```
ENVIRONMENT=BATCH
PATH=/gfs/dk16/demoraes/RPSAS/bin:/bin:/usr/bin:/usr/ucb
HOME=/gfs/home0/demoraes
SHELL=/bin/csh
USER=demoraes
LOGNAME=demoraes
QUEUENAME=Mini
STGDIR=/var/spool/nqsII/jsv/jobfile/0.41018.100/stgfile
PBS_JOBID=0:41018.siox.cptec.inpe.br
TZ=GST
FLMOD=float0
DISPLAY=sunray-b.cptec.inpe.br:3.0
TERM=vt100
REMOTEHOST=nheai.cptec.inpe.br
MAIL=/var/mail/demoraes
HOSTTYPE=unknown
VENDOR=unknown
OSTYPE=linux
MACHTYPE=unknown
SHLVL=1
PWD=/gfs/home0/demoraes
GROUP=users
HOST=azusa
HOSTNAME=azusa
LS_COLORS=no=00:fi=00:di=01;34:ln=01;36:pi=40;33:so=01;35:bd=40;33;01:cd=40;33;01:or=01;0
5;37;41:mi=01;05;37;41:ex=01;32:*.cmd=01;32:*.exe=01;32:*.com=01;32:*.btm=01;32:*.bat=01;
32:*.sh=01;32:*.csh=01;32:*.tar=01;31:*.tgz=01;31:*.arj=01;31:*.taz=01;31:*.lzh=01;31:*.z
ip=01;31:*.z=01;31:*.Z=01;31:*.gz=01;31:*.bz2=01;31:*.bz=01;31:*.tz=01;31:*.rpm=01;31:*.c
pio=01;31:*.jpg=01;35:*.gif=01;35:*.bmp=01;35:*.xbm=01;35:*.xpm=01;35:*.png=01;35:*.tif=0
1;35:
LD_LIBRARY_PATH=/opt/NECcomp/compiler80/ia64/lib
MANPATH=/usr/man/nqsII:/opt/NEChpf/man:/usr/share/man:/usr/psuite/man:/SX/usr/man:/usr/ke
rberos/man:/usr/X11R6/man:/usr/lib/perl5/man:/usr/man:/opt/NECcomp/compiler80/man:/usr/lo
cal/man:/usr/share/man:/usr/X11R6/man:/usr/kerberos/man:/usr/lib/perl5/man:/usr/man
SSH_ASKPASS=/usr/libexec/openssh/gnome-ssh-askpass
KDEDIR=/usr
LAMHELPFILE=/etc/lam/lam-helpfile
LANG=en_US
SUPPORTED=en_US:en
LESSOPEN=|/usr/bin/lesspipe.sh %s
LM_LICENSE_FILE=/SX/usr/flexlm-sx/licenses/license.dat2
PVM_RSH=/usr/bin/rsh
PVM_ROOT=/usr/share/pvm3
QTDIR=/usr/lib/qt-2.3.1
F_PROGINF=DETAIL
TMP=/tmp
TMPDIR=/tmp
CVSROOT=:ext:demoraes@150.163.147.170:/shared/tools/cvs-repositorios
CVS_RSH=ssh
GADDIR=/usr/local/grads/dat
GRADSB=/usr/local/grads/bin
GASCRP=/usr/local/grads/scripts
GAUDFT=/usr/local/grads/udf/udft
GS_LIB=/usr/local/grads/lib
PBS_ENVIRONMENT=PBS_BATCH
PBS_O_HOST=azusa
PBS_O_WORKDIR=/gfs/dk16/demoraes/RPSAS/running
PBS_O_HOME=/gfs/home0/demoraes
PBS_O_SHELL=/bin/csh
PBS_O_PATH=.:/usr/local/sxbin:~/Vftrace/Linux/bin:/usr/java/j2sdk1.4.2_06/bin:/usr/local/
grads/bin:~/bin:/usr/local/nec/tools:/usr/psuite:/SX/usr/bin:/usr/kerberos/bin:/bin:/usr/
bin:/usr/local/bin:/opt/NEChpf/bin:/opt/NECcomp/compiler80/ia64/bin:/usr/local/bin:/bin:/
usr/bin:/usr/X11R6/bin:/usr/bin/nqsII
PBS_O_LANG=en_US
PBS_O_LOGNAME=demoraes
PBS_O_MAIL=/var/mail/demoraes
PBS_O_TZ=GST
PBS_JOBNAME=run_psas
_MPIREQID=41018.siox.cptec.inpe.br
```

```
_MPINNODES=1
_MPILNODEID=0
_MPIMSTANODE=0001
MPID_MPPG=0x0000A03A00000064
_MPILNODELIST=0:tupan01
MPIPROGINF=DETAIL
F_SYSLEN=1000
MP_SET_NUMTHREADS=8
PSAS_NUM_MPI=8
NUMBER_MLP_PROCESSES=8
NUMBER_CPUS_IN_MACHINE=8
MPIRUN=mpirun -np 1

 ============================================================
 DEBUG.        Parse command line
 ============================================================


      -------------------------------------
      ana - the fvPSAS analyzer application
      -------------------------------------


 ============================================================
 DEBUG.            Load dynamics vector
 ============================================================

 New_ref - Eref=   -0.3678495  0.3369399
 ana: read dynamics state file RPOSFGE2004123106.SbinF0006.hdf
 ana: nymd, nhms =   20041231  120000


   Background file name: RPOSFGE2004123106.SbinF0006.hdf
 Pre-analysis ODS files:   4
                         r4aods.llk.t20041231
                         qscat.ods.llk.t20041231
                         nesdis_tpw.ods.t20041231
                         atovs.ods.llk.t20041231

   Analysis   file name: RPOSFGE2004123112.SbinF0012.ana.hdf
 Post-analysis ODS file: RPOSFGE2004123106.ana.obs.20041231_12z.ods


 ============================================================
 DEBUG.  Read observations for this this synoptic time
 ============================================================

 ana: read ODS file(s), nobs =   414004


 ============================================================
 DEBUG. Remove RAOBs from master ODS file when CQC stream
 DEBUG. is present
 ============================================================


 ============================================================
 DEBUG.  Start by analyzing Skin Temperature (Ts)
 ============================================================


 ============================================================
 DEBUG.!     Skip or call observer for this date/time
 ============================================================

Observer:   382303 observations have been "red-listed"
 ThinCtr:  BoxCtr.ERS: no observations to be thinned
 ThinCtr:  BoxCtr.QSCAT:  268   reports selected out of   22970  ,   1   percent
 ThinCtr:  BoxCtr.SPEED: no observations to be thinned
```

```
 ThinCtr:  BoxCtr.TPW:  506   reports selected out of   15711  ,   3   percent
 ThinCtr:  BoxCtr.AIREP:  5   reports selected out of   5561  ,   0   percent
 ThinCtr:  BoxCtr.CTW:  824   reports selected out of   24625  ,   3   percent
 ThinCtr:  BoxCtr.ACARS:  41   reports selected out of   23755  ,   0   percent
 999.7682  997.3411  992.2333  986.1410  977.8847  967.3377  954.5488  939.6055  922.5861
903.5879  882.7083  860.0450  835.7148  809.7957  782.4144  753.6783  723.6846  692.5603
660.4222  627.3677  593.5433  559.0658  524.0521  488.6290  452.9428  417.1103  381.3265
345.9424  311.6793  279.5510  250.2494  223.2386  196.8224  169.3437  140.3053  110.2766
79.97400  51.54781  25.00000  1.000000E-06  2.723499E-02  5.639699E-02  8.748400E-02
0.1182900  0.1480800  0.1762700  0.2033700  0.2310800  0.2611400  0.2941000  0.3292500
0.3655500  0.4022600  0.4390200  0.4756300  0.5119700  0.5478900  0.5832600  0.6179600
0.6518700  0.6848400  0.7167700  0.7475400  0.7770200  0.8051100  0.8317000  0.8566600
0.8799100  0.9013300  0.9208200  0.9382800  0.9536100  0.9667300  0.9775500  0.9860200
0.9922700  0.9975100  1.000000
Sanity_Check:        1 observations (out of    19705) detected with unphysical values
Sanity_Check:        1 obs (out of    19705) have been excluded
  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

TOVS_Anchor:  Thickness obs, max/min/mean/stdv =   57652.43  538.7519  21472.83  15456.69
TOVS_Anchor:  Ref. pressure, max/min/mean/stdv =   1000.000  700.0000  986.8561  46.78475
TOVS_Anchor:  Ref. height,   max/min/mean/stdv =   3188.383  -105.0355  219.1256
403.7505   M
TOVS_Unbias: Doing NESDIS TOVS bias correction by default
  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

Surf_toBot:  SLP  O  max/min/mean/stdv =   1049.500  986.6871  1013.348  4.968652
Surf_toBot:  SLP  F  max/min/mean/stdv =   1026.317  996.8589  1013.769  3.427827   M
Surf_toBot:  SLP O-F max/min/mean/stdv =   32.64941  -25.99243  -0.2178100  3.254611   M
  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

Surf_toBot:  ZS  O   max/min/mean/stdv =   1013.244  -36.58724  234.8403  279.1772   M
Surf_toBot:  ZS  F   max/min/mean/stdv =   3375.522  0.000000E+00  371.1993  560.4256   M
Surf_toBot:  ZS O-F  max/min/mean/stdv =   300.7267  -67.86066  20.51569  82.96950   M
Surf_toBot:  PLEV    max/min/mean/stdv =   1026.317  906.0056  987.6113  31.57135   M
Surf_toBot:  SLU max/min/mean/stdv =   21.32846  -11.17633  1.454156  5.862998
Surf_toBot:  SLV max/min/mean/stdv =   14.91760  -13.48996  -1.580069  5.421016
  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

 Insitu_Ocean ier :  1
 Surf_toBot: could not simulated ocean winds
Surf_toBot:  UWND max/min/mean/stdv =   21.32846  -11.17633  1.454156  5.862998
Surf_toBot:  VWND max/min/mean/stdv =   14.91760  -13.48996  -1.580069  5.421016
  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

Simulator:  obs/HGHT max/min/mean/stdv =   56223.54  -252.0000  15066.77  13164.50   M
Simulator:  fcs/HGHT max/min/mean/stdv =   24068.75  0.000000E+00  10211.12  7405.229   M
Simulator:  o-f/HGHT max/min/mean/stdv =   192.9915  -363.0801  -1.090588  10.45792   M
Simulator:    82912   HGHT obs (out of    87329) could not be simulated
  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

Simulator:  obs/TMPU max/min/mean/stdv =   306.4000  183.3000  246.6941  27.91722
```

```
Simulator:  fcs/TMPU max/min/mean/stdv =   305.6005  189.3378  247.8934  35.26246   M
Simulator:  o-f/TMPU max/min/mean/stdv =   103.7198  -10.70793  7.898965E-02  7.414438
M
Simulator:    47667   TMPU obs (out of    49176) could not be simulated
Simulator:  obs/UWND max/min/mean/stdv =   115.5891  -75.58187  11.49443  16.75871
Simulator:  fcs/UWND max/min/mean/stdv =   61.18172  -21.59779  3.933444  13.15942   M
Simulator:  o-f/UWND max/min/mean/stdv =   29.83692  -22.79581  0.1172994  3.875833   M
Simulator:    72520   UWND obs (out of    82945) could not be simulated
Simulator:  obs/VWND max/min/mean/stdv =   63.99622  -89.50482  1.766121  9.915225
Simulator:  fcs/VWND max/min/mean/stdv =   28.93974  -33.63948  0.2462183  6.138552   M
Simulator:  o-f/VWND max/min/mean/stdv =   33.65285  -34.08953  -0.3115987  3.996663   M
Simulator:    72520   VWND obs (out of    82945) could not be simulated
  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

Simulator:  obs/MIXR max/min/mean/stdv =   197.7469  1.766226E-05  1.588423  3.491898
Simulator:  fcs/MIXR max/min/mean/stdv =   20.96714  1.132879E-03  4.041585  4.657888   M
Simulator:  o-f/MIXR max/min/mean/stdv =   197.7447  -6.054083  0.7233618  7.901408   M
Simulator:    15831   MIXR obs (out of    16730) could not be simulated
  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

Simulator:  obs/TPW max/min/mean/stdv =   59.70000  3.800000  23.70566  15.67253
Simulator:  fcs/TPW max/min/mean/stdv =   0.5241771  0.000000E+00  0.1717268  0.1465861
M
Simulator:  o-f/TPW max/min/mean/stdv =   56.69257  7.306879  29.52951  12.53966   M
Simulator:    15711   TPW obs (out of    15711) could not be simulated
  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

Simulator:  obs/ RH  max/min/mean/stdv =   100.0000  3.997761E-02  38.70111  29.58871
Simulator:  fcs/ RH  max/min/mean/stdv =   101.8788  0.000000E+00  2.362783  11.25805
Simulator:  o-f/ RH  max/min/mean/stdv =   100.0000  -84.02989  36.33833  30.76162
Simulator:    15831    RH  obs (out of    16730) could not be simulated
Simulator:   385430 obs (out of   414004) are not supported
Observer:     9740 observations set as PASSIVE
m_Regioner::init_: Using refinement level 0
 m_duplicate:   0   duplicates marks found on entry
  regsort: returned from indexxi, nnobs =   414004
sort: returned, regsort_all()
sort: returned, typsort_all()
sort*regional_summary::
# kr    lat              lon
   1   58.48   88.24  -35.92   35.77    4893
   2   27.50   57.80    3.25   35.98    8902
   3   26.79   57.51  -36.00   -1.88    5737
   4   32.77   63.40  -34.68   34.05   25055
   5   59.12   89.50   36.10  107.22    2128
   6   27.70   56.94   73.20  107.98    3802
   7   28.37   56.89   36.02   70.92    4340
   8   33.74   62.80   38.83  100.48    5229
   9   59.71   87.73  108.02  179.67    1469
  10   27.49   56.79  144.66  179.98    2022
  11   26.97   57.77  108.03  142.68   11254
  12   34.53   63.27  111.84  175.70    4112
  13   59.56   87.84 -179.91 -108.48    3012
  14   26.72   57.62 -141.64 -108.01   19647
  15   26.98   57.77 -179.99  180.00    2179
  16   32.84   62.97 -175.79 -109.98    7463
  17   58.46   88.89 -107.75  -36.30    3443
  18   27.45   57.51  -70.46  -36.01    4742
  19   27.22   57.25 -108.00  -72.46   46379
  20   32.00   63.04 -104.08  -36.73   18950
```

```
  21  -25.70   -0.19  -16.71   16.24    1955
  22    0.53   31.62  -35.51   -2.17    3507
  23    0.57   30.98    1.54   35.10    2106
  24    0.00   29.25  -17.58   17.04    2893
  25  -25.38   -0.04   54.38   89.29    3482
  26    0.23   31.66   36.47   71.77    3892
  27    1.37   31.37   73.23  106.77    3957
  28    0.00   31.32   54.32   89.46    4800
  29  -25.95   -0.01  126.37  161.21    1242
  30    1.00   31.38  108.53  141.22    4460
  31    3.60   31.54  144.55  179.52    1249
  32    0.00   30.70  126.37  161.09    3284
  33  -24.08   -0.02 -159.20 -128.04    2375
  34    0.80   31.49 -179.50 -144.64    4295
  35    1.19   31.52 -142.04 -108.88    4421
  36    0.00   29.86 -161.36 -126.96    5167
  37  -26.35   -0.02  -89.45  -56.99    4280
  38    0.49   31.70 -107.86  -72.37   16176
  39    0.39   31.70  -71.59  -36.21    5988
  40    0.00   31.58  -89.50  -54.52    7025
  41    0.05   24.59   18.73   53.62    1948
  42  -31.57   -0.21   37.63   68.95    4518
  43  -31.33   -3.23    0.71   33.83    3200
  44  -30.75   -0.01   18.79   53.69    2685
  45    0.02   25.83   90.91  125.59    6109
  46  -31.59   -0.30  108.11  142.65    3537
  47  -31.56   -0.85   72.86  107.59    3868
  48  -31.16   -0.15   92.13  125.50    3969
  49    0.00   26.38 -179.92  180.00    3204
  50  -31.12   -1.38 -177.93 -148.66    1523
  51  -31.00   -1.54  144.27  179.00    1183
  52  -30.12   -0.02 -179.71  179.85    1397
  53    0.00   25.76 -124.90  -90.41    6434
  54  -31.65   -0.52 -107.81  -72.38    4054
  55  -31.71   -3.60 -140.42 -108.28    3069
  56  -31.21   -0.01 -121.70  -91.50    4040
  57    0.00   25.55  -52.64  -19.21    6692
  58  -31.53   -1.51  -35.43   -1.78    1924
  59  -31.68   -2.00  -71.62  -36.44    6051
