

# Fortran Model Code

./cmp\_n\_nweek <state>

run model	example
./cmp_n_week <state> <climate division> <year>	./cmp_n_week 11 09 2017

Code	Comments
<pre> program compute   week   implicit none   ! compute: norms curr_week_diffs and MIR    ! compute 30-yr (1981-2010) daily weather normal data from each   Illinois CD    ! for analysis year and previous year compute based on CDC EPI week   ! in 2016 and 2017, begin day use = saturday to friday   ! in 2018, change to sunday to Saturday    ! CDC defines ending saturday: The first epi week of the year ends,   ! by definition, on the first Saturday of January,   ! as long as it falls at least four days into the month.   ! Each epi week begins on a Sunday and ends on a Saturday.    ! get daily data for analysis year.   !   compute weekly normals and weekly current year observations.   !   compute weekly difference between analysis year and normals.   ! weekly temp avg ( C);   ! weekly precip tot (cm);   ! weekly degree day avg based on 22 C. (accumulate over time from Jan 1   to dec 31)    ! first saturday set up through 2020.   ! 2017, change to first sunday   ! VET-MED first epi week ends on first saturday of january, unless   falls after   ! January 3, then ends in corresponding december day.    ! as per Karki:   ! begin jan 1 all years and go thru 365 days.   ! weeks: 49-52,1-9 = WInter   !       10-22 = SPring (CDC spring ends week 22)   !       23-35 = SUMmer   !       36-48 = FAll    ! bflg=0   ! bflg=1    character*1 c   character*2 ST, CD, cstate   character*4 ayear    integer icd, iyear, year, mon, day, i, j, k, m, bflg   integer mm(366), dd(366)   integer icdi   real t(366, 30), p(366, 30), d(366, 30), dum_d, dsum_d   real wt(53, 30), wp(53, 30), wd(53, 30)    real tmax, tmin, tmean, prcp   real wknorm_t(53), wknorm_p(53), wknorm_d(53), wknorm_np(53)   real wksum_t(53), wksum_p(53), wksum_d, wksum_np(53)    real tmn(366), ppt(366), ddd(366) </pre>	<ul style="list-style-type: none"> <li>Initialize</li> </ul>

```

real wctmn(53), wcppt(53), wcddd(53), wcsum_d
real df_wkt(53), df_wkp(53), df_wkd(53), df_wknp(53)

!      integer begday(40),begmon(40)
integer begyr(40), ndays(40)
integer nbegday(40), nbegyr(40), nbegmon(40)
integer bday, bmon, nday, byear, n, end, endk

real WInorm_t, SPnorm_t, SUnorm_t, FAnorm_t
real WIsu_t, SPsu_t, SUSu_t, FAsu_t
real WInorm_d, SPnorm_d, SUnorm_d, FAnorm_d
real WIsu_d, SPsu_d, SUSu_d, FAsu_d

real WInorm_p, SPnorm_p, SUnorm_p, FAnorm_p
real WIsu_p, SPsu_p, SUSu_p, FAsu_p

real WInorm_np, SPnorm_np, SUnorm_np, FAnorm_np
real WIsu_np, SPsu_np, SUSu_np, FAsu_np

real SP_prev_yr_t, SP_prev_yr_d, SP_prev_yr_p, SP_prev_yr_np
real SU_prev_yr_t, SU_prev_yr_d, SU_prev_yr_p, SU_prev_yr_np
real FA_prev_yr_t, FA_prev_yr_d, FA_prev_yr_p, FA_prev_yr_np

real SP_prev_sum_t, SP_prev_sum_d, SP_prev_sum_p, SP_prev_sum_np
real SU_prev_sum_t, SU_prev_sum_d, SU_prev_sum_p, SU_prev_sum_np
real FA_prev_sum_t, FA_prev_sum_d, FA_prev_sum_p, FA_prev_sum_np

real WI_curr_yr_t, WI_curr_yr_d, WI_curr_yr_p, WI_curr_yr_np
real SP_curr_yr_t, SP_curr_yr_d, SP_curr_yr_p, SP_curr_yr_np

real WI_curr_sum_t, WI_curr_sum_d, WI_curr_sum_p, WI_curr_sum_np
real SP_curr_sum_t, SP_curr_sum_d, SP_curr_sum_p, SP_curr_sum_np

real df_WIc_t, df_WIc_p, df_WIc_d, df_WIc_np
real df_SPc_t, df_SPc_p, df_SPc_d, df_SPc_np
real df_Sp_t, df_Sp_p, df_Sp_d, df_Sp_np
real df_SUp_t, df_SUp_p, df_SUp_d, df_SUp_np
real df_FAp_t, df_FAp_p, df_FAp_d, df_FAp_np

character *86 line1
integer wk(53), cumwk(53)
real cd_dylt(53, 9), cd_avg_mir(53, 13), cd_2012mir(53, 13)

real dum1, dum2, dum3, dum4, dum5, dum6, dum7
real mir(53), daylight(53), mir_cur(53)
real mir2012(53, 13)
real ACT_mir(52, 9), ACTm_mir(52, 9), ACTp_mir(52, 9)
real cd_act_mir(53, 13)

real intercept(13)
real cDW_Lg1(13), cDW_Lg2(13), cDW_Lg3(13), cDW_Lg4(13)
real cPr_Lg1(13), cPr_Lg2(13), cPr_Lg3(13), cPr_Lg4(13)
real cDWLg1xPLg1(13), cDWLg1xPLg2(13)
real cDWLg1xPLg3(13), cDWLg1xPLg4(13)
real cDWLg2xPLg1(13), cDWLg2xPLg2(13)
real cDWLg2xPLg3(13), cDWLg2xPLg4(13)
real cDWLg3xPLg1(13), cDWLg3xPLg2(13)
real cDWLg3xPLg3(13), cDWLg3xPLg4(13)
real cDWLg4xPLg1(13), cDWLg4xPLg2(13)
real cDWLg4xPLg3(13), cDWLg4xPLg4(13)
real cSPc_temp(13), cSPc_prpc(13)
real cWIc_temp(13), cSPp_temp(13), cSUp_temp(13), cFAP_temp(13)
real cWIc_prpc(13), cSPp_prpc(13), cSUp_prpc(13), cFAP_prpc(13)
real cDayLite(13), cDWLg1xDayLite_Lg1(13)
real cDayLite_Lg1(13), cDayLite_Lg2(13)
real cDayLite_Lg3(13), cDayLite_Lg4(13)

integer ilcd, rundate
character*10 valdate
character*6 cprcp6
character*5 lab1

