```
 &aer_ccn_act_nml
     sul_concen = 0.3
     low_concen = 0.5
     high_concen = 1.0 /

 &aerosol_nml
   family_names = "small_dust", "large_dust", "black_carbon","organic_carbon", "sea_salt", "sulfate", "aerosol", "pm2.5",
"dust", "POA", "SOA"
   in_family1 = F,T,F,F,F,F,F,F,F,F,F,F,F,F,F,F,
   in_family2 = F,F,T,T,T,T,F,F,F,F,F,F,F,F,F,F,
   in_family3 = F,F,F,F,F,F,F,F,F,F,F,F,T,T,F,F,
   in_family4 = T,F,F,F,F,F,F,F,F,F,F,F,F,F,T,T,
   in_family5 = F,F,F,F,F,F,F,T,T,T,T,T,F,F,F,F,
   in_family6 = F,F,F,F,F,F,T,F,F,F,F,F,F,F,F,F,
   in_family7 = T,T,T,T,T,T,T,T,T,T,T,T,T,T,T,T,
   in_family8 = T,T,F,F,F,F,T,T,T,F,F,F,T,T,T,T,
   in_family9 = F,T,T,T,T,T,F,F,F,F,F,F,F,F,F,F,
   in_family10= F,F,F,F,F,F,F,F,F,F,F,F,F,F,T,T,
   in_family11= T,F,F,F,F,F,F,F,F,F,F,F,F,F,F,F,
   aerosol_data_source = "predicted" /

 &aerosolrad_package_nml
   force_to_repro_quebec = .true.
   using_im_bcsul = .true.
   volcanic_dataset_entry = $baseDate
   using_volcanic_lw_files = .true.,
   lw_ext_filename = "extlw_data.nc"
   lw_ext_root = "extlw"
   lw_asy_filename = "            "
   lw_asy_root = "     "
   lw_ssa_filename = "            "
   lw_ssa_root = "     "
   using_volcanic_sw_files = .true.,
   sw_ext_filename = "extsw_data.nc"
   sw_ext_root = "extsw"
   sw_ssa_filename = "omgsw_data.nc"
   sw_ssa_root = "omgsw"
   sw_asy_filename = "asmsw_data.nc"
   sw_asy_root = "asmsw"
   do_lwaerosol = .true.,
   do_swaerosol = .true.,
   aerosol_data_set = "Ginoux_Reddy"
   optical_filename = "Ginoux_Reddy_2005",
   sulfate_indices = 30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                 30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                 30,35,35,35,35,35,40,40,40,40,40,45,45,45,45,45,
                 50,50,50,50,50,55,55,55,55,55,60,60,60,60,60,65,
                 65,65,65,65,70,70,70,70,70,75,75,75,75,75,80,80,
                 80,80,82,82,84,84,86,86,88,88,90,91,92,93,94,95,
                 96,97,97,97,97,
   omphilic_indices = 30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                 30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                 30,35,35,35,35,35,40,40,40,40,40,45,45,45,45,45,
                 50,50,50,50,50,55,55,55,55,55,60,60,60,60,60,65,
                 65,65,65,65,70,70,70,70,70,75,75,75,75,75,80,80,
                 80,80,82,82,84,84,86,86,88,88,90,91,92,93,94,95,
                 96,97,97,97,97,
```

```
bcphilic_indices = 30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                   30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                   30,35,35,35,35,35,40,40,40,40,40,45,45,45,45,45,
                   50,50,50,50,50,55,55,55,55,55,60,60,60,60,60,65,
                   65,65,65,65,70,70,70,70,70,75,75,75,75,75,80,80,
                   80,80,82,82,84,84,86,86,88,88,90,91,92,93,94,95,
                   96,97,97,97,97,
seasalt1_indices = 30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                   30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                   30,35,35,35,35,35,40,40,40,40,40,45,45,45,45,45,
                   50,50,50,50,50,55,55,55,55,55,60,60,60,60,60,65,
                   65,65,65,65,70,70,70,70,70,75,75,75,75,75,80,80,
                   80,80,82,82,84,84,86,86,88,88,90,91,92,93,94,95,
                   96,97,97,97,97,
seasalt2_indices = 30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                   30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                   30,35,35,35,35,35,40,40,40,40,40,45,45,45,45,45,
                   50,50,50,50,50,55,55,55,55,55,60,60,60,60,60,65,
                   65,65,65,65,70,70,70,70,70,75,75,75,75,75,80,80,
                   80,80,82,82,84,84,86,86,88,88,90,91,92,93,94,95,
                   96,97,97,97,97,
seasalt3_indices = 30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                   30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                   30,35,35,35,35,35,40,40,40,40,40,45,45,45,45,45,
                   50,50,50,50,50,55,55,55,55,55,60,60,60,60,60,65,
                   65,65,65,65,70,70,70,70,70,75,75,75,75,75,80,80,
                   80,80,82,82,84,84,86,86,88,88,90,91,92,93,94,95,
                   96,97,97,97,97,
seasalt4_indices = 30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                   30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                   30,35,35,35,35,35,40,40,40,40,40,45,45,45,45,45,
                   50,50,50,50,50,55,55,55,55,55,60,60,60,60,60,65,
                   65,65,65,65,70,70,70,70,70,75,75,75,75,75,80,80,
                   80,80,82,82,84,84,86,86,88,88,90,91,92,93,94,95,
                   96,97,97,97,97,
seasalt5_indices = 30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                   30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,30,
