

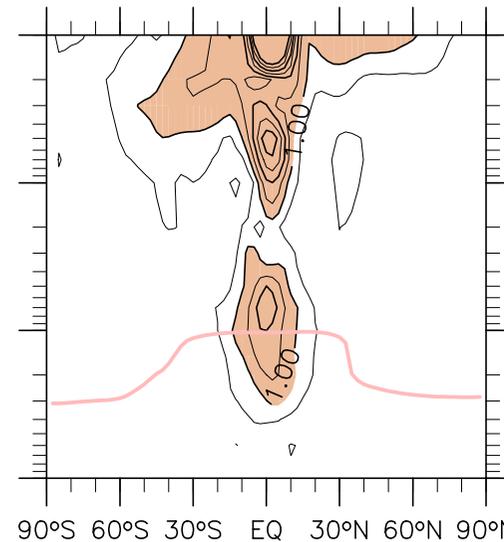
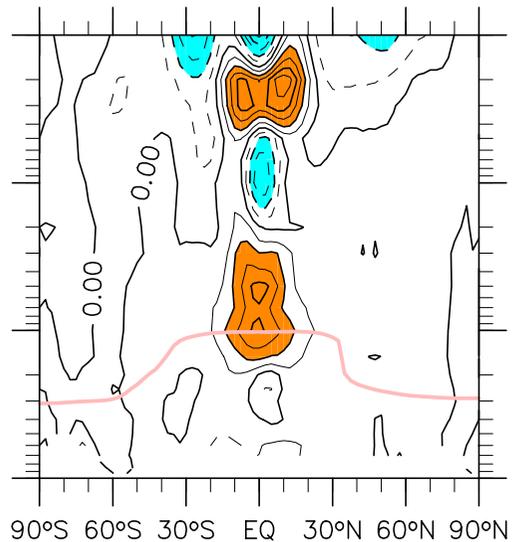
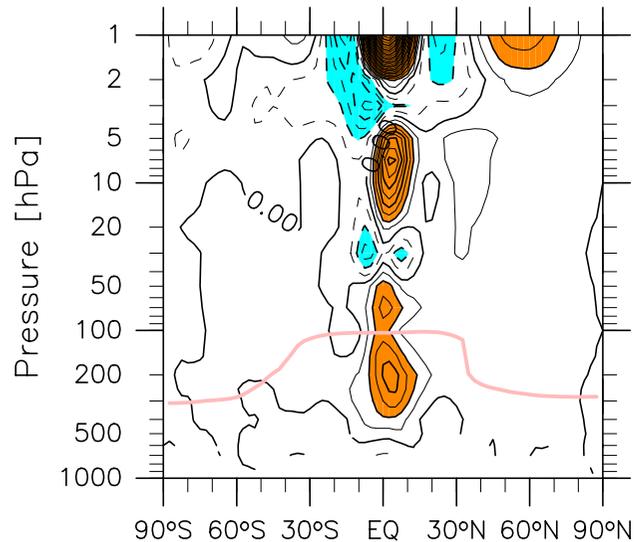
u [m/s]

DJF (D80–F10)

(a) MERRA-2 – REM

(b) JRA-55 – REM

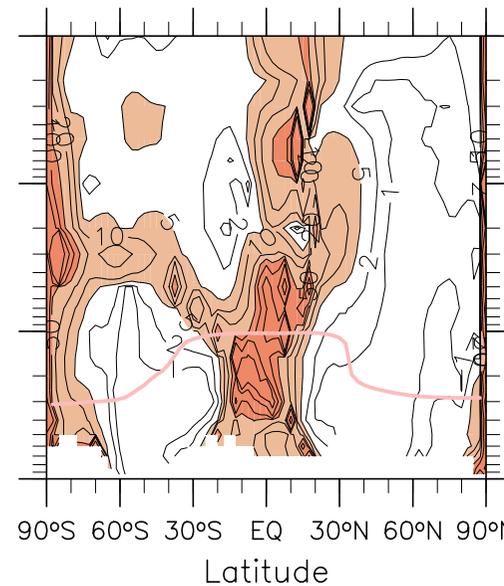
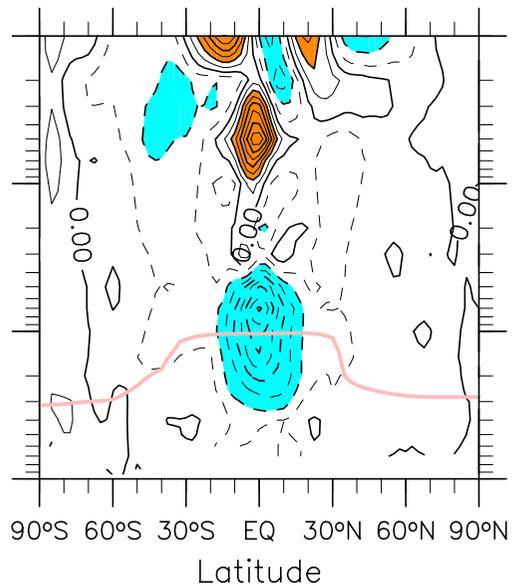
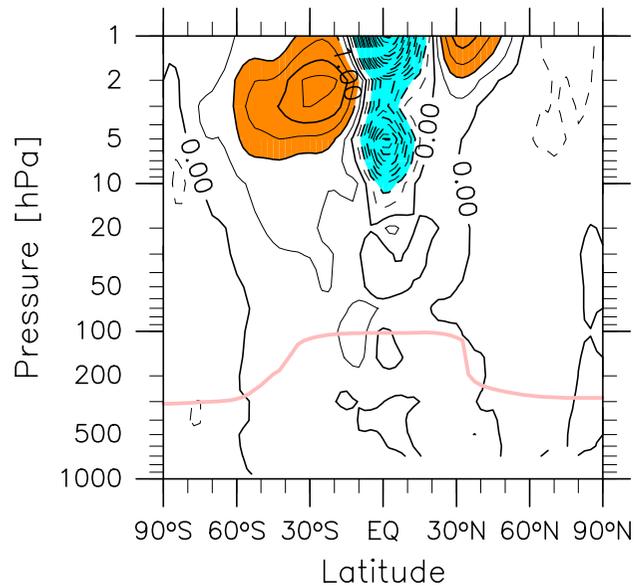
(e) SD



(c) ERA-Int – REM

(d) CFSR – REM

(f) (SD / | REM |) x 100%



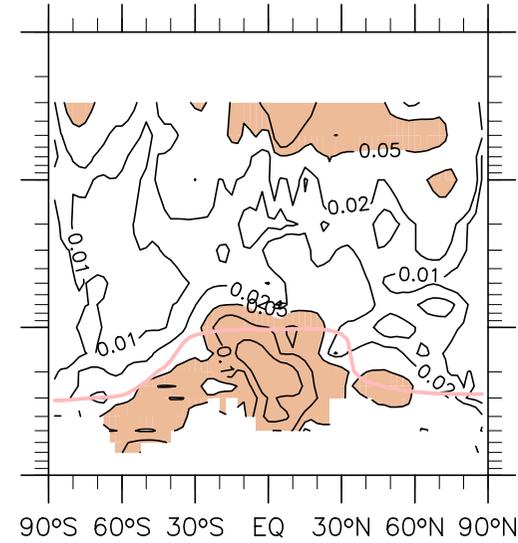
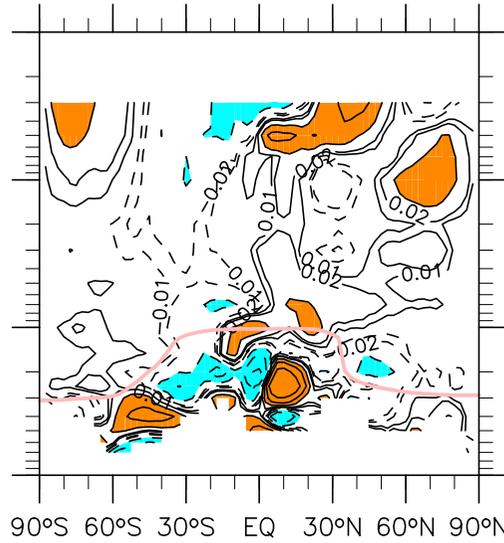
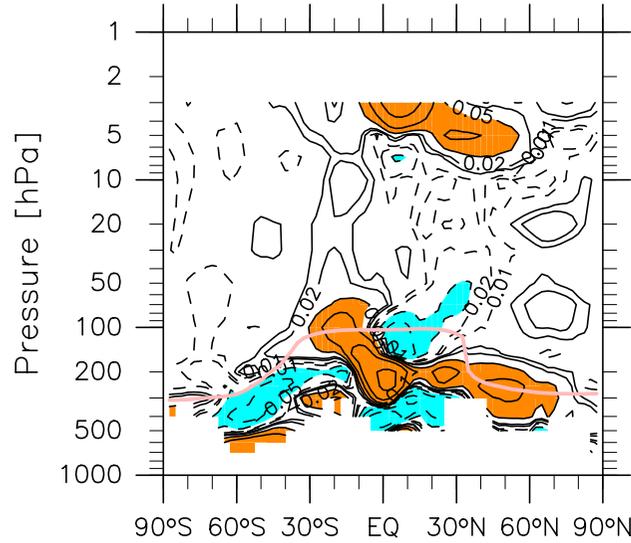
v_{res} [m/s]

DJF (D80–F10)

(a) MERRA-2 – REM

(b) JRA-55 – REM

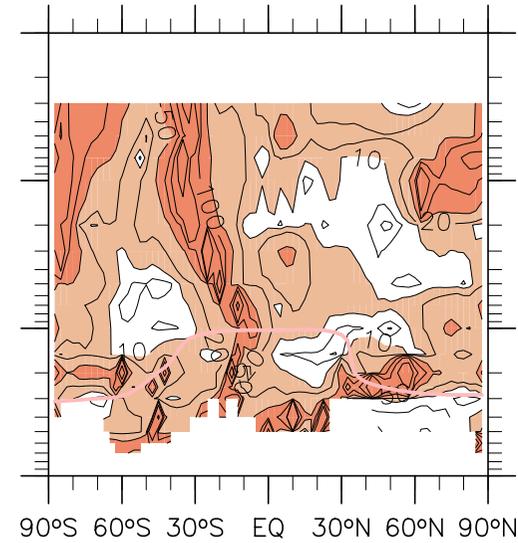
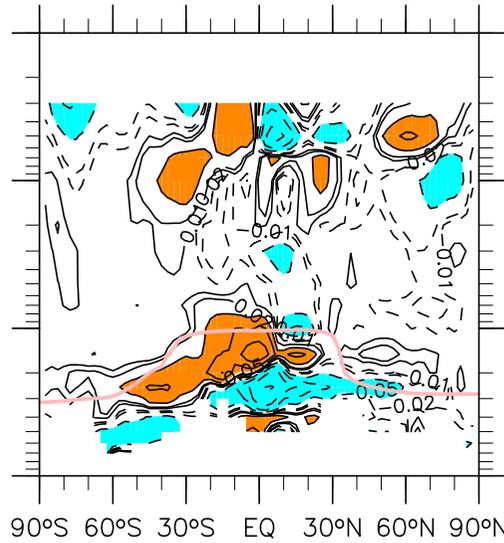
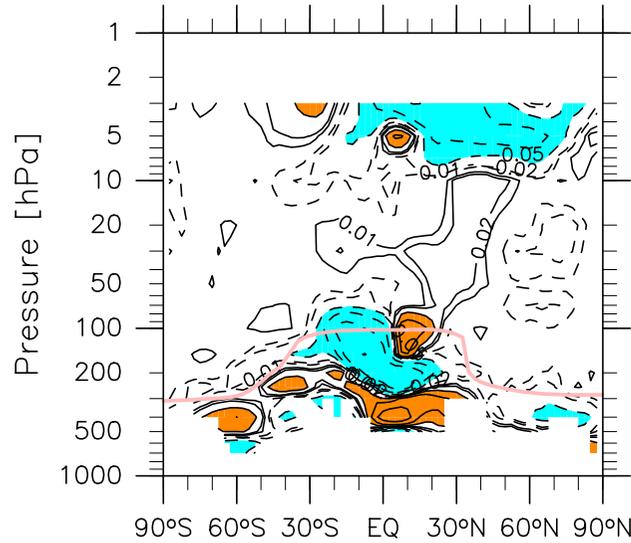
(e) SD



