**Table S4.** Permutation importance of predictor variables. Environmental variables codes (i.e., the column headers) are given in the first column of Table S2.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Name | BLD | CEC | CLYPPT | CRFVOL | OCSTHA | PHIHOX | SLTPPT | SNDPPT | Aspect | Slope | Globcover | Bio1 | Bio2 | Bio3 | Bio4 | Bio12 | Bio15 |
| *Magnolia officinalis* subsp. *biloba* | 2.848  | 0.430  | 0.483  | 0.376  | 7.774  | 5.541  | 0.118  | 5.391  | 1.041  | 5.801  | 2.418  | 10.506  | 8.243  | 0.851  | 14.577  | 30.324  | 3.281  |
| *Torreya fargesii* | 1.197  | 0.683  | 0.016  | 0.011  | 0.043  | 3.432  | 0.000  | 0.358  | 0.194  | 2.340  | 0.566  | 44.172  | 0.000  | 1.159  | 3.928  | 8.753  | 33.149  |
| *Pseudotaxus chienii* | 0.000  | 0.000  | 0.000  | 0.533  | 0.318  | 28.066  | 0.000  | 0.000  | 0.000  | 1.519  | 0.000  | 5.690  | 51.348  | 0.000  | 0.749  | 0.019  | 11.760  |
| *Semiliquidambar cathayensis* | 0.046  | 0.098  | 5.377  | 0.109  | 8.946  | 24.498  | 1.131  | 0.000  | 1.377  | 0.162  | 0.189  | 5.144  | 41.236  | 5.524  | 2.120  | 2.929  | 1.113  |
| *Cephalotaxus oliveri* | 0.025  | 1.795  | 1.553  | 0.443  | 0.661  | 5.112  | 0.218  | 0.370  | 0.945  | 2.021  | 0.394  | 15.801  | 0.456  | 0.984  | 1.306  | 4.331  | 63.586  |
| *Bretschneidera sinensis* | 2.761  | 0.106  | 0.710  | 0.667  | 2.095  | 2.633  | 0.029  | 1.301  | 0.596  | 1.355  | 1.472  | 14.339  | 34.945  | 2.264  | 5.615  | 19.300  | 9.814  |
| *Thuja koraiensis* | 0.000  | 0.001  | 0.000  | 0.093  | 0.000  | 1.305  | 0.003  | 0.000  | 0.010  | 0.021  | 0.001  | 51.987  | 0.000  | 26.327  | 11.264  | 8.987  | 0.000  |
| *Phellodendron chinense* | 0.019  | 0.177  | 0.000  | 0.258  | 0.445  | 0.204  | 0.019  | 0.607  | 0.030  | 7.954  | 0.317  | 22.633  | 0.535  | 10.410  | 8.611  | 30.580  | 17.202  |
| *Brasenia schreberi* | 0.716  | 1.311  | 0.013  | 0.000  | 0.000  | 0.000  | 0.005  | 1.307  | 0.000  | 0.340  | 0.000  | 8.252  | 4.476  | 39.613  | 5.396  | 31.928  | 6.644  |
| *Alsophila denticulata* | 0.274  | 0.010  | 0.047  | 0.118  | 1.269  | 1.602  | 0.001  | 0.000  | 0.017  | 7.577  | 0.025  | 0.135  | 57.746  | 0.071  | 30.360  | 0.008  | 0.740  |
| *Picea neoveitchii* | 0.001  | 0.038  | 0.115  | 0.061  | 0.105  | 0.594  | 0.000  | 0.158  | 0.040  | 0.325  | 0.014  | 30.120  | 1.498  | 20.980  | 44.301  | 0.887  | 0.763  |
| *Alsophila gigantea* | 0.000  | 0.000  | 0.062  | 0.060  | 3.971  | 90.218  | 0.874  | 0.000  | 0.375  | 0.706  | 0.066  | 0.792  | 0.214  | 0.126  | 0.161  | 0.123  | 2.252  |