  60  -31.27   -0.14  -52.72  -19.22    3768
  61  -88.35  -58.46    5.27   71.88    1889
  62  -55.61  -26.86    0.38   34.21    2541
  63  -57.93  -28.02   38.61   71.99    4194
  64  -63.27  -33.07    1.40   71.58    4266
  65  -88.73  -58.44   72.00  143.52    1637
  66  -58.00  -26.95   72.02  107.51    4432
  67  -57.50  -27.42  109.38  143.88    4192
  68  -63.38  -32.03   72.60  142.85    5198
  69  -90.00  -58.49 -179.58  179.51    1905
  70  -57.51  -28.00  144.00  179.00    3568
  71  -57.57  -27.52 -179.00 -144.07    1303
  72  -63.32  -34.00 -179.64  179.74    2949
  73  -87.62  -58.49 -143.83  -72.05    2469
  74  -57.58  -27.09 -143.89 -108.69    3231
  75  -58.05  -26.89 -107.71  -72.02    6026
  76  -63.39  -32.15 -142.46  -72.98    6110
  77  -89.00  -58.48  -72.00   -0.30    2012
  78  -57.96  -26.79  -71.95  -37.58    5935
  79  -55.49  -26.83  -35.42   -0.27    1698
  80  -63.35  -31.87  -71.09   -1.24    3964
::
 m_duplicate*dupelim:   39   duplicate obs found
 m_duplicate:   39   duplicates removed after wind check
-------------------------------------------------
Entering SQC: version 2.01 (31Mar2003)
              with   414004 observations
-------------------------------------------------
Init_: reset_allqc = F
Init_: reset_sqc = T
```

```
Init_: reset_passive = F
SQC:   407581 observations previously excluded
SQC:     6423 observations remain
RC_ktinfo_: allowable kt =   1
RC_ktinfo_:    scaling method: no
RC_ktinfo_:    error std dev from: PSAS
RC_ktinfo_:    horizontal length scale =   0.50E+06
RC_ktinfo_:    vertical length scale =   0.00E+00
RC_ktinfo_: allowable kt =   2
RC_ktinfo_:    scaling method: no
RC_ktinfo_:    error std dev from: PSAS
RC_ktinfo_:    horizontal length scale =   0.50E+06
RC_ktinfo_:    vertical length scale =   0.00E+00
RC_ktinfo_: allowable kt =   3
RC_ktinfo_:    scaling method: no
RC_ktinfo_:    error std dev from: PSAS
RC_ktinfo_:    horizontal length scale =   0.50E+06
RC_ktinfo_:    vertical length scale =   0.00E+00
RC_ktinfo_: allowable kt =   4
RC_ktinfo_:    scaling method: no
RC_ktinfo_:    error std dev from: PSAS
RC_ktinfo_:    horizontal length scale =   0.50E+06
RC_ktinfo_:    vertical length scale =   0.10E+04
RC_ktinfo_: allowable kt =   5
RC_ktinfo_:    scaling method: no
RC_ktinfo_:    error std dev from: PSAS
RC_ktinfo_:    horizontal length scale =   0.50E+06
RC_ktinfo_:    vertical length scale =   0.10E+04
RC_ktinfo_: allowable kt =   6
RC_ktinfo_:    scaling method: no
RC_ktinfo_:    error std dev from: PSAS
RC_ktinfo_:    horizontal length scale =   0.10E+07
RC_ktinfo_:    vertical length scale =   0.20E+04
RC_ktinfo_: allowable kt =   7
RC_ktinfo_:    scaling method: xm
RC_ktinfo_:    error std dev from: PSRH
RC_ktinfo_:    horizontal length scale =   0.50E+06
RC_ktinfo_:    vertical length scale =   0.10E+04
RC_ktinfo_: allowable kt =   8
RC_ktinfo_:    scaling method: no
RC_ktinfo_:    error std dev from: TEMP
RC_ktinfo_:    horizontal length scale =   0.50E+06
RC_ktinfo_:    vertical length scale =   0.10E+04
RC_ktinfo_: allowable kt =  13
RC_ktinfo_:    scaling method: no
RC_ktinfo_:    error std dev from: TSKIN
RC_ktinfo_:    horizontal length scale =   0.50E+06
RC_ktinfo_:    vertical length scale =   0.00E+00
RC_ktinfo_: allowable kt =  18
RC_ktinfo_:    scaling method: xm
RC_ktinfo_:    error std dev from: STPW
RC_ktinfo_:    horizontal length scale =   0.50E+06
RC_ktinfo_:    vertical length scale =   0.00E+00
RC_ktinfo_: allowable kt =  27
RC_ktinfo_:    scaling method: no
RC_ktinfo_:    error std dev from: TSKIN
RC_ktinfo_:    horizontal length scale =   0.50E+06
RC_ktinfo_:    vertical length scale =   0.00E+00
RC_ktinfo_: allowable kt =  38
RC_ktinfo_:    scaling method: no
RC_ktinfo_:    error std dev from: TSKIN
RC_ktinfo_:    horizontal length scale =   0.50E+06
RC_ktinfo_:    vertical length scale =   0.00E+00
OmF_scaling_: scaled O-F by xm value for      223 observations with kt=   7
OmF_scaling_: scaled O-F by xm value for        0 observations with kt=  18
SQC: excluded        0 data with non-positive scaling parameters
SQC:     6423 observations remain
m_psasrc::open_: using "psas.rc" for the runtime resource input
FcstErr*hCor_HH::
```

```
  WIN-POWERLAW     A power-law function windowed with a convolved spline
   1000  6000.0   524.9
    925  6000.0   537.6
    850  6000.0   551.5
    700  6000.0   583.8
    500  6000.0   641.3
    400  6000.0   680.6
    300  6000.0   732.8
    250  6000.0   766.8
    200  6000.0   809.6
    150  6000.0   866.9
    100  6000.0   952.0
     70  6000.0  1031.9
     50  6000.0  1112.4
     40  6000.0  1169.0
     30  6000.0  1246.3
     20  6000.0  1365.1
     15  6000.0  1457.7
     10  6000.0  1603.1
      7  6000.0  1749.1
      5  6000.0  1907.3
      3  6000.0  2201.1
      2  6000.0  2503.7
      1  6000.0  3303.1
  0.700  6000.0  4025.7
  0.500  6000.0  5267.9
  0.400  6000.0  7026.5
::
FcstErr*hCor_SS::
  WIN-POWERLAW     A power-law function windowed with a convolved spline
   1000  6000.0   650.0
    925  6000.0   650.0
    850  6000.0   650.0
    700  6000.0   650.0
    500  6000.0   650.0
    400  6000.0   650.0
    300  6000.0   650.0
    250  6000.0   650.0
    200  6000.0   650.0
    150  6000.0   650.0
    100  6000.0   650.0
     70  6000.0   650.0
     50  6000.0   650.0
     40  6000.0   650.0
     30  6000.0   650.0
     20  6000.0   650.0
     15  6000.0   650.0
     10  6000.0   650.0
      7  6000.0   650.0
      5  6000.0   650.0
      3  6000.0   650.0
      2  6000.0   650.0
      1  6000.0   650.0
  0.700  6000.0   650.0
  0.500  6000.0   650.0
  0.400  6000.0   650.0
::
FcstErr*hCor_VV::
  WIN-POWERLAW     A power-law function windowed with a convolved spline
   1000  6000.0   650.0
    925  6000.0   650.0
    850  6000.0   650.0
    700  6000.0   650.0
    500  6000.0   650.0
    400  6000.0   650.0
    300  6000.0   650.0
    250  6000.0   650.0
    200  6000.0   650.0
    150  6000.0   650.0
```

```
    100  6000.0   650.0
     70  6000.0   650.0
     50  6000.0   650.0
     40  6000.0   650.0
     30  6000.0   650.0
     20  6000.0   650.0
     15  6000.0   650.0
     10  6000.0   650.0
      7  6000.0   650.0
      5  6000.0   650.0
      3  6000.0   650.0
      2  6000.0   650.0
      1  6000.0   650.0
  0.700  6000.0   650.0
  0.500  6000.0   650.0
  0.400  6000.0   650.0
::
FcstErr*hCor_QQ::
  GASPARI-COHN     compactly supported spline function
   1000  3000.0   287.0
    925  3000.0   287.0
    850  3000.0   287.0
    700  3000.0   287.0
    500  3000.0   287.0
    400  3000.0   287.0
    300  3000.0   287.0
    250  3000.0   287.0
    200  3000.0   287.0
    150  3000.0   287.0
    100  3000.0   287.0
     70  3000.0   287.0
     50  3000.0   287.0
     40  3000.0   287.0
     30  3000.0   287.0
     20  3000.0   287.0
     15  3000.0   287.0
     10  3000.0   287.0
      7  3000.0   287.0
      5  3000.0   287.0
      3  3000.0   287.0
      2  3000.0   287.0
      1  3000.0   287.0
   0.70  3000.0   287.0
   0.50  3000.0   287.0
   0.40  3000.0   287.0
   0.20  3000.0   287.0
   0.05  3000.0   287.0
   0.01  3000.0   287.0
::
FcstErr*vCor_HH::

   1000 1.00
    925 0.82 1.00
    850 0.63 0.82 1.00
    700 0.39 0.60 0.81 1.00
    500 0.25 0.40 0.55 0.82 1.00
    400 0.19 0.31 0.43 0.70 0.89 1.00
    300 0.13 0.22 0.32 0.49 0.69 0.84 1.00
    250 0.09 0.18 0.26 0.39 0.56 0.70 0.88 1.00
    200 0.06 0.13 0.19 0.30 0.43 0.53 0.71 0.84 1.00
    150 0.03 0.09 0.13 0.21 0.32 0.40 0.51 0.59 0.81 1.00
    100 0.00 0.03 0.06 0.10 0.20 0.26 0.33 0.38 0.59 0.81 1.00
     70 0.00 0.00 0.03 0.04 0.12 0.18 0.23 0.26 0.41 0.63 0.88 1.00
     50 0.00 0.00 0.00 0.00 0.06 0.11 0.16 0.18 0.28 0.45 0.72 0.84 1.00
     40 0.00 0.00 0.00 0.00 0.03 0.09 0.12 0.14 0.22 0.36 0.58 0.74 0.90 1.00
     30 0.00 0.00 0.00 0.00 0.00 0.05 0.08 0.10 0.16 0.26 0.44 0.61 0.84 0.91 1.00
     20 0.00 0.00 0.00 0.00 0.00 0.01 0.04 0.05 0.10 0.17 0.29 0.41 0.72 0.78 0.83 1.00
     15 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.02 0.06 0.12 0.21 0.31 0.55 0.59 0.62 0.75
1.00
```

```
     10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.07 0.14 0.20 0.36 0.39 0.41 0.50
0.67 1.00
      7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.05 0.09 0.14 0.25 0.27 0.29 0.35
0.47 0.70 1.00
      5 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.03 0.05 0.10 0.18 0.19 0.21 0.25
0.34 0.50 0.71 1.00
      3 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.06 0.11 0.11 0.13 0.15
0.20 0.30 0.43 0.60 1.00
      2 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.04 0.06 0.08 0.08 0.10
0.14 0.20 0.29 0.40 0.69 1.00
      1 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.04 0.03 0.03
0.07 0.10 0.14 0.20 0.37 0.55 1.00
  0.700 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.05 0.07 0.10 0.14 0.28 0.41 0.75 1.00
  0.500 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.04 0.05 0.07 0.10 0.22 0.32 0.58 0.77 1.00
  0.400 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.03 0.04 0.06 0.08 0.19 0.28 0.49 0.65 0.85 1.00
  0.200 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.03 0.04 0.12 0.19 0.32 0.41 0.54 0.64 1.00
  0.050 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.08 0.12 0.19 0.24 0.31 0.37 0.51 1.00
  0.010 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.06 0.10 0.16 0.19 0.25 0.30 0.38 0.50 1.00
::
FcstErr*vCor_SS::

   1000 1.00
    925 0.00 1.00
    850 0.00 0.00 1.00
    700 0.00 0.00 0.00 1.00
    500 0.00 0.00 0.00 0.00 1.00
    400 0.00 0.00 0.00 0.00 0.00 1.00
    300 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    250 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    200 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    150 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    100 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     70 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     50 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     40 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     30 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     20 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     15 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
1.00
     10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 1.00
      7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 1.00
      5 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 1.00
      3 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 1.00
      2 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 1.00
      1 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.700 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.500 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.400 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.200 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.050 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.010 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
```

::
FcstErr*vCor_VV::

   1000 1.00
    925 0.00 1.00
    850 0.00 0.00 1.00
    700 0.00 0.00 0.00 1.00
    500 0.00 0.00 0.00 0.00 1.00
    400 0.00 0.00 0.00 0.00 0.00 1.00
    300 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    250 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    200 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    150 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    100 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     70 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     50 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     40 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     30 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     20 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     15 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
1.00
     10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 1.00
      7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 1.00
      5 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 1.00
      3 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 1.00
      2 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 1.00
      1 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.700 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.500 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.400 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.200 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.050 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.010 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
::
FcstErr*vCor_QQ::

   1000 1.00
    925 0.23 1.00
    850 0.00 0.37 1.00
    700 0.00 0.16 0.32 1.00
    500 0.00 0.00 0.00 0.28 1.00
    400 0.00 0.00 0.00 0.00 0.42 1.00
    300 0.00 0.00 0.00 0.00 0.14 0.44 1.00
    250 0.00 0.00 0.00 0.00 0.00 0.22 0.37 1.00
    200 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    150 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    100 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     70 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     50 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     40 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     30 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     20 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     15 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