(c) ERA-Int – REM

(d) CFSR – REM

(f) $(SD / |REM|) \times 100\%$



Latitude

Latitude

Latitude

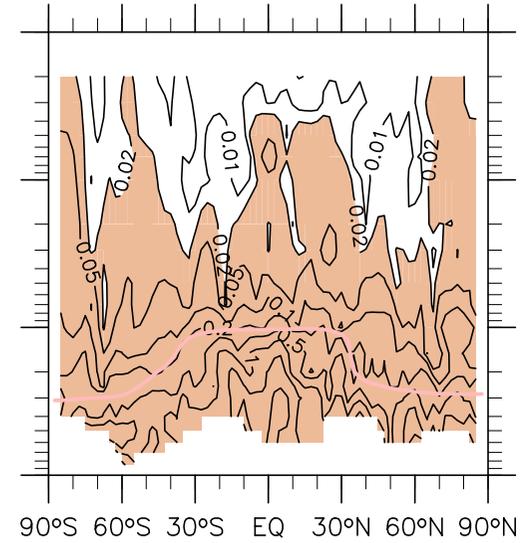
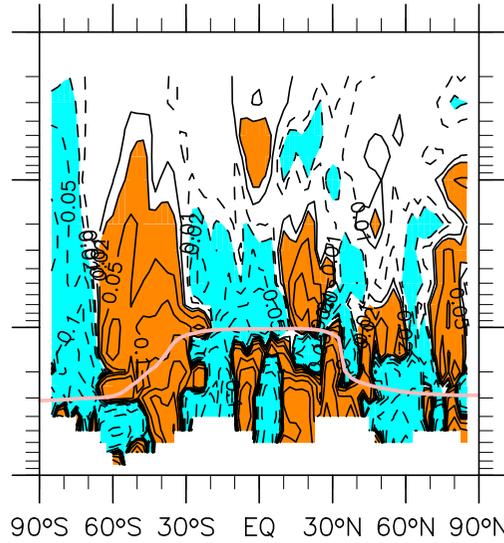
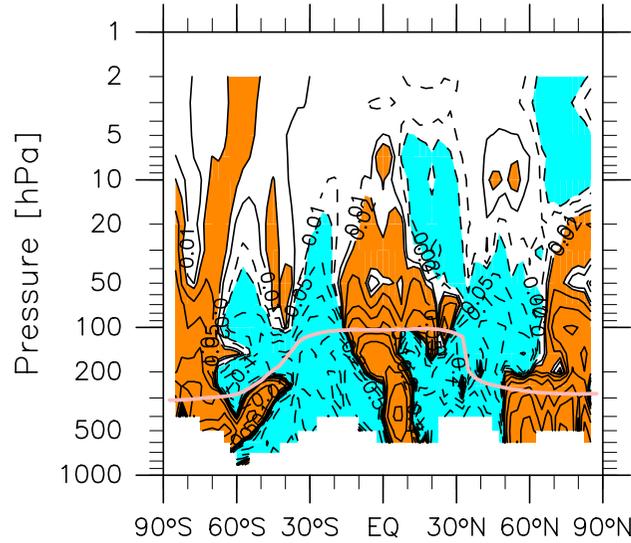
ω_{res} [mPa/s]

DJF (D80–F10)

(a) MERRA-2 – REM

(b) JRA-55 – REM

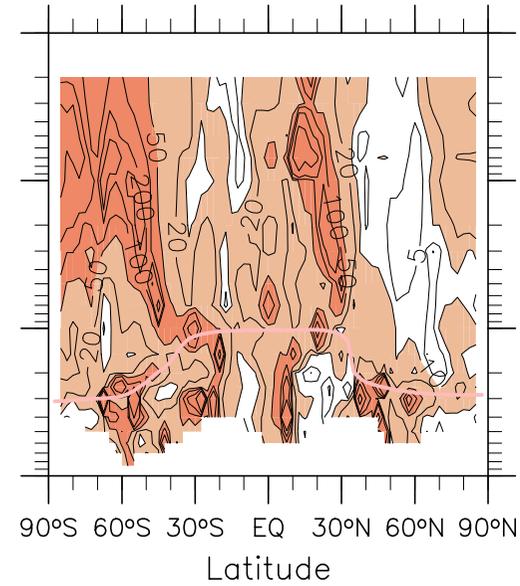
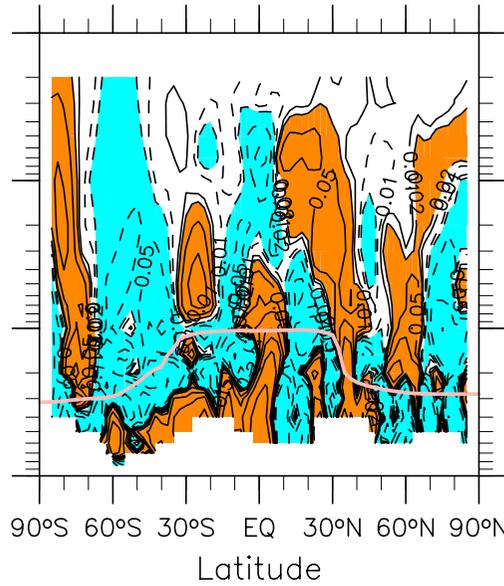
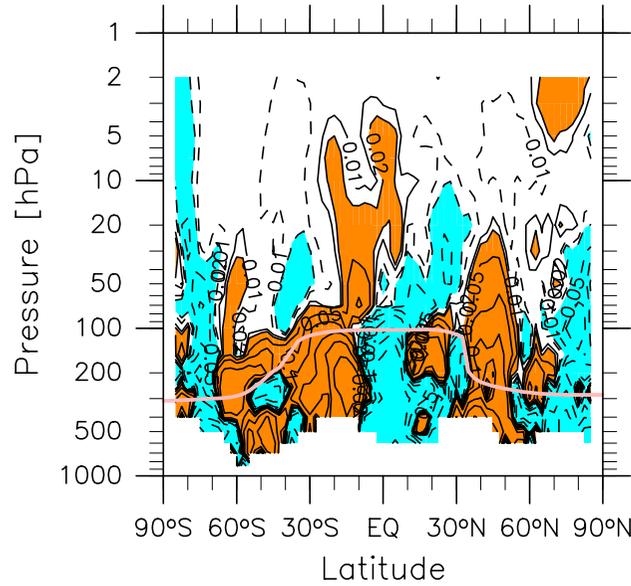
(e) SD



(c) ERA-Int – REM

(d) CFSR – REM

(f) (SD / | REM |) x 100%



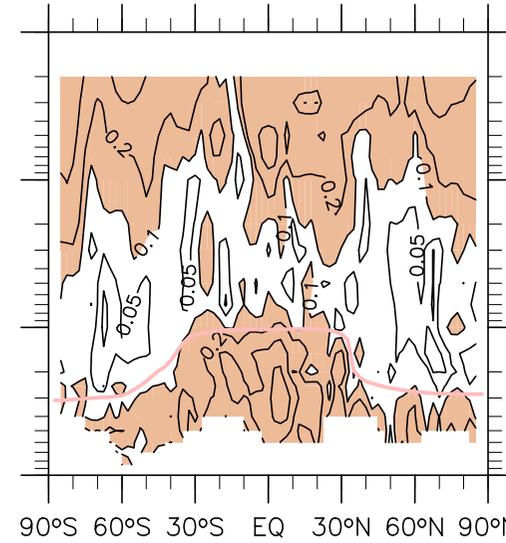
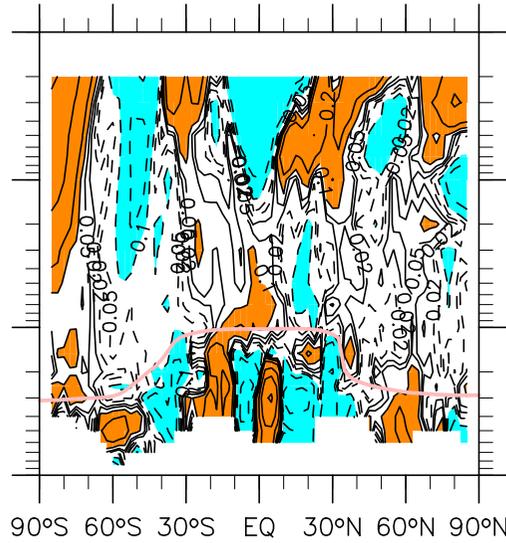
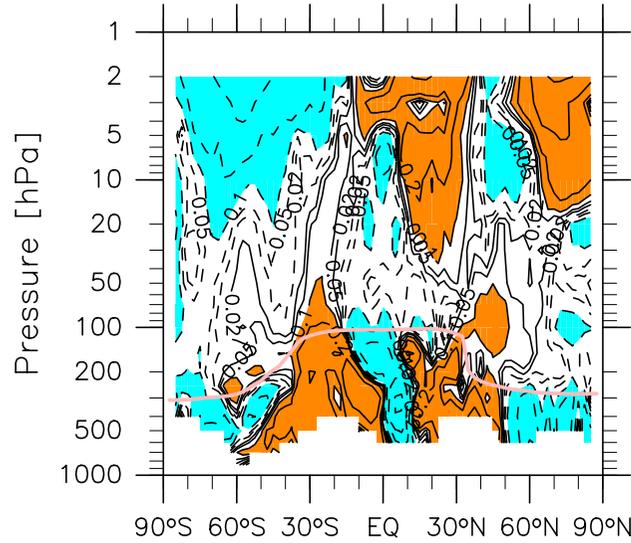
w_{res} [mm/s]

DJF (D80–F10)

(a) MERRA-2 – REM

(b) JRA-55 – REM

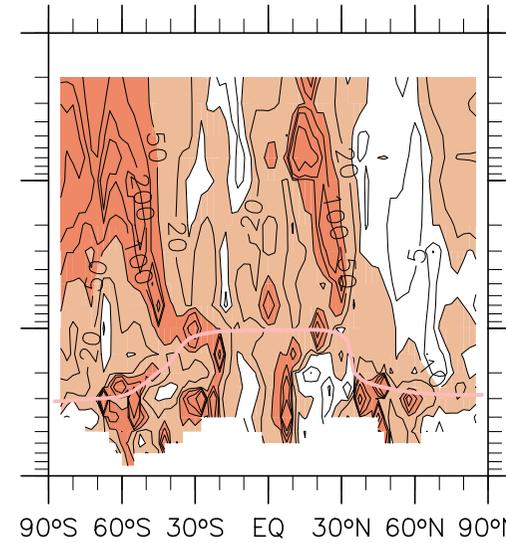
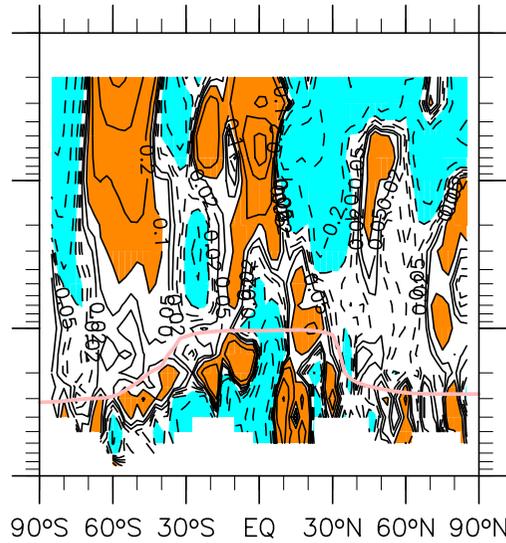
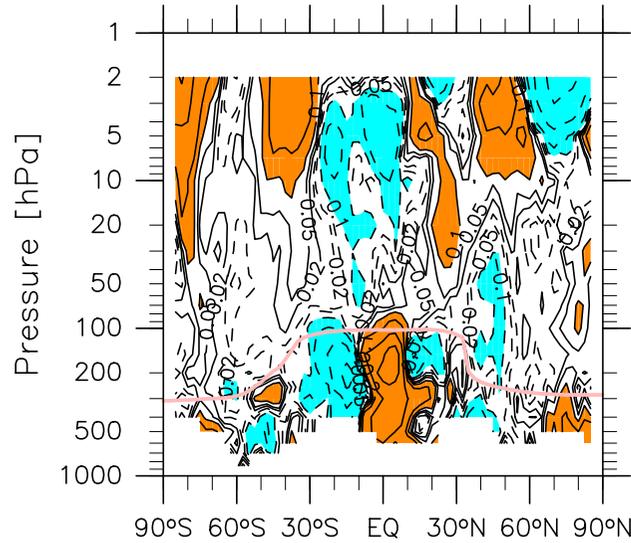
(e) SD



