ExaminingCovariatesII

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27 March 2018

Repeat of covariance analysis without sites 23, 53 , 74
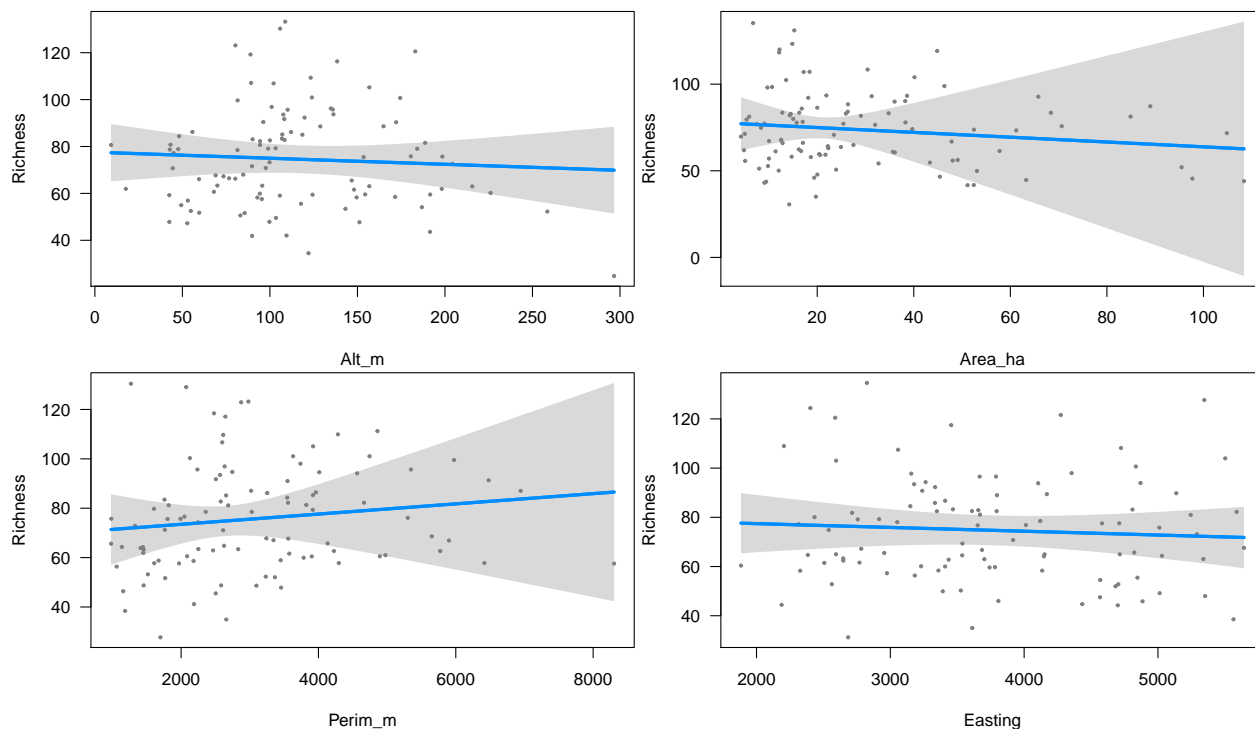
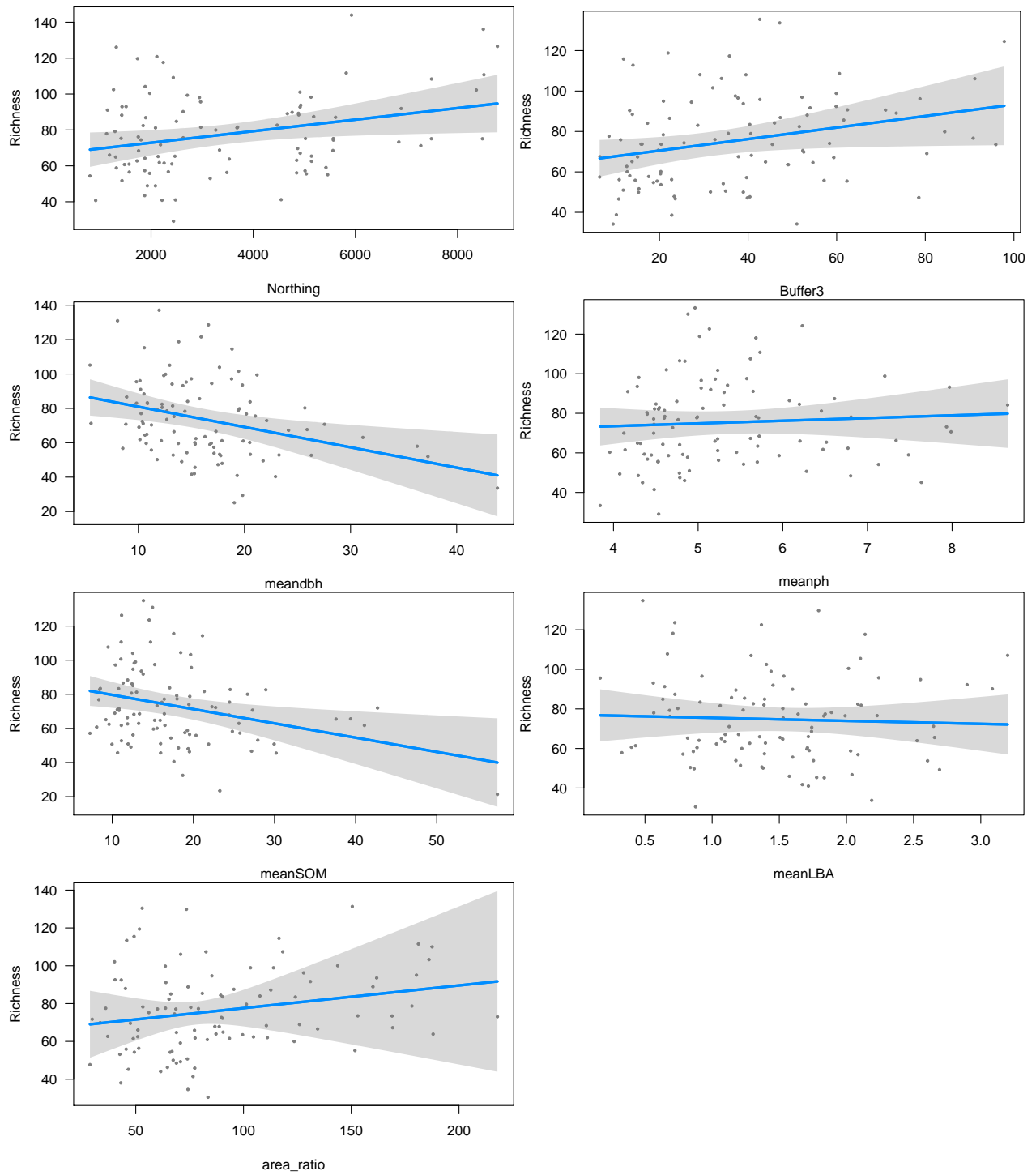Physical Variables

