

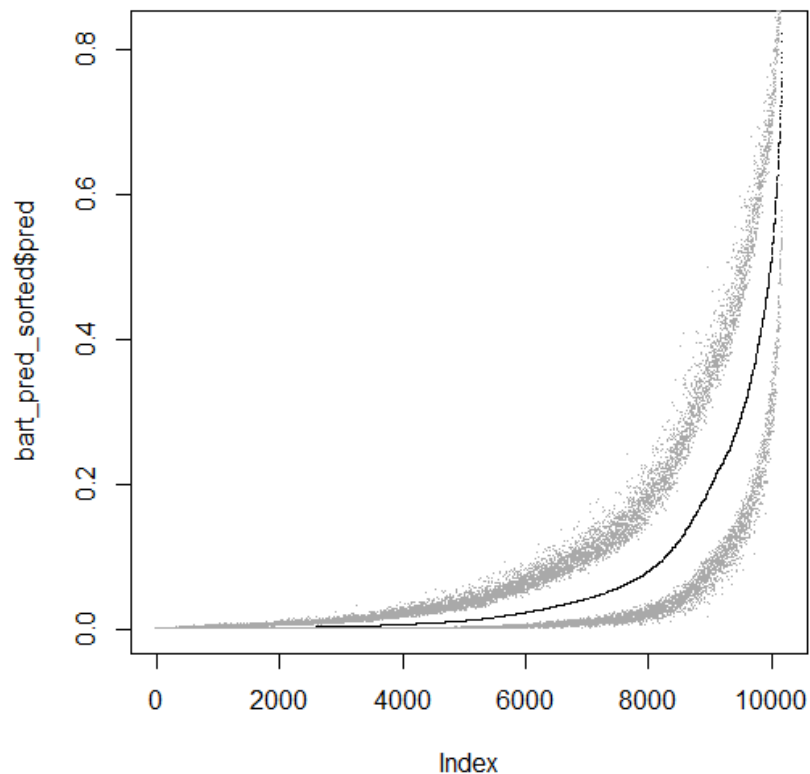
BART response plots

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<https://modtools.wordpress.com/barbosa>

Prediction with credible intervals

```
preds_sorted <- preds[order(preds$BART_P), ]  
plot(preds_sorted$BART_P, pch = ".")  
points(preds_sorted$BART_P_upper, col = "darkgrey")  
points(preds_sorted$BART_P_lower, col = "darkgrey")
```

