'0002'	030130	41.907524	-133.34761	!
! PS3	'0003'	030178	-11.202353	-217.71196	!
! PS4	'0004'	030220	23.040104	-205.033585	!
! PS5	'0005'	030326	174.153503	-75.901825	!
! PS6	'0006'	030458	137.788483	-17.963772	!
! PS7	'0007'	030460	150.793304	-26.160744	!
! PS8	'0008'	030530	127.936447	-102.792404	!
! PS9	'0009'	030616	-28.371426	48.087799	!
! PS10	'0010'	030764	9.169785	-158.872467	!

! PS11 = '0011'	030798	-31.926704	-97.919472	!
! PS12 = '0012'	030832	-55.461689	-99.067566	!
! PS13 = '0013'	030842	74.952934	-30.723768	!
! PS14 = '0014'	030900	-17.595287	-117.725464	!
! PS15 = '0015'	030936	193.314056	-121.702843	!
! PS16 = '0016'	031020	65.757294	40.89476	!
! PS17 = '0017'	031152	44.843231	-265.926392	!
! PS18 = '0018'	031457	-9.387491	-51.787292	!
! PS19 = '0019'	031582	0 9.238137	!	!
! PS20 = '0020'	031632	243.367447	51.393978	!
! PS21 = '0021'	031835	-9.112898	-103.452202	!
! PS22 = '0022'	031952	-98.899628	-210.037155	!
! PS23 = '0023'	032020	-72.705673	-205.049438	!
! PS24 = '0024'	032148	167.96051	-233.077301	!
! PS25 = '0025'	032356	-43.312531	46.300476	!
! PS26 = '0026'	032444	-77.97171	11.428351	!
! PS27 = '0027'	032489	77.746979	-136.373734	!
! PS28 = '0028'	032544	-100.185791	-252.583038	!
! PS29 = '0029'	032574	-96.506096	-73.409935	!
! PS30 = '0030'	032794	52.728374	-0.798018	!
! PS31 = '0031'	032810	-87.159203	-198.486526	!
! PS32 = '0032'	032978	117.80896	-52.801506	!
! PS33 = '0033'	033132	161.08757	31.706316	!
! PS34 = '0034'	033235	27.215736	-62.773365	!
! PS35 = '0035'	033544	-40.502537	7.482882	!
! PS36 = '0036'	034756	-88.576477	-157.735062	!
! PS37 = '0037'	034839	-63.982563	-257.250519	!
! PS38 = '0038'	034900	139.162674	-264.978058	!
! PS39 = '0039'	034988	-26.394886	-161.702011	!
! PS40 = '0040'	035110	-38.399864	-204.981674	!
! PS41 = '0041'	035112	-50.951725	-229.277588	!
! PS42 = '0042'	035200	12.168705	-116.379715	!
! PS43 = '0043'	035228	94.289017	28.21752	!
! PS44 = '0044'	035320	95.070145	-128.602509	!
! PS45 = '0045'	035602	4.507159	-5.541622	!
! PS46 = '0046'	035754	117.955902	-195.921585	!
! PS47 = '0047'	035908	-7.173062	-244.10614	!
! PS48 = '0048'	036393	-42.134075	-20.223825	!
! PS49 = '0049'	036403	133.340057	40.885639	!
! PS50 = '0050'	036804	-17.056889	-291.891693	!
! PS51 = '0051'	036920	172.888733	-168.310638	!
! PS52 = '0052'	037488	-81.653343	-121.713646	!
! PS53 = '0053'	038052	227.579453	-79.847397	!
! PS54 = '0054'	038084	56.909355	22.355108	!
! PS55 = '0055'	141740	-138.088043	129.963074	!
! PS56 = '0056'	142430	-219.54628	144.418121	!
! PS57 = '0057'	142686	-244.976181	186.098511	!
! PS58 = '0058'	143248	-278.702728	155.045135	!
! PS59 = '0059'	143984	-186.813538	215.303284	!
! PS60 = '0060'	145536	-190.799362	133.295364	!
! PS61 = '0061'	148191	-232.029861	196.257919	!
! PS62 = '0062'	148293	-147.618988	206.191742	!
! PS63 = '0063'	221707	251.719955	-196.032318	!
! PS64 = '0064'	221743	239.070435	-240.731888	!
! PS65 = '0065'	228445	220.786942	-280.285767	!
! PS66 = '0066'	230088	164.786621	129.377029	!
! PS67 = '0067'	230127	178.337646	71.65303	!
! PS68 = '0068'	230539	225.984787	189.561752	!
! PS69 = '0069'	230789	-8.041731	179.293472	!
! PS70 = '0070'	231383	-49.823334	74.733353	!
! PS71 = '0071'	231674	224.244904	128.324799	!
! PS72 = '0072'	232302	95.199738	86.966888	!
! PS73 = '0073'	232547	206.640152	139.202774	!
! PS74 = '0074'	232809	254.592514	202.687622	!
! PS75 = '0075'	234301	260.017487	155.30101	!
! PS76 = '0076'	234825	53.475483	187.036911	!
! PS77 = '0077'	234919	125.159904	173.284897	!
! PS78 = '0078'	235027	-57.831749	154.271576	!
! PS79 = '0079'	235307	34.569954	148.447189	!
! PS80 = '0080'	235594	-46.650177	134.698639	!
! PS81 = '0081'	235834	92.014938	128.309921	!

