



0.51009649655132E+15

Cubed-Sphere Grid Stats :            397 x            233 x            1  
12627.5976562500            13179.1318359375            12919.9423153260  
12627.5976562500            13179.1318359375  
Grid Length                    : min: 12627.60 max: 13179.13 avg: 12919.94 min/  
max:            0.96  
Deviation from Orthogonal : min:            0.00 max:            1.96 avg:            0.47  
Aspect Ratio                    : min:            1.00 max:            1.04 avg:            1.01

da\_max/da\_min= 1.00697315649652  
da\_max\_c/da\_min\_c= 1.00686501280547

Divergence damping Coefficients

For small dt= 5.625000  
External mode del-2 (m\*\*2/s)= 0.0000000000000000E+000  
Internal mode del-2 SMAG dimensionless coeff= 0.10000000  
Internal mode del-2 background diff= 0.0000000000000000E+000  
Internal mode del-6 background diff= 0.15000000  
tracer del-2 diff= 0.00000000E+00  
Vorticity del-4 (m\*\*4/s)= 27620106.8428472  
beta= 0.00000000E+00

in fv\_restart ncnst= 9  
FV\_RESTART: 1 F F

Tracer sphum initialized with surface value of 0.100000E+31 and vertical multiplier of 1.000000

Tracer liq\_wat initialized with surface value of 0.100000E+31 and vertical multiplier of 1.000000

Tracer rainwat initialized with surface value of 0.100000E+31 and vertical multiplier of 1.000000

Tracer ice\_wat initialized with surface value of 0.100000E+31 and vertical multiplier of 1.000000

Tracer snowwat initialized with surface value of 0.100000E+31 and vertical multiplier of 1.000000

Tracer graupel initialized with surface value of 0.100000E+31 and vertical multiplier of 1.000000

Tracer o3mr initialized with surface value of 0.100000E+31 and vertical multiplier of 1.000000

Tracer sgs\_tke initialized with surface value of 0.100000E+31 and vertical multiplier of 1.000000

Tracer cld\_amt initialized with surface value of 0.100000E+31 and vertical multiplier of 1.000000

enter get\_nggps\_ic is= 51 ie= 75 js= 1 je= 24 isd= 48 ied= 78 jsd= -2 jed= 27

Calling get\_external\_ic

NOTE from PE 0: Using external\_IC::get\_nggps\_ic which is valid only for data which has been horizontally interpolated to the current cubed-sphere grid

enter get\_nggps\_ic is= 26 ie= 50 js= 1 je= 24 isd= 23 ied= 53 jsd= -2 jed= 27

NOTE from PE 0: External\_IC::get\_nggps\_ic - use externally-generated, filtered terrain and NCEP pressure levels (no vertical remapping)

enter get\_nggps\_ic is= 1 ie= 25 js= 1 je= 24 isd= -2 ied= 28 jsd= -2 jed= 27

NOTE from PE 0: ==> External\_ic::get\_nggps\_ic: using control file gfs\_ctrl.nc for NGGPS IC

enter get\_nggps\_ic is= 76 ie= 100 js= 94 je= 116 isd= 73 ied= 103 jsd= 91 jed= 119

enter get\_nggps\_ic is= 101 ie= 125 js= 94 je= 116 isd= 98 ied= 128 jsd= 91 jed=

119  
enter get\_nggps\_ic is= 151 ie= 174 js= 94 je= 116 isd= 148 ied= 177 jsd= 91 jed=  
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enter get\_nggps\_ic is= 126 ie= 150 js= 94 je= 116 isd= 123 ied= 153 jsd= 91 jed=  
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enter get\_nggps\_ic is= 175 ie= 198 js= 94 je= 116 isd= 172 ied= 201 jsd= 91 jed=  
119  
enter get\_nggps\_ic is= 199 ie= 222 js= 94 je= 116 isd= 196 ied= 225 jsd= 91 jed=  
119  
enter get\_nggps\_ic is= 297 ie= 321 js= 71 je= 93 isd= 294 ied= 324 jsd= 68 jed=  
96  
enter get\_nggps\_ic is= 223 ie= 246 js= 71 je= 93 isd= 220 ied= 249 jsd= 68 jed=  
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enter get\_nggps\_ic is= 322 ie= 346 js= 71 je= 93 isd= 319 ied= 349 jsd= 68 jed=  
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enter get\_nggps\_ic is= 247 ie= 271 js= 71 je= 93 isd= 244 ied= 274 jsd= 68 jed=  
96  
enter get\_nggps\_ic is= 347 ie= 371 js= 71 je= 93 isd= 344 ied= 374 jsd= 68 jed=  
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enter get\_nggps\_ic is= 272 ie= 296 js= 71 je= 93 isd= 269 ied= 299 jsd= 68 jed=  
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enter get\_nggps\_ic is= 372 ie= 396 js= 71 je= 93 isd= 369 ied= 399 jsd= 68 jed=  
96  
enter get\_nggps\_ic is= 1 ie= 25 js= 94 je= 116 isd= -2 ied= 28 jsd= 91 jed=  
119  
enter get\_nggps\_ic is= 26 ie= 50 js= 94 je= 116 isd= 23 ied= 53 jsd= 91 jed=  
119  
enter get\_nggps\_ic is= 51 ie= 75 js= 94 je= 116 isd= 48 ied= 78 jsd= 91 jed=  
119  
enter get\_nggps\_ic is= 223 ie= 246 js= 186 je= 208 isd= 220 ied= 249 jsd= 183 jed=  
211  
enter get\_nggps\_ic is= 372 ie= 396 js= 25 je= 47 isd= 369 ied= 399 jsd= 22 jed=  
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enter get\_nggps\_ic is= 372 ie= 396 js= 1 je= 24 isd= 369 ied= 399 jsd= -2 jed=  
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enter get\_nggps\_ic is= 372 ie= 396 js= 48 je= 70 isd= 369 ied= 399 jsd= 45 jed=  
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enter get\_nggps\_ic is= 247 ie= 271 js= 186 je= 208 isd= 244 ied= 274 jsd= 183 jed=  
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enter get\_nggps\_ic is= 297 ie= 321 js= 186 je= 208 isd= 294 ied= 324 jsd= 183 jed=  
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enter get\_nggps\_ic is= 175 ie= 198 js= 209 je= 232 isd= 172 ied= 201 jsd= 206 jed=  
235  
enter get\_nggps\_ic is= 76 ie= 100 js= 71 je= 93 isd= 73 ied= 103 jsd= 68 jed=  
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enter get\_nggps\_ic is= 1 ie= 25 js= 48 je= 70 isd= -2 ied= 28 jsd= 45 jed=  
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enter get\_nggps\_ic is= 199 ie= 222 js= 209 je= 232 isd= 196 ied= 225 jsd= 206 jed=  
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enter get\_nggps\_ic is= 26 ie= 50 js= 48 je= 70 isd= 23 ied= 53 jsd= 45 jed=  
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enter get\_nggps\_ic is= 1 ie= 25 js= 140 je= 162 isd= -2 ied= 28 jsd= 137 jed=  
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enter get\_nggps\_ic is= 1 ie= 25 js= 117 je= 139 isd= -2 ied= 28 jsd= 114 jed=  
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enter get\_nggps\_ic is= 175 ie= 198 js= 1 je= 24 isd= 172 ied= 201 jsd= -2 jed= 27  
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enter get\_nggps\_ic is= 76 ie= 100 js= 25 je= 47 isd= 73 ied= 103 jsd= 22 jed= 50  
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enter get\_nggps\_ic is= 1 ie= 25 js= 163 je= 185 isd= -2 ied= 28 jsd= 160 jed=  
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enter get\_nggps\_ic is= 51 ie= 75 js= 163 je= 185 isd= 48 ied= 78 jsd= 160 jed=  
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enter get\_nggps\_ic is= 175 ie= 198 js= 140 je= 162 isd= 172 ied= 201 jsd= 137 jed=  
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enter get_nggps_ic is= 199 ie= 222 js= 140 je= 162 isd= 196 ied= 225 jsd= 137 jed=
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enter get_nggps_ic is= 247 ie= 271 js= 140 je= 162 isd= 244 ied= 274 jsd= 137 jed=
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enter get_nggps_ic is= 272 ie= 296 js= 140 je= 162 isd= 269 ied= 299 jsd= 137 jed=
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enter get_nggps_ic is= 151 ie= 174 js= 140 je= 162 isd= 148 ied= 177 jsd= 137 jed=
165
enter get_nggps_ic is= 223 ie= 246 js= 140 je= 162 isd= 220 ied= 249 jsd= 137 jed=
165
NOTE from PE      0: ==> External_ic::get_nggps_ic: using tiled data file
oro_data.nc for NGGPS IC
NOTE from PE      0: ==> External_ic::get_nggps_ic: using tiled data file
sfc_data.nc for NGGPS IC
NOTE from PE      0: ==> External_ic::get_nggps_ic: using tiled data file
gfs_data.nc for NGGPS IC
Tracer sphum initialized with surface value of 0.100000E+31 and vertical multiplier
of 1.000000
Tracer liq_wat initialized with surface value of 0.100000E+31 and vertical
multiplier of 1.000000
Tracer rainwat initialized with surface value of 0.100000E+31 and vertical
multiplier of 1.000000
Tracer ice_wat initialized with surface value of 0.100000E+31 and vertical
multiplier of 1.000000
Tracer snowwat initialized with surface value of 0.100000E+31 and vertical
multiplier of 1.000000
Tracer graupel initialized with surface value of 0.100000E+31 and vertical
multiplier of 1.000000
Tracer o3mr initialized with surface value of 0.100000E+31 and vertical multiplier
of 1.000000
Tracer sgs_tke initialized with surface value of 0.100000E+31 and vertical
multiplier of 1.000000
Tracer cld_amt initialized with surface value of 0.100000E+31 and vertical
multiplier of 1.000000
  ptop & ks      20.00000      21
  GFS ak(1)= 0.000000E+00 ak(2)= 20.00000
  regional_bc_data file_name=INPUT/gfs_bndy.tile7.000.nc
NOTE from PE      0: opened grid file INPUT/grid.tile7.halo4.nc
topo filename=INPUT/oro_data.tile7.halo4.nc
regional_bc_data file_name=INPUT/gfs_bndy.tile7.000.nc
sphum =          1
clwmr =          2
  o3mr =          7
ncnst =          9
ntracers =          9
done remap_scalar_nggps_regional_bc
done remap_scalar_nggps_regional_bc
done remap_dwinds
sphum =          1
clwmr =          2
  o3mr =          7
ncnst =          9
ntracers =          9

```