(c) ERA-Int – REM

(d) CFSR – REM

(f) $(SD / |REM|) \times 100\%$



Latitude

Latitude

Latitude

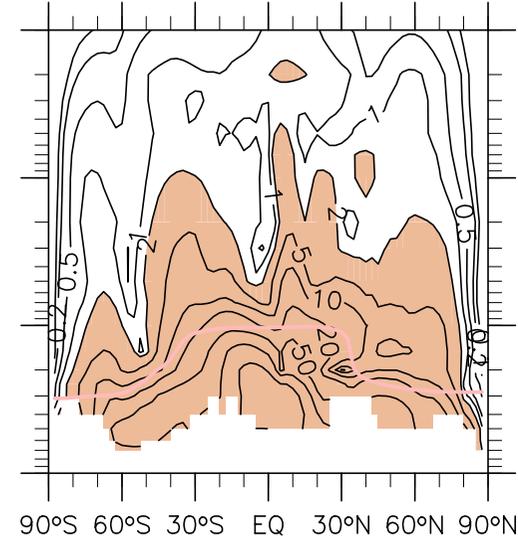
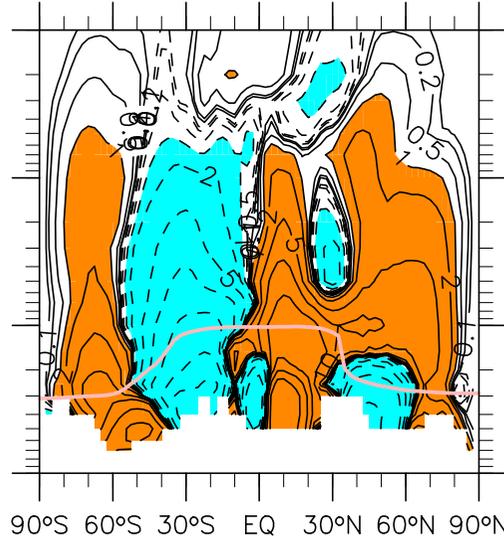
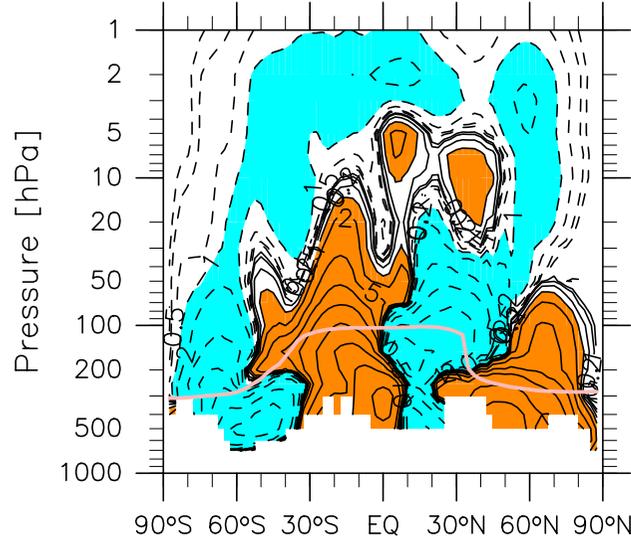
Ψ_{vres} [kg/m/s]

DJF (D80–F10)

(a) MERRA-2 – REM

(b) JRA-55 – REM

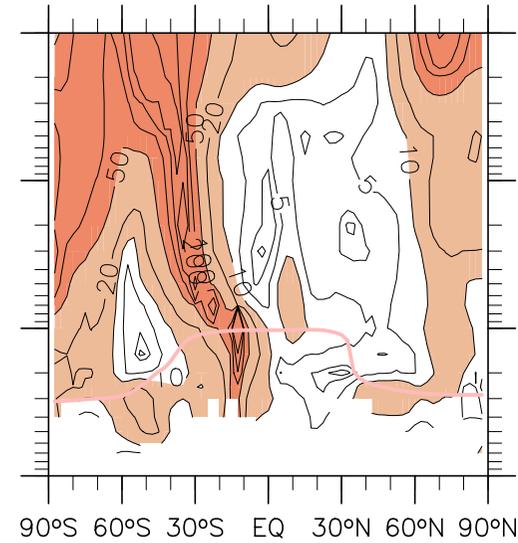
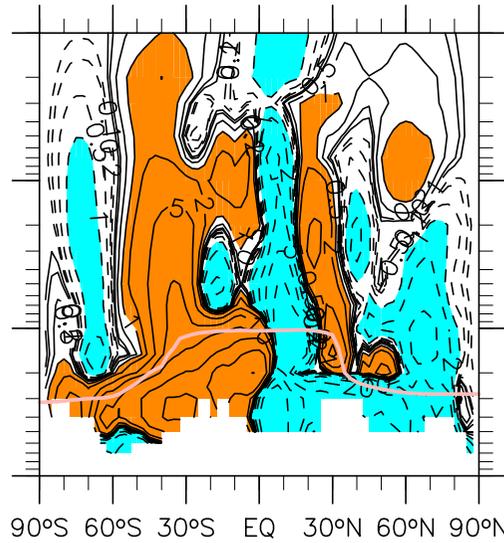
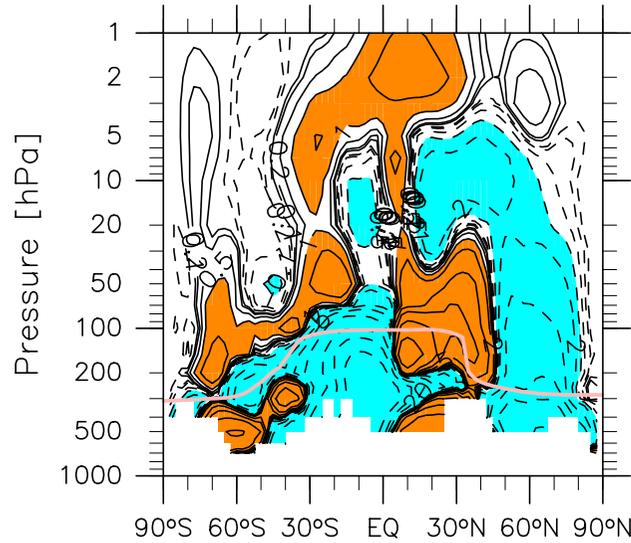
(e) SD



(c) ERA-Int – REM

(d) CFSR – REM

(f) (SD / | REM |) x 100%



Latitude

Latitude

Latitude

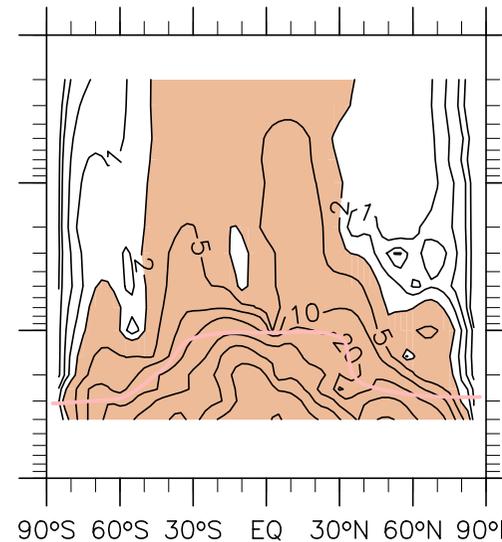
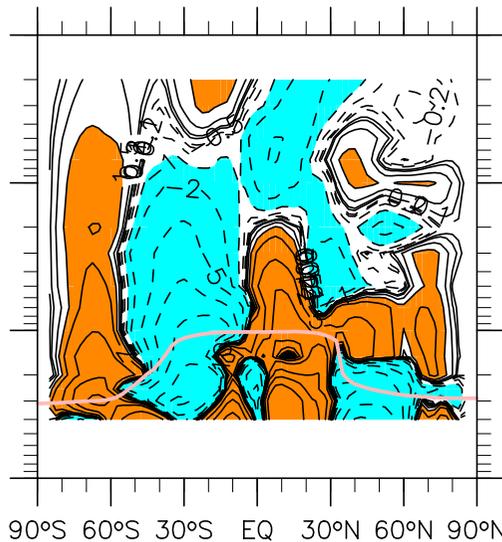
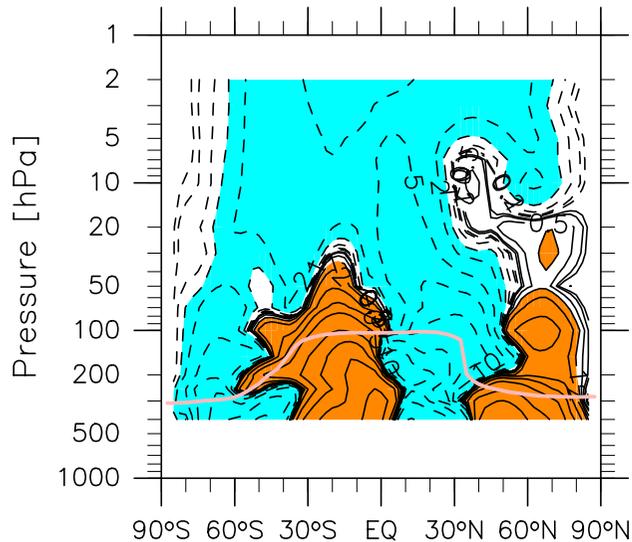
Ψ_{wres} [kg/m/s]

DJF (D80–F10)

(a) MERRA-2 – REM

(b) JRA-55 – REM

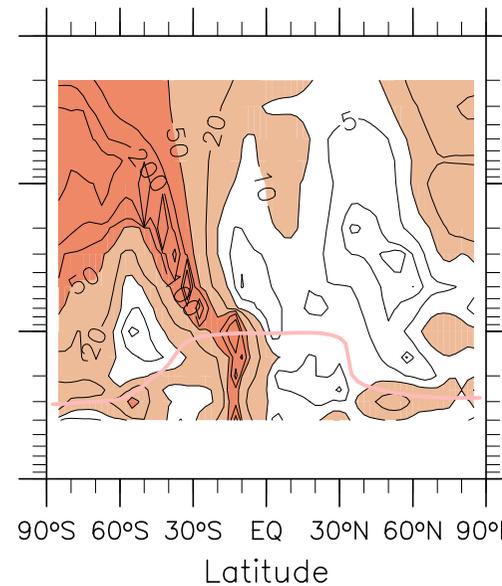
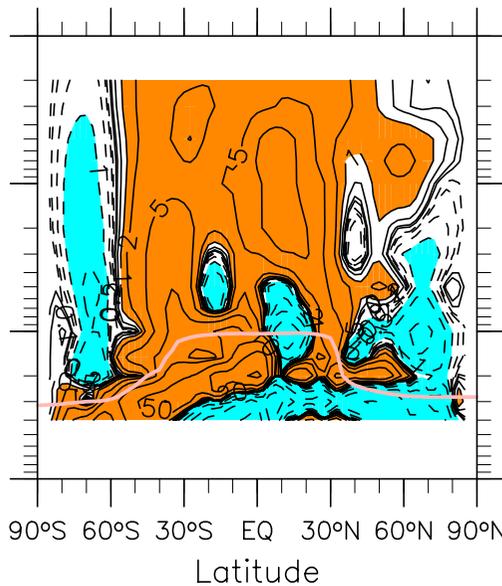
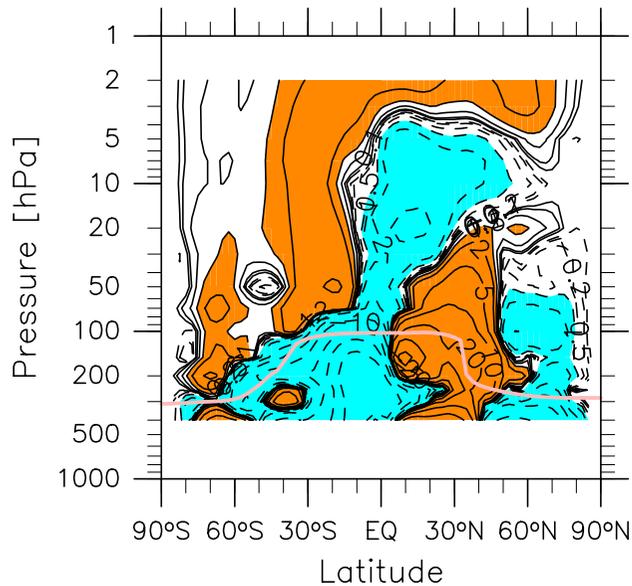
(e) SD



(c) ERA-Int – REM

(d) CFSR – REM

(f) (SD / | REM |)x100%



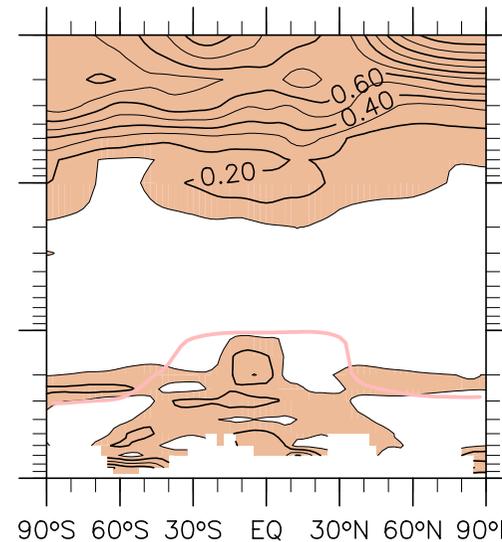
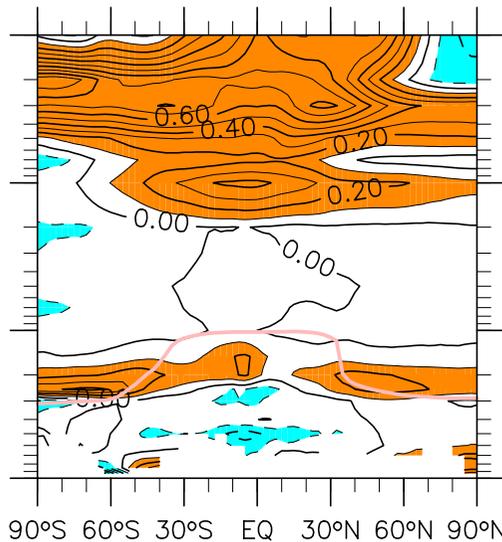
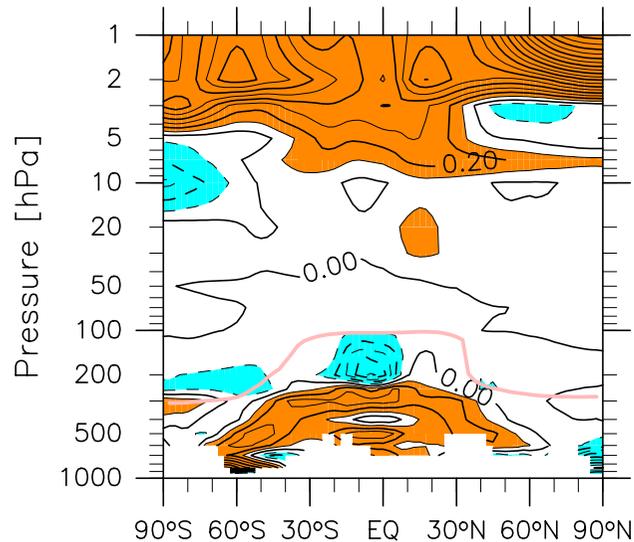
Q_longwave [K/d]

