**esm15\_** **latentH**

Changes in code (CABLE3-ESM): cbl\_latent\_heat.F90

IF( cable\_runtime%esm15\_latentH ) THEN

canopy\_fess= ssnow\_wetfac \* ssnow\_potev

WHERE (ssnow\_potev < 0. ) canopy\_fess = ssnow\_potev

ELSE

WHERE (ssnow\_potev < 0. ) ssnow\_wetfac(:) = 1.0

canopy\_fess= ssnow\_wetfac \* ssnow\_potev

END IF

IF( cable\_runtime%esm15\_latentH ) THEN

fupper\_limit(j) = REAL(ssnow\_wb(j)-ssnow\_wbice(j)) \* frescale(j)

ELSE

fupper\_limit(j) = REAL(ssnow\_wb(j)-ssnow\_wbice(j)/0.85)\*frescale(j)

fupper\_limit(j) = MAX(REAL(fupper\_limit(j),r\_2),0.)

END IF

IF( .NOT. cable\_runtime%esm15\_latentH ) THEN

!Ticket 137 - case ii) deposition of frost onto snow

! case of sublimation of snow overwrites later

IF (ssnow\_snowd(j) >=0.1 ) THEN

ssnow\_cls(j) = 1.1335

canopy\_fess(j) = ssnow\_cls(j)\*ssnow\_potev(j)

ENDIF

!Ticket 137 - case iv) deposition of frost onto frozen soil, no snow

IF (ssnow\_snowd(j) < 0.1 .AND. ssnow\_potev(j) < 0. .AND. &

ssnow\_tss(j)<CTFRZ) THEN

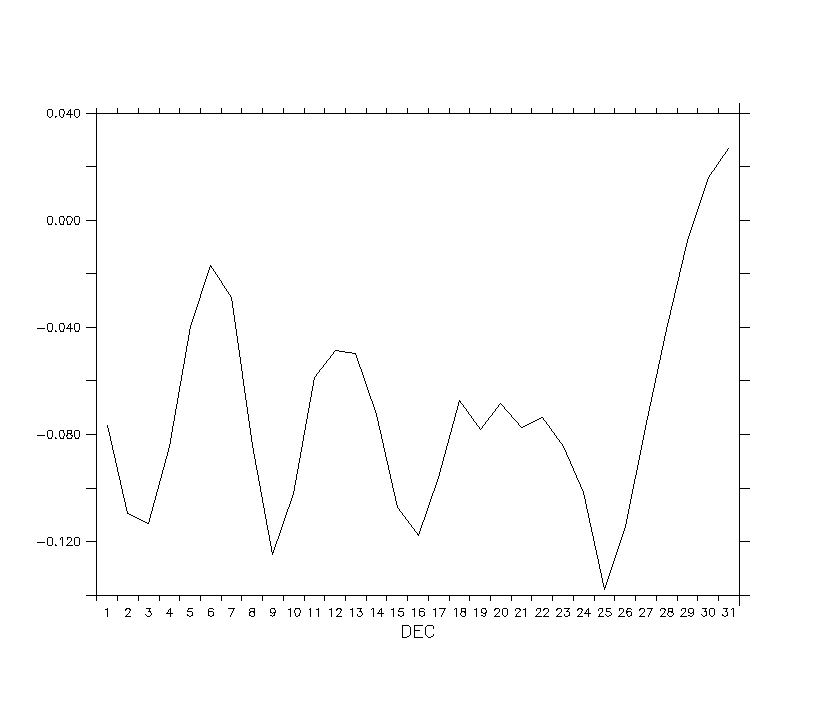
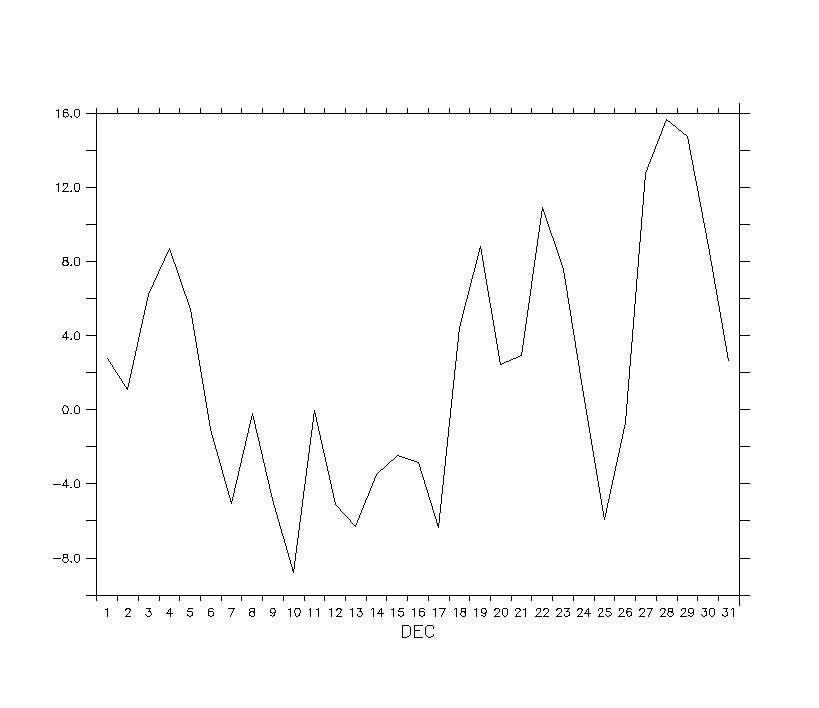
ssnow\_cls(j)=1.1335

