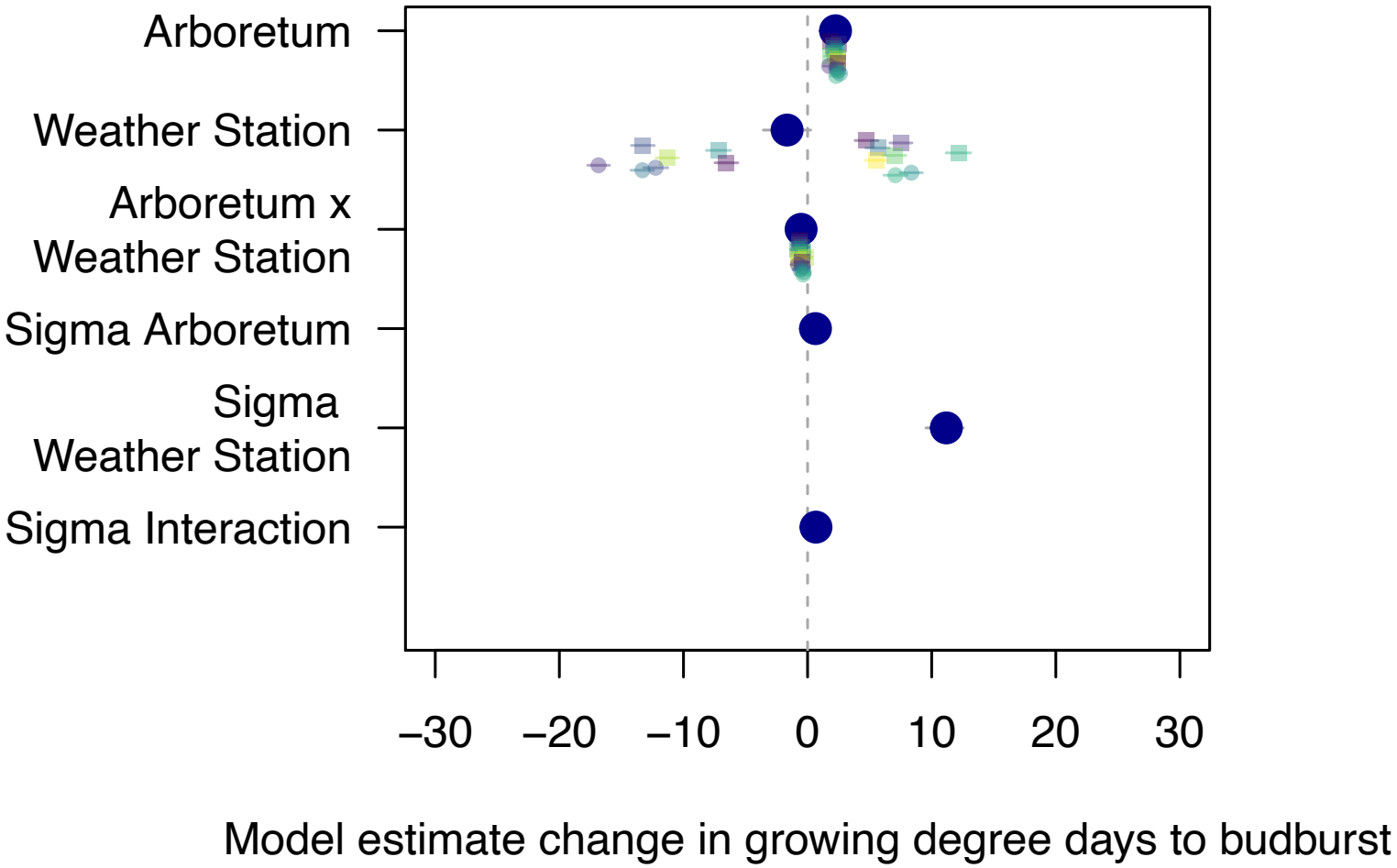
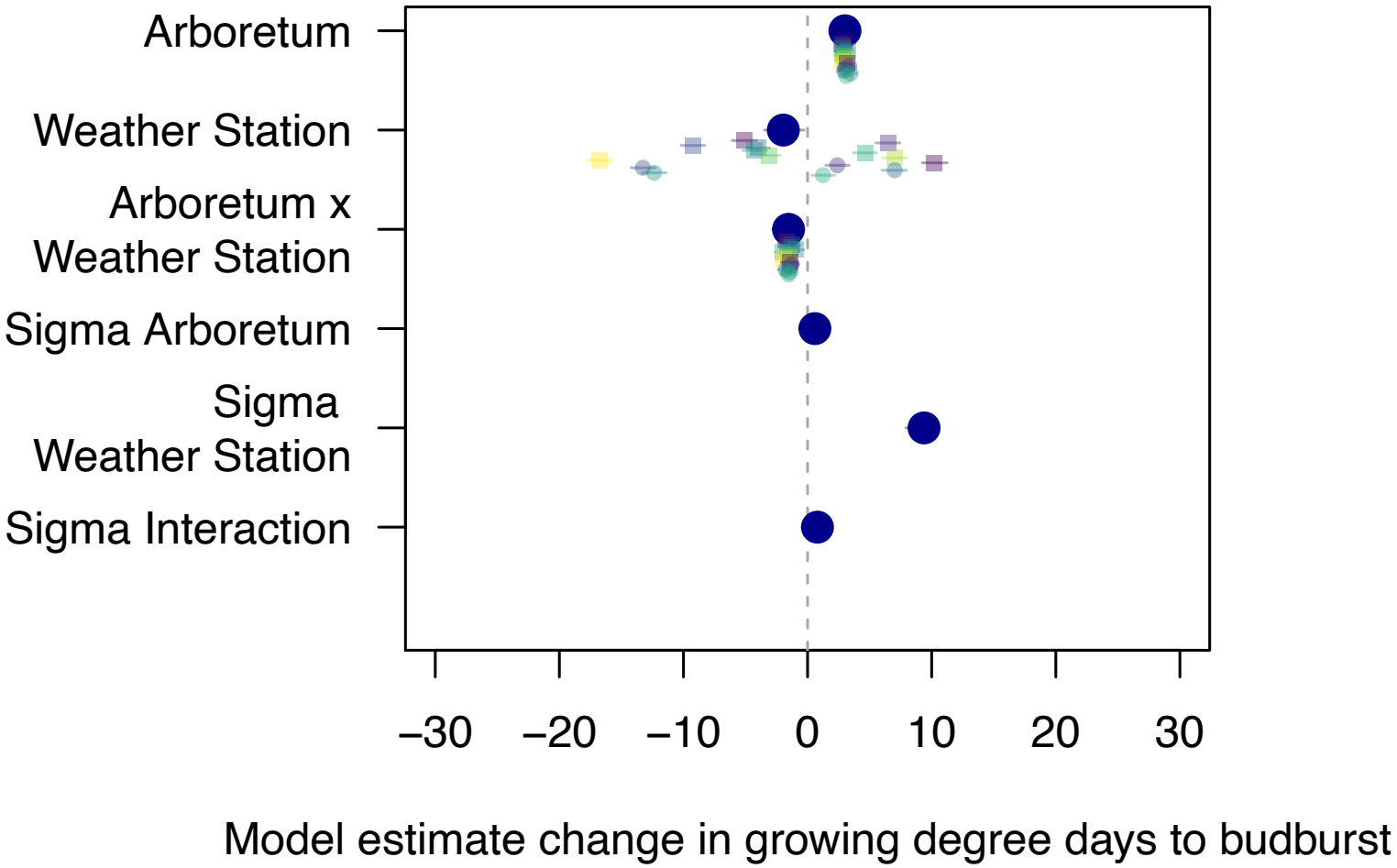
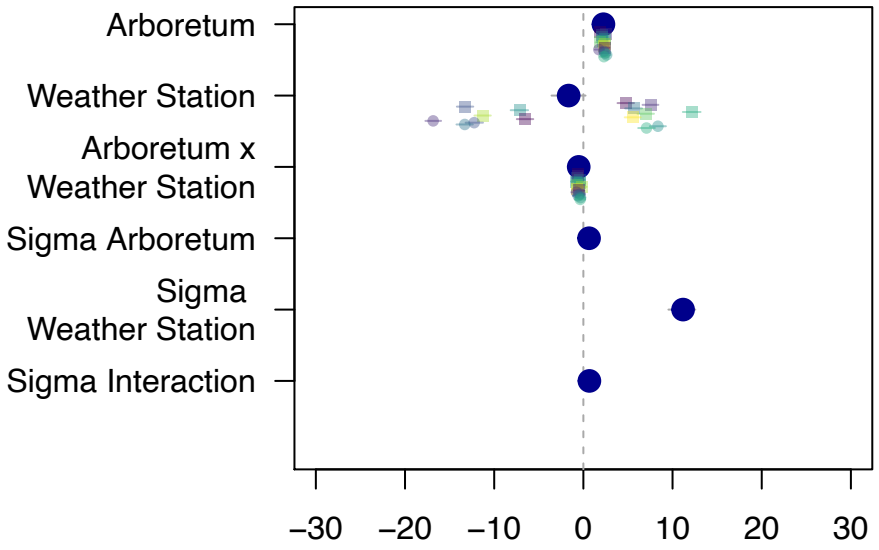
Noisy Weather Station Data