1.00
     10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 1.00

```
      7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 1.00
      5 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 1.00
      3 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 1.00
      2 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 1.00
      1 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.700 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.500 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.400 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.200 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.050 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.010 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
::
tabl_FEsigW: using a resource based "FcstErr*Sigma_Wind::"
 nHHtab=   15000
 cutoff= 1/2 the support=    3000.000
m_xTab_sigFi::tab_sigFi_: open "sigF.K60.21lev.ctl" for input
Get_ErrVar_: obtained varO, varF from   PSAS for     6200 observations with kt=   1   2
3   4   5   6
Get_ErrVar_: obtained varO, varF from sqc.rc for      223 observations with kt=  7
SQC: excluded        0 data with undefined error statistics
SQC:     6423 observations remain
Backg_Check_: tau_bgh =   2.00
Backg_Check_: tau_bgx =  10.00
SQC: background check excluded        3 extreme outliers
SQC: background check flagged       575 suspect outliers
SQC:     6420 observations remain
Buddy_Check_: tau_buddy =   3.00
Buddy_Check_: niter_max =    20
Buddy_Check_: nbuddy_max =    25
Buddy_Check_: nstar =    15
Buddy_Check_: search_rad =  0.200E+01
Buddy_Check_: seplim =  0.265E+02
Buddy_Check_: sorted data by region
Buddy_Check_: starting iteration  1 with      750 suspect observations
Buddy_Check_:      575 observations reaccepted after iteration 1
Buddy_Check_: starting iteration  2 with      175 suspect observations
Buddy_Check_:       81 observations reaccepted after iteration 2
Buddy_Check_: starting iteration  3 with       94 suspect observations
Buddy_Check_:       14 observations reaccepted after iteration 3
Buddy_Check_: starting iteration  4 with       80 suspect observations
Buddy_Check_:        3 observations reaccepted after iteration 4
Buddy_Check_: starting iteration  5 with       77 suspect observations
Buddy_Check_:        2 observations reaccepted after iteration 5
Buddy_Check_: starting iteration  6 with       75 suspect observations
Buddy_Check_:        3 observations reaccepted after iteration 6
Buddy_Check_: starting iteration  7 with       72 suspect observations
Buddy_Check_:        1 observations reaccepted after iteration 7
Buddy_Check_: starting iteration  8 with       71 suspect observations
Buddy_Check_:        0 observations reaccepted after iteration 8
SQC: buddy check excluded       71 observations
SQC:     6349 observations remain
OmF_scaling_: unscaled O-F by xm value for      223 observations with kt=   7
OmF_scaling_: unscaled O-F by xm value for        0 observations with kt=  18
Pairw_Check_: paired datatypes:   1   2
Pairw_Check_: paired datatypes:   4   5
Pairw_Check_: found     2420 wind observations
SQC: pairwise check excluded       21 observations
SQC:     6328 observations remain
```

```
Profl_Check_: profile_kxs::
Profl_Check_:    33: 56
Profl_Check_:    93:113
Profl_Check_:   125:145
Profl_Check_:   171:182
Profl_Check_: found     2987 observations subject to a profile check
SQC: profile check excluded       47 observations
SQC:     6281 observations remain
-----------------------------------------------------
Leaving SQC version 2.01 (31Mar2003)
Returning     6281 quality-controlled observations
               142 observations rejected by SQC checks
            407581 previously rejected observations
-----------------------------------------------------
ods_tally:
ods_tally: Kx =   2  Surface Land Obs - 2
ods_tally:     kt =   3               Sea level pressure         0      7290
ods_tally:     kt =   6    Upper-air geopotential height       276       279
ods_tally:
ods_tally: Kx =   3  Surface Ship Obs - 1
ods_tally:     kt =   1         Surface (10m) zonal wind         0       438
ods_tally:     kt =   2    Surface (10m) meridional wind         0       438
ods_tally:     kt =   3               Sea level pressure         0       424
ods_tally:
ods_tally: Kx =   4  Surface Ship Obs - 2
ods_tally:     kt =   1         Surface (10m) zonal wind         0       568
ods_tally:     kt =   2    Surface (10m) meridional wind         0       568
ods_tally:     kt =   3               Sea level pressure         0       546
ods_tally:     kt =   6    Upper-air geopotential height        29        30
ods_tally:
ods_tally: Kx =   5  Environment Buoy
ods_tally:     kt =   1         Surface (10m) zonal wind         0       933
ods_tally:     kt =   2    Surface (10m) meridional wind         0       933
ods_tally:     kt =   3               Sea level pressure         0       924
ods_tally:
ods_tally: Kx =   6  Drifting Buoy
ods_tally:     kt =   1         Surface (10m) zonal wind         0       188
ods_tally:     kt =   2    Surface (10m) meridional wind         0       188
ods_tally:     kt =   3               Sea level pressure         0      1616
ods_tally:     kt =   6    Upper-air geopotential height        12        53
ods_tally:
ods_tally: Kx =   7  Rawinsonde
ods_tally:     kt =   4             Upper-air zonal wind       332     17582
ods_tally:     kt =   5        Upper-air meridional wind       332     17582
ods_tally:     kt =   6    Upper-air geopotential height       455      7892
ods_tally:     kt =   7 Upper-air water vapor mixing rat       222     16730
ods_tally:     kt =   8            Upper-air temperature         0     20968
ods_tally:     kt =  10      Upper-air relative humidity         0     16730
ods_tally:
ods_tally: Kx =   8  Pilot Wind
ods_tally:     kt =   4             Upper-air zonal wind         7      1187
ods_tally:     kt =   5        Upper-air meridional wind         7      1187
ods_tally:
ods_tally: Kx =  14  Aircraft - Air/Sat Relay
ods_tally:     kt =   4             Upper-air zonal wind         0      1727
ods_tally:     kt =   5        Upper-air meridional wind         0      1727
ods_tally:     kt =   8            Upper-air temperature         0      1727
ods_tally:
ods_tally: Kx =  16  Aircraft Report
ods_tally:     kt =   4             Upper-air zonal wind         3       783
ods_tally:     kt =   5        Upper-air meridional wind         3       783
ods_tally:     kt =   8            Upper-air temperature         0       802
ods_tally:
ods_tally: Kx =  27 Cld. Track Wind-Japanese IR automated cloud-drift
ods_tally:     kt =   4             Upper-air zonal wind         0       695
ods_tally:     kt =   5        Upper-air meridional wind         0       695
ods_tally:
ods_tally: Kx =  32  Aircraft EU experiment
ods_tally:     kt =   4             Upper-air zonal wind         0      3005
```

```
ods_tally:     kt =   5        Upper-air meridional wind         0      3005
ods_tally:     kt =   8            Upper-air temperature         0      3008
ods_tally:
ods_tally: Kx =  33  NESDIS NH Land AM type A
ods_tally:     kt =   6    Upper-air geopotential height       143      2372
ods_tally:
ods_tally: Kx =  34  NESDIS SH Land AM type A
ods_tally:     kt =   6    Upper-air geopotential height       277      1163
ods_tally:
ods_tally: Kx =  37  NESDIS NH Land AM type C
ods_tally:     kt =   6    Upper-air geopotential height       218      7139
ods_tally:
ods_tally: Kx =  38  NESDIS SH Land AM type C
ods_tally:     kt =   6    Upper-air geopotential height       940      4974
ods_tally:
ods_tally: Kx =  39  NESDIS NH Ocean AM type A
ods_tally:     kt =   6    Upper-air geopotential height        13      2520
ods_tally:
ods_tally: Kx =  40  NESDIS SH Ocean AM type A
ods_tally:     kt =   6    Upper-air geopotential height       676      6636
ods_tally:
ods_tally: Kx =  43  NESDIS NH Ocean AM type C
ods_tally:     kt =   6    Upper-air geopotential height        52      4536
ods_tally:
ods_tally: Kx =  44  NESDIS SH Ocean AM type C
ods_tally:     kt =   6    Upper-air geopotential height       598      9051
ods_tally:
ods_tally: Kx =  45  NESDIS NH Land PM type A
ods_tally:     kt =   6    Upper-air geopotential height         0      4946
ods_tally:
ods_tally: Kx =  46  NESDIS SH Land PM type A
ods_tally:     kt =   6    Upper-air geopotential height         0       752
ods_tally:
ods_tally: Kx =  49  NESDIS NH Land PM type C
ods_tally:     kt =   6    Upper-air geopotential height         0      6101
ods_tally:
ods_tally: Kx =  50  NESDIS SH Land PM type C
ods_tally:     kt =   6    Upper-air geopotential height         0      2279
ods_tally:
ods_tally: Kx =  51  NESDIS NH Ocean PM type A
ods_tally:     kt =   6    Upper-air geopotential height         0      4473
ods_tally:
ods_tally: Kx =  52  NESDIS SH Ocean PM type A
ods_tally:     kt =   6    Upper-air geopotential height         0      6153
ods_tally:
ods_tally: Kx =  55  NESDIS NH Ocean PM type C
ods_tally:     kt =   6    Upper-air geopotential height         0      7917
ods_tally:
ods_tally: Kx =  56  NESDIS SH Ocean PM type C
ods_tally:     kt =   6    Upper-air geopotential height         0      8063
ods_tally:
ods_tally: Kx =  89  Aircraft reports (ACARS)
ods_tally:     kt =   4             Upper-air zonal wind        40     23685
ods_tally:     kt =   5        Upper-air meridional wind        40     23685
ods_tally:     kt =   8            Upper-air temperature         0     22671
ods_tally:
ods_tally: Kx =  90 Surface METAR
ods_tally:     kt =   3               Sea level pressure         0      1444
ods_tally:
ods_tally: Kx = 116
ods_tally:     kt =  18         Total precipitable water         0     15711
ods_tally:
ods_tally: Kx = 119 Cld.Track Wind-US1 IR autom.cloud-drift
ods_tally:     kt =   4             Upper-air zonal wind         0      3536
ods_tally:     kt =   5        Upper-air meridional wind         0      3536
ods_tally:
ods_tally: Kx = 120 Cld.Track Wind-US1 Water Vapor,Deep-Layer
ods_tally:     kt =   4             Upper-air zonal wind         0      1554
ods_tally:     kt =   5        Upper-air meridional wind         0      1554
```

```
ods_tally:
ods_tally: Kx = 121 Cld.Track Wind-US1 Water Vapor,Cloud-Top
ods_tally:     kt =   4             Upper-air zonal wind         0      1418
ods_tally:     kt =   5        Upper-air meridional wind         0      1418
ods_tally:
ods_tally: Kx = 122 Cld.Track Wind-US2 IR autom.cloud-drift
ods_tally:     kt =   4             Upper-air zonal wind       412      6711
ods_tally:     kt =   5        Upper-air meridional wind       412      6711
ods_tally:
ods_tally: Kx = 123 Cld.Track Wind-US2 Water Vapor,Deep-Layer
ods_tally:     kt =   4             Upper-air zonal wind         0      3300
ods_tally:     kt =   5        Upper-air meridional wind         0      3300
ods_tally:
ods_tally: Kx = 124 Cld.Track Wind-US2 Water Vapor,Cloud-Top
ods_tally:     kt =   4             Upper-air zonal wind         0      3555
ods_tally:     kt =   5        Upper-air meridional wind         0      3555
ods_tally:
ods_tally: Kx = 147 Cld.Track Wind-US2 visible autom. cloud-drift
ods_tally:     kt =   4             Upper-air zonal wind       227      5384
ods_tally:     kt =   5        Upper-air meridional wind       227      5384
ods_tally:
ods_tally: Kx = 154
ods_tally:     kt =   1          Surface (10m) zonal wind         0     22970
ods_tally:     kt =   2     Surface (10m) meridional wind         0     22970
ods_tally:
ods_tally: Kx = 269 Cld.Track Wind-Japanese Water Vapor
ods_tally:     kt =   4             Upper-air zonal wind         0       524
ods_tally:     kt =   5        Upper-air meridional wind         0       524
ods_tally:
ods_tally: Kx = 275 Cld.Track Wind-European ELW IR
ods_tally:     kt =   4             Upper-air zonal wind       164      8299
ods_tally:     kt =   5        Upper-air meridional wind       164      8299
ods_tally:
ods_tally: Kx = *** ALL KXs
ods_tally:     kt =   1          Surface (10m) zonal wind         0     25097
ods_tally:     kt =   2     Surface (10m) meridional wind         0     25097
ods_tally:     kt =   3               Sea level pressure         0     12244
ods_tally:     kt =   4             Upper-air zonal wind      1185     82945
ods_tally:     kt =   5        Upper-air meridional wind      1185     82945
ods_tally:     kt =   6     Upper-air geopotential height      3689     87329
ods_tally:     kt =   7 Upper-air water vapor mixing rat       222     16730
ods_tally:     kt =   8            Upper-air temperature         0     49176
ods_tally:     kt =  10       Upper-air relative humidity         0     16730
ods_tally:     kt =  18          Total precipitable water         0     15711
ods_tally:
ods_tally:     kt = ***                          ALL KTs       6281    414004
ods_tally:
 ana: no TPW observations to analyze
Analyzer:Moist_Obs_: Scaled mixr O-Fs using qsat_f
m_GetAI::GetAI_External: mpirun -np 1 /gfs/dk16/demoraes/RPSAS/bin/solve.x
solve.x: Starting PSAS Solver...
