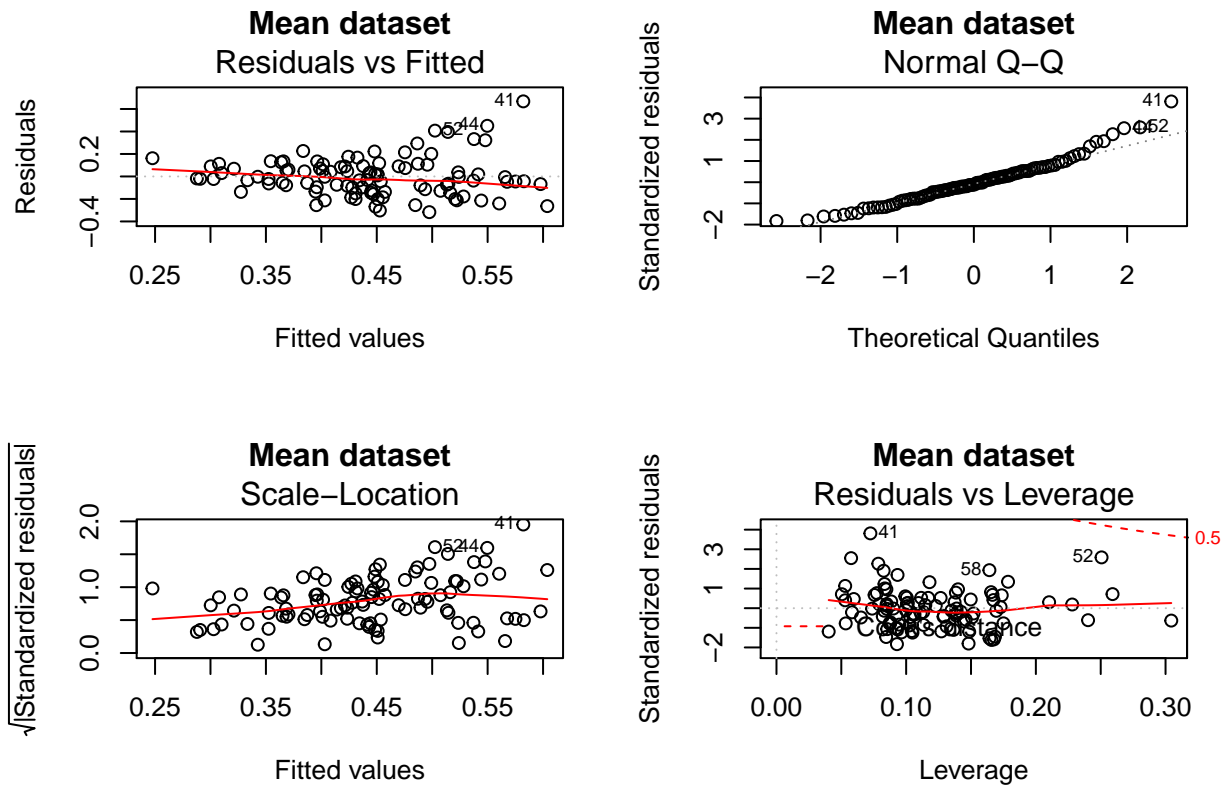


# Analysing effect of abiotic factors on standard deviation of random intercepts

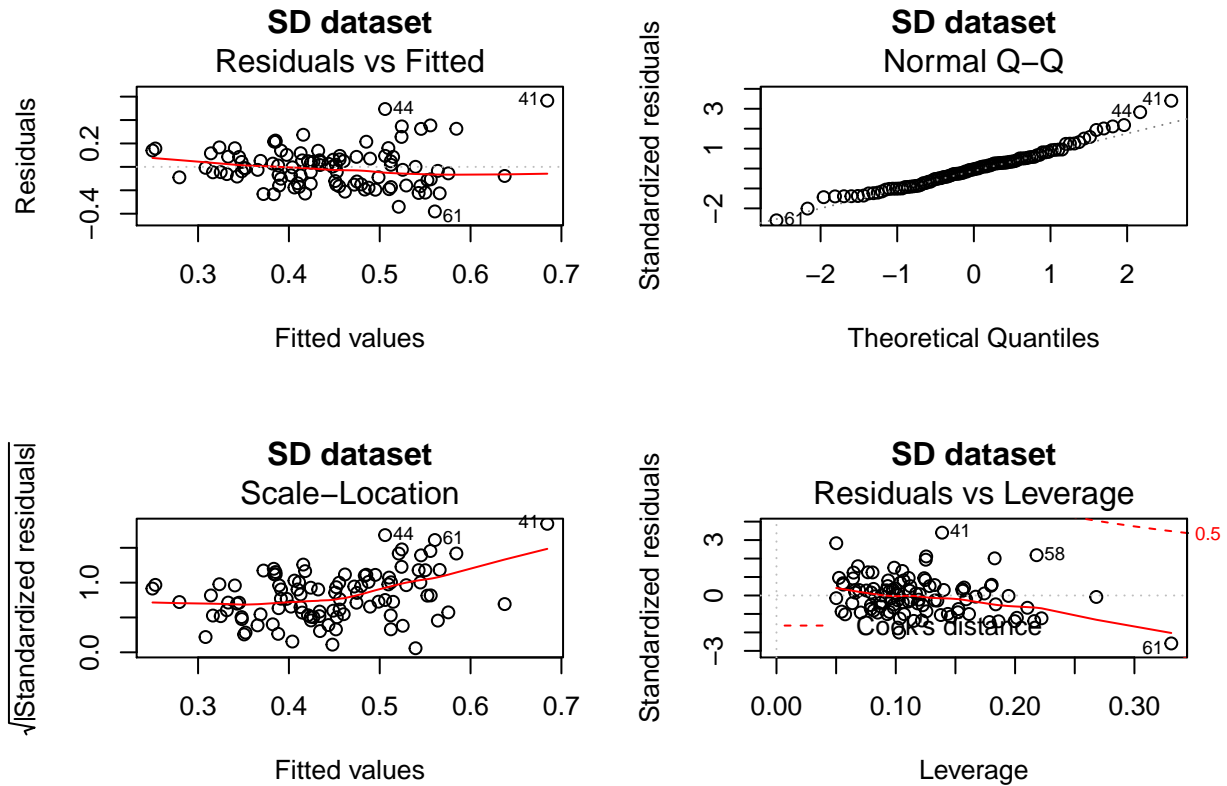
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*11 May 2018*

In this analysis the standard deviation of the random intercepts from the log/log linear mixed effects model used to fit species area curves across nets are modelled against the abiotic variables. The data is split in the same way, and outliers from area and PHI are removed.



The two site with the highest values of PHI had high leverage in this model and were therefore removed from the data in order to give normally distributed residuals, the plots above were created after these values were removed.



```
##   Northing      PHI    meandbh    meanph    Buffer    meanSOM
##   1.721261    1.219326    2.031493    1.356264    1.816954    1.158692
##   meanLBA     meanTD area_ratio    no_NVC    no_MSG
##   1.708121    1.955180    1.230977    1.292059    1.263801
```

