Supporting information S2: Microclimate simulation functions

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```r
library(tidyverse)
library(lubridate)

# function to change average
change_average <- function(climate.variable, average.offset){
  # create new variable that will contain simulated microclimate
  microclimate <- numeric(length(climate.variable))
  # microclimate = input climate + input offset
  microclimate <- climate.variable + average.offset
  # return vector of simulated microclimate values
  return(microclimate)
}


# function to change the variance of the data
change_variance <- function(climate.variable, time.variable,
variance.increase){
  # convert input to dataframe (necessary for grouping by month)
  df = data.frame(time.variable = time.variable, climate.variable =
climate.variable)
  df = df %>%
    # group by month
    group_by(month = lubridate::month(time.variable)) %>%
    mutate(microclimate =
            # ( Tmacro - mean(Tmacro) ) * (1 + v) + mean(Tmacro)
            (climate.variable - mean(climate.variable, na.rm=TRUE))* (1
+ {{variance.increase}})
            + mean(climate.variable, na.rm=TRUE))
  # return vector of simulated microclimate values
  return(df$microclimate)
}


# function to change extremes
change_extremes <- function(climate.variable, heat.stabilisation = 0,
cold.stabilisation = 0){

  # get 5th and 95th percentile (limits for extremes)
  perc.05 <- quantile(climate.variable, 0.05, na.rm=TRUE)
  perc.95 <- quantile(climate.variable, 0.95, na.rm=TRUE)
```

```r
  microclimate <- numeric(length(climate.variable))

  for(i in seq_along(climate.variable)){
    if(is.na(climate.variable[i]) == TRUE){
      # NA handling
      microclimate[i] <- NA
    } else if(climate.variable[i] > perc.95){
      # values above 95th percentile are modified
      microclimate[i] <- climate.variable[i] - (climate.variable[i] -
perc.95)* {{heat.stabilisation}}
    } else if(climate.variable[i] < perc.05){
      # values below 5th percentile are modified
      microclimate[i] <- climate.variable[i] + (perc.05 -
climate.variable[i])* {{cold.stabilisation}}
    } else {
      # other values stay the same
      microclimate[i] <- climate.variable[i]
    }
  }
  return(microclimate)
}
```