Running the PRMS Model – Scripting Approach

## Getting Started

1. Download the **RR\_PRMS** folder and save it to your C drive
   1. **S:\DWR\VOL1\WQC-PT\Cannabis - Regional Policies\Modeling\RR\_PRMS**
2. Navigate to this folder: **RR\_PRMS\PRMS\input\climate\_scenarios**
3. Rename data\_update\_to\_6.21.2022\_ZEROprecip\_to\_Oct.dat to data\_update\_to\_2023-05-07.dat. For the rest of this SOP, this file will be called the DAT File.
4. Clone the [DWRAT\_DataScraping](https://github.com/CAWaterBoardDataCenter/DWRAT_DataScraping.git) GitHub Repository to your computer.
   1. Navigate to the location you want to save the repository to.
   2. Open Command Prompt.
   3. Type the cloning code in Command Prompt.

#Syntax#

git clone --branch <branch name> <remote repository url>

#Example#

git clone --branch Payman

* 1. Upon completion, your branch should be completely downloaded to the location you had indicated. Command Prompt will also provide a message indicating completion.

## Downsizer

1. Navigate to C:\RR\_PRMS\PRMS\input\data\_file\_prep\downsizer\_raw\_data and click on downsizer-client-64bit-3.2.4.jar to open for downsizer program for precipitation.
2. Exit out of the World Wind window.
3. Select **Period** 
   1. **Start Date:** beginning of previous month because climate stations are always updating historical data for QAQC purposes
   2. **End Date:** End of Observed Data Range (yesterday)
4. Select **Output File**
   1. Browse to downsizer folder (downsizer\_raw\_data)
   2. **Format:** PRMS
   3. **Filename:** Downsizer\_Today’s date (e.g., Downsizer\_2023-05-17)
   4. Click **choose file**
5. Select **Station Addition**
   1. Navigate to the **Add Stations from File** section
      1. Navigate to **Climate IDs file path**, and click **Browse:**
         1. Navigate to C:\RR\_PRMS\PRMS\input\data\_file\_prep\downsizer\_raw\_data\downsizer\_sta.csv to select **downsizer\_sta.csv** (specifically made for Russian River); feel free to check out formatting; formatting will be constant for all Downsizer applications; it just consists of station IDs for climate stations
      2. **Click *Add Stations***
6. Select **Units**
   1. Choose **C** for Temperature**, mm** for Precipitation**, ft** for Elevation
7. Select **Quality Control**
   1. Check all the checkboxes:
      1. Proecess COOP measurement flags
      2. Discard stations with no data
      3. Discard absurd climate values
      4. Discard extreme climate values
         1. You can set minimum and maximum thresholds for tasmax (Tmax), tasmin(Tmin), precip, defaults are:
            1. Tasmax: -70 to 70
            2. Tasmin: -70 to 70
            3. precip: 1016
8. Click **Run**
   1. This will spit out a prms file that you can manually change to a csv
9. Metadata files generated by Downsizer can be deleted; they serve no purpose; they get generated and stored in the **Downsizer\_Raw\_Data**folder
10. Change the filename extension of the prms file from .prms to .csv
11. Copy and paste the CSV file from the previous step into the WebData folder of your local GitHub DWRAT\_DataScraping repository—doing so will allow you to run the Downsizer\_Processor.R script later on.

## Running the R Scripts

1. Run PRIMS\_Scraper.R for the observed data range (start of previous month to yesterday) to download PRISM temperature and precipitation data.
2. Run PRISM\_Processor.R to format the PRISM data appropriately.
3. Run CNRFC\_Scraper.R for the forecast data range(today until 5 days after today) to download CNRFC temperature and precipitation data.
4. Run CNRFC\_RR\_Processor.R to format the CNRFC data appropriately.
5. Run Downsizer\_Processor.R script to format the CNRFC data appropriately.
6. Run CIMIS\_Scraper.R to download and format the CIMIS temperature and precipitation data appropriately.
7. Run RAWS\_Scraper.R to download and format the RAWS temperature and precipitation data appropriately.
8. Run Dat\_Shell\_Manipulation.R to generate the text file, *DAT\_Final\_2023-05-07.txt,* whose contents, you will copy and paste into the DAT file.

## Update the Model Files

1. Replace the data in the DAT file for your observed and forecast date range ONLY—leave the rest of the data alone—with the data in your text file (but not the headers) from the previous step.
2. Update the control file—*this step is only required if you update the DAT filename and haven’t saved your outputs in a safe location.*
   1. Navigate to this folder: **RR\_PRMS\windows** and look for this file: **prms\_rr.control**
   2. Right-click the file and open it with Notepad++ so that you can see the line numbers
   3. Revise the DAT filename in line 51 to match the new DAT filename.
   4. *Optional:* Revise the Output CSV filename in line 319 to something that makes sense to you. Revising the output CSV filename with each run prevents the model from overwriting the previous outputs.
3. Update the BAT file—*this step is required just the first time you run the model*
   1. Navigate to this folder: **RR\_PRMS\window**, right-click on **run.bat** and open it with Notepad++ or Notepad
   2. Revise the file path to **C:RR\_PRMS\bin\gsflow.exe prms\_rr.control***;* make sure that a space separates *gsflow.exe* from *prms\_rr.control*.

## Running the Model

1. Click on **run.bat**in the **RR\_PRMS\window** folder and wait for about 5-10 minutes.
2. Command Prompt will have this message when the model is done running—you can ignore the warnings that come up.

A screenshot of a computer

Description automatically generated with medium confidence

## Processing the Outputs

1. Navigate to the **RR\_PRMS\PRMS\output** folder.
2. You will see two outputs with similar filenames to the one listed on line 319 of the **prms\_rr.control** file, e.g.:
   1. nsubout.update\_2023\_03-28\_PaymanAlemisub\_cfs.csv
   2. nsubout.update\_2023\_03-28\_PaymanAlemisub\_inq.csv—the inq version is the one we want.
3. Copy and paste the output of the PRMS model to the **InputData**folder of the DWRAT\_DataScraping GitHub Repository.
4. Run **PRMS\_Processor.R** to convert the PRMS output into acre-feet per day for the timeframe of interest.
   1. Update the R Script to reflect the PRMS output filename.
   2. Update the R script with the timeframe of interest (combined observed and forecast data range for this run).
   3. The CSV exported by this R script, will inform the Flows spreadsheet required by the Upper Russian River DWRAT. This CSV will be saved to the **ProcessedData** folder of the repository.

## Order of Operations for SRP Data Scraping/Processing

1. Run PRISM\_Scraper.R to download PRISM temperature and precipitation data (*this step coincides with step 2 of the SRP workflow, so you don’t need to run the script again if you’ve run it earlier in the day).*
2. Run CNRFC\_Scraper.R to download CNRFC temperature and precipitation data *(this step coincides with step 2 of the RR PRMS workflow, so you don’t need to run the script again if you’ve run it earlier in the day).*
3. Run CNRFC\_SRP\_Processor.R, which produces SRP\_Processed.csv
4. Run PRISM\_SRP\_Processor.R
5. Paste the columns from SRP\_Processed.csv into the Climate Stresses update excel spreadsheet
6. Copy the formatted data from the Climate Stressed Update Excel spreadsheet into the climate .dat file