| *Taxus cuspidata* | 0.163  | 0.003  | 0.000  | 0.578  | 0.024  | 0.517  | 0.106  | 0.088  | 0.002  | 1.768  | 0.450  | 53.952  | 0.898  | 19.428  | 1.366  | 17.723  | 2.935  |
| *Caryota obtusa* | 0.000  | 0.168  | 2.445  | 0.000  | 4.184  | 0.000  | 0.000  | 0.249  | 0.000  | 0.991  | 1.356  | 0.167  | 0.053  | 0.044  | 84.841  | 2.923  | 2.579  |
| *Kingdonia uniflora* | 0.425  | 0.119  | 0.010  | 0.700  | 0.000  | 0.250  | 0.507  | 0.000  | 3.875  | 14.271  | 2.749  | 27.966  | 0.000  | 0.000  | 35.899  | 0.108  | 13.122  |
| *Michelia wilsonii* | 0.003  | 0.000  | 0.101  | 0.000  | 0.000  | 0.001  | 0.000  | 0.000  | 0.008  | 0.005  | 0.014  | 7.463  | 0.009  | 41.272  | 51.017  | 0.025  | 0.084  |
| *Liriodendron chinense* | 1.231  | 0.000  | 0.207  | 0.159  | 1.730  | 3.192  | 0.000  | 3.761  | 0.480  | 0.238  | 8.881  | 30.089  | 17.382  | 4.235  | 0.228  | 0.548  | 27.639  |
| *Torreya grandis* | 1.545  | 0.547  | 1.603  | 0.037  | 0.007  | 1.221  | 0.598  | 0.001  | 2.923  | 0.680  | 0.564  | 4.249  | 1.212  | 2.916  | 3.821  | 5.821  | 72.255  |
| *Sagittaria natans* | 0.491  | 0.006  | 9.621  | 2.274  | 1.763  | 17.434  | 12.865  | 0.000  | 0.268  | 0.146  | 0.092  | 16.283  | 0.183  | 5.591  | 11.079  | 2.375  | 19.530  |
| *Fokienia hodginsii* | 0.029  | 0.000  | 0.560  | 0.242  | 0.081  | 14.108  | 1.277  | 0.000  | 0.252  | 5.639  | 0.268  | 2.898  | 62.799  | 6.811  | 0.163  | 2.589  | 2.285  |
| *Davidia involucrata* | 0.000  | 0.000  | 0.001  | 0.049  | 0.075  | 0.655  | 0.175  | 1.602  | 0.286  | 0.989  | 1.316  | 34.743  | 2.294  | 4.285  | 43.842  | 4.075  | 5.611  |
| *Davidia involucrata* var. *vilmoriniana* | 0.000  | 0.032  | 0.000  | 0.168  | 0.144  | 1.450  | 0.089  | 1.259  | 0.113  | 0.267  | 0.045  | 36.175  | 1.590  | 10.040  | 44.313  | 0.423  | 3.892  |
| *Gmelina hainanensis* | 0.007  | 0.000  | 0.000  | 3.173  | 0.000  | 9.996  | 0.000  | 0.000  | 0.000  | 0.003  | 0.000  | 80.866  | 0.000  | 3.767  | 0.000  | 1.396  | 0.792  |
| *Alsophila podophylla* | 0.004  | 0.651  | 0.055  | 0.314  | 0.128  | 0.587  | 0.000  | 0.009  | 1.650  | 3.575  | 0.205  | 66.535  | 0.004  | 3.664  | 1.483  | 16.453  | 4.686  |
| *Toona ciliata* | 0.269  | 0.000  | 7.572  | 4.173  | 3.251  | 0.053  | 0.838  | 0.124  | 3.064  | 11.562  | 4.030  | 3.418  | 15.177  | 0.258  | 1.597  | 33.981  | 10.633  |
| *Taxus wallichiana* var. *chinensis* | 0.369  | 0.144  | 1.502  | 0.536  | 0.110  | 4.632  | 0.022  | 0.434  | 0.494  | 0.702  | 0.336  | 26.947  | 3.247  | 22.190  | 33.259  | 1.183  | 3.895  |