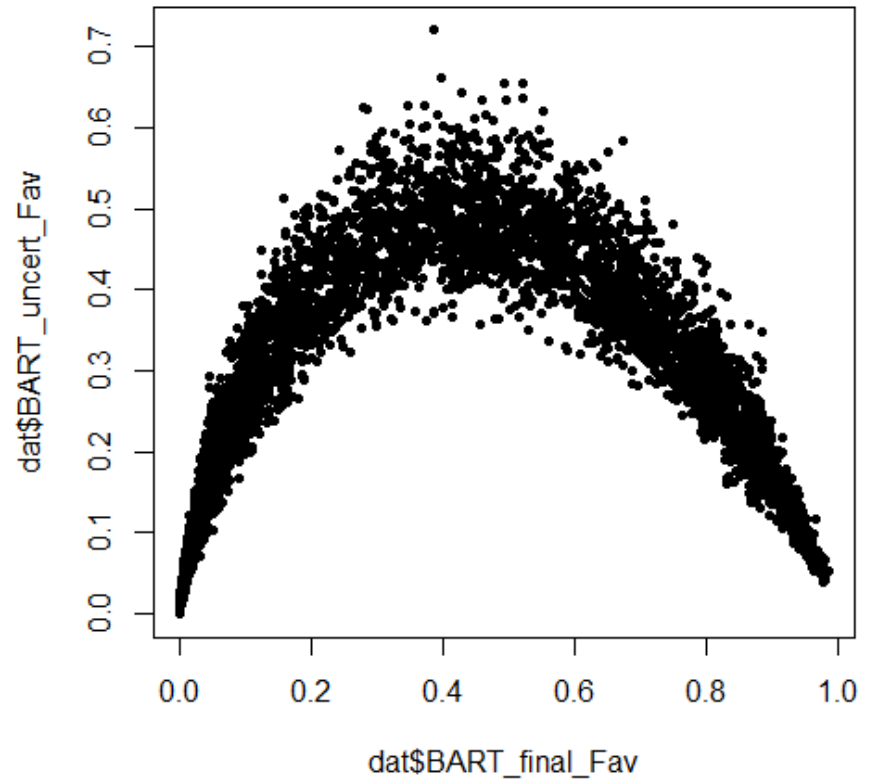
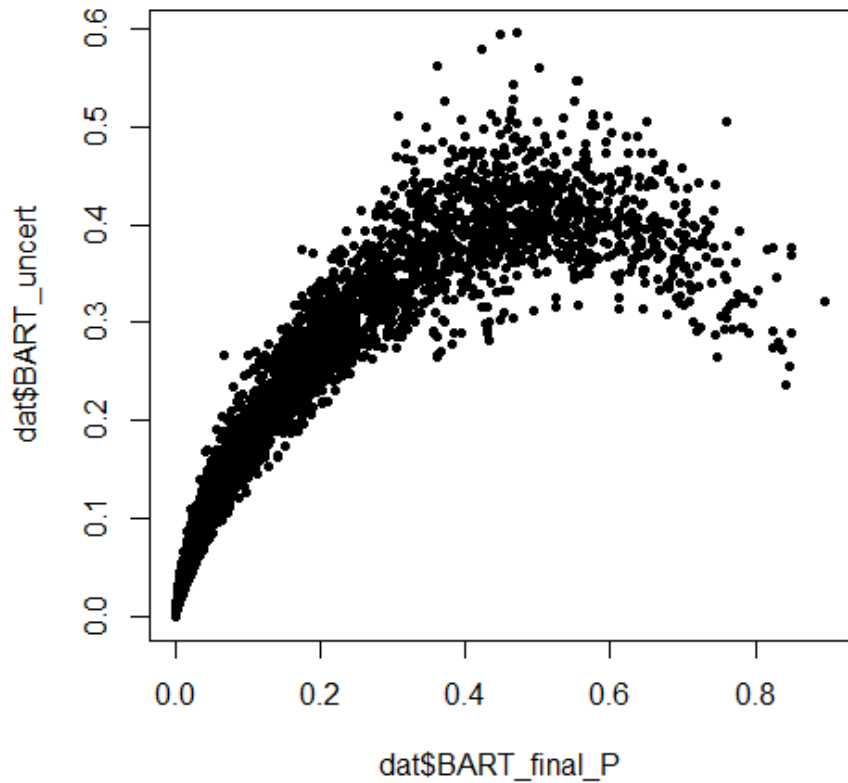


try the same for
favourability

Prediction vs. uncertainty

```
plot(x = dat$BART_P, y = dat$BART_P_uncert)
```

```
plot(x = dat$BART_F, y = dat$BART_F_uncert)
```