DJF (D80-F10)

(a) MERRA-2 - REM

(b) JRA-55 - REM

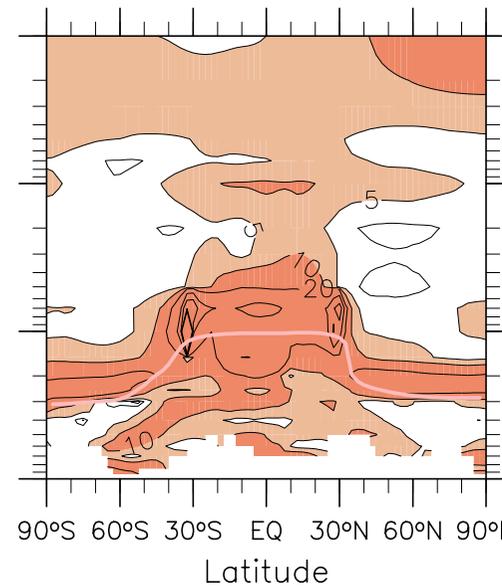
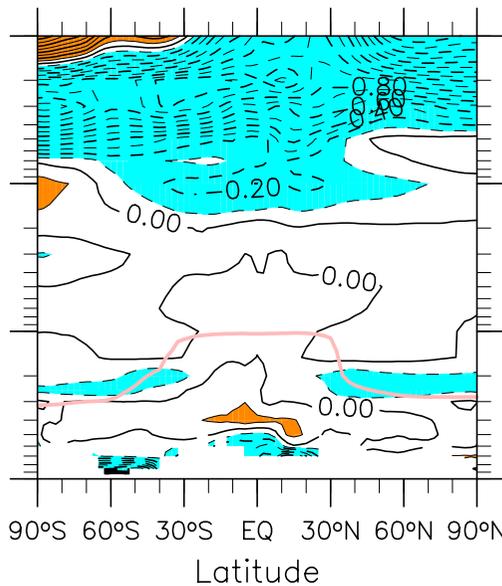
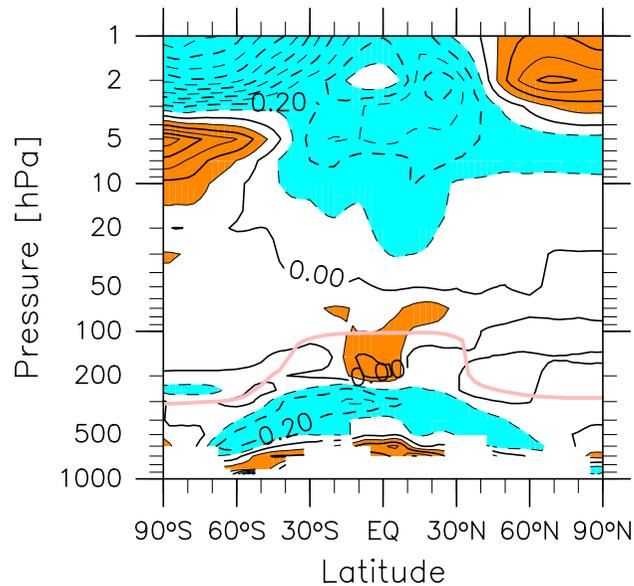
(e) SD



(c) ERA-Int - REM

(d) CFSR - REM

(f) (SD / | REM |) x 100%



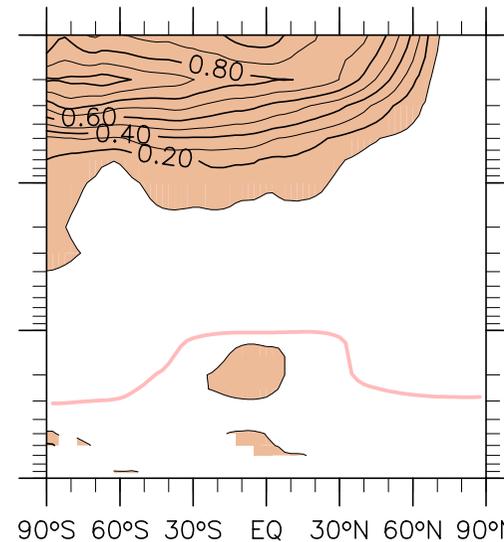
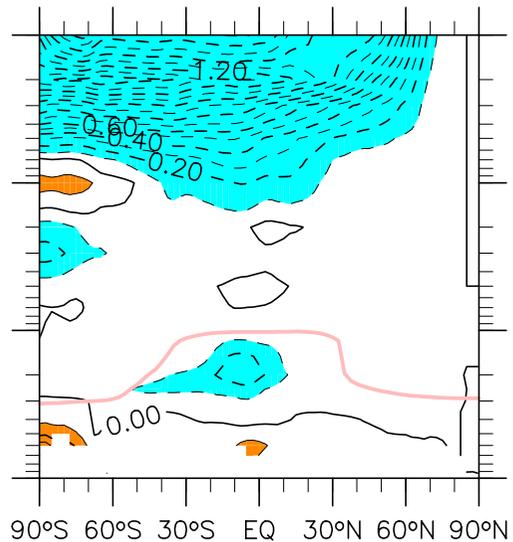
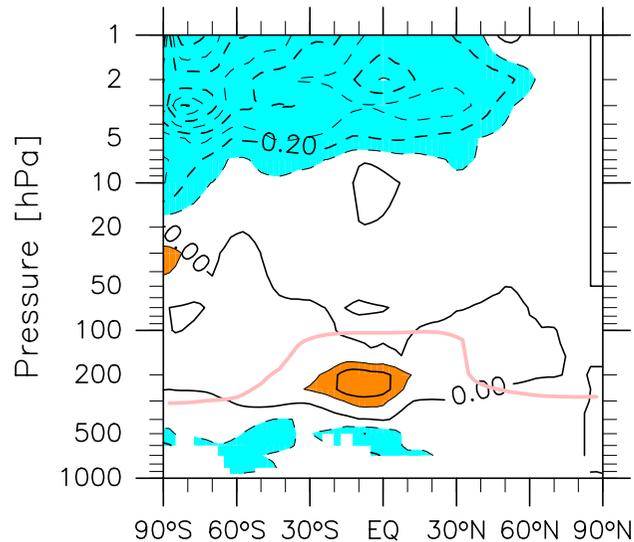
Q_shortwave [K/d]

DJF (D80-F10)

(a) MERRA-2 - REM

(b) JRA-55 - REM

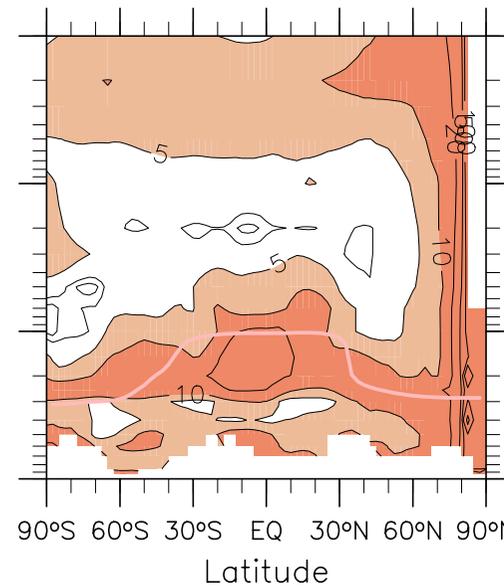
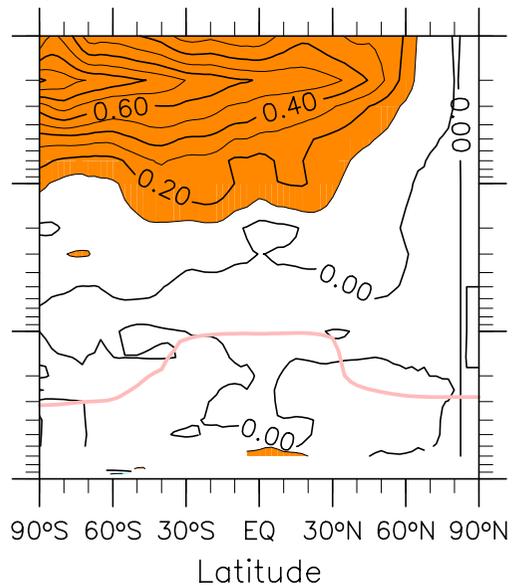
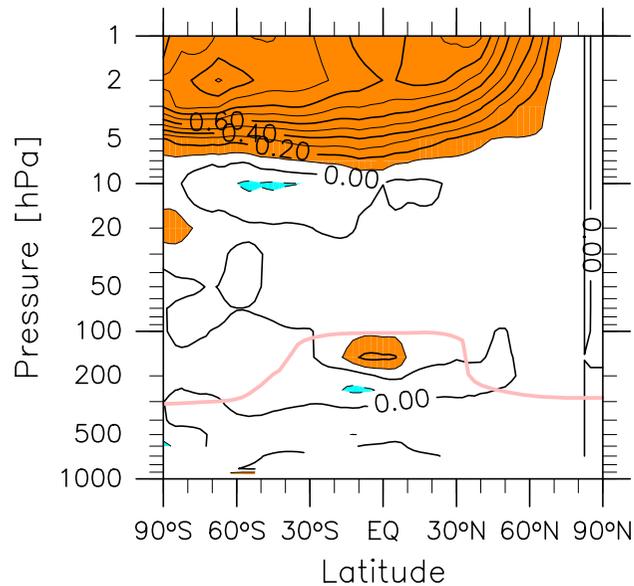
(e) SD



(c) ERA-Int - REM

(d) CFSR - REM

(f) (SD / | REM |) x 100%



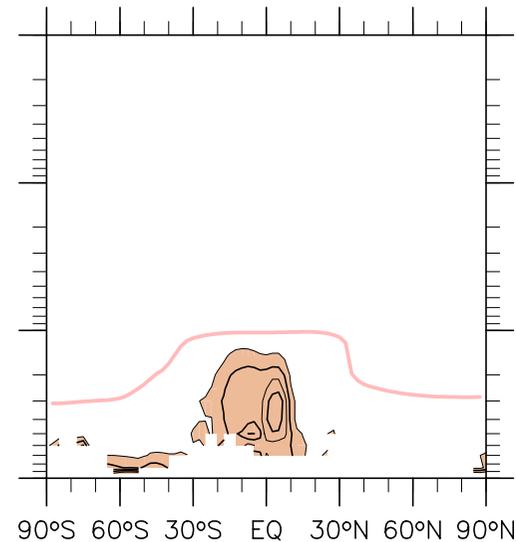
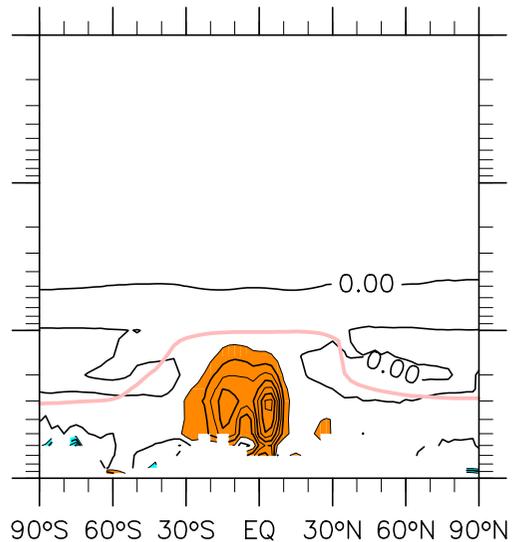
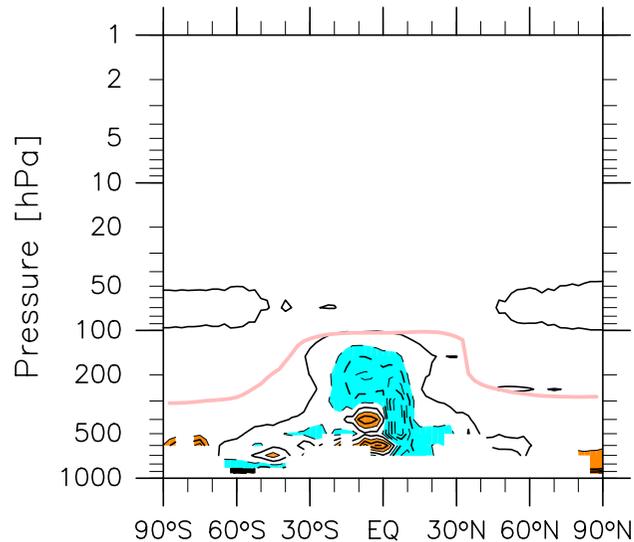
$Q_{total} - Q_{rad}$ [K/d]