```

```

character*20 lab(40)
real prcpd(10, 9), mxtemp(10, 9), mntemp(11, 9), prcp6(13, 9)
integer n_mnT, n_mnT, n_ppt
integer ncurr
integer firstmon, firstday
character*2 cfirstmon, cfirstday

integer pday(53), pmon(53), pdd(366), pmm(366)
character*2 cpdd, cpmm
integer nwk(53)
integer pm, pd
integer wmonth(52), wday(52), wweek(52), wyear
character*10 wdate
character*3 wdow
integer emon, eday

! used to comply with epi week beginning in December
! for previous year (iyear-1) and analysis year (iyear)
! for 2016 and 2017
data nbegday/3, 2, 1, 31, 29, 28, 3, 2, 31, 30, &
1, 31, 29, 28, 3, 2, 31, 30, 29, 28/
data nbegmon/1, 1, 1, 12, 12, 12, 1, 1, 12, 12, &
1, 12, 12, 12, 1, 1, 12, 12, 12, 12/
data nbegyr/1981, 1982, 1983, 1983, 1984, 1985, 1987, 1988, 1988,
1989, &
2011, 2011, 2012, 2013, 2015, 2016, 2016, 2017, 2018, 2019/

! for 2018
! defining years, months, days, epi weeks for previous year and
analysis years
! data nbegday/4,3,2,1,30,29,4,3,1,31,
! 30,29,3,2,1,31,30,4,3,2,
! 31,30,29,4,2,1,31,30,4,3,
! 2,1,30,29,4,3,1,31,30,29/
! data nbegmon/1,1,1,1,12,12,1,1,1,12,
! 12,12,1,1,1,12,12,1,1,1,
! 12,12,12,1,1,1,12,12,1,1,
! 1,1,12,12,1,1,1,12,12,12/
! data nbegyr/1981,
1982,1983,1984,1984,1985,1987,1988,1989,1989,
! 1990,1991,1993,1994,1995,1995,1996,1998,1999,2000,
! 2000,2001,2002,2004,2005,2006,2006,2007,2009,2010,
! 2011,2012,2012,2013,2015,2016,2017,2017,2018,2019/

! USE REGARDLESS
data begyr/1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989,
1990, &
2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020/
data ndays/365, 365, 365, 366, 365, 365, 365, 366, 365, 365, &
365, 366, 365, 365, 365, 366, 365, 365, 366/
call getarg (1, ST)
call getarg (1, ST)
call getarg (2, CD)
call getarg (3, ayear)

! read from character to integer
read(ayear, 25) iyear
25 format(i4)
read(CD, 26) icd
26 format(i2)
! print *, 'CD = ',icd,' ST = ',ST,'iyear= ',iyear

c = ','

do j = 1, 30
do i = 1, 366
t(i, j) = 999.9
d(i, j) = 0.0
p(i, j) = 999.9
enddo

```

<pre>enddo</pre>	
<pre>! input for days of week for current year open(unit = 2, file = 'week_days_2016.csv', status = 'old', &amp;       form = 'formatted') read (2, *) line1 do i = 1, 52     read (2, *) wmonth(i), wday(i), wweek(i), wyear, wdate, wdw enddo close(2) !MONTH, DAY, WEEK, YEAR, DATE, DOW !1,2,1,2016,1/2/2016,SAT</pre>	<p><b>INPUT FILE</b>  <a href="#">week_days_2016.csv</a></p> <ul style="list-style-type: none"> <li>Read in CDC Week             <ul style="list-style-type: none"> <li>can this be generalized?</li> </ul> </li> </ul> <p><a href="http://www.angulartutorial.net/2017/09/calculate-epi-week-from-date-convert.html">http://www.angulartutorial.net/2017/09/calculate-epi-week-from-date-convert.html</a></p>
<pre>! input for normals (1981-2010 daily) open(unit = 3, file = ST // CD // 'w_' // ayear, &amp;       status = 'unknown', form = 'formatted')</pre>	<p><b>OUTPUT FILE</b></p> <p>e.g., 1109w_2017</p> <p>SPRING Prev_YR NORM DIF for T D and P</p> <p>14.57,  13.22, 1.35, 0.00, 0.00, 0.00, 2.95, 2.52, 0.43</p> <p>SUMMER Prev_YR NORM DIF for T D and P</p> <p>25.48, 24.38, 1.09, 0.00,  15.34, 0.00, 3.47, 1.80, 1.67</p> <p>FALL Prev_YR NORM DIF for T D and P</p> <p>16.03, 14.05, 1.98, 0.00,  32.28, 0.00, 1.59, 2.03, -0.44</p>
<pre>! analisis file open(unit = 4, file = ST // CD // '_' // ayear // '_mir', &amp;       status = 'unknown', form = 'formatted') write (4, *) ' i i+1 CD iyr yr week MIR avg_mir mir_cur act_&amp; aSPc_t aWic_t aFap_t aUp_t aSp_t'</pre>	<p><b>OUTPUT FILE</b></p>
<pre>! MIR file open(unit = 8, file = ST // CD // '_' // ayear // '_plot', &amp;       status = 'unknown', form = 'formatted') write (8, *) ' CD yr week month day 2012_mir avg_mir curr_mir&amp; ACT_mir ACTm_mir ACTp_mir'</pre>	<p><b>OUTPUT FILE</b></p>
	<p><b>COMPUTE NORMALS</b></p> <p><a href="#">1109n</a></p>

```

! NORMALS computations
! put data in daily,yearly array to compute normalso
! same normals for each analysis year
! week 1, 8 days, dec 29-Jan 5;
! all other weeks=7 days (skip day 365 on new year)

! read into array
print *, '1 CD = ', CD
print *, ST // CD // 'n'
open(unit = 10, file = ST // CD // 'n', status = 'old', form =
'formatted')
! for normals
bmon = 12
bday = 29
emon = 12
eday = 28
nday = 365
! becasue skip 2/29

do j = 1, 30
    bflg = 0

    !      print *, 'byear ',byear,'bmon ',bmon,'bday ',bday,' nday ',
nday

    do i = 1, nday
        1      read (10, 5, end = 999) cstate, icd, year, mon, day,
tmax, tmin, prcp
        5      format (a2, 1x, i2, 1x, i4, 1x, i2, 1x, i2, 1x, f5.1,
1x, f5.1, 1x, f8.2)
        if (mon .eq. 2 .and. day .eq. 29) go to 1

        if (bflg .eq. 1) go to 3
        if (bflg .eq. 0 .and.&
            year.lt.byear .or. mon.lt.bmon .or. day.lt.bday) then
            !      print *, 'passed test ',year,byear,mon,bmon,day,
bday
            go to 1
        endif

        3      bflg = 1
        dd(i) = day
        mm(i) = mon

        if (year.gt.2010) then
            go to 999
        endif
        !      write (*,*) i,year,mon,day,tmax,tmin,prcp,byear,bmon,
bday

        ! compute daily mean
        ! convert to celcius from fahrenheit
        ! compute degree days, base 22 C
        ! convert to cm from inches
        t(i, j) = (5.0 / 9.0) * (((tmax + tmin) / 2.0) - 32.0)
        p(i, j) = prcp * 2.54

        if (day.eq.eday .and. mon.eq.emon) then
            print *, i, ' ', j, ' ', year, ' ', mon, ' ', day
            go to 998
        endif
        ! go to next year at nday=365
    998      enddo

    !      close(10)
enddo

999      close(10)

```

```

! compute weekly daily averages for d and t (and weekly sum for precip)
for each 30 years of data (1981-2010)

do j = 1, 30

    ! compute average T and sum P for 7 day weeks
    do i = 1, 8
        k = 1
        wt(1, j) = (t(i, j) + t((i + 1), j) + t((i + 2), j) + t((i + 3),
j) + t((i + 4), j)&
            + t((i + 5), j) + t((i + 6), j) + t((i + 7), j)) / 8.0
        wp(1, j) = (p(i, j) + p((i + 1), j) + p((i + 2), j) + p((i + 3),
j) + p((i + 4), j)&
            + p((i + 5), j) + p((i + 6), j) + p((i + 7), j))

        print *, j, k, t(i, j), t((i + 1), j), t((i + 2), j), t((i + 3),
j), t((i + 4), j), &
            t((i + 5), j), t((i + 6), j)
    enddo

    do i = 9, 365, 7
        k = k + 1
        ! compute average T and sum P for 7 day weeks

        wt(k, j) = (t(i, j) + t((i + 1), j) + t((i + 2), j) + t((i + 3),
j) + t((i + 4), j)&
            + t((i + 5), j) + t((i + 6), j)) / 7.0
        wp(k, j) = (p(i, j) + p((i + 1), j) + p((i + 2), j) + p((i + 3),
j) + p((i + 4), j)&
            + p((i + 5), j) + p((i + 6), j))

        !      print *, i,j,k,t(i,j),t((i+1),j),t((i+2),j),t((i+3),j),t
((i+4),j),
        !      ! t((i+5),j),t((i+6),j)
        !      print *, 'weekly sum and avg ppt_cm', i, j, k, wp(k, j), (wp(k, j)
/7.0)
        !      print *, i, j, k, p(i, j), p((i+1), j), p((i+2), j), p((i+3), j), p
((i+4), j),
        !      ! p((i+5), j), p((i+6), j), wp(k, j), (wp(k, j)/7.0)

    enddo
enddo

```

## COMPUTE WEEKLY DAILY AVERAGES

d,t?

```

! compute 30-year weekly normals
do k = 1, 53
    wknorm_t(k) = 0.0
    wknorm_p(k) = 0.0
    wknorm_d(k) = 0.0
    wksum_t(k) = 0.0
    wksum_p(k) = 0.0
enddo

! compute weekly 30-year normals
do k = 1, 52
    do j = 1, 30
        wksum_t(k) = wksum_t(k) + wt(k, j)
        wksum_p(k) = wksum_p(k) + wp(k, j)
        !      wksum_d(k)=wksum_d(k)+wd(k, j)
    enddo
    wknorm_t(k) = wksum_t(k) / 30.