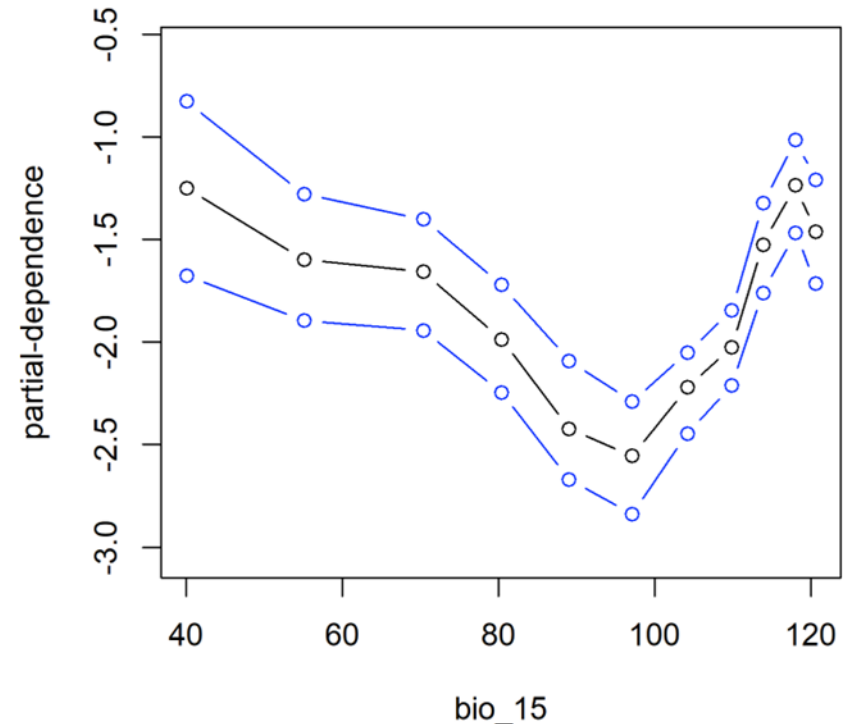
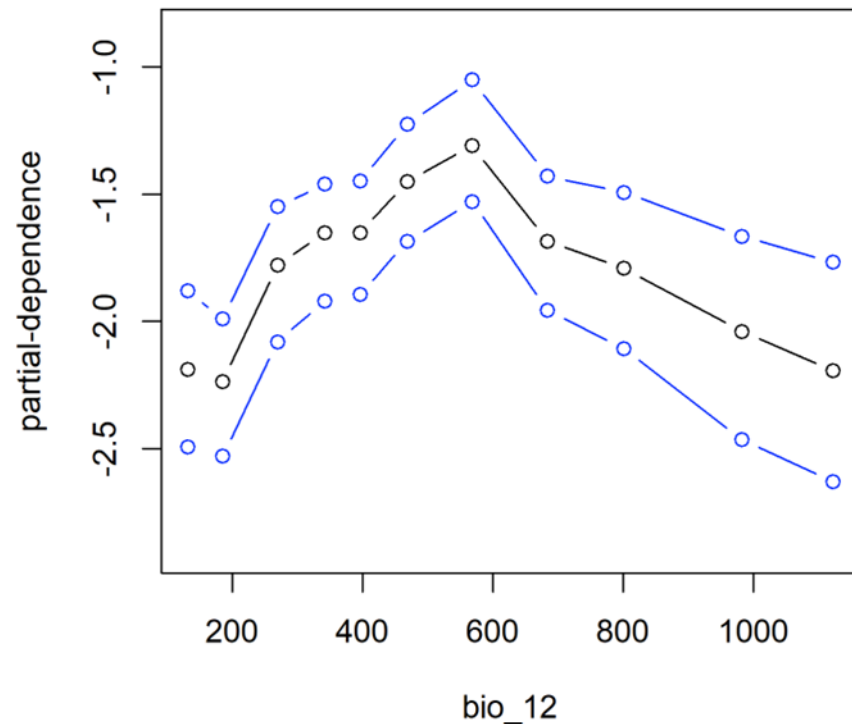
Partial dependence plots

response curve of the species to a given variable --
i.e., how the predicted values vary with that variable
when all other variables are kept constant at their
median value