m_GetAI:Moist_Sigf_: Defined moisture fcst error std dev for PSAS
m_GlobalPartition::init_: using "psas.rc" for the runtime resource input
m_GlobalPartition::init_: Using default "GlobalPartition_RefinementLevel:" =  1
m_GlobalPartition::init_: Using default "GlobalPartition_BaseLevel:" =  0
m_psasrc::open_: using "psas.rc" for the runtime resource input
m_redwin::init_: lc 1
m_redwin::init_: le 15000
m_redwin::init_: mxWtb 15000
m_redwin::init_: redwin(1) 1.000E+00
m_redwin::init_: redwin(lc) 1.000E+00
m_redwin::init_: redwin(le) 1.000E+00
m_redwin::init_: redwin(mxWtb) 1.000E+00
m_redwin::init_: dtau 2.744E-05
m_redwin::init_: rad_support 9.418E-01
m_redwin::init_: redwin_seplim 5.396E+01
m_redwin::init_: redwin_function = NOWINDOW
m_redwin::init_: redwin_cutdistance =  3.000E+03
m_redwin::init_: adjusted redwin_seplim =  5.396E+01
```

```
m_showDistrib:    1 x pre-distrib-nobs
m_showDistrib: avg=     6281  max=     6281  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
          00
000      6281
m_ClusterDistribution::init_: initial nregs   =  420
m_ClusterDistribution::init_: initial nsegs   =  31
m_ClusterDistribution::init_: largest segment =  809
m_ClusterDistribution::init_: target seg size =  1705
m_ClusterDistribution::init_: total work      =  2.907E+06
m_ClusterDistribution::init_: thread work     =  1.705E+03
m_ClusterDistribution::init_: base level      =  0
m_ClusterDistribution::init_: max refinement  =  1
m_ClusterDistribution::init_: seg to refine   =  0
m_ClusterDistribution::init_: max re-seg size =  1705
m_ClusterDistribution::init_: max_cluster     =  1
m_ClusterDistribution::init_: at level        =  1
m_ClusterDistribution::init_: n_segments      =  31
m_ClusterDistribution::init_: final gran.     =  4.442E+00
m_showDistrib:    1 x post-distrib-nobs
m_showDistrib: avg=     6281  max=     6281  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
          00
000      6281
m_AE::solve_: globalSize(ob_dstr) = 6281
m_AE::solve_:  localSize(ob_dstr) = 6281
m_showDistrib:    1 x pre-distrib-ninc
m_showDistrib: avg=  4533543  max=  4533543  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
          00
000   4533543
m_ClusterDistribution::init_: initial nregs   =  420
m_ClusterDistribution::init_: initial nsegs   =  57
m_ClusterDistribution::init_: largest segment =  233624
m_ClusterDistribution::init_: target seg size =  4533543
m_ClusterDistribution::init_: total work      =  4.534E+06
m_ClusterDistribution::init_: thread work     =  4.534E+06
m_ClusterDistribution::init_: base level      =  0
m_ClusterDistribution::init_: max refinement  =  1
m_ClusterDistribution::init_: seg to refine   =  0
m_ClusterDistribution::init_: max re-seg size =  4533543
m_ClusterDistribution::init_: max_cluster     =  1
m_ClusterDistribution::init_: at level        =  1
m_ClusterDistribution::init_: n_segments      =  57
m_ClusterDistribution::init_: final gran.     =  1.941E+01
m_showDistrib:    1 x post-distrib-ninc
m_showDistrib: avg=  4533543  max=  4533543  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
          00
000   4533543
m_AE::solve_: globalSize(ai_dstr) = 4533543
m_AE::solve_:  localSize(ai_dstr) = 4533543
m_psasrc::allopen_: using "psas.rc" for the runtime resource input
FcstErr*hCor_HH::
  WIN-POWERLAW     A power-law function windowed with a convolved spline
   1000  6000.0   524.9
    925  6000.0   537.6
    850  6000.0   551.5
    700  6000.0   583.8
    500  6000.0   641.3
    400  6000.0   680.6
    300  6000.0   732.8
    250  6000.0   766.8
    200  6000.0   809.6
    150  6000.0   866.9
    100  6000.0   952.0
     70  6000.0  1031.9
     50  6000.0  1112.4
     40  6000.0  1169.0
```

```
     30  6000.0  1246.3
     20  6000.0  1365.1
     15  6000.0  1457.7
     10  6000.0  1603.1
      7  6000.0  1749.1
      5  6000.0  1907.3
      3  6000.0  2201.1
      2  6000.0  2503.7
      1  6000.0  3303.1
  0.700  6000.0  4025.7
  0.500  6000.0  5267.9
  0.400  6000.0  7026.5
::
FcstErr*hCor_SS::
  WIN-POWERLAW     A power-law function windowed with a convolved spline
   1000  6000.0   650.0
    925  6000.0   650.0
    850  6000.0   650.0
    700  6000.0   650.0
    500  6000.0   650.0
    400  6000.0   650.0
    300  6000.0   650.0
    250  6000.0   650.0
    200  6000.0   650.0
    150  6000.0   650.0
    100  6000.0   650.0
     70  6000.0   650.0
     50  6000.0   650.0
     40  6000.0   650.0
     30  6000.0   650.0
     20  6000.0   650.0
     15  6000.0   650.0
     10  6000.0   650.0
      7  6000.0   650.0
      5  6000.0   650.0
      3  6000.0   650.0
      2  6000.0   650.0
      1  6000.0   650.0
  0.700  6000.0   650.0
  0.500  6000.0   650.0
  0.400  6000.0   650.0
::
FcstErr*hCor_VV::
  WIN-POWERLAW     A power-law function windowed with a convolved spline
   1000  6000.0   650.0
    925  6000.0   650.0
    850  6000.0   650.0
    700  6000.0   650.0
    500  6000.0   650.0
    400  6000.0   650.0
    300  6000.0   650.0
    250  6000.0   650.0
    200  6000.0   650.0
    150  6000.0   650.0
    100  6000.0   650.0
     70  6000.0   650.0
     50  6000.0   650.0
     40  6000.0   650.0
     30  6000.0   650.0
     20  6000.0   650.0
     15  6000.0   650.0
     10  6000.0   650.0
      7  6000.0   650.0
      5  6000.0   650.0
      3  6000.0   650.0
      2  6000.0   650.0
      1  6000.0   650.0
  0.700  6000.0   650.0
  0.500  6000.0   650.0
```

```
  0.400  6000.0   650.0
::
FcstErr*hCor_QQ::
  GASPARI-COHN     compactly supported spline function
   1000  3000.0   287.0
    925  3000.0   287.0
    850  3000.0   287.0
    700  3000.0   287.0
    500  3000.0   287.0
    400  3000.0   287.0
    300  3000.0   287.0
    250  3000.0   287.0
    200  3000.0   287.0
    150  3000.0   287.0
    100  3000.0   287.0
     70  3000.0   287.0
     50  3000.0   287.0
     40  3000.0   287.0
     30  3000.0   287.0
     20  3000.0   287.0
     15  3000.0   287.0
     10  3000.0   287.0
      7  3000.0   287.0
      5  3000.0   287.0
      3  3000.0   287.0
      2  3000.0   287.0
      1  3000.0   287.0
   0.70  3000.0   287.0
   0.50  3000.0   287.0
   0.40  3000.0   287.0
   0.20  3000.0   287.0
   0.05  3000.0   287.0
   0.01  3000.0   287.0
::
FcstErr*vCor_HH::

   1000 1.00
    925 0.82 1.00
    850 0.63 0.82 1.00
    700 0.39 0.60 0.81 1.00
    500 0.25 0.40 0.55 0.82 1.00
    400 0.19 0.31 0.43 0.70 0.89 1.00
    300 0.13 0.22 0.32 0.49 0.69 0.84 1.00
    250 0.09 0.18 0.26 0.39 0.56 0.70 0.88 1.00
    200 0.06 0.13 0.19 0.30 0.43 0.53 0.71 0.84 1.00
    150 0.03 0.09 0.13 0.21 0.32 0.40 0.51 0.59 0.81 1.00
    100 0.00 0.03 0.06 0.10 0.20 0.26 0.33 0.38 0.59 0.81 1.00
     70 0.00 0.00 0.03 0.04 0.12 0.18 0.23 0.26 0.41 0.63 0.88 1.00
     50 0.00 0.00 0.00 0.00 0.06 0.11 0.16 0.18 0.28 0.45 0.72 0.84 1.00
     40 0.00 0.00 0.00 0.00 0.03 0.09 0.12 0.14 0.22 0.36 0.58 0.74 0.90 1.00
     30 0.00 0.00 0.00 0.00 0.00 0.05 0.08 0.10 0.16 0.26 0.44 0.61 0.84 0.91 1.00
     20 0.00 0.00 0.00 0.00 0.00 0.01 0.04 0.05 0.10 0.17 0.29 0.41 0.72 0.78 0.83 1.00
     15 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.02 0.06 0.12 0.21 0.31 0.55 0.59 0.62 0.75
1.00
     10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.07 0.14 0.20 0.36 0.39 0.41 0.50
0.67 1.00
      7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.05 0.09 0.14 0.25 0.27 0.29 0.35
0.47 0.70 1.00
      5 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.03 0.05 0.10 0.18 0.19 0.21 0.25
0.34 0.50 0.71 1.00
      3 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.06 0.11 0.11 0.13 0.15
0.20 0.30 0.43 0.60 1.00
      2 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.04 0.06 0.08 0.08 0.10
0.14 0.20 0.29 0.40 0.69 1.00
      1 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.04 0.03 0.03
0.07 0.10 0.14 0.20 0.37 0.55 1.00
  0.700 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.05 0.07 0.10 0.14 0.28 0.41 0.75 1.00
```

```
  0.500 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.04 0.05 0.07 0.10 0.22 0.32 0.58 0.77 1.00
  0.400 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.03 0.04 0.06 0.08 0.19 0.28 0.49 0.65 0.85 1.00
  0.200 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.03 0.04 0.12 0.19 0.32 0.41 0.54 0.64 1.00
  0.050 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.08 0.12 0.19 0.24 0.31 0.37 0.51 1.00
  0.010 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.06 0.10 0.16 0.19 0.25 0.30 0.38 0.50 1.00
::
FcstErr*vCor_SS::

   1000 1.00
    925 0.00 1.00
    850 0.00 0.00 1.00
    700 0.00 0.00 0.00 1.00
    500 0.00 0.00 0.00 0.00 1.00
    400 0.00 0.00 0.00 0.00 0.00 1.00
    300 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    250 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    200 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    150 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    100 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     70 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     50 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     40 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     30 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     20 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     15 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
1.00
     10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 1.00
      7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 1.00
      5 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 1.00
      3 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 1.00
      2 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 1.00
      1 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.700 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.500 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.400 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.200 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.050 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.010 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
::
FcstErr*vCor_VV::

   1000 1.00
    925 0.00 1.00
    850 0.00 0.00 1.00
    700 0.00 0.00 0.00 1.00
    500 0.00 0.00 0.00 0.00 1.00
    400 0.00 0.00 0.00 0.00 0.00 1.00
    300 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    250 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    200 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    150 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    100 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
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```
     70 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     50 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     40 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     30 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     20 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     15 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
1.00
     10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 1.00
      7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 1.00
      5 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 1.00
      3 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 1.00