```

## COMPUTE NORMALS

```

    wknorm_p(k) = wksum_p(k) / 30.
    !           wknorm_d(k)=wksum_d(k)/30.
    !           print *, 'wk, week_norms_p, weeksum_p', k, wknorm_p(k), wksum_p(k)
enddo
wknorm_t(53) = wknorm_t(1)
wknorm_p(53) = wknorm_p(1)
!           wknorm_d(53)=wknorm_d(1)

! compute weekly dw 30-yr normals
do k = 1, 53
    wknorm_d(k) = 0.0
enddo

do k = 1, 53
    ! if weekly average temperature is greater than 22:
    if(wknorm_t(k) .gt. 22.0) then
        wksum_d = wksum_d + (wknorm_t(k) - 22.0)
    elseif (wknorm_t(k) .le. 22.0) then
        wksum_d = wksum_d + 0.0
    endif
    wknorm_d(k) = wksum_d
enddo

! compute seasonal weekly 30-year normals
do k = 1, 9
    WIsu_m_t = WIsu_m_t + wknorm_t(k)
    WIsu_m_p = WIsu_m_p + wknorm_p(k)
    !           WIsu_m_np=WIsu_m_np+wknorm_np(k)
    WIsu_m_d = WIsu_m_d + wknorm_d(k)
enddo
do k = 49, 52
    WIsu_m_t = WIsu_m_t + wknorm_t(k)
    WIsu_m_p = WIsu_m_p + wknorm_p(k)
    !           WIsu_m_np=WIsu_m_np+wknorm_np(k)
    WIsu_m_d = WIsu_m_d + wknorm_d(k)
enddo

do k = 10, 22
    SPsu_m_t = SPsu_m_t + wknorm_t(k)
    SPsu_m_p = SPsu_m_p + wknorm_p(k)
    !           SPsu_m_np=SPsu_m_np+wknorm_np(k)
    SPsu_m_d = SPsu_m_d + wknorm_d(k)
enddo
do k = 23, 35
    SUsu_m_t = SUsu_m_t + wknorm_t(k)
    SUsu_m_p = SUsu_m_p + wknorm_p(k)
    !           SUsu_m_np=SUsu_m_np+wknorm_np(k)
    SUsu_m_d = SUsu_m_d + wknorm_d(k)
enddo
do k = 36, 48
    FAsu_m_t = FAsu_m_t + wknorm_t(k)
    FAsu_m_p = FAsu_m_p + wknorm_p(k)
    !           FAsu_m_np=FAsu_m_np+wknorm_np(k)
    FAsu_m_d = FAsu_m_d + wknorm_d(k)
enddo

! seasonal weekly normals
WInorm_t = WIsu_m_t / 13.
SPnorm_t = SPsu_m_t / 13.
SUnorm_t = SUsu_m_t / 13.
FAnorm_t = FAsu_m_t / 13.

WInorm_d = WIsu_m_d / 13.
SPnorm_d = SPsu_m_d / 13.
SUnorm_d = SUsu_m_d / 13.
FAnorm_d = FAsu_m_d / 13.

WInorm_p = WIsu_m_p / 13.
SPnorm_p = SPsu_m_p / 13.
SUnorm_p = SUsu_m_p / 13.

```

```
FAnorm_p = FAsum_p / 13.
```

```
! input - get previous year quarterly temperature and precipitation  
differences
```

```
print *, '2 CD = ', CD  
open(unit = 1, file = ST // CD, status = 'old', form = 'formatted')  
do i = 1, 366  
    tmn(i) = 999.9  
    ppt(i) = 999.9  
enddo
```

```
! normals are done
```

## GET PREVIOUS YEAR

1109



```

! previouw year = iyear-1
! good for 1981 to 2020 (i=1 to 40)
do i = 1, 40
    if (begyr(i) .eq. iyear - 1) then
        byear = nbegyr(i)
        nday = ndays(i)
        bday = nbegday(i)
        bmon = nbegmon(i)
    endif
enddo

n = 0
bflg = 0
dsum_d = 0
do i = 1, nday
    9      read (1, 5, end = 19) cstate, icd, year, mon, day, tmax,
tmin, prcp
    if (bflg.eq. 1) go to 18
    if (bflg.eq. 0 .and.&
        year.lt.byear .or. mon.lt. bmon .or. day.lt.bday) then
        dsum_d = 0
        go to 9
    endif
    bflg = 1
!18      write (*,*) i,iyear,year,mon,day,tmax,tmin,prcp,bflg
18      n = n + 1

    if (tmax .eq. 999.9) go to 19
    ! mean temperature
    ! convert to centigrade
    ! convert to cm
    write (*, 5) cstate, icd, year, mon, day, tmax, tmin, prcp
    tmn(i) = (5.0 / 9.0) * (((tmax + tmin) / 2.0) - 32.0)
    ppt(i) = prcp * 2.54
    if (ppt(i) .lt. 0) ppt(i) = 999.9
    !      write (*,*) i,iyear,year,mon,day,tmn(i),ppt(i)
enddo

19      close(1)
print *, 'iyear,n,nday = ', iyear, n, nday

```

```

! compute weekly averages for previous year
do k = 1, 53
    wctmn(k) = 999.9
    wcppt(k) = 999.9
enddo

k = 0
do i = 1, 366, 7
    k = k + 1

    !      write (*,*) k,i,i+1,i+2,i+3,i+4,i+5,i+6
    !      print *, k, tmn(i),tmn(i+1),tmn(i+2),tmn(i+3),tmn(i+4),
    !      ! tmn(i+5),tmn(i+6)
    !      print *, k, ppt(i),ppt(i+1),ppt(i+2),ppt(i+3),ppt(i+4),
    !      ! ppt(i+5),ppt(i+6)

    wctmn(k) = (tmn(i) + tmn(i + 1) + tmn(i + 2) + tmn(i + 3) + tmn(i + 4)
&
        + tmn(i + 5) + tmn(i + 6)) / 7.0
    wcppt(k) = (ppt(i) + ppt(i + 1) + ppt(i + 2) + ppt(i + 3) + ppt(i + 4)
&
        + ppt(i + 5) + ppt(i + 6))

