

Vignette ecospat package

Contents

| | | |
|----------|--|------------|
| 1 | Load data | 1 |
| 2 | Pre-Modelling Analysis | 5 |
| 2.1 | Spatial Auto-correlation | 5 |
| 2.2 | Predictor Variable Selection | 6 |
| 2.3 | Climate Analogy Tools | 6 |
| 2.4 | Phylogenetic Diversity Measures | 8 |
| 2.5 | Niche Quantification and Comparison with Ordination techniques | 10 |
| 2.6 | Biotic Interactions | 15 |
| 2.7 | Data Preparation | 18 |
| 3 | Core Niche Modelling | 21 |
| 3.1 | Model Evaluation | 21 |
| 3.2 | Spatial Predictions and Projections | 75 |
| 3.3 | Spatial prediction of communities | 90 |
| 3.4 | SESAM framework with <i>ecospat.SESAM.prr()</i> | 90 |
| 4 | Post-Modelling | 142 |
| 4.1 | Spatial Predictions of species assamblages | 142 |

=====

Valeria Di Cola, Olivier Broennimann, Blaise Petitpierre, Manuela D'Amen, Frank Breiner & Antoine Guisan ##### 08 November, 2017

Miscellaneous methods and utilities for spatial ecology analysis, written by current and former members and collaborators of the *ecospat* group of Antoine Guisan, Department of Ecology and Evolution (DEE) & Institute of Earth Surface Dynamics (IDYST), University of Lausanne, Switzerland.

ecospat offers the possibility to perform Pre-modelling Analysis, such as Spatial autocorrelation analysis, MESS (Multivariate Environmental Similarity Surfaces) analyses, Phylogenetic diversity Measures, Biotic Interactions. It also provides functions to complement *biomod2* in preparing the data, calibrating and evaluating (e.g. boyce index) and projecting the models. Complementary analysis based on model predictions (e.g. co-occurrences analyses) are also provided.

In addition, the *ecospat* package includes Niche Quantification and Overlap functions that were used in Broennimann et al. 2012 and Petitpierre et al. 2012 to quantify climatic niche shifts between the native and invaded ranges of invasive species.

1 Load data

```
library(ecospat)
```

```
## Loading required package: ade4
```

```
## Loading required package: ape

## Loading required package: gbm

## Loading required package: survival

## Loading required package: lattice

## Loading required package: splines

## Loading required package: parallel

## Loaded gbm 2.1.3

## Loading required package: sp
```

```
citation("ecospat")
```

```
##
## To cite package 'ecospat' in publications use:
##
##   Olivier Broennimann, Valeria Di Cola and Antoine Guisan (2018).
##   ecospat: Spatial Ecology Miscellaneous Methods. R package
##   version 3.0.
##   http://www.unil.ch/ecospat/home/menuguid/ecospat-resources/tools.html
##
## A BibTeX entry for LaTeX users is
##
##   @Manual{,
##     title = {ecospat: Spatial Ecology Miscellaneous Methods},
##     author = {Olivier Broennimann and Valeria {Di Cola} and Antoine Guisan},
##     year = {2018},
##     note = {R package version 3.0},
##     url = {http://www.unil.ch/ecospat/home/menuguid/ecospat-resources/tools.html},
##   }
```

1.0.1 Test data for the ecospat library

```
ecospat.testData()
```

```
data(ecospat.testData)
names(ecospat.testData)
```

```
## [1] "numplots"          "long"
## [3] "lat"               "ddeg"
## [5] "mind"              "srاد"
## [7] "slp"               "topo"
## [9] "Achillea_atrata"   "Achillea_millefolium"
## [11] "Acinos_alpinus"    "Adenostyles_glabra"
## [13] "Aposeris_foetida"  "Arnica_montana"
## [15] "Aster_bellidiastrum" "Bartsia_alpina"
## [17] "Bellis_perennis"   "Campanula_rotundifolia"
## [19] "Centaurea_montana" "Cerastium_latifolium"
## [21] "Cruciata_laevipes" "Doronicum_grandiflorum"
```

```
## [23] "Galium_album" "Galium_anisophyllum"
## [25] "Galium_megalospermum" "Gentiana_bavarica"
## [27] "Gentiana_lutea" "Gentiana_purpurea"
## [29] "Gentiana_verna" "Globularia_cordifolia"
## [31] "Globularia_nudicaulis" "Gypsophila_repens"
## [33] "Hieracium_lactucella" "Homogyne_alpina"
## [35] "Hypochaeris_radicata" "Leontodon_autumnalis"
## [37] "Leontodon_helveticus" "Myosotis_alpestris"
## [39] "Myosotis_arvensis" "Phyteuma_orbiculare"
## [41] "Phyteuma_spicatum" "Plantago_alpina"
## [43] "Plantago_lanceolata" "Polygonum_bistorta"
## [45] "Polygonum_viviparum" "Prunella_grandiflora"
## [47] "Rhinanthus_alectorolophus" "Rumex_acetosa"
## [49] "Rumex_crispus" "Vaccinium_gaultherioides"
## [51] "Veronica_alpina" "Veronica_aphylla"
## [53] "Agrostis_capillaris" "Bromus_erectus_sstr"
## [55] "Campanula_scheuchzeri" "Carex sempervirens"
## [57] "Cynosurus_cristatus" "Dactylis_glomerata"
## [59] "Daucus_carota" "Festuca_pratensis_sl"
## [61] "Geranium_sylvaticum" "Leontodon_hispidus_sl"
## [63] "Potentilla_erecta" "Pritzelago_alpina_sstr"
## [65] "Prunella_vulgaris" "Ranunculus_acris_sl"
## [67] "Saxifraga_oppositifolia" "Soldanella_alpina"
## [69] "Taraxacum_officinale_aggr" "Trifolium_repens_sstr"
## [71] "Veronica_chamaedrys" "Parnassia_palustris"
## [73] "glm_Agrostis_capillaris" "glm_Leontodon_hispidus_sl"
## [75] "glm_Dactylis_glomerata" "glm_Trifolium_repens_sstr"
## [77] "glm_Geranium_sylvaticum" "glm_Ranunculus_acris_sl"
## [79] "glm_Prunella_vulgaris" "glm_Veronica_chamaedrys"
## [81] "glm_Taraxacum_officinale_aggr" "glm_Plantago_lanceolata"
## [83] "glm_Potentilla_erecta" "glm_Carex sempervirens"
## [85] "glm_Soldanella_alpina" "glm_Cynosurus_cristatus"
## [87] "glm_Campanula_scheuchzeri" "glm_Festuca_pratensis_sl"
## [89] "glm_Bromus_erectus_sstr" "glm_Saxifraga_oppositifolia"
## [91] "glm_Daucus_carota" "glm_Pritzelago_alpina_sstr"
## [93] "gbm_Bromus_erectus_sstr" "gbm_Saxifraga_oppositifolia"
## [95] "gbm_Daucus_carota" "gbm_Pritzelago_alpina_sstr"
```

1.0.2 Test data for the Niche Overlap Analysis

ecospat.testNiche.inv()

```
data(ecospat.testNiche.inv)
names(ecospat.testNiche.inv)
```

```
## [1] "x" "y" "aetpet" "gdd" "p"
## [6] "pet" "stdp" "tmax" "tmin" "tmp"
## [11] "species_occ" "predictions"
```

ecospat.testNiche.nat()

```
data(ecospat.testNiche.nat)
names(ecospat.testNiche.nat)
```

```
## [1] "x" "y" "aetpet" "gdd" "p"
## [6] "pet" "stdp" "tmax" "tmin" "tmp"
## [11] "species_occ" "predictions"
```

1.0.3 Test tree for Phylogenetic Diversity Analysis

ecospat.testTree()

```
fpath <- system.file("extdata", "ecospat.testTree.tre", package="ecospat")
fpath
```

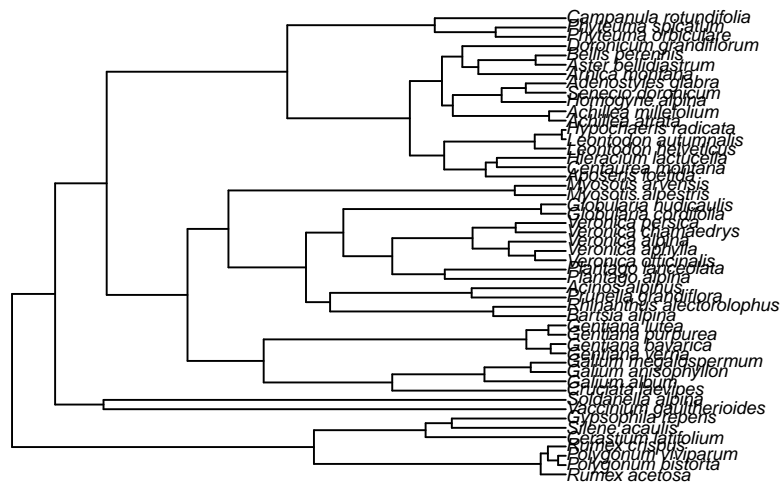
```
## [1] "C:/Users/obroenni/AppData/Local/Temp/RtmpAJ2NWH/Rinst289470d2f9f/ecospat/extdata/ecospat.tes
```

```
tree<-read.tree(fpath)
tree$tip.label
```

```
## [1] "Rumex_acetosa"          "Polygonum_bistorta"
## [3] "Polygonum_viviparum"   "Rumex_crispus"
## [5] "Cerastium_latifolium"  "Silene_aucaulis"
## [7] "Gypsophila_repens"     "Vaccinium_gaultherioides"
## [9] "Soldanella_alpina"     "Cruciata_laevipes"
## [11] "Galium_album"          "Galium_anisophyllum"
## [13] "Galium_megalospermum"  "Gentiana_verna"
## [15] "Gentiana_bavarica"     "Gentiana_purpurea"
## [17] "Gentiana_lutea"        "Bartsia_alpina"
## [19] "Rhinanthus_alectorolophus" "Prunella_grandiflora"
## [21] "Acinos_alpinus"        "Plantago_alpina"
## [23] "Plantago_lanceolata"   "Veronica_officinalis"
## [25] "Veronica_aphylla"      "Veronica_alpina"
## [27] "Veronica_chamaedrys"   "Veronica_persica"
## [29] "Globularia_cordifolia" "Globularia_nudicaulis"
## [31] "Myosotis_alpestris"    "Myosotis_arvensis"
## [33] "Aposeris_foetida"      "Centaurea_montana"
## [35] "Hieracium_lactucella"  "Leontodon_helveticus"
## [37] "Leontodon_autumnalis"  "Hypochaeris_radicata"
## [39] "Achillea_atrata"       "Achillea_millefolium"
## [41] "Homogyne_alpina"       "Senecio_doronicum"
## [43] "Adenostyles_glabra"    "Arnica_montana"
## [45] "Aster_bellidiflorus"   "Bellis_perennis"
## [47] "Doronicum_grandiflorum" "Phyteuma_orbiculare"
## [49] "Phyteuma_spicatum"     "Campanula_rotundifolia"
```

Plot tree

```
plot(tree, cex=0.6)
```

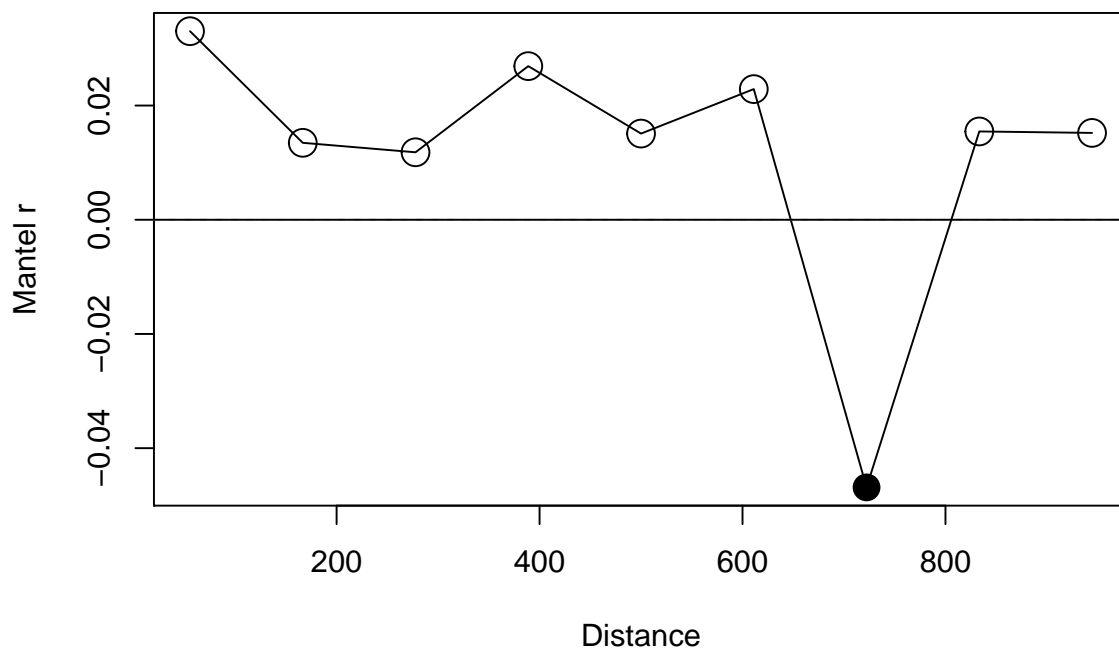


2 Pre-Modelling Analysis

2.1 Spatial Auto-correlation

2.1.1 Mantel Correlogram with `ecospat.mantel.correlogram()`

```
ecospat.mantel.correlogram(dfvar=ecospat.testData[c(2:16)], colxy=1:2, n=100,  
                           colvar=3:7, max=1000, nclass=10, nperm=100)
```



The graph indicates that spatial autocorrelation (SA) is minimal at a distance of 180 meters. Note however that SA is not significantly different than zero for several distances (open circles).

2.2 Predictor Variable Selection

2.2.1 Number of Predictors with Pearson Correlation *ecospat.npred()*

```
colvar <- ecospat.testData[c(4:8)]
x <- cor(colvar, method="pearson")
ecospat.npred (x, th=0.75)
```

```
## [1] 4
```

2.2.2 Number of Predictors with Spearman Correlation *ecospat.npred()*

```
x <- cor(colvar, method="spearman")
ecospat.npred (x, th=0.75)
```

```
## [1] 4
```

2.3 Climate Analogy Tools

2.3.1 Climate Analogy with *ecospat.climan()*

```
x <- ecospat.testData[c(4:8)]
p<- x[1:90,] #A projection dataset.
ref<- x[91:300,] # A reference dataset
```

```
ecospat.climan(ref,p)
```

```
## [1] 0.185415746 -0.028290993 -0.032909931 -0.009237875 -0.034642032
## [6] -0.209006928 -0.084295612 -0.103622863 0.355220600 -0.136258661
## [11] -0.087182448 -0.209006928 -0.143187067 -0.124711316 -0.114844720
## [16] -0.230596451 0.276046242 0.249093277 -0.125288684 -0.101226337
## [21] -0.113883908 -0.204653076 -0.001154734 -0.132217090 -0.100461894
## [26] 0.464738681 -0.416578541 -0.044457275 -0.018475751 -0.122225532
## [31] -0.137611720 -0.050808314 0.254605027 -0.062012319 0.238294633
## [36] -0.159141330 -0.147806005 0.277670365 -0.071593533 -0.019053118
## [41] 0.390781314 0.175132571 0.401892929 0.843703731 0.286155800
## [46] 0.321142114 0.668511130 0.252253209 0.440050672 0.177247206
## [51] 0.831525456 0.303710525 0.197182304 0.219273698 0.196637663
## [56] 0.195300816 0.142395786 0.176988160 -0.051991905 0.265163111
## [61] -0.020785219 -0.017898383 0.553965995 0.409635110 0.323633285
## [66] 0.468693064 0.124983005 -0.032909931 0.165642783 0.147046687
## [71] 0.202895471 0.341992334 0.225508458 0.133254065 0.485295264
## [76] -0.047344111 -0.012282931 0.165429659 0.134199992 0.216655251
## [81] 0.139419127 0.121254775 0.098782992 0.591393741 0.110866239
## [86] 0.146010655 0.095562156 0.093353356 0.081712342 0.160531262
```

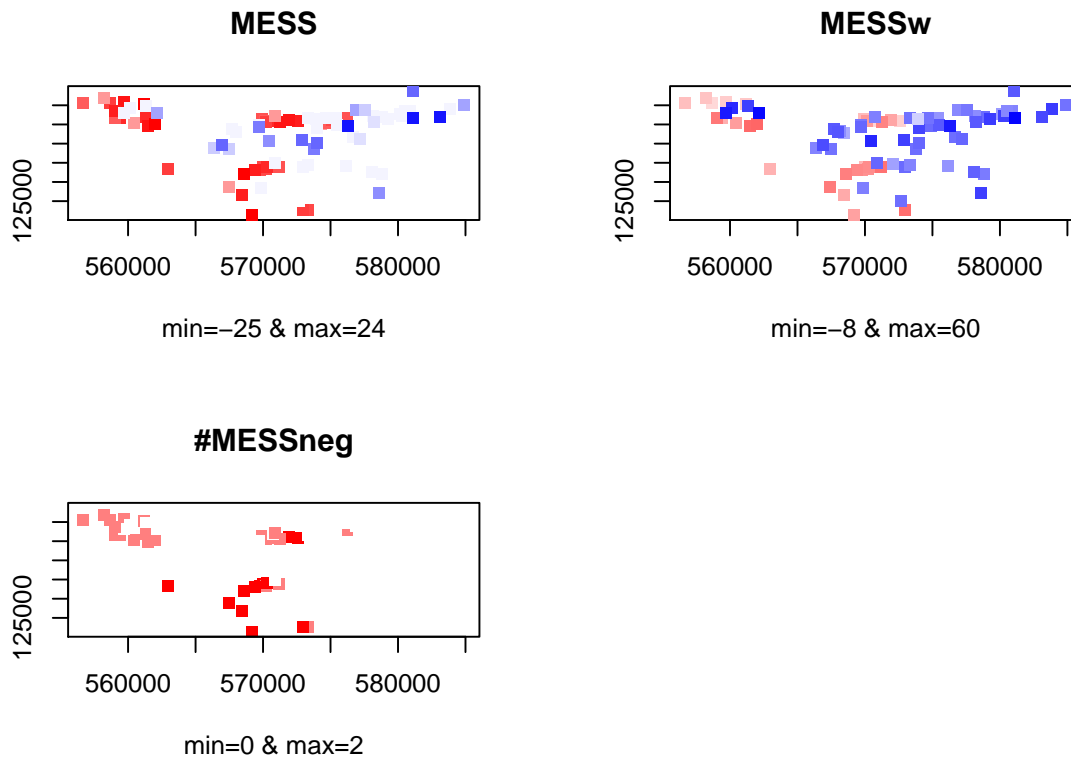
2.3.2 Extrapolation detection, creating a MESS object with *ecospat.mess()*

```
x <- ecospat.testData[c(2,3,4:8)]
proj<- x[1:90,] #A projection dataset.
cal<- x[91:300,] #A calibration dataset
```

```
mess.object<-ecospat.mess (proj, cal, w="default")
```

2.3.2.1 Plot MESS with *ecospat.plot.mess()*

```
ecospat.plot.mess (mess.object, cex=1, pch=15)
```



In the MESS plot pixels in red indicate sites where at least one environmental predictor has values outside of the range of that predictor in the calibration dataset. In the MESSw plot, same as previous plot but with weighted by the number of predictors. Finally, the MESSneg plot shows at each site how many predictors have values outside of their calibration range.

