

OTC Data Plots

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TITLE: OTC data plots

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DATA INPUT: CSV files are located in the HOB0_data folder in the shared Google drive

DATA OUTPUT: Plots of each graph are in the HOB0_plot.pdf in Github

note: plots are saved for each station and merged into a final figure at the bottom of the script

PROJECT: warmXtrophic

DATE: July 2020

Guide

Page 2: Pendant air temps from KBS and UMBS Page 3: Yearly average air temperatures between KBS and UMBS

Page 4: Monthly average air temperatures between KBS and UMBS for all years

Page 5: Average July air temperatures between KBS and UMBS

Page 6: KBS - Comparing PAR to HOB0 between 2017-2019

Page 7: KBS - Another comparison of PAR to HOB0 from 2017-2019

Page 8: KBS - Comparing PAR to HOB0 for multiple 2019 dates & a linear regression between 2019 warmed chamber PAR and HOB0

Page 9: UMBS linear regression between warmed temp and PAR

Page 10: KBS soil temperature over time

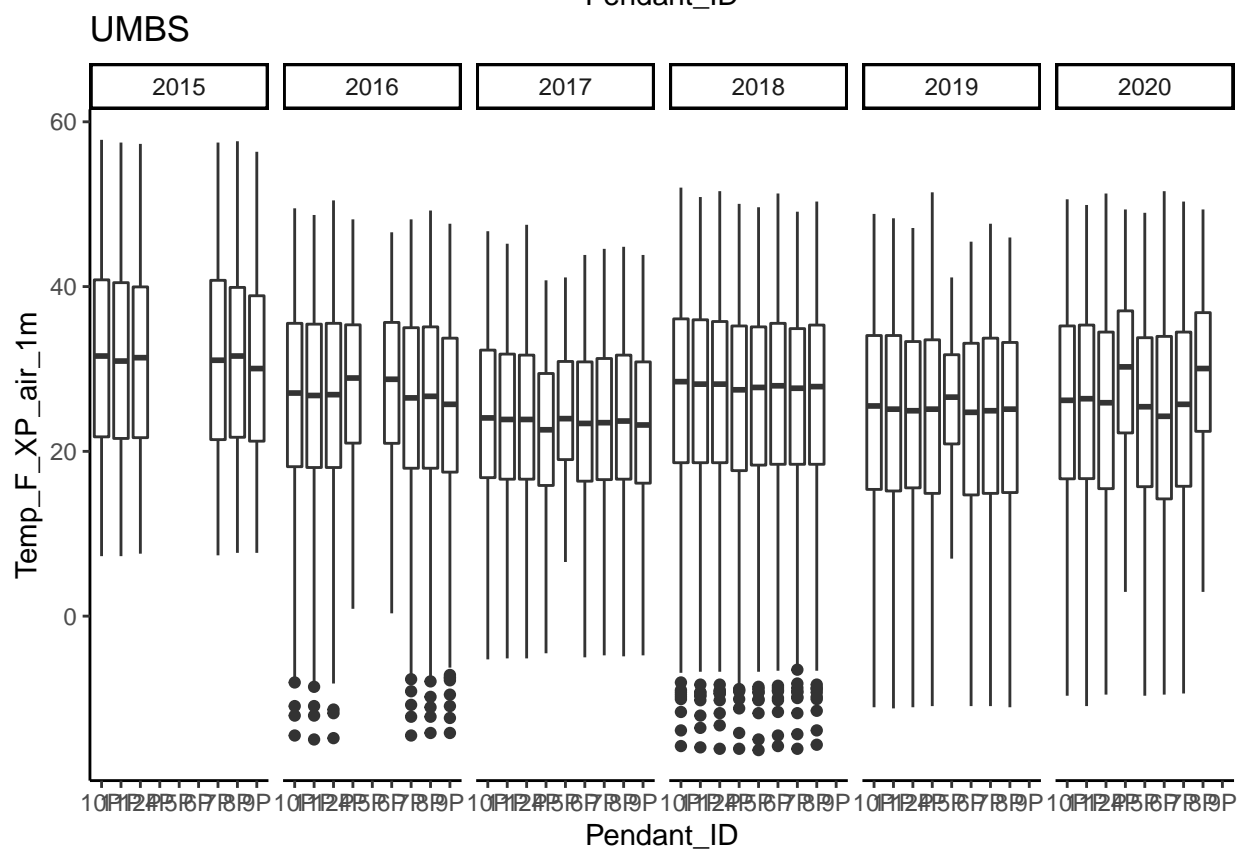
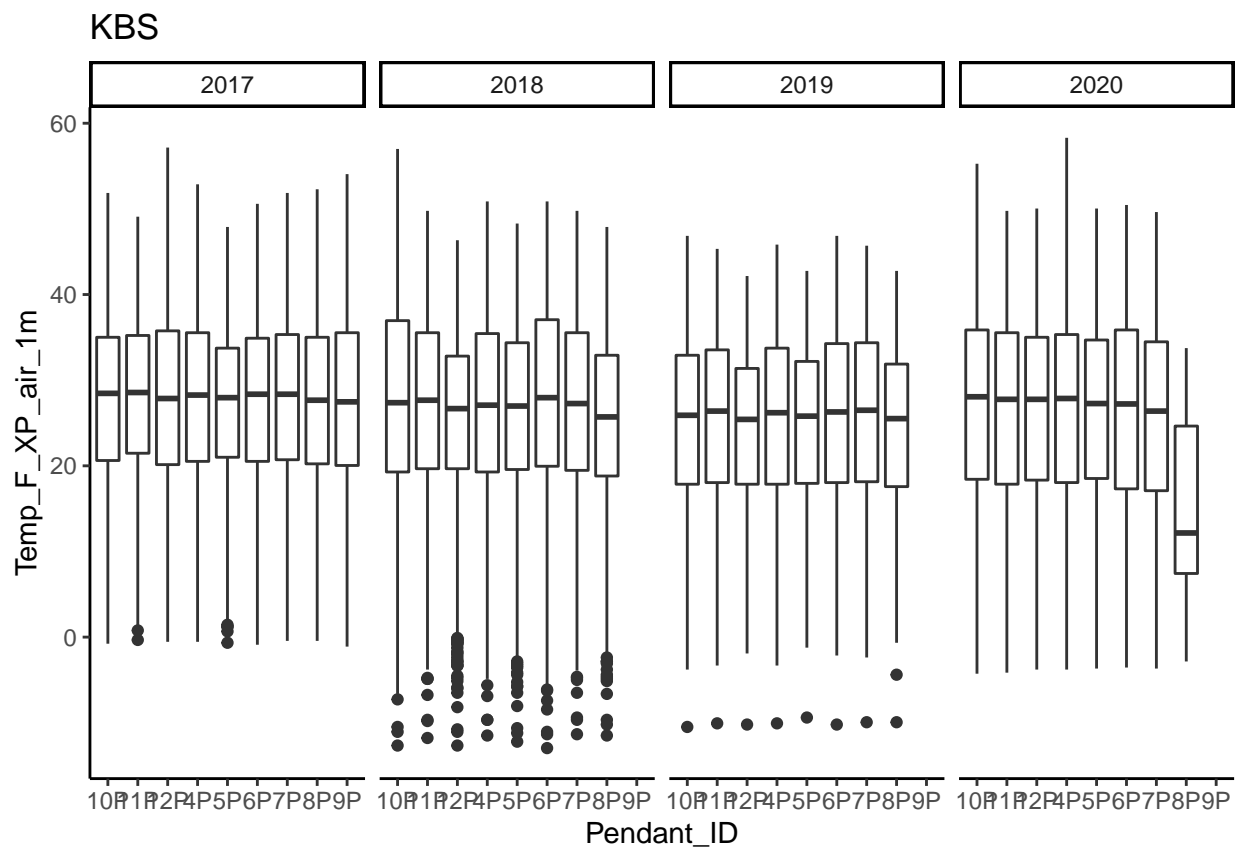
Page 11: KBS soil moisture over time