Partial dependence plots: single variable

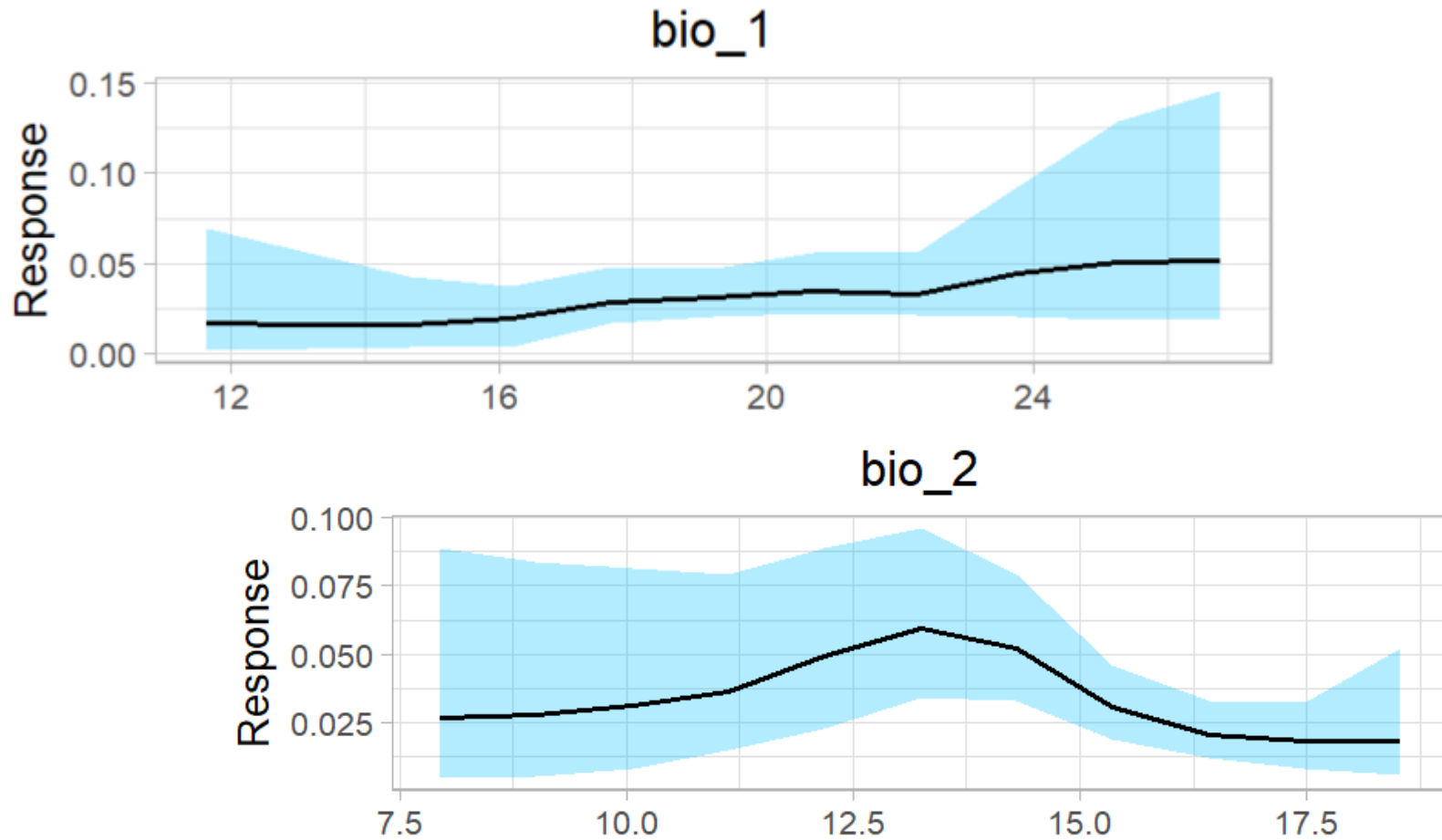
```
dbarts::pdbart(x.train = dat[, vars], y.train = dat[,  
spc_col], xind = vars[1])
```

```
dbarts::pdbart(x.train = dat[, vars], y.train = dat[,  
spc_col], xind = vars[2])
```