```

done remap_dwinds
regional_bc_data file_name=INPUT/gfs_bndy.tile7.003.nc
done remap_scalar_nggps_regional_bc
done remap_scalar_nggps_regional_bc
In remap_scalar:
ncnst =          9
nwat =           6
sphum  =          1
clwmr  =          2
  o3mr  =          7
liq_aero = -2147483646
ice_aero = -2147483646
rainwat =          3
ice_wat =          4
snowwat =          5
graupel =          6
done remap_dwinds
done remap_dwinds
delz_model -41.46443      -8754.261
sphum_model 2.0548852E-02  0.0000000E+00
liq_wat_model 1.9580396E-03 -4.1941751E-04
ice_wat_model 1.2762593E-03 -1.7185663E-04
PS_model (mb) 1021.290      638.7924
PT_model 307.1465      195.7259
Global Area= 15335167021658.1
ZS_model 3695.355      -69.00000      507.3084
ZS_data 3695.355      -69.00000      507.3084
ZS_diff (m) 2.4414062E-04 -2.4414062E-04 -5.3135249E-08
PS_diff (mb) 4.6874999E-04 -4.6874999E-04 -4.0971531E-07
done remap_scalar
done remap_dwinds
PS max = 1021.290      min = 638.7924
T max = 307.1465      min = 195.7259
W max = 0.0000000E+00 min = 0.0000000E+00
SPHUM max = 2.0548852E-02 min = 0.0000000E+00
TS max = 334.7395      min = 271.0986
liq_wat max = 1.9542133E-03 min = -4.1959350E-04
ice_wat max = 1.2746325E-03 min = -1.7188990E-04
rainwat max = 0.0000000E+00 min = 0.0000000E+00
snowwat max = 0.0000000E+00 min = 0.0000000E+00
graupel max = 0.0000000E+00 min = 0.0000000E+00
O3MR max = 1.5616582E-05 min = 0.0000000E+00
IC generated from the specified external source
in fv_restart ncnst=          9

fv_restart u = -3108701402949877823
fv_restart v = -1420916075473440558
fv_restart w = 6313395766689792
fv_restart delp = -1739384635837328341
fv_restart phis = -2964378040647972361
fv_restart pt = 2802510317205950532
fv_restart q(prog) nq =          9      1393878928275611759
fv_restart sphum = 5360282307858330107
fv_restart liq_wat = -3853354761053553277
fv_restart rainwat = 0
fv_restart ice_wat = -3702400417964102232
fv_restart snowwat = 0
fv_restart graupel = 0
fv_restart o3mr = 3589351799434937161

```

```

fv_restart sgs_tke = 0
fv_restart cld_amt = 0
ZS 3695.355 -69.00000 507.3083
PS 1021.297 639.0388 956.0048
T 307.1465 195.7259 289.7866
sphum 2.0548852E-02 0.0000000E+00 8.3183264E-03
liq_wat 1.9542133E-03 -4.1959350E-04 6.9315570E-07
rainwat 0.0000000E+00 0.0000000E+00 0.0000000E+00
ice_wat 1.2746325E-03 -1.7188990E-04 1.7372219E-08
snowwat 0.0000000E+00 0.0000000E+00 0.0000000E+00
graupel 0.0000000E+00 0.0000000E+00 0.0000000E+00
o3mr 1.5616582E-05 0.0000000E+00 7.7011109E-08
sgs_tke 0.0000000E+00 0.0000000E+00 0.0000000E+00
cld_amt 0.0000000E+00 0.0000000E+00 0.0000000E+00
U max = 69.15506 min = -34.32798
V max = 64.32701 min = -81.16678
W 0.0000000E+00 0.0000000E+00 0.0000000E+00

```

```

mp_top= 1 pfull= 0.3791508
Mean specific humidity (mg/kg) above 75 mb= 3.539601
Total surface pressure (mb) = 956.0048
mean dry surface pressure = 953.9805
Total Water Vapor (kg/m**2) = 20.53264
--- Micro Phys water substances (kg/m**2) ---
Total cloud water= 5.6081519E-02
Total rain water= 0.0000000E+00
Total cloud ice = 5.3228717E-02
Total snow = 0.0000000E+00
Total graupel = 0.0000000E+00

```

```

-----
NOTE from PE 0: READING FROM SST_restart DISABLED
Before adi: W max = 0.0000000E+00 min = 0.0000000E+00
NOTE from PE 0: Performing adiabatic init 1 times
Rayleigh_Super tau= 5.000000

```

- 1 0.3791508
- 2 0.9638716
- 3 1.765426
- 4 2.672258
- 5 3.706250
- 6 4.887253
- 7 6.236709
- 8 7.778571
- 9 9.539827
- 10 11.55093
- 11 13.84622
- 12 16.46434
- 13 19.44869
- 14 22.84788
- 15 26.71614
- 16 31.11374
- 17 36.10735
- 18 41.77032
- 19 48.18285
- 20 55.43190
- 21 63.61098
- 22 72.81963

```

Rayleigh friction E-folding time (days):
1 0.3791508 5.404807
2 0.9638716 8.290935

```

