From last meeting:

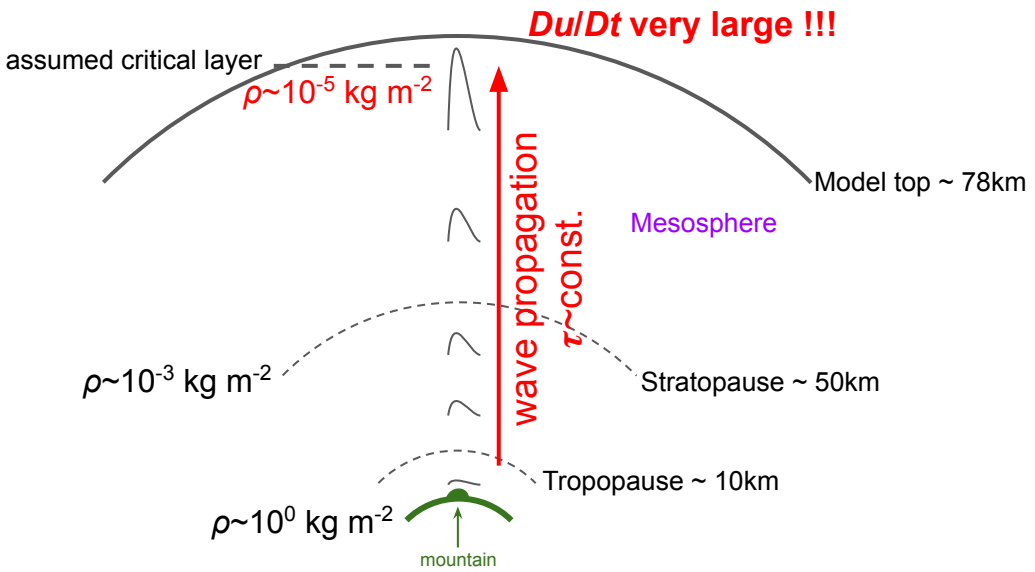
Added tendency limiter for mesosphere

Zonal wind tendency due to OGW

$$\left(\frac{Du}{Dt}\right)_{OGW} = -\frac{1}{\rho}\frac{\partial \tau_{OGW}}{\partial z}$$

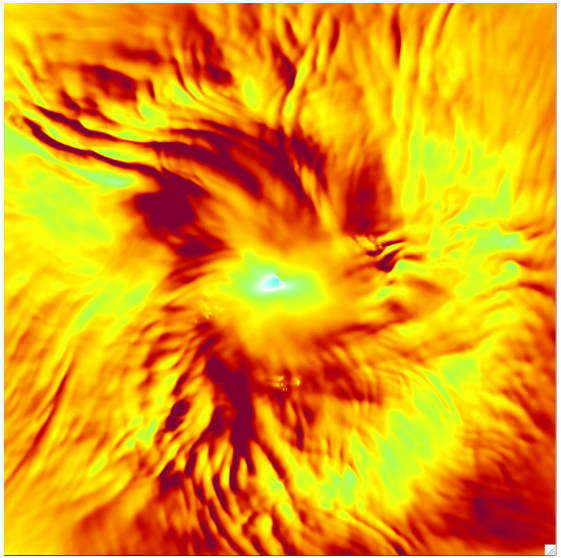
wave momentum flux (constant in height until reaches critical layer)

air density (decreases with height)

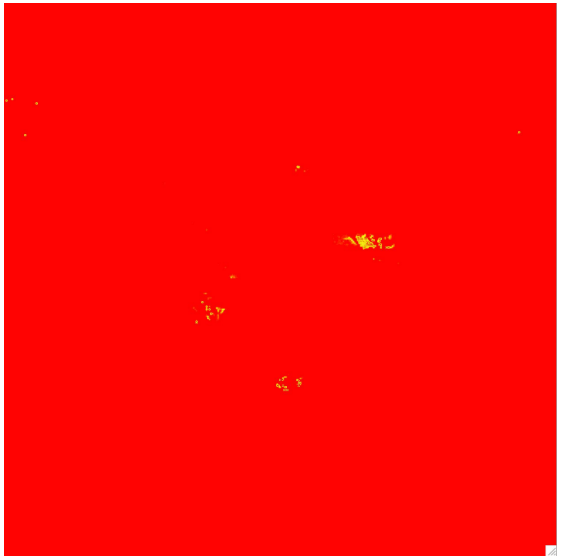


Added tendency limiter for mesosphere

Tile 6 (SH Pole in center) – 24 June 2020 19UTC – Model level k = 2 (p = 0.02mb)



Zonal wind (m s^{-1})



Zonal wind tendency from OGW (m s^{-2})

drag_suite.F90

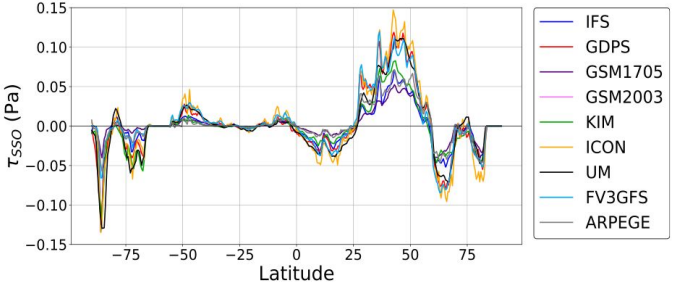
```
do k = kts,km
! Check if well into mesosphere -- if so, perform similar reduction of
! velocity tendency due to mesoscale GWD to prevent sudden reversal of
! wind direction (similar to above)
  dtfac_meso = 1.0
    if (prsl(i,k).le.plolevmeso) then
      if (taud_ms(i,k).ne.0.) dtfac_meso =
        min(dtfac_meso,facmeso*abs(velco(i,k)  &
            /(deltim*rcs*taud_ms(i,k))))
    end if
taud_ms(i,k)  = taud_ms(i,k)*dtfac(i)*dtfac_meso* &
                ls_taper(i) *(1.-rstoch(i))
```

(plolevmeso = 0.7mb)

Zonal wind range violations are prevented

Added filter on high-horizontal-wavenumber topographic features for Orographic Gravity Wave Drag (OGWD)

"True" zonally averaged zonal surface stress due to OGWD + blocking from model intercomparison study



Zonally averaged zonal surface stress due to OGWD + blocking