                   30,35,35,35,35,35,40,40,40,40,40,45,45,45,45,45,
                   50,50,50,50,50,55,55,55,55,55,60,60,60,60,60,65,
                   65,65,65,65,70,70,70,70,70,75,75,75,75,75,80,80,
                   80,80,82,82,84,84,86,86,88,88,90,91,92,93,94,95,
                   96,97,97,97,97,
aerosol_optical_names =
"sulfate_30%_100%","sulfate_35%_100%","sulfate_40%_100%","sulfate_45%_100%","sulfate_50%_100%",
"sulfate_55%_100%","sulfate_60%_100%","sulfate_65%_100%","sulfate_70%_100%","sulfate_75%_100%",
"sulfate_80%_100%","sulfate_82%_100%","sulfate_84%_100%","sulfate_86%_100%","sulfate_88%_100%",
"sulfate_90%_100%","sulfate_91%_100%","sulfate_92%_100%","sulfate_93%_100%","sulfate_94%_100%",
"sulfate_95%_100%","sulfate_96%_100%","sulfate_97%_100%","sulfate_98%_100%","sulfate_99%_100%",
"sulfate_100%_100%","sulfate_30%_98%","sulfate_35%_98%","sulfate_40%_98%","sulfate_45%_98%",
"sulfate_50%_98%","sulfate_55%_98%","sulfate_60%_98%","sulfate_65%_98%","sulfate_70%_98%",
"sulfate_75%_98%","sulfate_80%_98%","sulfate_82%_98%","sulfate_84%_98%","sulfate_86%_98%",
"sulfate_88%_98%","sulfate_90%_98%","sulfate_91%_98%","sulfate_92%_98%","sulfate_93%_98%",
"sulfate_94%_98%","sulfate_95%_98%","sulfate_96%_98%","sulfate_97%_98%","sulfate_98%_98%",
"sulfate_99%_98%","sulfate_100%_98%","sulfate_30%_96%","sulfate_35%_96%","sulfate_40%_96%",
"sulfate_45%_96%","sulfate_50%_96%","sulfate_55%_96%","sulfate_60%_96%","sulfate_65%_96%",
"sulfate_70%_96%","sulfate_75%_96%","sulfate_80%_96%","sulfate_82%_96%","sulfate_84%_96%",
"sulfate_86%_96%","sulfate_88%_96%","sulfate_90%_96%","sulfate_91%_96%","sulfate_92%_96%",
"sulfate_93%_96%","sulfate_94%_96%","sulfate_95%_96%","sulfate_96%_96%","sulfate_97%_96%",
```

"sulfate_98%_96%","sulfate_99%_96%","sulfate_100%_96%","sulfate_30%_94%","sulfate_35%_94%",
"sulfate_40%_94%","sulfate_45%_94%","sulfate_50%_94%","sulfate_55%_94%","sulfate_60%_94%",
"sulfate_65%_94%","sulfate_70%_94%","sulfate_75%_94%","sulfate_80%_94%","sulfate_82%_94%",
"sulfate_84%_94%","sulfate_86%_94%","sulfate_88%_94%","sulfate_90%_94%","sulfate_91%_94%",
"sulfate_92%_94%","sulfate_93%_94%","sulfate_94%_94%","sulfate_95%_94%","sulfate_96%_94%",
"sulfate_97%_94%","sulfate_98%_94%","sulfate_99%_94%","sulfate_100%_94%","sulfate_30%_92%",
"sulfate_35%_92%","sulfate_40%_92%","sulfate_45%_92%","sulfate_50%_92%","sulfate_55%_92%",
"sulfate_60%_92%","sulfate_65%_92%","sulfate_70%_92%","sulfate_75%_92%","sulfate_80%_92%",
"sulfate_82%_92%","sulfate_84%_92%","sulfate_86%_92%","sulfate_88%_92%","sulfate_90%_92%",
"sulfate_91%_92%","sulfate_92%_92%","sulfate_93%_92%","sulfate_94%_92%","sulfate_95%_92%",
"sulfate_96%_92%","sulfate_97%_92%","sulfate_98%_92%","sulfate_99%_92%","sulfate_100%_92%",
"sulfate_30%_90%","sulfate_35%_90%","sulfate_40%_90%","sulfate_45%_90%","sulfate_50%_90%",
"sulfate_55%_90%","sulfate_60%_90%","sulfate_65%_90%","sulfate_70%_90%","sulfate_75%_90%",
"sulfate_80%_90%","sulfate_82%_90%","sulfate_84%_90%","sulfate_86%_90%","sulfate_88%_90%",
"sulfate_90%_90%","sulfate_91%_90%","sulfate_92%_90%","sulfate_93%_90%","sulfate_94%_90%",
"sulfate_95%_90%","sulfate_96%_90%","sulfate_97%_90%","sulfate_98%_90%","sulfate_99%_90%",
"sulfate_100%_90%","sulfate_30%_88%","sulfate_35%_88%","sulfate_40%_88%","sulfate_45%_88%",
"sulfate_50%_88%","sulfate_55%_88%","sulfate_60%_88%","sulfate_65%_88%","sulfate_70%_88%",
"sulfate_75%_88%","sulfate_80%_88%","sulfate_82%_88%","sulfate_84%_88%","sulfate_86%_88%",
"sulfate_88%_88%","sulfate_90%_88%","sulfate_91%_88%","sulfate_92%_88%","sulfate_93%_88%",
"sulfate_94%_88%","sulfate_95%_88%","sulfate_96%_88%","sulfate_97%_88%","sulfate_98%_88%",
"sulfate_99%_88%","sulfate_100%_88%","sulfate_30%_86%","sulfate_35%_86%","sulfate_40%_86%",
"sulfate_45%_86%","sulfate_50%_86%","sulfate_55%_86%","sulfate_60%_86%","sulfate_65%_86%",
"sulfate_70%_86%","sulfate_75%_86%","sulfate_80%_86%","sulfate_82%_86%","sulfate_84%_86%",
"sulfate_86%_86%","sulfate_88%_86%","sulfate_90%_86%","sulfate_91%_86%","sulfate_92%_86%",
"sulfate_93%_86%","sulfate_94%_86%","sulfate_95%_86%","sulfate_96%_86%","sulfate_97%_86%",
"sulfate_98%_86%","sulfate_99%_86%","sulfate_100%_86%","sulfate_30%_84%","sulfate_35%_84%",
"sulfate_40%_84%","sulfate_45%_84%","sulfate_50%_84%","sulfate_55%_84%","sulfate_60%_84%",
"sulfate_65%_84%","sulfate_70%_84%","sulfate_75%_84%","sulfate_80%_84%","sulfate_82%_84%",
"sulfate_84%_84%","sulfate_86%_84%","sulfate_88%_84%","sulfate_90%_84%","sulfate_91%_84%",
"sulfate_92%_84%","sulfate_93%_84%","sulfate_94%_84%","sulfate_95%_84%","sulfate_96%_84%",
"sulfate_97%_84%","sulfate_98%_84%","sulfate_99%_84%","sulfate_100%_84%","sulfate_30%_82%",
"sulfate_35%_82%","sulfate_40%_82%","sulfate_45%_82%","sulfate_50%_82%","sulfate_55%_82%",