```
3 1.765426      14.52802
4 2.672258      26.73014
5 3.706250      55.27236
6 4.887253      146.8050
7 6.236709      784.0695
```

```
After adi: W max = 5.099064 min = -4.077043
na_ini Z500 5702.204 5702.204 0.0000000E+00 0.0000000E+00
```

WARNING from PE 0: atmos\_modeldefine\_blocks\_packed: domain ( 25 24) is not an even divisor with definition ( 32) - blocks will not be uniform with a remainder of 24

```
model init,iaufhrs= -1.0000000000000000 -1.0000000000000000
-1.0000000000000000 -1.0000000000000000 -1.0000000000000000
-1.0000000000000000 -1.0000000000000000
dxmax= 18.1991080870045 dxmin= 24.5164135836650 dxinv=
-0.158295336600173 max_lon= 5000 max_lat= 2000 min_lon=
192 min_lat= 94 rhc_max= 0.9999999000000000
```

NOAH Land Surface Model used

```
nst_anl= T use_ufo= T frac_grid= F ignore_lake= T
min_lakeice= 0.1500000000000000 min_seaice= 9.999999999999999E-012
min_lake_height= 250.00000000000000
```

flake model parameters

```
lkm : 0
```

NSSTM is active

```
nstf_name(1)= 2
```

```
nstf_name(2)= 1
```

```
nstf_name(3)= 0
```

```
nstf_name(4)= 0
```

```
nstf_name(5)= 0
```

scale & aerosol-aware mass-flux deep conv scheme

scale-aware hybrid edmf PBL scheme used

scale- & aerosol-aware mass-flux shallow conv scheme (2017)

Original mountain blocking and orographic gravity wave drag parameterization used

non-statioary gravity wave drag parameterization used

```
do_gwd= T
```

Radiative heating calculated at 64 layers

```
max-random cloud overlap for Shortwave IOVR_SW= 1
```

```
max-random cloud overlap for Longwave IOVR_LW= 1
```

```
sub-grid cloud for Shortwave ISUBC_SW= 2
```

```
sub-grid cloud for Longwave ISUBC_LW= 2
```

```
avg_max_length= 3600.000000000000
```

Using GFDL Cloud Microphysics

basic control parameters

```
me : 0
master : 0
communicator : -1006632900
nlunit : 9999
fn_nml : using internal file
fhzero : 6.000000000000000
ldiag3d : F
qdiag3d : F
lssav : F
naux2d : 0
naux3d : 0
fhcyc : 0.000000000000000E+000
thermodyn_id : 1
```

sfcpress\_id : 1  
gen\_coord\_hybrid : F

grid extent parameters

isc : 1  
jsc : 1  
nx : 25  
ny : 24  
levs : 64  
cnx : 396  
cny : 232  
lonr : 1584  
latr : 464  
blkksz(1) : 32  
blkksz(nblks) : 24  
Model%ncols : 600

coupling parameters

cplflx : F  
cplwav : F  
cplwav2atm : F  
cplchm : F

integrated dynamics through earth atmosphere

lsidea : F

calendars and time parameters and activation triggers

ntp : 45.00000000000000  
dtf : 45.00000000000000  
nscyc : 0  
nszero : 480  
idat : 2019 5 20 0  
18 0 0 0  
idate : 18 5 20 2019

radiation control parameters

fhswr : 3600.000000000000  
fhlwr : 3600.000000000000  
nsswr : 80  
nslwr : 80  
nhfrac : 0  
levr : 64  
nfxr : 45  
ntrcaer : 1  
lmfshal : T  
lmfdeep2 : T  
nrcm : 2  
iflip : 1  
isol : 2  
ico2 : 2  
ialb : 1  
iems : 1  
iaer : 111  
icliq\_sw : 1  
iovr\_sw : 1  
iovr\_lw : 1  
ictm : 1  
isubc\_sw : 2  
isubc\_lw : 2

crick\_proof : F  
ccnorm : F  
norad\_precip : F  
lwhtr : T  
swhtr : T

microphysical switch  
ncld : 5  
imp\_physics : 11

GFDL microphysical parameters  
GFDL MP radiation inter: T  
lrefres : F

land/surface model parameters  
lsm : 1  
lsoil : 4  
rdlai : F  
lsoil\_lsm : 4  
lsnow\_lsm : 3  
ivegsrsc : 1  
isot : 1  
use\_ufo : T

flake model parameters  
lkm : 0

tuning parameters for physical parameterizations

ras : F  
flipv : T  
trans\_trac : T  
old\_monin : F  
do\_gwd : T  
cnvgwd : T  
do\_cnvgwd : F  
mstrat : F  
moist\_adj : F  
cscnv : F  
cal\_pre : F  
do\_aw : F  
flx\_form : F  
do\_shoc : F  
shoc\_parm : 7000.000000000000 1.0000000000000000  
4.285714300000000 0.7000000000000000 -999.00000000000000  
shocaftcnv : F  
shoc\_cld : F  
uni\_cld : F  
h2o\_phys : T  
pdfcld : F  
shcnvcw : F  
redrag : T  
hybedmf : T  
satmedmf : F  
isatmedmf : 0  
shinhong : F  
do\_ysu : F  
dspheat : T  
lheatstrg : F  
cnvcld : T

```

random_clds      : F
shal_cnv        : T
imfshalcnv      :      2
imfdeepcnv      :      2
do_deep         : T
nmtvr           :      14
jcap            :      1
cs_parm         :      8.000000000000000      4.000000000000000
  1000.000000000000      3500.000000000000      20.000000000000000
  1.000000000000000      -999.000000000000      1.000000000000000
0.600000000000000      0.000000000000000E+000
flgmin          :      0.180000000000000      0.220000000000000
cgwf            :      0.500000000000000      5.000000000000000E-002
ccwf            :      1.000000000000000      1.000000000000000
cdmbgwd         :      3.500000000000000      0.250000000000000
  1.000000000000000      1.000000000000000
sup              :      1.000000000000000
cte1_rm         :      10.000000000000000      10.000000000000000
crtrh           :      0.900000000000000      0.900000000000000
0.900000000000000
dlqf            :      0.000000000000000E+000      0.000000000000000E+000
seed0           :      0
rbc             :      0.250000000000000
do_mynnedmf     : F
do_mynnsfc1ay   : F
do_myjsfc       : F
do_myjpbl       : F
gwd_opt         :      1

```

```

Rayleigh friction
prslrd0         :      0.000000000000000E+000
ral_ts          :      0.000000000000000E+000

```

```

mass flux deep convection
clam_deep       :      0.100000000000000
c0s_deep        :      2.000000000000000E-003
c1_deep         :      2.000000000000000E-003
beta1_deep      :      5.000000000000000E-002
betas_deep      :      5.000000000000000E-002
evfact_deep     :      0.300000000000000
evfact1_deep    :      0.300000000000000
pgcon_deep      :      0.550000000000000
asolfac_deep    :      0.958000000000000

```

```

mass flux shallow convection
clam_shal       :      0.300000000000000
c0s_shal        :      2.000000000000000E-003
c1_shal         :      5.000000000000000E-004
pgcon_shal      :      0.550000000000000
asolfac_shal    :      0.958000000000000

```

```

near surface sea temperature model
nst_anl         : T
nstf_name       :      2      1      0      0
  0
lsea            :      0

```

```

surface layer options
sfc_z0_type     :      0

```

```

vertical diffusion coefficients
xkzm_m      : 1.0000000000000000
xkzm_h      : 1.0000000000000000
xkzm_s      : 1.0000000000000000
xkzminv     : 0.3000000000000000
moninq_fac  : 1.0000000000000000
dspfac      : 1.0000000000000000
bl_upfr     : 0.1300000000000000
bl_dnfr     : 0.1000000000000000

```

```

parameters for canopy heat storage parametrization
z0fac       : 0.3000000000000000
e0fac       : 0.5000000000000000

```