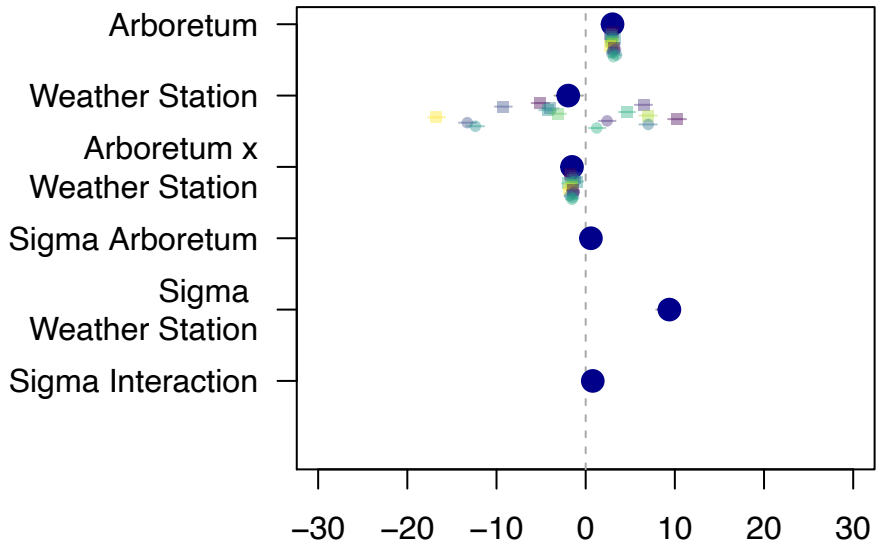
Noisy Hobo Logger Data



Oh goodness...



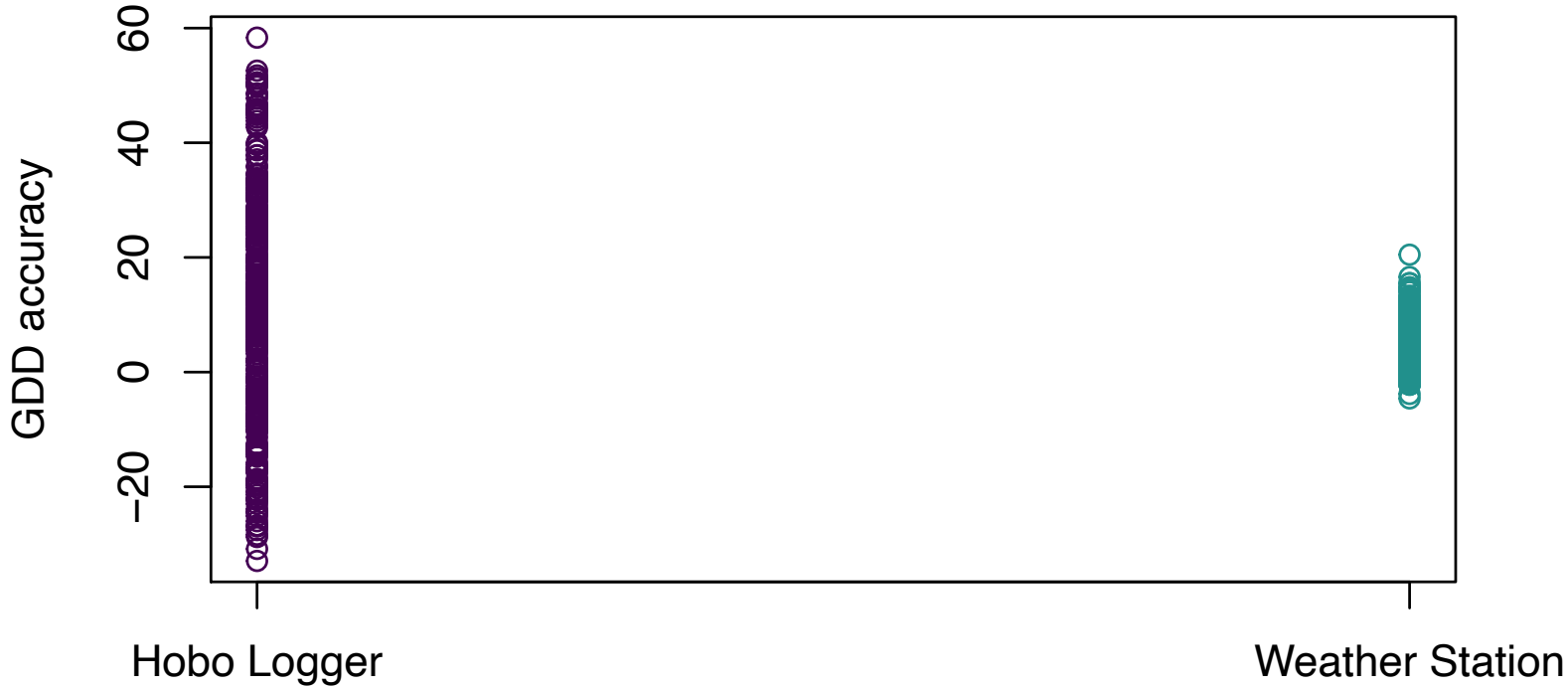
Model estimate change in growing degree days to budburst