```

```

!      print *, 'prev_ yr weekly sum avg ppt ',wcppt(k),(wcppt(k)/7.
0)
!      write (*,*) ppt(i),ppt(i+1),ppt(i+2),ppt(i+3),ppt(i+4),
!      ! ppt(i+5),ppt(i+6),wcppt(k),(wcppt(k)/7.0)
!      print *, ' k,wcppt(k) = ',k,wcppt(k)
enddo

SP_prev_sum_t = 0.0
SP_prev_sum_p = 0.0
SP_prev_yr_t = 0.0
SP_prev_yr_p = 0.0

SU_prev_sum_t = 0.0
SU_prev_sum_p = 0.0
SU_prev_yr_t = 0.0
SU_prev_yr_p = 0.0

FA_prev_sum_t = 0.0
FA_prev_sum_p = 0.0
FA_prev_yr_t = 0.0
FA_prev_yr_p = 0.0

! get december from previous year
WI_curr_sum_t = 0.0
WI_curr_sum_p = 0.0
WI_curr_yr_t = 0.0
WI_curr_yr_p = 0.0

do k = 10, 22
    SP_prev_sum_t = SP_prev_sum_t + wctmn(k)
    SP_prev_sum_p = SP_prev_sum_p + wcppt(k)
enddo
SP_prev_yr_t = SP_prev_sum_t / 13.0
SP_prev_yr_p = SP_prev_sum_p / 13.0
!      SP_prev_yr_p=SP_prev_sum_p

do k = 23, 35
    SU_prev_sum_t = SU_prev_sum_t + wctmn(k)
    SU_prev_sum_p = SU_prev_sum_p + wcppt(k)
enddo
SU_prev_yr_t = SU_prev_sum_t / 13.0
SU_prev_yr_p = SU_prev_sum_p / 13.0
!      SU_prev_yr_p=SU_prev_sum_p

do k = 36, 48
    FA_prev_sum_t = FA_prev_sum_t + wctmn(k)
    FA_prev_sum_p = FA_prev_sum_p + wcppt(k)
enddo
FA_prev_yr_t = FA_prev_sum_t / 13.0
FA_prev_yr_p = FA_prev_sum_p / 13.0
!      FA_prev_yr_p=FA_prev_sum_p

do k = 49, 52
    WI_curr_sum_t = WI_curr_sum_t + wctmn(k)
    WI_curr_sum_p = WI_curr_sum_p + wcppt(k)
enddo

```

```

! compute quarterly previous year differences

df_SpP_t = SP_prev_yr_t - SPnorm_t
df_SpP_p = (SP_prev_yr_p - SPnorm_p)

df_SUp_t = SU_prev_yr_t - SUnorm_t
df_SUp_p = (SU_prev_yr_p - SUnorm_p)

df_FAp_t = FA_prev_yr_t - FAnorm_t
df_FAp_p = (FA_prev_yr_p - FAnorm_p)

write (3, *) 'SPRING Prev_YR NORM DIF for T D and P'
write (3, 51) SP_prev_yr_t, c, SPnorm_t, c, df_SpP_t, c, SP_prev_yr_d, &
c, SPnorm_d, c, df_SpP_d, c, SP_prev_yr_p, c, SPnorm_p, c,
df_SpP_p
write (3, *) 'SUMMER Prev_YR NORM DIF for T D and P'
write (3, 51) SU_prev_yr_t, c, SUnorm_t, c, df_SUp_t, c, SU_prev_yr_d, &
c, SUnorm_d, c, df_SUp_d, c, SU_prev_yr_p, c, SUnorm_p, c,
df_SUp_p
write (3, *) 'FALL Prev_YR NORM DIF for T D and P'
write (3, 51) FA_prev_yr_t, c, FAnorm_t, c, df_FAp_t, c, FA_prev_yr_d, &
c, FAnorm_d, c, df_FAp_d, c, FA_prev_yr_p, c, FAnorm_p, c,
df_FAp_p

write (*, *) 'SPRING Prev_YR NORM DIF for T D and P'
write (*, 51) SP_prev_yr_t, c, SPnorm_t, c, df_SpP_t, c, SP_prev_yr_d, &
c, SPnorm_d, c, df_SpP_d, c, SP_prev_yr_p, c, SPnorm_p, c,
df_SpP_p
write (*, *) 'SUMMER Prev_YR NORM DIF for T D and P'
write (*, 51) SU_prev_yr_t, c, SUnorm_t, c, df_SUp_t, c, SU_prev_yr_d, &
c, SUnorm_d, c, df_SUp_d, c, SU_prev_yr_p, c, SUnorm_p, c,
df_SUp_p
write (*, *) 'FALL Prev_YR NORM DIF for T D and P'
write (*, 51) FA_prev_yr_t, c, FAnorm_t, c, df_FAp_t, c, FA_prev_yr_d, &
c, FAnorm_d, c, df_FAp_d, c, FA_prev_yr_p, c, FAnorm_p, c,
df_FAp_p

!cccccccccccccccccccccccccccccccccccccccccccccccccccccccccccc

```

```

! input - get model analysis year

print *, '3 CD = ', CD
open(unit = 1, file = ST // CD, status = 'old', form = 'formatted')
do i = 1, 366
  tmn(i) = 999.9
  ppt(i) = 999.9
  ddd(i) = 0.0
enddo

do i = 1, 53
  df_wkd(k) = 0.0
enddo

```

```

! set current analysis year = iyear
do i = 1, 40
  if (begyr(i) .eq. iyear) then
    byear = nbegyr(i)
    nday = ndays(i)
    bday = nbegday(i)
    bmon = nbegmon(i)

```

Is this redundant opening of file?

1109

```

endif
enddo
print *, 'year nday bday bmon ', year, ' ', nday, ' ', bday, ' ', bmon

n = 0
bflg = 0
dsum_d = 0
do i = 1, nday
  cfirstmon = '01'
  cfirstday = '01'
  10      read (1, 5, end = 88) cstate, icd, year, mon, day, tmax,
tmin, prcp
  if (year.lt.byear .and. day.lt.bday .and. mon.lt.bmon) go to 10
  !      write (*,*) cstate,icd,year,mon,day,tmax,tmin,prcp,'begin',
  !      !      byear,bday,bmon

  if ((tmax.eq. -99 .or. tmin.eq. -99 .or. prcp.lt. 0.0)&
      .and. n.gt.140) then
    ! for forecast
    firstday = day
    firstmon = mon
    write(cfirstmon, 11) firstmon
    write(cfirstday, 11) firstday
    11      format(i2)
    ! to compensate for blanks ...
    if (cfirstmon .eq. ' 1') cfirstmon = '01'
    if (cfirstmon .eq. ' 2') cfirstmon = '02'
    if (cfirstmon .eq. ' 3') cfirstmon = '03'
    if (cfirstmon .eq. ' 4') cfirstmon = '04'
    if (cfirstmon .eq. ' 5') cfirstmon = '05'
    if (cfirstmon .eq. ' 6') cfirstmon = '06'
    if (cfirstmon .eq. ' 7') cfirstmon = '07'
    if (cfirstmon .eq. ' 8') cfirstmon = '08'
    if (cfirstmon .eq. ' 9') cfirstmon = '09'
    if (cfirstday .eq. ' 1') cfirstday = '01'
    if (cfirstday .eq. ' 2') cfirstday = '02'
    if (cfirstday .eq. ' 3') cfirstday = '03'
    if (cfirstday .eq. ' 4') cfirstday = '04'
    if (cfirstday .eq. ' 5') cfirstday = '05'
    if (cfirstday .eq. ' 6') cfirstday = '06'
    if (cfirstday .eq. ' 7') cfirstday = '07'
    if (cfirstday .eq. ' 8') cfirstday = '08'
    if (cfirstday .eq. ' 9') cfirstday = '09'
    go to 88
  endif

  if (bflg.eq. 1) go to 8
  if (bflg.eq. 0 .and.&
      year.lt.byear .or. mon.lt. bmon .or. day.lt.bday) then
    dsum_d = 0
    !      print *, 'got iyear',iyear,'mon ',mon,'day ',day,'eday
',eday
    go to 10
  endif

  bflg = 1
  write (*, *)'first bflg=1, i year mon day tmax tmin prcp'
  write (*, *) i, year, mon, day, ' ', tmax, tmin, prcp
  8      write (*, *) i, iyear, year, mon, day, tmax, tmin, prcp,
bflg
  n = n + 1

  ! mean temperature
  ! convert to centigrade
  ! compute degree days
  ! convert to cm
  pdd(n) = day
  pmm(n) = mon
  tmn(n) = (5.0 / 9.0) * (((tmax + tmin) / 2.0) - 32.0)
  dum_d = 0
  if (tmn(n) .ge. 22.0) dum_d = (tmn(n) - 22.0)