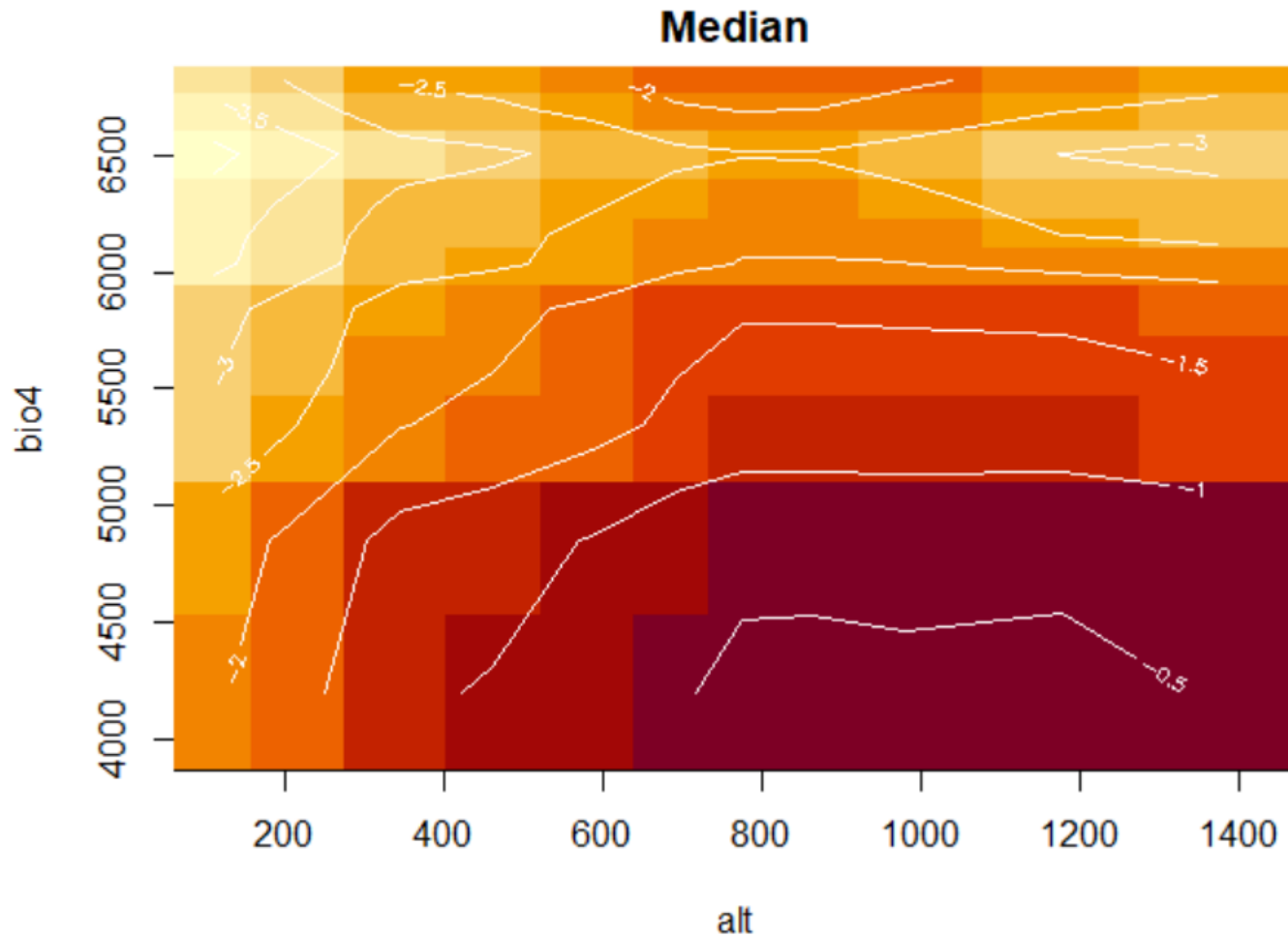
Partial dependence plots: single variable

```
embarcadero::partial(mod, x.vars = "WC_bio51_lonlat",  
ciwidth = 0.95, trace = FALSE)
```