```
##  [1] "Alt_m"      "Area_ha"    "Perim_m"    "Easting"    "Northing"
##  [6] "Buffer3"    "meandbh"    "meanph"     "meanSOM"    "meanLBA"
## [11] "area_ratio"
```
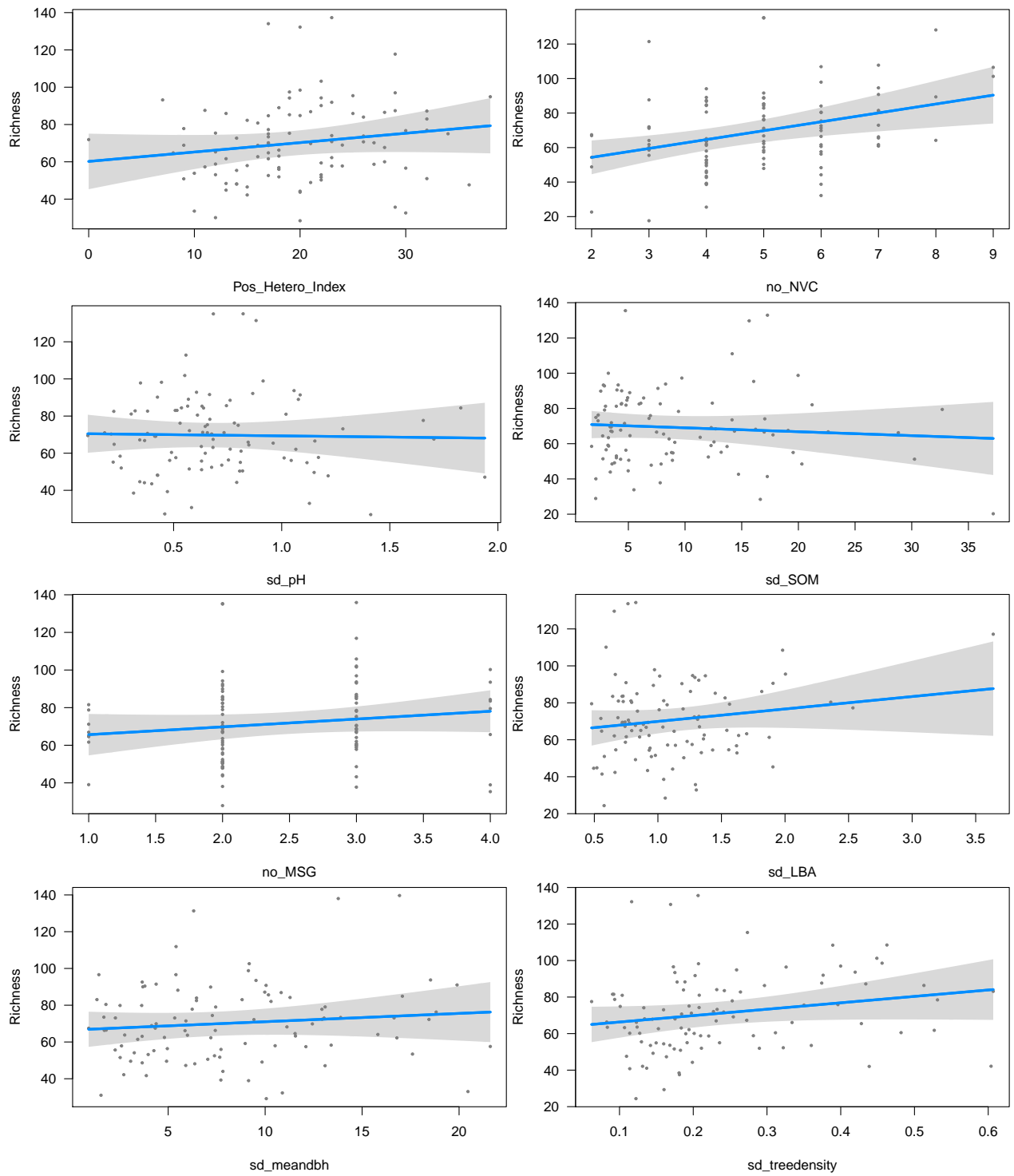
Heterogeneity variables
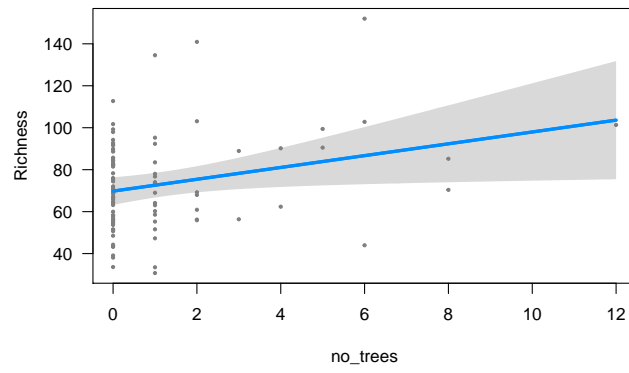
```
## [1] "Pos_Hetero_Index" "no_NVC"           "sd_pH"
## [4] "sd_SOM"           "no_MSG"           "sd_LBA"
## [7] "sd_meandbh"       "sd_treedensity"   "no_trees"
```