```

```

ppt(n) = prcp * 2.54

! changed to accomodate temperature good, but precipitation missing!
!5-19-2017

if (ppt(n) .lt. 0.0) ppt(n) = 0.0
!       if (ppt(n) .gt. 1000) ppt(n)=0.0
!       if (ppt(n) .lt. 0) ppt(n)=999.9

!       write (*,*) i,iyear,year,mon,day,tmn(i),ppt(i)
enddo

! missing data or end of year, so close
88      close(1)

ncurr = n
print *, 'iyear,n,ncurr,nday = ', iyear, n, ncurr, nday

```

```

! ADD FORECAST DATA

! input - get 10-day max and min temp forecasts, and 3 day precip
forecasts

! for this year 2017:

if (iyear .eq. 2017) then
! initialize forecast data
do j = 1, 9
do i = 1, 11
mntemp(i, j) = 999.9
enddo
do i = 1, 10
mxtemp(i, j) = 999.9
enddo
do i = 1, 3
prcpd(i, j) = 999.9
enddo
! set later days of precip to 0.0
do i = 4, 10
prcpd(i, j) = 0.0
enddo
enddo

! see /home/nan/WWV_WX/Not_Smooth/run.get.forecast
! open(unit=7,file='ILCD_divisions_ALL',
! ! status='old',form='formatted')

print *, 'ILCD_' // ayear // cfirstmon // cfirstday

open(unit = 7, file = 'ILCD_' // ayear // cfirstmon // cfirstday, &
status = 'old', form = 'formatted')
print *, '-----'
print *, 'first day with missing data = '
print *, 'ILCD_' // ayear // cfirstmon // cfirstday
read (7, *) line1
!DIV,CYCLE,ELEMENT,VALIDTIME,MEAN-VALUE
!1,2014041412,MINT,2014041512,23.115

! should have 11 min temps, 10 max temps, 13 precip, otherwise bombs
n_mnT = 0
n_mxT = 0
n_ppt = 0
do j = 1, 9
do i = 1, 11

```

## INPUT FILE

ILCD\_divisions\_ALL  
[ILCD\\_<year><month><day>](#)

```

        read (7, *, end = 6) ilcd, rundate, lab1, valdate, mntemp(i,
j)
        cpdd = valdate(7 : 8)
        cpmm = valdate(5 : 6)
        read(cpdd, 27) pdd(n + i)
        read(cpmm, 27) pmm(n + i)
        27      format(i2)

        print *, '-----'
        print *, ' n= ', n, 'ncurr = ', ncurr
        write (*, *) 'fcst date', ilcd, rundate, lab1, valdate, mntemp
(i, j), &
                pmm(n + i), pdd(n + i), i, (n + i), n_mnT
        n_mnT = n_mnT + 1
    enddo

    6      do i = 1, 10
        read (7, *, end = 66) ilcd, rundate, lab1, valdate, mxtemp(i,
j)
        write (*, *) ilcd, rundate, lab1, valdate, mxtemp(i, j), &
                pmm(n + i), pdd(n + i)
        n_mxT = n_mxT + 1
    enddo

    66      do i = 1, 13
        read (7, *, end = 666) ilcd, rundate, lab1, valdate, cprcp6
        write (*, *) ilcd, rundate, lab1, valdate, cprcp6
        n_ppt = n_ppt + 1
        ! read from character to integer
        if(cprcp6(1 : 3).eq.'NaN') cprcp6 = '999.90'
        read(cprcp6, 28) prcp6(i, j)
        28      format(f6.2)
        if (prcp6(i, j) .ge. 999.0) prcp6(i, j) = 0.0
    enddo

    666      if (n_mnT.lt.11 .or. n_mxT.lt.10 .or. n_ppt.lt.13)&
        print *, 'too little data: n_mnT,n_mxT,n_ppt ', n_mnT,
n_mxT, n_ppt
        print*, 'should have 11 n_mnT, 10 n_mxT, 13 n_ppt'
        prcpd(1, j) = prcp6(2, j) + prcp6(3, j) + prcp6(4, j) + prcp6(5,
j)
        prcpd(2, j) = prcp6(6, j) + prcp6(7, j) + prcp6(8, j) + prcp6(9,
j)
        prcpd(3, j) = prcp6(10, j) + prcp6(11, j) + prcp6(12, j) + prcp6
(13, j)
        prcpd(4, j) = 0.0
        prcpd(5, j) = 0.0
        prcpd(6, j) = 0.0
        prcpd(7, j) = 0.0
        prcpd(8, j) = 0.0
        prcpd(9, j) = 0.0
        prcpd(10, j) = 0.0

        print *, 'read temp and precp forecasts'

        ! tack on to endof ytd data
        6666      print *, 'too little data? n_mnT,n_mxT,n_ppt ', n_mnT,
n_mxT, n_ppt
        if (ilcd .eq. icd) then
            print *, 'ilcd = ', ilcd, icd
            dum_d = 0
            k = 1
            do i = ncurr + 1, ncurr + 8
                print *, 'ncurr+1 to ncurr+10', i, k, j, tmn(i), mntemp
(k, j)
                tmn(i) = (5.0 / 9.0) * (((mxtemp(k, j) + mntemp(k, j)) /
2.0) - 32.0)
                dum_d = 0
                if (tmn(i) .ge. 22.0) dum_d = (tmn(i) - 22.0)
                print *, 'dum_d', dum_d
                print *, 'ncurr+1 to ncurr+10', i, k, j, tmn(i), mntemp

```

```

(k, j)
    k = k + 1
enddo

k = 1
do i = ncurr + 1, ncurr + 8
    ppt(i) = prcpd(k, j) * 2.54
    print *, 'ncurr+1 to ncurr+10', i, k, j, ppt(i), prcpd(k,
j)
    k = k + 1
enddo

endif
! go to next cliamte division
enddo

! write out after forecast
do i = ncurr + 1, ncurr + 8
    write (*, *) 'FORECAST DAYS ', pmm(i), pdd(i)
    write (*, 15) year, i, ncurr, pday(i), pmm(i), tmn(i), ppt(i)
    15      format (i4, 1x, i4, 1x, i4, 1x, i2, 1x, i2, 1x, f7.3,
1x, f7.4)
    enddo
endif
! end of forecast data for 2017

```

```

! compute weekly averages for model analysis year
do k = 1, 53
    wctmn(k) = 999.9
    wcppt(k) = 999.9
enddo

k = 1
!      do i=1,n-1,7
do i = 1, ncurr + 8, 7
    ! only go out 8 days (should match dupage model, will have 3 days
    with precip forecast

    pday(k) = pdd(i)
    pmon(k) = pmm(i)
    !      pday(k)=pdd(i+4)
    !      pmon(k)=pmm(i+4)
    print *, 'meanT @7day ', i, pmm(i), pdd(i), &
        tmn(i), tmn(i + 1), tmn(i + 2), tmn(i + 3), tmn(i + 4), tmn(i
+ 5), tmn(i + 6)
    if (tmn(i) .ge. 999.9 .or. tmn(i + 1) .ge. 999.9 .or.&
        tmn(i + 6) .ge. 999.9) then
        print *, 'meanT @7day ', i, pmm(i), pdd(i), &
            tmn(i + 4), tmn(i + 5), tmn(i + 6)
        print *, '999', pmm(i + 4), pdd(i + 4)
        endk = k
        go to 79
    endif

    wctmn(k) = (tmn(i) + tmn(i + 1) + tmn(i + 2) + tmn(i + 3) + tmn(i + 4)
&
        + tmn(i + 5) + tmn(i + 6)) / 7.0
    wcddd(k) = (ddd(i) + ddd(i + 1) + ddd(i + 2) + ddd(i + 3) + ddd(i + 4)
&
        + ddd(i + 5) + ddd(i + 6)) / 7.0
    !      wcppt(k) = (ppt(i)+ppt(i+1)+ppt(i+2)+ppt(i+3)+ppt(i+4)
    !      ! +ppt(i+5)+ppt(i+6))/7.0
    wcppt(k) = (ppt(i) + ppt(i + 1) + ppt(i + 2) + ppt(i + 3) + ppt(i + 4)
&
        + ppt(i + 5) + ppt(i + 6))

    print *, 'k,pmon(k),pday(k),i,pmm(i),pdd(i) = ', &
        k, pmon(k), pday(k), ' ', i, pmm(i), pdd(i)

    !      write (*,*) k,i,i+1,i+2,i+3,i+4,i+5,i+6
    !      print *, 'cur_yr weekly avg sum ppt ', k, wcppt(k), (wcppt(k)/7.
0)

    !      print *, k, tmn(i),tmn(i+1),tmn(i+2),tmn(i+3),tmn(i+4),
    !      ! tmn(i+5),tmn(i+6),wctmn(k),pmon(k),pday(k)
    !      print *, k, ddd(i),ddd(i+1),ddd(i+2),ddd(i+3),ddd(i+4),
    !      ! ddd(i+5),ddd(i+6),wcddd(k)
    !      print *, k, ppt(i),ppt(i+1),ppt(i+2),ppt(i+3),ppt(i+4),
    !      ! ppt(i+5),ppt(i+6),wcppt(k)

    k = k + 1
    79 continue
    endk = k - 1
    print *, 'endk = ', endk
enddo