| *Ormosia hosiei* | 0.155  | 0.038  | 1.666  | 0.808  | 0.356  | 2.494  | 1.173  | 0.003  | 0.278  | 0.414  | 2.101  | 22.403  | 2.537  | 10.263  | 7.742  | 2.104  | 45.464  |
| *Meconopsis punicea* | 0.025  | 0.000  | 0.000  | 0.000  | 0.033  | 0.457  | 0.135  | 1.827  | 0.292  | 1.910  | 1.127  | 55.147  | 0.372  | 0.061  | 33.651  | 4.939  | 0.023  |
| *Pinus koraiensis* | 0.616  | 0.032  | 1.256  | 0.658  | 0.003  | 2.002  | 0.621  | 0.019  | 0.063  | 1.038  | 0.191  | 63.757  | 4.068  | 10.850  | 0.208  | 14.496  | 0.123  |
| *Magnolia officinalis* | 2.799  | 0.730  | 0.224  | 0.168  | 2.775  | 2.459  | 3.051  | 2.703  | 0.933  | 2.890  | 2.931  | 33.176  | 3.074  | 2.192  | 15.195  | 17.194  | 7.506  |
| *Ormosia henryi* | 0.577  | 0.127  | 1.937  | 0.220  | 0.701  | 5.296  | 0.104  | 1.195  | 0.440  | 2.092  | 1.627  | 4.613  | 51.553  | 4.254  | 10.613  | 13.671  | 0.981  |
| *Pinus kwangtungensis* | 0.050  | 0.000  | 0.288  | 0.000  | 0.290  | 16.881  | 0.204  | 0.000  | 0.045  | 2.126  | 0.718  | 3.240  | 50.263  | 0.000  | 21.326  | 3.276  | 1.294  |
| *Castanopsis concinna* | 0.000  | 4.806  | 0.000  | 2.435  | 0.000  | 3.874  | 0.104  | 0.000  | 0.688  | 0.000  | 0.000  | 73.027  | 6.804  | 0.057  | 0.000  | 7.444  | 0.761  |
| *Phellodendron amurense* | 0.795  | 0.656  | 1.169  | 0.347  | 0.151  | 1.031  | 0.346  | 1.728  | 0.618  | 2.964  | 1.950  | 21.261  | 7.390  | 5.191  | 37.832  | 15.896  | 0.676  |
| *Pseudotsuga sinensis* | 0.369  | 0.139  | 0.733  | 0.001  | 0.771  | 0.063  | 0.642  | 0.000  | 0.728  | 0.117  | 0.448  | 6.727  | 0.129  | 10.848  | 28.945  | 0.130  | 49.212  |
| *Cibotium barometz*  | 0.458  | 0.184  | 0.212  | 0.406  | 0.187  | 2.253  | 0.222  | 2.008  | 0.180  | 1.746  | 0.417  | 6.697  | 19.719  | 0.053  | 4.929  | 57.700  | 2.629  |
| *Pseudolarix amabilis* | 0.784  | 0.079  | 0.043  | 0.324  | 0.113  | 0.000  | 0.000  | 0.393  | 0.270  | 2.708  | 0.644  | 7.480  | 0.024  | 56.699  | 0.000  | 15.951  | 14.489  |
| *Fagopyrum dibotrys* | 1.598  | 0.413  | 1.195  | 2.501  | 0.676  | 4.041  | 0.289  | 1.283  | 1.644  | 3.184  | 2.485  | 13.174  | 4.631  | 3.407  | 8.610  | 13.200  | 37.671  |
| *Zelkova schneideriana* | 0.006  | 0.074  | 0.272  | 0.344  | 0.968  | 1.782  | 0.015  | 0.762  | 0.118  | 0.720  | 1.720  | 5.397  | 0.181  | 0.353  | 3.433  | 0.957  | 82.900  |
| *Cercidiphyllum japonicum* | 0.102  | 0.082  | 0.238  | 0.047  | 0.382  | 0.311  | 0.264  | 0.319  | 0.258  | 0.732  | 1.814  | 52.830  | 1.201  | 6.874  | 16.353  | 10.943  | 7.252  |