Page 12: 1H sensor average air temperature by month over all years

Page 13: 2H sensor average air temperature by month over all years

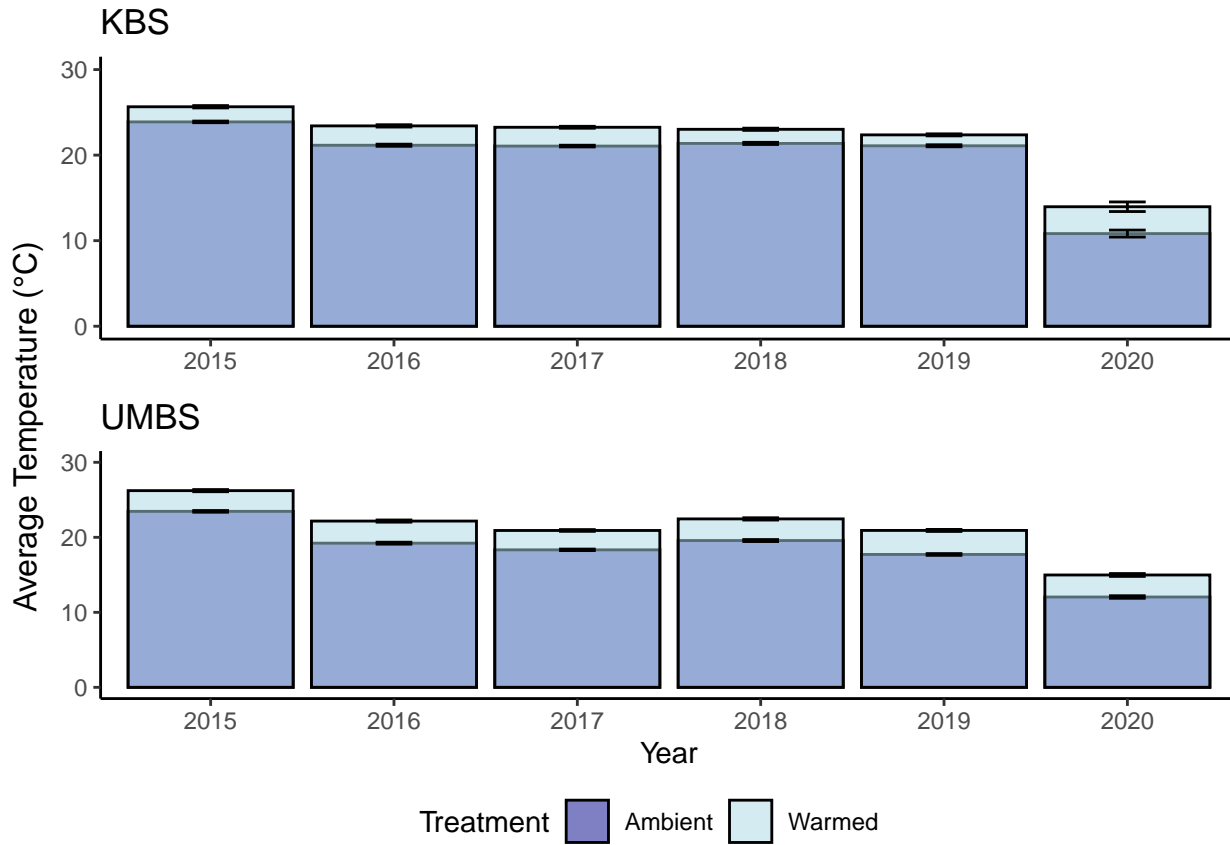
Page 14: 3H sensor average air temperature by month over all years

Warning: Removed 175 rows containing non-finite values (stat_boxplot).