2.4 Phylogenetic Diversity Measures

```
fpath <- system.file("extdata", "ecospat.testTree.tre", package="ecospat")
tree <- read.tree(fpath)
data <- ecospat.testData[9:52]
```

2.4.1 Calculate Phylogenetic Diversity Measures *ecospat.calculate.pd*

```
pd<- ecospat.calculate.pd(tree, data, method = "spanning", type = "species", root = TRUE, average =
```

```
## Progress ( . = 100 pixels calculated):
## ... [300]
## All 300 pixels done.
```

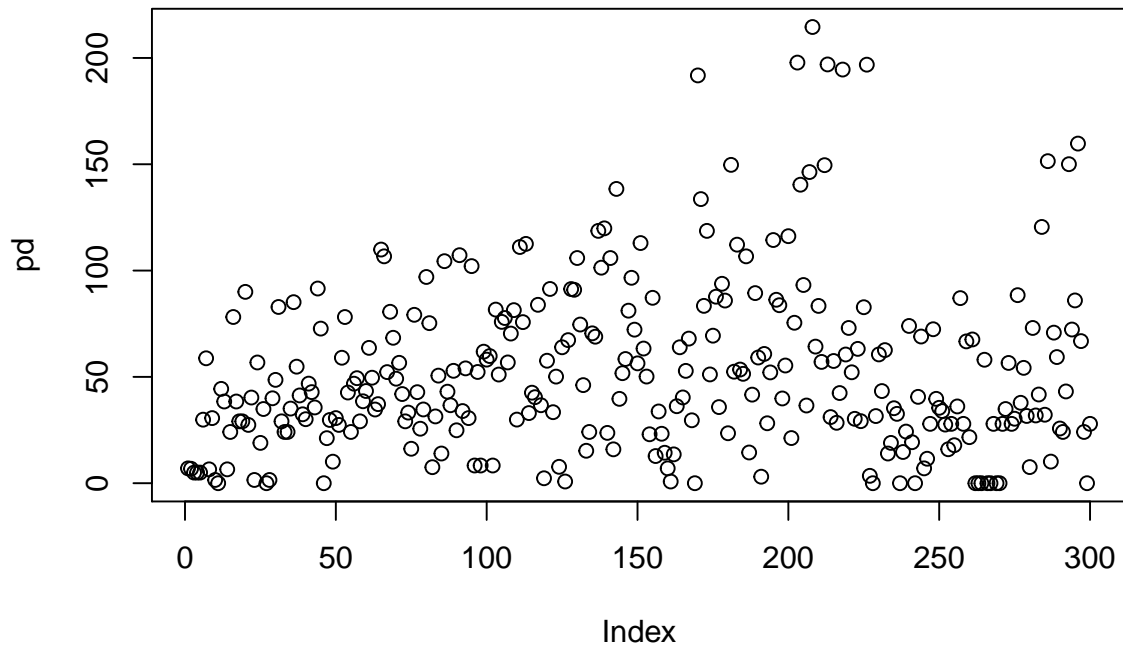
```
pd
```

```
## [1] 6.9782188 6.7981743 4.9964700 4.9964700 4.9964700
## [6] 29.8820547 58.7451752 6.5223035 30.6152478 1.5258335
## [11] 0.0000000 44.3661803 38.4155607 6.5223035 24.0929443
## [16] 78.1607950 38.4155607 29.0894143 29.0894143 89.9839758
## [21] 27.4135569 40.2827035 1.5258335 56.7686202 18.9535475
## [26] 34.8871800 0.0000000 1.5258335 39.9291325 48.5997861
```


| | | | | | | |
|----|-------|-------------|-------------|-------------|-------------|-------------|
| ## | [31] | 82.8763723 | 29.0894143 | 24.0929443 | 24.0929443 | 35.0949481 |
| ## | [36] | 85.1406422 | 54.7974724 | 41.2817284 | 32.4100269 | 30.0984781 |
| ## | [41] | 46.8247511 | 42.8358475 | 35.6223697 | 91.5539224 | 72.7022527 |
| ## | [46] | 0.0000000 | 21.1862293 | 29.7320308 | 10.1187868 | 30.6152478 |
| ## | [51] | 27.4135569 | 59.0015345 | 78.1536692 | 42.6423378 | 24.0929443 |
| ## | [56] | 46.8050070 | 49.3924266 | 29.0894143 | 38.5290848 | 43.3611373 |
| ## | [61] | 63.6397674 | 49.6097169 | 34.6522309 | 37.1871282 | 109.8813371 |
| ## | [66] | 106.6971561 | 52.2512132 | 80.6221671 | 68.3867818 | 49.1362998 |
| ## | [71] | 56.6138690 | 41.9283257 | 29.0894143 | 33.2026673 | 16.1897593 |
| ## | [76] | 79.1938213 | 42.8115427 | 25.6187778 | 34.6805724 | 96.9902366 |
| ## | [81] | 75.2672695 | 7.5313673 | 31.4078882 | 50.5865673 | 13.9570775 |
| ## | [86] | 104.4121025 | 43.0464918 | 36.6693230 | 52.8590823 | 24.8855847 |
| ## | [91] | 107.2302322 | 33.9358604 | 54.0048319 | 30.6152478 | 102.0983385 |
| ## | [96] | 8.3170826 | 52.3071062 | 8.3170826 | 61.8562896 | 58.1179346 |
| ## | [101] | 59.7939424 | 8.3170826 | 81.6495398 | 51.1054635 | 75.8701970 |
| ## | [106] | 77.6947419 | 56.7929250 | 70.3693202 | 81.3965205 | 29.9118877 |
| ## | [111] | 111.0790432 | 75.7518798 | 112.5482496 | 32.9763735 | 42.5644761 |
| ## | [116] | 40.4507005 | 83.8955419 | 36.6693230 | 2.3184739 | 57.5978451 |
| ## | [121] | 91.3453370 | 33.3983912 | 50.1351419 | 7.7084002 | 63.9227817 |
| ## | [126] | 0.7926404 | 67.2813325 | 91.2965996 | 90.9578739 | 105.9024741 |
| ## | [131] | 74.6128871 | 46.1321553 | 15.2479619 | 24.0929443 | 70.4802708 |
| ## | [136] | 68.8949899 | 118.6657550 | 101.3545260 | 119.8539056 | 23.6602184 |
| ## | [141] | 105.8968281 | 15.9336325 | 138.4059855 | 39.6674173 | 51.7391372 |
| ## | [146] | 58.4119283 | 81.1388699 | 96.6048825 | 72.2156025 | 56.3601992 |
| ## | [151] | 112.9489963 | 63.3258805 | 50.1594468 | 23.0021994 | 87.1886965 |
| ## | [156] | 12.7714946 | 33.7421666 | 23.2537702 | 14.3226164 | 6.9752071 |
| ## | [161] | 0.7926404 | 13.5641350 | 36.2007616 | 63.9227817 | 40.3310946 |
| ## | [166] | 52.8264129 | 67.9956878 | 29.5843437 | 0.0000000 | 191.7818606 |
| ## | [171] | 133.6077875 | 83.3977825 | 118.6711630 | 51.1512871 | 69.3838811 |
| ## | [176] | 87.7066616 | 35.8005270 | 93.7797077 | 85.8984840 | 23.4933413 |
| ## | [181] | 149.7094684 | 52.4451847 | 112.1873673 | 53.4479612 | 51.4341108 |
| ## | [186] | 106.6959500 | 14.4361405 | 41.6547546 | 89.4018733 | 59.1068292 |
| ## | [191] | 3.0516670 | 60.7852739 | 28.1850877 | 52.1002690 | 114.3651475 |
| ## | [196] | 86.2640717 | 83.7092232 | 39.8499777 | 55.3514065 | 116.1795597 |
| ## | [201] | 21.2346203 | 75.4593878 | 197.8157358 | 140.3806968 | 93.2192350 |
| ## | [206] | 36.5337815 | 146.3370747 | 214.5450205 | 64.2439145 | 83.3740177 |
| ## | [211] | 57.0440643 | 149.5697614 | 196.9415036 | 31.0984631 | 57.4769230 |
| ## | [216] | 28.4014469 | 42.3978747 | 194.5384819 | 60.5204195 | 73.0060715 |
| ## | [221] | 52.1628582 | 30.2801165 | 63.1752097 | 29.1789484 | 82.7662787 |
| ## | [226] | 196.8309769 | 3.4666557 | 0.0000000 | 31.5688084 | 60.5650008 |
| ## | [231] | 43.3334929 | 62.5952411 | 13.9570775 | 18.9495667 | 35.2646601 |
| ## | [236] | 32.6155790 | 0.0000000 | 14.6693623 | 24.2745827 | 73.9480832 |
| ## | [241] | 19.2825866 | 0.0000000 | 40.6115985 | 68.9862341 | 6.9782188 |
| ## | [246] | 11.5030881 | 27.9105497 | 72.4020225 | 39.6781995 | 35.4596364 |
| ## | [251] | 33.9160835 | 27.5735165 | 15.9619740 | 27.9105497 | 17.8628493 |
| ## | [256] | 36.0936777 | 87.0440848 | 27.9105497 | 66.6907987 | 21.6475811 |
| ## | [261] | 67.5969904 | 0.0000000 | 0.0000000 | 0.0000000 | 58.0542370 |
| ## | [266] | 0.0000000 | 0.0000000 | 27.9105497 | 0.0000000 | 0.0000000 |
| ## | [271] | 27.9105497 | 34.8887684 | 56.5556633 | 27.9105497 | 30.3097595 |
| ## | [276] | 88.4296666 | 37.8150727 | 54.2397810 | 31.6243116 | 7.5799087 |
| ## | [281] | 73.0136833 | 31.8638035 | 41.7172212 | 120.5228857 | 32.2001243 |
| ## | [286] | 151.4545228 | 10.1544492 | 70.8133537 | 59.3255687 | 25.7211220 |
| ## | [291] | 24.1115267 | 43.1500941 | 150.0299191 | 72.2758570 | 85.9498096 |
| ## | [296] | 159.7242106 | 66.8328159 | 24.0929443 | 0.0000000 | 27.9105497 |

2.4.1.1 Plot the results (correlation of phylogenetic diversity with species richness)

```
plot(pd)
```



2.5 Niche Quantification and Comparison with Ordination techniques

Loading test data for the niche dynamics analysis in the invaded range

```
inv <- ecospat.testNiche.inv
```

Loading test data for the niche dynamics analysis in the native range

```
nat <- ecospat.testNiche.nat
```

2.5.1 PCA-ENVIRONMENT

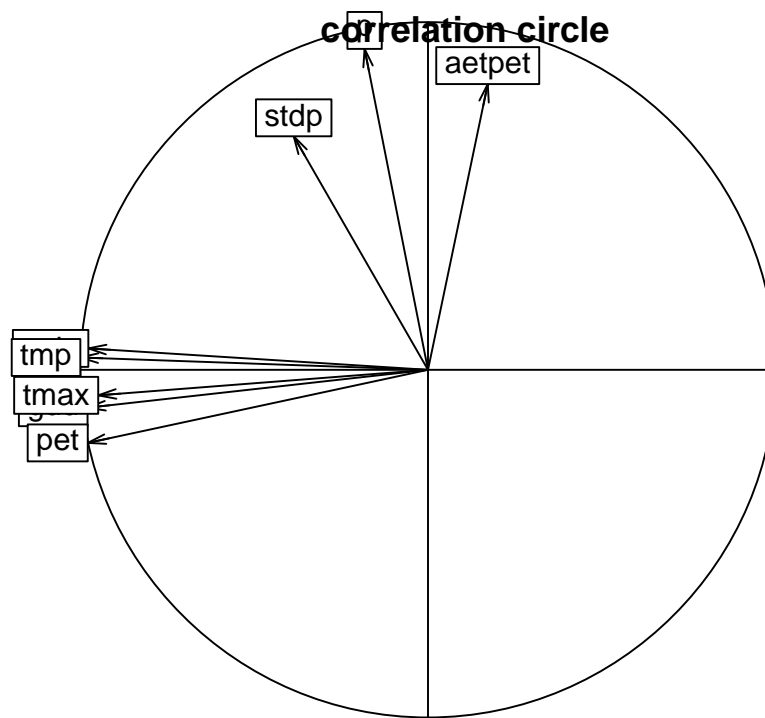
2.5.1.1 The PCA is calibrated on all the sites of the study area

Calibrating the PCA in the whole study area, including both native and invaded ranges (same as PCAenv in Broenniman et al. 2012)

```
pca.env <- dudi.pca(rbind(nat,inv)[,3:10],scannf=F,nf=2)
```

2.5.1.2 Plot Variables Contribution with *ecospat.plot.contrib()*

```
ecospat.plot.contrib(contrib=pca.env$co, eigen=pca.env$eig)
```



axis1 = 61.14 % axis2 = 25.09 %

The correlation circle indicate the contribution of original predictors to the PCA axes.

2.5.1.3 Predict the scores on the axes

```
# PCA scores for the whole study area
scores.globclim <- pca.env$li

# PCA scores for the species native distribution
scores.sp.nat <- suprow(pca.env,nat[which(nat[,11]==1),3:10])$li

# PCA scores for the species invasive distribution
scores.sp.inv <- suprow(pca.env,inv[which(inv[,11]==1),3:10])$li

# PCA scores for the whole native study area
scores.clim.nat <- suprow(pca.env,nat[,3:10])$li

# PCA scores for the whole invaded study area
scores.clim.inv <- suprow(pca.env,inv[,3:10])$li
```

2.5.2 Calculate the Occurrence Densities Grid with *ecospat.grid.clim.dyn()*

For a species in the native range (North America)

```
# gridding the native niche
grid.clim.nat <- ecospat.grid.clim.dyn(glob=scores.globclim,
                                       glob1=scores.clim.nat,
                                       sp=scores.sp.nat, R=100,
                                       th.sp=0)
```

For a species in the invaded range (Australia)

```
# gridding the invasive niche
grid.clim.inv <- ecospat.grid.clim.dyn(glob=scores.globclim,
                                       glob1=scores.clim.inv,
                                       sp=scores.sp.inv, R=100,
                                       th.sp=0)
```

2.5.3 Calculate Niche Overlap with *ecospat.niche.overlap()*

```
# Compute Schoener's D, index of niche overlap
D.overlap <- ecospat.niche.overlap (grid.clim.nat, grid.clim.inv, cor=T)$D
D.overlap
```

```
## [1] 0.224586
```

The niche overlap between the native and the invaded range is 22%.