```

stochastic physics
do_sppt     : T
do_shum     : T
do_skeb     : T
do_sfcperfs : F

```

```

cellular automata
nca         : 1
ncells      : 5
nlives      : 30
nca_g       : 1
ncells_g    : 1
nlives_g    : 100
nfracseed   : 0.5000000000000000
nseed_g     : 100
nseed       : 100000
ca_global   : F
ca_sgs      : F
do_ca       : F
iseed_ca    : 0
ca_smooth   : F
nspinup     : 1
nthresh     : 0.0000000000000000E+000
ca_amplitude : 500.00000000000000
nsmooth     : 100
ca_closure  : F
ca_entr     : F
ca_trigger  : F

```

```

tracers
tracer_names : sphum
liq_wat      : rainwat
ice_wat      : snowwat
graupel      : o3mr
sgs_tke      : cld_amt
ntrac        : 9
nqrimef      : -99
ntqv         : 1
ntoz         : 7
ntcw         : 2
ntiw         : 4
ntrw         : 3
ntsw         : 5
ntgl         : 6

```

```

ntclamt      :           9
ntlnc        :          -99
ntinc        :          -99
ntrnc        :          -99
ntsnc        :          -99
ntgnc        :          -99
ntke         :           8
nto          :           0
nto2         :           0
ntwa         :          -99
ntia         :          -99
ntchm        :           0
ntchs        :          -99
fscav        :

```

derived totals for phy\_f\*d

```

ntot2d       :           1
ntot3d       :           6
num_p2d      :           1
num_p3d      :           5
nshoc_2d     :           0
nshoc_3d     :           0
ncnvcld3d    :           1
npdf3d       :           0
nctp         :           0
nkbfsnoc     :          -999
nahdshoc     :          -999
nscfshoc     :          -999

```

debug flags

```

debug        : F
pre_rad      : F

```

variables modified at each time step

```

ipt          :           1
lprnt        : F
lsswr        : F
lslwr        : F
solhr        : -9999.000000000000
solcon       : -9999.000000000000
slag         : -9999.000000000000
sdec         : -9999.000000000000
cdec         : -9999.000000000000
clstp        : -9999.000000000000
phour        : 0.0000000000000000E+000
fhour        : 1.2500000000000000E-002
zhour        : 0.0000000000000000E+000
kdt          :           0
jdat         :           2019           5           20           0
            18           0           0           0
si           : 1.0000000000000000 0.994670113905427
0.988630029862881 0.981795328784028 0.974074824381414
0.965370596536591 0.955579032245920 0.944592281724886
0.932299589197043 0.918589878654169 0.903354552978177
0.886491456284680 0.867909181223329 0.847532027963060
0.825305872606940 0.801203971050680 0.775232616526301
0.747436691980290 0.717903933000379 0.686767576879424
0.654206979596587 0.620446067143273 0.585748548474683
0.550410958994977 0.514753111688719 0.479106817942817

```