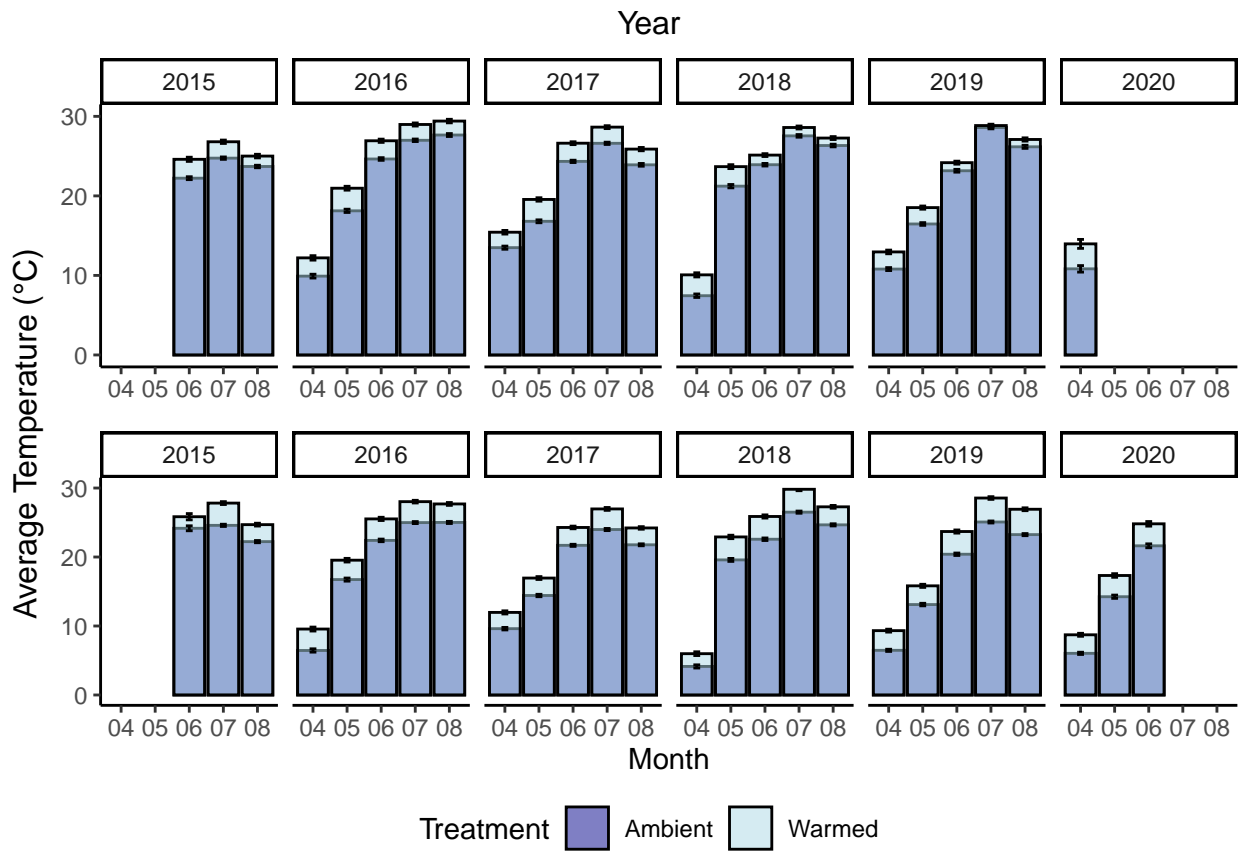


Yearly average chamber temperatures during the day for the growing season (I defined this as April-August from 7 AM - 7 PM, but this could easily be changed)