"sulfate_60%_82%","sulfate_65%_82%","sulfate_70%_82%","sulfate_75%_82%","sulfate_80%_82%",
"sulfate_82%_82%","sulfate_84%_82%","sulfate_86%_82%","sulfate_88%_82%","sulfate_90%_82%",
"sulfate_91%_82%","sulfate_92%_82%","sulfate_93%_82%","sulfate_94%_82%","sulfate_95%_82%",
"sulfate_96%_82%","sulfate_97%_82%","sulfate_98%_82%","sulfate_99%_82%","sulfate_100%_82%",
"sulfate_30%_80%","sulfate_35%_80%","sulfate_40%_80%","sulfate_45%_80%","sulfate_50%_80%",
"sulfate_55%_80%","sulfate_60%_80%","sulfate_65%_80%","sulfate_70%_80%","sulfate_75%_80%",
"sulfate_80%_80%","sulfate_82%_80%","sulfate_84%_80%","sulfate_86%_80%","sulfate_88%_80%",
"sulfate_90%_80%","sulfate_91%_80%","sulfate_92%_80%","sulfate_93%_80%","sulfate_94%_80%",
"sulfate_95%_80%","sulfate_96%_80%","sulfate_97%_80%","sulfate_98%_80%","sulfate_99%_80%",
"sulfate_100%_80%","sulfate_30%_75%","sulfate_35%_75%","sulfate_40%_75%","sulfate_45%_75%",
"sulfate_50%_75%","sulfate_55%_75%","sulfate_60%_75%","sulfate_65%_75%","sulfate_70%_75%",
"sulfate_75%_75%","sulfate_80%_75%","sulfate_82%_75%","sulfate_84%_75%","sulfate_86%_75%",
"sulfate_88%_75%","sulfate_90%_75%","sulfate_91%_75%","sulfate_92%_75%","sulfate_93%_75%",
"sulfate_94%_75%","sulfate_95%_75%","sulfate_96%_75%","sulfate_97%_75%","sulfate_98%_75%",
"sulfate_99%_75%","sulfate_100%_75%","sulfate_30%_70%","sulfate_35%_70%","sulfate_40%_70%",
"sulfate_45%_70%","sulfate_50%_70%","sulfate_55%_70%","sulfate_60%_70%","sulfate_65%_70%",
"sulfate_70%_70%","sulfate_75%_70%","sulfate_80%_70%","sulfate_82%_70%","sulfate_84%_70%",
"sulfate_86%_70%","sulfate_88%_70%","sulfate_90%_70%","sulfate_91%_70%","sulfate_92%_70%",
"sulfate_93%_70%","sulfate_94%_70%","sulfate_95%_70%","sulfate_96%_70%","sulfate_97%_70%",
"sulfate_98%_70%","sulfate_99%_70%","sulfate_100%_70%","sulfate_30%_65%","sulfate_35%_65%",
"sulfate_40%_65%","sulfate_45%_65%","sulfate_50%_65%","sulfate_55%_65%","sulfate_60%_65%",
"sulfate_65%_65%","sulfate_70%_65%","sulfate_75%_65%","sulfate_80%_65%","sulfate_82%_65%",
"sulfate_84%_65%","sulfate_86%_65%","sulfate_88%_65%","sulfate_90%_65%","sulfate_91%_65%",
"sulfate_92%_65%","sulfate_93%_65%","sulfate_94%_65%","sulfate_95%_65%","sulfate_96%_65%",
"sulfate_97%_65%","sulfate_98%_65%","sulfate_99%_65%","sulfate_100%_65%","sulfate_30%_60%",

"sulfate_35%_60%","sulfate_40%_60%","sulfate_45%_60%","sulfate_50%_60%","sulfate_55%_60%",
"sulfate_60%_60%","sulfate_65%_60%","sulfate_70%_60%","sulfate_75%_60%","sulfate_80%_60%",
"sulfate_82%_60%","sulfate_84%_60%","sulfate_86%_60%","sulfate_88%_60%","sulfate_90%_60%",
"sulfate_91%_60%","sulfate_92%_60%","sulfate_93%_60%","sulfate_94%_60%","sulfate_95%_60%",
"sulfate_96%_60%","sulfate_97%_60%","sulfate_98%_60%","sulfate_99%_60%","sulfate_100%_60%",
"sulfate_30%_55%","sulfate_35%_55%","sulfate_40%_55%","sulfate_45%_55%","sulfate_50%_55%",
"sulfate_55%_55%","sulfate_60%_55%","sulfate_65%_55%","sulfate_70%_55%","sulfate_75%_55%",
"sulfate_80%_55%","sulfate_82%_55%","sulfate_84%_55%","sulfate_86%_55%","sulfate_88%_55%",
"sulfate_90%_55%","sulfate_91%_55%","sulfate_92%_55%","sulfate_93%_55%","sulfate_94%_55%",
"sulfate_95%_55%","sulfate_96%_55%","sulfate_97%_55%","sulfate_98%_55%","sulfate_99%_55%",
"sulfate_100%_55%","sulfate_30%_50%","sulfate_35%_50%","sulfate_40%_50%","sulfate_45%_50%",
"sulfate_50%_50%","sulfate_55%_50%","sulfate_60%_50%","sulfate_65%_50%","sulfate_70%_50%",
"sulfate_75%_50%","sulfate_80%_50%","sulfate_82%_50%","sulfate_84%_50%","sulfate_86%_50%",
"sulfate_88%_50%","sulfate_90%_50%","sulfate_91%_50%","sulfate_92%_50%","sulfate_93%_50%",
"sulfate_94%_50%","sulfate_95%_50%","sulfate_96%_50%","sulfate_97%_50%","sulfate_98%_50%",
"sulfate_99%_50%","sulfate_100%_50%","sulfate_30%_45%","sulfate_35%_45%","sulfate_40%_45%",
"sulfate_45%_45%","sulfate_50%_45%","sulfate_55%_45%","sulfate_60%_45%","sulfate_65%_45%",
"sulfate_70%_45%","sulfate_75%_45%","sulfate_80%_45%","sulfate_82%_45%","sulfate_84%_45%",
"sulfate_86%_45%","sulfate_88%_45%","sulfate_90%_45%","sulfate_91%_45%","sulfate_92%_45%",
"sulfate_93%_45%","sulfate_94%_45%","sulfate_95%_45%","sulfate_96%_45%","sulfate_97%_45%",
"sulfate_98%_45%","sulfate_99%_45%","sulfate_100%_45%","sulfate_30%_40%","sulfate_35%_40%",
"sulfate_40%_40%","sulfate_45%_40%","sulfate_50%_40%","sulfate_55%_40%","sulfate_60%_40%",
"sulfate_65%_40%","sulfate_70%_40%","sulfate_75%_40%","sulfate_80%_40%","sulfate_82%_40%",
"sulfate_84%_40%","sulfate_86%_40%","sulfate_88%_40%","sulfate_90%_40%","sulfate_91%_40%",
"sulfate_92%_40%","sulfate_93%_40%","sulfate_94%_40%","sulfate_95%_40%","sulfate_96%_40%",
"sulfate_97%_40%","sulfate_98%_40%","sulfate_99%_40%","sulfate_100%_40%","sulfate_30%_35%",
"sulfate_35%_35%","sulfate_40%_35%","sulfate_45%_35%","sulfate_50%_35%","sulfate_55%_35%",
"sulfate_60%_35%","sulfate_65%_35%","sulfate_70%_35%","sulfate_75%_35%","sulfate_80%_35%",