      2 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 1.00
      1 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.700 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.500 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.400 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.200 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.050 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.010 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
::
FcstErr*vCor_QQ::

   1000 1.00
    925 0.23 1.00
    850 0.00 0.37 1.00
    700 0.00 0.16 0.32 1.00
    500 0.00 0.00 0.00 0.28 1.00
    400 0.00 0.00 0.00 0.00 0.42 1.00
    300 0.00 0.00 0.00 0.00 0.14 0.44 1.00
    250 0.00 0.00 0.00 0.00 0.00 0.22 0.37 1.00
    200 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    150 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
    100 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     70 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     50 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     40 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     30 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     20 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
     15 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
1.00
     10 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 1.00
      7 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 1.00
      5 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 1.00
      3 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 1.00
      2 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 1.00
      1 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.700 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.500 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
```

```
  0.400 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.200 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.050 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
  0.010 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.00
::
tabl_FEsigW: using a resource based "FcstErr*Sigma_Wind::"
m_xTab_sigFi::tab_sigFi_: open "sigF.K60.21lev.ctl" for input
m_xTab_levs::parxtab_: ndat original:  4533543
m_xTab_levs::parxtab_: ndat final:     59541
m_xTab_levs::parxtab_: ndat original:  6281
m_xTab_levs::parxtab_: ndat final:     511
merg_plevs: nwlev =   302, readjusted rstp from 0.01 to 0.02

m_AE*ObsErr*sigO::
kt    10^     n   pres   mean+/-stdv   mini(imin)    maxi(imax)
u_UprAir E+00  192  923.5  0.000 0.000  0.000     1  0.000     1
u_UprAir E+00  209  806.5  0.000 0.000  0.000     3  0.000     3
u_UprAir E+00  102  647.7  0.000 0.000  0.000     4  0.000     4
u_UprAir E+00   63  472.6  0.000 0.000  0.000     5  0.000     5
u_UprAir E+00  149  359.7  0.000 0.000  0.000     6  0.000     6
u_UprAir E+00  131  282.7  0.000 0.000  0.000     7  0.000     7
u_UprAir E+00  155  231.1  0.000 0.000  0.000     8  0.000     8
u_UprAir E+00   86  190.1  0.000 0.000  0.000     9  0.000     9
u_UprAir E+00   34  149.6  0.000 0.000  0.000    10  0.000    10
u_UprAir E+00   23  100.0  0.000 0.000  0.000    11  0.000    11
u_UprAir E+00   21   70.0  0.000 0.000  0.000    12  0.000    12
u_UprAir E+00   20   50.0  0.000 0.000  0.000    13  0.000    13
v_UprAir E+00  192  923.5  0.000 0.000  0.000   143  0.000   143
v_UprAir E+00  209  806.5  0.000 0.000  0.000   145  0.000   145
v_UprAir E+00  102  647.7  0.000 0.000  0.000   146  0.000   146
v_UprAir E+00   63  472.6  0.000 0.000  0.000   147  0.000   147
v_UprAir E+00  149  359.7  0.000 0.000  0.000   148  0.000   148
v_UprAir E+00  131  282.7  0.000 0.000  0.000   149  0.000   149
v_UprAir E+00  155  231.1  0.000 0.000  0.000   150  0.000   150
v_UprAir E+00   86  190.1  0.000 0.000  0.000   151  0.000   151
v_UprAir E+00   34  149.6  0.000 0.000  0.000   152  0.000   152
v_UprAir E+00   23  100.0  0.000 0.000  0.000   153  0.000   153
v_UprAir E+00   21   70.0  0.000 0.000  0.000   154  0.000   154
v_UprAir E+00   20   50.0  0.000 0.000  0.000   155  0.000   155
H_UprAir E+01  132 1010.6  0.000 0.000  0.000   299  0.000   299
H_UprAir E+01  458  946.7  0.468 0.532  0.000   285  1.169   389
H_UprAir E+01  254  850.0  1.124 0.477  0.000   317  1.440   390
H_UprAir E+01  259  700.0  1.438 0.644  0.000   318  1.920   391
H_UprAir E+01  262  500.0  1.722 0.836  0.000   319  2.400   392
H_UprAir E+01  261  400.0  1.926 0.967  0.000   320  2.730   393
H_UprAir E+01  260  300.0  2.131 1.045  0.000   321  2.990   394
H_UprAir E+01  260  250.0  2.254 1.096  0.000   322  3.150   395
H_UprAir E+01  260  200.0  2.318 1.099  0.000   323  3.200   396
H_UprAir E+01  258  150.0  2.608 1.054  0.000   324  3.320   397
H_UprAir E+01  257  100.0  2.560 0.965  0.000   338  3.110   398
H_UprAir E+01  259   70.0  2.590 0.974  0.000   325  3.030   361
H_UprAir E+01  257   50.0  2.718 0.988  0.000   326  3.090   362
H_UprAir E+01  252   30.0  3.032 1.009  0.000   327  3.430   401
q_UprAir E+00   50  953.5  0.000 0.000  0.000   933  0.000   933
q_UprAir E+00   35  850.0  0.000 0.000  0.000   935  0.000   935
q_UprAir E+00   36  700.0  0.000 0.000  0.000   936  0.000   936
q_UprAir E+00   35  500.0  0.000 0.000  0.000   937  0.000   937
q_UprAir E+00   34  400.0  0.000 0.000  0.000   938  0.000   938
q_UprAir E+00   32  300.0  0.000 0.000  0.000   939  0.000   939
::

m_AE*ObsErr*sigU::
kt    10^     n   pres   mean+/-stdv   mini(imin)    maxi(imax)
u_UprAir E+00  192  923.5  1.618 0.241  1.500    96  2.500  1134
u_UprAir E+00  209  806.5  1.630 0.242  1.500   965  2.600  1124
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u_UprAir E+00  102  647.7  1.865 0.330  1.600   981  2.600  1125
u_UprAir E+00   63  472.6  2.267 0.444  1.700  3628  2.700     5
u_UprAir E+00  149  359.7  2.284 0.468  1.900  1166  3.200     6
u_UprAir E+00  131  282.7  2.572 0.480  2.200    62  4.000  2209
u_UprAir E+00  155  231.1  2.687 0.403  2.300    25  4.000  2210
u_UprAir E+00   86  190.1  2.902 0.284  2.700    38  3.300     9
u_UprAir E+00   34  149.6  2.700 0.000  2.700    10  2.700    10
u_UprAir E+00   23  100.0  2.700 0.000  2.700    11  2.700    11
u_UprAir E+00   21   70.0  2.714 0.064  2.700    12  3.000  4802
u_UprAir E+00   20   50.0  2.715 0.065  2.700    13  3.000  4803
v_UprAir E+00  192  923.5  1.618 0.241  1.500   238  2.500  1207
v_UprAir E+00  209  806.5  1.630 0.242  1.500  1001  2.600  1197
v_UprAir E+00  102  647.7  1.865 0.330  1.600  1017  2.600  1198
v_UprAir E+00   63  472.6  2.267 0.444  1.700  3851  2.700   147
v_UprAir E+00  149  359.7  2.284 0.468  1.900  1239  3.200   148
v_UprAir E+00  131  282.7  2.572 0.480  2.200   204  4.000  2480
v_UprAir E+00  155  231.1  2.687 0.403  2.300   167  4.000  2481
v_UprAir E+00   86  190.1  2.902 0.284  2.700   180  3.300   151
v_UprAir E+00   34  149.6  2.700 0.000  2.700   152  2.700   152
v_UprAir E+00   23  100.0  2.700 0.000  2.700   153  2.700   153
v_UprAir E+00   21   70.0  2.714 0.064  2.700   154  3.000  4948
v_UprAir E+00   20   50.0  2.715 0.065  2.700   155  3.000  4949
H_UprAir E+01  132 1010.6  0.535 0.003  0.527  5926  0.540  4446
H_UprAir E+01  458  946.7  0.603 0.069  0.540   315  0.704   389
H_UprAir E+01  254  850.0  0.817 0.104  0.560   317  0.870   390
H_UprAir E+01  259  700.0  1.073 0.179  0.620   318  1.150   353
H_UprAir E+01  262  500.0  1.395 0.227  0.860   319  1.550   392
H_UprAir E+01  261  400.0  1.542 0.214  1.080   320  1.710   393
H_UprAir E+01  260  300.0  1.691 0.183  1.280   321  1.830   394
H_UprAir E+01  260  250.0  1.764 0.182  1.350   322  1.900   395
H_UprAir E+01  260  200.0  1.842 0.166  1.450   323  1.960   396
H_UprAir E+01  258  150.0  1.900 0.118  1.630   324  1.990   397
H_UprAir E+01  257  100.0  1.878 0.030  1.840   360  1.930   338
H_UprAir E+01  259   70.0  1.937 0.096  1.890   399  2.190   325
H_UprAir E+01  257   50.0  1.998 0.137  1.910   400  2.350   326
H_UprAir E+01  252   30.0  2.224 0.197  2.100   401  2.770   327
q_UprAir E-01   50  953.5  1.030 0.023  1.000   933  1.048   934
q_UprAir E-01   35  850.0  1.100 0.000  1.100   935  1.100   935
q_UprAir E-01   36  700.0  1.200 0.000  1.200   936  1.200   936
q_UprAir E-01   35  500.0  1.300 0.000  1.300   937  1.300   937
q_UprAir E-01   34  400.0  1.400 0.000  1.400   938  1.400   938
q_UprAir E-01   32  300.0  1.500 0.000  1.500   939  1.500   939
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m_AE*ObsErr*sigU(*xmUs)::
kt    10^     n   pres   mean+/-stdv   mini(imin)    maxi(imax)
u_UprAir E+00  192  923.5  1.618 0.241  1.500    96  2.500  1134
u_UprAir E+00  209  806.5  1.630 0.242  1.500   965  2.600  1124
u_UprAir E+00  102  647.7  1.865 0.330  1.600   981  2.600  1125
u_UprAir E+00   63  472.6  2.267 0.444  1.700  3628  2.700     5
u_UprAir E+00  149  359.7  2.284 0.468  1.900  1166  3.200     6
u_UprAir E+00  131  282.7  2.572 0.480  2.200    62  4.000  2209
u_UprAir E+00  155  231.1  2.687 0.403  2.300    25  4.000  2210
u_UprAir E+00   86  190.1  2.902 0.284  2.700    38  3.300     9
u_UprAir E+00   34  149.6  2.700 0.000  2.700    10  2.700    10
u_UprAir E+00   23  100.0  2.700 0.000  2.700    11  2.700    11
u_UprAir E+00   21   70.0  2.714 0.064  2.700    12  3.000  4802
u_UprAir E+00   20   50.0  2.715 0.065  2.700    13  3.000  4803
v_UprAir E+00  192  923.5  1.618 0.241  1.500   238  2.500  1207
v_UprAir E+00  209  806.5  1.630 0.242  1.500  1001  2.600  1197
v_UprAir E+00  102  647.7  1.865 0.330  1.600  1017  2.600  1198
v_UprAir E+00   63  472.6  2.267 0.444  1.700  3851  2.700   147
v_UprAir E+00  149  359.7  2.284 0.468  1.900  1239  3.200   148
v_UprAir E+00  131  282.7  2.572 0.480  2.200   204  4.000  2480
v_UprAir E+00  155  231.1  2.687 0.403  2.300   167  4.000  2481
v_UprAir E+00   86  190.1  2.902 0.284  2.700   180  3.300   151
v_UprAir E+00   34  149.6  2.700 0.000  2.700   152  2.700   152
v_UprAir E+00   23  100.0  2.700 0.000  2.700   153  2.700   153
v_UprAir E+00   21   70.0  2.714 0.064  2.700   154  3.000  4948
```

```
v_UprAir E+00   20   50.0  2.715 0.065  2.700   155  3.000  4949
H_UprAir E+01  132 1010.6  0.535 0.003  0.527  5926  0.540  4446
H_UprAir E+01  458  946.7  0.603 0.069  0.540   315  0.704   389
H_UprAir E+01  254  850.0  0.817 0.104  0.560   317  0.870   390
H_UprAir E+01  259  700.0  1.073 0.179  0.620   318  1.150   353
H_UprAir E+01  262  500.0  1.395 0.227  0.860   319  1.550   392
H_UprAir E+01  261  400.0  1.542 0.214  1.080   320  1.710   393
H_UprAir E+01  260  300.0  1.691 0.183  1.280   321  1.830   394
H_UprAir E+01  260  250.0  1.764 0.182  1.350   322  1.900   395
H_UprAir E+01  260  200.0  1.842 0.166  1.450   323  1.960   396
H_UprAir E+01  258  150.0  1.900 0.118  1.630   324  1.990   397
H_UprAir E+01  257  100.0  1.878 0.030  1.840   360  1.930   338
H_UprAir E+01  259   70.0  1.937 0.096  1.890   399  2.190   325
H_UprAir E+01  257   50.0  1.998 0.137  1.910   400  2.350   326
H_UprAir E+01  252   30.0  2.224 0.197  2.100   401  2.770   327
q_UprAir E-01   50  953.5  1.030 0.023  1.000   933  1.048   934
q_UprAir E-01   35  850.0  1.100 0.000  1.100   935  1.100   935
q_UprAir E-01   36  700.0  1.200 0.000  1.200   936  1.200   936
