# Run Fortran Model

Steps for running the fortran model (https://opensource.ncsa.illinois.edu/bitbucket/projects/VBD/repos/mir_model_f/browse)

- Original Code and setup on idea.
  - **Steps in run process (cron)**
    - The 3 routines that are run on the original server
    - **Get forecast**
      - /home/nan/WNV_WX/Not_smooth/run.get_forecast
        - gets csv of forcast
          - wget http://sats.nws.noaa.gov/~mos/mos/wnv/IL_divisions_all.csv
      - copies (renames) to ILCD_<year><month><day> in same directory
      - then copies all IL* files to ../MIR_Model, ../MIR_cmb, and MIR_indiv
    - **Get prism data**
      - /home/nan/WNV_WX/MIR_model/run.cp_prism
      - get prism data
        - /home/mtimlin/estSTCD/estCDwestnile/estCD.csh
          - set d1 to 19810101 and d2 to `date +"%Y%m%d"` the get 4 files:
            - curl -o estCD.dir/estCDp --data 'params={"state":"IL","sdate":"'"$d1"'","edate":"'"$d2"'","grid":"21","elems":[{"name":"pcpn","area_reduce":"climdiv_mean"}]}' http://data.rcc-acis.org/GridData
            - curl -o estCD.dir/estCDn --data 'params={"state":"IL","sdate":"'"$d1"'","edate":"'"$d2"'","grid":"21","elems":[{"name":"mint","area_reduce":"climdiv_mean"}]}' http://data.rcc-acis.org/GridData
            - curl -o estCD.dir/estCDx --data 'params={"state":"IL","sdate":"'"$d1"'","edate":"'"$d2"'","grid":"21","elems":[{"name":"maxt","area_reduce":"climdiv_mean"}]}' http://data.rcc-acis.org/GridData
            - curl -o estCD.dir/estCDt --data 'params={"state":"IL","sdate":"'"$d1"'","edate":"'"$d2"'","grid":"21","elems":[{"name":"avgt","area_reduce":"climdiv_mean"}]}' http://data.rcc-acis.org/GridData
      - copy prism data
        - from timlin directory cd /home/mtimlin/estSTCD/estCDwestnile/estCD.dir/110x  where x=[1,9]  where x is the climate division
        - to WNV_WX/Not_smooth/110x
    - **Run Model**
      - /home/nan/WNV_WX/MIR_model/run.cmp_n_nweek
        - run the model
          - ./cmp_n_nweek 11 0x 2017 where x=[1,9]
        - rename plots
        - copy plots (rename) (110x_2017_plot  110x_YRcur_plot) to webapp directory
  - **Step through fortran code**

| Lines | Function | Important variables Description | Important variables names | Issues |
|---|---|---|---|---|
| 38-185 | initialize variables | | | |
| 188-191 | characters to int | | ayeariyear CD->icd | |
| 194 | ? | | c=',' | |
| 196-202 | create 3 20x360 arrays | initialized as: t=temperature p=precipitation d=? | t,p = 999.9 d =0.0 | |
| 209-212 | read week_days_2016.csv, | input days of week for year | wmonth(i),wday(i), wweek(i),wyear, wdate,wdow | |
| 216-231 | create output files | normals MIR plot, (move to ./output) | | |
| 241-423 | compute normals | | | |
| 243-247 | set some time period length values | | bmon = 12<br>bday = 29<br>emon = 12<br>eday = 28<br>nday=365 | |
| 250-293 | create 1d arrays for day and month convert fahrenheit to celcius convert inches to cm | | dd(i) -day mm(i) -month | -running to the end of the file without indexes updating -added byear=1981, now finishes |

| | | | | |
|---|---|---|---|---|
| 297-327 | calculate weekly averages for temp and precip | averages of weekly temps and precips | wt(k,j) wp(k,j) | |
| 331-352 | calculate weekly normals | | | |
| 356-358 | compute dw 30yr normals | | | |
| 362-368 | if weekly average > 22deg | | | |
| 371-401 | compute weekly 30 year normals | | | |
| 404-417 | compute seasonal weekly normals | | | |
| 435 | open ST//CD previous year quarterly temp and precip diffs | | | |
| 436-439 | instantiate 2 1d 366n arrays at 999.9 | | tmn(i)=999.9 ppt(i)=999.9 | |
| 445-452 | get year previous to input year values | | byear, nday, bday, bmon | |
| 454-480 | get daily means for previous year, convert to to celsius, cm | | tmn ppt | |
| 485-509 | compute weekly averages for previous year | | wctmn wcppt | |
| 511-530 | initalize to 0 | | | |
| 533-560 | compute seasonal averages | | | |
| 564-571 | compute quarterly previous year differences | | | |
| 573-580 | write to file <state><climdiv>w_<year> | | | |
| 598 | open ST//CD previous year quarterly temp and precip diffs (again) | | | |
| 599-603 | initialize 366d arrays | | tmn(i)=999.9 ppt(i) =999.9 ddd(i)=0.0 | |
| 605-607 | initialize 53d array | | df_wkd=0.0 | |
| 610-617 | set year values | | byear nday bday bmonth | |
| 620-698 | calculate means for temp, precip | | | |
| 700-826 | forecaste data for 2017 | | | |
| 711-725 | initialize | | mntemp mxtemp prcpd | |
| 730-735 | open data/ILCD_20171024 read header line | | | |
| 740-742 | initalize 0 counters for min and max temp and precip | | | |
| 743 | loop climate divs | | | |
| 744-777 | validate counts for min and max templs and precip | | | |
| 780-789 | set values of prcpd | | prcpd(x,j) x=[1,10], j=climatediv | |
| 795-816 | convert to celsius and calculated diff from 22 convert to cm | | | |
| 830-884 | compute weekly averages for analysis year | | | |
| 887-899 | compute weekly dw | | | |

## Fortran Help

| command | inputs |
|---|---|
| read | (unit, format, if end goto) |
| write(*, | print to stdout |