2.5.4 Perform the Niche Equivalency Test with *ecospat.niche.equivalency.test()* according to Warren et al. (2008)

It is recommended to use at least 1000 replications for the equivalency test. As an example we used $rep = 10$, to reduce the computational time.

```
eq.test <- ecospat.niche.equivalency.test(grid.clim.nat, grid.clim.inv,
                                          rep=10, alternative = "greater")
```

Niche equivalency test H1: Is the overlap between the native and invaded niche higher than two random niches?

2.5.5 Perform the Niche Similarity Test with *ecospat.niche.similarity.test()*

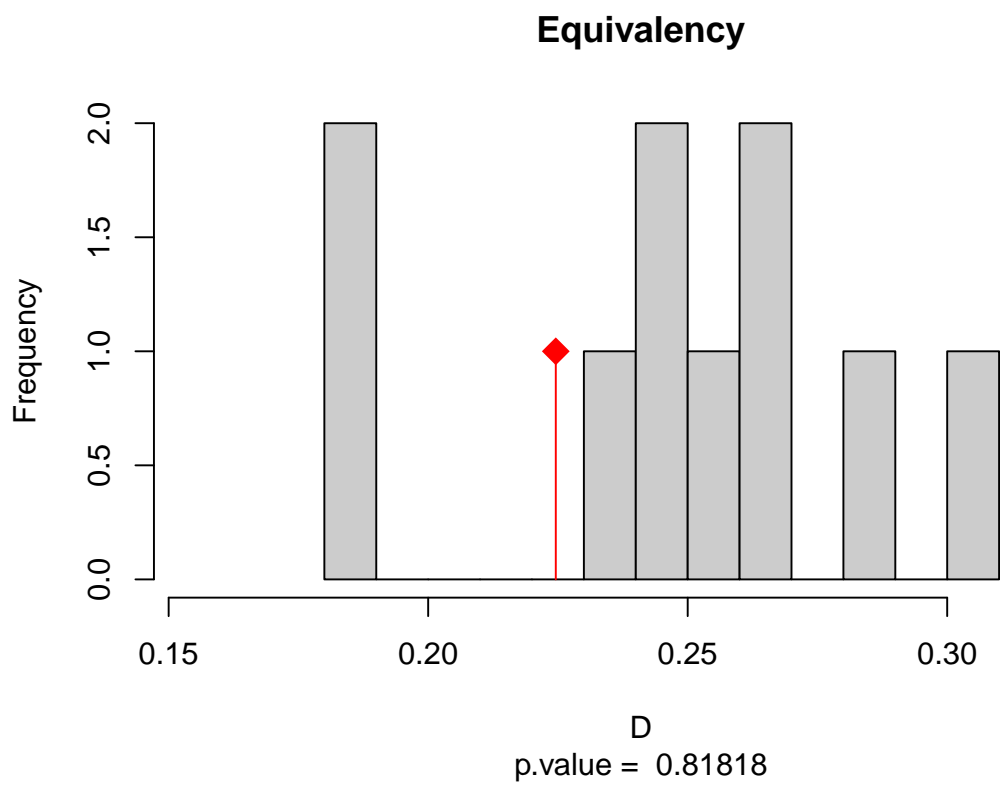
Shifting randomly the invasive niche in the invaded study area. It is recommended to use at least 1000 replications for the similarity test. As an example we used $rep = 10$, to reduce the computational time.

```
sim.test <- ecospat.niche.similarity.test(grid.clim.nat, grid.clim.inv,
                                          rep=10, alternative = "greater",
                                          rand.type=2)
```

Niche similarity test H1: Is the overlap between the native and invaded higher than when the invasive niche is randomly introduced in the invaded study area?

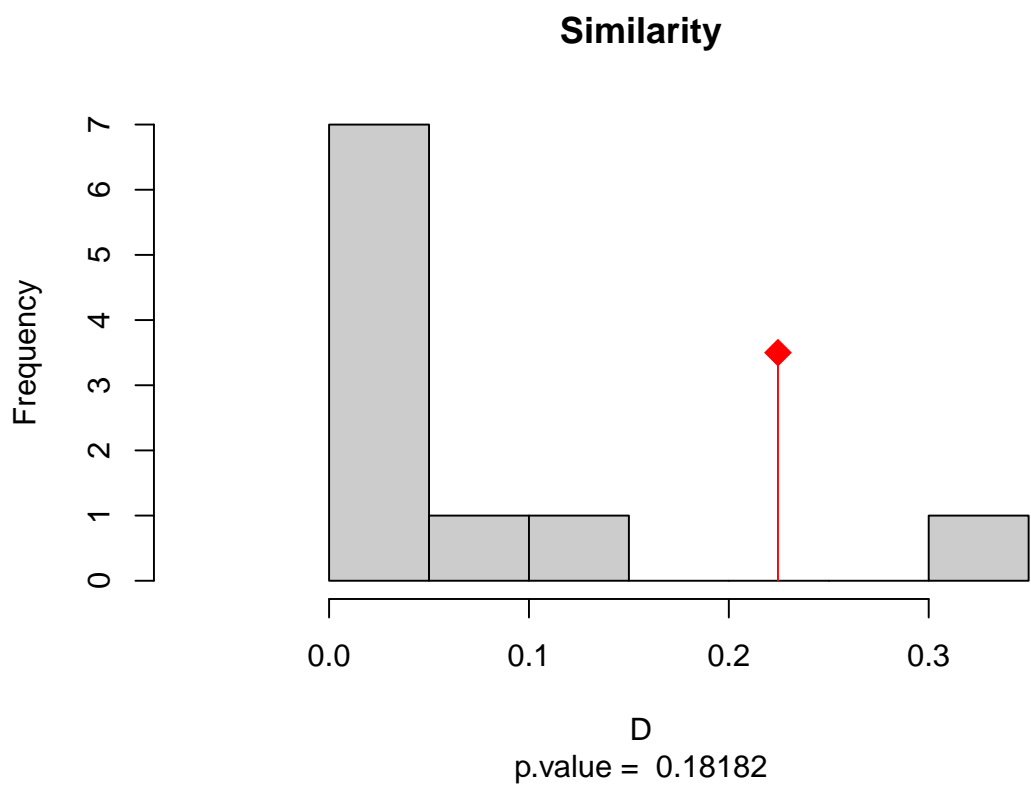
2.5.5.1 Plot Equivalency test

```
ecospat.plot.overlap.test(eq.test, "D", "Equivalency")
```



2.5.5.2 Plot Similarity test

```
ecospat.plot.overlap.test(sim.test, "D", "Similarity")
```



We see that the niche overlap D is 22% and this value is compared to the random distribution of the niche equivalency and niche similarity tests.

2.5.6 Delimiting niche categories and quantifying niche dynamics in analogue climates with *ecospat.niche.dyn.index()*

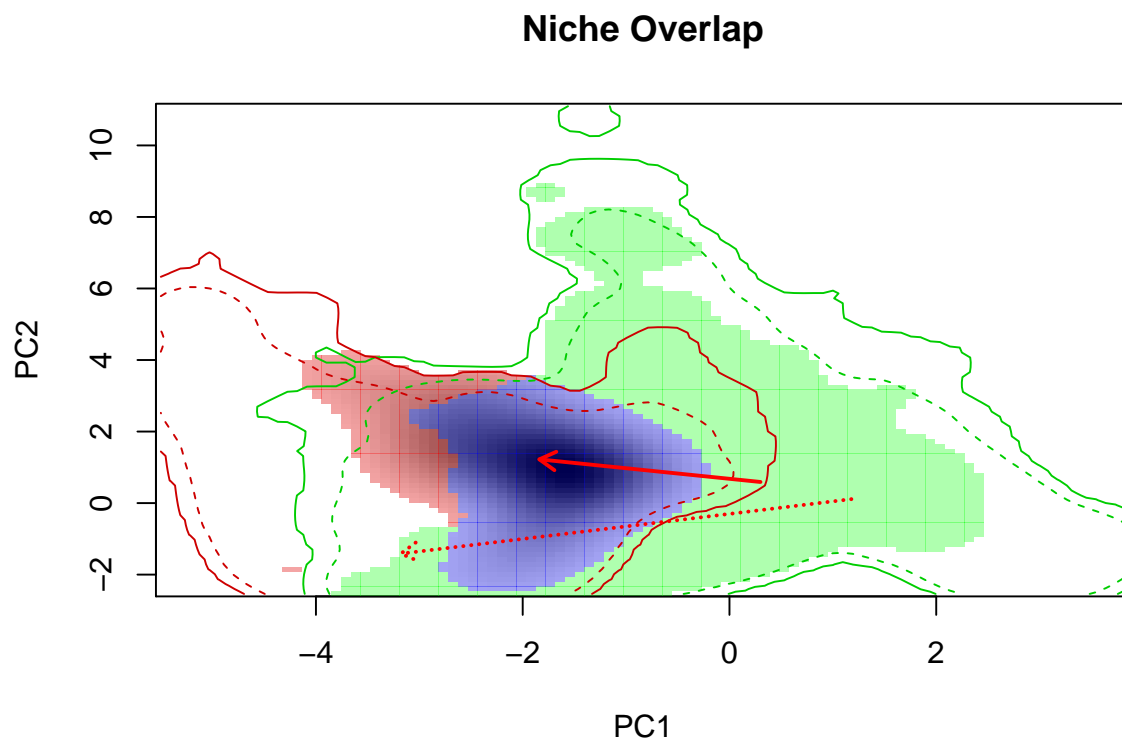
```
niche.dyn <- ecospat.niche.dyn.index (grid.clim.nat, grid.clim.inv, intersection = 0.1)
```

2.5.6.1 Visualizing niche categories, niche dynamics and climate analogy between ranges with *ecospat.plot.niche.dyn()*

Plot niche overlap

```
ecospat.plot.niche.dyn(grid.clim.nat, grid.clim.inv, quant=0.25, interest=2,
                       title= "Niche Overlap", name.axis1="PC1",
                       name.axis2="PC2")

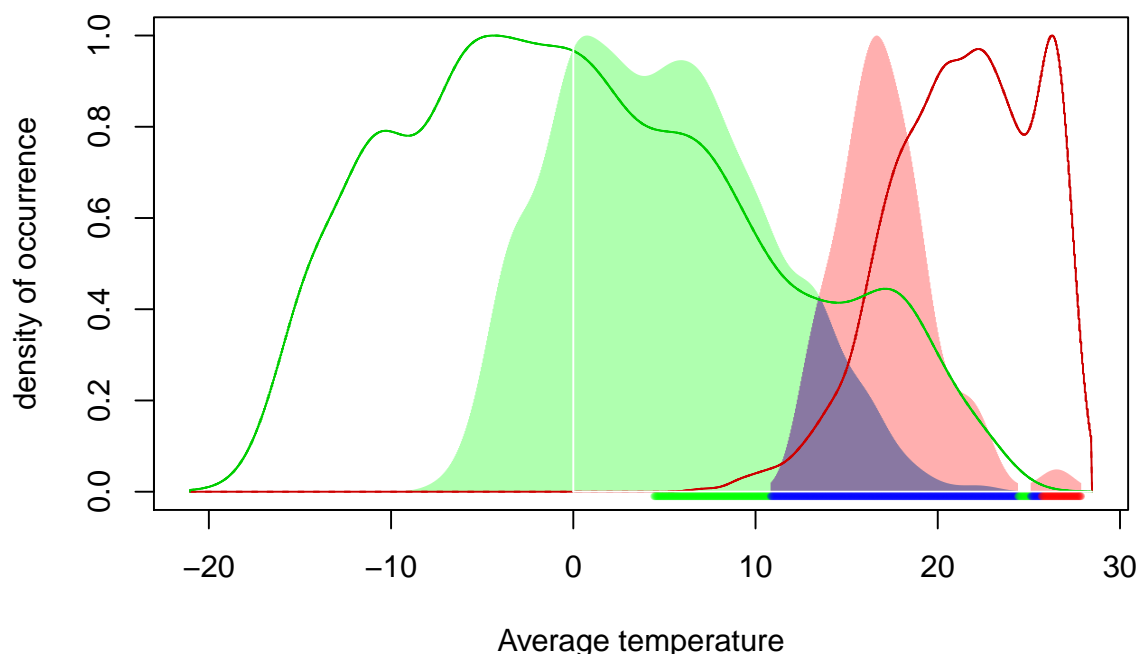
ecospat.shift.centroids(scores.sp.nat, scores.sp.inv, scores.clim.nat, scores.clim.inv)
```



2.5.6.2 Plot the niche dynamics along one gradient (here temperature) with *ecospat.plot.niche.dyn()*

```
# gridding the native niche
grid.clim.t.nat <- ecospat.grid.clim.dyn(glob=as.data.frame(rbind(nat,inv)[,10]),
                                         globi=as.data.frame(nat[,10]),
                                         sp=as.data.frame(nat[which(nat[,11]==1),10]),
                                         R=1000, th.sp=0)
```

```
# gridding the invaded niche
grid.clim.t.inv <- ecospat.grid.clim.dyn(glob=as.data.frame(rbind(nat,inv)[,10]),
                                       glob1=as.data.frame(inv[,10]),
                                       sp=as.data.frame(inv[which(inv[,11]==1),10]),
                                       R=1000, th.sp=0)
t.dyn<-ecospat.niche.dyn.index (grid.clim.t.nat, grid.clim.t.inv,
                              intersection=0.1)
ecospat.plot.niche.dyn(grid.clim.t.nat, grid.clim.t.inv, quant=0,
                      interest=2, title= "Niche Overlap",
                      name.axis1="Average temperature")
```



2.6 Biotic Interactions

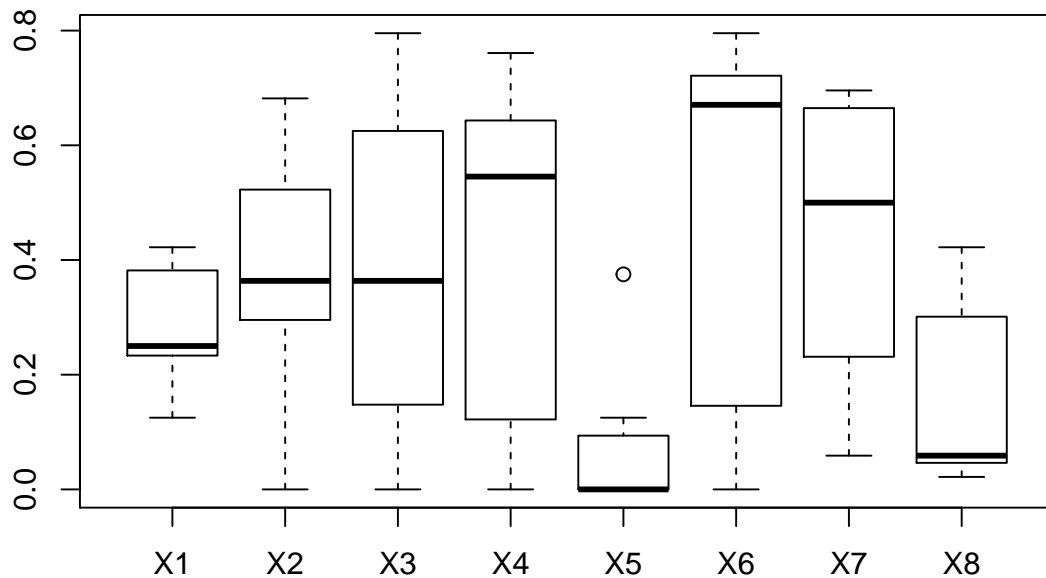
2.6.1 Species Co-occurrences Analysis with a Presence-absence matrix using the function *ecospat.co_occurrences()*

```
data <- ecospat.testData[c(9:16,54:57)]
```

For each pair of species (sp1, sp2), the number (N) of plots where both species were present is divided by the number of plots where the rarest of the two species is present. This index ranges from 0 (no co-occurrence) to 1 (always in co-occurrence) as given in eq. 1.

where $N(S1 \text{ intersects } S2)$ is the number of times species S1 and S2 co-occur, while $\text{Min}(NS1, NS2)$ is the number of times species S1 and S2 co-occur, while is the occurrence frequency of the rarest of the two species.

```
ecospat.co_occurrences (data)
```



```
##
## Aposeris_foetida Arnica_montana Aster_bellidiastrum
## Aposeris_foetida 1.0000000 0.3636364 0.2500000
## Arnica_montana 0.3636364 1.0000000 0.3636364
## Aster_bellidiastrum 0.2500000 0.3636364 1.0000000
## Bartsia_alpina 0.2222222 0.5454545 0.5909090
## Bromus_erectus_sstr 0.1250000 0.0000000 0.0000000
## Campanula_scheuchzeri 0.2444444 0.6818182 0.7954545
## Carex sempervirens 0.4000000 0.5000000 0.6590909
## Cynosurus_cristatus 0.4222222 0.2272727 0.0454545
##
## Bartsia_alpina Bromus_erectus_sstr
## Aposeris_foetida 0.2222222 0.1250
## Arnica_montana 0.5454545 0.0000
## Aster_bellidiastrum 0.5909090 0.0000
## Bartsia_alpina 1.0000000 0.0000
## Bromus_erectus_sstr 0.0000000 1.0000
## Campanula_scheuchzeri 0.76086957 0.0000
## Carex sempervirens 0.69565217 0.0625
## Cynosurus_cristatus 0.02173913 0.3750
##
## Campanula_scheuchzeri Carex sempervirens
## Aposeris_foetida 0.24444444 0.4000000
## Arnica_montana 0.68181818 0.5000000
## Aster_bellidiastrum 0.79545455 0.65909091
## Bartsia_alpina 0.76086957 0.69565217
## Bromus_erectus_sstr 0.00000000 0.06250000
## Campanula_scheuchzeri 1.00000000 0.67058824
## Carex sempervirens 0.67058824 1.00000000
## Cynosurus_cristatus 0.04705882 0.05882353
##
## Cynosurus_cristatus
## Aposeris_foetida 0.42222222
## Arnica_montana 0.22727273
## Aster_bellidiastrum 0.04545455
```



```
## Bartsia_alpina          0.02173913
## Bromus_erectus_sstr     0.37500000
## Campanula_scheuchzeri   0.04705882
## Carex sempervirens      0.05882353
## Cynosurus_cristatus     1.00000000
```