q_UprAir E-01   35  500.0  1.300 0.000  1.300   937  1.300   937
q_UprAir E-01   34  400.0  1.400 0.000  1.400   938  1.400   938
q_UprAir E-01   32  300.0  1.500 0.000  1.500   939  1.500   939
::

m_AE*Innovations::
kt    10^     n   pres   mean+/-stdv   mini(imin)    maxi(imax)
u_UprAir E+01  192  923.5  0.016 0.215 -0.669  3673  0.896  1134
u_UprAir E+01  209  806.5  0.008 0.302 -0.837  4878  0.837  4793
u_UprAir E+01  102  647.7  0.068 0.357 -1.006  4762  0.870  4863
u_UprAir E+01   63  472.6  0.049 0.375 -1.084  5952  0.781  2118
u_UprAir E+01  149  359.7 -0.033 0.393 -1.212  5956  1.097  2293
u_UprAir E+01  131  282.7  0.035 0.425 -1.044  6002  1.046  3640
u_UprAir E+01  155  231.1 -0.030 0.387 -0.868  2223  0.929  2221
u_UprAir E+01   86  190.1 -0.114 0.422 -0.917  3576  0.961  2197
u_UprAir E+01   34  149.6  0.084 0.400 -0.764  4778  0.931    10
u_UprAir E+01   23  100.0  0.467 0.718 -0.502   960  2.590  2081
u_UprAir E+01   21   70.0 -0.104 0.617 -2.030    12  0.555  1123
u_UprAir E+01   20   50.0  0.004 0.401 -1.077    13  0.775  2083
v_UprAir E+01  192  923.5 -0.061 0.256 -0.591  1008  0.882  2584
v_UprAir E+01  209  806.5  0.015 0.353 -0.818  6049  1.148  2574
v_UprAir E+01  102  647.7 -0.008 0.326 -0.994  4982  0.930  6062
v_UprAir E+01   63  472.6  0.044 0.336 -0.692  2358  0.914  4919
v_UprAir E+01  149  359.7  0.043 0.347 -0.947  4404  0.879  3807
v_UprAir E+01  131  282.7  0.016 0.340 -1.012  2391  0.888  2480
v_UprAir E+01  155  231.1  0.055 0.427 -1.075   174  1.020  2066
v_UprAir E+01   86  190.1 -0.106 0.463 -1.410  3920  0.862  3823
v_UprAir E+01   34  149.6  0.133 0.440 -0.973   152  0.892  2351
v_UprAir E+01   23  100.0 -0.012 0.523 -1.029  2418  0.763   153
v_UprAir E+01   21   70.0  0.057 0.518 -0.808  2395  1.086  2365
v_UprAir E+01   20   50.0  0.129 0.837 -1.015   998  2.910  3778
H_UprAir E+02  132 1010.6 -0.062 0.108 -0.377  2706  0.303  2004
H_UprAir E+02  458  946.7 -0.083 0.150 -0.696  3991  0.493   306
H_UprAir E+02  254  850.0 -0.018 0.121 -0.608  2883  0.390  3301
H_UprAir E+02  259  700.0 -0.028 0.159 -0.692  2884  0.520  3022
H_UprAir E+02  262  500.0 -0.061 0.198 -0.745  2885  0.507  5334
H_UprAir E+02  261  400.0 -0.080 0.229 -0.877   763  0.508  4694
H_UprAir E+02  260  300.0 -0.092 0.257 -1.205   764  0.509  1333
H_UprAir E+02  260  250.0 -0.100 0.278 -1.426   765  0.513  1062
H_UprAir E+02  260  200.0 -0.117 0.292 -1.619   766  0.511  1063
H_UprAir E+02  258  150.0 -0.113 0.308 -1.806   767  0.598  1040
H_UprAir E+02  257  100.0 -0.161 0.301 -1.733   768  0.562   338
H_UprAir E+02  259   70.0 -0.359 0.342 -1.549   769  0.726  1041
H_UprAir E+02  257   50.0 -0.476 0.396 -1.594   840  0.957  1042
H_UprAir E+02  252   30.0 -0.790 0.556 -2.569  1431  1.145   327
q_UprAir E-01   50  953.5  0.275 1.217 -1.748  5863  3.827   940
q_UprAir E-01   35  850.0  0.309 1.000 -1.780  5878  2.692  4327
q_UprAir E-01   36  700.0 -0.302 1.550 -4.229  3479  2.489  4745
q_UprAir E-01   35  500.0 -0.591 1.976 -6.306  3506  2.868  3473
q_UprAir E-01   34  400.0 -0.872 2.309 -6.901  1659  2.637  5874
q_UprAir E-01   32  300.0 -1.759 2.161 -6.421  4299  3.021  5875
```

```
::
 nHHtab=   15000
 cutoff= 1/2 the support=    3000.000
m_costs::init_: Using default costs values
m_psasrc::allopen_: using "psas.rc" for the runtime resource input
m_symMatx::schedAll_: kind_mat =  5
m_symMatx::schedAll_: kind_cov =  1
  load balance info?   43.00000
     max:   3.595474E-02
     avg:   3.421245E-03

 ****  load balance summary ***
    kind_M =   5  ; kind_C =   1  ; mblox =   43  ; nblox =   43
   local cost =   0.1471
   total cost =   0.1471
   est. spdup =   1.0000

 Begin analysis   1  5
 Checking on ob_dstr: (lc,le) =   1  43  43

 ****  load balance summary ***
    kind_M =   5  ; kind_C =   1  ; mblox =   43  ; nblox =   43
    local cost =   0.1471135  ; total cost =   0.1471135  ; ratio =   1.000000

m_symMatx::schedAll_: kind_mat =  5
m_symMatx::schedAll_: kind_cov =  2
  load balance info?   78.00000
     max:   6.133085E-02
     avg:   7.945166E-03

 ****  load balance summary ***
    kind_M =   5  ; kind_C =   2  ; mblox =   78  ; nblox =   78
   local cost =   0.6197
   total cost =   0.6197
   est. spdup =   1.0000

 Begin analysis   2  5
 Checking on ob_dstr: (lc,le) =   1  43  43

 ****  load balance summary ***
    kind_M =   5  ; kind_C =   2  ; mblox =   78  ; nblox =   78
    local cost =   0.6197228  ; total cost =   0.6197228  ; ratio =   1.000000

m_symMatx::schedAll_: kind_mat =  5
m_symMatx::schedAll_: kind_cov =  4
  load balance info?   328.0000
     max:   6.133085E-02
     avg:   3.525544E-03

 ****  load balance summary ***
    kind_M =   5  ; kind_C =   4  ; mblox =   328  ; nblox =   328
   local cost =   1.1564
   total cost =   1.1564
   est. spdup =   1.0000

 Begin analysis   4  5
 Checking on ob_dstr: (lc,le) =   1  43  43

 ****  load balance summary ***
    kind_M =   5  ; kind_C =   4  ; mblox =   328  ; nblox =   328
    local cost =   1.156379  ; total cost =   1.156379  ; ratio =   1.000000

m_symMatx::schedAll_: kind_mat =  5
m_symMatx::schedAll_: kind_cov =  8
  load balance info?   78.00000
     max:   7.980457E-03
     avg:   1.165132E-03

 ****  load balance summary ***
```

```
    kind_M =   5  ; kind_C =   8  ; mblox =   78  ; nblox =   78
   local cost =   0.0909
   total cost =   0.0909
   est. spdup =   1.0000

 Begin analysis   8  5
 Checking on ob_dstr: (lc,le) =   1  43  43

 ****  load balance summary ***
    kind_M =   5  ; kind_C =   8  ; mblox =   78  ; nblox =   78
    local cost =   9.088032E-02  ; total cost =   9.088032E-02  ; ratio =   1.000000

m_symMatx::schedAll_: kind_mat =  5
m_symMatx::schedAll_: kind_cov =  16
  load balance info?   78.00000
     max:   7.980457E-03
     avg:   1.165132E-03

 ****  load balance summary ***
    kind_M =   5  ; kind_C =   16  ; mblox =   78  ; nblox =   78
   local cost =   0.0909
   total cost =   0.0909
   est. spdup =   1.0000

 Begin analysis   16  5
 Checking on ob_dstr: (lc,le) =   1  43  43

 ****  load balance summary ***
    kind_M =   5  ; kind_C =   16  ; mblox =   78  ; nblox =   78
    local cost =   9.088032E-02  ; total cost =   9.088032E-02  ; ratio =   1.000000

m_showDistrib:    1 x m_FcstErrCovMatx::Phi
m_showDistrib: avg=  1.1564E+00  max=  1.1564E+00  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
m_showDistrib:    1 x m_FcstErrCovMatx::Psi
m_showDistrib: avg=  9.0880E-02  max=  9.0880E-02  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
m_showDistrib:    1 x m_FcstErrCovMatx::Chi
m_showDistrib: avg=  9.0880E-02  max=  9.0880E-02  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
m_showDistrib:    1 x m_ObsErrCovMatx::Ru
m_showDistrib: avg=  1.4711E-01  max=  1.4711E-01  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
m_showDistrib:    1 x m_ObsErrCovMatx::Rc
m_showDistrib: avg=  6.1972E-01  max=  6.1972E-01  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
m_symMatx::schedAll_: kind_mat =  2
m_symMatx::schedAll_: kind_cov =  1
  load balance info?   43.00000
     max:   3.595474E-02
     avg:   3.421245E-03

 ****  load balance summary ***
    kind_M =   2  ; kind_C =   1  ; mblox =   43  ; nblox =   43
   local cost =   0.1471
   total cost =   0.1471
   est. spdup =   1.0000

 Begin analysis   1  2
 Checking on ob_dstr: (lc,le) =   1  43  43

 ****  load balance summary ***
    kind_M =   2  ; kind_C =   1  ; mblox =   43  ; nblox =   43
    local cost =   0.1471135  ; total cost =   0.1471135  ; ratio =   1.000000

m_symMatx::schedAll_: kind_mat =  2
m_symMatx::schedAll_: kind_cov =  2
  load balance info?   12.00000
     max:   3.595474E-02
```

```
     avg:   9.037292E-03

 ****  load balance summary ***
    kind_M =   2  ; kind_C =   2  ; mblox =   12  ; nblox =   12
   local cost =   0.1084
   total cost =   0.1084
   est. spdup =   1.0000

 Begin analysis   2  2
 Checking on ob_dstr: (lc,le) =   1  43  43

 ****  load balance summary ***
    kind_M =   2  ; kind_C =   2  ; mblox =   12  ; nblox =   12
    local cost =   0.1084475  ; total cost =   0.1084475  ; ratio =   1.000000

m_symMatx::schedAll_: kind_mat =  2
m_symMatx::schedAll_: kind_cov =  4
  load balance info?   43.00000
     max:   3.595474E-02
     avg:   4.409564E-03

 ****  load balance summary ***
    kind_M =   2  ; kind_C =   4  ; mblox =   43  ; nblox =   43
   local cost =   0.1896
   total cost =   0.1896
   est. spdup =   1.0000

 Begin analysis   4  2
 Checking on ob_dstr: (lc,le) =   1  43  43

 ****  load balance summary ***
    kind_M =   2  ; kind_C =   4  ; mblox =   43  ; nblox =   43
    local cost =   0.1896113  ; total cost =   0.1896113  ; ratio =   1.000000

m_symMatx::schedAll_: kind_mat =  2
m_symMatx::schedAll_: kind_cov =  8
  load balance info?   12.00000
     max:   6.088612E-03
     avg:   1.301309E-03

 ****  load balance summary ***
    kind_M =   2  ; kind_C =   8  ; mblox =   12  ; nblox =   12
   local cost =   0.0156
   total cost =   0.0156
   est. spdup =   1.0000

 Begin analysis   8  2
 Checking on ob_dstr: (lc,le) =   1  43  43

 ****  load balance summary ***
    kind_M =   2  ; kind_C =   8  ; mblox =   12  ; nblox =   12
    local cost =   1.561571E-02  ; total cost =   1.561571E-02  ; ratio =   1.000000

m_symMatx::schedAll_: kind_mat =  2
m_symMatx::schedAll_: kind_cov =  16
  load balance info?   12.00000
     max:   6.088612E-03
     avg:   1.301309E-03

 ****  load balance summary ***
    kind_M =   2  ; kind_C =   16  ; mblox =   12  ; nblox =   12
   local cost =   0.0156
   total cost =   0.0156
   est. spdup =   1.0000

 Begin analysis   16  2
 Checking on ob_dstr: (lc,le) =   1  43  43

 ****  load balance summary ***
```

```
    kind_M =   2  ; kind_C =   16  ; mblox =   12  ; nblox =   12
    local cost =   1.561571E-02  ; total cost =   1.561571E-02  ; ratio =   1.000000

m_showDistrib:    1 x m_FcstErrCovMatx::Phi
m_showDistrib: avg=  1.8961E-01  max=  1.8961E-01  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
m_showDistrib:    1 x m_FcstErrCovMatx::Psi
m_showDistrib: avg=  1.5616E-02  max=  1.5616E-02  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
m_showDistrib:    1 x m_FcstErrCovMatx::Chi
m_showDistrib: avg=  1.5616E-02  max=  1.5616E-02  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
m_showDistrib:    1 x m_ObsErrCovMatx::Ru
m_showDistrib: avg=  1.4711E-01  max=  1.4711E-01  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
m_showDistrib:    1 x m_ObsErrCovMatx::Rc
m_showDistrib: avg=  1.0845E-01  max=  1.0845E-01  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
m_CGSolver::recurSolve_: band  2, convergence achieved, iter =   2
conjgr2::
    Scale               +3
    Criterion    2.000E-01
    localSize         6281
    Iterations           2
    Vectors       1
  0  2.4060
  1  0.7135
  2  0.3439
 **  0.4812
::      # conjgr2
m_CGSolver::recurSolve_: band  2, convergence achieved, iter =   2
conjgr2::
    Scale               +3
    Criterion    2.000E-01
    localSize         6281
    Iterations           2
    Vectors       1
  0  2.3000
  1  0.5158
  2  0.3429
 **  0.4600
::      # conjgr2
m_CGSolver::recurSolve_: band  2, convergence achieved, iter =   2