```

0.443803755827879      0.409163362102867      0.375481637197382
0.343021630526860      0.312006349908912      0.282614367662092
0.254978019741106      0.229183933695002      0.205273979324196
0.183250542465033      0.163082927684146      0.144713208830611
0.128062070821253      0.113034548640276      9.952492808608623E-002
8.742129474757540E-002  7.660920870157206E-002  6.697472013659247E-002
5.840827012178570E-002  5.080841020772667E-002  4.407969166440452E-002
3.813288585907038E-002  3.288544455789448E-002  2.826156740474310E-002
2.419217300170278E-002  2.061463863379769E-002  1.747249420453704E-002
1.471507881713945E-002  1.229704311855289E-002  1.017797696120317E-002
8.321978020812769E-003  6.697171612603955E-003  5.275396191999099E-003
4.031725882024734E-003  2.944237611282143E-003  1.993563916427727E-003
1.162726353942380E-003  4.367701658155986E-004  0.000000000000000E+000
sec          : 0.000000000000000E+000
first_time_step : T
restart        : F
hydrostatic    : F
in compns_stochy
skeb= 0.500000000000000 -999.0000000000000 -999.0000000000000
-999.0000000000000 -999.0000000000000
ntrunc not supplied, calculating
ntrunc calculated from l_min 150000.000000000 266
NOTE ntrunc adjusted for even nlats 266
gaussian grid not set, defining here 1608 800
stochastic physics
do_sppt : T
do_shum : T
do_skeb : T
do_sfcperfs : F
in init stochdata 160 800
getcon_h jcap= 266 me= 0
nspt = 1
nshum = 1
nskeb = 1
Initialize random pattern for SPPT
using seed 1 1
Initialize random pattern for SHUM
using seed 2 2
Initialize random pattern for SKEB
using seed 3 3
using kenorm 4.182878122746661E-005 0.000000000000000E+000
sppt vert profile 1 0.997335582971573 1.000000000000000
sppt vert profile 2 0.991651720732068 1.000000000000000
sppt vert profile 3 0.985215605805386 1.000000000000000
sppt vert profile 4 0.977939465054167 1.000000000000000
sppt vert profile 5 0.969728780781293 1.000000000000000
sppt vert profile 6 0.960482826265860 1.000000000000000
sppt vert profile 7 0.950095912305177 1.000000000000000
sppt vert profile 8 0.938458779737250 1.000000000000000
sppt vert profile 9 0.925460556922048 1.000000000000000
sppt vert profile 10 0.910991451116564 1.000000000000000
sppt vert profile 11 0.894946127859296 1.000000000000000
sppt vert profile 12 0.877227844157553 1.000000000000000
sppt vert profile 13 0.857753079755403 1.000000000000000
sppt vert profile 14 0.836456948681151 1.000000000000000
sppt vert profile 15 0.813299033075777 1.000000000000000
sppt vert profile 16 0.788269111580580 1.000000000000000
sppt vert profile 17 0.761392762066699 1.000000000000000
sppt vert profile 18 0.732736267352740 1.000000000000000

```

sppt	vert	profile	19	0.702410069804083	1.000000000000000
sppt	vert	profile	20	0.670570403685810	1.000000000000000
sppt	vert	profile	21	0.637418829528624	1.000000000000000
sppt	vert	profile	22	0.603199067527073	1.000000000000000
sppt	vert	profile	23	0.568191128090127	1.000000000000000
sppt	vert	profile	24	0.532703062460077	1.000000000000000
sppt	vert	profile	25	0.497060552827227	1.000000000000000
sppt	vert	profile	26	0.461595211551550	1.000000000000000
sppt	vert	profile	27	0.426632466153825	1.000000000000000
sppt	vert	profile	28	0.392479912454202	1.000000000000000
sppt	vert	profile	29	0.359416963850816	1.000000000000000
sppt	vert	profile	30	0.327686551988184	1.000000000000000
sppt	vert	profile	31	0.297489386818428	1.000000000000000
sppt	vert	profile	32	0.268980860456398	1.000000000000000
sppt	vert	profile	33	0.242270412910638	1.000000000000000
sppt	vert	profile	34	0.217422289451748	1.000000000000000
sppt	vert	profile	35	0.194458659764854	1.000000000000000
sppt	vert	profile	36	0.173365435616940	1.000000000000000
sppt	vert	profile	37	0.154098384919129	1.000000000000000
sppt	vert	profile	38	0.136588975452291	1.000000000000000
sppt	vert	profile	39	0.120750162962977	1.000000000000000
sppt	vert	profile	40	0.106481708905523	1.000000000000000
sppt	vert	profile	41	9.367490340529945E-002	0.915665378737326
sppt	vert	profile	42	8.221667547465832E-002	0.762889006328777
sppt	vert	profile	43	7.199293675567758E-002	0.626572490075701
sppt	vert	profile	44	6.289202284365746E-002	0.505226971248766
sppt	vert	profile	45	5.480846890810094E-002	0.397446252108012
sppt	vert	profile	46	4.764382606197557E-002	0.301917680826341
sppt	vert	profile	47	4.130575106621730E-002	0.217410014216231
sppt	vert	profile	48	3.570835124822619E-002	0.142778016643016
sppt	vert	profile	49	3.077244840510859E-002	7.696597873478117E-002
sppt	vert	profile	50	2.642559808427937E-002	1.900797445705824E-002
sppt	vert	profile	51	2.260194497894558E-002	0.000000000000000E+000
sppt	vert	profile	52	1.924193974426210E-002	0.000000000000000E+000
sppt	vert	profile	53	1.629201423968873E-002	0.000000000000000E+000
sppt	vert	profile	54	1.370416097085544E-002	0.000000000000000E+000
sppt	vert	profile	55	1.143549807097575E-002	0.000000000000000E+000
sppt	vert	profile	56	9.447867420795288E-003	0.000000000000000E+000
sppt	vert	profile	57	7.707378843106029E-003	0.000000000000000E+000
sppt	vert	profile	58	6.184012741585945E-003	0.000000000000000E+000
sppt	vert	profile	59	4.851224095305945E-003	0.000000000000000E+000
sppt	vert	profile	60	3.685587273886738E-003	0.000000000000000E+000
sppt	vert	profile	61	2.666455990941009E-003	0.000000000000000E+000
sppt	vert	profile	62	1.775656396050562E-003	0.000000000000000E+000
sppt	vert	profile	63	9.972211003656567E-004	0.000000000000000E+000
sppt	vert	profile	64	4.158292282722074E-004	0.000000000000000E+000
skeb	vert	profile	1	0.997335582971573	1.000000000000000
skeb	vert	profile	2	0.991651720732068	1.000000000000000
skeb	vert	profile	3	0.985215605805386	1.000000000000000
skeb	vert	profile	4	0.977939465054167	1.000000000000000
skeb	vert	profile	5	0.969728780781293	1.000000000000000
skeb	vert	profile	6	0.960482826265860	1.000000000000000
skeb	vert	profile	7	0.950095912305177	1.000000000000000
skeb	vert	profile	8	0.938458779737250	1.000000000000000
skeb	vert	profile	9	0.925460556922048	1.000000000000000
skeb	vert	profile	10	0.910991451116564	1.000000000000000
skeb	vert	profile	11	0.894946127859296	1.000000000000000
skeb	vert	profile	12	0.877227844157553	1.000000000000000
skeb	vert	profile	13	0.857753079755403	1.000000000000000

skeb vert profile	14	0.836456948681151	1.000000000000000
skeb vert profile	15	0.813299033075777	1.000000000000000
skeb vert profile	16	0.788269111580580	1.000000000000000
skeb vert profile	17	0.761392762066699	1.000000000000000
skeb vert profile	18	0.732736267352740	1.000000000000000
skeb vert profile	19	0.702410069804083	1.000000000000000
skeb vert profile	20	0.670570403685810	1.000000000000000
skeb vert profile	21	0.637418829528624	1.000000000000000
skeb vert profile	22	0.603199067527073	1.000000000000000
skeb vert profile	23	0.568191128090127	1.000000000000000
skeb vert profile	24	0.532703062460077	1.000000000000000
skeb vert profile	25	0.497060552827227	1.000000000000000
skeb vert profile	26	0.461595211551550	1.000000000000000
skeb vert profile	27	0.426632466153825	1.000000000000000
skeb vert profile	28	0.392479912454202	1.000000000000000
skeb vert profile	29	0.359416963850816	1.000000000000000
skeb vert profile	30	0.327686551988184	1.000000000000000
skeb vert profile	31	0.297489386818428	1.000000000000000
skeb vert profile	32	0.268980860456398	1.000000000000000
skeb vert profile	33	0.242270412910638	1.000000000000000
skeb vert profile	34	0.217422289451748	1.000000000000000
skeb vert profile	35	0.194458659764854	1.000000000000000
skeb vert profile	36	0.173365435616940	1.000000000000000
skeb vert profile	37	0.154098384919129	1.000000000000000
skeb vert profile	38	0.136588975452291	1.000000000000000
skeb vert profile	39	0.120750162962977	1.000000000000000
skeb vert profile	40	0.106481708905523	1.000000000000000
skeb vert profile	41	9.367490340529945E-002	0.915665378737326
skeb vert profile	42	8.221667547465832E-002	0.762889006328777
skeb vert profile	43	7.199293675567758E-002	0.626572490075701
skeb vert profile	44	6.289202284365746E-002	0.505226971248766
skeb vert profile	45	5.480846890810094E-002	0.397446252108012
skeb vert profile	46	4.764382606197557E-002	0.301917680826341
skeb vert profile	47	4.130575106621730E-002	0.217410014216231
skeb vert profile	48	3.570835124822619E-002	0.142778016643016
skeb vert profile	49	3.077244840510859E-002	7.696597873478117E-002
skeb vert profile	50	2.642559808427937E-002	1.900797445705824E-002
skeb vert profile	51	2.260194497894558E-002	0.000000000000000E+000
skeb vert profile	52	1.924193974426210E-002	0.000000000000000E+000
skeb vert profile	53	1.629201423968873E-002	0.000000000000000E+000
skeb vert profile	54	1.370416097085544E-002	0.000000000000000E+000
skeb vert profile	55	1.143549807097575E-002	0.000000000000000E+000
skeb vert profile	56	9.447867420795288E-003	0.000000000000000E+000
skeb vert profile	57	7.707378843106029E-003	0.000000000000000E+000
skeb vert profile	58	6.184012741585945E-003	0.000000000000000E+000
skeb vert profile	59	4.851224095305945E-003	0.000000000000000E+000
skeb vert profile	60	3.685587273886738E-003	0.000000000000000E+000
skeb vert profile	61	2.666455990941009E-003	0.000000000000000E+000
skeb vert profile	62	1.775656396050562E-003	0.000000000000000E+000
skeb vert profile	63	9.972211003656567E-004	0.000000000000000E+000
skeb vert profile	64	4.158292282722074E-004	0.000000000000000E+000
skeb vpts	1.000000000000000	0.000000000000000E+000	
skeb vpts	1.000000000000000	0.336384017742247	
skeb vpts	1.000000000000000	0.717288076718299	
skeb vpts	2.000000000000000	0.147906792728318	
skeb vpts	2.000000000000000	0.633833940104581	
skeb vpts	3.000000000000000	0.181030757463453	
skeb vpts	3.000000000000000	0.795752174487500	