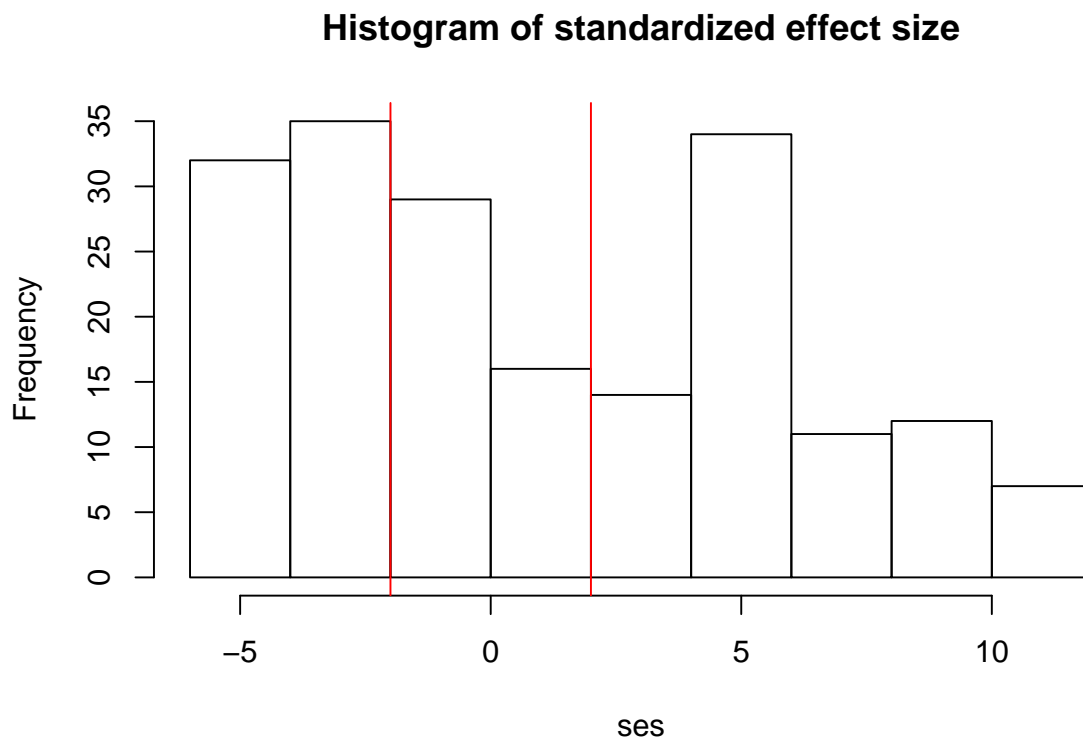
2.6.2 Pairwise co-occurrence Analysis with calculation of the C-score index using the function *ecospat.Cscore()*

This function allows to apply a pairwise null model analysis to a presence-absence community matrix to determine which species associations are significant across the study area. The strength of associations is quantified by the C-score index and a ‘fixed-equiprobable’ null model algorithm is applied.

It is recommended to use at least 10000 permutations for the test. As an example we used `nperm = 100`, to reduce the computational time.

```
data<- ecospat.testData[c(53,62,58,70,61,66,65,71,69,43,63,56,68,57,55,60,54,67,59,64)]
nperm <- 100
outpath <- getwd()
ecospat.Cscore(data, nperm, outpath)
```

```
## Computing observed co-occurrence matrix
## .....
## .....
## .....
##Computing permutations
## .....
## 100 permutations to go
## .....
## 50 permutations to go
## .....
##Computing P-values
## .....
##Exporting dataset
## .....
## .....
## .....
```



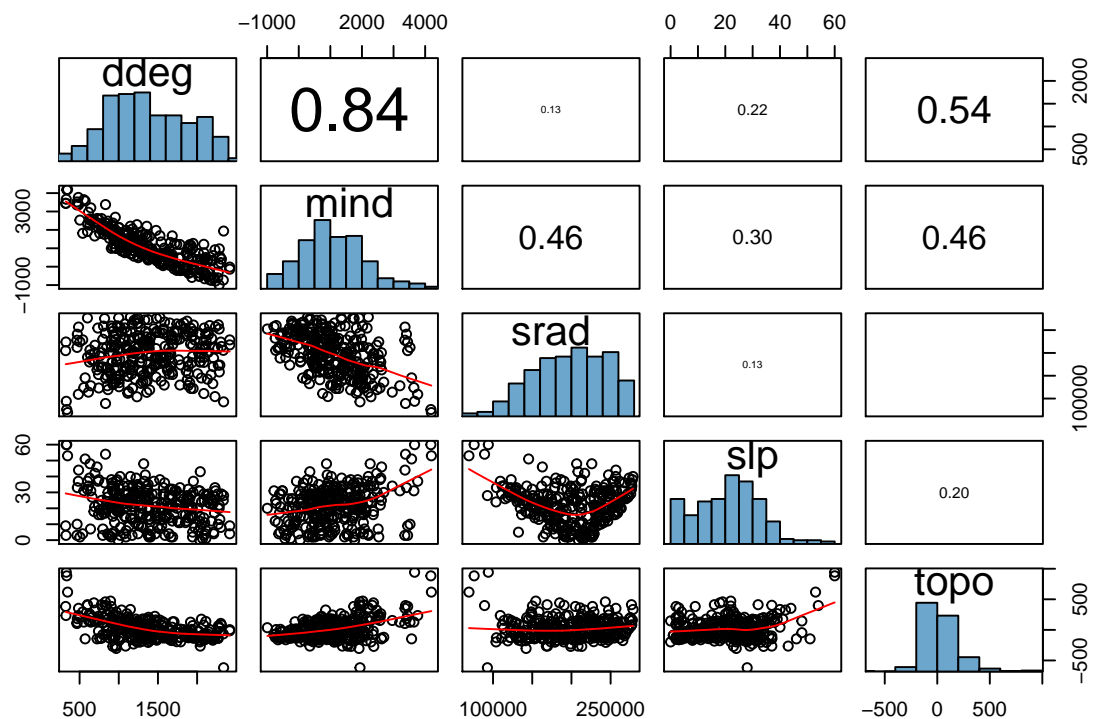
```
## $ObsCscoreTot
## [1] 2675.468
##
## $SimCscoreTot
## [1] 2466.123
##
## $PVal.less
## [1] 1
##
## $PVal.greater
## [1] 0.00990099
##
## $SES.Tot
## [1] 55.15354
```

The function returns the C-score index for the observed community (ObsCscoreTot), p.value (PValTot) and standardized effect size (SES.Tot). It saves also a table in the working directory where the same metrics are calculated for each species pair (only the table with species pairs with significant p-values is saved in this version)

2.7 Data Preparation

2.7.1 Correlation Plot of Variables with *ecospat.cor.plot()*

```
data <- ecospat.testData[,4:8]
ecospat.cor.plot(data)
```



A scatter plot of matrices, with bivariate scatter plots below the diagonal, histograms on the diagonal, and the Pearson correlation above the diagonal. Useful for descriptive statistics of small data sets (better with less than 10 variables).

2.7.2 Calibration And Evaluation Dataset

```
data <- ecospat.testData
caleval <- ecospat.caleval (data = ecospat.testData[53], xy = data[2:3],
                           row.num = 1:nrow(data), nrep = 2, ratio = 0.7,
                           disaggregate = 0.2, pseudoabs = 100, npres = 10,
                           replace = FALSE)
caleval
```

```
## $eval
##   yeval yeval
## 1    78   NA
## 2   NA   NA
## 3   NA  167
## 4  237   85
## 5  281   67
## 6  155  231
## 7  266  181
## 8  245  248
## 9   18  154
## 10 206  268
## 11 177  145
## 12 289   75
## 13 243  246
## 14 140  267
## 15  56  242
```

```

## 16 233 100
## 17 217 123
## 18 43 270
## 19 211 15
## 20 222 225
## 21 113 177
## 22 272 211
## 23 240 120
## 24 252 254
## 25 288 17
## 26 168 139
## 27 241 4
## 28 224 235
## 29 84 196
## 30 152 283
## 31 171 106
## 32 259 166
## 33 239 247
##
## $cal
## ycal ycal
## 1 216 NA
## 2 125 132
## 3 NA NA
## 4 163 NA
## 5 28 172
## 6 NA 96
## 7 NA 101
## 8 192 239
## 9 36 261
## 10 79 260
## 11 236 210
## 12 290 234
## 13 188 95
## 14 53 289
## 15 265 279
## 16 27 212
## 17 57 265
## 18 4 20
## 19 22 295
## 20 14 296
## 21 283 199
## 22 238 238
## 23 116 189
## 24 17 71
## 25 250 31
## 26 114 204
## 27 274 224
## 28 31 253
## 29 156 184
## 30 276 297
## 31 294 256
## 32 34 168
## 33 253 2
## 34 203 23
## 35 115 110
## 36 23 205
## 37 278 286

```

```
## 38 235 264
## 39 269 134
## 40 273 188
## 41 219 201
## 42 186 178
## 43 8 250
## 44 299 79
## 45 157 223
## 46 120 156
## 47 234 230
## 48 150 113
## 49 45 169
## 50 300 18
## 51 139 37
## 52 247 33
## 53 49 55
## 54 182 150
## 55 291 121
## 56 262 220
## 57 297 193
## 58 255 3
## 59 249 232
## 60 196 275
## 61 16 293
## 62 221 198
## 63 200 22
## 64 106 258
## 65 71 292
## 66 44 251
## 67 30 228
## 68 271 11
## 69 254 24
## 70 33 53
## 71 263 147
## 72 180 214
## 73 166 21
## 74 185 276
## 75 5 94
## 76 133 51
## 77 229 244
```

We obtained an evaluation and calibration dataset with a desired ratio of disaggregation.

3 Core Niche Modelling

3.1 Model Evaluation

3.1.1 Presence-only Evaluation Indices- Boyce Index

The argument `fit` is a vector containing the predicted suitability values

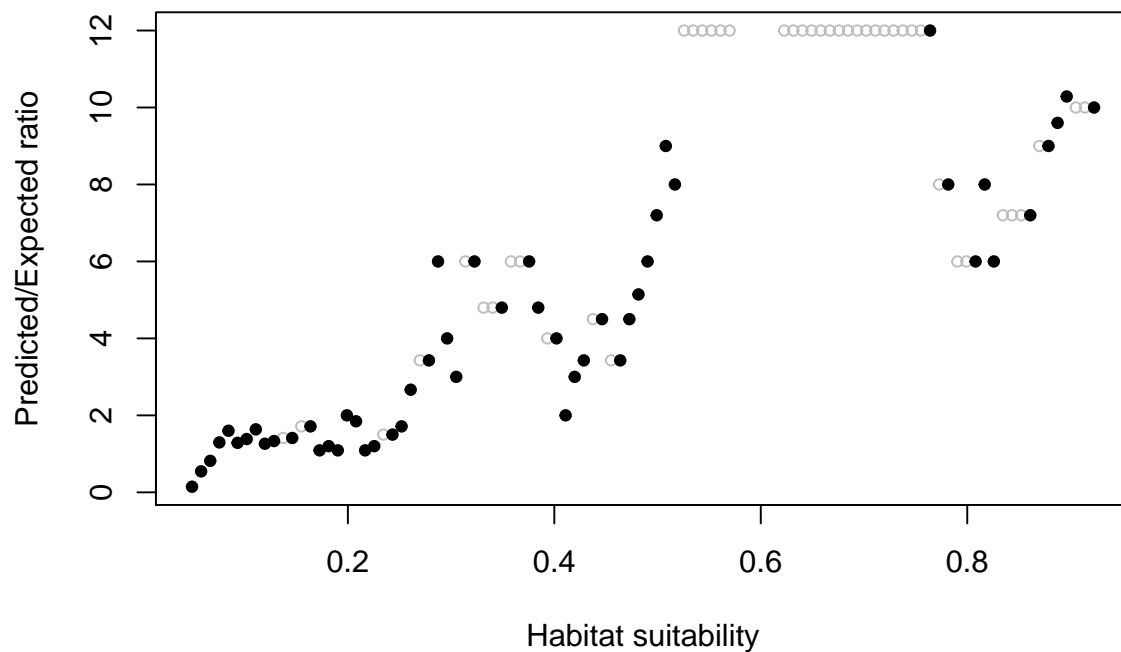
```
fit <- ecospat.testData$glm_Saxifraga_oppositifolia
```

The argument `obs` is a vector containing the predicted suitability values of the validation points (presence records)

```
obs<-ecospat.testData$glm_Saxifraga_oppositifolia[which(ecospat.testData$Saxifraga_oppositifolia==1)]
```

Calculate and plot Boyce Index with *ecospat.boyce*

```
ecospat.boyce (fit, obs, nclass = 0, window.w = "default", res = 100,
              PEplot = TRUE)$Spearman.cor
```



```
## [1] 0.91
```

Here the boyce index is 0.91. If the rank of predicted expected ratio would be completely ordered along habitat suitability axis then boyce index would be 1.

3.1.2 Accuracy of Community Prediction

Indices of accuracy of community predictions *ecospat.CommunityEval()*

```
eval<-ecospat.testData[c(53,62,58,70,61,66,65,71,69,43,63,56,68,57,55,60,54,67,59,64)]
pred<-ecospat.testData[c(73:92)]
```

```
ecospat.CommunityEval (eval, pred, proba=T, ntir=5)
```

```
## trial 1 on 5
## trial 2 on 5
## trial 3 on 5
## trial 4 on 5
## trial 5 on 5
```

```

## $deviation.rich.pred
##      1  2  3  4  5
## 1      1  2 -3 -2 -4
## 2     -6 -6 -8 -7 -8
## 3     -2 -5 -4 -7 -7
## 4     -4 -4 -5 -3 -4
## 5    -10 -8 -7 -10 -10
## 6      1 -1  0 -1 -2
## 7     -4 -1 -2 -4 -5
## 8     -4 -7 -6 -7 -7
## 9      2  3 -2  6  6
## 10     -5 -6 -4 -4 -5
## 11     -6 -10 -9 -10 -9
## 12      0  0  2 -1  1
## 13     -1  1  2 -1  2
## 14     -6 -4 -2 -1 -1
## 15      1 -2 -2  0  0
## 16     -1 -1 -3 -5  1
## 17     -4 -2 -3 -5 -7
## 18     -3 -4 -2 -2 -6
## 19      2  4  2  8  4
## 20     -5 -5 -3 -5 -6
## 21      0 -3 -4 -4  0
## 22     -6 -5 -6 -5 -5
## 23     -5 -6 -4 -6 -7
## 24      0  3  3  1  3
## 25     -2 -1  3 -2 -8
## 26     -2 -1 -3 -1 -1
## 27     -6 -7 -7 -5 -7
## 28     -2 -5 -2 -2 -1
## 29      1  1  2 -1  3
## 30     -4 -2 -4 -4 -7
## 31     -2 -3 -3  0 -3
## 32      1 -3  4  0 -2
## 33      0  0 -1  0 -2
## 34     -3 -6 -3 -5 -1
## 35     -1  1 -3 -1  1
## 36     -3 -3 -1 -2 -4
## 37      1  3  2  0  2
## 38     -4  0 -6 -3 -3
## 39      3  1  3  1 -2
## 40     -1 -1  0 -1 -2
## 41      3  1  4  1  4
## 42     -2  3  4  4  2
## 43     -2 -1 -1  0  1
## 44      5  1  2  5  3
## 45      2  2  2  4  0
## 46      0  1 -1 -2 -1
## 47     -2  2  0 -2  0
## 48      2  4 -2  3  1
## 49      1 -2 -1 -1  1
## 50      2  2  3  2  2
## 51      5  5  2  4  4
## 52     -2  0 -1  0 -4
## 53     -2 -1  3 -2  2
## 54      2  0  1  0  0
## 55     -5 -3 -5 -2 -3
## 56     -7 -6 -5 -2 -5