"sulfate_82%_35%","sulfate_84%_35%","sulfate_86%_35%","sulfate_88%_35%","sulfate_90%_35%",
"sulfate_91%_35%","sulfate_92%_35%","sulfate_93%_35%","sulfate_94%_35%","sulfate_95%_35%",
"sulfate_96%_35%","sulfate_97%_35%","sulfate_98%_35%","sulfate_99%_35%","sulfate_100%_35%",
"sulfate_30%_30%","sulfate_35%_30%","sulfate_40%_30%","sulfate_45%_30%","sulfate_50%_30%",
"sulfate_55%_30%","sulfate_60%_30%","sulfate_65%_30%","sulfate_70%_30%","sulfate_75%_30%",
"sulfate_80%_30%","sulfate_82%_30%","sulfate_84%_30%","sulfate_86%_30%","sulfate_88%_30%",
"sulfate_90%_30%","sulfate_91%_30%","sulfate_92%_30%","sulfate_93%_30%","sulfate_94%_30%",
"sulfate_95%_30%","sulfate_96%_30%","sulfate_97%_30%","sulfate_98%_30%","sulfate_99%_30%",
"sulfate_100%_30%","sulfate_30%_25%","sulfate_35%_25%","sulfate_40%_25%","sulfate_45%_25%",
"sulfate_50%_25%","sulfate_55%_25%","sulfate_60%_25%","sulfate_65%_25%","sulfate_70%_25%",
"sulfate_75%_25%","sulfate_80%_25%","sulfate_82%_25%","sulfate_84%_25%","sulfate_86%_25%",
"sulfate_88%_25%","sulfate_90%_25%","sulfate_91%_25%","sulfate_92%_25%","sulfate_93%_25%",
"sulfate_94%_25%","sulfate_95%_25%","sulfate_96%_25%","sulfate_97%_25%","sulfate_98%_25%",
"sulfate_99%_25%","sulfate_100%_25%","sulfate_30%_20%","sulfate_35%_20%","sulfate_40%_20%",
"sulfate_45%_20%","sulfate_50%_20%","sulfate_55%_20%","sulfate_60%_20%","sulfate_65%_20%",
"sulfate_70%_20%","sulfate_75%_20%","sulfate_80%_20%","sulfate_82%_20%","sulfate_84%_20%",
"sulfate_86%_20%","sulfate_88%_20%","sulfate_90%_20%","sulfate_91%_20%","sulfate_92%_20%",
"sulfate_93%_20%","sulfate_94%_20%","sulfate_95%_20%","sulfate_96%_20%","sulfate_97%_20%",
"sulfate_98%_20%","sulfate_99%_20%","sulfate_100%_20%","sulfate_30%_15%","sulfate_35%_15%",
"sulfate_40%_15%","sulfate_45%_15%","sulfate_50%_15%","sulfate_55%_15%","sulfate_60%_15%",
"sulfate_65%_15%","sulfate_70%_15%","sulfate_75%_15%","sulfate_80%_15%","sulfate_82%_15%",
"sulfate_84%_15%","sulfate_86%_15%","sulfate_88%_15%","sulfate_90%_15%","sulfate_91%_15%",
"sulfate_92%_15%","sulfate_93%_15%","sulfate_94%_15%","sulfate_95%_15%","sulfate_96%_15%",
"sulfate_97%_15%","sulfate_98%_15%","sulfate_99%_15%","sulfate_100%_15%","sulfate_30%_10%",
"sulfate_35%_10%","sulfate_40%_10%","sulfate_45%_10%","sulfate_50%_10%","sulfate_55%_10%",
"sulfate_60%_10%","sulfate_65%_10%","sulfate_70%_10%","sulfate_75%_10%","sulfate_80%_10%",
"sulfate_82%_10%","sulfate_84%_10%","sulfate_86%_10%","sulfate_88%_10%","sulfate_90%_10%",
"sulfate_91%_10%","sulfate_92%_10%","sulfate_93%_10%","sulfate_94%_10%","sulfate_95%_10%",
"sulfate_96%_10%","sulfate_97%_10%","sulfate_98%_10%","sulfate_99%_10%","sulfate_100%_10%",
"sulfate_30%_5%","sulfate_35%_5%","sulfate_40%_5%","sulfate_45%_5%","sulfate_50%_5%",

```
"sulfate_55%_5%","sulfate_60%_5%","sulfate_65%_5%","sulfate_70%_5%","sulfate_75%_5%",
"sulfate_80%_5%","sulfate_82%_5%","sulfate_84%_5%","sulfate_86%_5%","sulfate_88%_5%",
"sulfate_90%_5%","sulfate_91%_5%","sulfate_92%_5%","sulfate_93%_5%","sulfate_94%_5%",
"sulfate_95%_5%","sulfate_96%_5%","sulfate_97%_5%","sulfate_98%_5%","sulfate_99%_5%",
"sulfate_100%_5%","sulfate_30%_0%","sulfate_35%_0%","sulfate_40%_0%","sulfate_45%_0%",
"sulfate_50%_0%","sulfate_55%_0%","sulfate_60%_0%","sulfate_65%_0%","sulfate_70%_0%",
"sulfate_75%_0%","sulfate_80%_0%","sulfate_82%_0%","sulfate_84%_0%","sulfate_86%_0%",
"sulfate_88%_0%","sulfate_90%_0%","sulfate_91%_0%","sulfate_92%_0%","sulfate_93%_0%",
"sulfate_94%_0%","sulfate_95%_0%","sulfate_96%_0%","sulfate_97%_0%","sulfate_98%_0%",
"sulfate_99%_0%","sulfate_100%_0%",
                    "organic_carbon","soot",
                    "sea_salt",    "dust_0.1",    "dust_0.2",    "dust_0.4",
                    "dust_0.8",    "dust_1.0",    "dust_2.0",    "dust_4.0",
                    "dust_8.0",
                    "dust1",       "dust2",       "dust3",       "dust4",
                    "dust5",       "bcphobic",     "omphobic",     "bcdry"
                    "omphilic_30%", "omphilic_35%", "omphilic_40%", "omphilic_45%",
                    "omphilic_50%", "omphilic_55%", "omphilic_60%", "omphilic_65%",
                    "omphilic_70%", "omphilic_75%", "omphilic_80%", "omphilic_82%",
                    "omphilic_84%", "omphilic_86%", "omphilic_88%", "omphilic_90%",
                    "omphilic_91%", "omphilic_92%", "omphilic_93%", "omphilic_94%",
                    "omphilic_95%", "omphilic_96%", "omphilic_97%", "omphilic_98%",
                    "omphilic_99%",
                    "seasalt1_30%", "seasalt1_35%", "seasalt1_40%", "seasalt1_45%",
                    "seasalt1_50%", "seasalt1_55%", "seasalt1_60%", "seasalt1_65%",
                    "seasalt1_70%", "seasalt1_75%", "seasalt1_80%", "seasalt1_82%",
                    "seasalt1_84%", "seasalt1_86%", "seasalt1_88%", "seasalt1_90%",