```

```

! compute current weekly dw
do k = 1, endk
    wcddd(k) = 0
enddo
wksum_d = 0

do k = 1, endk

```



```

        if(wctmn(k) .gt. 22.0) then
            wsum_d = wsum_d + (wctmn(k) - 22.0)
        elseif (wctmn(k) .le. 22.0) then
            wsum_d = wsum_d + 0.0
        endif
        wddd(k) = wsum_d
    enddo

! summed december already from previous year
!     WI_curr_sum_t=0.0
!     WI_curr_sum_d=0.0
!     WI_curr_sum_p=0.0
SP_curr_sum_t = 0.0
SP_curr_sum_d = 0.0
SP_curr_sum_p = 0.0

WI_curr_yr_t = 0.0
WI_curr_yr_d = 0.0
WI_curr_yr_p = 0.0
SP_curr_yr_t = 0.0
SP_curr_yr_d = 0.0
SP_curr_yr_p = 0.0

if (endk .ge. 9) then
    ! k=week, weeks 1-9 to previously computed WI_curr
    print *, 'Dec WI_curr_sum_p = ', WI_curr_sum_p
    do k = 1, 9
        WI_curr_sum_t = WI_curr_sum_t + wctmn(k)
        WI_curr_sum_d = WI_curr_sum_d + wddd(k)
        WI_curr_sum_p = WI_curr_sum_p + wcppt(k)
    enddo
    WI_curr_yr_t = WI_curr_sum_t / 13.0
    WI_curr_yr_d = WI_curr_sum_d / 13.0
    WI_curr_yr_p = WI_curr_sum_p / 13.0
    !     WI_curr_yr_p=WI_curr_sum_p
endif
!     print *, 'DecFeb WI_curr_sum_p = ',WI_curr_sum_p
!     print *, 'DecFeb WI_curr_yr_p = ',WI_curr_yr_p

if (endk .ge. 22) then
    do k = 10, 22
        SP_curr_sum_t = SP_curr_sum_t + wctmn(k)
        SP_curr_sum_d = SP_curr_sum_d + wddd(k)
        SP_curr_sum_p = SP_curr_sum_p + wcppt(k)
    enddo
    SP_curr_yr_t = SP_curr_sum_t / 13.0
    SP_curr_yr_d = SP_curr_sum_d / 13.0
    SP_curr_yr_p = SP_curr_sum_p / 13.0
    !     SP_curr_yr_p=SP_curr_sum_p
endif

do k = 1, endk
    df_wkt(k) = wctmn(k) - wknorm_t(k)
    df_wkd(k) = wddd(k) - wknorm_d(k)
    df_wkp(k) = (wcppt(k) - wknorm_p(k))

    !     print *, 'k,df_wkp ',k,df_wkp(k)
    !     print *, 'year,endk,k,wcppt(k),wknorm_p(k),df_wkp(k) ',
    !         !     year,endk,k,wcppt(k),wknorm_p(k),df_wkp(k)
    !     print *, 'year,endk,k,wddd(k),wknorm_d(k) ',
    !         !     year,endk,k,wddd(k),wknorm_d(k)
enddo
! what is this!!
!     if (iyear .eq. 2015)then
!         df_wkd(endk)=0.0
!         df_wkp(endk)=0.0
!c         print *, 'endk,df_wkp ',k,df_wkp(endk)
!         endif

df_WIc_t = WI_curr_yr_t - WInorm_t
df_WIc_d = WI_curr_yr_d - WInorm_d

```

```

df_WIc_p = (WI_curr_yr_p - WInorm_p)
!      df_WIc_np=(WI_curr_yr_p-WInorm_np)

df_SPc_t = SP_curr_yr_t - SPnorm_t
df_SPc_d = SP_curr_yr_d - SPnorm_d
df_SPc_p = (SP_curr_yr_p - SPnorm_p)
!      df_SPc_np=(SP_curr_yr_p-SPnorm_np)

if (endk .lt. 13) then
    df_WIc_t = 0.0
    df_WIc_d = 0.0
    df_WIc_p = 0.0
endif
if (endk .lt. 26) then
    df_SPc_t = 0.0
    df_SPc_d = 0.0
    df_SPc_p = 0.0
endif

! write weekly normals previous and current quarts data
write (3, *) 'year week wctmn wknrm_t df_wkt wcddd wknrm_d df_wkd&
    wcppt wknrm_p df_wkp'
write (*, *) 'year week wctmn wknrm_t df_wkt wcddd wknrm_d df_wkd&
    wcppt wknrm_p df_wkp'

do k = 1, endk
    write (3, 50) iyear, c, k, c, wctmn(k), c, wknrm_t(k), c, df_wkt(k),
c, &
        wcppt(k), c, wknrm_p(k), c, df_wkp(k), c
    write (*, 50) iyear, c, k, c, wctmn(k), c, wknrm_t(k), c, df_wkt(k),
c, &
        wcppt(k), c, wknrm_p(k), c, df_wkp(k), c
    50      format (i4, a1, i4, 9(a1, f6.2, a1, f6.2, a1, f6.2))
enddo

! write quartly normals previous and current quarts data
write (3, *) 'WI_curr_t WInrm_t df_WIc_t WI_curr_d WInrm_d df_q&
    lc_d WI_curr_p WInrm_p df_WIc_p'
write (*, *) 'WI_curr_t WInrm_t df_WIc_t WI_curr_d WInrm_d df_q&
    lc_d WI_curr_p WInrm_p df_WIc_p'

write (3, 51) WI_curr_yr_t, c, WInorm_t, c, df_WIc_t, c, WI_curr_yr_d, &
c, WInorm_d, c, df_WIc_d, c, WI_curr_yr_p, c, WInorm_p, c,
df_WIc_p
write (*, 51) WI_curr_yr_t, c, WInorm_t, c, df_WIc_t, c, WI_curr_yr_d, &
c, WInorm_d, c, df_WIc_d, c, WI_curr_yr_p, c, WInorm_p, c,
df_WIc_p
51      format (1x, 3(f6.2, a1), 4x, 3(f6.2, a1), 4x, 3(f6.2, a1))
print *, 'end of quart info'

!51      format (1x,3(f6.2,a1),4x,3(f6.2,a1),4x,3(f6.2,a1),4x,3(f6.2,a1))

!      write (3,*) 'SP_curr_t SPnrm_t df_SPc_t SP_curr_d SPnrm_d df_q
!      !2c_d SP_curr_p SPnrm_p df_SPc_p'
!      write (3,51) SP_curr_yr_t,c,SPnorm_t,c,df_SPc_t,c, SP_curr_yr_d,
!      !      c,SPnorm_d,c,df_SPc_d,c, SP_curr_yr_p,c,SPnorm_p,c,df_SPc_p
!      !      c,SP_curr_yr_np,c,SPnorm_np,c,df_SPc_np,c

