**Supporting information** S2: Microclimate simulation functions  
  
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10 April, 2025*

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)  
   
 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)  
}