**Table S3.** Pearson's correlation coefficient between the environmental variables considered for analysis. Environmental variable codes (i.e., the first column) are given in the first column of Table S2.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variables | SNDPPT | SLTPPT | PHIHOX | ORCDRC | OCSTHA | Globcover | CRFVOL | CLYPPT | CEC | BLD | Aspect | Alt | Slope | Bio1 | Bio2 | Bio3 |
| SNDPPT | 1  | -0.324  | 0.033  | 0.228  | 0.116  | -0.089  | 0.203  | -0.122  | -0.333  | 0.260  | -0.029  | -0.131  | 0.150  | -0.216  | -0.205  | 0.029  |
| SLTPPT | -0.324  | 1  | 0.628  | 0.331  | 0.446  | -0.074  | 0.100  | -0.061  | 0.612  | 0.597  | 0.073  | -0.247  | -0.069  | -0.257  | 0.395  | -0.422  |
| PHIHOX | 0.033  | 0.628  | 1  | 0.049  | 0.061  | -0.314  | 0.126  | 0.278  | 0.547  | 0.614  | 0.012  | -0.253  | 0.119  | -0.334  | 0.134  | -0.308  |
| ORCDRC | 0.228  | 0.331  | 0.049  | 1  | 0.910  | 0.216  | 0.394  | -0.443  | 0.394  | 0.076  | 0.018  | 0.039  | 0.092  | -0.109  | 0.341  | -0.137  |
| OCSTHA | 0.116  | 0.446  | 0.061  | 0.910  | 1  | 0.228  | 0.080  | -0.420  | 0.351  | 0.178  | 0.011  | -0.073  | -0.097  | -0.119  | 0.439  | -0.243  |
| Globcover | -0.089  | -0.074  | -0.314  | 0.216  | 0.228  | 1  | 0.043  | -0.357  | 0.039  | -0.275  | 0.009  | 0.176  | -0.076  | 0.205  | 0.207  | 0.107  |
| CRFVOL | 0.203  | 0.100  | 0.126  | 0.394  | 0.080  | 0.043  | 1  | -0.177  | 0.327  | 0.156  | 0.053  | 0.159  | 0.458  | -0.069  | -0.062  | 0.142  |
| CLYPPT | -0.122  | -0.061  | 0.278  | -0.443  | -0.420  | -0.357  | -0.177  | 1  | 0.131  | 0.233  | -0.053  | -0.175  | 0.079  | -0.186  | -0.533  | -0.005  |
| CEC | -0.333  | 0.612  | 0.547  | 0.394  | 0.351  | 0.039  | 0.327  | 0.131  | 1  | 0.189  | 0.020  | 0.007  | 0.227  | -0.158  | 0.186  | -0.211  |
| BLD | 0.260  | 0.597  | 0.614  | 0.076  | 0.178  | -0.275  | 0.156  | 0.233  | 0.189  | 1  | 0.024  | -0.411  | -0.018  | -0.386  | -0.024  | -0.297  |
| Aspect | -0.029  | 0.073  | 0.012  | 0.018  | 0.011  | 0.009  | 0.053  | -0.053  | 0.020  | 0.024  | 1  | -0.082  | -0.052  | -0.073  | -0.052  | -0.115  |
| Alt | -0.131  | -0.247  | -0.253  | 0.039  | -0.073  | 0.176  | 0.159  | -0.175  | 0.007  | -0.411  | -0.082  | 1  | 0.158  | 0.918  | 0.297  | 0.752  |
| Slope | 0.150  | -0.069  | 0.119  | 0.092  | -0.097  | -0.076  | 0.458  | 0.079  | 0.227  | -0.018  | -0.052  | 0.158  | 1  | -0.053  | -0.135  | 0.153  |
| Bio1 | -0.216  | -0.257  | -0.334  | -0.109  | -0.119  | 0.205  | -0.069  | -0.186  | -0.158  | -0.386  | -0.073  | 0.918  | -0.053  | 1  | 0.324  | 0.707  |
| Bio2 | -0.205  | 0.395  | 0.134  | 0.341  | 0.439  | 0.207  | -0.062  | -0.533  | 0.186  | -0.024  | -0.052  | 0.297  | -0.135  | 0.324  | 1  | 0.256  |