                    "seasalt1_91%", "seasalt1_92%", "seasalt1_93%", "seasalt1_94%",
                    "seasalt1_95%", "seasalt1_96%", "seasalt1_97%", "seasalt1_98%",
                    "seasalt1_99%",
                    "seasalt2_30%", "seasalt2_35%", "seasalt2_40%", "seasalt2_45%",
                    "seasalt2_50%", "seasalt2_55%", "seasalt2_60%", "seasalt2_65%",
                    "seasalt2_70%", "seasalt2_75%", "seasalt2_80%", "seasalt2_82%",
                    "seasalt2_84%", "seasalt2_86%", "seasalt2_88%", "seasalt2_90%",
                    "seasalt2_91%", "seasalt2_92%", "seasalt2_93%", "seasalt2_94%",
                    "seasalt2_95%", "seasalt2_96%", "seasalt2_97%", "seasalt2_98%",
                    "seasalt2_99%",
                    "seasalt3_30%", "seasalt3_35%", "seasalt3_40%", "seasalt3_45%",
                    "seasalt3_50%", "seasalt3_55%", "seasalt3_60%", "seasalt3_65%",
                    "seasalt3_70%", "seasalt3_75%", "seasalt3_80%", "seasalt3_82%",
                    "seasalt3_84%", "seasalt3_86%", "seasalt3_88%", "seasalt3_90%",
                    "seasalt3_91%", "seasalt3_92%", "seasalt3_93%", "seasalt3_94%",
                    "seasalt3_95%", "seasalt3_96%", "seasalt3_97%", "seasalt3_98%",
                    "seasalt3_99%",
                    "seasalt4_30%", "seasalt4_35%", "seasalt4_40%", "seasalt4_45%",
                    "seasalt4_50%", "seasalt4_55%", "seasalt4_60%", "seasalt4_65%",
                    "seasalt4_70%", "seasalt4_75%", "seasalt4_80%", "seasalt4_82%",
                    "seasalt4_84%", "seasalt4_86%", "seasalt4_88%", "seasalt4_90%",
                    "seasalt4_91%", "seasalt4_92%", "seasalt4_93%", "seasalt4_94%",
                    "seasalt4_95%", "seasalt4_96%", "seasalt4_97%", "seasalt4_98%",
                    "seasalt4_99%",
                    "seasalt5_30%", "seasalt5_35%", "seasalt5_40%", "seasalt5_45%",
                    "seasalt5_50%", "seasalt5_55%", "seasalt5_60%", "seasalt5_65%",
                    "seasalt5_70%", "seasalt5_75%", "seasalt5_80%", "seasalt5_82%",
                    "seasalt5_84%", "seasalt5_86%", "seasalt5_88%", "seasalt5_90%",
                    "seasalt5_91%", "seasalt5_92%", "seasalt5_93%", "seasalt5_94%",
                    "seasalt5_95%", "seasalt5_96%", "seasalt5_97%", "seasalt5_98%",
                    "seasalt5_99%" /
```

```
&carbon_aerosol_nml
    bcff_source = 'gocart_2007',
      bcff_input_name(1)='anthro',
      bcff_filename='emissions.bc.1x1.1859_2020.nc',
      bcff_time_dependency_type='time_varying',bcff_dataset_entry=$baseDate
    omff_source = 'gocart_2007',
      omff_input_name(1)='anthro',
      omff_filename='emissions.om.1x1.1859_2020.nc',
      omff_time_dependency_type='time_varying',omff_dataset_entry=$baseDate
    omsh_source = 'gocart_2007',
      omsh_input_name(1)='ship',
      omsh_filename='emissions.om.1x1.1859_2020.nc',
      omsh_time_dependency_type='time_varying',omsh_dataset_entry=$baseDate
    bcsh_source = 'gocart_2007',
      bcsh_input_name(1)='ship',
      bcsh_filename='emissions.bc.1x1.1859_2020.nc',
      bcsh_time_dependency_type='time_varying',bcsh_dataset_entry=$baseDate
    bcav_source = 'do_aircraft'
      bcav_input_name(1)='fuel',
      bcav_filename='emissions.aircraft.aero.1x1.1859_2020.nc',
      bcav_time_dependency_type='time_varying',bcav_dataset_entry=$baseDate
    bcbb_source = 'AEROCOM',
      bcbb_filename='emissions.bc.1x1.1859_2020.nc',
      bcbb_input_name(1)='bb_l1'
      bcbb_input_name(2)='bb_l2'
      bcbb_input_name(3)='bb_l3'
      bcbb_input_name(4)='bb_l4'
      bcbb_input_name(5)='bb_l5'
      bcbb_input_name(6)='bb_l6'
      bcbb_time_dependency_type='time_varying',bcbb_dataset_entry=$baseDate
    ombb_source = 'AEROCOM',
      ombb_filename='emissions.om.1x1.1859_2020.nc',
      ombb_input_name(1)='bb_l1'
      ombb_input_name(2)='bb_l2'
      ombb_input_name(3)='bb_l3'
      ombb_input_name(4)='bb_l4'
      ombb_input_name(5)='bb_l5'
      ombb_input_name(6)='bb_l6'
      ombb_time_dependency_type='time_varying',ombb_dataset_entry=$baseDate
    omna_source = 'gunther',
      omna_filename='oc8_natural_emission.nc'
      omna_input_name='omemisnat'
    omss_source = 'ODowd'
      omss_coef = 0.05
/

&cg_drag_nml
    cg_drag_freq = 1800,
    cg_drag_offset = 0,
    Bt_0 =  0.004 ,
    Bt_aug= 0.000,
    Bt_nh=  0.001,
    Bt_sh= -0.001,
    Bt_eq=  0.000,
    Bt_eq_width= 4.0,
    phi0n =  30.,
    phi0s = -30.,
```

```
    dphin =  5.0,
    dphis = -5.0 /

&cloud_generator_nml
    do_inhomogeneous_clouds = .true.
    defaultOverlap = 4
    overlapLengthScale = 1. /

&cloud_rad_nml
    overlap = 2,
    do_brenguier = .false.,
    scale_factor = 1.00 /

&cloud_spec_nml
    cloud_type_form = 'stratdeepuw' /

&cloudrad_diagnostics_nml
    do_isccp = .true.