```

<pre> ! input - climate division daylight data ! for cd's 1-9, cd = icd  open(unit = 14, file = 'CD_Daylight.csv'&amp;       , status = 'old', form = 'formatted') read (14, *) line1 do i = 1, 53   read (14, *) wk(i), (cd_dylt(i, j), j = 1, 9)   !      print *, wk(i),(cd_dylt(i,j),j=1,9) enddo close(14)  !WEEK,HRS_DYLT_DIV1,HRS_DYLT_DIV2,HRS_DYLT_DIV3,HRS_DYLT_DIV4, HRS_DYLT_DIV5,HRS_DYLT_DIV6,HRS_DYLT_DIV7,HRS_DYLT_DIV8,HRS_DYLT_DIV9 !1,9.228,9.228,9.367,9.367,9.350,9.467,9.489,9.600,9.600 </pre>	<p><a href="#">CD_Daylight.csv</a></p>
<pre> ! input - MIR 9-year average by 9 CDs and (4) combined areas ! for cd's 1-9, cd = icd  open(unit = 15, file = 'Weekly_MIRavg_05_12.csv', &amp;       status = 'old', form = 'formatted') read (15, *) line1 do i = 1, 52   read (15, *) wk(i), (cd_avg_mir(i, j), j = 1, 13)   !      print *, 'each year',wk(i),(cd_avg_mir(i,j),j=1,13) enddo close(15)  !WeekNum,CD_02,CD_02,CD_05,CD_05,CD_05,Cd_08,Cd_08,Cd_08,Cd_08 !1,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00 </pre>	<p><a href="#">Weekly_MIRavg_05_12.csv</a></p> <p>Is this needed to run model?</p>

```

! input - 2012 MIR by CD

open(unit = 16, file = 'Weekly_MIR_2012.csv', status = 'old', &
    form = 'formatted')
read (16, *) line1
do i = 15, 45
    read (16, *) wk(i), (cd_2012mir(i, j), j = 1, 13)
    !
    print *, '2012 mir1',wk(i),(cd_2012mir(i,j),j=1,13)
enddo
print *, 'act_mir year and iyear = ', year, ' ', iyear

! input - 2005-2013 MIR by CD
!
! do i=1,53
! do i=1,13
! cd_act_mir=0.0
! enddo
! enddo
!
!
! if (iyear .lt. 2005) go to 228
! if (iyear .gt. 2013) go to 228
! open(unit=26,file='CD_ACT_mir_2005_13.csv',status='old',
! ! form='formatted')
! read (26,*) line1
! i=1
!226 read (26,*,end=228) year,wk(i),cumwk(i),(cd_act_mir(i,j),j=1,9)
! print *, i,year,wk(i),(cd_act_mir(i,j),j=1,9)
! if (year .lt. iyear) go to 226
! if (year .gt. iyear) go to 227
! print *, year,' ',iyear,'cd =' ,j,'act_mir = ',cd_act_mir(i,j)
! i=i+1
! go to 226
!228 close(26)

!WeekNum,CD_02,CD_02,CD_05,CD_05,CD_05,Cd_08,Cd_08,Cd_08
!1,0.00,0.00,0.00,0.00,0.00,0.00,0.00,0.00

! input - current year (2017) ACTUAL MIR by CD

!
! open(unit=18,file='CD_ACT_MIR_'//ayear//'.prn',status='old',
open(unit = 18, file = 'CD_ACT_MIR_2017.prn', status = 'old', &
    form = 'formatted')
read (18, *) line1
do i = 1, 52
    read(18, *, end = 118)wk(i), &
        (ACT_mir(i, j), ACTm_mir(i, j), ACTp_mir(i, j), j = 1, 9)
enddo
118 continue

do i = 1, 52
    write(*, *)&
        wk(i), icd, ACT_mir(i, icd), ACTm_mir(i, icd), ACTp_mir(i,
icd)
enddo

!WeekNum,CD_02,CD_02,CD_05,CD_05,CD_05,Cd_08,Cd_08,Cd_08,Cd_08

```

[Weekly\\_MIR\\_2012.csv](#)

Needed for running model?

[CD\\_ACT\\_mir\\_2005\\_13.csv](#)

```

! read coefficients for 9 CD and 4 combined areas
open(unit = 17, file = 'CD_Coef_2017.csv', &
    status = 'old', form = 'formatted')
read (17, *) line1

read (17, *) lab(1), (intercept(j), j = 1, 9)
print *, lab(1), (intercept(icd))
read (17, *) lab(2), (cdW_Lg1(j), j = 1, 9)
print *, lab(2), (cdW_Lg1(icd))
read (17, *) lab(3), (cdW_Lg2(j), j = 1, 9)
print *, lab(3), (cdW_Lg2(icd))

```

[CD\\_Coef\\_2017.csv](#)

```

read (17, *) lab(4), (cDW_Lg3(j), j = 1, 9)
print *, lab(4), (cDW_Lg3(icd))
read (17, *) lab(5), (cDW_Lg4(j), j = 1, 9)
print *, lab(5), (cDW_Lg4(icd))

read (17, *) lab(6), (cSPc_temp(j), j = 1, 9)
print *, lab(6), (cSPc_temp(icd))
read (17, *) lab(7), (cWic_temp(j), j = 1, 9)
print *, lab(7), (cWic_temp(icd))
read (17, *) lab(9), (cSUp_temp(j), j = 1, 9)
print *, lab(9), (cSUp_temp(icd))
read (17, *) lab(8), (cFAp_temp(j), j = 1, 9)
print *, lab(8), (cFAp_temp(icd))
read (17, *) lab(10), (cSPp_temp(j), j = 1, 9)
print *, lab(10), (cSPp_temp(icd))

read (17, *) lab(11), (cPr_Lg1(j), j = 1, 9)
print *, lab(11), (cPr_Lg1(icd))
read (17, *) lab(12), (cPr_Lg2(j), j = 1, 9)
print *, lab(12), (cPr_Lg2(icd))
read (17, *) lab(13), (cPr_Lg3(j), j = 1, 9)
print *, lab(13), (cPr_Lg3(icd))
read (17, *) lab(14), (cPr_Lg4(j), j = 1, 9)
print *, lab(14), (cPr_Lg4(icd))

read (17, *) lab(15), (cSPc_prp(j), j = 1, 9)
print *, lab(15), (cSPc_prp(icd))
read (17, *) lab(16), (cWic_prp(j), j = 1, 9)
print *, lab(16), (cWic_prp(icd))
read (17, *) lab(18), (cSUp_prp(j), j = 1, 9)
print *, lab(18), (cSUp_prp(icd))
read (17, *) lab(17), (cFAp_prp(j), j = 1, 9)
print *, lab(17), (cFAp_prp(icd))
read (17, *) lab(19), (cSPp_prp(j), j = 1, 9)
print *, lab(19), (cSPp_prp(icd))

read (17, *) lab(36), (cDWLg1xDayLite_Lg1(j), j = 1, 9)
read (17, *) lab(37), (cDayLite_Lg1(j), j = 1, 9)

read (17, *) lab(20), (cDWLg1xPLg1(j), j = 1, 9)
read (17, *) lab(21), (cDWLg1xPLg2(j), j = 1, 9)
read (17, *) lab(22), (cDWLg1xPLg3(j), j = 1, 9)

print *, "lab(23)....."
print *, lab(23)

read (17, *) lab(23), (cDWLg1xPLg4(j), j = 1, 9)

print *, "lab(23)....."
print *, lab(23)
print *, "lab(24)....."
print *, lab(24)

do i = 1, 9
    print *, cDWLg1xPLg4(i), cDWLg2xPLg1(i)
enddo

read (17, *) lab(24), (cDWLg2xPLg1(j), j = 1, 9)

read (17, *) lab(25), (cDWLg2xPLg2(j), j = 1, 9)
read (17, *) lab(26), (cDWLg2xPLg3(j), j = 1, 9)
read (17, *) lab(27), (cDWLg2xPLg4(j), j = 1, 9)

read (17, *) lab(28), (cDWLg3xPLg1(j), j = 1, 9)
read (17, *) lab(29), (cDWLg3xPLg2(j), j = 1, 9)
read (17, *) lab(30), (cDWLg3xPLg3(j), j = 1, 9)
read (17, *) lab(31), (cDWLg3xPLg4(j), j = 1, 9)

read (17, *) lab(32), (cDWLg4xPLg1(j), j = 1, 9)
read (17, *) lab(33), (cDWLg4xPLg2(j), j = 1, 9)
read (17, *) lab(34), (cDWLg4xPLg3(j), j = 1, 9)