DJF (D80-F10)

(a) MERRA-2 - REM

(b) JRA-55 - REM

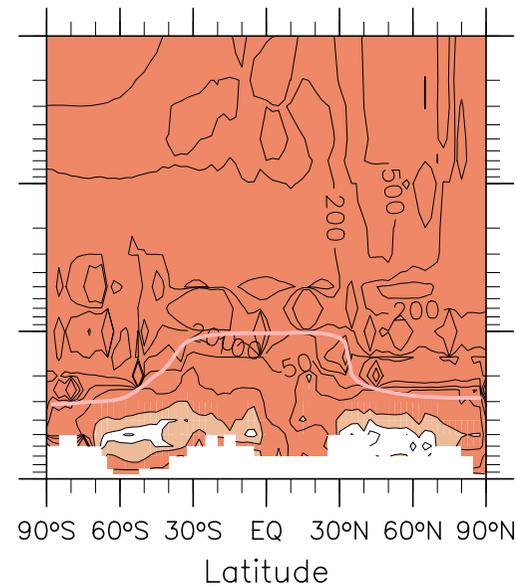
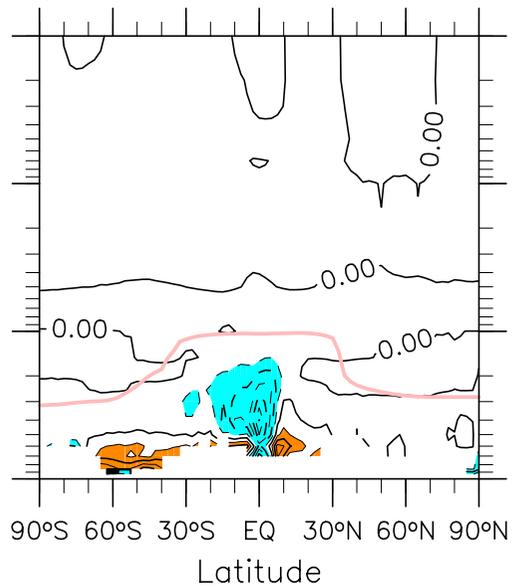
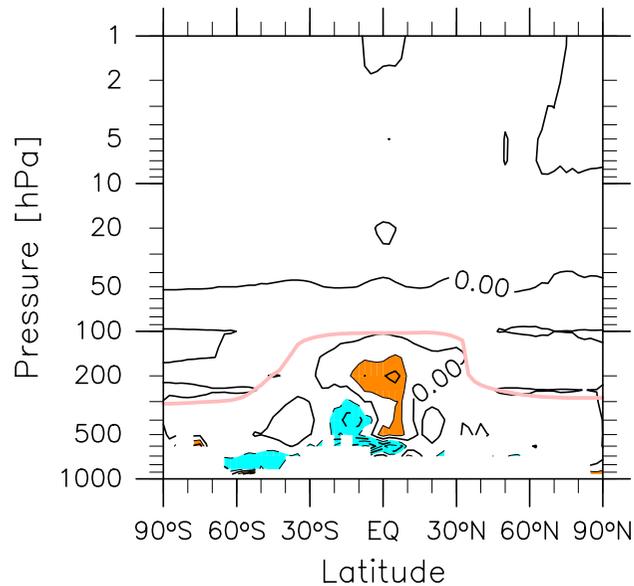
(e) SD



(c) ERA-Int - REM

(d) CFSR - REM

(f) $(SD / |REM|) \times 100\%$



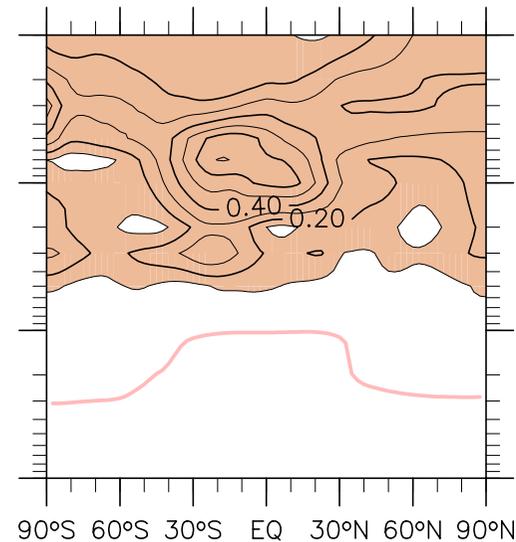
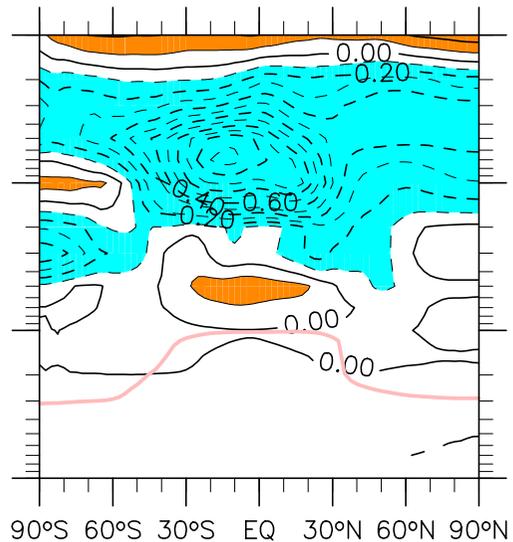
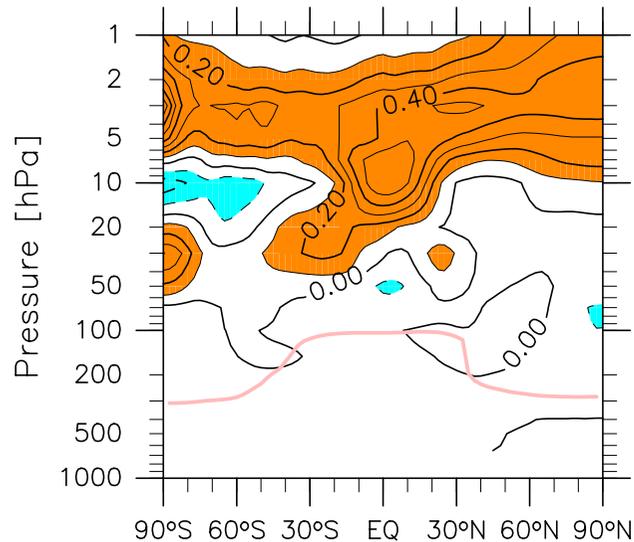
Ozone [ppmv]

DJF (D80–F10)

(a) MERRA-2 – REM

(b) JRA-55 – REM

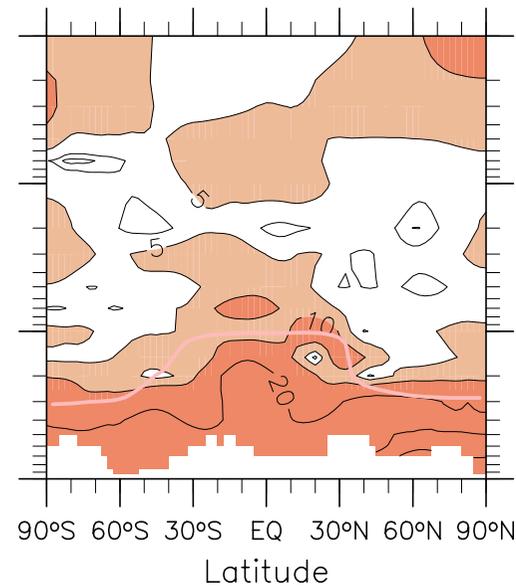
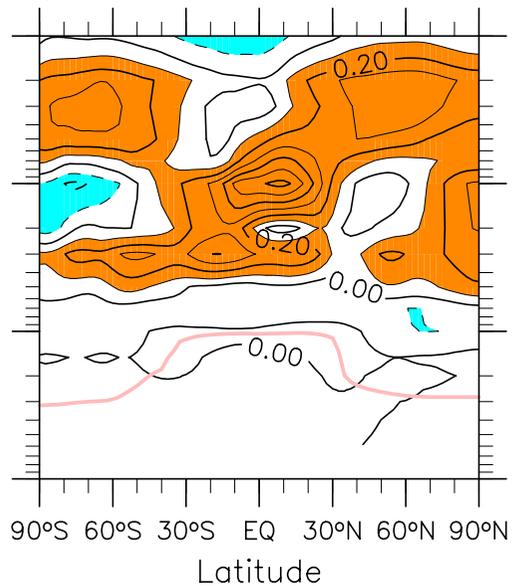
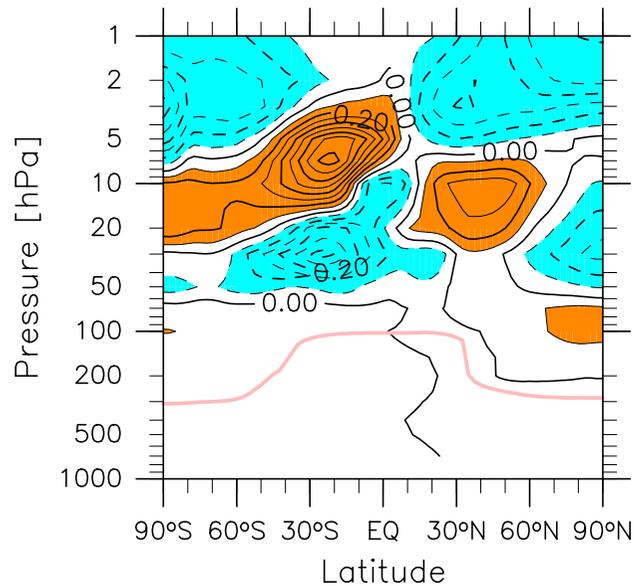
(e) SD



(c) ERA-Int – REM

(d) CFSR – REM

(f) (SD / | REM |)x100%



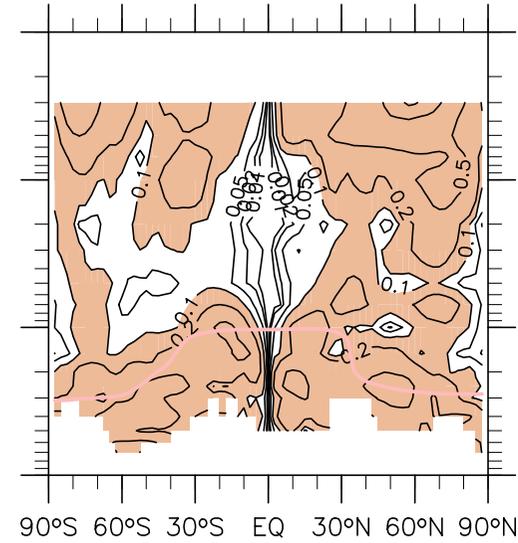
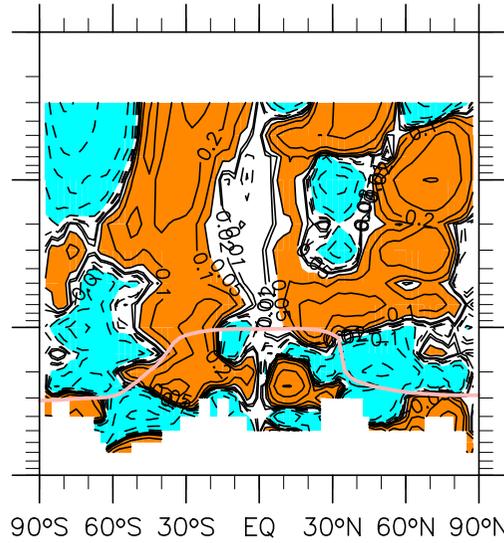
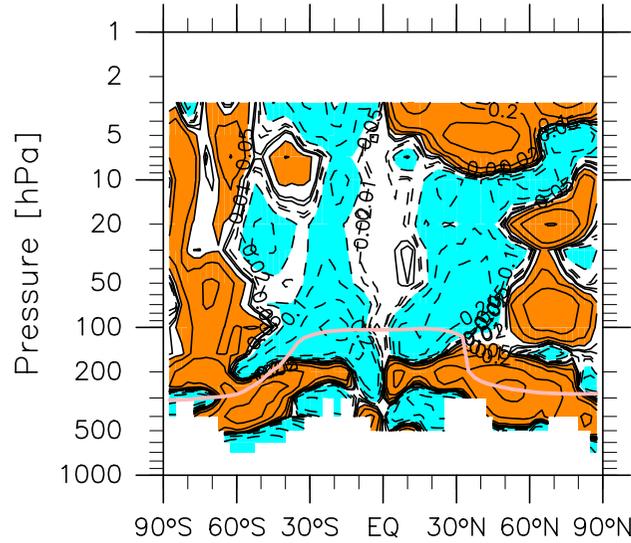
+fv*

DJF (D80-F10)