skeb vpts	4.000000000000000	0.484464399247414	

skeb vpts	5.000000000000000	0.253729069966722	
skeb vpts	6.000000000000000	0.110043973265761	
skeb vpts	7.000000000000000	5.964304442885359E-002	
skeb vpts	8.000000000000000	0.108251755889919	
skeb vpts	9.000000000000000	0.260813028161327	
skeb vpts	10.000000000000000	0.521166962029105	
skeb vpts	11.000000000000000	0.891705579191333	
skeb vpts	13.000000000000000	0.373033803124640	
skeb vpts	14.000000000000000	0.963637876687134	
skeb vpts	16.000000000000000	0.659595030485238	
skeb vpts	18.000000000000000	0.454369031754993	
skeb vpts	20.000000000000000	0.338713577967941	
skeb vpts	22.000000000000000	0.300699854124725	
skeb vpts	24.000000000000000	0.325903939519299	
skeb vpts	26.000000000000000	0.397754175232140	
skeb vpts	28.000000000000000	0.498019381444621	
skeb vpts	30.000000000000000	0.607424938353278	
skeb vpts	32.000000000000000	0.706345265097811	
skeb vpts	34.000000000000000	0.775520813801879	
skeb vpts	36.000000000000000	0.796747357575080	
skeb vpts	38.000000000000000	0.753488569969625	
skeb vpts	40.000000000000000	0.631367198480959	
skeb vpts	42.000000000000000	0.418504767303125	
skeb vpts	44.000000000000000	0.105704814291944	
skeb vpts	45.000000000000000	0.686490428462477	
skeb vpts	47.000000000000000	0.157059427190526	
skeb vpts	48.000000000000000	0.516099757607756	
skeb vpts	49.000000000000000	0.764445193691240	
skeb vpts	50.000000000000000	0.904713492019660	
skeb vpts	51.000000000000000	0.940960546674179	
skeb vpts	52.000000000000000	0.878337836431625	
skeb vpts	53.000000000000000	0.722777708576596	
skeb vpts	54.000000000000000	0.480713863092529	
skeb vpts	55.000000000000000	0.158838100644655	
skeb vpts	55.000000000000000	0.763902432206877	
skeb vpts	56.000000000000000	0.302515413635920	
skeb vpts	56.000000000000000	0.780918695752686	
skeb vpts	57.000000000000000	0.204938709734917	
skeb vpts	57.000000000000000	0.580040540494734	
skeb vpts	57.000000000000000	0.911307513610118	
skeb vpts	58.000000000000000	0.203425576925096	
skeb vpts	58.000000000000000	0.460682159479443	
skeb vpts	58.000000000000000	0.686974729535971	
skeb vpts	58.000000000000000	0.885827554050642	
skeb vpts	59.000000000000000	6.041091857552940E-002	
skeb vpts	59.000000000000000	0.213566016854863	
skeb vpts	59.000000000000000	0.347830696223798	
skeb vpts	59.000000000000000	0.465463241792601	
skeb vpts	59.000000000000000	0.568469352061841	
skeb vpts	59.000000000000000	0.658625655668228	
skeb vpts	59.000000000000000	0.737503147898929	
skeb vpts	59.000000000000000	0.806488211346114	
skeb vpts	59.000000000000000	0.866802740643004	
skeb vpts	59.000000000000000	0.919522305985341	
skeb vpts	59.000000000000000	0.965591894107110	
skeb vpts	58.000000000000000	1.000000000000000	
shum vert profile	1	0.997335582971573	0.986766261080344
shum vert profile	2	0.991651720732068	0.959117779872912
shum vert profile	3	0.985215605805386	0.928744160017092

shum	vert	profile	4	0.977939465054167	0.895563029972683
shum	vert	profile	5	0.969728780781293	0.859541564762456
shum	vert	profile	6	0.960482826265860	0.820709664354009
shum	vert	profile	7	0.950095912305177	0.779174355531624
shum	vert	profile	8	0.938458779737250	0.735131340398331
shum	vert	profile	9	0.925460556922048	0.688873781649161
shum	vert	profile	10	0.910991451116564	0.640796884957536
shum	vert	profile	11	0.894946127859296	0.591396044055978
shum	vert	profile	12	0.877227844157553	0.541257155617596
shum	vert	profile	13	0.857753079755403	0.491037587471275
shum	vert	profile	14	0.836456948681151	0.441439078238448
shum	vert	profile	15	0.813299033075777	0.393173285361365
shum	vert	profile	16	0.788269111580580	0.346922300458010
shum	vert	profile	17	0.761392762066699	0.303298991414255
shum	vert	profile	18	0.732736267352740	0.262811387143474
shum	vert	profile	19	0.702410069804083	0.225835222192445
shum	vert	profile	20	0.670570403685810	0.192598420310361
shum	vert	profile	21	0.637418829528624	0.163179272320745
shum	vert	profile	22	0.603199067527073	0.137517422286420
shum	vert	profile	23	0.568191128090127	0.115435383065736
shum	vert	profile	24	0.532703062460077	9.666685584062909E-002
shum	vert	profile	25	0.497060552827227	8.088739830303213E-002
shum	vert	profile	26	0.461595211551550	6.774369120915145E-002
shum	vert	profile	27	0.426632466153825	5.687851114318319E-002
shum	vert	profile	28	0.392479912454202	0.000000000000000E+000
shum	vert	profile	29	0.359416963850816	0.000000000000000E+000
shum	vert	profile	30	0.327686551988184	0.000000000000000E+000
shum	vert	profile	31	0.297489386818428	0.000000000000000E+000
shum	vert	profile	32	0.268980860456398	0.000000000000000E+000
shum	vert	profile	33	0.242270412910638	0.000000000000000E+000
shum	vert	profile	34	0.217422289451748	0.000000000000000E+000
shum	vert	profile	35	0.194458659764854	0.000000000000000E+000
shum	vert	profile	36	0.173365435616940	0.000000000000000E+000
shum	vert	profile	37	0.154098384919129	0.000000000000000E+000
shum	vert	profile	38	0.136588975452291	0.000000000000000E+000
shum	vert	profile	39	0.120750162962977	0.000000000000000E+000
shum	vert	profile	40	0.106481708905523	0.000000000000000E+000
shum	vert	profile	41	9.367490340529945E-002	0.000000000000000E+000
shum	vert	profile	42	8.221667547465832E-002	0.000000000000000E+000
shum	vert	profile	43	7.199293675567758E-002	0.000000000000000E+000
shum	vert	profile	44	6.289202284365746E-002	0.000000000000000E+000
shum	vert	profile	45	5.480846890810094E-002	0.000000000000000E+000
shum	vert	profile	46	4.764382606197557E-002	0.000000000000000E+000
shum	vert	profile	47	4.130575106621730E-002	0.000000000000000E+000
shum	vert	profile	48	3.570835124822619E-002	0.000000000000000E+000
shum	vert	profile	49	3.077244840510859E-002	0.000000000000000E+000
shum	vert	profile	50	2.642559808427937E-002	0.000000000000000E+000
shum	vert	profile	51	2.260194497894558E-002	0.000000000000000E+000
shum	vert	profile	52	1.924193974426210E-002	0.000000000000000E+000
shum	vert	profile	53	1.629201423968873E-002	0.000000000000000E+000
shum	vert	profile	54	1.370416097085544E-002	0.000000000000000E+000
shum	vert	profile	55	1.143549807097575E-002	0.000000000000000E+000
shum	vert	profile	56	9.447867420795288E-003	0.000000000000000E+000
shum	vert	profile	57	7.707378843106029E-003	0.000000000000000E+000
shum	vert	profile	58	6.184012741585945E-003	0.000000000000000E+000
shum	vert	profile	59	4.851224095305945E-003	0.000000000000000E+000
shum	vert	profile	60	3.685587273886738E-003	0.000000000000000E+000
shum	vert	profile	61	2.666455990941009E-003	0.000000000000000E+000
shum	vert	profile	62	1.775656396050562E-003	0.000000000000000E+000

shum vert profile 63 9.972211003656567E-004 0.000000000000000E+000  
shum vert profile 64 4.158292282722074E-004 0.000000000000000E+000  
in iau\_init -1.000000000000000  
nfiles = 0  
in fv3gfs\_diag\_register, nrgst\_bl= 53 nrgst\_nb= 350  
nrgst\_vctbl= 2 isco= 1 25 jsco= 1  
24 num\_axes\_phys= 3

NOTE from PE 0: reading topographic/orographic information from  
INPUT/oro\_data.tile\*.nc  
NOTE from PE 0: reading surface properties data from INPUT/sfc\_data.tile\*.nc  
NOTE from PE 0: gfs\_driver:: - after put to container  
NOTE from PE 0: gfs\_driver::surface\_props\_input - computing sncovr  
NOTE from PE 0: gfs\_driver::surface\_props\_input - computing tsfc1  
NOTE from PE 0: gfs\_driver::surface\_props\_input - computing zorll  
NOTE from PE 0: gfs\_driver::surface\_props\_input - computing zorli  
NOTE from PE 0: gfs\_driver::surface\_props\_input - computing zorli  
NOTE from PE 0: gfs\_driver::surface\_props\_input - computing tiice  
NOTE from PE 0: No physics restarts - cold starting physical parameterizations

In rad\_initialize (GFS\_rrtmg\_setup\_init), before calling radinit

si = 1.000000000000000 0.994670113905427 0.988630029862881  
0.981795328784028 0.974074824381414 0.965370596536591  
0.955579032245920 0.944592281724886 0.932299589197043  
0.918589878654169 0.903354552978177 0.886491456284680  
0.867909181223329 0.847532027963060 0.825305872606940  
0.801203971050680 0.775232616526301 0.747436691980290  
0.717903933000379 0.686767576879424 0.654206979596587  
0.620446067143273 0.585748548474683 0.550410958994977  
0.514753111688719 0.479106817942817 0.443803755827879  
0.409163362102867 0.375481637197382 0.343021630526860  
0.312006349908912 0.282614367662092 0.254978019741106  
0.229183933695002 0.205273979324196 0.183250542465033  
0.163082927684146 0.144713208830611 0.128062070821253  
0.113034548640276 9.952492808608623E-002 8.742129474757540E-002  
7.660920870157206E-002 6.697472013659247E-002 5.840827012178570E-002  
5.080841020772667E-002 4.407969166440452E-002 3.813288585907038E-002  
3.288544455789448E-002 2.826156740474310E-002 2.419217300170278E-002  
2.061463863379769E-002 1.747249420453704E-002 1.471507881713945E-002  
1.229704311855289E-002 1.017797696120317E-002 8.321978020812769E-003  
6.697171612603955E-003 5.275396191999099E-003 4.031725882024734E-003  
2.944237611282143E-003 1.993563916427727E-003 1.162726353942380E-003  
4.367701658155986E-004 0.000000000000000E+000

levr= 64 ictm= 1 isol= 2 ico2= 2  
iaer= 111 ialb= 1 iems= 1 ntcw= 2  
np3d= 5 ntoz= 7 iovr\_sw= 1 iovr\_lw=  
1 isubc\_sw= 2 isubc\_lw= 2 icliq\_sw=  
1 iflip= 1 me= 0

crick\_proof= F ccnorm= F norad\_precip= F  
NEW RADIATION PROGRAM STRUCTURES BECAME OPER. May 01 2007

NCEP-Radiation\_driver v5.2 Jan 2013  
- Selected Control Flag settings: ICTMflg= 1 ISOLar = 2  
ICO2flg= 2 IAERflg= 111 IALBflg= 1 IEMSflg=  
1 ICLDflg= 1 IMP\_PHYSICS= 11 IOZNflg=  
7  
IVFLIP= 1 IOVRSW= 1 IOVRLW= 1 ISUBCSW=  
2 ISUBCLW= 2  
LCRICK= F LCNORM= F LNOPREC= F  
LTP = 0 , add extra top layer = F  
- ISUBCLW= 2 Use McICA with random  
permutation seeds for LW random number generator