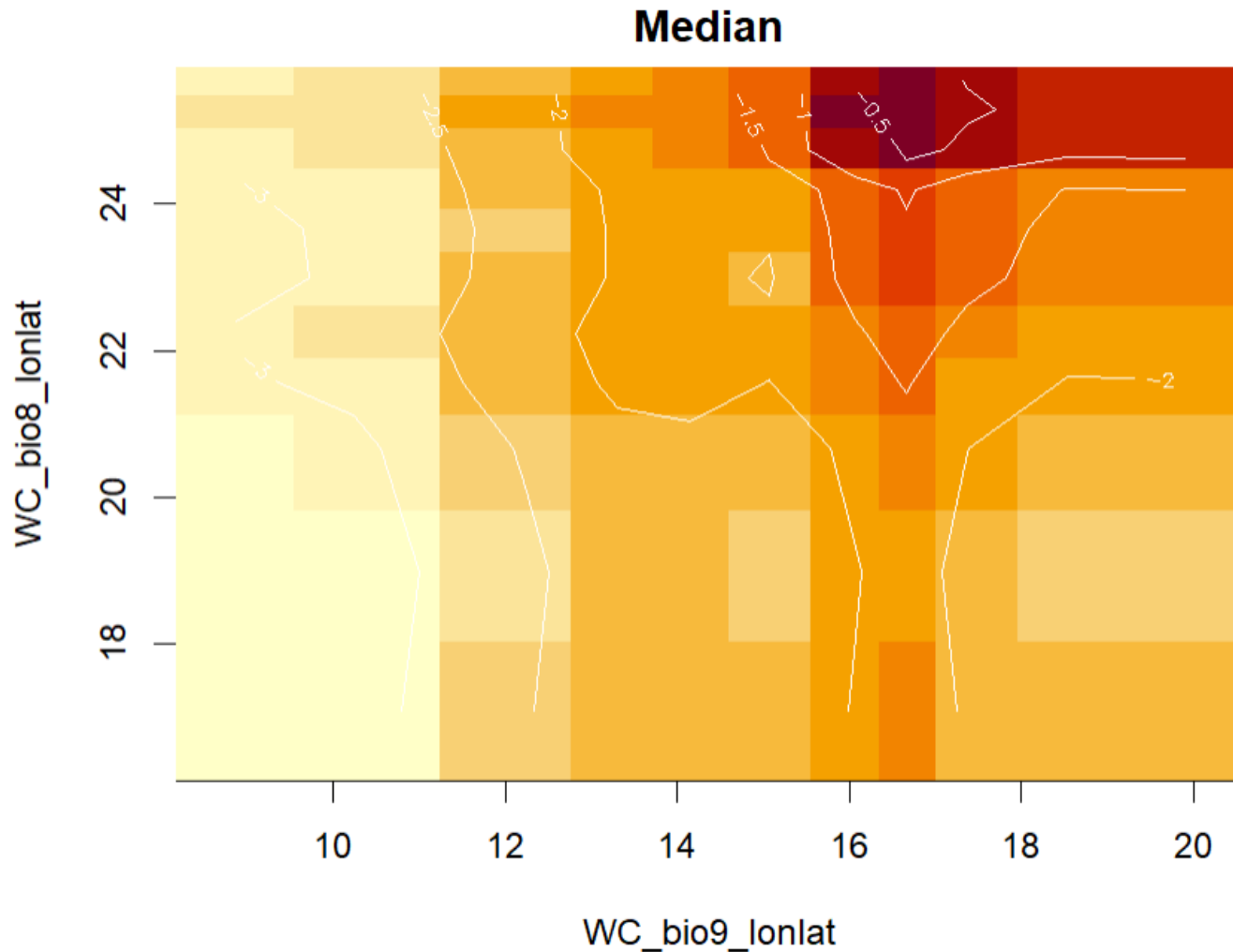
Partial dependence plots: 2 variables

```
pd2bart(mod, xind = c("alt", "bio4"))
```



Partial dependence plots: 2 variables

```
pd2bart(mod, xind = c("WC_bio8_lonlat",  
"WC_bio9_lonlat"))
```



Spatial partial (*spartial*) dependence plots

spatial partial response to a given variable

(or how the predicted probability varies with that variable **across the study area**)