Effect of each variable on richness using multiple linear regression, simple additive model.
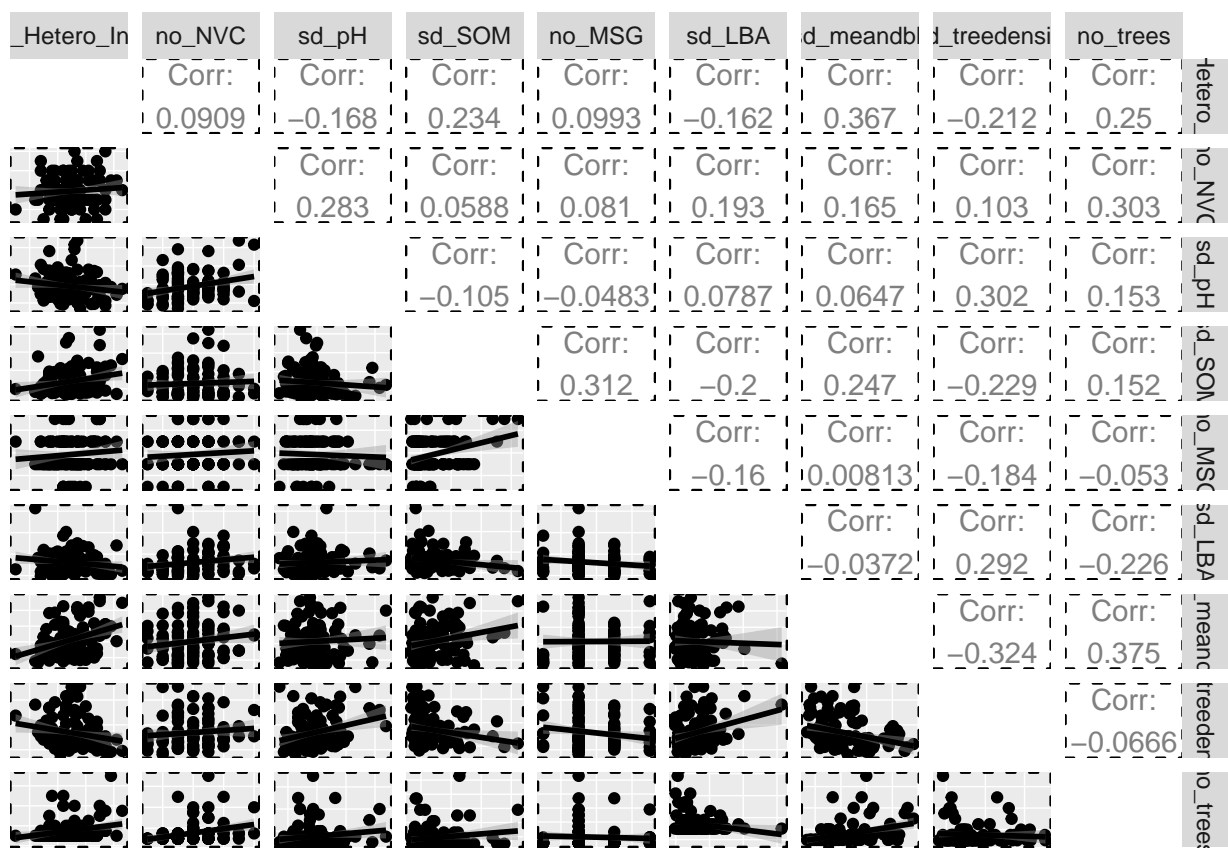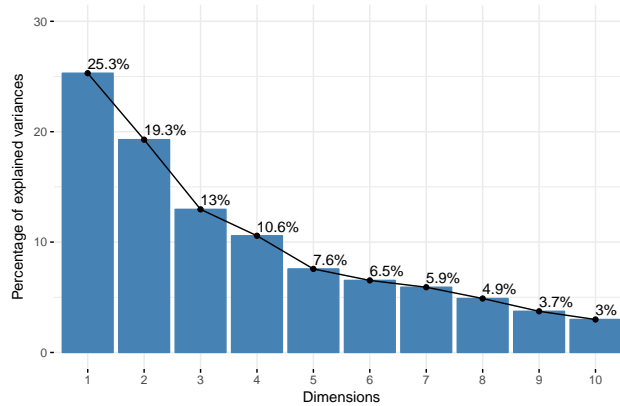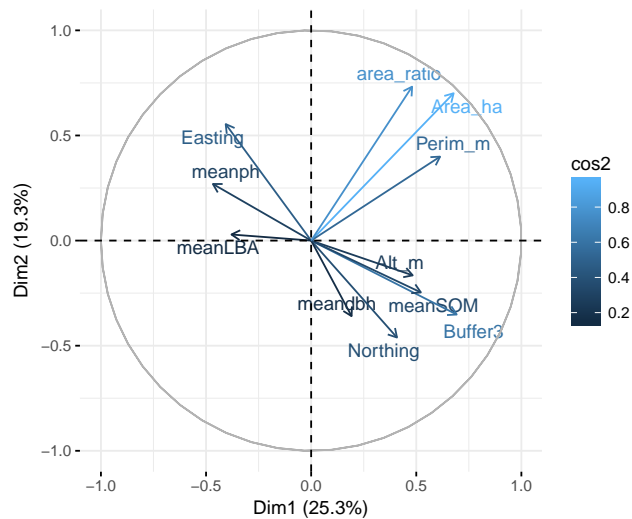
Colinearity of variables using pair plots