| *Nelumbo nucifera* | 2.150  | 2.789  | 10.791  | 0.815  | 0.903  | 0.011  | 1.137  | 0.175  | 0.090  | 2.673  | 0.076  | 4.580  | 17.957  | 11.527  | 7.386  | 33.926  | 3.016  |
| *Rhoiptelea chiliantha* | 2.014  | 7.876  | 11.044  | 0.000  | 0.000  | 49.056  | 0.000  | 0.000  | 0.342  | 0.056  | 0.000  | 0.000  | 28.684  | 0.000  | 0.000  | 0.927  | 0.000  |
| *Toona ciliata* var. *pubescens* | 1.377  | 0.085  | 0.007  | 0.027  | 0.026  | 0.708  | 0.032  | 0.144  | 0.447  | 37.353  | 1.447  | 3.083  | 1.451  | 2.009  | 0.000  | 24.764  | 27.041  |
| *Phoebe bournei* | 1.088  | 0.295  | 1.728  | 0.114  | 0.810  | 6.440  | 0.000  | 0.300  | 0.519  | 0.797  | 0.960  | 6.072  | 1.046  | 0.410  | 2.892  | 2.045  | 74.485  |
| *Aldrovanda vesiculosa* | 0.329  | 0.054  | 3.600  | 3.581  | 0.054  | 3.545  | 0.071  | 0.625  | 0.845  | 1.291  | 0.056  | 60.532  | 2.468  | 16.789  | 0.505  | 0.000  | 5.656  |
| *Taxus wallichiana* var. *mairei* | 4.898  | 2.333  | 3.595  | 3.309  | 0.264  | 16.091  | 0.389  | 0.305  | 1.569  | 3.302  | 3.133  | 19.186  | 7.364  | 6.313  | 8.920  | 7.298  | 11.732  |
| *Phoebe zhennan* | 0.001  | 0.013  | 0.001  | 0.074  | 0.092  | 0.004  | 0.002  | 0.005  | 0.011  | 2.877  | 0.403  | 35.044  | 1.388  | 10.451  | 3.967  | 35.076  | 10.591  |
| *Abies chensiensis* | 0.093  | 0.029  | 0.000  | 0.012  | 0.053  | 0.187  | 0.389  | 0.000  | 0.000  | 0.003  | 0.726  | 41.873  | 2.944  | 5.351  | 40.788  | 1.081  | 6.472  |
| *Zenia insignis* | 0.098  | 0.139  | 4.613  | 0.084  | 0.442  | 7.901  | 0.000  | 0.037  | 1.955  | 3.606  | 0.137  | 0.631  | 13.624  | 0.639  | 2.246  | 63.713  | 0.136  |
| *Machilus nanmu* | 0.842  | 0.000  | 0.128  | 0.035  | 0.401  | 0.000  | 0.000  | 0.550  | 0.041  | 1.491  | 0.001  | 3.476  | 27.174  | 5.559  | 60.077  | 0.000  | 0.227  |
| *Eurycorymbus cavaleriei* | 0.027  | 0.007  | 1.350  | 0.296  | 0.708  | 6.142  | 0.035  | 0.000  | 0.662  | 0.434  | 0.529  | 4.377  | 4.048  | 0.851  | 19.003  | 1.784  | 59.748  |
| *Euchresta japonica* | 0.000  | 0.000  | 0.000  | 1.918  | 0.000  | 22.633  | 0.000  | 0.000  | 1.133  | 4.516  | 13.242  | 9.381  | 0.083  | 10.702  | 8.503  | 0.239  | 27.651  |
| *Anisodus tanguticus* | 0.767  | 0.038  | 0.020  | 0.000  | 0.002  | 0.000  | 0.626  | 0.000  | 0.175  | 0.001  | 0.069  | 47.578  | 0.075  | 8.684  | 41.657  | 0.307  | 0.000  |
| *Dipentodon sinicus* | 1.175  | 0.000  | 14.514  | 0.000  | 0.000  | 44.103  | 0.000  | 0.000  | 0.404  | 0.000  | 0.010  | 0.000  | 1.280  | 0.000  | 38.515  | 0.000  | 0.000  |