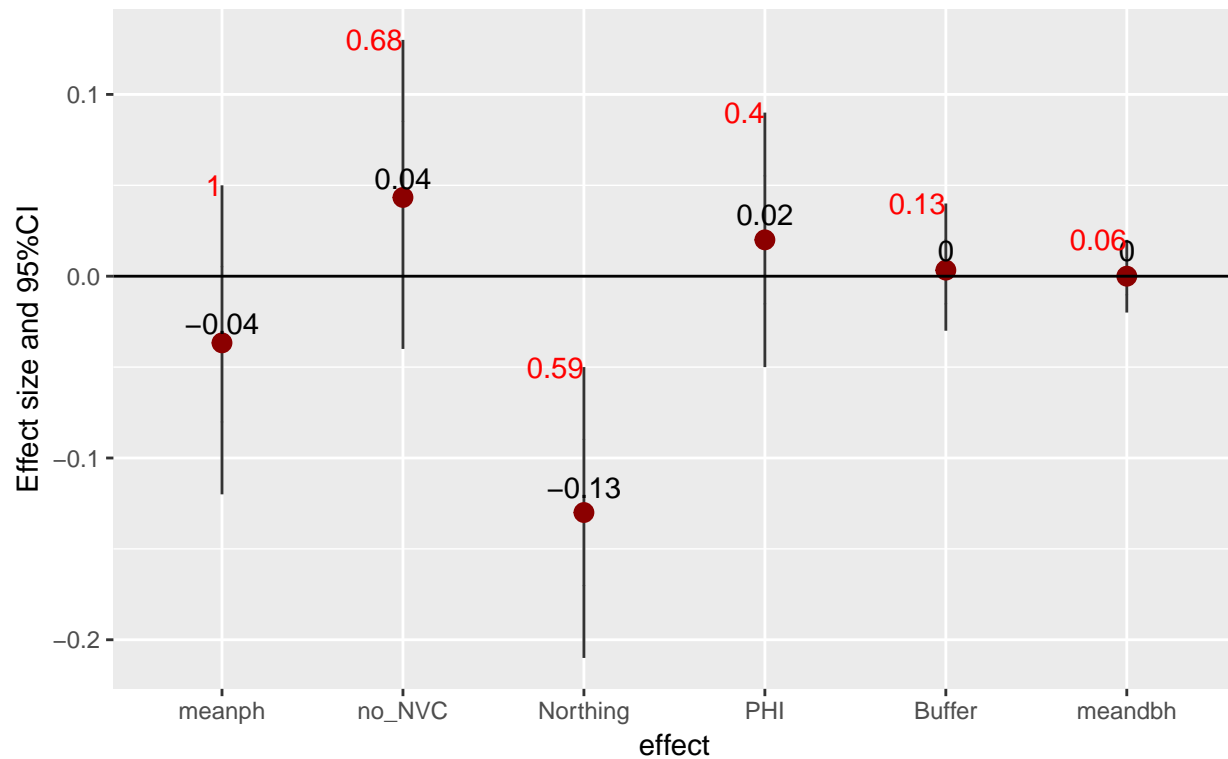
The variance inflation factors in the mean dataset are low, suggesting that correlations between covariates are low and not likely to increase the variance of the parameter estimates.

```
##   Northing      PHI    Buffer    no_MSG    no_NVC    sd_pH
##   1.713097    1.275714    1.860168    1.241747    1.277452    1.328220
##   sd_SOM     sd_LBA sd_meandbh    sd_TD area_ratio
##   1.412783    1.188175    1.521227    1.501602    1.257226
```

The variance inflation factors in the sd dataset are also low

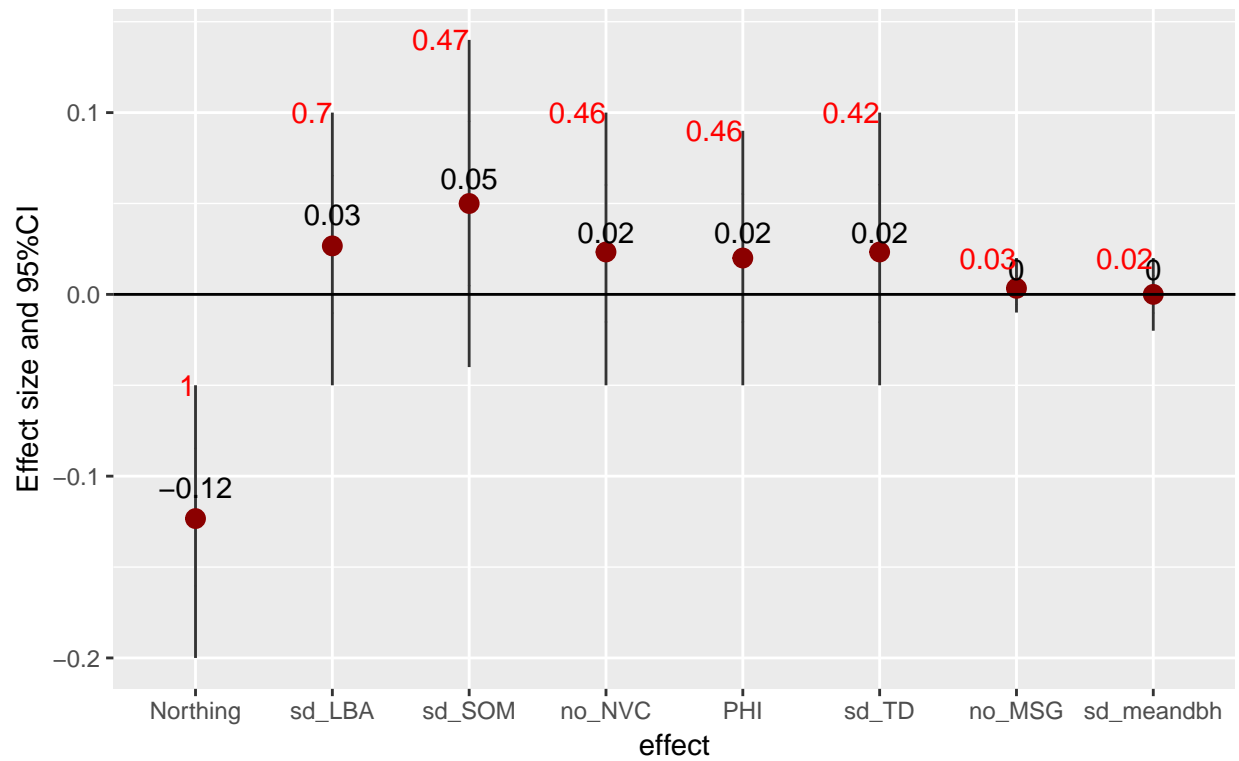
The first twelve models from the mean dataset, which had a  $\Delta < 2$  were selected from the MuMin dredge function as the top model set.