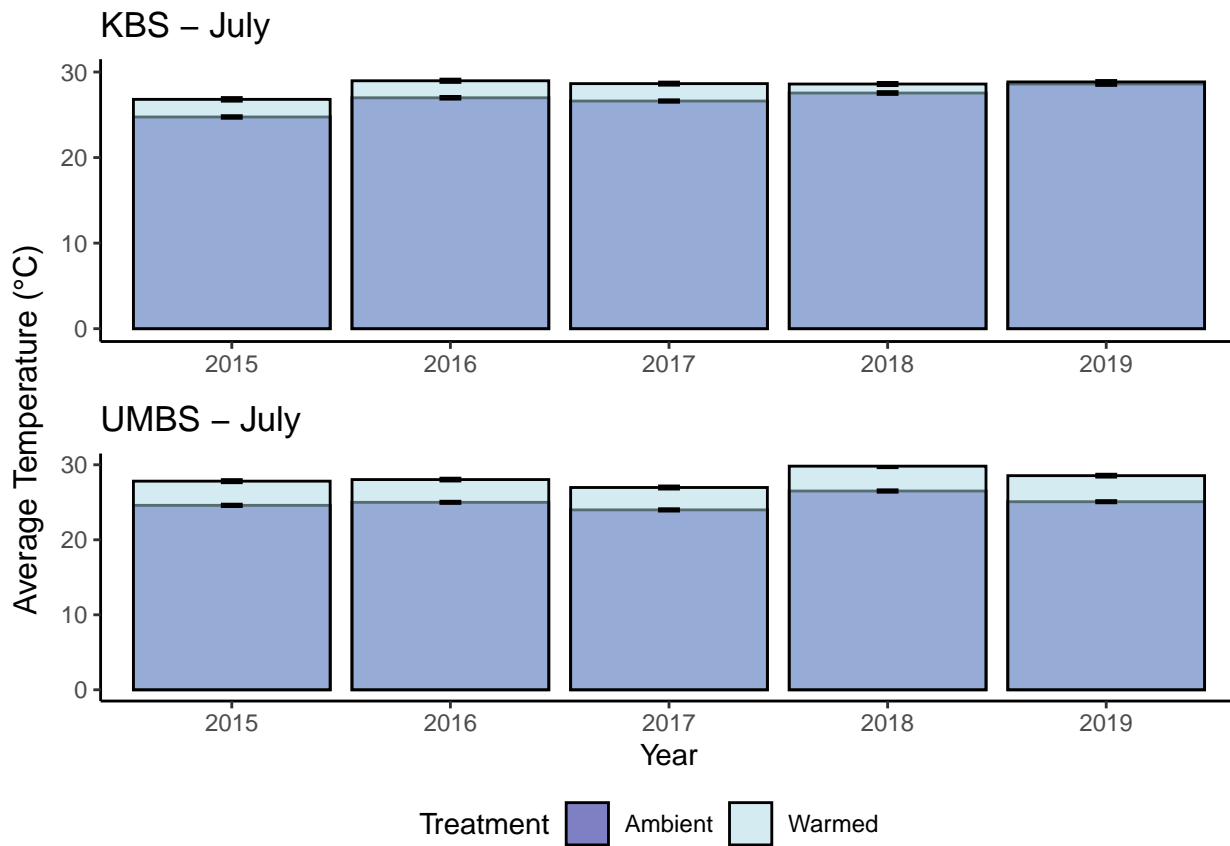
p-value < 0.001 for all



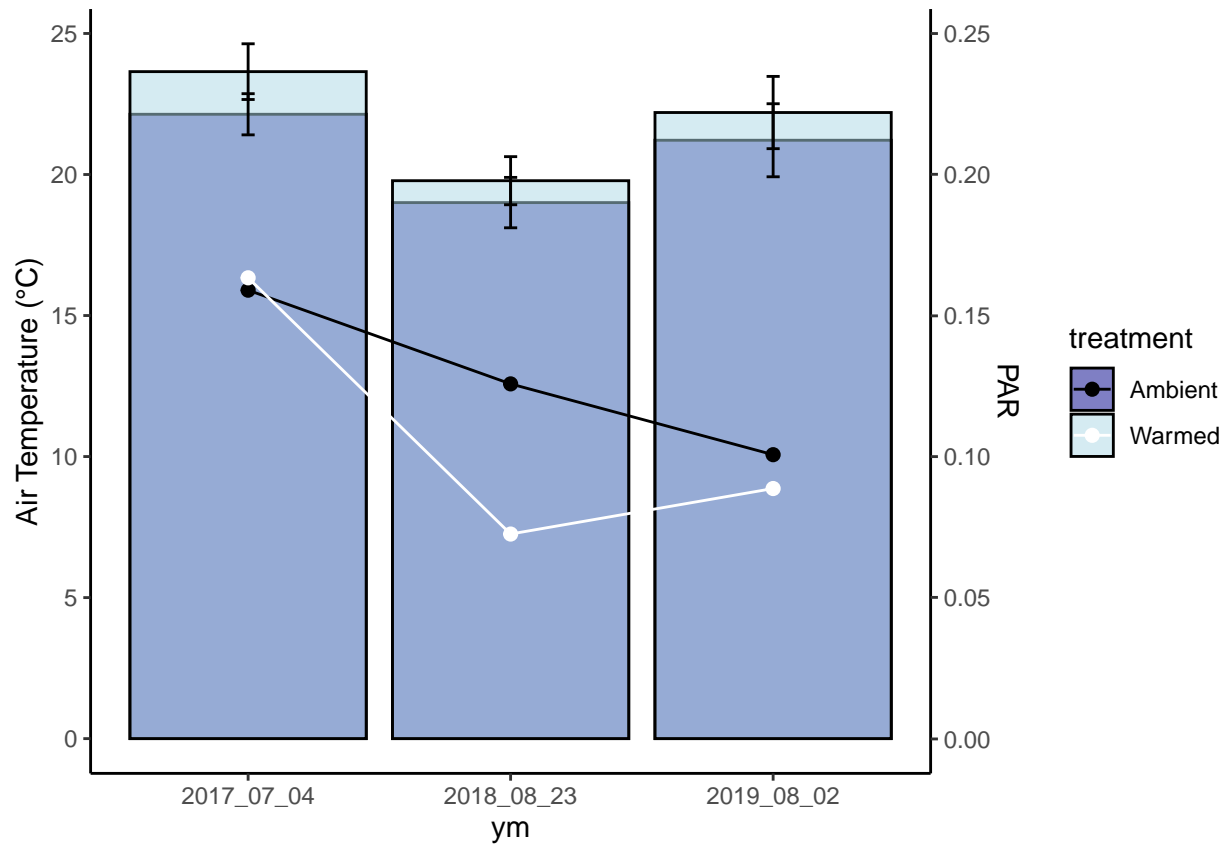
Monthly averages during the growing season, over time (KBS on top and UMBS on bottom) — these could be separated to see individual months over time (i.e. July temps over each year, as shown on the next page)



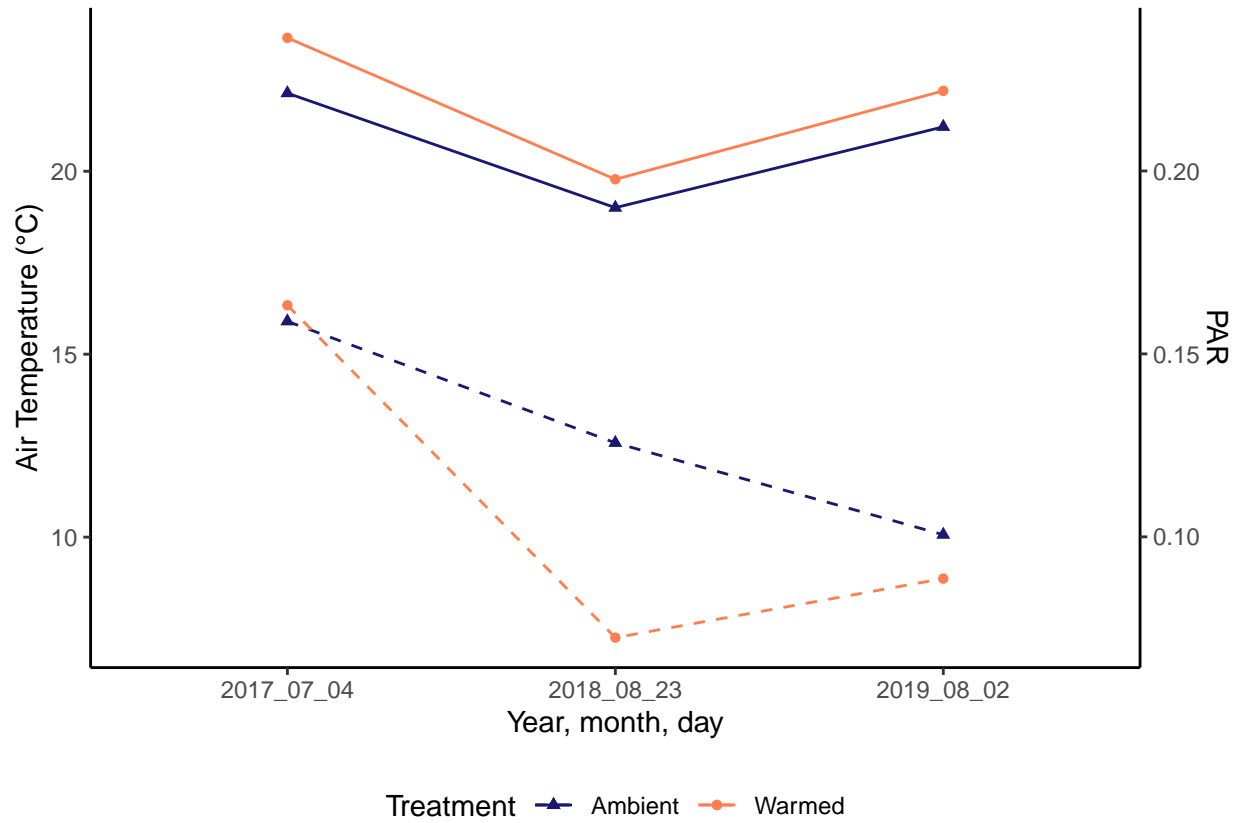
Average July temperatures during the daytime - KBS shows a smaller difference between warmed + ambient in later years than UMBS