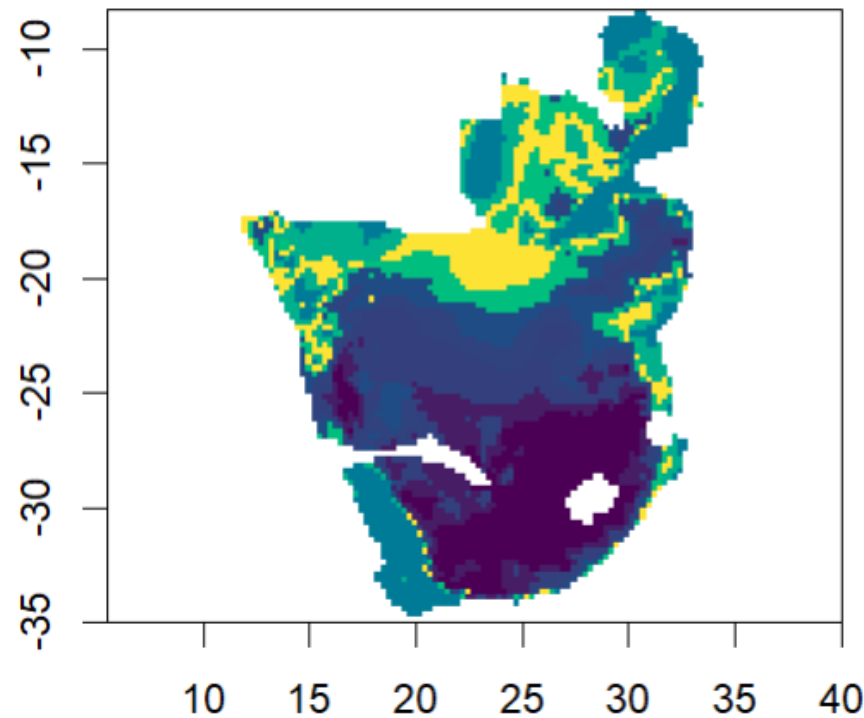
if all other variables are kept constant at their median value

Spatial partial (*spartial*) dependence plots

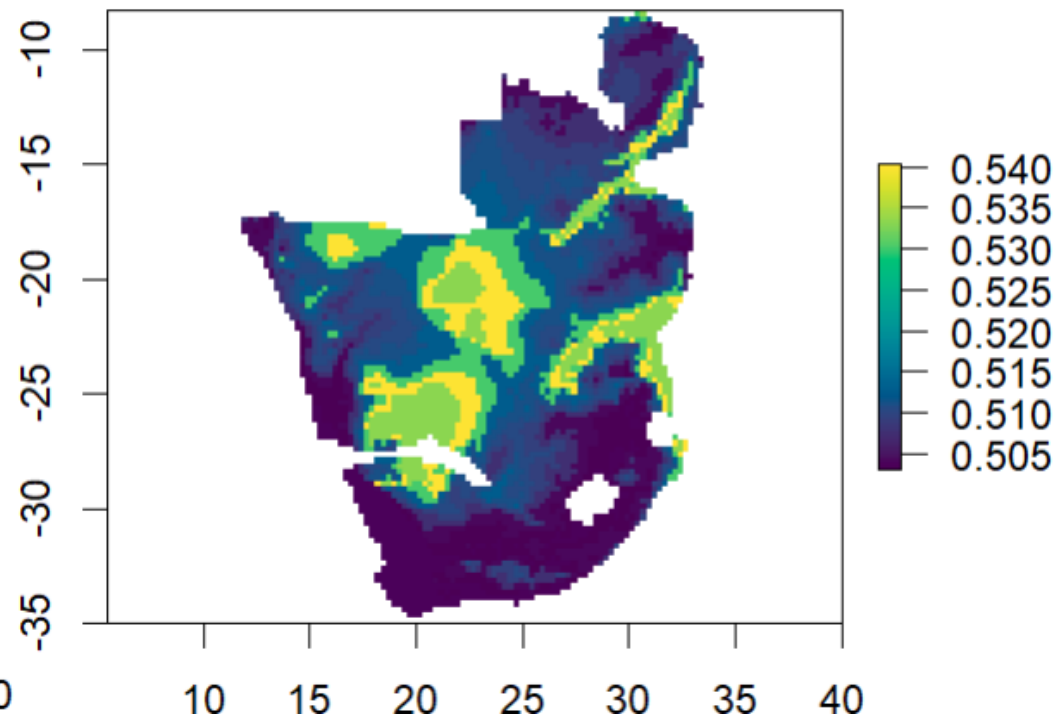
```
spartial(mod, envs = layers, x.vars = "alt")
```

```
spartial(mod, envs = layers, x.vars = "bio4")
```