```

```

read (17, *) lab(35), (cDWLg4xPLg4(j), j = 1, 9)
close(17)

!      if (icd .eq. 1 .or. icd .eq. 2) icdi=10
!      if (icd .eq. 3 .or. icd .eq. 4 .or. icd .eq. 5) icdi=11
! 2016
!      if (icd .eq. 1) icdi=1
!      if (icd .eq. 2) icdi=2
!      if (icd .eq. 3) icdi=11
!      if (icd .eq. 4) icdi=11
!      if (icd .eq. 5) icdi=11
!      if (icd .eq. 6 .or. icd .eq. 7) icdi=12
!      if (icd .eq. 8 .or. icd .eq. 9) icdi=13
! 2017
if (icd .eq. 1) icdi = 1
if (icd .eq. 2) icdi = 2
if (icd .eq. 3) icdi = 3
if (icd .eq. 4) icdi = 4
if (icd .eq. 5) icdi = 5
if (icd .eq. 6) icdi = 6
if (icd .eq. 7) icdi = 7
if (icd .eq. 8) icdi = 8
if (icd .eq. 9) icdi = 9

print *, 'intercept(icdi),icdi = ', intercept(icdi), ' ', icdi
print *, intercept(icdi), &
      cDWLg4xPLg3(icdi), cDWLg4xPLg4(icdi)

! compute mir
! future week = Lag0 (i+1)
! Lg1 = this past week, the most recent week (i)
! Lg2 = 2 weeks back (i-1)
! Lg3 = 3 weeks back (i-2)
! Lg4 = 4 weeks back (i-3)
! Lg0 = next week

! MIR computed for next week
! CD 2: Ind Model weeks 18-38

if (endk .gt. 44) endk = 44
year = iyear

do i = 1, 53
  mir(i) = 0.0
  mir_cur(i) = -99.99
enddo

write (3, *) ' i i+1 CD iyr yr week +MIR +avg_mir +mir_cur +&
      df_SPC_t df_WIc_t df_FAp_t df_SUP_t df_SPP_t'
dum1 = 0.0
dum2 = 0.0
dum3 = 0.0
dum4 = -99.99
dum5 = -99.99
dum6 = -99.99
dum7 = -99.99
! print week 1-17, current week weather and daylight and zero MIR
do i = 1, 17
  write (4, 60)i, i, icd, iyear, year, wk(i), dum1, dum2, dum3,
dum4, &
      df_SUP_p, df_SPP_p, df_SPC_t, df_WIc_t, df_FAp_t,
df_SUP_t, df_SPP_t

  if (iyear .eq. 2017) then
    write (8, 83)icd, year, wk(i), pmon(i), pday(i), dum1, dum2,
dum3, &
        dum5, dum6, dum7
  endif
enddo

print *, 'computing mir for next week with this weeks weather'

```

```

print *, 'and with next weeks daylight'

print *, 'predicted (next week (i+1), start at 18 (17+1) to 44+1'
print *, 'printing next week mir(i+1) wx(i) and daylight(i+1)'
print *, ' and this weeks weather(i)'

! lag1 (i)
! lag2 (i-1)
! lag3 (i-2)
! lag4 (i=3)

do i = 17, endk
  mir(i + 1) = (intercept(icdi) + &
    cDWLg4xPLg4(icdi) * df_wkd(i - 3) * df_wkp(i - 3))

  ! adjust next weeks mir(i+1) with next weeks avg_mir

  mir_cur(i + 1) = mir(i + 1) + cd_avg_mir(i + 1, icdi)
  print *, 'i+1, mir_cur, mir, avg_mir = ', i + 1, &
    mir_cur(i + 1), mir(i + 1), cd_avg_mir(i + 1, icdi)

  if(mir_cur(i + 1) .lt. 0.0) mir_cur(i + 1) = 0.0

  ! weekly weather output
  ! open(unit=3,file=ST//CD//'w_ '//ayear
  write (3, 60)i, i + 1, icd, iyear, year, wk(i + 1), &
    df_spc_t, df_WIc_t, df_FAp_t, df_SUp_t, df_SPP_t

  ! weekly MIR file
  ! open(unit=4,file=ST//CD//'_ '//ayear//'_mir'
  write (4, 60)i, i + 1, icd, iyear, year, wk(i + 1), &
    df_SPC_t, df_WIc_t, df_FAp_t, df_SUp_t, df_SPP_t
60      format (2(1x, i2), 4(1x, i4), 7(1x, f6.2, 1x), 1x, 8(1x,
f6.2))

  if (iyear .eq. 2017) then
    ! MIR plotting file
    ! open(unit=8,file=ST//CD//'_ '//ayear//'_plot'
    write (8, 83)icd, year, wk(i + 1), wmonth(i + 1), wday(i +
1), &
      ACT_mir(i + 1, icd), ACTm_mir(i + 1, icd), ACTp_mir(i
+ 1, icd)
    print *, icd, year, wk(i + 1), ACT_mir(i + 1, icd), ACTm_mir
(i + 1, icd), &
      ACTp_mir(i + 1, icd)
83      format (i4, 4(1x, i4), 6(1x, f6.2))
    endif
  enddo

  !      if (iyear .eq. 2017) then
! post weeks
dum1 = -99.99
dum5 = -99.99
dum6 = -99.99
dum7 = -99.99
do i = endk + 2, 45
  write (8, 83)icd, year, wk(i), wmonth(i), wday(i), &
    cd_2012mir(i, icd), cd_avg_mir(i, icdi), dum1, dum5,
dum6, dum7
  enddo
!      endif

dum1 = 0.0
dum2 = 0.0
dum3 = 0.0
dum4 = -99.99
do i = 46, 52
  print *, "here now"
  print *, i, i, icd, iyear, year, wk(i), wmonth(i), wday(i), real
(wday(i))

```

```

!      write (4,60)i,i,icd,iyear,year,wk(i),real(wmonth(i)),
!      ! real(wday(i))

!      write (4,60)i,i,icd,iyear,year,wk(i),real(wmonth(i))

write (4, 60)i, i, icd, iyear, year, wk(i), real(wmonth(i)), &
      df_SpC_t, df_WIc_t, df_FAp_t, df_SUp_t, df_SPP_t

!      write (4,60)i,i,icd,iyear,year,wk(i),wmonth(i),wday(i),
!      ! dum3,dum4,cd_dylt(i,icd),df_wkd(i),df_wkp(i),
!      ! df_SpC_p,df_WIc_p,df_FAp_p,df_SUp_p,df_SPP_p,
!      ! df_SpC_t,df_WIc_t,df_FAp_t,df_SUp_t,df_SPP_t

if (iyear .eq. 2017) then
      write (8, 83)icd, year, wk(i), wmonth(i), wday(i), dum1,
dum2, dum3, &
      dum5, dum6, dum7
endif
enddo

stop
end

```

--

--

--

--