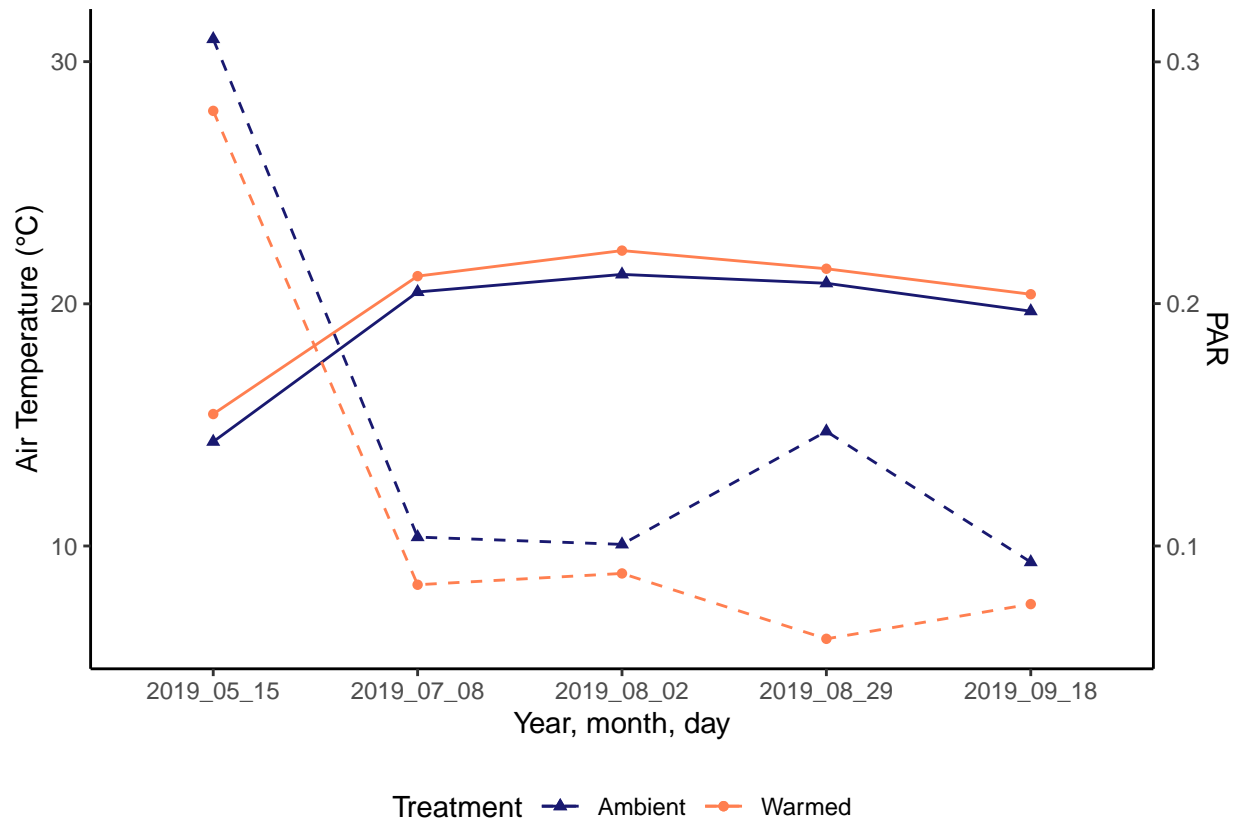
KBS - Comparing PAR to HOBO from 2017-2019; only one day is shown for each year because PAR measurements were only taken on one day at KBS for 2017 and 2018



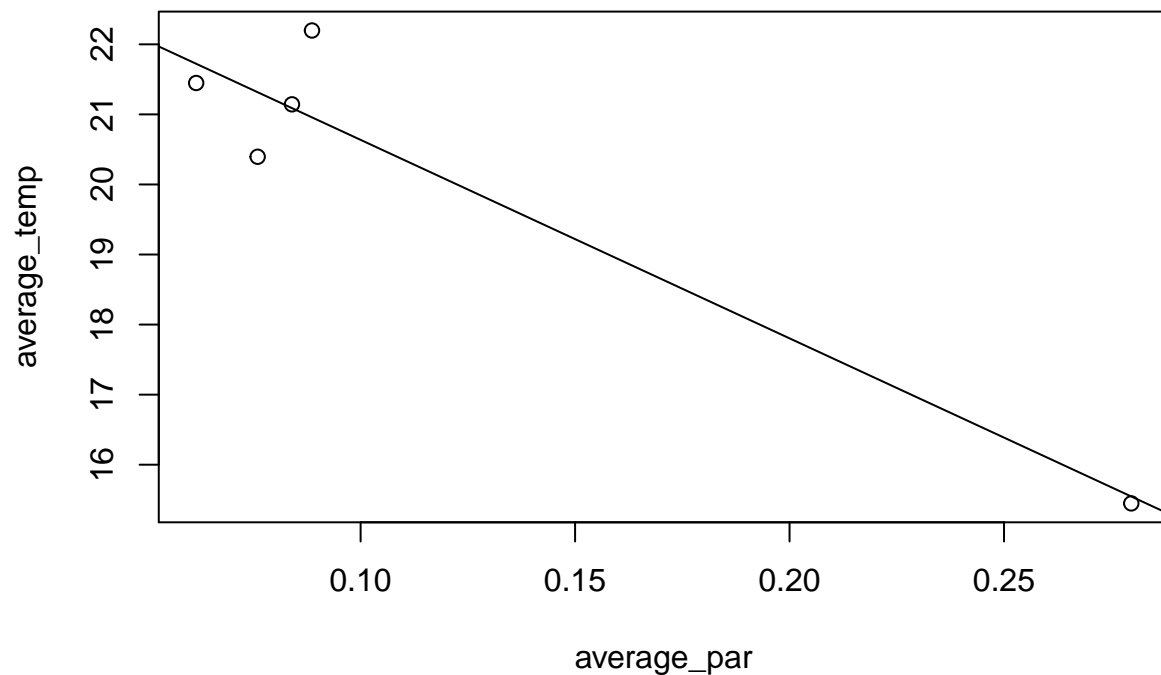
KBS - Again, comparing PAR to HOBO, this time in line format - PAR in dashed lines