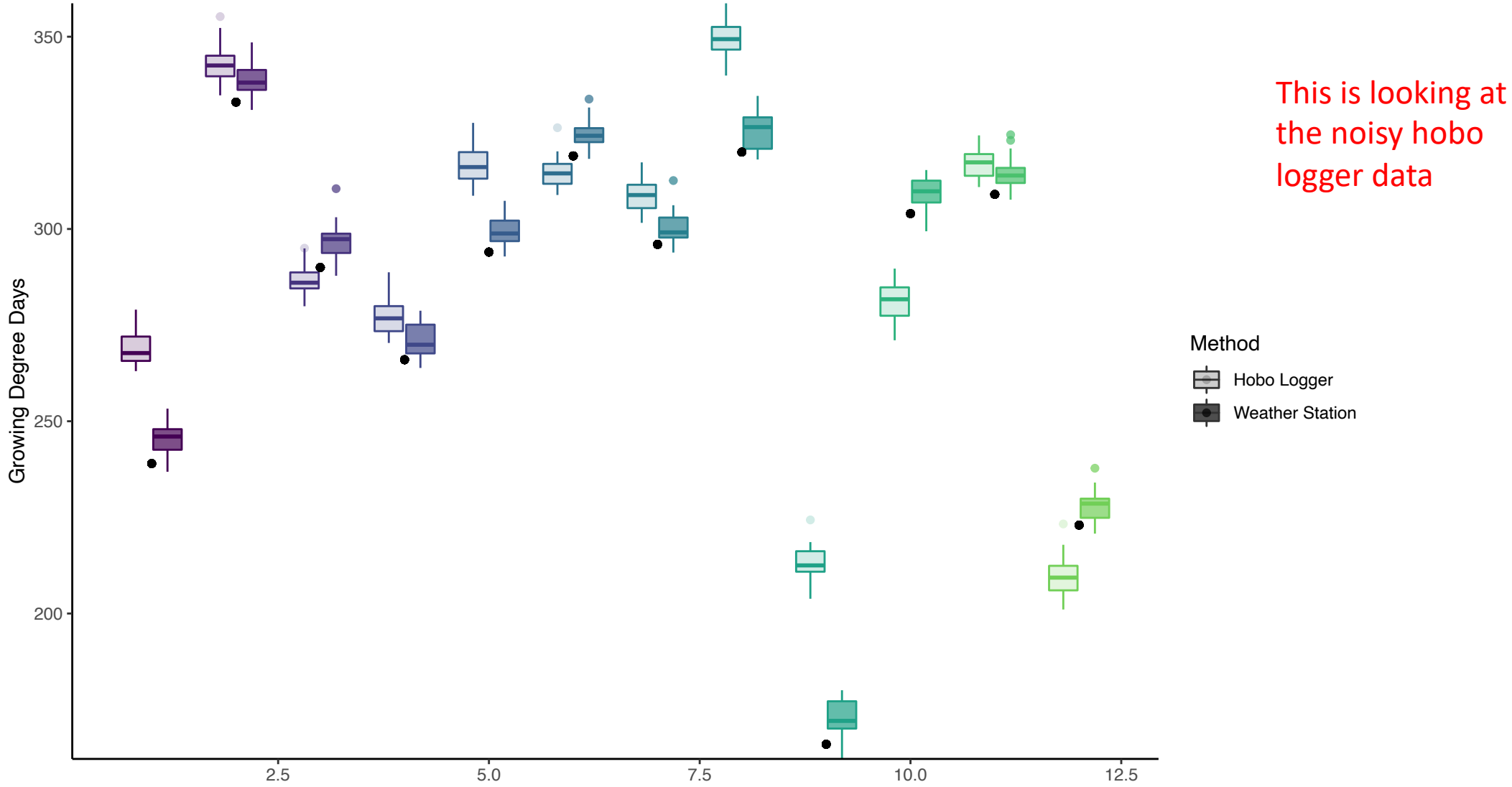
Model estimate change in growing degree days to budburst

Okay, so lots of sims data checks ensued...

And things seemed to be working well actually... So this might be really cool!