Model averaged results for delta <2, SD of intercepts, Mean dataset  
 numbers in red are variable importance



The graph shows the averaged effect sizes of the model with delta < 2. We cannot say that of the variables in the model might have any effect on the standard deviation of the random intercepts

Model averaged results for delta <2, SD of random intercepts, SD dataset  
 numbers in red are variable importance

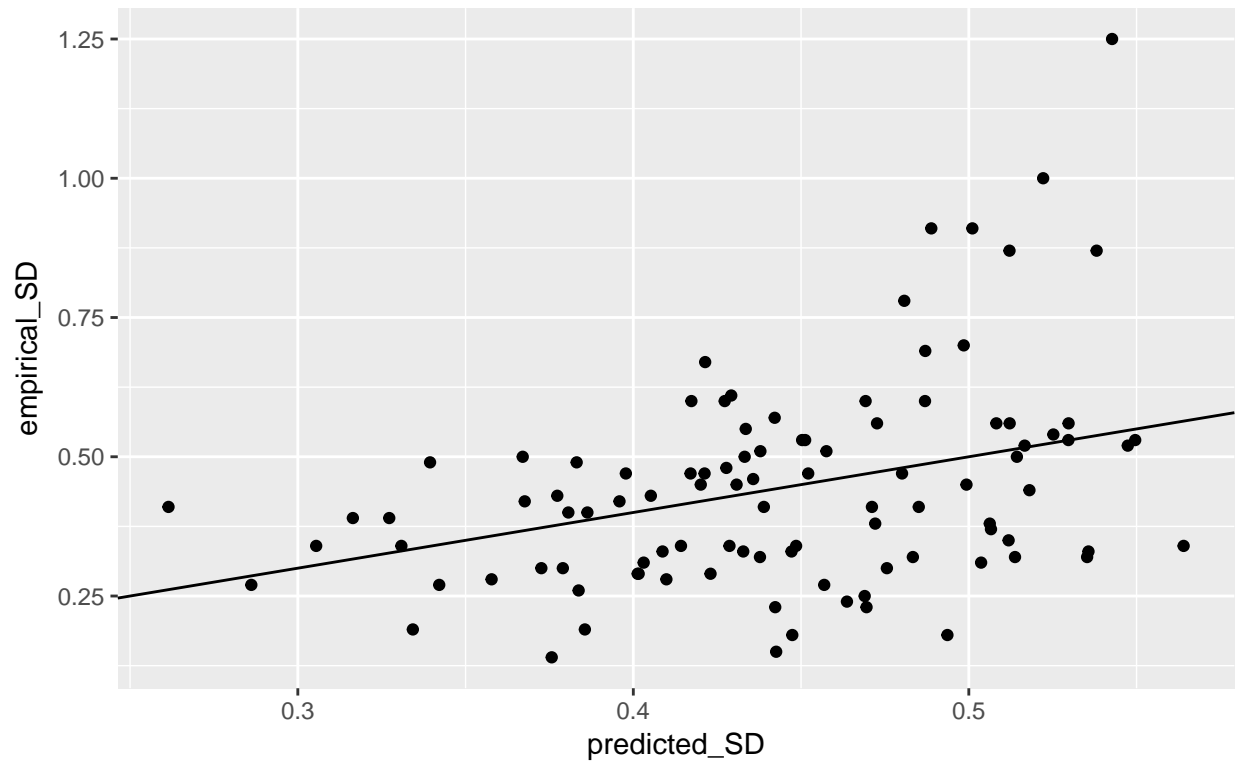


The Northing is the only variable which may effect the SD of random intercepts

## Using the model for prediction

Observed versus predicted data, mean dataset

R<sup>2</sup> = 0.15



Observed versus predicted data, sd dataset

R<sup>2</sup> = 0.18