partial prediction:
WC_bio9_lonlat



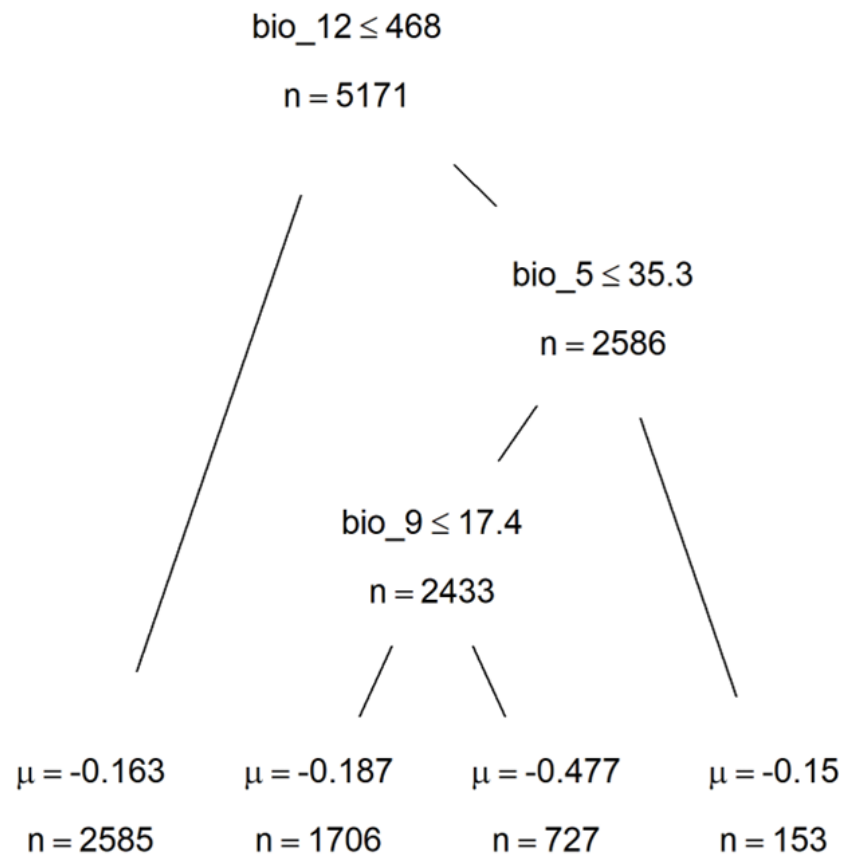
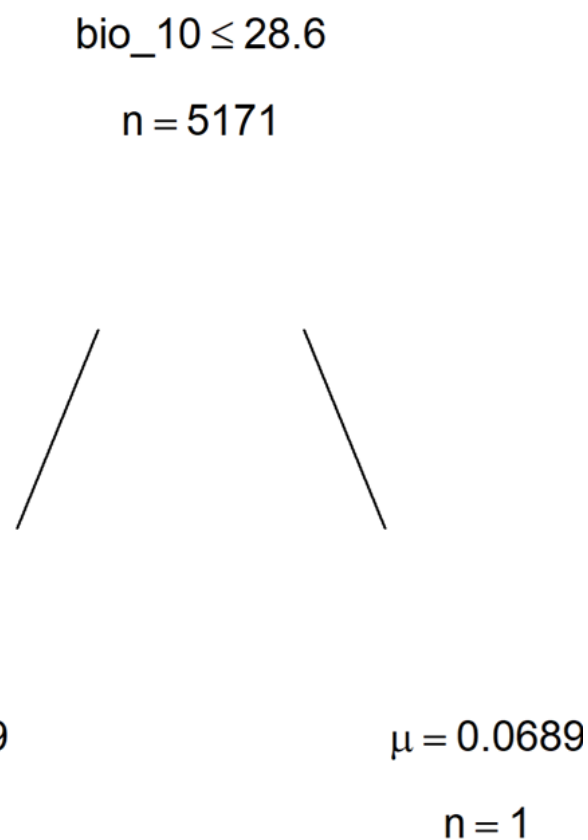
partial prediction:
WC_bio8_lonlat



Plot individual BART trees

```
mod_full$fit$plotTree(sampleNum = 2, treeNum = 2)
```

```
mod_full$fit$plotTree(sampleNum = 5, treeNum = 3)
```



Map the BART learning process

```
plot.mcmc(mod, layers)
```