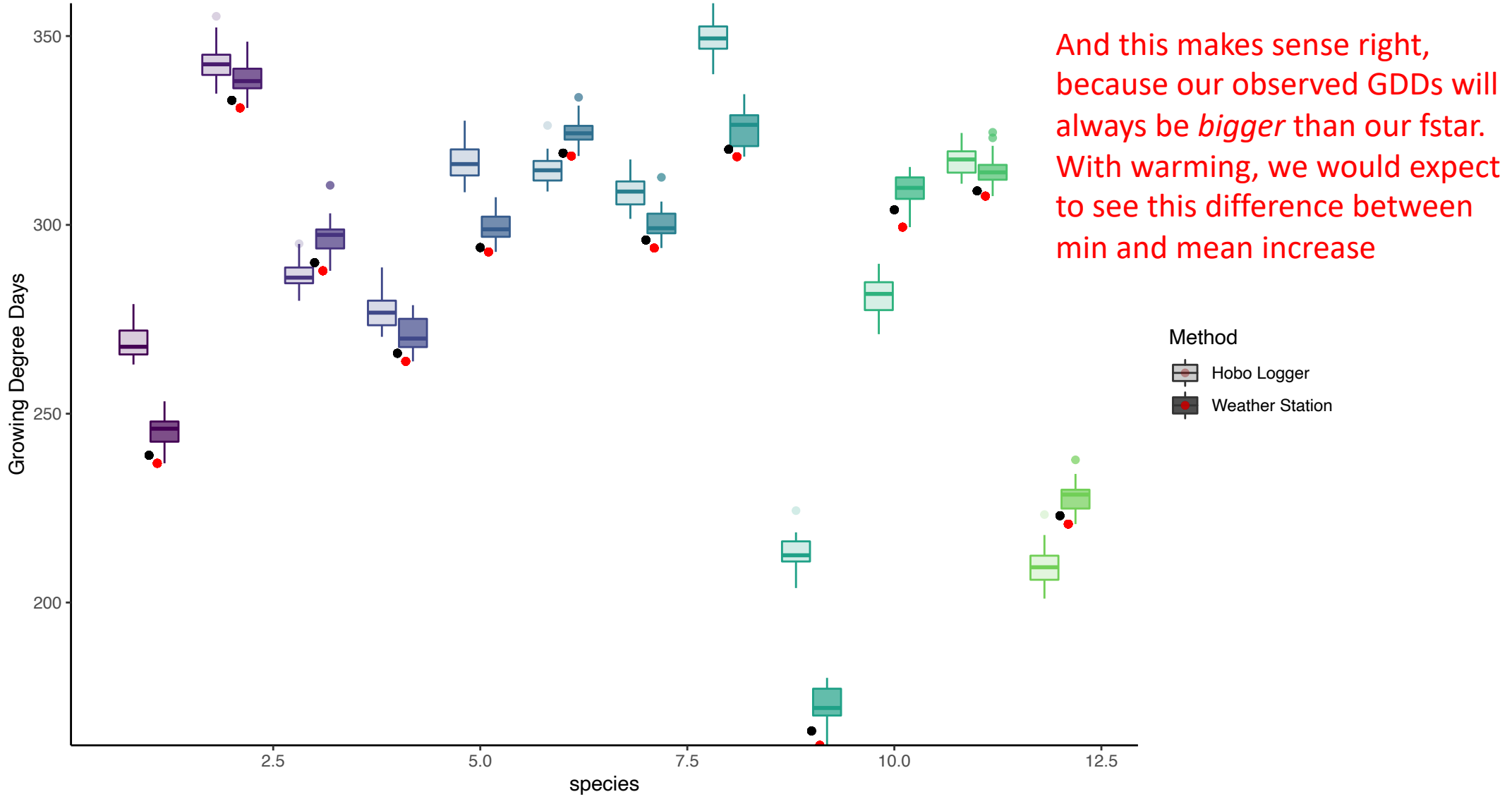
Next, I want to see if I could figure out what Fstar for each species was using raw data



This is looking at the noisy hobo logger data

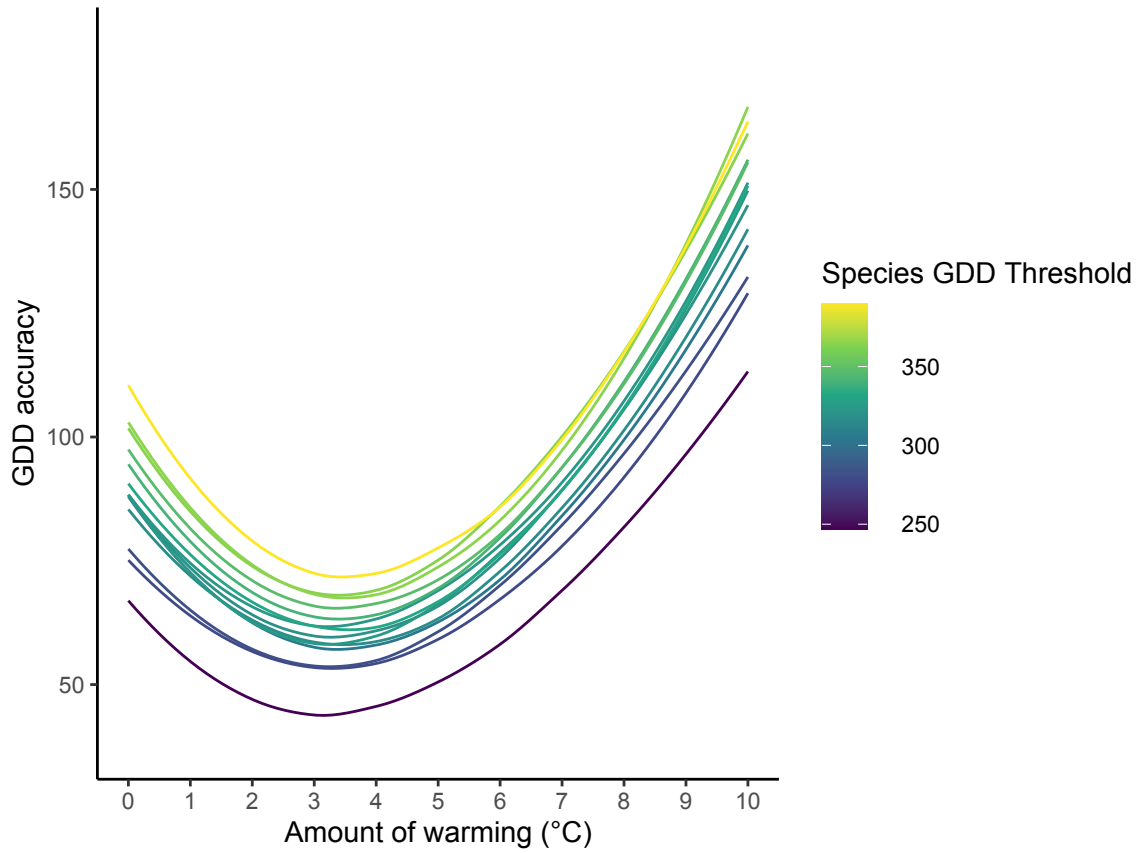
Cool!! There's this relationship between fstarspp and mean minimum GDD using Weather Station data

(remember this is the more accurate method for this example)



And this makes sense right, because our observed GDDs will always be *bigger* than our fstar. With warming, we would expect to see this difference between min and mean increase