| Bio3 | 0.029  | -0.422  | -0.308  | -0.137  | -0.243  | 0.107  | 0.142  | -0.005  | -0.211  | -0.297  | -0.115  | 0.752  | 0.153  | 0.707  | 0.256  | 1  |
| Bio4 | -0.260  | 0.669  | 0.300  | 0.361  | 0.555  | 0.135  | -0.220  | -0.464  | 0.293  | 0.192  | 0.057  | -0.274  | -0.318  | -0.169  | 0.658  | -0.527  |
| Bio5 | -0.224  | -0.239  | -0.327  | -0.099  | -0.103  | 0.210  | -0.074  | -0.200  | -0.150  | -0.382  | -0.072  | 0.915  | -0.062  | 1.000  | 0.344  | 0.696  |
| Bio6 | -0.207  | -0.279  | -0.343  | -0.123  | -0.139  | 0.199  | -0.062  | -0.168  | -0.168  | -0.390  | -0.073  | 0.921  | -0.043  | 0.999  | 0.294  | 0.717  |
| Bio7 | -0.229  | 0.676  | 0.322  | 0.397  | 0.577  | 0.130  | -0.179  | -0.477  | 0.310  | 0.201  | 0.044  | -0.271  | -0.275  | -0.194  | 0.719  | -0.472  |
| Bio8 | -0.226  | -0.238  | -0.324  | -0.099  | -0.104  | 0.211  | -0.071  | -0.200  | -0.146  | -0.383  | -0.071  | 0.916  | -0.059  | 1.000  | 0.345  | 0.698  |
| Bio9 | -0.206  | -0.275  | -0.343  | -0.119  | -0.133  | 0.200  | -0.064  | -0.173  | -0.168  | -0.389  | -0.074  | 0.920  | -0.046  | 1.000  | 0.303  | 0.718  |
| Bio10 | -0.223  | -0.242  | -0.328  | -0.101  | -0.106  | 0.209  | -0.073  | -0.198  | -0.151  | -0.383  | -0.071  | 0.915  | -0.060  | 1.000  | 0.340  | 0.697  |
| Bio11 | -0.208  | -0.274  | -0.341  | -0.119  | -0.133  | 0.201  | -0.062  | -0.173  | -0.165  | -0.389  | -0.074  | 0.921  | -0.044  | 1.000  | 0.304  | 0.718  |
| Bio12 | 0.294  | -0.470  | -0.426  | -0.298  | -0.331  | -0.134  | -0.072  | 0.428  | -0.457  | 0.006  | 0.042  | -0.159  | -0.054  | -0.101  | -0.722  | 0.097  |
| bio13 | 0.284  | -0.418  | -0.418  | -0.261  | -0.272  | -0.096  | -0.086  | 0.332  | -0.471  | 0.016  | 0.036  | -0.212  | -0.088  | -0.135  | -0.526  | 0.178  |
| bio14 | 0.251  | -0.423  | -0.435  | -0.306  | -0.262  | -0.103  | -0.252  | 0.302  | -0.538  | 0.007  | 0.022  | -0.183  | -0.200  | -0.038  | -0.614  | -0.054  |
| bio15 | -0.140  | 0.449  | 0.357  | 0.289  | 0.336  | 0.066  | 0.058  | -0.343  | 0.325  | 0.111  | 0.003  | -0.158  | -0.004  | -0.214  | 0.681  | -0.068  |
| bio16 | 0.288  | -0.426  | -0.412  | -0.255  | -0.285  | -0.107  | -0.046  | 0.372  | -0.452  | 0.026  | 0.039  | -0.178  | -0.056  | -0.124  | -0.574  | 0.192  |
| bio17 | 0.259  | -0.408  | -0.433  | -0.292  | -0.247  | -0.089  | -0.248  | 0.270  | -0.538  | 0.009  | 0.027  | -0.185  | -0.198  | -0.038  | -0.596  | -0.054  |
| bio18 | 0.195  | -0.336  | -0.323  | -0.235  | -0.282  | -0.057  | 0.022  | 0.381  | -0.320  | 0.037  | 0.034  | -0.164  | -0.006  | -0.141  | -0.512  | 0.221  |
| bio19 | 0.294  | -0.412  | -0.450  | -0.264  | -0.215  | -0.107  | -0.244  | 0.232  | -0.559  | 0.014  | 0.032  | -0.184  | -0.206  | -0.033  | -0.542  | -0.018  |