	Area_ha	Perim_m	Easting	Northing	Buffer3	meandbh	meanph	meanSOM	meanLBA	area_ratio
Alt_m	Corr: 0.126	Corr: 0.0929	Corr: -0.249	Corr: 0.00461	Corr: 0.278	Corr: 0.0824	Corr: -0.214	Corr: 0.293	Corr: -0.245	Corr: 0.128
Area_ha		Corr: 0.73	Corr: 0.0759	Corr: 0.00282	Corr: 0.22	Corr: -0.0384	Corr: -0.12	Corr: 0.145	Corr: -0.138	Corr: 0.832
Perim_m			Corr: 0.0659	Corr: 0.207	Corr: 0.217	Corr: 0.0087	Corr: -0.16	Corr: 0.0867	Corr: -0.0747	Corr: 0.304
Easting				Corr: -0.242	Corr: -0.27	Corr: 0.0952	Corr: 0.262	Corr: -0.386	Corr: 0.209	Corr: 0.192
Northing					Corr: 0.509	Corr: 0.171	Corr: -0.128	Corr: 0.135	Corr: -0.217	Corr: -0.207
Buffer3						Corr: 0.318	Corr: -0.341	Corr: 0.287	Corr: -0.207	Corr: 0.107
meandbh							Corr: 0.258	Corr: 0.0344	Corr: 0.272	Corr: -0.0616
meanph								Corr: -0.186	Corr: -0.0584	Corr: -0.064
meanSOM									Corr: -0.21	Corr: 0.112
meanLBA										Corr: -0.148
area_ratio										