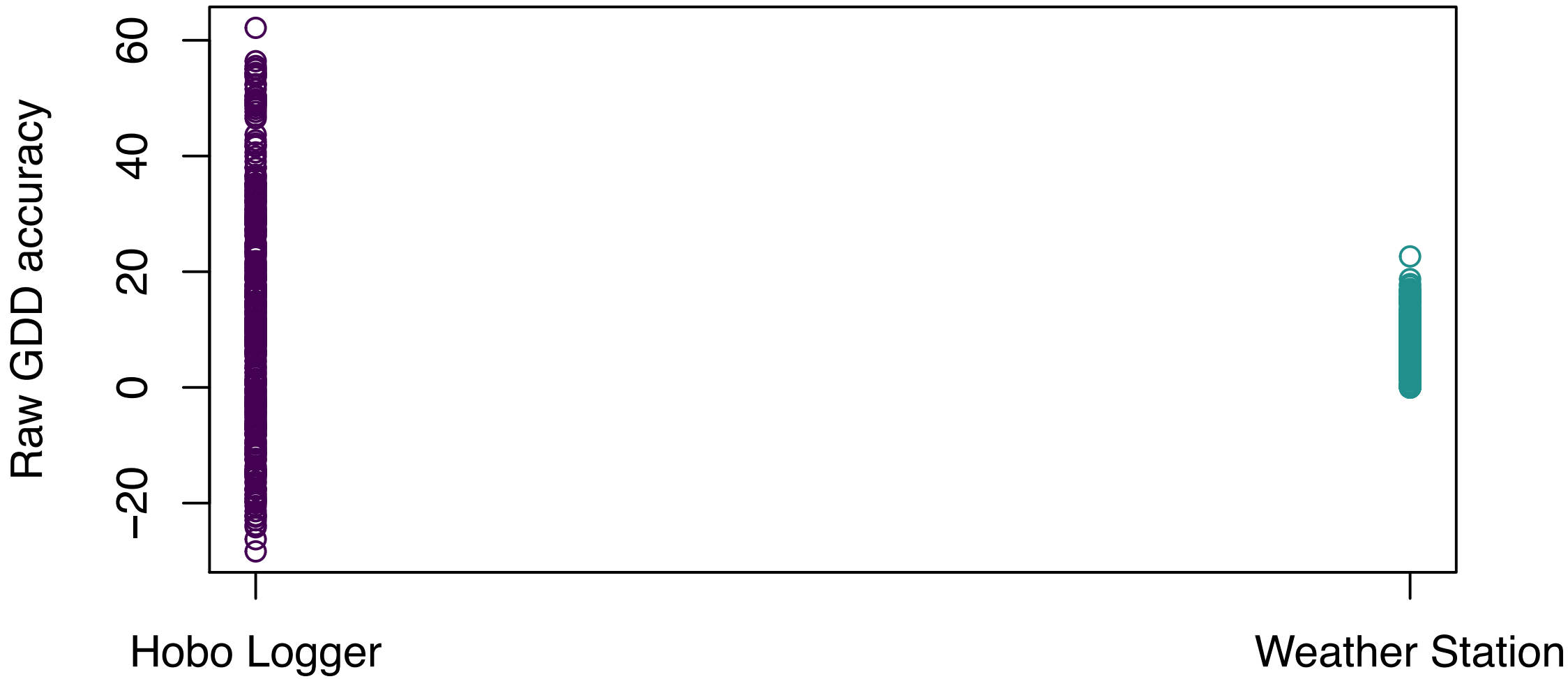
Just a quick detour...



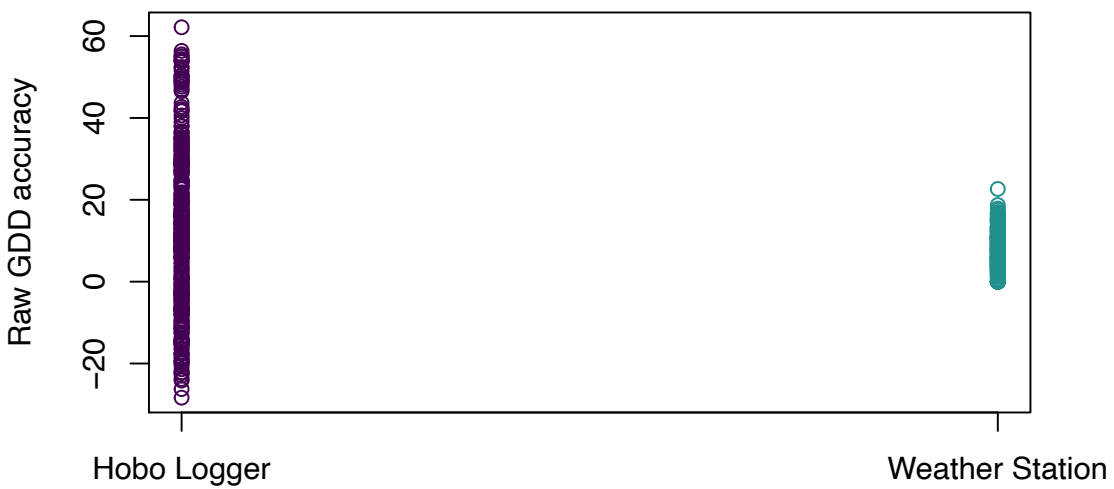
How do I calculate this “raw fstar” value?

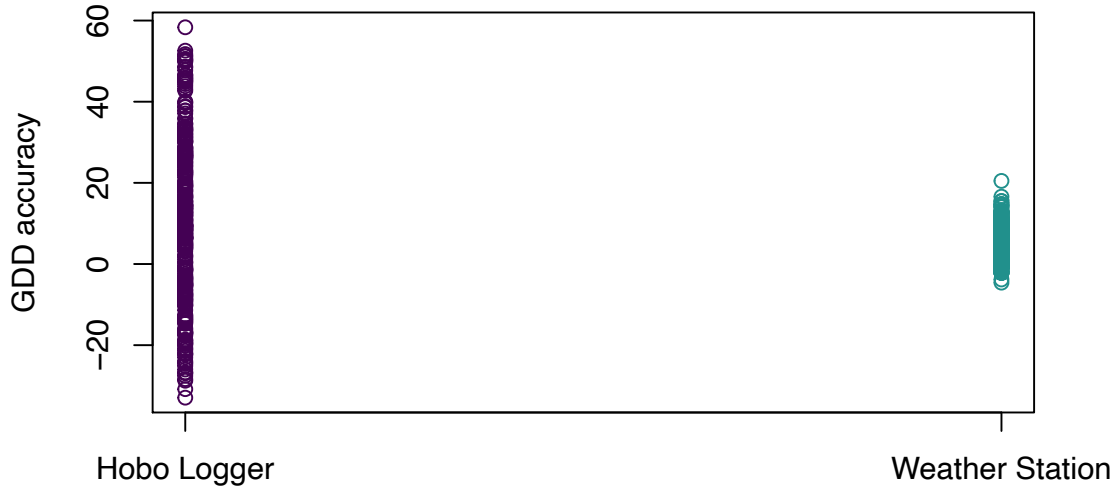
So we’ve learned that the mean min for WS is closely related to fstarspp
If we have real data, how do we know which method is more accurate? Which mean min do we use?

```
fstarrawfunc <- function(df){

  hoboaccuracy <- max(df$meangdd_ws - df$mingdd_hobo) - min(df$meangdd_ws - df$mingdd_hobo)
  wsaccuracy <- max(df$meangdd_hobo - df$mingdd_ws) - min(df$meangdd_hobo - df$mingdd_ws)

  methodcheck <- hoboaccuracy - wsaccuracy

  if(methodcheck<0){
    df$fstarspp_raw <- df$mingdd_hbbo
  } else{
    df$fstarspp_raw <- df$mingdd_ws
  }
  return(df)
}
```