(a) MERRA-2 - REM

(b) JRA-55 - REM

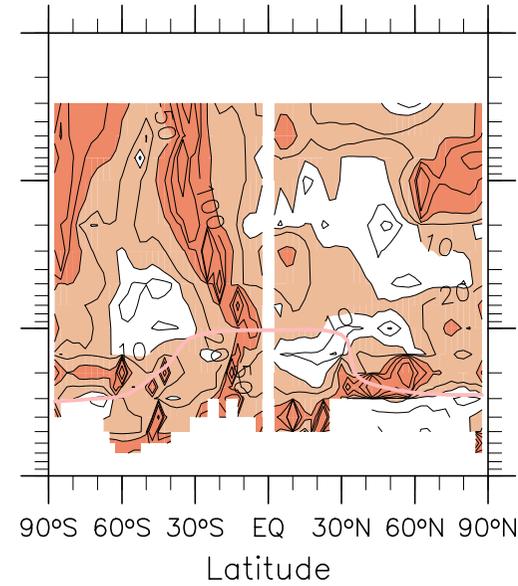
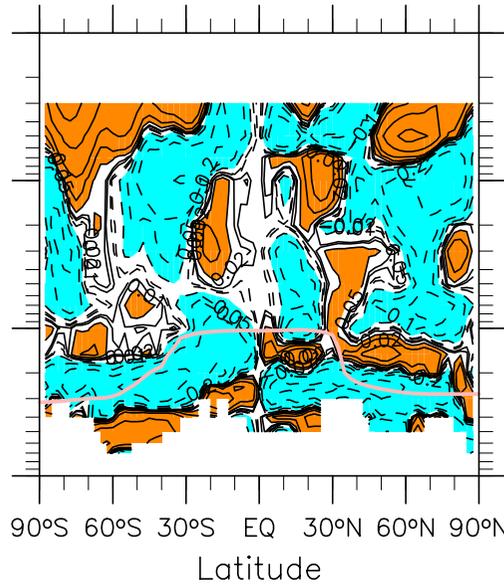
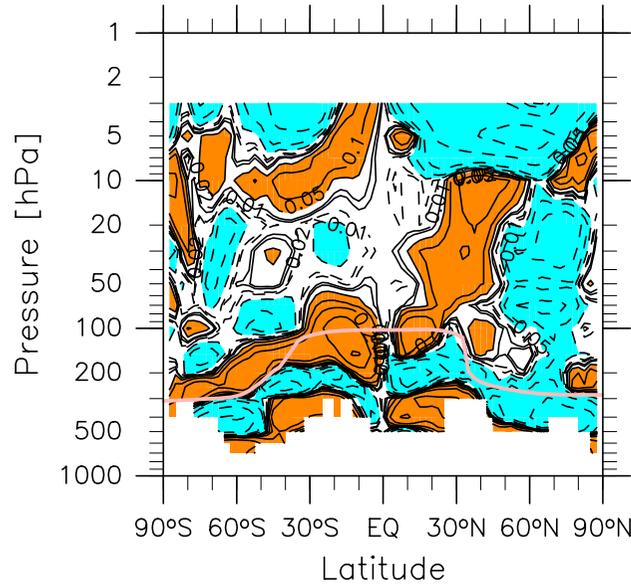
(e) SD



(c) ERA-Int - REM

(d) CFSR - REM

(f) (SD / | REM |) x 100%



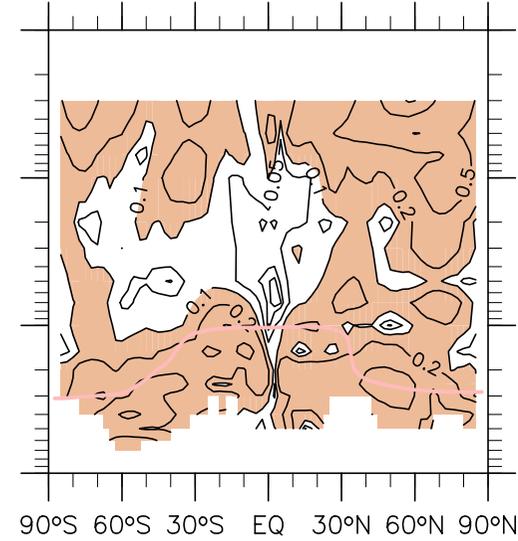
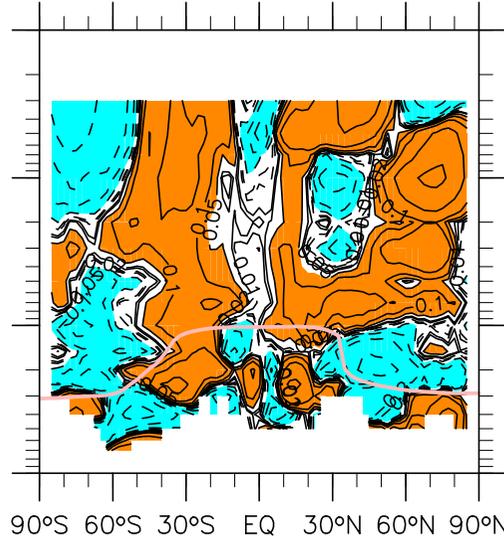
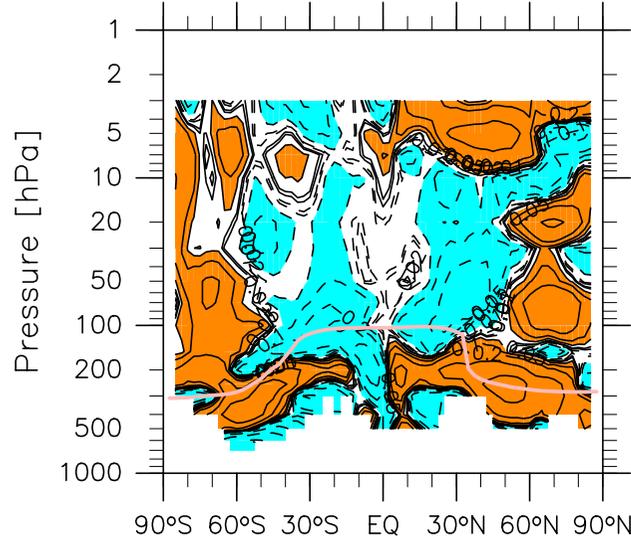
$$+fv^* - v^* \partial u / \partial y - \omega^* \partial u / \partial p$$

DJF (D80–F10)

(a) MERRA-2 – REM

(b) JRA-55 – REM

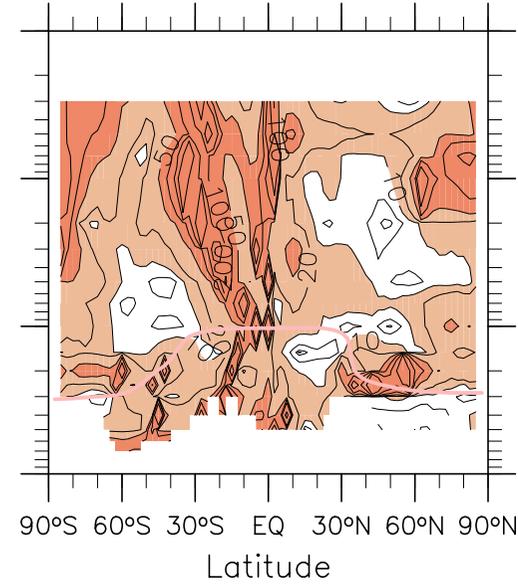
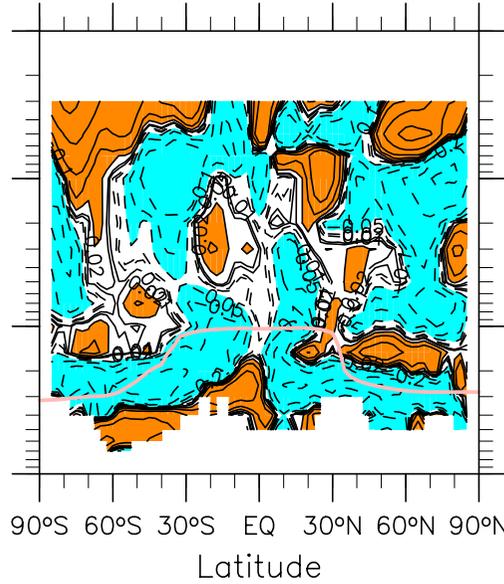
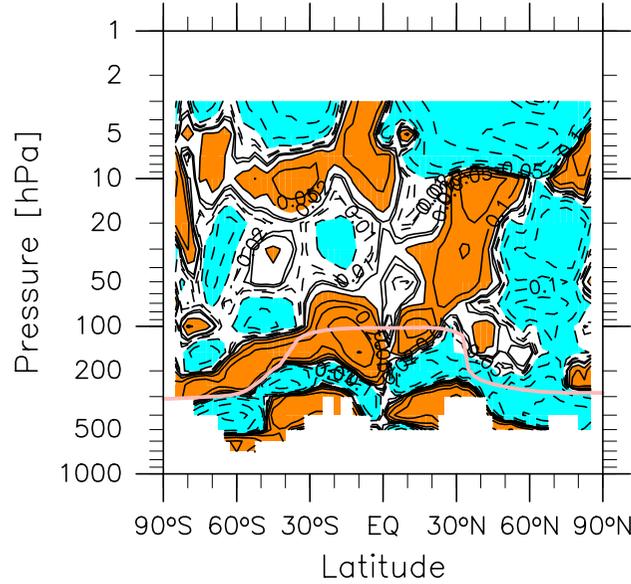
(e) SD



(c) ERA-Int – REM

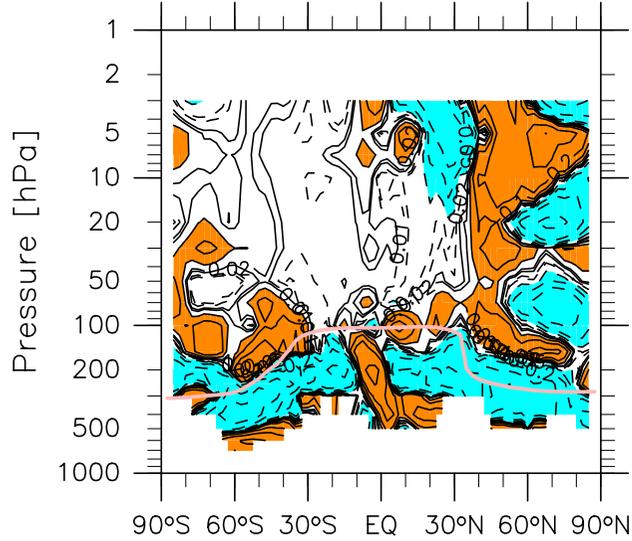
(d) CFSR – REM

(f) (SD / | REM |) x 100%

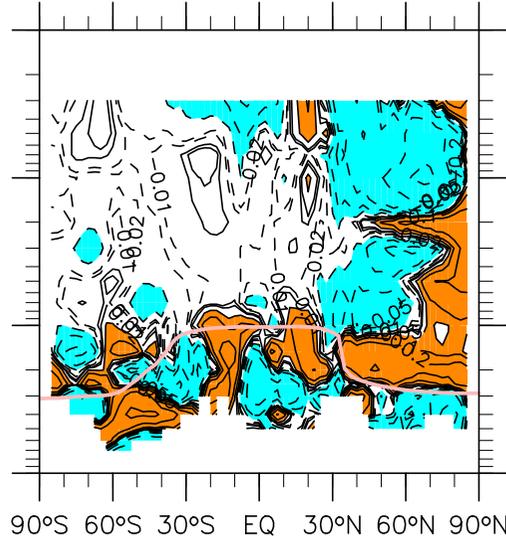


EPFD

(a) MERRA-2 - REM

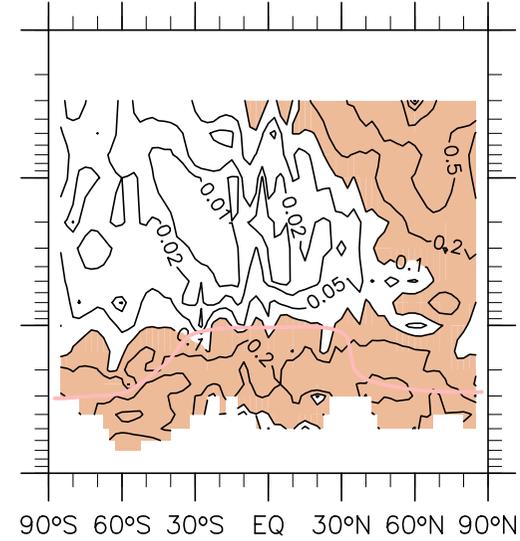


(b) JRA-55 - REM

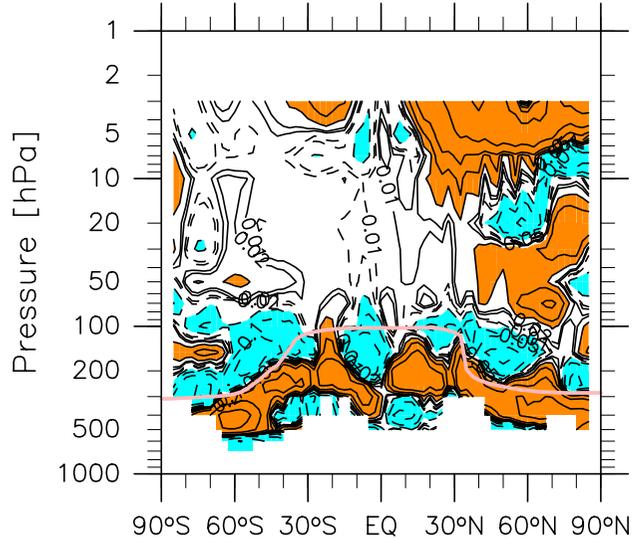


DJF (D80-F10)