	_Hetero_In	no_NVC	sd_pH	sd_SOM	no_MSG	sd_LBA	d_meandb	d_treedensi	no_trees	
		Corr: 0.0909	Corr: −0.168	Corr: 0.234	Corr: 0.0993	Corr: −0.162	Corr: 0.367	Corr: −0.212	Corr: 0.25	Hetero_
			Corr: 0.283	Corr: 0.0588	Corr: 0.081	Corr: 0.193	Corr: 0.165	Corr: 0.103	Corr: 0.303	o_NVC
				Corr: −0.105	Corr: −0.0483	Corr: 0.0787	Corr: 0.0647	Corr: 0.302	Corr: 0.153	sd_pH
					Corr: 0.312	Corr: −0.2	Corr: 0.247	Corr: −0.229	Corr: 0.152	d_SO
						Corr: −0.16	Corr: 0.00813	Corr: −0.184	Corr: −0.053	o_MSG
							Corr: −0.0372	Corr: 0.292	Corr: −0.226	sd_LBA
								Corr: −0.324	Corr: 0.375	meanc
									Corr: −0.0666	treeder
										o_tree

PCA

Physical variables

```
##          eigenvalue variance.percent cumulative.variance.percent
## Dim.1  2.78270756        25.2973415                    25.29734
## Dim.2  2.12064850        19.2786227                    