

ReadMe File for Comparison of 2019-2020-2021
“Extremes of Physical-Chemical Drivers and Cyanobacteria Concentrations”

The R scripts compute daily data files **Buoy+PLppt_dailyYY.Rdata** where YY stands for a 2-digit year 19, 20, or 21. Each file contains daily means of buoy variates (pigments, water temperature, wind velocity and direction), phosphorus load, and precipitation for 15 March – 30 September in each of the 3 years.

Buoy+PLppt_dailyYY.Rdata where YY stands for a 2-digit year 19, 20, or 21 is constructed by **Merge_Daily_PLoad_Precip_YYYY.R** where YYYY is the four-digit year. The input files are:

Daily precipitation **Daily_precip_2019-2021.csv** downloaded from (Anderson, Robertson, & Service, 2022).

Daily phosphorus load in files **Ploads_PB+YP_2019-20.Rdata** and **Ploads+ortho_PB+YP_2020-2021.Rdata** by the R script **RetrieveUSGSdata.R** presented in https://github.com/SRCarpen/MendotaExtremes1_Plots-CCFs.git

Daily mean buoy pigments for all 24 hours and dark hours 2200-2400 and 0000 – 0400 each day number for a given year in files **Me_Buoy_YYYY.Rdata** where YYYY is the four digit year. Data were downloaded from observations of water temperature, pigment concentrations, and meteorologic variates made every minute from the buoy in Lake Mendota posted by Magnuson et al. (2022). See https://github.com/SRCarpen/MendotaExtremes1_Plots-CCFs.git for a worked example for 2021.

Figure S6 was plotted by **Cumulative_precip_Pload_wind_temp_2019-2021.R** from data in **Buoy+PLppt_dailyYY.Rdata** where YY is two-digit year.

Figure S7 was plotted by **Plot_Multiple_Roses_daily_precip_wind_temp_2019-2021.R** from data in **Buoy+PLppt_dailyYY.Rdata** where YY is two-digit year.

Figures 8 and S8 were plotted by **Density_Plots_Multipanel_All+Dark_2019-2021_2022-02-18.R** using data in **Me_Buoy_YYYY.Rdata** where YYYY is a four-digit year.

References

- Anderson, L., Robertson, D. M., & Service, N. W. (2022). *Madison Wisconsin Daily Meteorological Data 1869 - current*. Retrieved from:
<https://doi.org/10.6073/pasta/f716e89717c2fb017451678aab688a0e>
- Magnuson, J. J., Carpenter, S. R., & Stanley, E. H. (2022). *North Temperate Lakes LTER: High Frequency Data: Meteorological, Dissolved Oxygen, Chlorophyll, Phycocyanin - Lake Mendota Buoy 2006 - current*. Retrieved from:
<https://doi.org/10.6073/pasta/fc8bd96677405945024ad708003be1fc>