    isccp_scale_factor = 1.00
    water_ice_ratio = 10. /

&cloudrad_package_nml
    microphys_form = 'predicted' /

&clouds_nml
    do_zonal_clouds = .false.,
    do_obs_clouds  = .false. /

&cu_mo_trans_nml
    transport_scheme='diffusive'
    diff_norm = 2.5 /

&damping_driver_nml
    trayfric = 0.,
    nlev_rayfric = 1,
    do_mg_drag = .true.,
    do_cg_drag = .true.,
    do_topo_drag = .false.,
    do_conserve_energy = .true. /

&diag_cloud_nml
    linvers = .false., lcnvcld = .false.,
    l_theqv = .true., lomega = .true.,
    low_lev_cloud_index = 16, nofog = .false. /

&diag_cloud_rad_nml
    l_har_anvil   = .true.,
    l_har_coldcld = .true.,
    l_anom_abs_v  = .true. /

&diag_integral_nml
    file_name  = 'diag_integral.out',
    time_units = 'days',
    output_interval = 1.0 /

&donner_deep_clouds_W_nml
    using_dge_sw = .true.,
    using_dge_lw = .true. /
```

```
&donner_deep_nml
    parcel_launch_level = 2
    model_levels_in_sfcbl = 0
    donner_deep_freq = 1800
    write_reduced_restart_file = .true.
    allow_mesoscale_circulation = .true.
    do_donner_cape    = .false.
    do_donner_plume   = .false.
    do_donner_closure = .false.
    do_donner_lscloud = .true.
    do_dcape          = .false.
    do_lands          = .false.
    do_freezing_for_cape = .true.
    do_freezing_for_closure = .true.
    gama              = 0.0
    tau               = 28800.
    tke0              = 0.5
    cape0             = 1000.
    lochoice          = 10
    do_capetau_land   = .false.
    use_llift_criteria= .false.
    do_ice            = .true.
    atopevap  = 0.1
    auto_rate = 1.e-3
    auto_th   = 0.5e-3
    frac      = 1.65
    ttend_max = 0.005
    EVAP_IN_DOWNDRAFTS  = 0.00
    EVAP_IN_ENVIRON     = 0.00
    ENTRAINED_INTO_MESO = 1.00
    ANVIL_PRECIP_EFFICIENCY = 0.55
    MESO_DOWN_EVAP_FRACTION = 0.4
    MESO_UP_EVAP_FRACTION   = 0.05
    wmin_ratio      = 0.05,
    arat =  1.0, 0.26, 0.35, 0.32, 0.3, 0.54, 0.66
    erat =  1.0, 1.30, 1.80, 2.50, 3.3, 4.50, 10.0
    frc_internal_enthalpy_conserv = .true.
    limit_pztm_to_tropo = .true. /

&dust_nml
    dust_source_name = 'source',
    dust_source_filename = 'dust_source_Iceland_1x1.nc'
    uthresh = 1.
    coef_emis = 1.25e-10 /

&edt_nml
    n_print_levels = 14,
    use_qcmin = .true.,
    num_pts_ij = 0,
    min_adj_time = 1.0,
    do_gaussian_cloud = .false.,
    use_extrapolated_ql = .false. /

&entrain_nml
    convect_shutoff = .true.,
    apply_entrain = .true.,
    parcel_buoy   = 0.25,
```

```
    parcel_option = 2,
    beta_rad      = 0.5,
    Ashear        = 25.0,
    radperturb    = 0.10,
    critjump      = 0.10,
    num_pts_ij    = 0,
    i_entprt_gl   = 112, 96, 89,105, 81, 97,
    j_entprt_gl   =  71, 61, 56, 64, 53, 46 /

&esfsw_driver_nml
    do_coupled_stratozone = .true. /

&esfsw_parameters_nml
    sw_resolution = 'low',
    sw_diff_streams = 1 /

&gas_tf_nml
    interp_form = 'log' ,
    do_calcstdco2tfs = .true.,
    do_writestdco2tfs= .false.,
    do_readstdco2tfs = .false.,
    do_calcstdch4tfs = .true.,
    do_writestdch4tfs= .false.,
    do_readstdch4tfs = .false.,
    do_calcstdn2otfs = .true.,
    do_writestdn2otfs= .false.,
    do_readstdn2otfs = .false. /

&lscale_cond_nml
    do_evap = .true. /

&lw_gases_stdtf_nml
    NSTDCO2LVLS=496 /

&mg_drag_nml
    gmax  = 1.,
    acoef = 1.,
    do_conserve_energy = .true.,
    flux_cut_level = 30.e2,
    source_of_sgsmtn = 'input/computed' /

&microphys_rad_nml
    do_orig_donner_stoch = .false.,
    lwem_form = 'fuliou' /

&moist_conv_nml
    beta = 0.0 /

&moist_processes_nml
    do_lsc=.false.,
    do_strat=.true.,
    do_mca=.false.,
    do_ras=.false.,
    do_uw_conv=.true.,
    do_donner_deep = .true.,
    do_diag_clouds = .false.,
    do_cmt=.true.,
    cmt_mass_flux_source='all',
```

```
    do_rh_clouds = .false. ,
    do_gust_cv = .false.,
    do_liq_num = .true.,
    force_donner_moist_conserv = .true.,
    do_donner_conservation_checks = .true.,
    do_limit_donner = .true.,
    do_limit_uw = .true.,
    limit_conv_cloud_frac = .true.,
    do_donner_before_uw = .true. /

&monin_obukhov_nml
    stable_option =  2,
    rich_crit = 1.0,
    zeta_trans =  0.5 /

&my25_turb_nml
    do_thv_stab = .true.,
    TKEmin = 1.e-8,
    AKmin_land = 5.,
    AKmin_sea  = 0. /

&ozone_nml
    basic_ozone_type = 'predicted_ozone' ,
    ozone_data_source = 'predicted_ozone' ,
    ozone_dataset_entry = $baseDate
    data_name = "ozone",
    filename = "o3.climatology.nc"
    do_coupled_stratozone = .true. /

&physics_driver_nml
    use_cloud_tracers_in_radiation = .false. /

&rad_output_file_nml
    write_data_file=.true. /

&radiation_diag_nml
    iradprt_gl = 20, 6,
    jradprt_gl = 12, 20,
    num_pts_ij = 0 /

&radiation_driver_nml
    rad_time_step= 10800,
    time_varying_solar_constant = .true.,
    solar_dataset_entry = $baseDate
    rad_package = 'sea_esf',
    do_clear_sky_pass=.true.,
    calc_hemi_integrals = .false.,
    renormalize_sw_fluxes=.true.,
    all_step_diagnostics = .true.,
    zenith_spec = 'diurnally_varying',
    using_restart_file = .false. /

&radiative_gases_nml
    verbose = 3
    gas_printout_freq = 240

    time_varying_co2 = .true.,
    co2_variation_type = 'linear',
```

```
    co2_dataset_entry = $baseDate
    co2_specification_type = 'time_series',
    co2_floor = 100.0E-06,
    co2_ceiling = 1600.0E-06,
    co2_data_source = 'input'

    time_varying_ch4 = .true.,
    ch4_variation_type = 'linear'
    ch4_dataset_entry = $baseDate
    ch4_specification_type = 'time_series'
    ch4_data_source = 'input'

    time_varying_n2o = .true.,
    n2o_variation_type = 'linear'
    n2o_dataset_entry = $baseDate
    n2o_specification_type = 'time_series'
    n2o_data_source = 'input'

    time_varying_f11 = .true.,
    f11_variation_type = 'linear'
    f11_dataset_entry = $baseDate
    f11_specification_type = 'time_series'
    f11_data_source = 'input'

    time_varying_f12 = .true.,
    f12_variation_type = 'linear'
    f12_dataset_entry = $baseDate
    f12_specification_type = 'time_series'
    f12_data_source = 'input'

    time_varying_f113 = .true.,
    f113_variation_type = 'linear'
    f113_dataset_entry = $baseDate
    f113_specification_type = 'time_series'
    f113_data_source = 'input'

    time_varying_f22 = .true.,
    f22_variation_type = 'linear'
    f22_dataset_entry = $baseDate
    f22_specification_type = 'time_series'
    f22_data_source = 'input' /

&ras_nml
    aratio = 0.9,
    modify_pbl=.true.