| *Ceratopteris thalictroides* | 6.503  | 0.000  | 0.460  | 0.000  | 0.000  | 0.640  | 0.000  | 0.000  | 0.000  | 8.549  | 0.000  | 48.523  | 15.360  | 0.000  | 0.000  | 19.062  | 0.904  |
| [*Tetracentron sinense*](http://foc.eflora.cn/content.aspx?TaxonId=200008490) | 0.953  | 0.194  | 0.463  | 0.203  | 0.210  | 1.558  | 0.127  | 0.263  | 0.652  | 0.976  | 1.416  | 21.940  | 1.066  | 9.615  | 47.664  | 3.125  | 9.576  |
| *Fraxinus mandschurica* | 1.896  | 0.104  | 0.822  | 0.262  | 0.383  | 2.308  | 0.640  | 0.165  | 0.351  | 2.478  | 0.990  | 53.179  | 8.509  | 8.661  | 1.000  | 18.092  | 0.161  |
| [*Metasequoia glyptostroboides*](http://foc.eflora.cn/content.aspx?TaxonId=200005396) | 0.618  | 0.344  | 2.110  | 0.142  | 0.480  | 0.060  | 0.089  | 0.000  | 0.380  | 0.625  | 1.096  | 21.533  | 29.522  | 17.578  | 17.731  | 3.982  | 3.711  |
| *Larix mastersiana* | 0.000  | 0.021  | 0.000  | 0.000  | 0.000  | 1.285  | 3.135  | 0.000  | 2.401  | 5.530  | 0.018  | 0.035  | 7.144  | 0.679  | 69.220  | 6.114  | 4.419  |
| *Brainea insignis* | 0.000  | 2.633  | 4.530  | 4.556  | 2.190  | 10.520  | 32.579  | 0.000  | 3.717  | 1.843  | 0.239  | 25.890  | 0.004  | 0.000  | 1.108  | 7.137  | 3.055  |
| *Malania oleifera* | 0.014  | 0.000  | 0.000  | 0.136  | 0.152  | 0.000  | 0.458  | 1.437  | 0.000  | 0.000  | 0.028  | 95.615  | 0.134  | 0.000  | 1.958  | 0.039  | 0.029  |
| *Alsophila spinulosa* | 0.074  | 0.560  | 6.898  | 5.205  | 1.447  | 22.179  | 0.061  | 0.000  | 5.544  | 5.055  | 2.926  | 4.666  | 3.314  | 1.507  | 3.321  | 36.353  | 0.890  |
| *Taiwania cryptomerioides* | 2.037  | 0.162  | 15.978  | 3.110  | 0.000  | 1.187  | 0.000  | 0.000  | 0.088  | 0.000  | 0.000  | 21.710  | 31.899  | 2.862  | 5.573  | 0.000  | 15.395  |
| *Cinnamomum japonicum* | 0.000  | 0.918  | 0.000  | 5.924  | 12.789  | 0.000  | 0.000  | 0.000  | 0.736  | 0.428  | 1.611  | 0.198  | 0.040  | 2.351  | 0.247  | 0.000  | 74.761  |
| *Myriophyllum ussuriense* | 0.045  | 0.033  | 0.701  | 0.935  | 1.890  | 0.945  | 18.442  | 4.731  | 1.483  | 2.652  | 1.354  | 0.830  | 0.783  | 6.610  | 20.712  | 13.642  | 24.214  |
| *Oyama wilsonii* | 0.000  | 0.000  | 0.000  | 0.000  | 3.759  | 0.000  | 1.158  | 0.000  | 0.000  | 0.105  | 0.000  | 0.004  | 0.000  | 0.000  | 92.327  | 2.623  | 0.024  |
| *Camptotheca acuminata* | 2.392  | 1.565  | 1.671  | 1.673  | 3.020  | 9.990  | 1.214  | 2.256  | 2.114  | 3.982  | 3.283  | 12.440  | 0.549  | 5.585  | 12.941  | 13.677  | 21.648  |
| *Emmenopterys henryi* | 0.983  | 0.370  | 0.515  | 0.625  | 1.620  | 4.039  | 0.088  | 0.861  | 0.199  | 6.041  | 5.957  | 29.094  | 6.691  | 4.270  | 2.432  | 15.825  | 20.391  |
