Assignment2

Michelle Lam and Alex Reed

2023-04-20

Conceptual Model

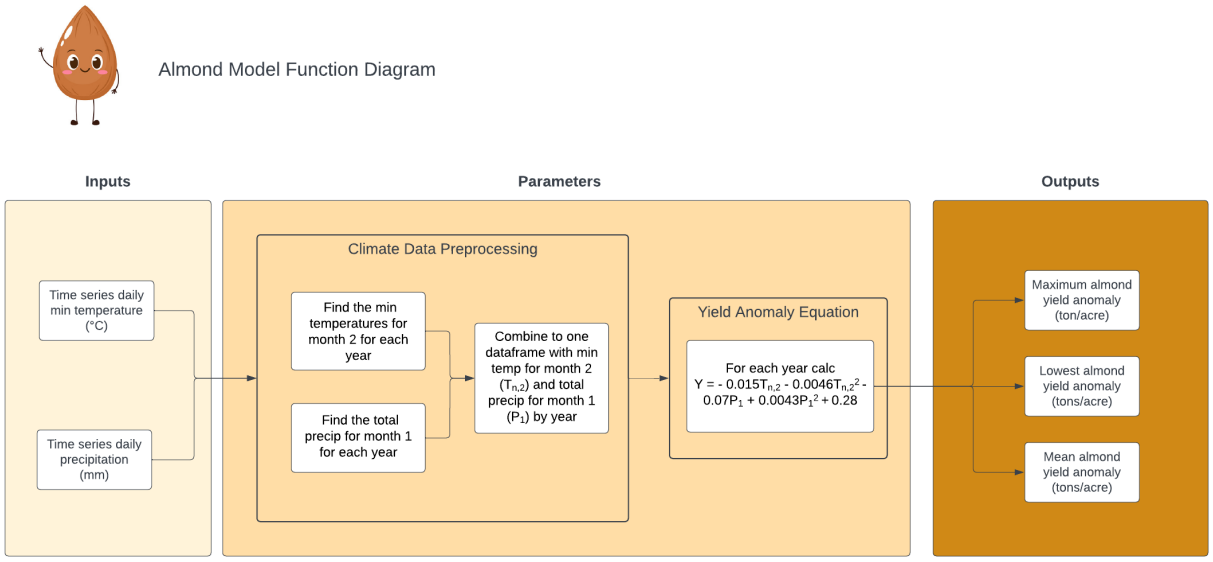

Figure 1: Almond Model Function Diagram

Application of Function

```
source("almond_model.R")

almond_model("clim.txt")
```

```
## `summarise()` has grouped output by 'year'. You can override using the
## `.groups` argument.
## `summarise()` has grouped output by 'year'. You can override using the
## `.groups` argument.
## Joining, by = "year"

## [1] "The maximum almond yield anomaly is approximately 1920 ton/acre."
## [1] "The minimum almond yield anomaly is approximately -0.027 ton/acre."
## [1] "The mean almond yield anomaly is approximately 182 ton/acre."
```

Creating Function Variables/Exploration

```
#read in climate data
clim_df <- read.table("clim.txt", header = TRUE)
```

Pre-processing data

```
#Tn2: temp min for each year for February
yearly_tmin_feb <- clim_df |>
  group_by(year, month) |>
  summarize(min_temp_2 = min(tmin_c)) |>
  filter(month == 2) |>
  select(-month)
```

```
## `summarise()` has grouped output by 'year'. You can override using the
## `.groups` argument.
```

```
tlist<- as.list(yearly_tmin_feb)

#P1: precip sum for each year for January
yearly_precip_jan <- clim_df |>
  group_by(year, month) |>
  summarize(precip_sum_1 = sum(precip)) |>
  filter(month == 1) |>
  select(-month)
```

```
## `summarise()` has grouped output by 'year'. You can override using the
## `.groups` argument.
```

```
plist <- as.list(yearly_precip_jan)

tmin_precip_df <- left_join(yearly_tmin_feb, yearly_precip_jan)
```

```
## Joining, by = "year"
```

For Loop

```
#for loop
anomaly_list <- list()

for (year in 1:nrow(tmin_precip_df)) {

  # calculate anomaly value for each year and append it to the list
  anomaly_value <- -0.015 * tmin_precip_df$min_temp_2[year] - 0.0046 * (tmin_precip_df$min_temp_2[year]

  anomaly_list[[year]] <- anomaly_value
```

```
}

anomaly_vect <- unlist(anomaly_list)
```

Results

```
#minimum value in the vect
min_val <- min(anomaly_vect)

#maximum value in the vect
max_val <- max(anomaly_vect)

#mean value in the vect
mean_val <- mean(anomaly_vect)
```