| **Continued** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Variables | Bio4 | Bio5 | Bio6 | Bio7 | Bio8 | Bio9 | Bio10 | Bio11 | Bio12 | Bio13 | Bio14 | Bio15 | Bio16 | Bio17 | Bio18 | Bio19 |
| SNDPPT | -0.260  | -0.224  | -0.207  | -0.229  | -0.226  | -0.206  | -0.223  | -0.208  | 0.294  | 0.284  | 0.251  | -0.140  | 0.288  | 0.259  | 0.195  | 0.294  |
| SLTPPT | 0.669  | -0.239  | -0.279  | 0.676  | -0.238  | -0.275  | -0.242  | -0.274  | -0.470  | -0.418  | -0.423  | 0.449  | -0.426  | -0.408  | -0.336  | -0.412  |
| PHIHOX | 0.300  | -0.327  | -0.343  | 0.322  | -0.324  | -0.343  | -0.328  | -0.341  | -0.426  | -0.418  | -0.435  | 0.357  | -0.412  | -0.433  | -0.323  | -0.450  |
| ORCDRC | 0.361  | -0.099  | -0.123  | 0.397  | -0.099  | -0.119  | -0.101  | -0.119  | -0.298  | -0.261  | -0.306  | 0.289  | -0.255  | -0.292  | -0.235  | -0.264  |
| OCSTHA | 0.555  | -0.103  | -0.139  | 0.577  | -0.104  | -0.133  | -0.106  | -0.133  | -0.331  | -0.272  | -0.262  | 0.336  | -0.285  | -0.247  | -0.282  | -0.215  |
| Globcover | 0.135  | 0.210  | 0.199  | 0.130  | 0.211  | 0.200  | 0.209  | 0.201  | -0.134  | -0.096  | -0.103  | 0.066  | -0.107  | -0.089  | -0.057  | -0.107  |
| CRFVOL | -0.220  | -0.074  | -0.062  | -0.179  | -0.071  | -0.064  | -0.073  | -0.062  | -0.072  | -0.086  | -0.252  | 0.058  | -0.046  | -0.248  | 0.022  | -0.244  |
| CLYPPT | -0.464  | -0.200  | -0.168  | -0.477  | -0.200  | -0.173  | -0.198  | -0.173  | 0.428  | 0.332  | 0.302  | -0.343  | 0.372  | 0.270  | 0.381  | 0.232  |
| CEC | 0.293  | -0.150  | -0.168  | 0.310  | -0.146  | -0.168  | -0.151  | -0.165  | -0.457  | -0.471  | -0.538  | 0.325  | -0.452  | -0.538  | -0.320  | -0.559  |
| BLD | 0.192  | -0.382  | -0.390  | 0.201  | -0.383  | -0.389  | -0.383  | -0.389  | 0.006  | 0.016  | 0.007  | 0.111  | 0.026  | 0.009  | 0.037  | 0.014  |
| Aspect | 0.057  | -0.072  | -0.073  | 0.044  | -0.071  | -0.074  | -0.071  | -0.074  | 0.042  | 0.036  | 0.022  | 0.003  | 0.039  | 0.027  | 0.034  | 0.032  |
| Alt | -0.274  | 0.915  | 0.921  | -0.271  | 0.916  | 0.920  | 0.915  | 0.921  | -0.159  | -0.212  | -0.183  | -0.158  | -0.178  | -0.185  | -0.164  | -0.184  |
| Slope | -0.318  | -0.062  | -0.043  | -0.275  | -0.059  | -0.046  | -0.060  | -0.044  | -0.054  | -0.088  | -0.200  | -0.004  | -0.056  | -0.198  | -0.006  | -0.206  |
| Bio1 | -0.169  | 1.000  | 0.999  | -0.194  | 1.000  | 1.000  | 1.000  | 1.000  | -0.101  | -0.135  | -0.038  | -0.214  | -0.124  | -0.038  | -0.141  | -0.033  |
| Bio2 | 0.658  | 0.344  | 0.294  | 0.719  | 0.345  | 0.303  | 0.340  | 0.304  | -0.722  | -0.526  | -0.614  | 0.681  | -0.574  | -0.596  | -0.512  | -0.542  |