canopy\_fess(j) = ssnow\_cls(j)\*ssnow\_potev(j)

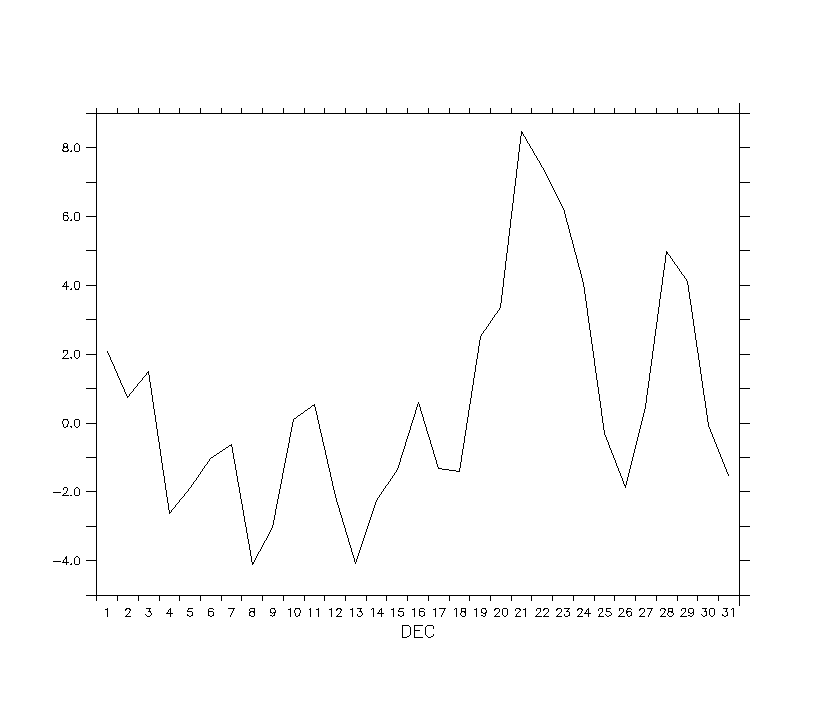
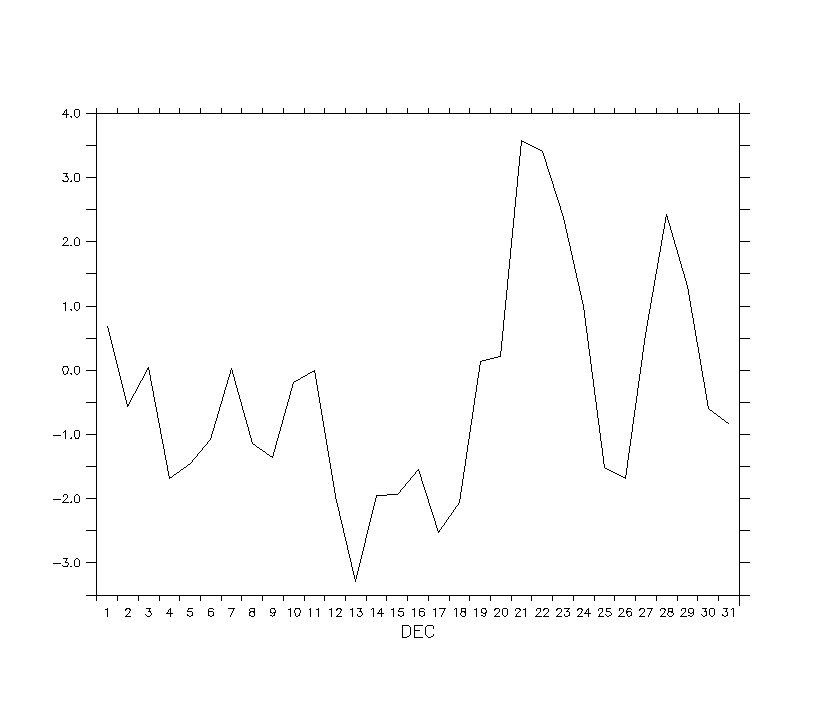
ENDIF

END IF

Effect on climate: (left: precipitation; right: temperature (kelvin), Unit: percentage relative change, ):



Effect on carbon: (left: GPP; right: NPP, Unit: percentage relative change)



Recommendation: Discussion