```

- ISUBCSW=          2 Use McICA with random
permutation seeds for SW random number generator
NCEP-Radiation_astronomy v5.2 Jan 2013
- Using NOAA annual mean TSI table in TIM scale
with cycle approximation (new values)!
NCEP-Radiation_aerosols v5.2 Jan 2013
- Using OPAC-seasonal climatology for tropospheric aerosol effect
IAER=          111 LW-trop-aer= T SW-trop-aer= T Volc-aer= T
- Include stratospheric volcanic aerosol effect
- Compute multi-band aerosol optical properties for SW input parameters
- Compute multi-band aerosol optical properties for LW input parameters
NCEP-Radiation_gases v5.1 Nov 2012
- Using interactive ozone distribution
- Using observed co2 monthly 2-d data
NCEP-Radiation_surface v5.1 Nov 2012
- Using MODIS based land surface albedo for sw
- Using Varying Surface Emissivity for lw
Opened data file: sfc_emissivity_idx.txt
SURFACE EMISSIVITY INDEX, IDM,JDM: 360 180 NOTE: DATA FROM N TO S

NCEP-Radiation_clouds v5.1 Nov 2012
- Using Prognostic Cloud Method
--- GFDL Lin cloud microphysics
- Using AER Longwave Radiation, Version:
NCEP LW v5.1 Nov 2012 -RRTMG-LW v4.82
--- Include rare gases N2O, CH4, O2, CFCs absorptions in LW
--- Using MCICA sub-colum clouds approximation
with provided input array of permutation seeds
- Using AER Shortwave Radiation, Version:
NCEP SW v5.1 Nov 2012 -RRTMG-SW v3.8
--- PIFM 2-stream transfer scheme
--- Include rare gases N2O, CH4, O2, absorptions in SW
--- Using MCICA sub-colum clouds approximation
with provided input array of permutation seeds
Radiation sub-cloud initial seed = 47698 IC-ideate = 18
5 20 2019
return from rad_initialize (GFS_rrtmg_setup_init) - after calling radinit
Reading in o3data from global_o3prdos.f77
oz_coeff = 6
latsozp = 71
levozp = 53
timeoz = 12
Reading in h2odata from global_h2oprds.f77
h2o_coeff = 3
latsh2o = 73
levh2o = 72
timeh2o = 12
do_physb_gwsrsrc T in cires_ugwp_init
init_okw_gws
init_fjet_gws
init_convective Gws cgwf 25 4
ugwp_v0: init_gw_wmsdis_control
ugwp_v0: WMSDIS launch layer 25
ugwp_v0: WMSDID tot_mflux in mpa 30.00000000000000

ugwp_v0: zcimin= 0.5000000000000000
ugwp_v0: zcimax= 125.00000000000000
ugwp_v0: cd_crit= 0.2500000000000000
ugwp_v0: launch_level 25

```

ugwp\_v0 zms\_l= 2000.000000000000  
ugwp\_vgw nslope= 1.00000000000000

VAY-ugwp is initialized T

---fdiag	1.000000	2.000000	3.000000	4.000000
5.000000	6.000000	7.000000	8.000000	9.000000
10.000000	11.000000	12.000000	13.000000	14.000000
15.000000	16.000000	17.000000	18.000000	19.000000
20.000000	21.000000	22.000000	23.000000	24.000000
25.000000	26.000000	27.000000	28.000000	29.000000
30.000000	31.000000	32.000000	33.000000	34.000000
35.000000	36.000000	37.000000	38.000000	39.000000
40.000000				

af fcstCom FBCount= 0  
in fv3\_cap, init time= 65.7539331912994  
Updating solar constant with cycle approx  
Opened solar constant data file: solarconstant\_noaa\_an.txt  
CHECK: Solar constant data used for year 2019 1361.040000000000  
1361.040000000000

0 FORECAST DATE 20 MAY 2019 AT 18 HRS 0.00 MINS  
JULIAN DAY 2458624 PLUS 0.250000  
RADIUS VECTOR 1.0119126  
RIGHT ASCENSION OF SUN 3.8168129 HRS, OR 3 HRS 49 MINS 0.5 SECS  
DECLINATION OF THE SUN 20.0318470 DEGS, OR 20 DEGS 1 MINS 54.6 SECS  
EQUATION OF TIME 3.4205390 MINS, OR 205.23 SECS, OR 0.014966 RADIANS  
SOLAR CONSTANT 1329.1833754 (DISTANCE AJUSTED)

for cosz calculations: nswr,deltim,deltsw,dtswh = 80  
45.00000000000000 3600.000000000000 1.00000000000000  
anginc,nstp = 3.272492347489368E-003 80  
Opened aerosol data file: aerosol.dat

--- Reading  
MONTH OF MAY CLIMATOLOGICAL AEROSOL GLOBAL DISTRIBUTION

Request volcanic date out of range, optical depth set to lowest value  
CHECK: Sample Volcanic data used for month, year: 5 2019  
1 1 1 1

Requested co2 data for year 2019  
not found, check for other available data set  
Looking for CO2 file co2historicaldata\_2018.txt  
Opened co2 data file: co2historicaldata\_2018.txt  
2018

MONTHLY CO2 (PPMV) 24 12 LON/LAT (N-S/0-360E) IN 15 DEGREE RESOLUTION, GL  
B ANNUAL MEAN = 408.800000000000 GROWTH RATE = 2.78000000000000

Global annual mean CO2 data for year 2019 4.10800000000000E-004  
CHECK: Sample of selected months of CO2 data used for year: 2019

Month = 1		
4.16450000000000E-004	4.17020000000000E-004	4.18250000000000E-004
4.17090000000000E-004	4.15029999999999E-004	4.11230000000000E-004
4.09400000000000E-004	4.07970000000000E-004	4.07060000000000E-004
4.06029999999999E-004	4.05579999999999E-004	4.05709999999999E-004
Month = 4		
4.16600000000000E-004	4.17180000000000E-004	4.22760000000000E-004
4.23670000000000E-004	4.23910000000000E-004	4.15310000000000E-004
4.11040000000000E-004	4.08150000000000E-004	4.07579999999999E-004
4.07030000000000E-004	4.06810000000000E-004	4.06760000000000E-004
Month = 7		
4.03970000000000E-004	4.05610000000000E-004	4.06900000000000E-004