    rn_frac_bot = 0.5,
    rn_pbot = 800.0e2,
    puplim =  500.0e02,
    rn_ptop = 500.0e2,
    rn_frac_top = 0.975,
    Tokioka_on = .true.,
    Tokioka_con = 0.025,
    Tokioka_plim = 500.0e2,
    cufric =.false.
    do_rasdeep = .false.
    do_fixed_pres_deep = .true.
    prevent_unreasonable =.true.
    a = 1.6851, 1.1686, 0.7663, 0.5255, 0.4100, 0.3677,
```

```
      0.3151, 0.2216, 0.1521, 0.0750, 0.0000, 0.0000,
      0.0000, 0.0000, 0.0000 /

&rh_based_clouds_nml
    cirrus_cld_prop_form = 'part',
    cldht_type_form = '93' /

&sat_vapor_pres_nml
    construct_table_wrt_liq = .true.,
    construct_table_wrt_liq_and_ice = .true.,
    use_exact_qs = .true. /

&sealw99_nml
    do_thick = .false.,
    do_nlte = .false.,
    do_lwcldemiss = .true.,
    continuum_form = 'ckd2.1',
    linecatalog_form = 'hitran_2000',

    calc_co2_tfs_on_first_step = .false.,
    calc_co2_tfs_monthly = .true.,
    co2_tf_time_displacement = 360.0,

    calc_ch4_tfs_on_first_step = .false.,
    calc_ch4_tfs_monthly = .true.,
    ch4_tf_time_displacement = 360.0,

    calc_n2o_tfs_on_first_step = .false.,
    calc_n2o_tfs_monthly = .true.,
    n2o_tf_time_displacement = 360.0,

    verbose = 5 /

&secondary_organics_nml
    gas_conc_filename = 'gas_conc_3D.nc' /

&shortwave_driver_nml
    do_cmip_diagnostics = .true.,
    calculate_volcanic_sw_heating = .false.,
    swform = 'esfsw99' /

&simple_sulfate_nml
    aerocom_emission_filename = 'aerocom_emission_2000_cr6_volc2.nc' /

&ssalt_nml
    coef_emis1 = 0.38,
    coef_emis2 = 0.65 /

&stable_bl_turb_nml
    alsm = 500.0,
    alsh = 500.0 /

&strat_cloud_nml
    use_online_aerosol = .true.,
    U00 = 0.80,
    U00_profile = .true.,
    rthresh = 8.2,
    Dmin = 1.0e-07,
```

```
    n_land = 300.e6,
    diff_thresh = 0.1,
    mc_thresh = 0.001,
    eros_scale = 1.3e-6,
    eros_choice = .true.,
    eros_scale_c = 7.e-5,
    eros_scale_t = 7.e-5,
    super_choice = .true.,
    tracer_advec = .true.
    vfact = 1.5
    cfact = 1.0
    do_liq_num = .true.
    use_kk_auto = .false.
    var_limit = 0.7
    num_mass_ratio1 = 1.0
    num_mass_ratio2 = 0.
    use_sub_seasalt = .false. /

&strat_clouds_W_nml
    do_stochastic_clouds = .true. /

&surface_flux_nml
    gust_min = 1.e-10 /

&tropchem_driver_nml
    relaxed_dt = 864000.,
    ub_pres = 1.,
    relaxed_dt_lbc = 86400.,
    lb_pres = 800.e2,
    file_sulfate = 'sulfate.nc',
    file_conc = 'tracerIC.19800101.v2.nc',
    file_emis_1 = 'emissions.',
    file_emis_2 = '.1x1.1859_2020.nc',
    file_emis3d_1 = 'emissions3D.',
    file_emis3d_2 = '.1x1.1859_2020.nc',
    file_ub = 'ub_vals.mozart.nc',
    file_dry = 'depvel.nc',
    inv_list = '',
    file_aircraft = 'emissions.aircraft.1x1.1859_2020.nc',
    lght_no_prd_factor = 0.6,
    strat_chem_age_factor = 1.25,
    strat_chem_dclydt_factor = 1.,
    do_tropchem = .true.,
    use_tdep_jvals = .true.,
    file_jval_lut = 'jvals.v6fix.twilight.solarmax',
    file_jval_lut_min = 'jvals.v6fix.twilight.solarmin',
    o3_column_top = 0.002,
    repartition_water_tracers = .true.,
    allow_negative_cosz = .true.,
    allow_psc_settling_type1 = .true.,
    force_cly_conservation = .true.,
    set_min_h2o_strat = .true.,
    ch4_filename = 'ch4_gblannualdata',
    ch4_scale_factor = 1.e-9,
    verbose = 1
    retain_cm3_bugs =.false.
    check_convergence = .true.