44.57596
## Dim.3  1.42600773        12.9637067                    57.53967
## Dim.4  1.16297043        10.5724585                    68.11213
## Dim.5  0.83251632         7.5683302                    75.68046
## Dim.6  0.71811899         6.5283544                    82.20881
## Dim.7  0.65016271         5.9105701                    88.11938
## Dim.8  0.53769477         4.8881343                    93.00752
## Dim.9  0.41034356         3.7303960                    96.73791
## Dim.10 0.32868818         2.9880744                    99.72599
## Dim.11 0.03014125         0.2740113                   100.00000
```
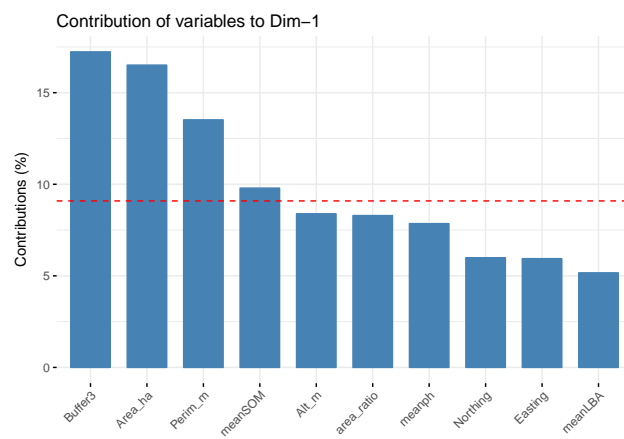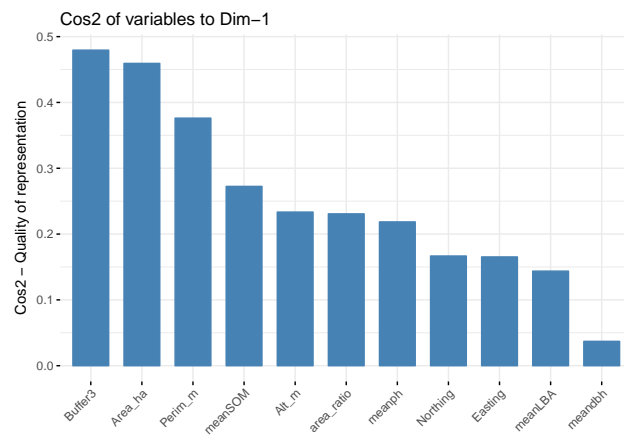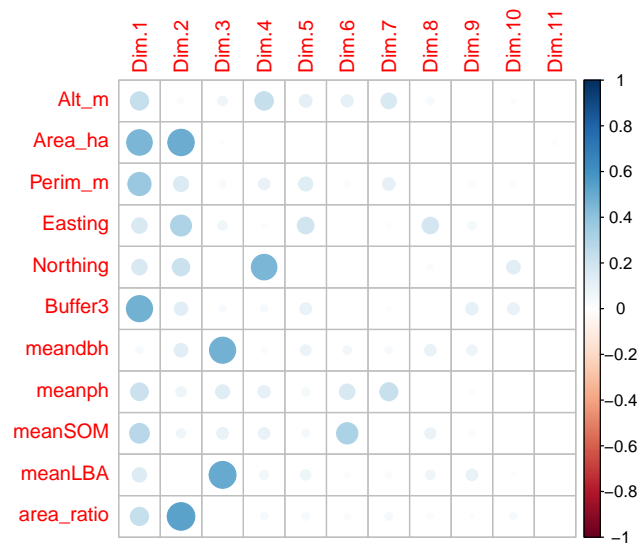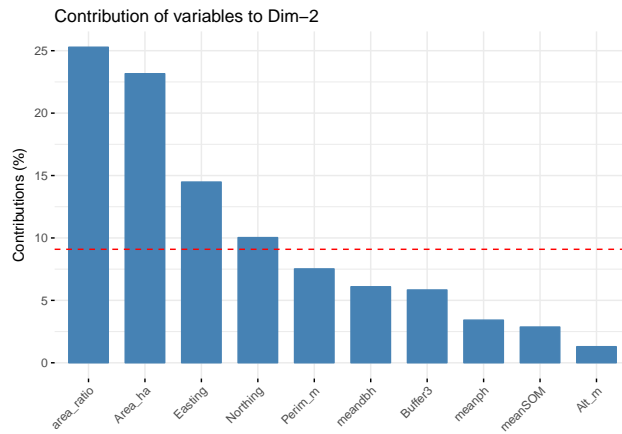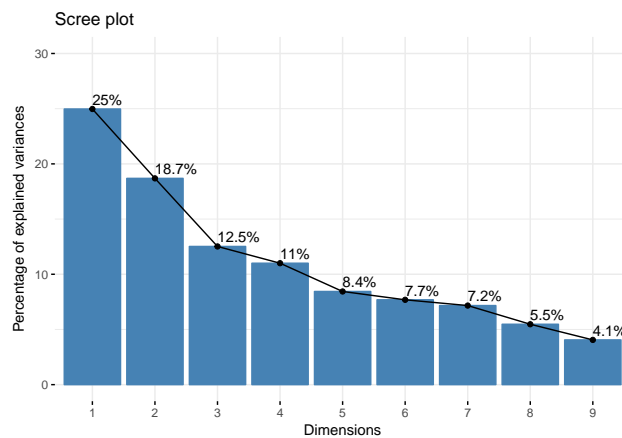
Cos2 of variables to Dim−1