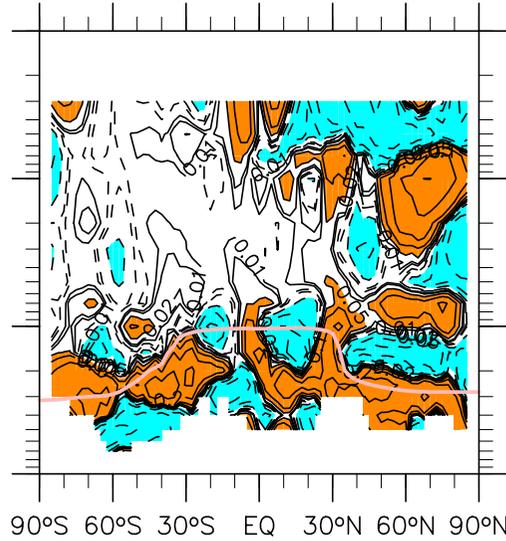
(e) SD



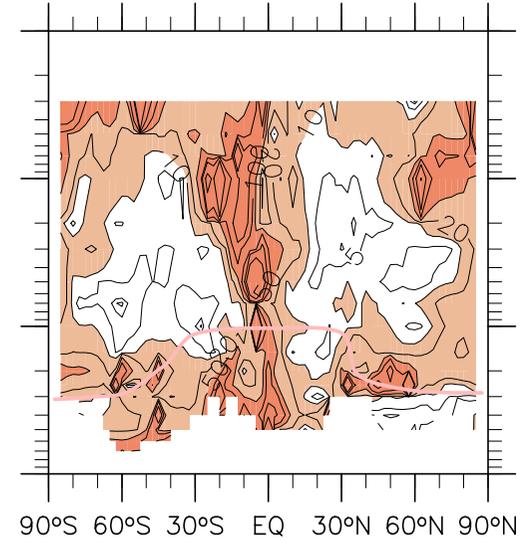
(c) ERA-Int - REM



(d) CFSR - REM



(f) (SD / | REM |) x 100%



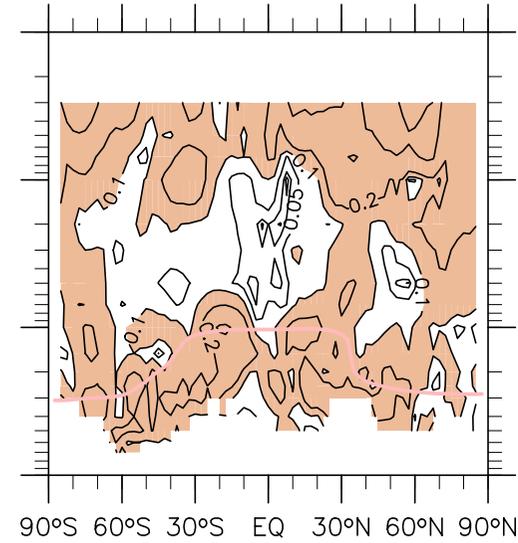
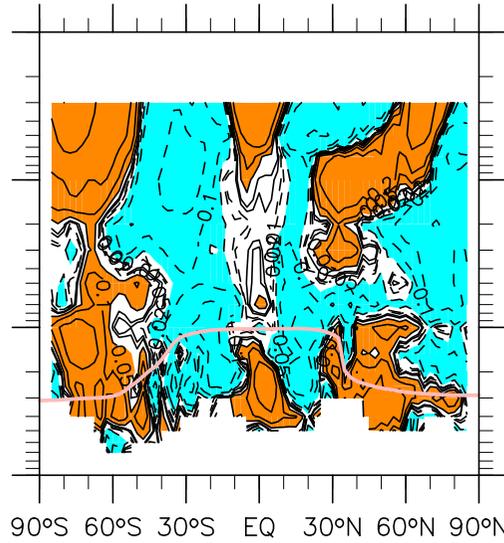
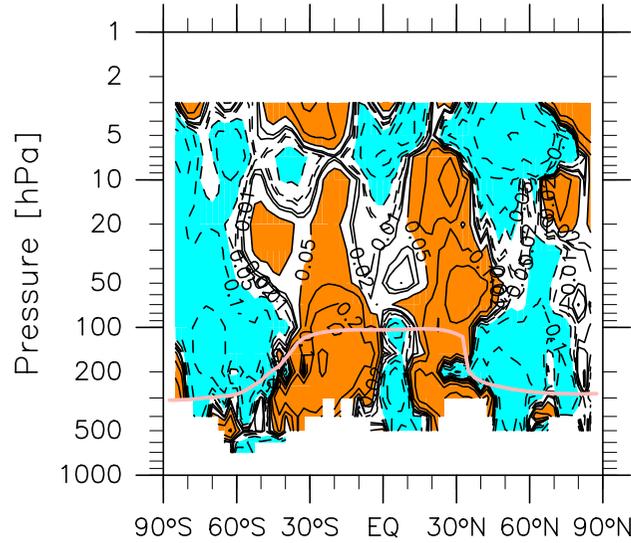
Residual_u

DJF (D80-F10)

(a) MERRA-2 - REM

(b) JRA-55 - REM

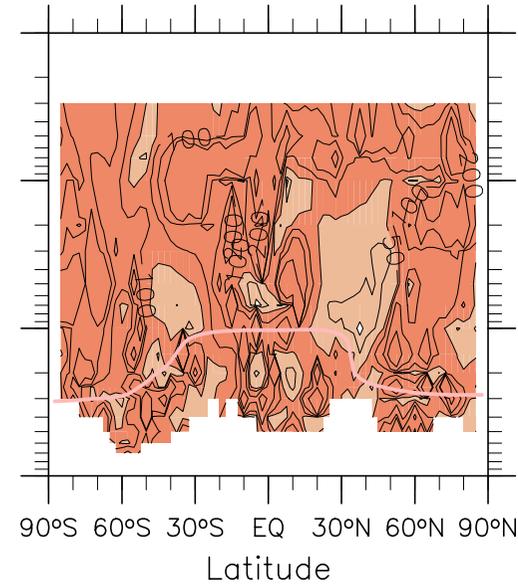
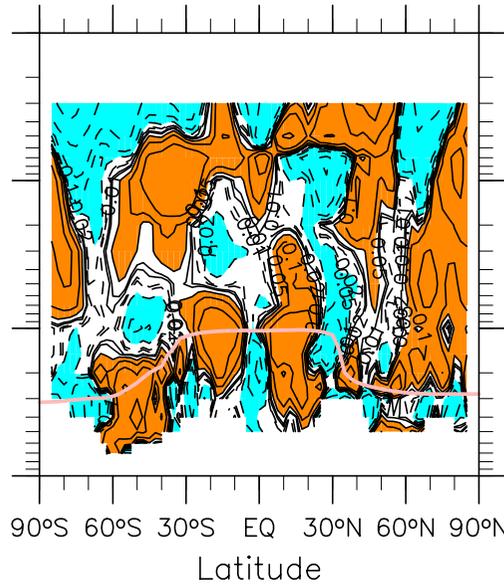
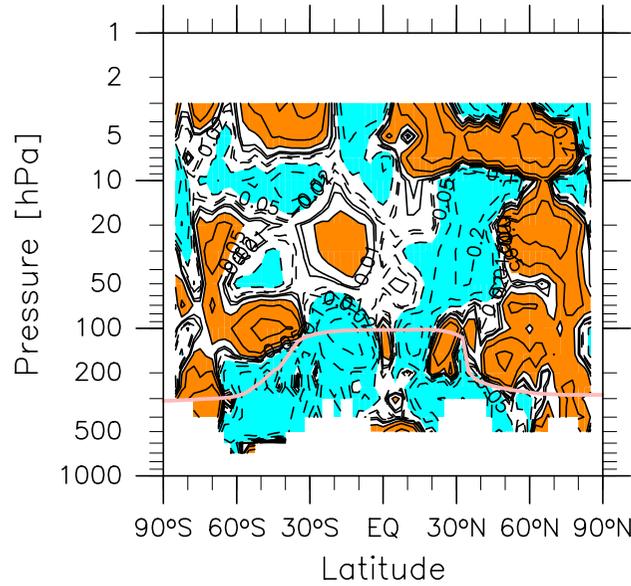
(e) SD



(c) ERA-Int - REM

(d) CFSR - REM

(f) (SD / | REM |) x 100%



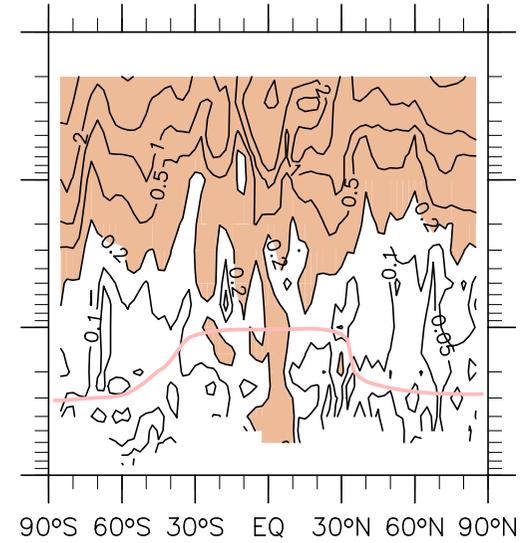
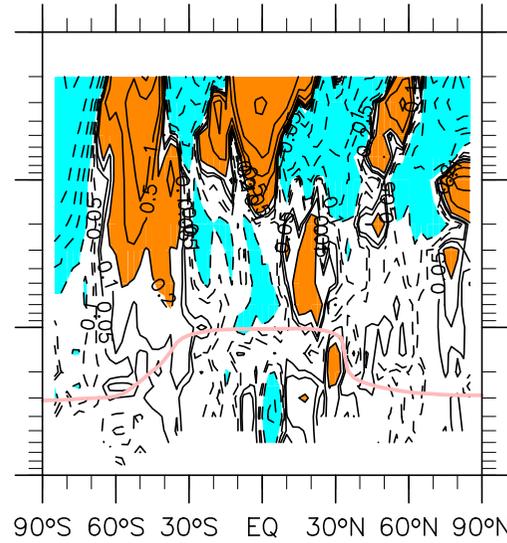
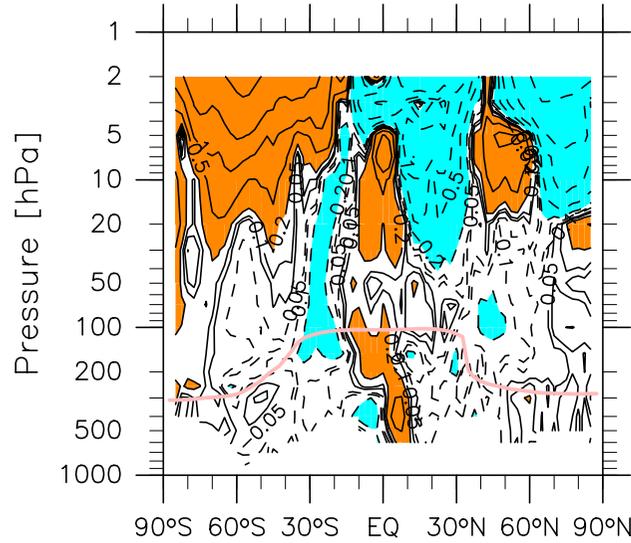
$$-\omega^* \partial\theta/\partial p$$

DJF (D80–F10)

(a) MERRA-2 – REM

(b) JRA-55 – REM

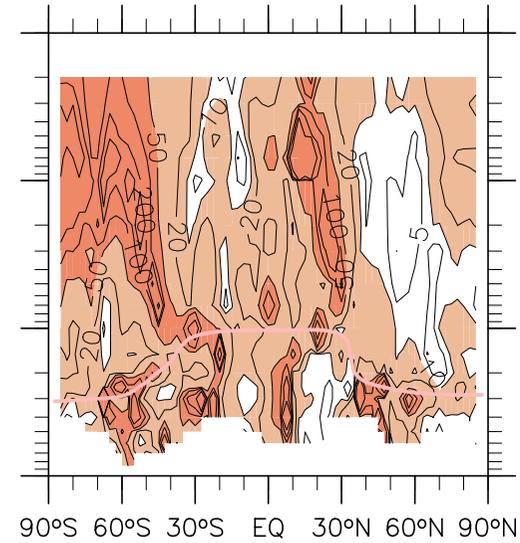
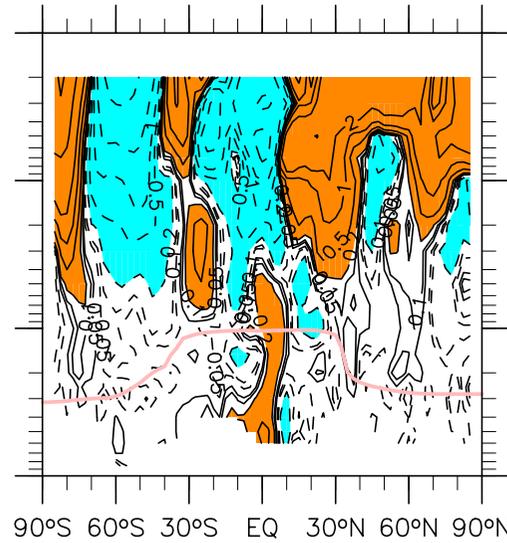
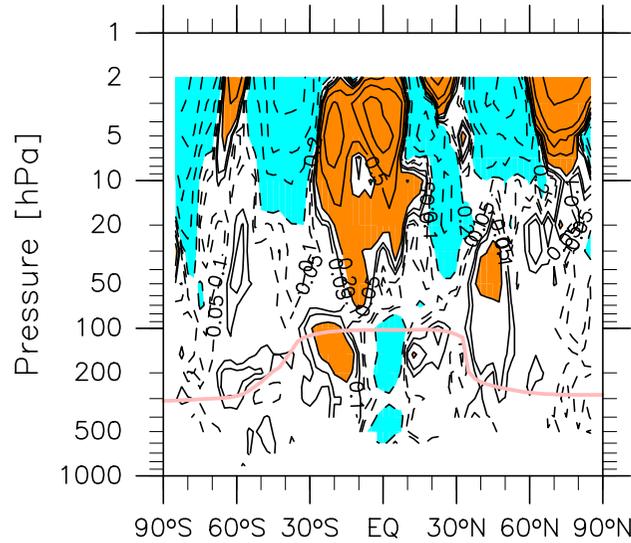
(e) SD