| *Alsophila metteniana* | 0.312  | 0.026  | 0.711  | 0.012  | 2.096  | 6.539  | 1.163  | 0.000  | 0.037  | 2.561  | 3.188  | 1.347  | 52.433  | 0.232  | 24.305  | 2.154  | 2.883  |
| *Triaenophora rupestris* | 0.103  | 0.261  | 0.039  | 0.048  | 0.000  | 0.020  | 0.000  | 0.413  | 0.046  | 0.730  | 0.000  | 20.253  | 0.000  | 13.760  | 45.649  | 1.517  | 17.161  |
| *Glycine soja* | 1.595  | 0.796  | 0.887  | 0.686  | 0.655  | 1.677  | 0.536  | 1.372  | 1.067  | 3.218  | 0.649  | 10.489  | 0.573  | 13.184  | 17.874  | 36.972  | 7.770  |
| *Ginkgo biloba* | 0.339  | 0.160  | 2.200  | 0.944  | 0.466  | 1.764  | 0.681  | 0.442  | 1.383  | 2.281  | 1.635  | 22.517  | 1.018  | 17.359  | 4.448  | 40.807  | 1.557  |
| *Picea brachytyla* var. *complanata* | 0.018  | 0.000  | 0.000  | 0.433  | 0.000  | 0.936  | 0.117  | 0.850  | 0.388  | 0.105  | 0.096  | 45.486  | 0.002  | 0.206  | 47.135  | 2.950  | 1.277  |
| *Cinnamomum longepaniculatum* | 0.452  | 0.105  | 0.000  | 0.069  | 0.086  | 0.158  | 0.000  | 0.032  | 0.257  | 1.241  | 0.067  | 1.159  | 1.036  | 23.058  | 71.654  | 0.609  | 0.018  |
| *Cinnamomum camphora* | 2.022  | 2.583  | 0.350  | 2.104  | 0.127  | 2.914  | 0.602  | 0.294  | 0.917  | 3.100  | 1.726  | 11.886  | 31.464  | 3.819  | 3.191  | 26.319  | 6.584  |
| *Phoebe chekiangensis* | 0.038  | 0.003  | 0.016  | 0.277  | 0.872  | 0.000  | 0.000  | 0.072  | 0.042  | 0.232  | 0.008  | 0.512  | 7.078  | 4.871  | 0.707  | 75.076  | 10.197  |
| *Zoysia sinica* | 0.815  | 0.207  | 0.041  | 0.087  | 2.614  | 0.088  | 0.487  | 0.000  | 0.102  | 0.332  | 0.002  | 5.183  | 0.041  | 30.774  | 11.921  | 0.312  | 46.995  |
| *Platycrater arguta* | 0.000  | 0.000  | 4.945  | 0.029  | 0.094  | 0.000  | 0.000  | 1.153  | 0.000  | 0.000  | 0.026  | 0.040  | 0.094  | 4.658  | 0.000  | 88.711  | 0.251  |
| *Acer amplum* subsp. *catalpifolium* | 0.000  | 0.874  | 0.000  | 0.162  | 0.512  | 0.733  | 0.261  | 0.583  | 1.189  | 2.782  | 0.031  | 3.510  | 3.981  | 8.656  | 70.987  | 5.732  | 0.007  |
| *Tilia amurensis* | 0.257  | 0.223  | 0.491  | 1.744  | 0.003  | 0.174  | 1.086  | 0.149  | 0.451  | 1.117  | 1.229  | 30.192  | 6.542  | 1.132  | 35.685  | 18.011  | 1.515  |
| *Madhuca pasquieri* | 0.000  | 5.853  | 0.000  | 0.418  | 0.892  | 36.220  | 0.000  | 0.000  | 0.252  | 2.312  | 0.759  | 43.303  | 1.957  | 0.000  | 1.794  | 0.189  | 6.054  |
| *Chosenia arbutifolia* | 1.076  | 0.044  | 0.147  | 0.360  | 0.009  | 4.023  | 0.056  | 0.327  | 0.017  | 0.068  | 0.067  | 77.024  | 2.639  | 1.604  | 2.689  | 7.564  | 2.287  |