```

```

## 57    0    1 -3    1    1
## 58   -3   -3 -1   -1   -1
## 59    2    1  4    0    0
## 60    0   -1  1   -3    0
## 61    3    3  4    0    2
## 62    2    2  1    3    3
## 63    1    5  3    5    1
## 64   -1   -3 -3    2    2
## 65    5    7  8    4    4
## 66    8    7  7    7    4
## 67    6    1  2    1    3
## 68    0   -1  3    2    3
## 69   -1    4  4    2    2
## 70    3    5  5    3    5
## 71   -4   -4 -2   -4    0
## 72   -3    1 -1    0   -2
## 73    4    2 -1    1    4
## 74    0    2  0    1   -1
## 75   -8   -9 -6  -11   -9
## 76    7    3  2    8    7
## 77    1    1  4    1    0
## 78    8    4  3    4    3
## 79   -6   -4 -4   -7   -1
## 80    0    2 -1   -2    0
## 81    5    6  5    6    2
## 82    2    3  5    2    4
## 83    6    6  5    7    2
## 84   -1   -1  0   -2   -1
## 85   -6   -7 -3   -3   -2
## 86    5    3  8    5    8
## 87    5    5  5    5    6
## 88    2    3  2   -1    6
## 89    3    1  2    1    2
## 90    4    2  3    4    7
## 91    4    2  6    6    5
## 92    4    2  2    5    2
## 93    2    4  0    2    4
## 94   -5   -4 -1   -3   -5
## 95    2    5  3    3    1
## 96    4    3  4    4    3
## 97   -2   -1 -1    0    2
## 98    1    4  2    3    0
## 99    7    7  6    7    8
## 100   3    3 -1    0    5
## 101  -1   -3  2    3   -1
## 102   5    2  3    3    3
## 103   5    0 -1    0    1
## 104   5    1  3    6    1
## 105   4    3  3    3    3
## 106   2    1  4    1    4
## 107   4    2  1    3   -1
## 108   4    4  5    2    4
## 109   2    5  5    1    3
## 110  -6   -8 -8  -12   -7
## 111   1    1  2    0    3
## 112   3    3  3    2    4
## 113   4    2  3    3    1
## 114  -4   -4 -6   -4   -3

```



```

## 115  4  0  1 -1  3
## 116 -8 -4 -3 -2 -9
## 117  8  5  7  8  7
## 118  4  7  6  3  8
## 119 -2 -1 -5 -1 -3
## 120  0 -6 -3 -2 -5
## 121 -2  0  3  2  0
## 122 -1  4  5  6  5
## 123  5  1  7  6  7
## 124  4  3  5  3  5
## 125 -2 -3 -3 -2 -3
## 126 -1  3  4  2  4
## 127  5  6  6  8  8
## 128  5  7  8  3  4
## 129  6  7  5  3  8
## 130  3  4  2  5  3
## 131  6  2  3  4  4
## 132  6  5  3  6  6
## 133  0 -1  2  1  0
## 134 -5 -3 -2 -4 -2
## 135  6  4  6  6  6
## 136  4  4  3  2 -1
## 137  2  3  6  4  4
## 138  2  3  0  0 -2
## 139  1 -3  1 -3  0
## 140 -4  0 -1  0  1
## 141  2  5  5  3  6
## 142  4  4  5  4  5
## 143 -1 -2 -2 -5  0
## 144  7  6  7  8  7
## 145 -2 -3 -5 -1 -5
## 146 -3  2 -4  2  2
## 147  3 -2  1 -1 -1
## 148  6  2  3  3  2
## 149  3  4  2  6  4
## 150 -4 -1 -2 -3 -6
## 151 -1  1 -2  1  1
## 152 -2 -1 -1 -1 -1
## 153  6  1  5  3  3
## 154  0 -1  0 -2 -3
## 155  3  1  1  0 -1
## 156 -3 -3 -6 -5 -3
## 157 -4 -4 -4 -4 -4
## 158  7  3  1  7  5
## 159  4  6  1  2  5
## 160  2 -1  0  1 -1
## 161  0  1 -1 -3 -1
## 162  1  2  1  3  4
## 163  1  0  2  2  3
## 164  0 -2  0 -1 -2
## 165  2 -2  1  1  3
## 166 -1 -2  1  0 -3
## 167  3  1  3  3 -2
## 168 -5 -4 -2  0 -3
## 169 -1 -4 -7 -5 -2
## 170  2  5  5  3  3
## 171  1 -1 -1  0  1
## 172  0 -2 -2 -5 -3

```

```

## 173  3  5  3  4  5
## 174 -4 -4 -1  0 -4
## 175  3  4  0 -2  1
## 176  0  0 -2 -1  1
## 177 -1  0 -1 -4 -2
## 178  3  4  7  6  8
## 179  4  5  3  4  5
## 180 -5 -3 -5 -4 -5
## 181 -5 -3 -4 -2 -3
## 182  1  2  3  1  4
## 183  3  3  1  4  3
## 184  0  0  2  2  2
## 185 -1  2  2  0  1
## 186 -3 -2 -4 -4 -6
## 187  2  2  0  0 -3
## 188 -4 -1 -2  0 -1
## 189  3  5  4  3  2
## 190 -1  0  2  1  2
## 191  1  1  2  0  4
## 192 -5 -2 -2 -3 -3
## 193 -5 -4 -5 -2  0
## 194  6  5  3  4  4
## 195  3  2  3  3  3
## 196 -5 -1 -5 -3 -1
## 197  4  4  3  4  3
## 198 -2 -1 -2 -1  0
## 199 -2 -2 -2  0  1
## 200 -7 -7 -4 -3 -2
## 201 -2  1  0 -1  2
## 202  3  3  4  4  6
## 203 -2 -4 -3 -2 -2
## 204  0  0  1  0 -1
## 205  0  1  1 -2  1
## 206 -3 -3 -3 -1 -2
## 207  1  1  3  5  5
## 208 -1  2  1  3  2
## 209  5  5  2  5  0
## 210 -3 -5 -5 -3 -4
## 211 -2 -1  0 -1 -2
## 212  1 -1  1  3  1
## 213  1  4  1 -1  2
## 214 -3 -2 -2 -2 -2
## 215  1 -1  1  0  4
## 216  1 -1  1  3  2
## 217 -4 -3  1 -2  0
## 218  0  2  0  2  0
## 219  3  2  4  0  2
## 220  1  3 -1  0  0
## 221  1  1 -1  0 -2
## 222  0 -2 -3 -1 -3
## 223 -3 -1 -2  0 -1
## 224  2  0  3 -1  1
## 225  0  2  1  0  0
## 226  2  0  3  3  2
## 227  4  4  1  3  2
## 228 -2 -3 -1 -2 -5
## 229 -2 -3 -2 -1 -5
## 230  2  2  0 -1  0

```

```

## 231  1  5  3  3  4
## 232  1  3  2 -1  1
## 233  0  2  1  1  0
## 234  1  0  2  1  2
## 235 -5 -4 -2 -2 -8
## 236 -1 -1 -3 -1 -2
## 237 -1 -2 -2 -1 -3
## 238 -3 -4 -6 -3 -3
## 239 -1  1  3 -1  0
## 240  1 -2 -1 -3 -3
## 241 -3 -3 -3 -3 -4
## 242 -2 -4 -2 -1 -2
## 243  0  2 -2  2  2
## 244 -2  0  0  1  3
## 245 -3 -5 -2  0 -3
## 246 -1  0 -2 -1 -3
## 247 -3  0 -4 -2 -1
## 248  1  0  0 -1 -3
## 249  0  2  2  1  2
## 250  1 -1 -2  0  1
## 251  1 -1  2  1  1
## 252 -6 -1  0  0 -1
## 253  0 -1 -1 -2 -2
## 254 -4 -1 -2  0 -3
## 255 -2 -1  0 -1  0
## 256  0 -1 -2  1 -3
## 257  1  0  0  3  1
## 258 -2 -3 -1  0 -2
## 259 -3 -3 -4 -1  1
## 260  0  1 -3 -1 -1
## 261 -1 -3 -1 -1 -2
## 262 -3 -2 -4 -3 -3
## 263 -3 -3 -2 -2 -2
## 264 -3  0 -3 -3 -2
## 265 -5 -4 -2 -1  0
## 266 -5 -4  0  0 -2
## 267 -2  0 -1 -1 -2
## 268 -4  0 -2 -5  0
## 269 -3 -3 -2 -5 -3
## 270 -1 -5 -3 -4 -2
## 271 -3 -2 -3 -4 -4
## 272 -3 -1 -2 -4 -1
## 273 -2 -1 -3 -2  0
## 274 -2 -2 -2 -2 -3
## 275 -1  1 -1 -1 -1
## 276 -3  0 -6 -1 -1
## 277  3  1  2 -1 -3
## 278 -2 -4 -4 -5 -6
## 279  0  1  1  0  0
## 280  7  6  5  9  7
## 281 -3 -2  0 -3 -5
## 282  1  4  0  2  5
## 283 -3 -4 -4 -1 -2
## 284  3  3  1  5  2
## 285 -2 -5 -2  0 -1
## 286  0 -1 -3 -2  1
## 287  0  1  2  0 -1
## 288  0  1 -1  0 -1

```

```

## 289  3  1 -1  1 -2
## 290  0 -2 -2 -3 -3
## 291 -1  1 -1  2  1
## 292  0  0  2  1  2
## 293  1 -1  3  3 -1
## 294  0  3  1 -2  2
## 295  1  0  2  0  0
## 296 -1  0  0 -1  0
## 297 -2 -3 -2 -2 -1
## 298 -2 -3 -1  0 -1
## 299 -1 -2 -2  1  0
## 300 -1 -2  1  0 -1
##
## $overprediction
##           1           2           3           4           5
## 1  0.05882353 0.05882353 0.35294118 0.17647059 0.29411765
## 2  0.37500000 0.37500000 0.50000000 0.43750000 0.50000000
## 3  0.20000000 0.33333333 0.26666667 0.46666667 0.46666667
## 4  0.33333333 0.33333333 0.40000000 0.40000000 0.26666667
## 5  0.55555556 0.44444444 0.38888889 0.55555556 0.55555556
## 6  0.10000000 0.30000000 0.10000000 0.20000000 0.30000000
## 7  0.33333333 0.20000000 0.26666667 0.33333333 0.40000000
## 8  0.26666667 0.46666667 0.40000000 0.53333333 0.46666667
## 9  0.40000000 0.20000000 0.30000000 0.00000000 0.10000000
## 10 0.40000000 0.40000000 0.33333333 0.33333333 0.40000000
## 11 0.30000000 0.50000000 0.45000000 0.50000000 0.45000000
## 12 0.25000000 0.25000000 0.25000000 0.37500000 0.12500000
## 13 0.30000000 0.00000000 0.10000000 0.30000000 0.10000000
## 14 0.53846154 0.38461538 0.15384615 0.23076923 0.30769231
## 15 0.22222222 0.55555556 0.44444444 0.22222222 0.44444444
## 16 0.30000000 0.40000000 0.30000000 0.50000000 0.40000000
## 17 0.42857143 0.28571429 0.35714286 0.35714286 0.64285714
## 18 0.30769231 0.46153846 0.23076923 0.15384615 0.46153846
## 19 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## 20 0.46153846 0.38461538 0.46153846 0.46153846 0.46153846
## 21 0.16666667 0.50000000 0.50000000 0.41666667 0.25000000
## 22 0.53846154 0.61538462 0.61538462 0.46153846 0.38461538
## 23 0.37500000 0.37500000 0.25000000 0.50000000 0.50000000
## 24 0.30000000 0.20000000 0.20000000 0.30000000 0.10000000
## 25 0.31250000 0.18750000 0.06250000 0.25000000 0.50000000
## 26 0.21428571 0.28571429 0.35714286 0.14285714 0.14285714
## 27 0.30000000 0.35000000 0.35000000 0.25000000 0.35000000
## 28 0.30769231 0.46153846 0.38461538 0.23076923 0.30769231
## 29 0.16666667 0.25000000 0.16666667 0.33333333 0.16666667
## 30 0.35714286 0.28571429 0.35714286 0.42857143 0.50000000
## 31 0.30000000 0.40000000 0.40000000 0.20000000 0.40000000
## 32 0.22222222 0.44444444 0.22222222 0.22222222 0.33333333
## 33 0.15384615 0.23076923 0.23076923 0.23076923 0.30769231
## 34 0.23076923 0.53846154 0.38461538 0.38461538 0.23076923
## 35 0.40000000 0.30000000 0.30000000 0.40000000 0.10000000
## 36 0.33333333 0.41666667 0.25000000 0.25000000 0.41666667
## 37 0.28571429 0.28571429 0.14285714 0.28571429 0.14285714
## 38 0.46153846 0.23076923 0.53846154 0.38461538 0.38461538
## 39 0.30000000 0.20000000 0.30000000 0.30000000 0.40000000
## 40 0.20000000 0.10000000 0.30000000 0.20000000 0.20000000
## 41 0.00000000 0.00000000 0.11111111 0.11111111 0.22222222
## 42 0.50000000 0.30000000 0.20000000 0.20000000 0.30000000
## 43 0.25000000 0.33333333 0.50000000 0.41666667 0.16666667