(c) ERA-Int – REM

(d) CFSR – REM

(f) (SD / | REM |) x 100%



Latitude

Latitude

Latitude

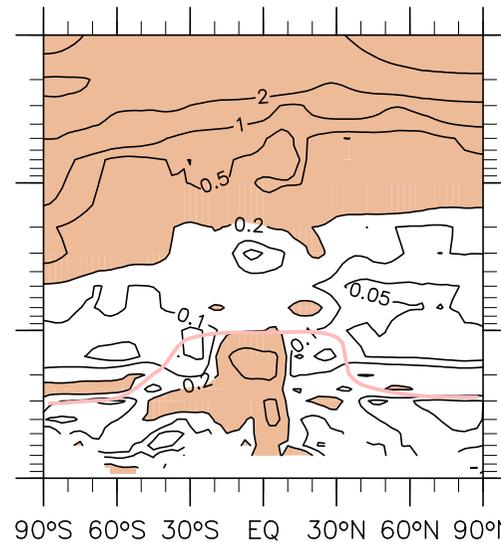
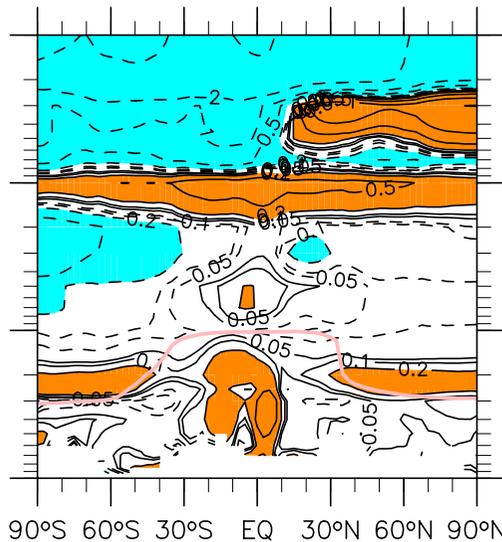
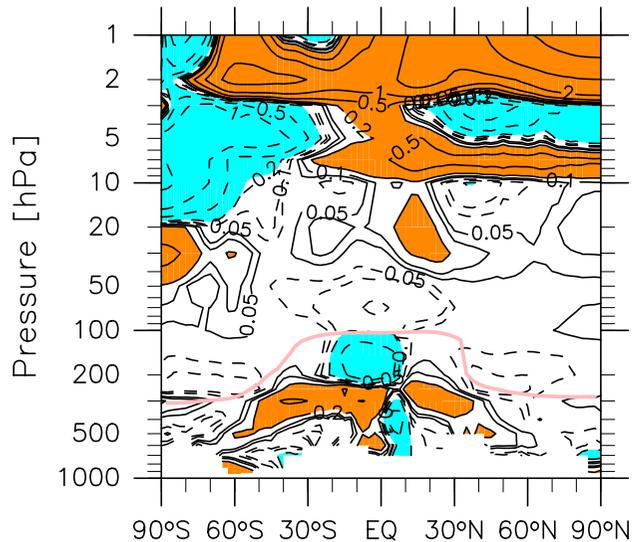
Q_total

DJF (D80-F10)

(a) MERRA-2 - REM

(b) JRA-55 - REM

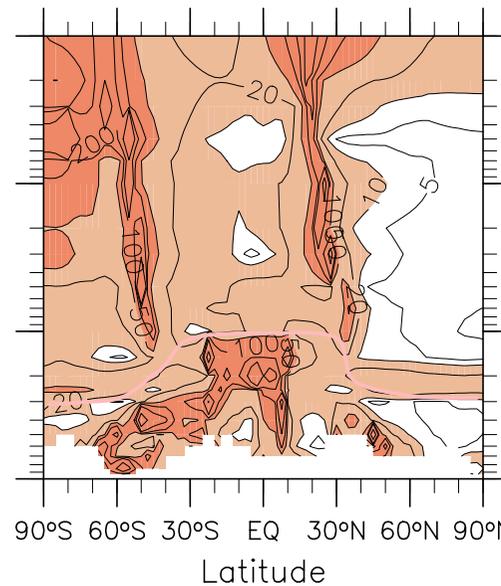
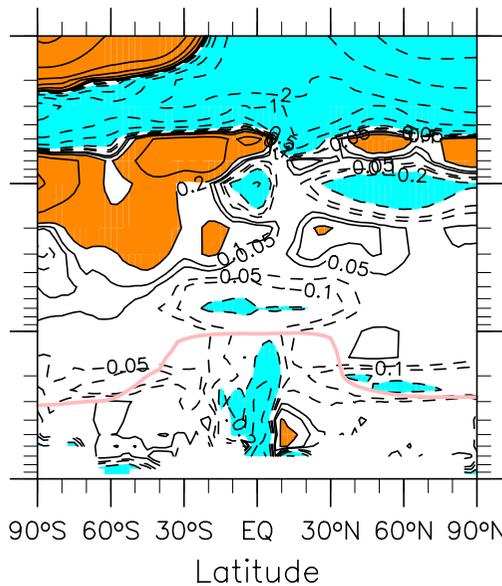
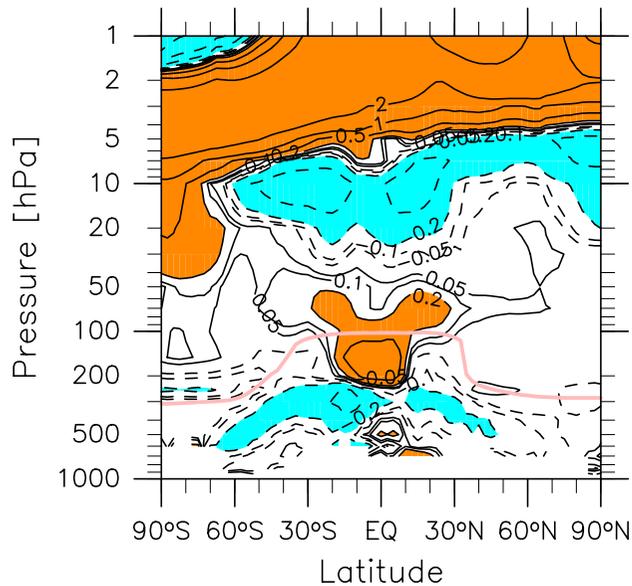
(e) SD



(c) ERA-Int - REM

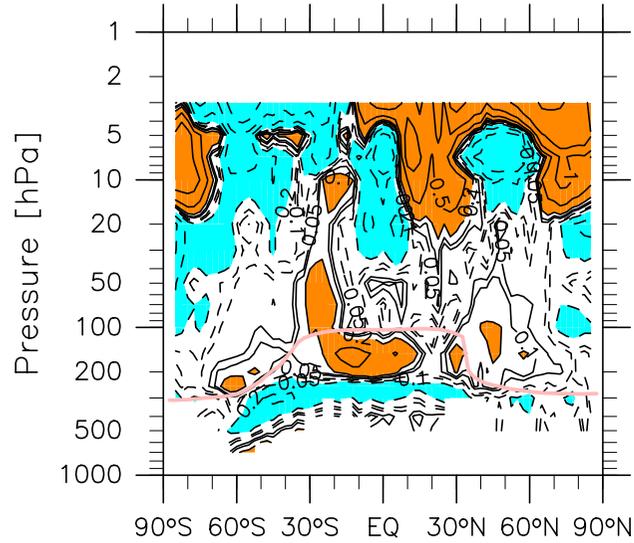
(d) CFSR - REM

(f) (SD / | REM |) x 100%

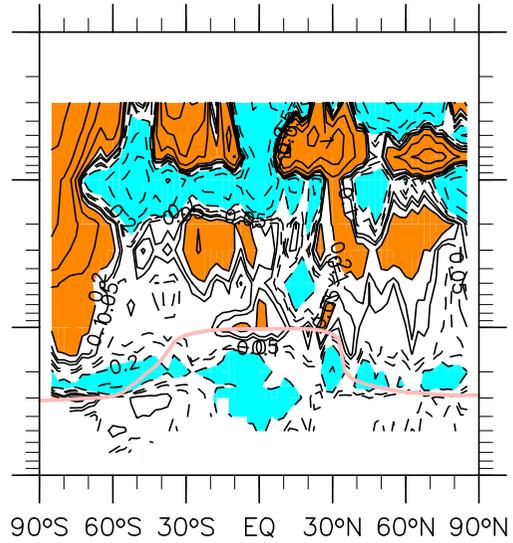


Residual_Θ

(a) MERRA-2 - REM

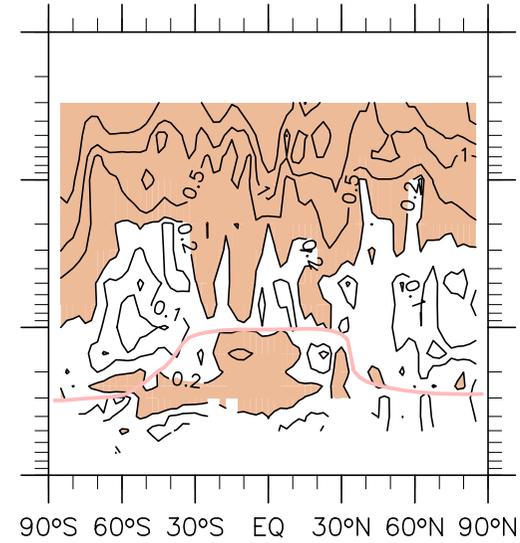


(b) JRA-55 - REM

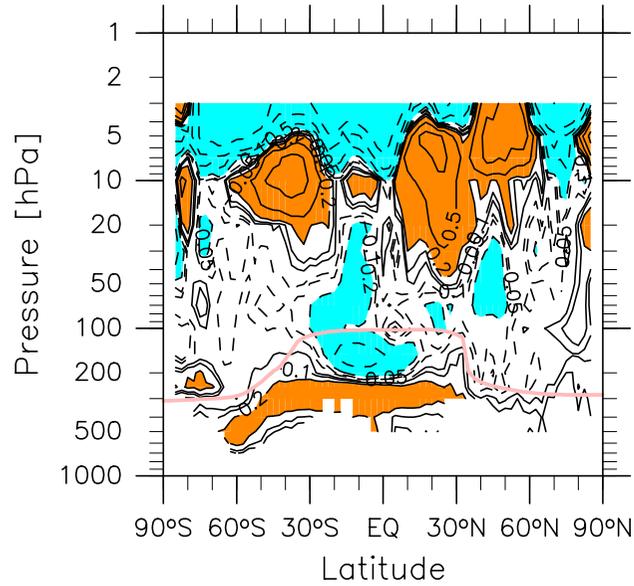


DJF (D80-F10)

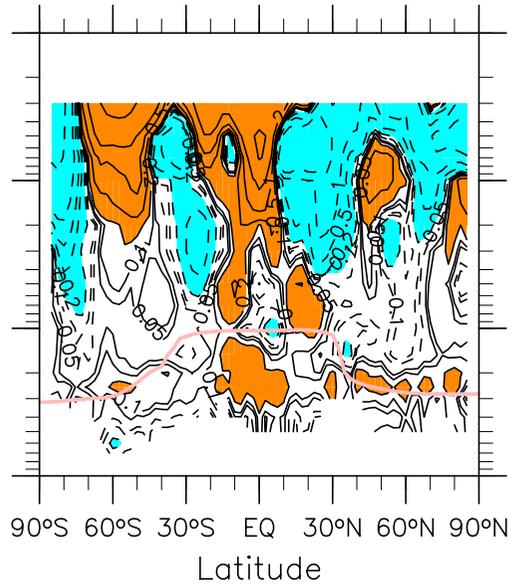
(e) SD



(c) ERA-Int - REM



(d) CFSR - REM



(f) (SD / | REM |) x 100%