Contribution of variables to Dim−1

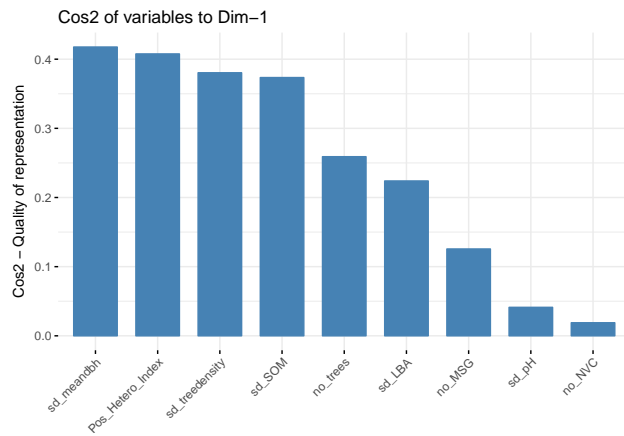Contribution of variables to Dim−2

```
##           eigenvalue variance.percent cumulative.variance.percent
## Dim.1  2.2475416         24.972684                    24.97268
## Dim.2  1.6819087         18.687874                    43.66056
## Dim.3  1.1267328         12.519254                    56.17981
## Dim.4  0.9901760         11.001956                    67.18177
## Dim.5  0.7597468          8.441632                    75.62340
## Dim.6  0.6917863          7.686514                    83.30991
## Dim.7  0.6448447          7.164941                    90.47486
## Dim.8  0.4924388          5.471542                    95.94640
## Dim.9  0.3648242          4.053603                   100.00000
```
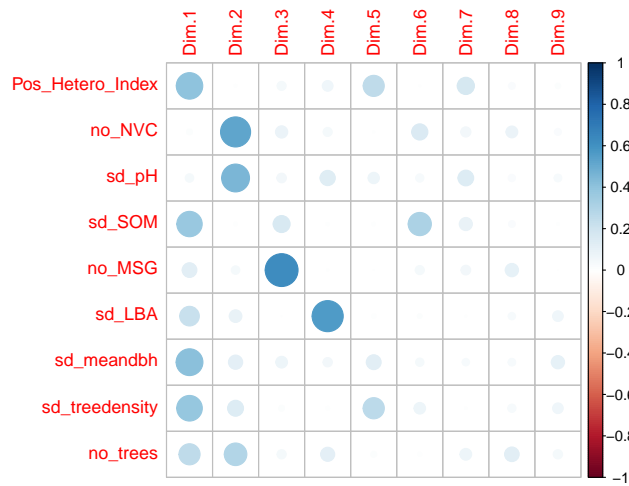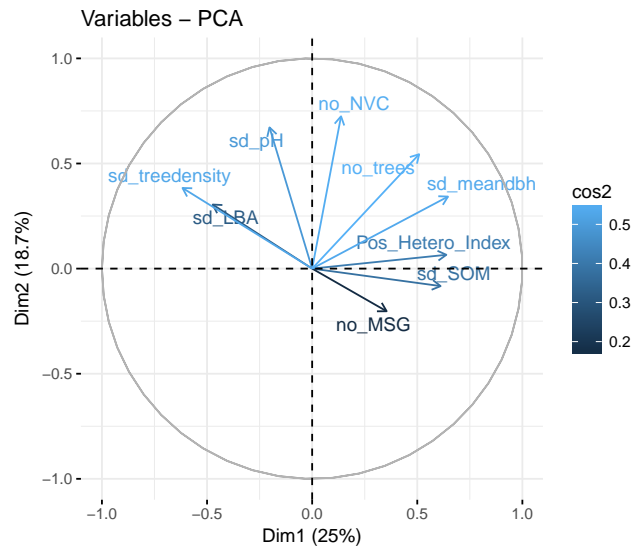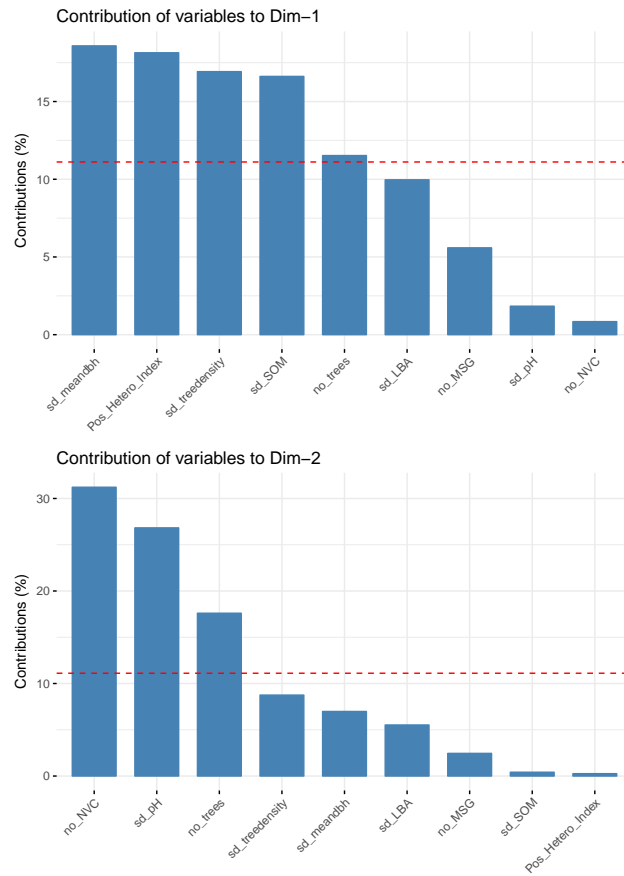

Scree plot

Variables – PCA

Cos2 of variables to Dim–1

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Contribution of variables to Dim−1

Contribution of variables to Dim−2

Discussion

Removing the outliers in area and positive heterogeneity indezx has altered the corr plot