```

| | | | | | |
|--------|------------|------------|------------|------------|------------|
| ## 44 | 0.20000000 | 0.20000000 | 0.30000000 | 0.20000000 | 0.20000000 |
| ## 45 | 0.10000000 | 0.20000000 | 0.20000000 | 0.10000000 | 0.20000000 |
| ## 46 | 0.25000000 | 0.25000000 | 0.25000000 | 0.33333333 | 0.25000000 |
| ## 47 | 0.28571429 | 0.14285714 | 0.21428571 | 0.21428571 | 0.28571429 |
| ## 48 | 0.16666667 | 0.00000000 | 0.25000000 | 0.16666667 | 0.25000000 |
| ## 49 | 0.00000000 | 0.33333333 | 0.25000000 | 0.33333333 | 0.16666667 |
| ## 50 | 0.12500000 | 0.00000000 | 0.25000000 | 0.12500000 | 0.12500000 |
| ## 51 | 0.00000000 | 0.22222222 | 0.11111111 | 0.22222222 | 0.00000000 |
| ## 52 | 0.33333333 | 0.33333333 | 0.26666667 | 0.13333333 | 0.33333333 |
| ## 53 | 0.36363636 | 0.36363636 | 0.18181818 | 0.36363636 | 0.27272727 |
| ## 54 | 0.12500000 | 0.25000000 | 0.37500000 | 0.50000000 | 0.50000000 |
| ## 55 | 0.33333333 | 0.26666667 | 0.46666667 | 0.33333333 | 0.26666667 |
| ## 56 | 0.56250000 | 0.43750000 | 0.43750000 | 0.25000000 | 0.31250000 |
| ## 57 | 0.36363636 | 0.27272727 | 0.45454545 | 0.18181818 | 0.18181818 |
| ## 58 | 0.33333333 | 0.33333333 | 0.33333333 | 0.41666667 | 0.33333333 |
| ## 59 | 0.22222222 | 0.33333333 | 0.00000000 | 0.33333333 | 0.22222222 |
| ## 60 | 0.28571429 | 0.35714286 | 0.07142857 | 0.50000000 | 0.21428571 |
| ## 61 | 0.10000000 | 0.20000000 | 0.10000000 | 0.30000000 | 0.00000000 |
| ## 62 | 0.09090909 | 0.09090909 | 0.18181818 | 0.27272727 | 0.00000000 |
| ## 63 | 0.27272727 | 0.00000000 | 0.18181818 | 0.00000000 | 0.09090909 |
| ## 64 | 0.28571429 | 0.42857143 | 0.35714286 | 0.14285714 | 0.07142857 |
| ## 65 | 0.10000000 | 0.10000000 | 0.00000000 | 0.10000000 | 0.00000000 |
| ## 66 | 0.00000000 | 0.22222222 | 0.11111111 | 0.22222222 | 0.00000000 |
| ## 67 | 0.11111111 | 0.22222222 | 0.66666667 | 0.44444444 | 0.22222222 |
| ## 68 | 0.33333333 | 0.33333333 | 0.11111111 | 0.11111111 | 0.22222222 |
| ## 69 | 0.45454545 | 0.18181818 | 0.18181818 | 0.18181818 | 0.18181818 |
| ## 70 | 0.25000000 | 0.00000000 | 0.12500000 | 0.25000000 | 0.00000000 |
| ## 71 | 0.42857143 | 0.42857143 | 0.35714286 | 0.35714286 | 0.14285714 |
| ## 72 | 0.50000000 | 0.30000000 | 0.40000000 | 0.40000000 | 0.40000000 |
| ## 73 | 0.11111111 | 0.22222222 | 0.22222222 | 0.22222222 | 0.33333333 |
| ## 74 | 0.36363636 | 0.36363636 | 0.27272727 | 0.36363636 | 0.27272727 |
| ## 75 | 0.40000000 | 0.45000000 | 0.30000000 | 0.55000000 | 0.45000000 |
| ## 76 | 0.00000000 | 0.16666667 | 0.00000000 | 0.00000000 | 0.16666667 |
| ## 77 | 0.12500000 | 0.25000000 | 0.12500000 | 0.25000000 | 0.37500000 |
| ## 78 | 0.00000000 | 0.22222222 | 0.33333333 | 0.22222222 | 0.22222222 |
| ## 79 | 0.44444444 | 0.27777778 | 0.27777778 | 0.38888889 | 0.16666667 |
| ## 80 | 0.23076923 | 0.23076923 | 0.46153846 | 0.38461538 | 0.38461538 |
| ## 81 | 0.12500000 | 0.00000000 | 0.00000000 | 0.12500000 | 0.12500000 |
| ## 82 | 0.25000000 | 0.16666667 | 0.25000000 | 0.16666667 | 0.16666667 |
| ## 83 | 0.12500000 | 0.25000000 | 0.12500000 | 0.00000000 | 0.25000000 |
| ## 84 | 0.16666667 | 0.16666667 | 0.11111111 | 0.11111111 | 0.11111111 |
| ## 85 | 0.35294118 | 0.58823529 | 0.23529412 | 0.29411765 | 0.17647059 |
| ## 86 | 0.10000000 | 0.20000000 | 0.00000000 | 0.10000000 | 0.10000000 |
| ## 87 | 0.11111111 | 0.11111111 | 0.22222222 | 0.22222222 | 0.00000000 |
| ## 88 | 0.30000000 | 0.10000000 | 0.20000000 | 0.40000000 | 0.10000000 |
| ## 89 | 0.16666667 | 0.33333333 | 0.16666667 | 0.16666667 | 0.16666667 |
| ## 90 | 0.18181818 | 0.18181818 | 0.27272727 | 0.18181818 | 0.09090909 |
| ## 91 | 0.20000000 | 0.20000000 | 0.10000000 | 0.10000000 | 0.20000000 |
| ## 92 | 0.11111111 | 0.22222222 | 0.11111111 | 0.22222222 | 0.11111111 |
| ## 93 | 0.37500000 | 0.25000000 | 0.25000000 | 0.25000000 | 0.00000000 |
| ## 94 | 0.42857143 | 0.42857143 | 0.21428571 | 0.28571429 | 0.42857143 |
| ## 95 | 0.25000000 | 0.25000000 | 0.25000000 | 0.25000000 | 0.25000000 |
| ## 96 | 0.20000000 | 0.20000000 | 0.20000000 | 0.10000000 | 0.10000000 |
| ## 97 | 0.46153846 | 0.23076923 | 0.30769231 | 0.15384615 | 0.15384615 |
| ## 98 | 0.36363636 | 0.27272727 | 0.18181818 | 0.36363636 | 0.18181818 |
| ## 99 | 0.11111111 | 0.11111111 | 0.33333333 | 0.22222222 | 0.11111111 |
| ## 100 | 0.25000000 | 0.16666667 | 0.41666667 | 0.33333333 | 0.16666667 |
| ## 101 | 0.30769231 | 0.46153846 | 0.07692308 | 0.07692308 | 0.38461538 |

```

## 102 0.00000000 0.16666667 0.08333333 0.16666667 0.08333333
## 103 0.08333333 0.25000000 0.33333333 0.33333333 0.08333333
## 104 0.37500000 0.25000000 0.25000000 0.25000000 0.37500000
## 105 0.15384615 0.15384615 0.15384615 0.15384615 0.15384615
## 106 0.15384615 0.23076923 0.07692308 0.15384615 0.15384615
## 107 0.07142857 0.07142857 0.14285714 0.07142857 0.28571429
## 108 0.10000000 0.10000000 0.20000000 0.10000000 0.20000000
## 109 0.33333333 0.11111111 0.22222222 0.44444444 0.22222222
## 110 0.30000000 0.40000000 0.40000000 0.60000000 0.35000000
## 111 0.25000000 0.16666667 0.25000000 0.16666667 0.08333333
## 112 0.20000000 0.00000000 0.20000000 0.20000000 0.30000000
## 113 0.16666667 0.08333333 0.25000000 0.25000000 0.16666667
## 114 0.29411765 0.35294118 0.52941176 0.35294118 0.29411765
## 115 0.16666667 0.41666667 0.25000000 0.41666667 0.25000000
## 116 0.42105263 0.21052632 0.21052632 0.15789474 0.47368421
## 117 0.11111111 0.33333333 0.11111111 0.11111111 0.11111111
## 118 0.14285714 0.42857143 0.14285714 0.14285714 0.00000000
## 119 0.17647059 0.11764706 0.29411765 0.17647059 0.29411765
## 120 0.17647059 0.41176471 0.35294118 0.29411765 0.47058824
## 121 0.50000000 0.35714286 0.14285714 0.21428571 0.21428571
## 122 0.33333333 0.22222222 0.11111111 0.11111111 0.33333333
## 123 0.27272727 0.36363636 0.00000000 0.09090909 0.18181818
## 124 0.00000000 0.14285714 0.00000000 0.07142857 0.07142857
## 125 0.16666667 0.27777778 0.22222222 0.22222222 0.22222222
## 126 0.25000000 0.16666667 0.16666667 0.16666667 0.08333333
## 127 0.11111111 0.11111111 0.00000000 0.00000000 0.00000000
## 128 0.11111111 0.11111111 0.00000000 0.11111111 0.33333333
## 129 0.00000000 0.00000000 0.00000000 0.20000000 0.10000000
## 130 0.20000000 0.20000000 0.30000000 0.00000000 0.20000000
## 131 0.10000000 0.20000000 0.30000000 0.20000000 0.20000000
## 132 0.20000000 0.20000000 0.10000000 0.20000000 0.10000000
## 133 0.13333333 0.33333333 0.06666667 0.13333333 0.20000000
## 134 0.40000000 0.33333333 0.40000000 0.40000000 0.20000000
## 135 0.33333333 0.22222222 0.22222222 0.22222222 0.11111111
## 136 0.08333333 0.16666667 0.16666667 0.16666667 0.33333333
## 137 0.27272727 0.36363636 0.18181818 0.18181818 0.18181818
## 138 0.23076923 0.15384615 0.38461538 0.30769231 0.30769231
## 139 0.18750000 0.37500000 0.18750000 0.37500000 0.25000000
## 140 0.35294118 0.11764706 0.23529412 0.17647059 0.11764706
## 141 0.16666667 0.00000000 0.00000000 0.16666667 0.08333333
## 142 0.08333333 0.16666667 0.00000000 0.08333333 0.00000000
## 143 0.18750000 0.31250000 0.31250000 0.43750000 0.25000000
## 144 0.00000000 0.10000000 0.00000000 0.00000000 0.00000000
## 145 0.20000000 0.26666667 0.46666667 0.26666667 0.33333333
## 146 0.33333333 0.13333333 0.46666667 0.06666667 0.06666667
## 147 0.06250000 0.25000000 0.06250000 0.18750000 0.18750000
## 148 0.08333333 0.25000000 0.16666667 0.16666667 0.16666667
## 149 0.30000000 0.30000000 0.30000000 0.10000000 0.20000000
## 150 0.22222222 0.16666667 0.16666667 0.22222222 0.38888889
## 151 0.21428571 0.14285714 0.35714286 0.21428571 0.21428571
## 152 0.25000000 0.18750000 0.18750000 0.18750000 0.18750000
## 153 0.00000000 0.36363636 0.00000000 0.09090909 0.09090909
## 154 0.17647059 0.17647059 0.11764706 0.23529412 0.23529412
## 155 0.00000000 0.26666667 0.20000000 0.13333333 0.26666667
## 156 0.15000000 0.15000000 0.30000000 0.25000000 0.15000000
## 157 0.20000000 0.20000000 0.20000000 0.20000000 0.20000000
## 158 0.09090909 0.27272727 0.27272727 0.00000000 0.18181818
## 159 0.27272727 0.18181818 0.18181818 0.27272727 0.27272727

```

```

## 160 0.00000000 0.17647059 0.17647059 0.11764706 0.17647059
## 161 0.12500000 0.06250000 0.18750000 0.18750000 0.12500000
## 162 0.06666667 0.13333333 0.13333333 0.06666667 0.00000000
## 163 0.13333333 0.20000000 0.06666667 0.06666667 0.06666667
## 164 0.18750000 0.25000000 0.18750000 0.25000000 0.12500000
## 165 0.06250000 0.25000000 0.12500000 0.12500000 0.06250000
## 166 0.11111111 0.22222222 0.00000000 0.05555556 0.27777778
## 167 0.23076923 0.30769231 0.00000000 0.30769231 0.38461538
## 168 0.33333333 0.27777778 0.22222222 0.00000000 0.16666667
## 169 0.10526316 0.26315789 0.36842105 0.26315789 0.10526316
## 170 0.23076923 0.07692308 0.07692308 0.15384615 0.07692308
## 171 0.18750000 0.18750000 0.12500000 0.18750000 0.18750000
## 172 0.20000000 0.33333333 0.33333333 0.40000000 0.33333333
## 173 0.20000000 0.20000000 0.40000000 0.10000000 0.20000000
## 174 0.27777778 0.33333333 0.16666667 0.05555556 0.33333333
## 175 0.16666667 0.08333333 0.25000000 0.50000000 0.33333333
## 176 0.14285714 0.21428571 0.21428571 0.35714286 0.14285714
## 177 0.17647059 0.11764706 0.11764706 0.23529412 0.17647059
## 178 0.18181818 0.27272727 0.18181818 0.18181818 0.09090909
## 179 0.08333333 0.16666667 0.08333333 0.16666667 0.08333333
## 180 0.35294118 0.23529412 0.35294118 0.29411765 0.41176471
## 181 0.25000000 0.15000000 0.20000000 0.10000000 0.15000000
## 182 0.28571429 0.21428571 0.14285714 0.14285714 0.14285714
## 183 0.13333333 0.06666667 0.26666667 0.00000000 0.00000000
## 184 0.20000000 0.20000000 0.06666667 0.06666667 0.00000000
## 185 0.20000000 0.00000000 0.06666667 0.20000000 0.06666667
## 186 0.21052632 0.10526316 0.21052632 0.21052632 0.31578947
## 187 0.06666667 0.13333333 0.26666667 0.13333333 0.40000000
## 188 0.35294118 0.17647059 0.23529412 0.11764706 0.17647059
## 189 0.06666667 0.00000000 0.06666667 0.13333333 0.13333333
## 190 0.33333333 0.16666667 0.25000000 0.33333333 0.25000000
## 191 0.20000000 0.26666667 0.13333333 0.20000000 0.06666667
## 192 0.41176471 0.17647059 0.29411765 0.35294118 0.29411765
## 193 0.26315789 0.26315789 0.26315789 0.15789474 0.05263158
## 194 0.00000000 0.00000000 0.07142857 0.00000000 0.00000000
## 195 0.07692308 0.07692308 0.15384615 0.15384615 0.00000000
## 196 0.31578947 0.10526316 0.26315789 0.21052632 0.10526316
## 197 0.08333333 0.08333333 0.16666667 0.08333333 0.00000000
## 198 0.22222222 0.16666667 0.22222222 0.11111111 0.05555556
## 199 0.22222222 0.16666667 0.16666667 0.05555556 0.00000000
## 200 0.44444444 0.44444444 0.22222222 0.27777778 0.16666667
## 201 0.11111111 0.05555556 0.11111111 0.11111111 0.00000000
## 202 0.08333333 0.00000000 0.08333333 0.16666667 0.00000000
## 203 0.37500000 0.43750000 0.37500000 0.31250000 0.31250000
## 204 0.06250000 0.06250000 0.06250000 0.12500000 0.12500000
## 205 0.17647059 0.00000000 0.11764706 0.17647059 0.11764706
## 206 0.22222222 0.16666667 0.16666667 0.11111111 0.11111111
## 207 0.14285714 0.14285714 0.00000000 0.00000000 0.00000000
## 208 0.13333333 0.06666667 0.20000000 0.06666667 0.00000000
## 209 0.00000000 0.00000000 0.07142857 0.07142857 0.28571429
## 210 0.21052632 0.31578947 0.31578947 0.15789474 0.21052632
## 211 0.16666667 0.05555556 0.05555556 0.11111111 0.16666667
## 212 0.06250000 0.12500000 0.12500000 0.06250000 0.18750000
## 213 0.06666667 0.00000000 0.20000000 0.26666667 0.13333333
## 214 0.29411765 0.17647059 0.11764706 0.23529412 0.11764706
## 215 0.20000000 0.13333333 0.13333333 0.26666667 0.06666667
## 216 0.18750000 0.18750000 0.12500000 0.06250000 0.06250000
## 217 0.43750000 0.31250000 0.18750000 0.37500000 0.18750000

```

```

## 218 0.13333333 0.06666667 0.06666667 0.06666667 0.20000000
## 219 0.06666667 0.13333333 0.00000000 0.20000000 0.20000000
## 220 0.13333333 0.06666667 0.20000000 0.20000000 0.20000000
## 221 0.11764706 0.11764706 0.17647059 0.05882353 0.11764706
## 222 0.05882353 0.11764706 0.17647059 0.11764706 0.17647059
## 223 0.15789474 0.10526316 0.15789474 0.05263158 0.10526316
## 224 0.12500000 0.18750000 0.06250000 0.25000000 0.12500000
## 225 0.00000000 0.06250000 0.00000000 0.12500000 0.12500000
## 226 0.07142857 0.14285714 0.07142857 0.07142857 0.07142857
## 227 0.00000000 0.07142857 0.21428571 0.07142857 0.07142857
## 228 0.15789474 0.21052632 0.05263158 0.15789474 0.31578947
## 229 0.10526316 0.15789474 0.15789474 0.10526316 0.26315789
## 230 0.00000000 0.06250000 0.06250000 0.18750000 0.25000000
## 231 0.13333333 0.00000000 0.06666667 0.06666667 0.06666667
## 232 0.06666667 0.06666667 0.13333333 0.13333333 0.06666667
## 233 0.12500000 0.12500000 0.06250000 0.12500000 0.25000000
## 234 0.05882353 0.11764706 0.05882353 0.05882353 0.05882353
## 235 0.26315789 0.21052632 0.10526316 0.15789474 0.42105263
## 236 0.17647059 0.11764706 0.17647059 0.11764706 0.23529412
## 237 0.11111111 0.22222222 0.16666667 0.11111111 0.22222222
## 238 0.21052632 0.26315789 0.36842105 0.21052632 0.21052632
## 239 0.05882353 0.11764706 0.00000000 0.17647059 0.11764706
## 240 0.05555556 0.11111111 0.11111111 0.22222222 0.22222222
## 241 0.21052632 0.21052632 0.15789474 0.21052632 0.26315789
## 242 0.15789474 0.26315789 0.15789474 0.05263158 0.10526316
## 243 0.11764706 0.05882353 0.23529412 0.05882353 0.05882353
## 244 0.23529412 0.11764706 0.00000000 0.05882353 0.00000000
## 245 0.15000000 0.25000000 0.10000000 0.00000000 0.15000000
## 246 0.10526316 0.05263158 0.10526316 0.10526316 0.21052632
## 247 0.15789474 0.00000000 0.21052632 0.10526316 0.10526316
## 248 0.00000000 0.17647059 0.17647059 0.05882353 0.23529412
## 249 0.12500000 0.06250000 0.00000000 0.00000000 0.06250000
## 250 0.00000000 0.05882353 0.11764706 0.05882353 0.05882353
## 251 0.11764706 0.05882353 0.00000000 0.05882353 0.05882353
## 252 0.30000000 0.05000000 0.00000000 0.00000000 0.05000000
## 253 0.05263158 0.05263158 0.10526316 0.15789474 0.15789474
## 254 0.21052632 0.05263158 0.15789474 0.00000000 0.15789474
## 255 0.11111111 0.16666667 0.00000000 0.05555556 0.11111111
## 256 0.05555556 0.11111111 0.11111111 0.05555556 0.16666667
## 257 0.12500000 0.18750000 0.18750000 0.00000000 0.12500000
## 258 0.16666667 0.16666667 0.11111111 0.11111111 0.16666667
## 259 0.16666667 0.16666667 0.22222222 0.05555556 0.05555556
## 260 0.05555556 0.05555556 0.16666667 0.11111111 0.11111111
## 261 0.11111111 0.27777778 0.16666667 0.16666667 0.22222222
## 262 0.15000000 0.10000000 0.20000000 0.15000000 0.15000000
## 263 0.15000000 0.15000000 0.10000000 0.10000000 0.10000000
## 264 0.15789474 0.00000000 0.15789474 0.15789474 0.10526316
## 265 0.29411765 0.29411765 0.17647059 0.11764706 0.05882353
## 266 0.26315789 0.21052632 0.00000000 0.00000000 0.10526316
## 267 0.11111111 0.00000000 0.11111111 0.11111111 0.16666667
## 268 0.22222222 0.05555556 0.11111111 0.27777778 0.05555556
## 269 0.15789474 0.15789474 0.10526316 0.26315789 0.15789474
## 270 0.05263158 0.26315789 0.15789474 0.21052632 0.10526316
## 271 0.15789474 0.10526316 0.15789474 0.21052632 0.21052632
## 272 0.21052632 0.10526316 0.15789474 0.21052632 0.05263158
## 273 0.11111111 0.16666667 0.27777778 0.16666667 0.11111111
## 274 0.10526316 0.10526316 0.10526316 0.10526316 0.15789474
## 275 0.16666667 0.05555556 0.11111111 0.16666667 0.11111111