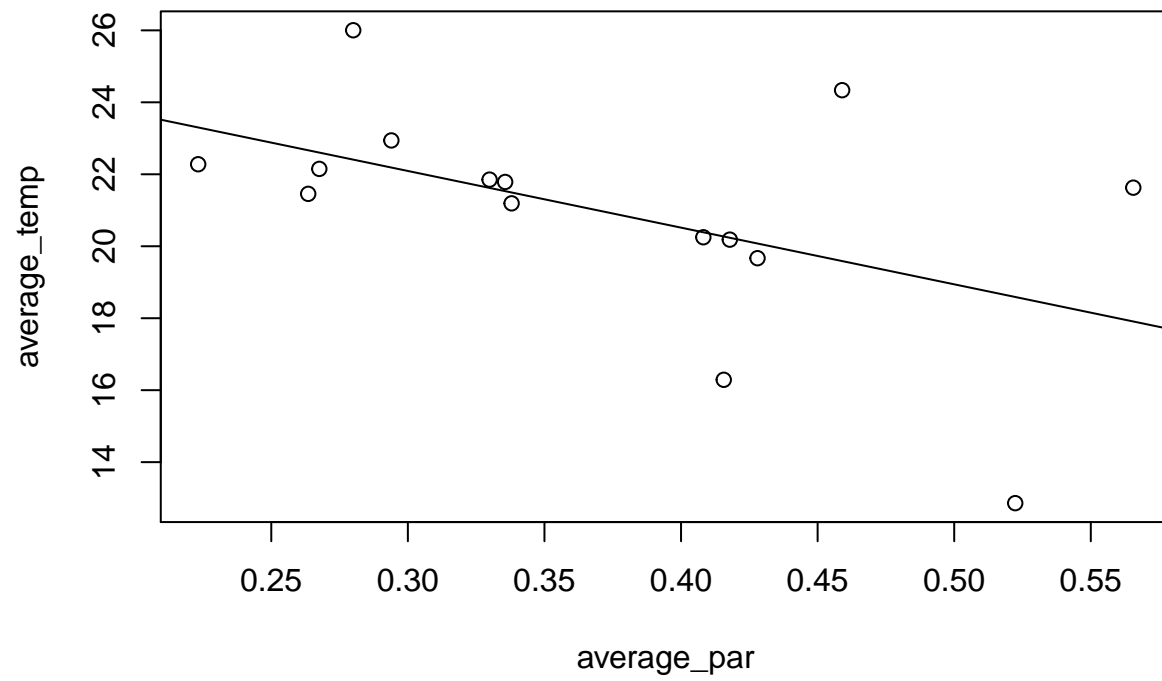
KBS- Comparing PAR to HOBO for only 2019 because multiple PAR measurements were taken that year - PAR in dashed lines



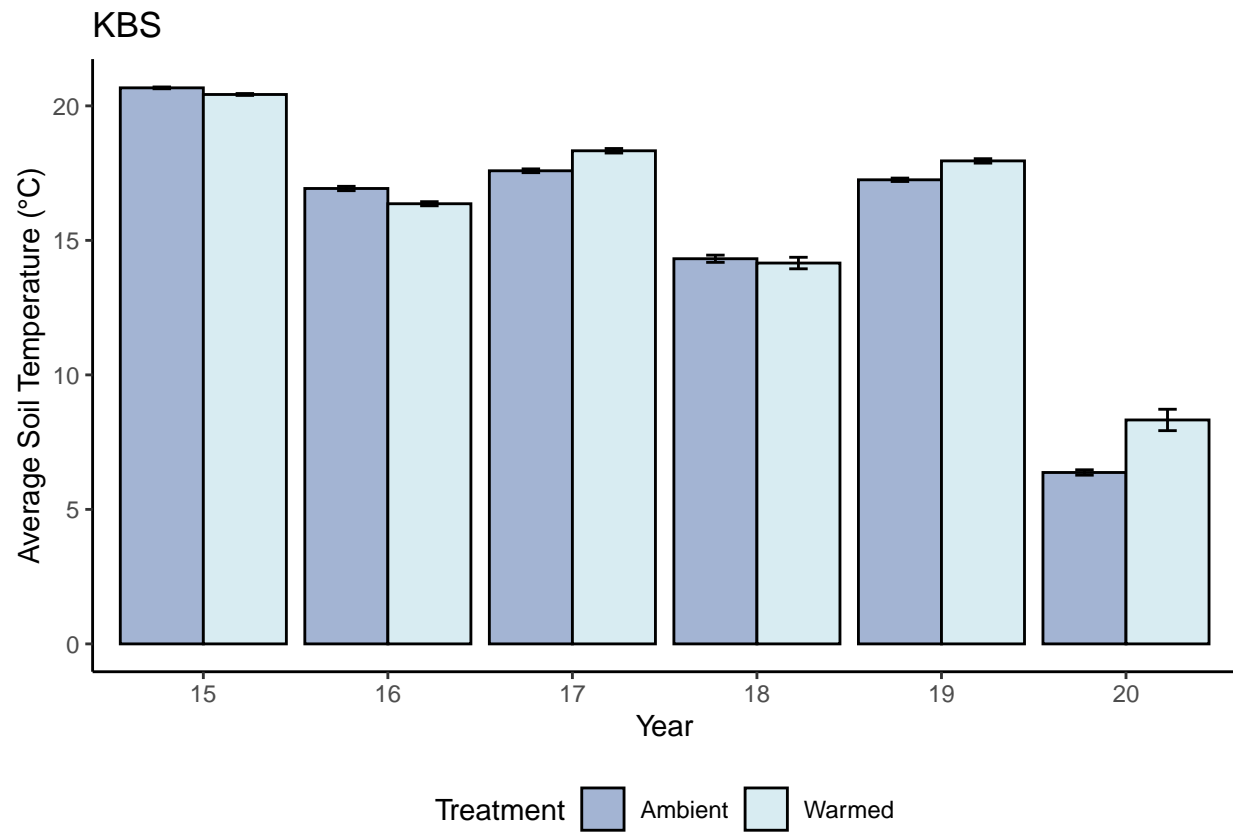
KBS - Simple linear regression between temp and par: $F(1,3) = 32.21$, p-value = 0.011