Raw GDD accuracy
60
40
20
0
−20
Hobo Logger
Weather Station

”Raw fstarspp” value Vs. Fstarspp from sims

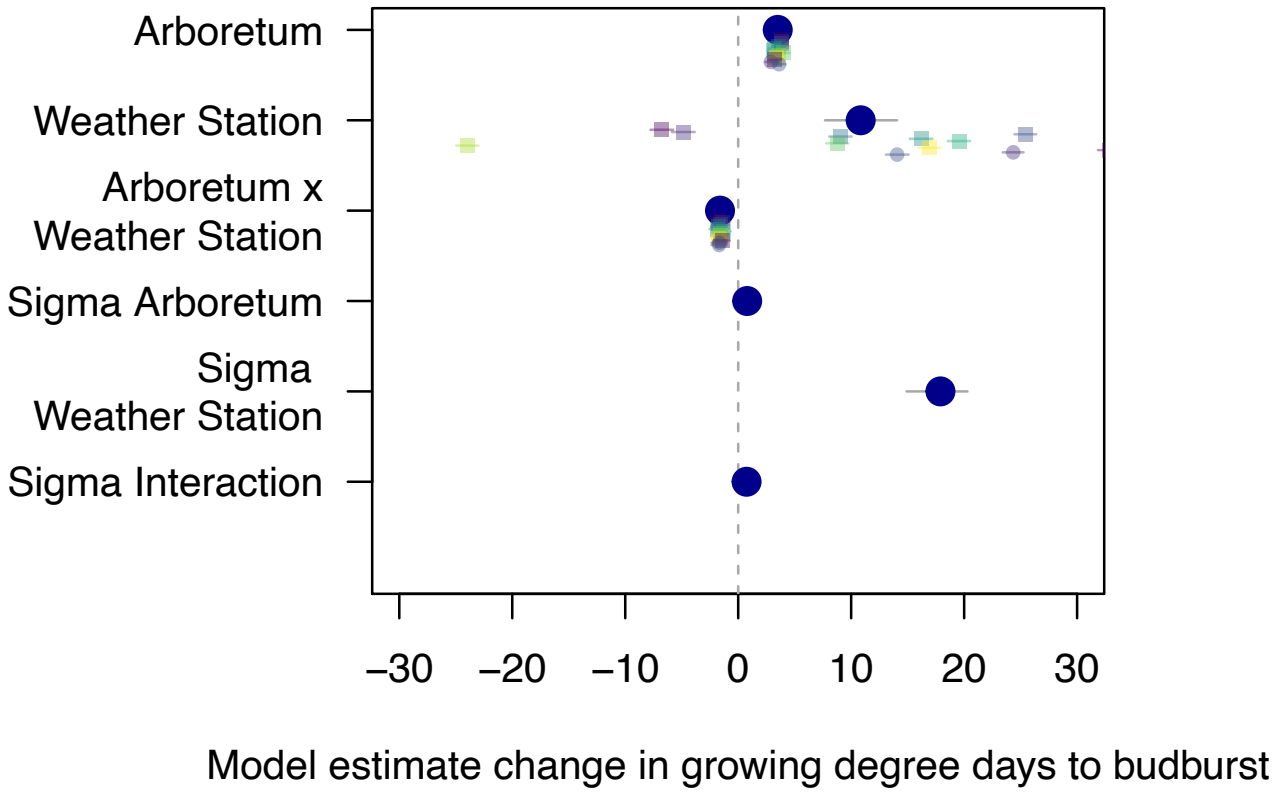


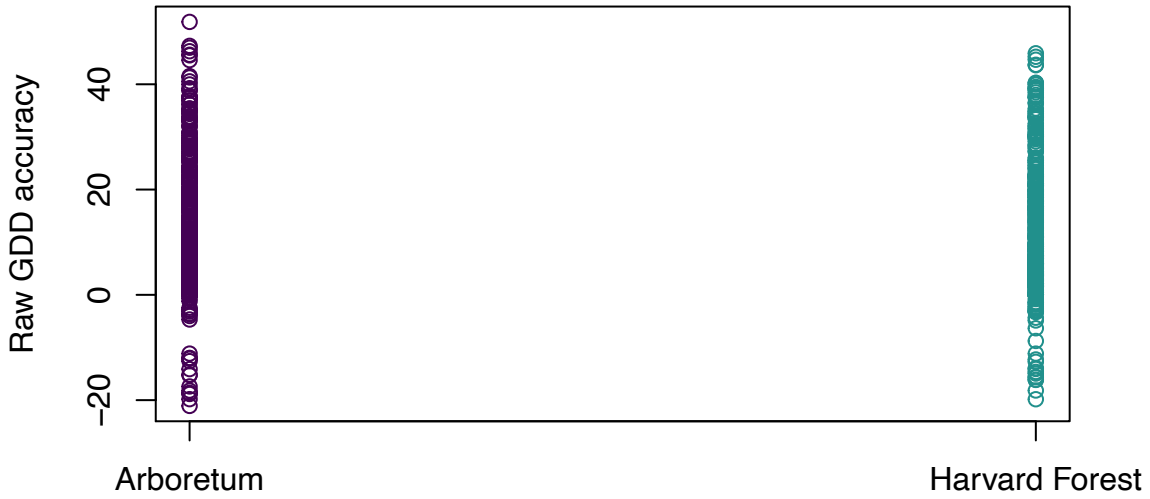


Alright so now we want to see if hobo loggers are more accurate estimates of GDD when we have microclimates....