conjgr2::
    Scale               +3
    Criterion    2.000E-01
    localSize         6281
    Iterations           2
    Vectors       1
  0  1.4242
  1  0.3825
  2  0.2537
 **  0.2848
::      # conjgr2
m_CGSolver::recurSolve_: band  2, convergence achieved, iter =   2
conjgr2::
    Scale               +2
    Criterion    2.000E-01
    localSize         6281
    Iterations           2
    Vectors       1
  0  7.7309
  1  2.3737
  2  1.4309
 **  1.5462
::      # conjgr2
m_CGSolver::recurSolve_: band  2, convergence achieved, iter =   2
conjgr2::
    Scale               +2
```

```
    Criterion    2.000E-01
    localSize         6281
    Iterations           2
    Vectors       1
  0  4.8930
  1  1.7715
  2  0.8728
 **  0.9786
::      # conjgr2
m_CGSolver::recurSolve_: band  2, convergence achieved, iter =   2
conjgr2::
    Scale               +2
    Criterion    2.000E-01
    localSize         6281
    Iterations           2
    Vectors       1
  0  4.1240
  1  1.3189
  2  0.5951
 **  0.8248
::      # conjgr2
m_CGSolver::recurSolve_: band  2, convergence achieved, iter =   2
conjgr2::
    Scale               +2
    Criterion    2.000E-01
    localSize         6281
    Iterations           2
    Vectors       1
  0  2.9949
  1  0.9998
  2  0.4600
 **  0.5990
::      # conjgr2
m_CGSolver::recurSolve_: band  2, convergence achieved, iter =   2
conjgr2::
    Scale               +2
    Criterion    2.000E-01
    localSize         6281
    Iterations           2
    Vectors       1
  0  2.4050
  1  0.7496
  2  0.3623
 **  0.4810
::      # conjgr2
m_CGSolver::recurSolve_: band  5, convergence achieved, iter =   8
conjgr5::
    Scale               +3
    Criterion    7.000E-02
    localSize         6281
    Iterations           8
    Vectors       1
  0  2.4060
  1  2.3000
  2  1.4242
  3  0.7731
  4  0.4893
  5  0.4124
  6  0.2995
  7  0.2405
  8  0.1525
 **  0.1684
::      # conjgr5

m_AE*Solutions::
kt    10^     n   pres   mean+/-stdv   mini(imin)    maxi(imax)
u_UprAir E+00  192  923.5  0.033 0.494 -1.599  3673  1.974  4892
u_UprAir E+00  209  806.5  0.056 0.712 -2.110  4872  2.778  4869
u_UprAir E+00  102  647.7  0.069 0.704 -1.282  4762  3.656  5989
```

```
u_UprAir E+00   63  472.6  0.010 0.543 -2.215  5952  1.074  4763
u_UprAir E+00  149  359.7 -0.029 0.509 -1.276  2292  1.579  6005
u_UprAir E+00  131  282.7  0.007 0.403 -1.008  2332  1.164  3640
u_UprAir E+00  155  231.1  0.007 0.331 -0.841  4824  0.946  2219
u_UprAir E+00   86  190.1 -0.064 0.279 -0.768  2276  0.644  2197
u_UprAir E+00   34  149.6 -0.006 0.318 -0.784  4778  0.560  2134
u_UprAir E+00   23  100.0  0.160 0.310 -0.359  2190  0.920  4779
u_UprAir E+00   21   70.0 -0.092 0.280 -0.752  2094  0.295  4759
u_UprAir E+00   20   50.0 -0.035 0.202 -0.688  4801  0.275  4760
v_UprAir E+00  192  923.5  0.003 0.628 -1.536  4994  2.487  5038
v_UprAir E+00  209  806.5  0.045 0.801 -2.534  5025  2.662  5007
v_UprAir E+00  102  647.7 -0.010 0.624 -2.584  4982  2.707  6062
v_UprAir E+00   63  472.6  0.059 0.412 -0.845   244  1.100  6072
v_UprAir E+00  149  359.7 -0.018 0.416 -1.134  4980  0.953  6025
v_UprAir E+00  131  282.7 -0.046 0.350 -1.047  2565  0.782  4959
v_UprAir E+00  155  231.1  0.031 0.374 -1.059  2555  0.989  2497
v_UprAir E+00   86  190.1 -0.058 0.298 -0.948  3920  0.537  3852
v_UprAir E+00   34  149.6  0.132 0.315 -0.464  2550  0.822  4946
v_UprAir E+00   23  100.0 -0.038 0.351 -0.767  2418  0.738  2470
v_UprAir E+00   21   70.0 -0.002 0.338 -0.670  2395  0.879  2450
v_UprAir E+00   20   50.0  0.048 0.314 -0.589  4947  0.845  3778
H_UprAir E+00  132 1010.6  0.036 0.264 -0.783  2706  0.777  2004
H_UprAir E+00  458  946.7 -0.015 0.298 -1.460  3991  1.436   289
H_UprAir E+00  254  850.0 -0.001 0.137 -0.892  2883  0.549  5157
H_UprAir E+00  259  700.0 -0.005 0.147 -0.701  2884  0.557  3022
H_UprAir E+00  262  500.0  0.001 0.093 -0.355  2754  0.626  2846
H_UprAir E+00  261  400.0  0.000 0.064 -0.273  2861  0.254  4069
H_UprAir E+00  260  300.0  0.000 0.053 -0.332  2876  0.282  2862
H_UprAir E+00  260  250.0  0.000 0.045 -0.314  2863  0.214  5148
H_UprAir E+00  260  200.0 -0.001 0.046 -0.219  2899  0.404  2864
H_UprAir E+00  258  150.0 -0.001 0.055 -0.320   337  0.180  2828
H_UprAir E+00  257  100.0  0.003 0.050 -0.196  4465  0.248   338
H_UprAir E+00  259   70.0 -0.002 0.039 -0.126  5178  0.150  5138
H_UprAir E+00  257   50.0  0.001 0.048 -0.248  2868  0.169  4076
H_UprAir E+00  252   30.0 -0.002 0.039 -0.134  4741  0.154   327
q_UprAir E+01   50  953.5  0.072 0.439 -0.692  5863  1.416   940
q_UprAir E+01   35  850.0  0.084 0.374 -0.563  5878  0.920  4327
q_UprAir E+01   36  700.0 -0.057 0.496 -1.398  3479  0.736  4745
q_UprAir E+01   35  500.0 -0.053 0.471 -1.278  3506  1.031  3473
q_UprAir E+01   34  400.0 -0.092 0.534 -1.478  3500  0.755  3488
q_UprAir E+01   32  300.0 -0.340 0.529 -1.558  4299  0.842  3501
::
 symSched_ -> FcstErrCovMatx_init::recSched
m_recMatx::schedule_: mBlox =  977
m_recMatx::schedule_: mBlox =  212
m_recMatx::schedule_: mBlox =  212
 FcstErrCovMatx_init::recSched -> symSched_
m_showDistrib:    1 x m_FcstErrCovMatx::Phi
m_showDistrib: avg=  8.0607E+02  max=  8.0607E+02  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
m_showDistrib:    1 x m_FcstErrCovMatx::Psi
m_showDistrib: avg=  1.2447E+02  max=  1.2447E+02  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
m_showDistrib:    1 x m_FcstErrCovMatx::Chi
m_showDistrib: avg=  1.2447E+02  max=  1.2447E+02  iPE=   0
m_showDistrib:  x%=00   r%=00   i%=00
m_CorFxpy::mt_recCxpy_: Actual Timings for kind Cov 4
m_CorFxpy::mt_recCxpy_:      time 4.783E+02
m_CorFxpy::mt_recCxpy_: predicted 8.061E+02
m_CorFxpy::mt_recCxpy_: Actual Timings for kind Cov 8
m_CorFxpy::mt_recCxpy_:      time 6.301E+01
m_CorFxpy::mt_recCxpy_: predicted 1.245E+02
m_CorFxpy::mt_recCxpy_: Actual Timings for kind Cov 16
m_CorFxpy::mt_recCxpy_:      time 5.971E+01
m_CorFxpy::mt_recCxpy_: predicted 1.245E+02
m_AE:  Chi-squared for global sample size    6281 is 0.692150E+04

[MWTIME]     counts    period    NET    m:s      % SCOPE    m:s      %
--------------------------------------------------------------------------------
```

```
..zeit.         1s  0/   5                    0.0     00:00 660.7+ ******** -61997:**
*****+
solve            1      1.8      1.8     00:02 *****% ******** -61997:** *****%
psas             1    582.7    582.7     09:43 *****% ******** -61997:** *****%
distribute_ob
                 1      4.9      4.9     00:05 *****%      4.9     00:05 *****%
distribute_ai
                 1 ******** ******** -62018:** *****% ******** -62018:** *****%
attr_1           2      0.0      0.0     00:00 222.4%      0.0     00:00 222.4%
attr_2           2      0.0      0.0     00:00 218.0%      0.0     00:00 218.0%
attr_3           2      0.0      0.0     00:00 557.2%      0.0     00:00 557.2%
attr_4           2      0.0      0.0     00:00 *****%      0.0     00:00 *****%
attr_5           2      0.2      0.4     00:00 *****%      0.4     00:00 *****%
attr_6           2      2.8      5.6     00:06 *****%      5.6     00:06 *****%
attr_7           2      0.3      0.6     00:01 *****%      0.6     00:01 *****%
CGSolver_solve
                 1      3.9      3.9     00:04 *****%     32.8     00:33 *****%
localSolve_     16      1.2     20.0     00:20 *****%     20.0     00:20 *****%
sMatxU_agat     24      0.0      0.0     00:00 *****%      0.0     00:00 *****%
sMatxUxpy       24      0.0      0.9     00:01 *****%      0.9     00:01 *****%
sMatxU_rscat    24      0.0      0.0     00:00 *****%      0.0     00:00 *****%
sMatxO_agat     24      0.0      0.0     00:00 *****%      0.0     00:00 *****%
sMatxOxpy       24      0.1      1.6     00:02 *****%      1.6     00:02 *****%
sMatxO_rscat    24      0.0      0.0     00:00 *****%      0.0     00:00 *****%
fcst Phi        24      0.0      0.3     00:00 *****%      4.8     00:05 *****%
sMatxF_agat     72      0.0      0.0     00:00 *****%      0.0     00:00 *****%
sMatxFxpy       72      0.1      5.4     00:05 *****%      5.4     00:05 *****%
sMatxF_rscat    72      0.0      0.0     00:00 *****%      0.0     00:00 *****%
fcst Psi        24      0.0      0.3     00:00 *****%      0.8     00:01 *****%
fcst Chi        24      0.0      0.3     00:00 *****%      0.8     00:01 *****%
FcstErrCovMatx_Cx
                 1      0.2      0.2     00:00 *****%    602.2     10:02 *****%
rMatxF_agat      3      0.0      0.0     00:00 150.3%      0.0     00:00 150.3%
rMatxFxpy        3    200.4    601.1     10:01 *****%    601.1     10:01 *****%
rMatxF_rscat     3      0.3      0.9     00:01 *****%      0.9     00:01 *****%
-------------------------------------------------------------------------------

[MWTIME]x1    NET avg     max imx x% r% i%  SCP avg     max imx x% r% i%
-------------------------------------------------------------------------
..zeit.           0.0     0.0 000  0  0  0 ********** 000  0  0  0
solve             1.8     1.8 000  0  0  0 ********** 000  0  0  0
psas            582.7   582.7 000  0  0  0 ********** 000  0  0  0
distribute_ob
                  4.9     4.9 000  0  0  0      4.9     4.9 000  0  0  0
distribute_ai
           ********** 000  0  0  0 ********** 000  0  0  0
attr_1            0.0     0.0 000  0  0  0      0.0     0.0 000  0  0  0
attr_2            0.0     0.0 000  0  0  0      0.0     0.0 000  0  0  0
attr_3            0.0     0.0 000  0  0  0      0.0     0.0 000  0  0  0
attr_4            0.0     0.0 000  0  0  0      0.0     0.0 000  0  0  0
attr_5            0.4     0.4 000  0  0  0      0.4     0.4 000  0  0  0
attr_6            5.6     5.6 000  0  0  0      5.6     5.6 000  0  0  0
attr_7            0.6     0.6 000  0  0  0      0.6     0.6 000  0  0  0
CGSolver_solve
                  3.9     3.9 000  0  0  0     32.8    32.8 000  0  0  0
localSolve_      20.0    20.0 000  0  0  0     20.0    20.0 000  0  0  0
sMatxU_agat       0.0     0.0 000  0  0  0      0.0     0.0 000  0  0  0
sMatxUxpy         0.9     0.9 000  0  0  0      0.9     0.9 000  0  0  0
sMatxU_rscat      0.0     0.0 000  0  0  0      0.0     0.0 000  0  0  0
sMatxO_agat       0.0     0.0 000  0  0  0      0.0     0.0 000  0  0  0
sMatxOxpy         1.6     1.6 000  0  0  0      1.6     1.6 000  0  0  0
sMatxO_rscat      0.0     0.0 000  0  0  0      0.0     0.0 000  0  0  0
fcst Phi          0.3     0.3 000  0  0  0      4.8     4.8 000  0  0  0
sMatxF_agat       0.0     0.0 000  0  0  0      0.0     0.0 000  0  0  0
sMatxFxpy         5.4     5.4 000  0  0  0      5.4     5.4 000  0  0  0
sMatxF_rscat      0.0     0.0 000  0  0  0      0.0     0.0 000  0  0  0
fcst Psi          0.3     0.3 000  0  0  0      0.8     0.8 000  0  0  0
fcst Chi          0.3     0.3 000  0  0  0      0.8     0.8 000  0  0  0
FcstErrCovMatx_Cx
```

```
                 0.2     0.2 000  0  0  0    602.2   602.2 000  0  0  0
rMatxF_agat      0.0     0.0 000  0  0  0      0.0     0.0 000  0  0  0
rMatxFxpy      601.1   601.1 000  0  0  0    601.1   601.1 000  0  0  0
rMatxF_rscat     0.9     0.9 000  0  0  0      0.9     0.9 000  0  0  0
-------------------------------------------------------------------------
solve.x: Done with PSAS Solver...