```



```

## 276 0.35714286 0.21428571 0.50000000 0.21428571 0.28571429
## 277 0.16666667 0.16666667 0.08333333 0.25000000 0.41666667
## 278 0.38461538 0.46153846 0.38461538 0.38461538 0.53846154
## 279 0.38461538 0.30769231 0.23076923 0.23076923 0.30769231
## 280 0.22222222 0.22222222 0.22222222 0.11111111 0.00000000
## 281 0.21052632 0.15789474 0.00000000 0.21052632 0.31578947
## 282 0.30769231 0.15384615 0.30769231 0.15384615 0.07692308
## 283 0.22222222 0.33333333 0.22222222 0.16666667 0.16666667
## 284 0.07142857 0.14285714 0.28571429 0.00000000 0.14285714
## 285 0.17647059 0.35294118 0.17647059 0.17647059 0.11764706
## 286 0.17647059 0.11764706 0.29411765 0.23529412 0.11764706
## 287 0.13333333 0.06666667 0.06666667 0.13333333 0.13333333
## 288 0.11764706 0.05882353 0.11764706 0.11764706 0.11764706
## 289 0.00000000 0.06250000 0.12500000 0.12500000 0.12500000
## 290 0.00000000 0.11111111 0.16666667 0.22222222 0.22222222
## 291 0.11764706 0.11764706 0.17647059 0.05882353 0.05882353
## 292 0.05882353 0.05882353 0.05882353 0.11764706 0.05882353
## 293 0.06250000 0.18750000 0.00000000 0.00000000 0.12500000
## 294 0.12500000 0.06250000 0.12500000 0.18750000 0.06250000
## 295 0.12500000 0.12500000 0.06250000 0.18750000 0.18750000
## 296 0.23529412 0.05882353 0.05882353 0.17647059 0.05882353
## 297 0.11764706 0.23529412 0.23529412 0.17647059 0.17647059
## 298 0.40000000 0.30000000 0.40000000 0.40000000 0.30000000
## 299 0.11111111 0.11111111 0.11111111 0.00000000 0.05555556
## 300 0.05555556 0.16666667 0.05555556 0.05555556 0.11111111
##
## $underprediction
##      1      2      3      4      5
## 1  0.6666667 1.0000000 1.0000000 0.3333333 0.3333333
## 2  0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 3  0.2000000 0.0000000 0.0000000 0.0000000 0.0000000
## 4  0.2000000 0.2000000 0.2000000 0.6000000 0.0000000
## 5  0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 6  0.2000000 0.2000000 0.1000000 0.1000000 0.1000000
## 7  0.2000000 0.4000000 0.4000000 0.2000000 0.2000000
## 8  0.0000000 0.0000000 0.0000000 0.2000000 0.0000000
## 9  0.6000000 0.5000000 0.1000000 0.6000000 0.7000000
## 10 0.2000000 0.0000000 0.2000000 0.2000000 0.2000000
## 11      NaN      NaN      NaN      NaN      NaN
## 12 0.1666667 0.1666667 0.3333333 0.1666667 0.1666667
## 13 0.2000000 0.1000000 0.3000000 0.2000000 0.3000000
## 14 0.1428571 0.1428571 0.0000000 0.2857143 0.4285714
## 15 0.2727273 0.2727273 0.1818181 0.1818182 0.3636363
## 16 0.2000000 0.3000000 0.0000000 0.0000000 0.5000000
## 17 0.3333333 0.3333333 0.3333333 0.0000000 0.3333333
## 18 0.1428571 0.28571429 0.1428571 0.0000000 0.0000000
## 19 0.1333333 0.26666667 0.1333333 0.5333333 0.26666667
## 20 0.1428571 0.0000000 0.4285714 0.1428571 0.0000000
## 21 0.2500000 0.3750000 0.2500000 0.1250000 0.3750000
## 22 0.1428571 0.4285714 0.28571429 0.1428571 0.0000000
## 23 0.2500000 0.0000000 0.0000000 0.5000000 0.2500000
## 24 0.3000000 0.5000000 0.5000000 0.4000000 0.4000000
## 25 0.7500000 0.5000000 1.0000000 0.5000000 0.0000000
## 26 0.1666667 0.5000000 0.3333333 0.1666667 0.1666667
## 27      NaN      NaN      NaN      NaN      NaN
## 28 0.2857143 0.1428571 0.4285714 0.1428571 0.4285714
## 29 0.3750000 0.5000000 0.5000000 0.3750000 0.6250000
## 30 0.1666667 0.3333333 0.1666667 0.3333333 0.0000000

```

```

## 31 0.1000000 0.10000000 0.10000000 0.2000000 0.10000000
## 32 0.2727273 0.09090909 0.54545455 0.1818182 0.09090909
## 33 0.2857143 0.42857143 0.28571429 0.4285714 0.28571429
## 34 0.0000000 0.14285714 0.28571429 0.0000000 0.28571429
## 35 0.3000000 0.40000000 0.00000000 0.3000000 0.20000000
## 36 0.1250000 0.25000000 0.25000000 0.1250000 0.12500000
## 37 0.2307692 0.38461538 0.23076923 0.1538462 0.23076923
## 38 0.2857143 0.42857143 0.14285714 0.2857143 0.28571429
## 39 0.6000000 0.30000000 0.60000000 0.4000000 0.20000000
## 40 0.1000000 0.00000000 0.30000000 0.1000000 0.00000000
## 41 0.2727273 0.09090909 0.45454545 0.1818182 0.54545455
## 42 0.3000000 0.60000000 0.60000000 0.6000000 0.50000000
## 43 0.1250000 0.37500000 0.62500000 0.6250000 0.37500000
## 44 0.7000000 0.30000000 0.50000000 0.7000000 0.50000000
## 45 0.3000000 0.40000000 0.40000000 0.5000000 0.20000000
## 46 0.3750000 0.50000000 0.25000000 0.2500000 0.25000000
## 47 0.3333333 0.66666667 0.50000000 0.1666667 0.66666667
## 48 0.5000000 0.50000000 0.12500000 0.6250000 0.50000000
## 49 0.1250000 0.25000000 0.25000000 0.3750000 0.37500000
## 50 0.2500000 0.16666667 0.41666667 0.2500000 0.25000000
## 51 0.4545455 0.63636364 0.27272727 0.5454545 0.36363636
## 52 0.6000000 1.00000000 0.60000000 0.4000000 0.20000000
## 53 0.2222222 0.33333333 0.55555556 0.2222222 0.55555556
## 54 0.2500000 0.16666667 0.33333333 0.3333333 0.33333333
## 55 0.0000000 0.20000000 0.40000000 0.6000000 0.20000000
## 56 0.5000000 0.25000000 0.50000000 0.5000000 0.00000000
## 57 0.4444444 0.44444444 0.22222222 0.3333333 0.33333333
## 58 0.1250000 0.12500000 0.37500000 0.5000000 0.37500000
## 59 0.3636364 0.36363636 0.36363636 0.2727273 0.18181818
## 60 0.6666667 0.66666667 0.33333333 0.6666667 0.50000000
## 61 0.4000000 0.50000000 0.50000000 0.3000000 0.20000000
## 62 0.3333333 0.33333333 0.33333333 0.6666667 0.33333333
## 63 0.4444444 0.55555556 0.55555556 0.5555556 0.22222222
## 64 0.5000000 0.50000000 0.33333333 0.6666667 0.50000000
## 65 0.6000000 0.80000000 0.80000000 0.5000000 0.40000000
## 66 0.7272727 0.81818182 0.72727273 0.8181818 0.36363636
## 67 0.6363636 0.27272727 0.72727273 0.4545455 0.45454545
## 68 0.2727273 0.18181818 0.36363636 0.2727273 0.45454545
## 69 0.4444444 0.66666667 0.66666667 0.4444444 0.44444444
## 70 0.4166667 0.41666667 0.50000000 0.4166667 0.41666667
## 71 0.3333333 0.33333333 0.50000000 0.1666667 0.33333333
## 72 0.2000000 0.40000000 0.30000000 0.4000000 0.20000000
## 73 0.4545455 0.36363636 0.09090909 0.2727273 0.63636364
## 74 0.4444444 0.66666667 0.33333333 0.5555556 0.22222222
## 75      NaN      NaN      NaN      NaN      NaN
## 76 0.5000000 0.28571429 0.14285714 0.5714286 0.57142857
## 77 0.1666667 0.25000000 0.41666667 0.2500000 0.25000000
## 78 0.7272727 0.54545455 0.54545455 0.5454545 0.45454545
## 79 1.0000000 0.50000000 0.50000000 0.0000000 1.00000000
## 80 0.4285714 0.71428571 0.71428571 0.4285714 0.71428571
## 81 0.5000000 0.50000000 0.41666667 0.5833333 0.25000000
## 82 0.6250000 0.62500000 1.00000000 0.5000000 0.75000000
## 83 0.5833333 0.66666667 0.50000000 0.5833333 0.33333333
## 84 1.0000000 1.00000000 1.00000000 0.0000000 0.50000000
## 85 0.0000000 1.00000000 0.33333333 0.6666667 0.33333333
## 86 0.6000000 0.50000000 0.80000000 0.6000000 0.90000000
## 87 0.5454545 0.54545455 0.63636364 0.6363636 0.54545455
## 88 0.5000000 0.40000000 0.40000000 0.3000000 0.70000000

```

| | | | | | |
|--------|-----------|------------|------------|-----------|------------|
| ## 89 | 0.6250000 | 0.62500000 | 0.50000000 | 0.3750000 | 0.50000000 |
| ## 90 | 0.6666667 | 0.44444444 | 0.66666667 | 0.6666667 | 0.88888889 |
| ## 91 | 0.6000000 | 0.40000000 | 0.70000000 | 0.7000000 | 0.70000000 |
| ## 92 | 0.4545455 | 0.36363636 | 0.27272727 | 0.6363636 | 0.27272727 |
| ## 93 | 0.4166667 | 0.50000000 | 0.16666667 | 0.3333333 | 0.33333333 |
| ## 94 | 0.1666667 | 0.33333333 | 0.33333333 | 0.1666667 | 0.16666667 |
| ## 95 | 0.3333333 | 0.58333333 | 0.41666667 | 0.4166667 | 0.25000000 |
| ## 96 | 0.6000000 | 0.50000000 | 0.60000000 | 0.5000000 | 0.40000000 |
| ## 97 | 0.5714286 | 0.28571429 | 0.42857143 | 0.2857143 | 0.57142857 |
| ## 98 | 0.5555556 | 0.77777778 | 0.44444444 | 0.7777778 | 0.22222222 |
| ## 99 | 0.7272727 | 0.72727273 | 0.81818182 | 0.8181818 | 0.81818182 |
| ## 100 | 0.7500000 | 0.62500000 | 0.50000000 | 0.5000000 | 0.87500000 |
| ## 101 | 0.4285714 | 0.42857143 | 0.42857143 | 0.5714286 | 0.57142857 |
| ## 102 | 0.6250000 | 0.50000000 | 0.50000000 | 0.6250000 | 0.50000000 |
| ## 103 | 0.7500000 | 0.37500000 | 0.37500000 | 0.5000000 | 0.25000000 |
| ## 104 | 0.6666667 | 0.25000000 | 0.41666667 | 0.6666667 | 0.33333333 |
| ## 105 | 0.8571429 | 0.71428571 | 0.71428571 | 0.7142857 | 0.71428571 |
| ## 106 | 0.5714286 | 0.57142857 | 0.71428571 | 0.4285714 | 0.85714286 |
| ## 107 | 0.8333333 | 0.50000000 | 0.50000000 | 0.6666667 | 0.50000000 |
| ## 108 | 0.5000000 | 0.50000000 | 0.70000000 | 0.3000000 | 0.60000000 |
| ## 109 | 0.4545455 | 0.54545455 | 0.63636364 | 0.4545455 | 0.45454545 |
| ## 110 | NaN | NaN | NaN | NaN | NaN |
| ## 111 | 0.5000000 | 0.37500000 | 0.62500000 | 0.2500000 | 0.50000000 |
| ## 112 | 0.5000000 | 0.30000000 | 0.50000000 | 0.4000000 | 0.70000000 |
| ## 113 | 0.7500000 | 0.37500000 | 0.75000000 | 0.7500000 | 0.37500000 |
| ## 114 | 0.3333333 | 0.66666667 | 1.00000000 | 0.6666667 | 0.66666667 |
| ## 115 | 0.7500000 | 0.62500000 | 0.50000000 | 0.5000000 | 0.75000000 |
| ## 116 | 0.0000000 | 0.00000000 | 1.00000000 | 1.0000000 | 0.00000000 |
| ## 117 | 0.8181818 | 0.72727273 | 0.72727273 | 0.8181818 | 0.72727273 |
| ## 118 | 0.3846154 | 0.76923077 | 0.53846154 | 0.3076923 | 0.61538462 |
| ## 119 | 0.3333333 | 0.33333333 | 0.00000000 | 0.6666667 | 0.66666667 |
| ## 120 | 1.0000000 | 0.33333333 | 1.00000000 | 1.0000000 | 1.00000000 |
| ## 121 | 0.8333333 | 0.83333333 | 0.83333333 | 0.8333333 | 0.50000000 |
| ## 122 | 0.1818182 | 0.54545455 | 0.54545455 | 0.6363636 | 0.72727273 |
| ## 123 | 0.8888889 | 0.55555556 | 0.77777778 | 0.7777778 | 1.00000000 |
| ## 124 | 0.6666667 | 0.83333333 | 0.83333333 | 0.6666667 | 1.00000000 |
| ## 125 | 0.5000000 | 1.00000000 | 0.50000000 | 1.0000000 | 0.50000000 |
| ## 126 | 0.2500000 | 0.62500000 | 0.75000000 | 0.5000000 | 0.62500000 |
| ## 127 | 0.5454545 | 0.63636364 | 0.54545455 | 0.7272727 | 0.72727273 |
| ## 128 | 0.5454545 | 0.72727273 | 0.72727273 | 0.3636364 | 0.63636364 |
| ## 129 | 0.6000000 | 0.70000000 | 0.50000000 | 0.5000000 | 0.90000000 |
| ## 130 | 0.5000000 | 0.60000000 | 0.50000000 | 0.5000000 | 0.50000000 |
| ## 131 | 0.7000000 | 0.40000000 | 0.60000000 | 0.6000000 | 0.60000000 |
| ## 132 | 0.8000000 | 0.70000000 | 0.40000000 | 0.8000000 | 0.70000000 |
| ## 133 | 0.4000000 | 0.80000000 | 0.60000000 | 0.6000000 | 0.60000000 |
| ## 134 | 0.2000000 | 0.40000000 | 0.80000000 | 0.4000000 | 0.20000000 |
| ## 135 | 0.8181818 | 0.54545455 | 0.72727273 | 0.7272727 | 0.63636364 |
| ## 136 | 0.6250000 | 0.75000000 | 0.62500000 | 0.5000000 | 0.37500000 |
| ## 137 | 0.5555556 | 0.77777778 | 0.88888889 | 0.6666667 | 0.66666667 |
| ## 138 | 0.7142857 | 0.71428571 | 0.71428571 | 0.5714286 | 0.28571429 |
| ## 139 | 1.0000000 | 0.75000000 | 1.00000000 | 0.7500000 | 1.00000000 |
| ## 140 | 0.6666667 | 0.66666667 | 1.00000000 | 1.0000000 | 1.00000000 |
| ## 141 | 0.5000000 | 0.62500000 | 0.62500000 | 0.6250000 | 0.87500000 |
| ## 142 | 0.6250000 | 0.75000000 | 0.62500000 | 0.6250000 | 0.62500000 |
| ## 143 | 0.5000000 | 0.75000000 | 0.75000000 | 0.5000000 | 1.00000000 |
| ## 144 | 0.7000000 | 0.70000000 | 0.70000000 | 0.8000000 | 0.70000000 |
| ## 145 | 0.2000000 | 0.20000000 | 0.40000000 | 0.6000000 | 0.00000000 |
| ## 146 | 0.4000000 | 0.80000000 | 0.60000000 | 0.6000000 | 0.60000000 |

```

## 147 1.0000000 0.5000000 0.5000000 0.5000000 0.5000000
## 148 0.8750000 0.6250000 0.6250000 0.6250000 0.5000000
## 149 0.6000000 0.7000000 0.5000000 0.7000000 0.6000000
## 150 0.0000000 1.0000000 0.5000000 0.5000000 0.5000000
## 151 0.3333333 0.5000000 0.5000000 0.6666667 0.6666667
## 152 0.5000000 0.5000000 0.5000000 0.5000000 0.5000000
## 153 0.6666667 0.5555556 0.5555556 0.4444444 0.4444444
## 154 1.0000000 0.6666667 0.6666667 0.6666667 0.3333333
## 155 0.6000000 1.0000000 0.8000000 0.4000000 0.6000000
## 156      NaN      NaN      NaN      NaN      NaN
## 157      NaN      NaN      NaN      NaN      NaN
## 158 0.8888889 0.6666667 0.4444444 0.7777778 0.7777778
## 159 0.7777778 0.8888889 0.3333333 0.5555556 0.8888889
## 160 0.6666667 0.6666667 1.0000000 1.0000000 0.6666667
## 161 0.5000000 0.5000000 0.5000000 0.0000000 0.2500000
## 162 0.4000000 0.8000000 0.6000000 0.8000000 0.8000000
## 163 0.6000000 0.6000000 0.6000000 0.6000000 0.8000000
## 164 0.7500000 0.5000000 0.7500000 0.7500000 0.0000000
## 165 0.7500000 0.5000000 0.7500000 0.7500000 1.0000000
## 166 0.5000000 1.0000000 0.5000000 0.5000000 1.0000000
## 167 0.8571429 0.7142857 0.4285714 1.0000000 0.4285714
## 168 0.5000000 0.5000000 1.0000000 0.0000000 0.0000000
## 169 1.0000000 1.0000000 0.0000000 0.0000000 0.0000000
## 170 0.7142857 0.8571428 0.8571428 0.7142857 0.5714285
## 171 1.0000000 0.5000000 0.2500000 0.7500000 1.0000000
## 172 0.6000000 0.6000000 0.6000000 0.2000000 0.4000000
## 173 0.5000000 0.7000000 0.7000000 0.5000000 0.7000000
## 174 0.5000000 1.0000000 1.0000000 0.5000000 1.0000000
## 175 0.6250000 0.6250000 0.3750000 0.5000000 0.6250000
## 176 0.3333333 0.5000000 0.1666667 0.6666667 0.5000000
## 177 0.6666667 0.6666667 0.3333333 0.0000000 0.3333333
## 178 0.5555556 0.7777778 1.0000000 0.8888889 1.0000000
## 179 0.6250000 0.8750000 0.5000000 0.7500000 0.7500000
## 180 0.3333333 0.3333333 0.3333333 0.3333333 0.6666667
## 181      NaN      NaN      NaN      NaN      NaN
## 182 0.8333333 0.8333333 0.8333333 0.5000000 1.0000000
## 183 1.0000000 0.8000000 1.0000000 0.8000000 0.6000000
## 184 0.6000000 0.6000000 0.6000000 0.6000000 0.4000000
## 185 0.4000000 0.4000000 0.6000000 0.6000000 0.4000000
## 186 1.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 187 0.6000000 0.8000000 0.8000000 0.4000000 0.6000000
## 188 0.6666667 0.6666667 0.6666667 0.6666667 0.6666667
## 189 0.8000000 1.0000000 1.0000000 1.0000000 0.8000000
## 190 0.3750000 0.2500000 0.6250000 0.6250000 0.6250000
## 191 0.8000000 1.0000000 0.8000000 0.6000000 1.0000000
## 192 0.6666667 0.3333333 1.0000000 1.0000000 0.6666667
## 193 0.0000000 1.0000000 0.0000000 1.0000000 1.0000000
## 194 1.0000000 0.8333333 0.6666667 0.6666667 0.6666667
## 195 0.5714286 0.4285714 0.7142857 0.7142857 0.4285714
## 196 1.0000000 1.0000000 0.0000000 1.0000000 1.0000000
## 197 0.6250000 0.6250000 0.6250000 0.6250000 0.3750000
## 198 1.0000000 1.0000000 1.0000000 0.5000000 0.5000000
## 199 1.0000000 0.5000000 0.5000000 0.5000000 0.5000000
## 200 0.5000000 0.5000000 0.0000000 1.0000000 0.5000000
## 201 0.0000000 1.0000000 1.0000000 0.5000000 1.0000000
## 202 0.5000000 0.3750000 0.6250000 0.7500000 0.7500000
## 203 1.0000000 0.7500000 0.7500000 0.7500000 0.7500000
## 204 0.2500000 0.2500000 0.5000000 0.5000000 0.2500000