```

4.0887000000000000E-004 4.1069000000000000E-004 4.1173000000000000E-004
4.1188000000000000E-004 4.1066000000000000E-004 4.0982000000000000E-004
4.0902000000000000E-004 4.0879000000000000E-004 4.0865000000000000E-004
    Month = 10
4.1220000000000000E-004 4.1444000000000000E-004 4.1452000000000000E-004
4.1300000000000000E-004 4.1050000000000000E-004 4.1000000000000000E-004
4.1007999999999999E-004 4.0982000000000000E-004 4.0935000000000000E-004
4.0899000000000000E-004 4.0903000000000000E-004 4.0889000000000000E-004
PASS: fcstRUN phase 1, na = 0 time is 10.5906422138214
---isec,seconds 45 45
gfs diags time since last bucket empty: 1.2500000000000000E-002 hrs
in, fv3gfs_io. 3D fields, idx= 184 varname=skebu_wtslcnvfac=
1.0000000000000000 levo= 64 nx= 25 ny= 24
in, fv3gfs_io. 3D fields, idx= 185 varname=skebv_wtslcnvfac=
1.0000000000000000 levo= 64 nx= 25 ny= 24
in, fv3gfs_io. 3D fields, idx= 189 varname=sppt_wtslcnvfac=
1.0000000000000000 levo= 64 nx= 25 ny= 24
in, fv3gfs_io. 3D fields, idx= 190 varname=shum_wtslcnvfac=
1.0000000000000000 levo= 64 nx= 25 ny= 24
PASS: fcstRUN phase 2, na = 0 time is 9.711194038391113E-002
PASS: fcstRUN phase 1, na = 1 time is 1.98601412773132
PASS: fcstRUN phase 2, na = 1 time is 4.057407379150391E-002

```

fortrl: severe (174): SIGSEGV, segmentation fault occurred

Image	PC	Routine	Line	Source
NEMS.exe	0000000002B3C34C	Unknown	Unknown	Unknown
libpthread-2.17.s	00002AB4E52095D0	Unknown	Unknown	Unknown
NEMS.exe	00000000023016C7	Unknown	Unknown	Unknown
NEMS.exe	00000000022FD80F	Unknown	Unknown	Unknown
NEMS.exe	00000000022FA42D	Unknown	Unknown	Unknown
NEMS.exe	00000000020BB82A	Unknown	Unknown	Unknown
NEMS.exe	0000000001E8A4F1	Unknown	Unknown	Unknown
NEMS.exe	0000000001A9AE25	Unknown	Unknown	Unknown
libiomp5.so	00002AB4E35A5563	__kmp_invoke_micr	Unknown	Unknown
libiomp5.so	00002AB4E356D991	__kmp_fork_call	Unknown	Unknown
libiomp5.so	00002AB4E352DFB0	__kmpc_fork_call	Unknown	Unknown
NEMS.exe	0000000001A8B618	Unknown	Unknown	Unknown
NEMS.exe	0000000001A3B341	Unknown	Unknown	Unknown
NEMS.exe	00000000019C12BC	Unknown	Unknown	Unknown
NEMS.exe	00000000018B3CBB	Unknown	Unknown	Unknown
NEMS.exe	00000000018A0F7A	Unknown	Unknown	Unknown
NEMS.exe	0000000000B28245	_ZN5ESMCI6FTable1	2010	ESMCI_FTable.C
NEMS.exe	0000000000B2BBDA	ESMCI_FTableCallE	746	ESMCI_FTable.C
NEMS.exe	0000000000B37C3A	_ZN5ESMCI2VM5ente	1178	ESMCI_VM.C
NEMS.exe	0000000000B296E7	c_esmc_ftablecall	898	ESMCI_FTable.C
NEMS.exe	0000000000AA49DD	esmf_compmo mp_e	1209	ESMF_Comp.F90
NEMS.exe	00000000005BA884	esmf_gridcompmo d_	1889	
ESMF_GridComp.F90				
NEMS.exe	00000000018937B9	Unknown	Unknown	Unknown
NEMS.exe	00000000008E8A70	_ZN5ESMCI13Method	287	
ESMCI_MethodTable.C				
NEMS.exe	00000000008E8995	_ZN5ESMCI11Method	455	
ESMCI_MethodTable.C				
NEMS.exe	00000000008E8130	c_esmc_methodtabl	203	
ESMCI_MethodTable.C				
NEMS.exe	0000000000B1D5C4	esmf_attachmethod	785	
ESMF_AttachMethods.F90				
NEMS.exe	0000000000582AC9	nuopc_modelbase_m	901	
NUOPC_ModelBase.F90				
NEMS.exe	0000000000B28245	_ZN5ESMCI6FTable1	2010	ESMCI_FTable.C

NEMS.exe	0000000000B2BBDA	ESMCI_FTableCallE	746	ESMCI_FTable.C
NEMS.exe	0000000000B37C3A	_ZN5ESMCI2VM5ente	1178	ESMCI_VM.C
NEMS.exe	0000000000B296E7	c_esmc_ftablecall	898	ESMCI_FTable.C
NEMS.exe	0000000000AA49DD	esmf_compmo_d_mp_e	1209	ESMF_Comp.F90
NEMS.exe	00000000005BA884	esmf_gridcompmo_d_	1889	
ESMF_GridComp.F90				
NEMS.exe	0000000000B5724B	nuopc_driver_mp_r	2898	
NUOPC_Driver.F90				
NEMS.exe	0000000000B28245	_ZN5ESMCI6FTable1	2010	ESMCI_FTable.C
NEMS.exe	0000000000B2BBDA	ESMCI_FTableCallE	746	ESMCI_FTable.C
NEMS.exe	0000000000B37C3A	_ZN5ESMCI2VM5ente	1178	ESMCI_VM.C
NEMS.exe	0000000000B296E7	c_esmc_ftablecall	898	ESMCI_FTable.C
NEMS.exe	0000000000AA49DD	esmf_compmo_d_mp_e	1209	ESMF_Comp.F90
NEMS.exe	00000000005BA884	esmf_gridcompmo_d_	1889	
ESMF_GridComp.F90				
NEMS.exe	0000000000425ECE	Unknown	Unknown	Unknown
NEMS.exe	0000000000B28245	_ZN5ESMCI6FTable1	2010	ESMCI_FTable.C
NEMS.exe	0000000000B2BBDA	ESMCI_FTableCallE	746	ESMCI_FTable.C
NEMS.exe	0000000000B37C3A	_ZN5ESMCI2VM5ente	1178	ESMCI_VM.C
TACC: MPI job exited with code: 174				
TACC: Shutdown complete. Exiting.				