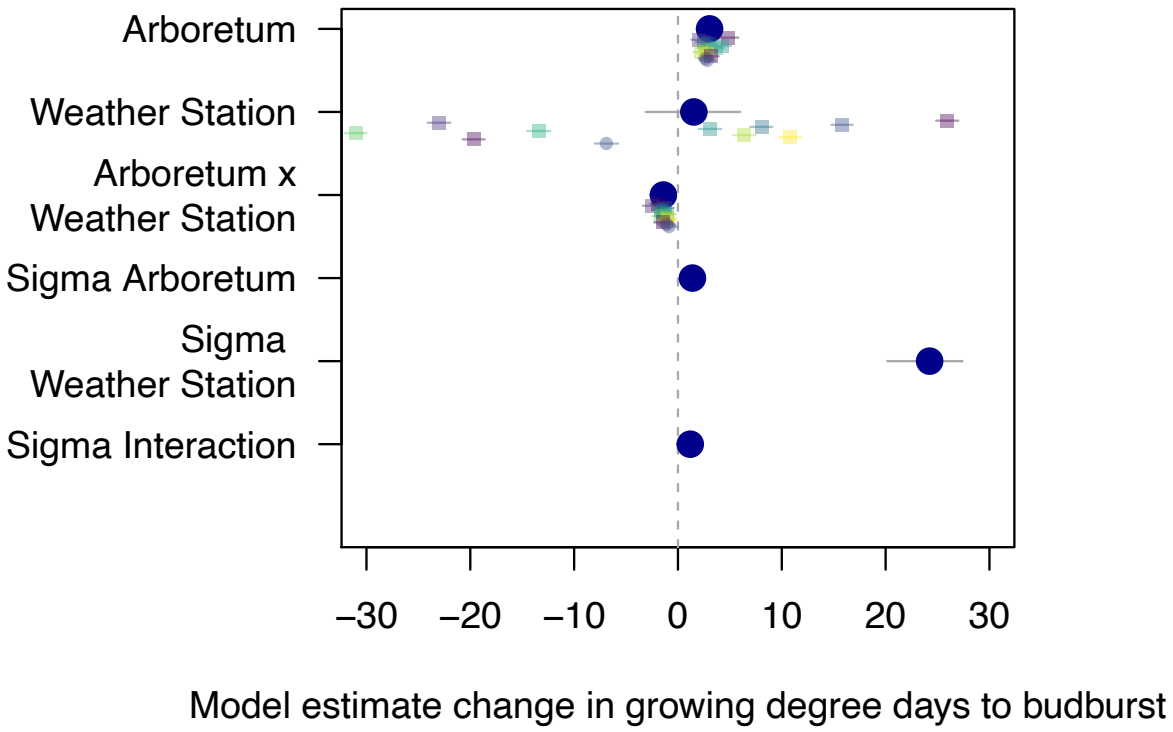
So the way that I do this first is to see what microclimates do to our accuracy tests and muplot

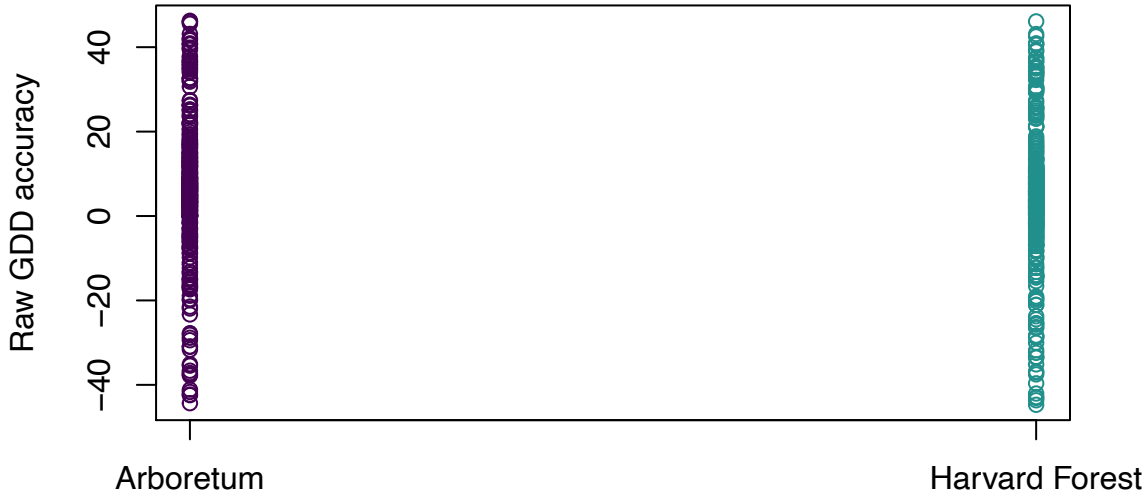
NOISY WEATHER STATION DATA WITH MICROS!

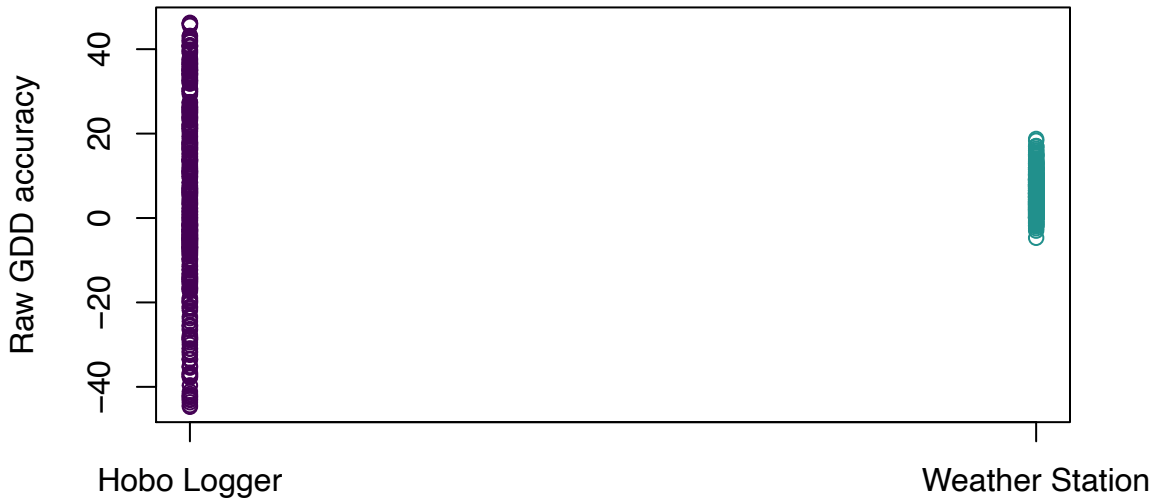




NOISY HOBO LOGGER DATA WITH MICROS!