/
```

```
&uw_closure_nml
    rkfre    = 0.2
    wcrit_min= 1.6 /

&uw_conv_nml
    use_online_aerosol = .true.,
    iclosure        = 0,
    rkm_sh          = 13.5,
    cldhgt_max      = 50.e3,
    do_uwcmt        = .false.,
    apply_tendency  = .true.,
    wmin_ratio      = 0.05,
    do_lands        = .false.
    gama            = 0.0,
    tke0            = 0.5
    pblht0          = 500.
    lofactor0       = 0.5
    lochoice        = 10
    do_rescale      = .true.
    use_sub_seasalt = .false.
    wrel_min=1. /

&uw_plume_nml
    rmaxfrac = 0.15
    auto_th0 = 0.5e-3,
    tcrit    = -50.0,
    wmin     = 0.5,
    deltaqc0 = 0.5e-3
    do_pdfpcp= .false.
    do_pmadjt= .true.
    do_emmax = .true.
    do_pnqv  = .true. /

&vert_diff_driver_nml
    do_conserve_energy = .true. /

&vert_turb_driver_nml
    use_tau          = .false.,
    gust_scheme      = 'beljaars',
    do_mellor_yamada = .false.,
    do_entrain       = .true.,
    do_edt           = .false.,
    do_diffusivity   = .false.,
    do_stable_bl     = .true.,
    do_shallow_conv  = .false. /

&cana_nml
    turbulence_to_use = "lm3v"
    canopy_air_mass_for_tracers = 10.
    init_co2 = 286.e-6 /

&glac_data_nml
    use_lm2_awc = .true.,
    rsa_exp_global = 10.,
    dat_emis_dry = 1., dat_emis_sat = 1. /

&glac_nml
```

```
    conserve_glacier_mass = .true.
    lm2 = .true. /

&lake_data_nml
    lake_to_use = 'from-rivers'
    num_l = 20,
    dz = 1., 1., 1., 1., 1., 1., 1., 1., 1., 1.,
         1., 1., 1., 1., 1., 1., 1., 1., 1., 1.,
    dat_emis_dry = 1.,
    dat_emis_sat = 1.,
    dat_heat_capacity_ref = 0.,
    f_iso_liq = 0.02, 0.01
    f_iso_ice = 0.02, 0.01
    f_vol_liq = 0.003, 0.
    f_vol_ice = 0.003, 0.
    f_geo_liq = 0., 0.
    f_geo_ice = 0., 0. /

&lake_nml
    albedo_to_use = 'brdf-params'
    float_ice_to_top = .true. /

&land_debug_nml
    watch_point = 0, 0, 0, 1 /

&land_model_nml
    layout = 6,12,
    tau_snow_T_adj = 604800., /

&river_nml
    dt_slow     = 86400.
    land_area_called_cellarea = .true.
    all_big_outlet_ctn0 = .true. /

&river_physics_nml
    lake_sfc_w_min = 20. /

&snow_data_nml
    emis_snow_max = 1.
    emis_snow_min = 1.
    z0_momentum = 0.01
    num_l = 5
    dz = 0.05, 0.2, 0.5, 0.2, 0.05, 0.0, 0.0, 0.0, 0.0, 0.0
    f_iso_cold = 0.90, 0.64
    f_vol_cold = 0.09, 0.13
    f_geo_cold = 0.00, 0.00
    f_iso_warm = 0.90, 0.64
    f_vol_warm = 0.09, 0.13
    f_geo_warm = 0.00, 0.00
    depth_crit = 0.0334 /

&snow_nml
    min_snow_mass = 1.e-10
    albedo_to_use = 'brdf-params' /

&soil_data_nml
    dat_emis_dry     = 1., 1., 1., 1., 1., 1., 1., 1., 1.
    dat_emis_sat     = 1., 1., 1., 1., 1., 1., 1., 1., 1.
```

```
    dat_tf_depr      = 2., 2., 2., 2., 2., 2., 2., 2., 2.
    use_geohydrology = .true.
    gw_scale_soil_depth  = 10.
    freeze_factor    = 2.0
    comp             = 1e-4
    num_l            = 20
    dz = 0.020, 0.040, 0.040, 0.050, 0.05, 0.100, 0.10, 0.200, 0.200, 0.2,
        0.40,  0.40,  0.40,  0.4,   0.4,   1.0,   1.0,  1.0,  1.5,   2.5 /

&soil_nml
    init_w        = 500.
    albedo_to_use = 'brdf-maps'
    uptake_to_use = 'darcy2d-linearized'
    uptake_oneway = .true.
    active_layer_drainage_acceleration = 100. /

&static_veg_nml
    use_static_veg = .false.
    write_static_veg = .false.
    timeline   = 'loop'
    start_loop = 1982, 1, 1, 0, 0, 0
    end_loop   = 1983, 1, 1, 0, 0, 0
    fill_land_mask = .TRUE. /

&topo_rough_nml
    use_topo_rough    = .true.
    max_topo_rough    = 100.0
    topo_rough_factor = 0.01 /

&vegn_data_nml
    dat_snow_crit = 0.0167, 0.0167, 0.0333, 0.2, 0.1
    vegn_to_use = 'uniform'
    K1=10,
    K2=0.1,
    fsc_liv=0.9,
    fsc_wood=0.45,
    c1(4) = 0.3
    c2(4) = 0.3
    Vmax = 2.0E-5, 2.0E-5, 2.0E-5, 2.0E-5, 1.5E-5,
    m_cond = 4., 9., 9., 7., 7.,
    alpha_phot = 0.05, 0.06, 0.06, 0.06, 0.06,
    gamma_resp = 0.03, 0.02, 0.02, 0.02, 0.02,
    fact_crit_phen(0:4) = 0., 0., 0., 0., 0.
    fact_crit_fire(0:4) = 0., 0., 0., 0., 0.
    cnst_crit_phen(0:4) = 0.30, 0.4, 0.30, 0.30, 0.30
    cnst_crit_fire(0:4) = 0.25, 0.4, 0.30, 0.15, 0.15
    wet_leaf_dreg(0:4)  = .3, .3, .3, .3, .3
    dfr = 3e-2,3e-2,7e-3,7e-3,7e-3,
    ksi =  0, 0, 0, 0, 0,
    leaf_refl(0:4,1) = 0.11, 0.11, 0.10, 0.10, 0.10
    leaf_refl(0:4,2) = 0.58, 0.58, 0.45, 0.45, 0.50,
    dat_root_zeta(0:4) =   0.35212, 0.17039, 0.28909, 0.25813, 0.17039
    critical_root_density = 0.0,
    tau_drip_s     = 259200.0
    cmc_lai(0:4) = 0.02, 0.02, 0.02, 0.02, 0.02
    csc_lai(0:4) = 0.2, 0.2, 0.2, 0.2, 0.2
    t_transp_min = 268.
    srl(0:1) = 112.0e3, 150.0e3
```

```
    root_perm = 14*5e-7
    alpha(1,3) = 4
    leaf_age_tau(2) = 150
    smoke_fraction = 0.9, 0.9, 0.6, 0.6, 0.6 /

&vegn_nml
    init_Tv = 288.0
    rad_to_use = 'two-stream'
    photosynthesis_to_use = 'leuning'
    snow_rad_to_use = 'paint-leaves'
    write_soil_carbon_restart = .FALSE.
    co2_to_use_for_photosynthesis ='interactive' /
```