! PS82 = '0082'	236460	15.535235	73.158218	!
! PS83 = '0083'	237506	155.670166	182.562149	!
! PS84 = '0084'	237656	-116.143257	94.211479	!
! PS85 = '0085'	237967	-109.930725	109.78286	!
! PS86 = '0086'	237976	-7.957213	137.474365	!
! PS87 = '0087'	238082	-41.686485	188.266891	!
! PS88 = '0088'	238252	-0.670549	66.214142	!
! PS89 = '0089'	238609	191.0401	191.961212	!
! PS90 = '0090'	238754	65.009758	88.077919	!
! PS91 = '0091'	238880	130.766693	83.295273	!
! PS92 = '0092'	340256	-215.888657	-190.548416	!
! PS93 = '0093'	340537	-256.424774	64.704529	!
! PS94 = '0094'	340670	-162.941132	-125.999146	!
! PS95 = '0095'	341168	-129.046051	-205.994446	!
! PS96 = '0096'	341437	-268.488983	-191.855469	!
! PS97 = '0097'	341544	-135.764359	-191.176941	!
! PS98 = '0098'	343286	-174.435501	-13.071342	!
! PS99 = '0099'	344098	-268.869446	-1.476295	!
! PS100 = '0100'	344384	-204.623749	-219.576614	!
! PS101 = '0101'	344386	-193.876312	-219.626984	!
! PS102 = '0102'	344393	-249.30899	105.17778	!
! PS103 = '0103'	344506	-202.497208	9.700225	!
! PS104 = '0104'	344812	-265.203217	20.595457	!
! PS105 = '0105'	344975	-193.876755	-77.344559	!
! PS106 = '0106'	345108	-267.724274	-166.002609	!
! PS107 = '0107'	345664	-226.794449	-120.921989	!
! PS108 = '0108'	346130	-183.685867	-23.972584	!
! PS109 = '0109'	346485	-208.334259	80.075417	!
! PS110 = '0110'	346627	-186.503098	-14.67452	!
! PS111 = '0111'	346638	-272.113037	-58.676228	!
! PS112 = '0112'	346729	-213.512405	50.621964	!
! PS113 = '0113'	346935	-272.419098	78.12706	!
! PS114 = '0114'	347080	-164.410721	-207.271866	!
! PS115 = '0115'	347309	-180.971359	35.109116	!
! PS116 = '0116'	347675	-134.726822	-72.886208	!
! PS117 = '0117'	347739	-154.310577	19.819832	!
! PS118 = '0118'	348497	-165.16983	-81.614838	!
! PS119 = '0119'	348769	-158.421005	-42.935463	!
! PS120 = '0120'	348992	-232.102814	25.212069	!
! PS121 = '0121'	349023	-182.348495	-150.509674	!
! PS122 = '0122'	349450	-169.085556	-48.28307	!
! PS123 = '0123'	349724	-128.12944	-116.39994	!
! PS124 = '0124'	411773	-159.706299	-263.533447	!
! PS125 = '0125'	412415	-192.508347	-268.015656	!
! PS126 = '0126'	414257	-241.245224	-264.704285	!
! PS127 = '0127'	414975	-242.349792	-248.038818	!
! PS128 = '0128'	416270	-103.059967	-281.56424	!
! PS129 = '0129'	416834	-204.977814	-234.168777	!
! PS130 = '0130'	418942	-72.837257	-286.073883	!

1

Four character string for station name
(MUST START IN COLUMN 9)

2

Six digit station code composed of state
code (first 2 digits) and station ID (last
4 digits)

!END!