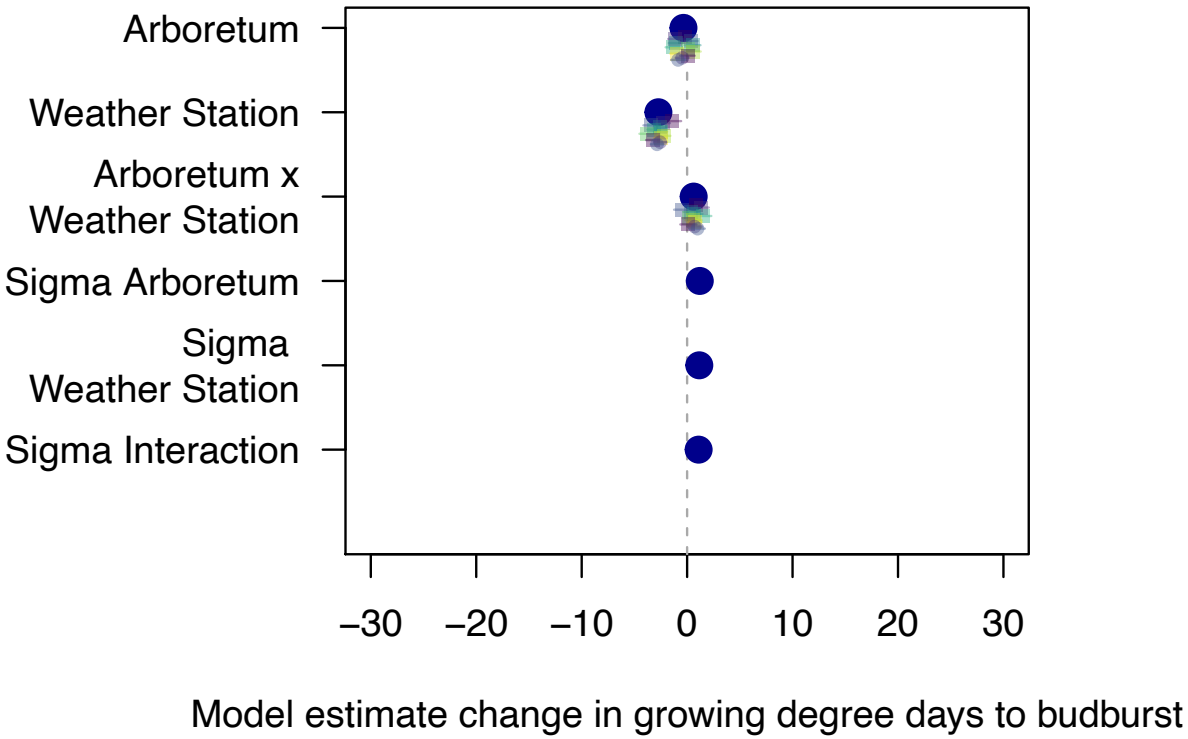


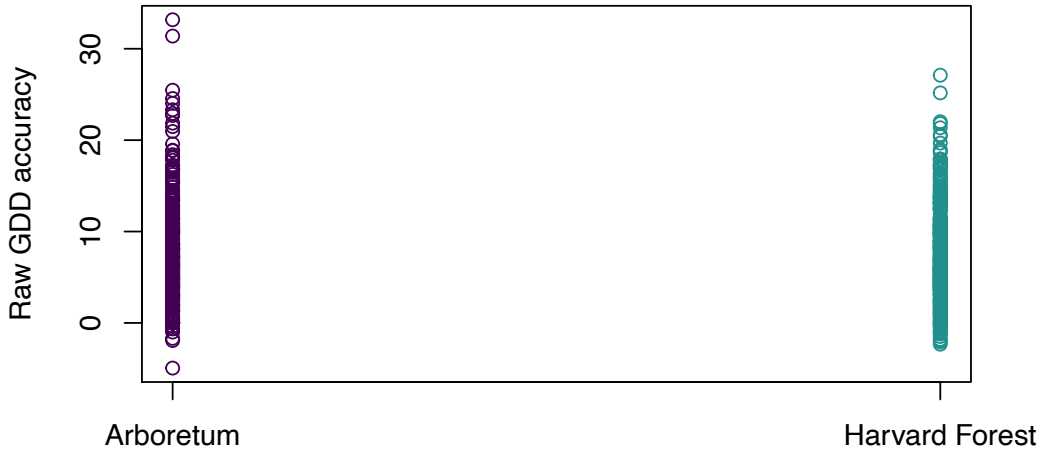


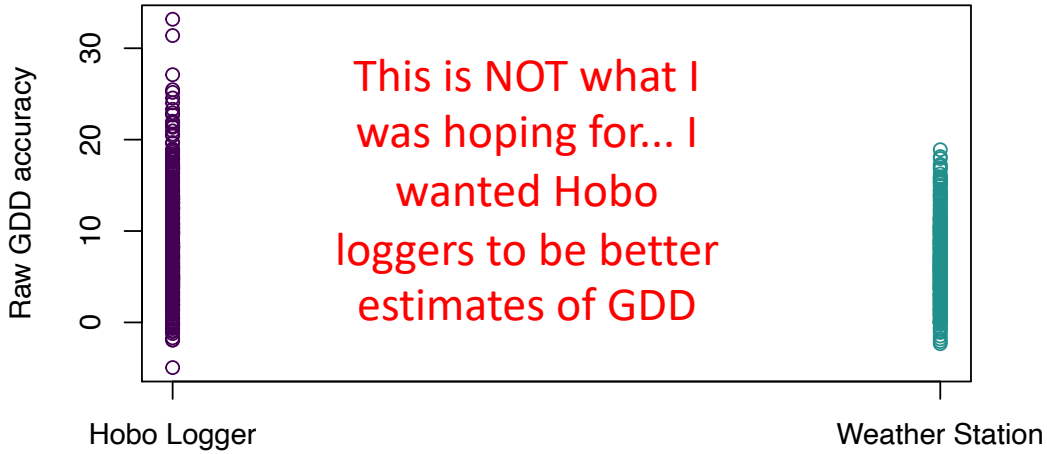


Next, I want to remove the noisy WS or noisy Hobo logger and just have microclimates…

- The way I do this is I add variation around the microsites at both the Arb and the Forest…







This is NOT what I was hoping for… I wanted Hobo loggers to be better estimates of GDD