| Bio3 | -0.527  | 0.696  | 0.717  | -0.472  | 0.698  | 0.718  | 0.697  | 0.718  | 0.097  | 0.178  | -0.054  | -0.068  | 0.192  | -0.054  | 0.221  | -0.018  |
| Bio4 | 1  | -0.141  | -0.202  | 0.990  | -0.142  | -0.195  | -0.146  | -0.194  | -0.682  | -0.574  | -0.467  | 0.607  | -0.626  | -0.451  | -0.588  | -0.439  |
| Bio5 | -0.141  | 1  | 0.998  | -0.167  | 1.000  | 0.998  | 1.000  | 0.999  | -0.122  | -0.154  | -0.052  | -0.198  | -0.143  | -0.052  | -0.160  | -0.046  |
| Bio6 | -0.202  | 0.998  | 1  | -0.228  | 0.998  | 1.000  | 0.998  | 1.000  | -0.075  | -0.115  | -0.018  | -0.238  | -0.102  | -0.019  | -0.120  | -0.015  |
| Bio7 | 0.990  | -0.167  | -0.228  | 1  | -0.168  | -0.221  | -0.172  | -0.220  | -0.710  | -0.579  | -0.518  | 0.672  | -0.632  | -0.501  | -0.590  | -0.479  |
| Bio8 | -0.142  | 1.000  | 0.998  | -0.168  | 1  | 0.998  | 1.000  | 0.999  | -0.125  | -0.156  | -0.059  | -0.194  | -0.145  | -0.059  | -0.158  | -0.053  |
| Bio9 | -0.195  | 0.998  | 1.000  | -0.221  | 0.998  | 1  | 0.999  | 1.000  | -0.079  | -0.117  | -0.021  | -0.232  | -0.104  | -0.022  | -0.123  | -0.016  |
| Bio10 | -0.146  | 1.000  | 0.998  | -0.172  | 1.000  | 0.999  | 1  | 0.999  | -0.118  | -0.150  | -0.049  | -0.201  | -0.140  | -0.049  | -0.156  | -0.043  |
| Bio11 | -0.194  | 0.999  | 1.000  | -0.220  | 0.999  | 1.000  | 0.999  | 1  | -0.082  | -0.120  | -0.025  | -0.230  | -0.107  | -0.026  | -0.125  | -0.021  |
| Bio12 | -0.682  | -0.122  | -0.075  | -0.710  | -0.125  | -0.079  | -0.118  | -0.082  | 1  | 0.913  | 0.869  | -0.679  | 0.935  | 0.862  | 0.815  | 0.864  |
| Bio13 | -0.574  | -0.154  | -0.115  | -0.579  | -0.156  | -0.117  | -0.150  | -0.120  | 0.913  | 1  | 0.731  | -0.372  | 0.984  | 0.730  | 0.896  | 0.760  |
| Bio14 | -0.467  | -0.052  | -0.018  | -0.518  | -0.059  | -0.021  | -0.049  | -0.025  | 0.869  | 0.731  | 1  | -0.767  | 0.726  | 0.992  | 0.519  | 0.976  |
| Bio15 | 0.607  | -0.198  | -0.238  | 0.672  | -0.194  | -0.232  | -0.201  | -0.230  | -0.679  | -0.372  | -0.767  | 1  | -0.414  | -0.760  | -0.277  | -0.703  |
| Bio16 | -0.626  | -0.143  | -0.102  | -0.632  | -0.145  | -0.104  | -0.140  | -0.107  | 0.935  | 0.984  | 0.726  | -0.414  | 1  | 0.721  | 0.911  | 0.747  |
| Bio17 | -0.451  | -0.052  | -0.019  | -0.501  | -0.059  | -0.022  | -0.049  | -0.026  | 0.862  | 0.730  | 0.992  | -0.760  | 0.721  | 1  | 0.517  | 0.977  |
| Bio18 | -0.588  | -0.160  | -0.120  | -0.590  | -0.158  | -0.123  | -0.156  | -0.125  | 0.815  | 0.896  | 0.519  | -0.277  | 0.911  | 0.517  | 1  | 0.509  |
| Bio19 | -0.439  | -0.046  | -0.015  | -0.479  | -0.053  | -0.016  | -0.043  | -0.021  | 0.864  | 0.760  | 0.976  | -0.703  | 0.747  | 0.977  | 0.509  | 1  |