 999.7682  997.3411  992.2333  986.1410  977.8847  967.3377  954.5488  939.6055  922.5861
903.5879  882.7083  860.0450  835.7148  809.7957  782.4144  753.6783  723.6846  692.5603
660.4222  627.3677  593.5433  559.0658  524.0521  488.6290  452.9428  417.1103  381.3265
345.9424  311.6793  279.5510  250.2494  223.2386  196.8224  169.3437  140.3053  110.2766
79.97400  51.54781  25.00000  1.000000E-06  2.723499E-02  5.639699E-02  8.748400E-02
0.1182900  0.1480800  0.1762700  0.2033700  0.2310800  0.2611400  0.2941000  0.3292500
0.3655500  0.4022600  0.4390200  0.4756300  0.5119700  0.5478900  0.5832600  0.6179600
0.6518700  0.6848400  0.7167700  0.7475400  0.7770200  0.8051100  0.8317000  0.8566600
0.8799100  0.9013300  0.9208200  0.9382800  0.9536100  0.9667300  0.9775500  0.9860200
0.9922700  0.9975100  1.000000
  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

Analyzer:Ainc_Moist_: Recovered mixr analysis increment
  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361


Analyzer:Ainc_Moist_: Redistributed moisture within      887 columns ( 2.99 % of
29631)

Analyzer:Ainc_Moist_: Maximum change at lat, lon =  -29.74, -49.09:
Analyzer:Ainc_Moist_:     redistributed 0.50E+00 kg/m^2 water ( 0.00% of 0.27E+15 kg/m^2)

Analyzer:Ainc_Moist_: Maximum relative change at lat, lon =  -28.10, -64.89:
Analyzer:Ainc_Moist_:     redistributed 0.11E+00 kg/m^2 water ( 0.29% of 0.38E+02 kg/m^2)

Analyzer:Ainc_Moist_: Ramped mixr analysis increment above 100hPa
   PK(:,:,:) min, max =   2.508513  7.223975
 Etae:  1.000000E-06    Level mid =   38.45810  38.45810       dw:   -1.293419E-06
0.000000E+00      q_f:   8.802437E-07  2.418243E-06
 Etae:  2.723499E-02    Level mid =   66.32698  66.32698       dw:   -2.363027E-06
0.000000E+00      q_f:   1.208296E-07  2.863344E-06
 Etae:  5.639699E-02    Level mid =   96.09969  96.09970       dw:   -5.451566E-06
0.000000E+00      q_f:   9.757638E-08  4.813037E-06
 Etae:  8.748400E-02    Level mid =   126.6850  126.6850       dw:   -8.174683E-06
0.000000E+00      q_f:   5.598530E-07  1.091568E-05
 Etae:  0.1182900    Level mid =   156.6298  156.6299       dw:   -1.775007E-05
0.000000E+00      q_f:   7.916370E-07  1.574106E-05
 Etae:  0.1480800    Level mid =   185.2811  185.2812       dw:   -3.307219E-05
0.000000E+00      q_f:   5.373743E-07  4.777173E-05
 Etae:  0.1762700    Level mid =   212.6018  212.6018       dw:   -3.001066E-03
6.257385E-04      q_f:   5.652711E-07  1.189806E-04
 Etae:  0.2033700    Level mid =   239.6867  239.6867       dw:   -2.053530E-02
3.466688E-03      q_f:   3.910573E-06  2.333320E-04
 Etae:  0.2310800    Level mid =   268.2360  268.2361       dw:   -7.647580E-02
1.387271E-02      q_f:   5.590000E-06  4.508548E-04
 Etae:  0.2611400    Level mid =   299.3746  299.3747       dw:   -0.2205685  4.682888E-
02      q_f:   4.384254E-06  7.621095E-04
 Etae:  0.2941000    Level mid =   333.0287  333.0287       dw:   -0.3579427  9.938834E-
02      q_f:   1.000000E-12  1.238196E-03
 Etae:  0.3292500    Level mid =   368.3380  368.3380       dw:   -0.6883365  0.1730284
q_f:   7.306802E-06  1.940446E-03
 Etae:  0.3655500    Level mid =   404.4174  404.4175       dw:   -1.045047  0.3290531
q_f:   2.430512E-05  2.610452E-03
 Etae:  0.4022600    Level mid =   440.7213  440.7214       dw:   -1.247778  0.4427038
q_f:   1.127168E-05  3.249806E-03
 Etae:  0.4390200    Level mid =   476.9782  476.9783       dw:   -1.546902  0.6102369
q_f:   1.475857E-05  4.081167E-03
 Etae:  0.4756300    Level mid =   513.0272  513.0273       dw:   -1.797914  0.9517016
q_f:   8.195028E-06  5.107222E-03
 Etae:  0.5119700    Level mid =   548.7330  548.7332       dw:   -1.751407  1.042589
q_f:   3.627557E-05  6.098366E-03
```

```
 Etae:  0.5478900    Level mid =   583.9647  583.9648       dw:   -1.677257  1.129632
q_f:   4.520145E-05  8.283671E-03
 Etae:  0.5832600    Level mid =   618.5936  618.5937       dw:   -1.446627  1.229655
q_f:   2.558358E-05  9.581965E-03
 Etae:  0.6179600    Level mid =   652.4940  652.4941       dw:   -1.572123  1.356964
q_f:   1.035442E-04  9.601092E-03
 Etae:  0.6518700    Level mid =   685.5420  685.5422       dw:   -2.183078  1.467298
q_f:   2.030019E-04  1.029406E-02
 Etae:  0.6848400    Level mid =   717.6165  717.6166       dw:   -2.421261  1.636760
q_f:   2.332257E-04  1.081216E-02
 Etae:  0.7167700    Level mid =   748.5988  748.5989       dw:   -2.242466  1.647575
q_f:   3.342967E-04  1.146030E-02
 Etae:  0.7475400    Level mid =   778.3725  778.3727       dw:   -2.025649  1.578685
q_f:   6.393622E-04  1.335879E-02
 Etae:  0.7770200    Level mid =   806.8237  806.8239       dw:   -1.666330  1.835775
q_f:   7.239640E-04  1.342745E-02
 Etae:  0.8051100    Level mid =   833.8408  833.8409       dw:   -1.557742  2.110915
q_f:   8.341281E-04  1.425529E-02
 Etae:  0.8317000    Level mid =   859.3148  859.3149       dw:   -1.596349  2.360579
q_f:   1.031893E-03  1.533319E-02
 Etae:  0.8566600    Level mid =   883.1390  883.1392       dw:   -1.382265  2.579432
q_f:   1.050435E-03  1.630103E-02
 Etae:  0.8799100    Level mid =   905.2093  905.2095       dw:   -1.623984  2.781495
q_f:   9.119096E-04  1.802307E-02
 Etae:  0.9013300    Level mid =   925.4237  925.4239       dw:   -1.853672  2.967959
q_f:   6.816077E-04  1.776250E-02
 Etae:  0.9208200    Level mid =   943.6830  943.6832       dw:   -1.571076  2.876369
q_f:   6.593221E-04  1.861465E-02
 Etae:  0.9382800    Level mid =   959.8903  959.8904       dw:   -1.489150  2.841681
q_f:   6.832905E-04  1.898986E-02
 Etae:  0.9536100    Level mid =   973.9510  973.9512       dw:   -1.496688  3.004406
q_f:   7.189164E-04  1.986015E-02
 Etae:  0.9667300    Level mid =   985.7781  985.7783       dw:   -1.798375  3.222850
q_f:   7.529900E-04  2.118842E-02
 Etae:  0.9775500    Level mid =   995.3117  995.3119       dw:   -2.354057  3.449797
q_f:   7.752635E-04  2.254135E-02
 Etae:  0.9860200    Level mid =   1002.585  1002.585       dw:   -2.658066  3.529744
q_f:   7.897230E-04  2.350711E-02
 Etae:  0.9922700    Level mid =   1008.259  1008.260       dw:   -2.799342  3.529488
q_f:   7.802491E-04  2.658078E-02
 Etae:  0.9975100    Level mid =   1012.050  1012.050       dw:   -2.860747  3.544213
q_f:   7.704009E-04  2.694964E-02
   du_a ll =   -15.22559  18.08941

   dv_a ll =   -9.503042  8.596211

   dh_a ll =   -190.7093  31.56258

   dw_a ll =   -2.860747  3.544213
 Shape (dh_a):   119  249  39
  dlonp   0.7181702
  dlatp   0.2735939
   Interh A-grid  =   -190.7093  31.56258
 grade A lon:  262.7911  347.5361
 grade E lon:  262.4138  348.5862
   Interh egrid 1d =   -190.7093  31.56258
   k2i-mass  =   1  119
   k2J-mass  =   1  249
   k2i-wind  =   1  119
   k2J-wind  =   1  249
  Interpolated Ainc :   29425
  Points undef. in egrid :   82
 Shape (dw_a):   119  249  38
  dlonp   0.7181702
  dlatp   0.2735939
   Interh A-grid  =   -2.860747  3.544213
 grade A lon:  262.7911  347.5361
 grade E lon:  262.4138  348.5862
   Interh egrid 1d =   -2.860747  3.544213
```

```
  k2i-mass  =   1  119
  k2J-mass  =   1  249
  k2i-wind  =   1  119
  k2J-wind  =   1  249
 Interpolated Ainc :   29425
 Points undef. in egrid :   82
Shape (du_a):   119  249  38
 dlonp   0.7181702
 dlatp   0.2735939
  Interh A-grid  =   -15.22559  18.08941
grade A lon:  262.7911  347.5361
grade E lon:  262.4138  348.5862
  Interh egrid 1d =   -15.22559  18.08941
  k2i-mass  =   1  119
  k2J-mass  =   1  249
  k2i-wind  =   1  119
  k2J-wind  =   1  249
 Interpolated Ainc :   29424
 Points undef. in egrid :   83
Shape (dv_a):   119  249  38
 dlonp   0.7181702
 dlatp   0.2735939
  Interh A-grid  =   -9.503042  8.596211
grade A lon:  262.7911  347.5361
grade E lon:  262.4138  348.5862
  Interh egrid 1d =   -9.503042  8.596211
  k2i-mass  =   1  119
  k2J-mass  =   1  249
  k2i-wind  =   1  119
  k2J-wind  =   1  249
 Interpolated Ainc :   29424
 Points undef. in egrid :   83
  du_a egrid =   -15.22559  18.08941
  dv_a egrid =   -9.503042  8.596211
  dh_a egrid =   -190.7093  31.56258
  dw_a egrid =   -2.860747  3.544213
 theta =   38.24044  82.98746

  ps_a =   549.3893  1029.323
  ps_f =   548.5583  1028.601
   A-F =   -1.685364  3.988220

   u_a =   -38.70545  67.27515
   u_f =   -38.79866  69.88008
   A-F =   -15.21386  18.08941

   v_a =   -40.16967  38.35386
   v_f =   -42.05933  36.23878
   A-F =   -9.503042  8.596757

   t_a =   183.9277  310.1415
   t_f =   183.8478  309.2338
   A-F =   -7.006104  7.045410

   q_a =   0.000000E+00  2.692569E-02
   q_f =   1.000000E-12  2.694964E-02
   A-F =   -2.748712E-03  3.720445E-03

 999.7194  997.2924  992.1848  986.0929  977.8370  967.2905  954.5022  939.5598  922.5411
903.5438  882.6653  860.0032  835.6742  809.7563  782.3765  753.6417  723.6497  692.5269
660.3904  627.3376  593.5148  559.0390  524.0271  488.6058  452.9213  417.0906  381.3087
345.9264  311.6650  279.5382  250.2382  223.2287  196.8138  169.3365  140.2996  110.2724
79.97125  51.54648  25.00000  1.000000E-06  2.723499E-02  5.639699E-02  8.748400E-02
0.1182900  0.1480800  0.1762700  0.2033700  0.2310800  0.2611400  0.2941000  0.3292500
0.3655500  0.4022600  0.4390200  0.4756300  0.5119700  0.5478900  0.5832600  0.6179600
0.6518700  0.6848400  0.7167700  0.7475400  0.7770200  0.8051100  0.8317000  0.8566600
0.8799100  0.9013300  0.9208200  0.9382800  0.9536100  0.9667300  0.9775500  0.9860200
0.9922700  0.9975100  1.000000
  Long. of obs. are [0, 360]
```

```
   glon =   262.7911  347.5361

Simulator:  obs/HGHT max/min/mean/stdv =   56223.54  -252.0000  15066.77  13164.50   M
Simulator:  ana/HGHT max/min/mean/stdv =   23998.40  -7.864801  10211.25  7394.505   M
Simulator:  o-a/HGHT max/min/mean/stdv =   182.0587  -299.1836  -1.097865  9.267681   M
Simulator:    82912   HGHT obs (out of    87329) could not be simulated
  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

Simulator:  obs/TMPU max/min/mean/stdv =   306.4000  183.3000  246.6941  27.91722
Simulator:  ana/TMPU max/min/mean/stdv =   305.5328  186.1990  247.8337  35.54140   M
Simulator:  o-a/TMPU max/min/mean/stdv =   102.8658  -8.391235  0.2084393  7.281955   M
Simulator:    47665   TMPU obs (out of    49176) could not be simulated
Simulator:  obs/UWND max/min/mean/stdv =   115.5891  -75.58187  11.49443  16.75871
Simulator:  ana/UWND max/min/mean/stdv =   58.78279  -20.99930  4.088171  13.23566   M
Simulator:  o-a/UWND max/min/mean/stdv =   30.06372  -20.42274  -3.830431E-02  3.168379
M
Simulator:    72519   UWND obs (out of    82945) could not be simulated
Simulator:  obs/VWND max/min/mean/stdv =   63.99622  -89.50482  1.766121  9.915225
Simulator:  ana/VWND max/min/mean/stdv =   27.63970  -31.42450  0.1211027  6.030188   M
Simulator:  o-a/VWND max/min/mean/stdv =   30.88565  -35.67945  -0.1866544  3.379724   M
Simulator:    72519   VWND obs (out of    82945) could not be simulated
  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

Simulator:  obs/MIXR max/min/mean/stdv =   197.7469  1.766226E-05  1.588423  3.491898
Simulator:  ana/MIXR max/min/mean/stdv =   20.74048  1.134391E-03  4.043673  4.770827   M
Simulator:  o-a/MIXR max/min/mean/stdv =   197.7447  -5.256778  0.7456189  7.833902   M
Simulator:    15829   MIXR obs (out of    16730) could not be simulated
  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

Simulator:  obs/TPW max/min/mean/stdv =   59.70000  3.800000  23.70566  15.67253
Simulator:  ana/TPW max/min/mean/stdv =   0.5613888  0.000000E+00  0.1726161  0.1475674
M
Simulator:  o-a/TPW max/min/mean/stdv =   56.68904  7.306848  29.52862  12.53929   M
Simulator:    15711   TPW obs (out of    15711) could not be simulated
  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

  Long. of obs. are [0, 360]
   glon =   262.7911  347.5361

Simulator:  obs/ RH  max/min/mean/stdv =   100.0000  3.997761E-02  38.70111  29.58871
Simulator:  ana/ RH  max/min/mean/stdv =   99.97049  0.000000E+00  2.213577  10.54516
Simulator:  o-a/ RH  max/min/mean/stdv =   100.0000  -79.10872  36.48753  30.41540
Simulator:    15829    RH  obs (out of    16730) could not be simulated
 nobs, nobs_good:   414004  19705
ana: wrote ODS file RPOSFGE2004123106.ana.obs.20041231_12z.ods
ana: wrote Analysis file RPOSFGE2004123112.SbinF0012.ana.hdf

[MWTIME]     counts    period    NET    m:s      % SCOPE    m:s      %
-------------------------------------------------------------------------------
..zeit.         1s  0/   5                    0.0     00:00   0.0+ 211600.3   3526:40
100.0+
ana              1   9933.6   9933.6    165:34   4.7% 211600.3   3526:40 100.0%
dyn_get          1      3.1      3.1     00:03   0.0%      3.1     00:03   0.0%
ods_get          1      3.9      3.9     00:04   0.0%      3.9     00:04   0.0%
Observer         1      7.4      7.4     00:07   0.0%   9014.9    150:15   4.3%
simulator        2   4495.1   8990.1    149:50   4.2%   8990.1    149:50   4.2%
tovs_prep        1      0.2      0.2     00:00   0.0%      0.2     00:00   0.0%
surf_tobot       1      0.1      0.1     00:00   0.0%      0.1     00:00   0.0%
DupObs           1      4.0      4.0     00:04   0.0%      4.0     00:04   0.0%
SQC              1      0.7      0.7     00:01   0.0%     13.0     00:13   0.0%
Get_ErrVar_      1      0.1      0.1     00:00   0.0%      2.0     00:02   0.0%
PSAS_Sigs        1      1.9      1.9     00:02   0.0%      1.9     00:02   0.0%
```

```
Backg_Check_     1      0.0      0.0     00:00   0.0%      0.0     00:00   0.0%
Buddy_Check_     1      9.2      9.2     00:09   0.0%      9.2     00:09   0.0%
Pairw_Check_     1      0.1      0.1     00:00   0.0%      0.1     00:00   0.0%
Profl_Check_     1      0.9      0.9     00:01   0.0%      0.9     00:01   0.0%
Analyzer         1 ******** ********  65207:56 ******% 192633.5   3210:33  91.0%
getAI            1      0.0      0.0     00:00   0.0% ******** -61997:** ******%
I/O ovrhd        1 ******** ******** -61997:** ******% ******** -61997:** ******%
Ana2Dyn          1     20.8     20.8     00:21   0.0%     20.8     00:21   0.0%
ods_put          1      2.6      2.6     00:03   0.0%      2.6     00:03   0.0%
dyn_put          1      8.8      8.8     00:09   0.0%      8.8     00:09   0.0%
-------------------------------------------------------------------------------
 ana: sucessfully completed
```