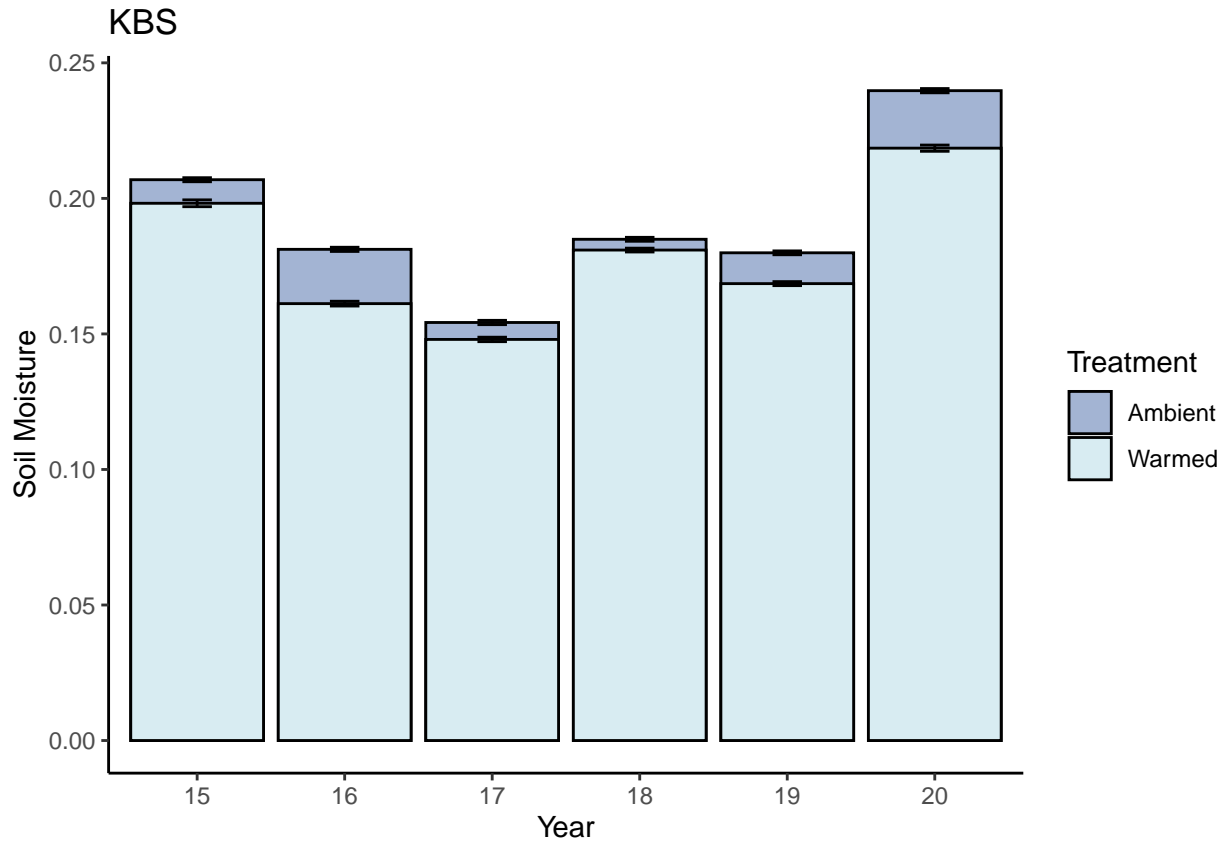
UMBS - Simple linear regression between temp and par: $F(1,13) = 1.45$, p-value = 0.25



Soil temperature over time - varies between ambient or warmed treatments
no sig difference for 2018 (p-value = 0.87)

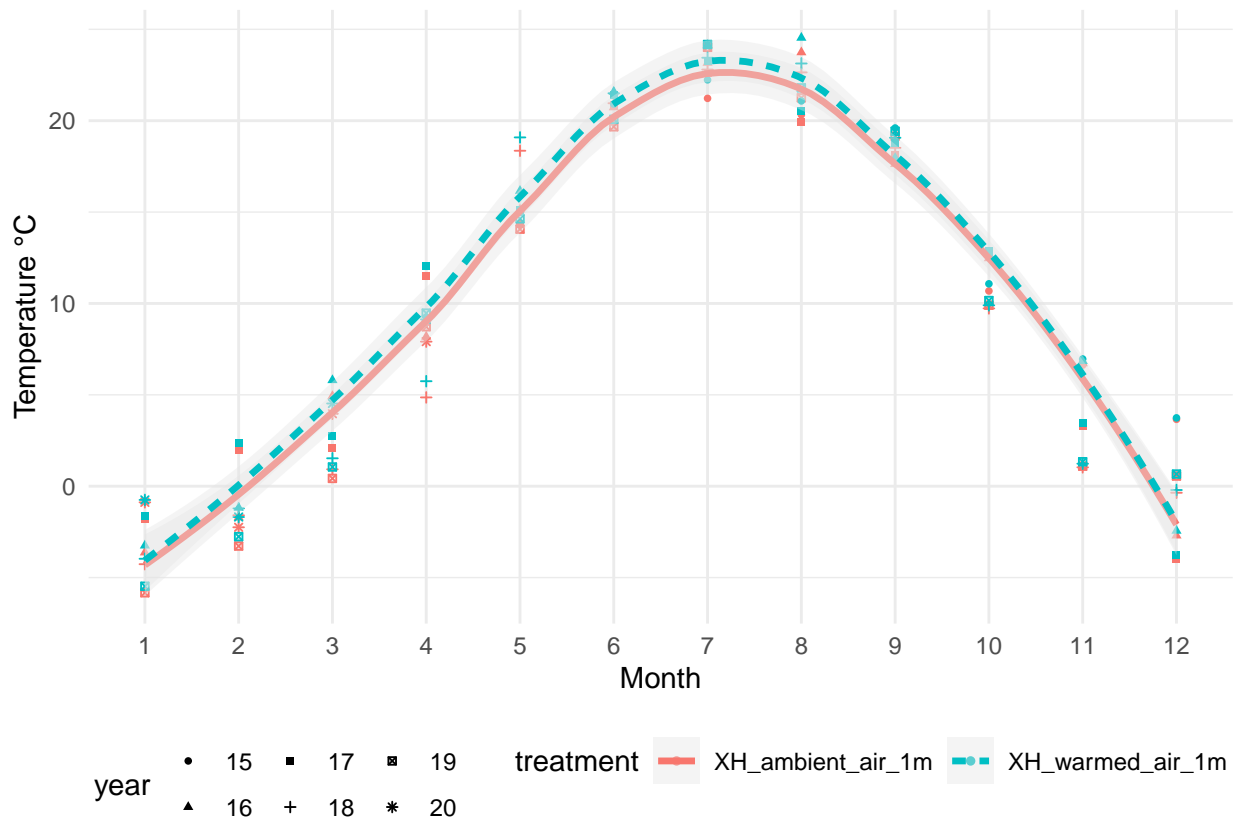


Soil moisture over time - ambient retains more moisture (p-value < 0.001 for all)

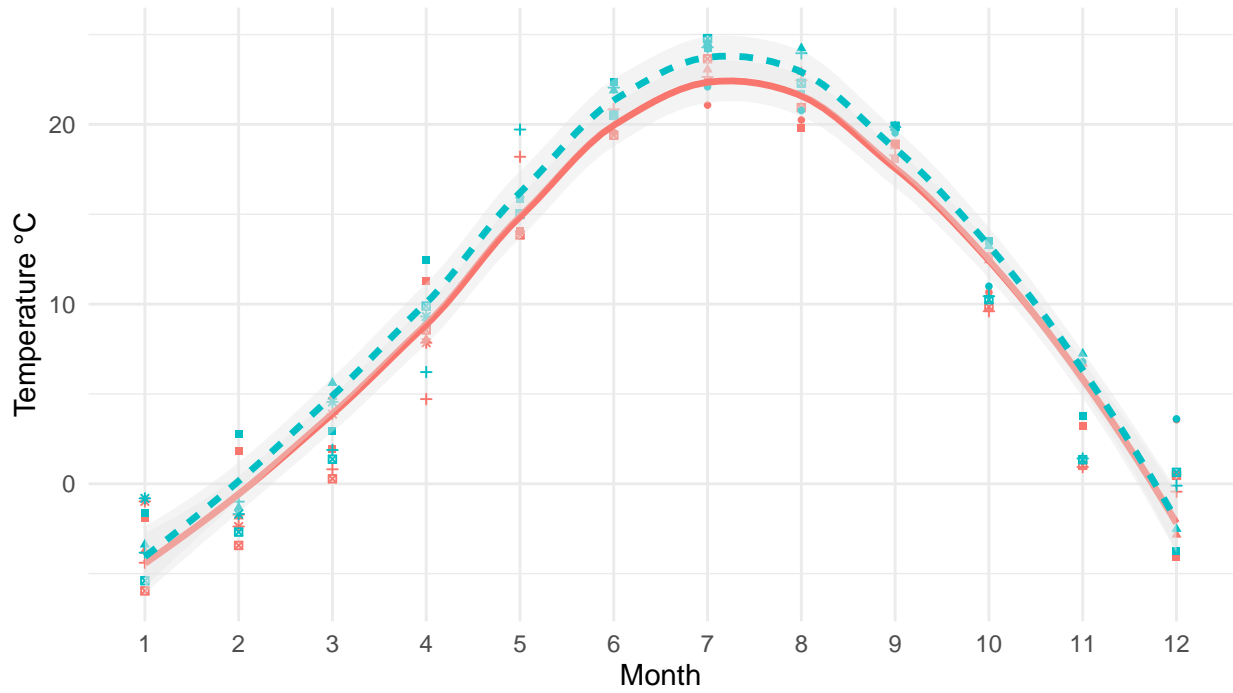


These plots average the chamber temperatures for each month over all years for each treatment

1H sensor

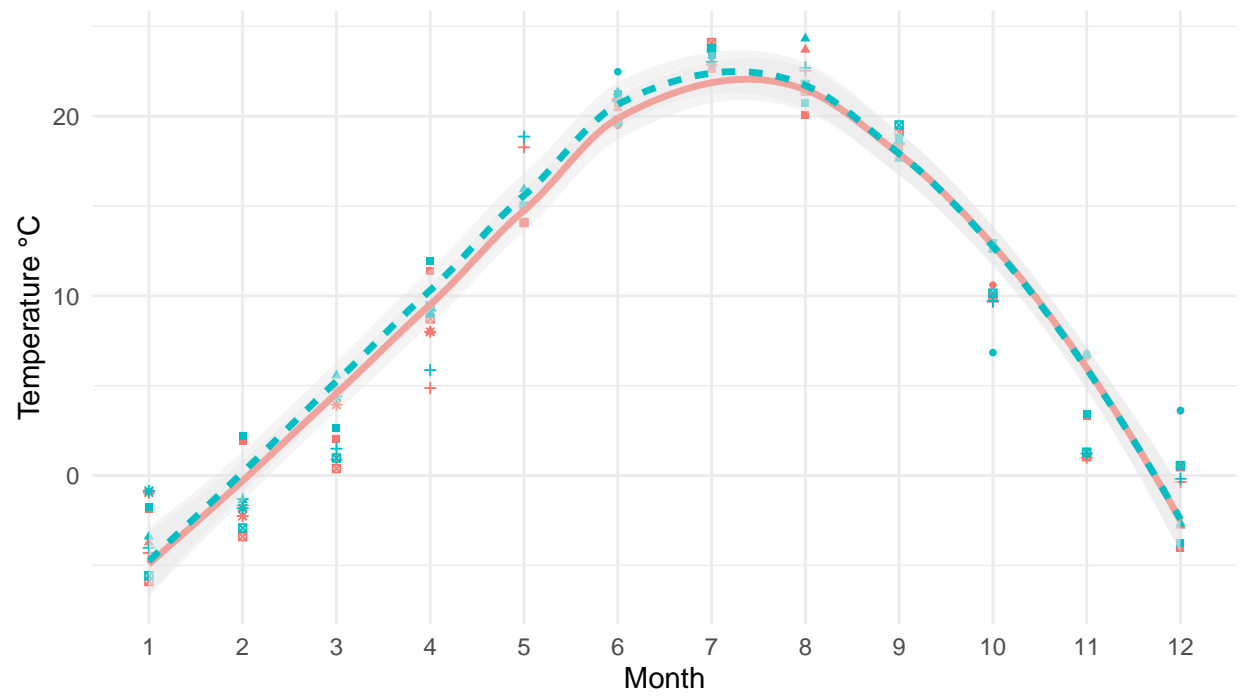


2H sensor



year • 15 ■ 17 ▣ 19 treatment — XH_ambient_air_1m - - XH_warmed_air_1m
 ▲ 16 + 18 * 20

3H sensor



year • 15 ■ 17 ▣ 19 treatment — XH_ambient_air_1m - - XH_warmed_air_1m
 ▲ 16 + 18 * 20