```

```

## 205 1.0000000 0.3333333 1.0000000 0.3333333 1.0000000
## 206 0.5000000 0.0000000 0.0000000 0.5000000 0.0000000
## 207 0.5000000 0.5000000 0.5000000 0.8333333 0.8333333
## 208 0.2000000 0.6000000 0.8000000 0.8000000 0.4000000
## 209 0.8333333 0.8333333 0.5000000 1.0000000 0.6666667
## 210 1.0000000 1.0000000 1.0000000 0.0000000 0.0000000
## 211 0.5000000 0.0000000 0.5000000 0.5000000 0.5000000
## 212 0.5000000 0.2500000 0.7500000 1.0000000 1.0000000
## 213 0.4000000 0.8000000 0.8000000 0.6000000 0.8000000
## 214 0.6666667 0.3333333 0.0000000 0.6666667 0.0000000
## 215 0.8000000 0.2000000 0.6000000 0.8000000 1.0000000
## 216 1.0000000 0.5000000 0.7500000 1.0000000 0.7500000
## 217 0.7500000 0.5000000 1.0000000 1.0000000 0.7500000
## 218 0.4000000 0.6000000 0.2000000 0.6000000 0.6000000
## 219 0.8000000 0.8000000 0.8000000 0.6000000 1.0000000
## 220 0.6000000 0.8000000 0.4000000 0.6000000 0.6000000
## 221 1.0000000 1.0000000 0.6666667 0.3333333 0.0000000
## 222 0.3333333 0.0000000 0.0000000 0.3333333 0.0000000
## 223 0.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 224 1.0000000 0.7500000 1.0000000 0.7500000 0.7500000
## 225 0.0000000 0.7500000 0.2500000 0.5000000 0.5000000
## 226 0.5000000 0.3333333 0.6666667 0.6666667 0.5000000
## 227 0.6666667 0.8333333 0.6666667 0.6666667 0.5000000
## 228 1.0000000 1.0000000 0.0000000 1.0000000 1.0000000
## 229 0.0000000 0.0000000 1.0000000 1.0000000 0.0000000
## 230 0.5000000 0.7500000 0.2500000 0.5000000 1.0000000
## 231 0.6000000 1.0000000 0.8000000 0.8000000 1.0000000
## 232 0.4000000 0.8000000 0.8000000 0.2000000 0.4000000
## 233 0.5000000 1.0000000 0.5000000 0.7500000 1.0000000
## 234 0.6666667 0.6666667 1.0000000 0.6666667 1.0000000
## 235 0.0000000 0.0000000 0.0000000 1.0000000 0.0000000
## 236 0.6666667 0.3333333 0.0000000 0.3333333 0.6666667
## 237 0.5000000 1.0000000 0.5000000 0.5000000 0.5000000
## 238 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 239 0.0000000 1.0000000 1.0000000 0.6666667 0.6666667
## 240 1.0000000 0.0000000 0.5000000 0.5000000 0.5000000
## 241 1.0000000 1.0000000 0.0000000 1.0000000 1.0000000
## 242 1.0000000 1.0000000 1.0000000 0.0000000 0.0000000
## 243 0.6666667 1.0000000 0.6666667 1.0000000 1.0000000
## 244 0.6666667 0.6666667 0.0000000 0.6666667 1.0000000
## 245      NaN      NaN      NaN      NaN      NaN
## 246 1.0000000 1.0000000 0.0000000 1.0000000 1.0000000
## 247 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000
## 248 0.3333333 1.0000000 1.0000000 0.0000000 0.3333333
## 249 0.5000000 0.7500000 0.5000000 0.2500000 0.7500000
## 250 0.3333333 0.0000000 0.0000000 0.3333333 0.6666667
## 251 1.0000000 0.0000000 0.6666667 0.6666667 0.6666667
## 252      NaN      NaN      NaN      NaN      NaN
## 253 1.0000000 0.0000000 1.0000000 1.0000000 1.0000000
## 254 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
## 255 0.0000000 1.0000000 0.0000000 0.0000000 1.0000000
## 256 0.5000000 0.5000000 0.0000000 1.0000000 0.0000000
## 257 0.7500000 0.7500000 0.7500000 0.7500000 0.7500000
## 258 0.5000000 0.0000000 0.5000000 1.0000000 0.5000000
## 259 0.0000000 0.0000000 0.0000000 0.0000000 1.0000000
## 260 0.5000000 1.0000000 0.0000000 0.5000000 0.5000000
## 261 0.5000000 1.0000000 1.0000000 1.0000000 1.0000000
## 262      NaN      NaN      NaN      NaN      NaN

```

```

## 263      NaN      NaN      NaN      NaN      NaN
## 264 0.0000000 0.00000000 0.00000000 0.00000000 0.00000000
## 265 0.0000000 0.33333333 0.33333333 0.33333333 0.33333333
## 266 0.0000000 0.00000000 0.00000000 0.00000000 0.00000000
## 267 0.0000000 0.00000000 0.50000000 0.50000000 0.50000000
## 268 0.0000000 0.50000000 0.00000000 0.00000000 0.50000000
## 269 0.0000000 0.00000000 0.00000000 0.00000000 0.00000000
## 270 0.0000000 0.00000000 0.00000000 0.00000000 0.00000000
## 271 0.0000000 0.00000000 0.00000000 0.00000000 0.00000000
## 272 1.0000000 1.00000000 1.00000000 0.00000000 0.00000000
## 273 0.0000000 1.00000000 1.00000000 0.50000000 1.00000000
## 274 0.0000000 0.00000000 0.00000000 0.00000000 0.00000000
## 275 1.0000000 1.00000000 0.50000000 1.00000000 0.50000000
## 276 0.3333333 0.50000000 0.16666667 0.33333333 0.50000000
## 277 0.6250000 0.37500000 0.37500000 0.25000000 0.25000000
## 278 0.4285714 0.28571429 0.14285714 0.00000000 0.14285714
## 279 0.7142857 0.71428571 0.57142857 0.4285714 0.57142857
## 280 0.8181818 0.72727273 0.63636364 0.9090909 0.63636364
## 281 1.0000000 1.00000000 0.00000000 1.00000000 1.00000000
## 282 0.7142857 0.85714286 0.57142857 0.5714286 0.85714286
## 283 0.5000000 1.00000000 0.00000000 1.00000000 0.50000000
## 284 0.6666667 0.83333333 0.83333333 0.83333333 0.66666667
## 285 0.3333333 0.33333333 0.33333333 1.0000000 0.33333333
## 286 1.0000000 0.33333333 0.66666667 0.6666667 1.00000000
## 287 0.4000000 0.40000000 0.60000000 0.4000000 0.20000000
## 288 0.6666667 0.66666667 0.33333333 0.6666667 0.33333333
## 289 0.7500000 0.50000000 0.25000000 0.7500000 0.00000000
## 290 0.0000000 0.00000000 0.50000000 0.5000000 0.50000000
## 291 0.3333333 1.00000000 0.66666667 1.0000000 0.66666667
## 292 0.3333333 0.33333333 1.00000000 1.0000000 1.00000000
## 293 0.5000000 0.50000000 0.75000000 0.7500000 0.25000000
## 294 0.5000000 1.00000000 0.75000000 0.2500000 0.75000000
## 295 0.7500000 0.50000000 0.75000000 0.7500000 0.75000000
## 296 1.0000000 0.33333333 0.33333333 0.6666667 0.33333333
## 297 0.0000000 0.33333333 0.66666667 0.3333333 0.66666667
## 298 0.2000000 0.00000000 0.30000000 0.4000000 0.20000000
## 299 0.5000000 0.00000000 0.00000000 0.5000000 0.50000000
## 300 0.0000000 0.50000000 1.00000000 0.5000000 0.50000000
##
## $prediction.success
##      1      2      3      4      5
## 1  0.85 0.80 0.55 0.80 0.70
## 2  0.70 0.70 0.60 0.65 0.60
## 3  0.80 0.75 0.80 0.65 0.65
## 4  0.70 0.70 0.65 0.55 0.80
## 5  0.50 0.60 0.65 0.50 0.50
## 6  0.85 0.75 0.90 0.85 0.80
## 7  0.70 0.75 0.70 0.70 0.65
## 8  0.80 0.65 0.70 0.55 0.65
## 9  0.50 0.65 0.80 0.70 0.60
## 10 0.65 0.70 0.70 0.70 0.65
## 11 0.70 0.50 0.55 0.50 0.55
## 12 0.80 0.80 0.70 0.75 0.85
## 13 0.75 0.95 0.80 0.75 0.80
## 14 0.60 0.70 0.90 0.75 0.65
## 15 0.75 0.60 0.70 0.80 0.60
## 16 0.75 0.65 0.85 0.75 0.55
## 17 0.60 0.70 0.65 0.75 0.45

```

| | | | | | |
|-------|------|------|------|------|------|
| ## 18 | 0.75 | 0.60 | 0.80 | 0.90 | 0.70 |
| ## 19 | 0.90 | 0.80 | 0.90 | 0.60 | 0.80 |
| ## 20 | 0.65 | 0.75 | 0.55 | 0.65 | 0.70 |
| ## 21 | 0.80 | 0.55 | 0.60 | 0.70 | 0.70 |
| ## 22 | 0.60 | 0.45 | 0.50 | 0.65 | 0.75 |
| ## 23 | 0.65 | 0.70 | 0.80 | 0.50 | 0.55 |
| ## 24 | 0.70 | 0.65 | 0.65 | 0.65 | 0.75 |
| ## 25 | 0.60 | 0.75 | 0.75 | 0.70 | 0.60 |
| ## 26 | 0.80 | 0.65 | 0.65 | 0.85 | 0.85 |
| ## 27 | 0.70 | 0.65 | 0.65 | 0.75 | 0.65 |
| ## 28 | 0.70 | 0.65 | 0.60 | 0.80 | 0.65 |
| ## 29 | 0.75 | 0.65 | 0.70 | 0.65 | 0.65 |
| ## 30 | 0.70 | 0.70 | 0.70 | 0.60 | 0.65 |
| ## 31 | 0.80 | 0.75 | 0.75 | 0.80 | 0.75 |
| ## 32 | 0.75 | 0.75 | 0.60 | 0.80 | 0.80 |
| ## 33 | 0.80 | 0.70 | 0.75 | 0.70 | 0.70 |
| ## 34 | 0.85 | 0.60 | 0.65 | 0.75 | 0.75 |
| ## 35 | 0.65 | 0.65 | 0.85 | 0.65 | 0.85 |
| ## 36 | 0.75 | 0.65 | 0.75 | 0.80 | 0.70 |
| ## 37 | 0.75 | 0.65 | 0.80 | 0.80 | 0.80 |
| ## 38 | 0.60 | 0.70 | 0.60 | 0.65 | 0.65 |
| ## 39 | 0.55 | 0.75 | 0.55 | 0.65 | 0.70 |
| ## 40 | 0.85 | 0.95 | 0.70 | 0.85 | 0.90 |
| ## 41 | 0.85 | 0.95 | 0.70 | 0.85 | 0.60 |
| ## 42 | 0.60 | 0.55 | 0.60 | 0.60 | 0.60 |
| ## 43 | 0.80 | 0.65 | 0.45 | 0.50 | 0.75 |
| ## 44 | 0.55 | 0.75 | 0.60 | 0.55 | 0.65 |
| ## 45 | 0.80 | 0.70 | 0.70 | 0.70 | 0.80 |
| ## 46 | 0.70 | 0.65 | 0.75 | 0.70 | 0.75 |
| ## 47 | 0.70 | 0.70 | 0.70 | 0.80 | 0.60 |
| ## 48 | 0.70 | 0.80 | 0.80 | 0.65 | 0.65 |
| ## 49 | 0.95 | 0.70 | 0.75 | 0.65 | 0.75 |
| ## 50 | 0.80 | 0.90 | 0.65 | 0.80 | 0.80 |
| ## 51 | 0.75 | 0.55 | 0.80 | 0.60 | 0.80 |
| ## 52 | 0.60 | 0.50 | 0.65 | 0.80 | 0.70 |
| ## 53 | 0.70 | 0.65 | 0.65 | 0.70 | 0.60 |
| ## 54 | 0.80 | 0.80 | 0.65 | 0.60 | 0.60 |
| ## 55 | 0.75 | 0.75 | 0.55 | 0.60 | 0.75 |
| ## 56 | 0.45 | 0.60 | 0.55 | 0.70 | 0.75 |
| ## 57 | 0.60 | 0.65 | 0.65 | 0.75 | 0.75 |
| ## 58 | 0.75 | 0.75 | 0.65 | 0.55 | 0.65 |
| ## 59 | 0.70 | 0.65 | 0.80 | 0.70 | 0.80 |
| ## 60 | 0.60 | 0.55 | 0.85 | 0.45 | 0.70 |
| ## 61 | 0.75 | 0.65 | 0.70 | 0.70 | 0.90 |
| ## 62 | 0.80 | 0.80 | 0.75 | 0.55 | 0.85 |
| ## 63 | 0.65 | 0.75 | 0.65 | 0.75 | 0.85 |
| ## 64 | 0.65 | 0.55 | 0.65 | 0.70 | 0.80 |
| ## 65 | 0.65 | 0.55 | 0.60 | 0.70 | 0.80 |
| ## 66 | 0.60 | 0.45 | 0.55 | 0.45 | 0.80 |
| ## 67 | 0.60 | 0.75 | 0.30 | 0.55 | 0.65 |
| ## 68 | 0.70 | 0.75 | 0.75 | 0.80 | 0.65 |
| ## 69 | 0.55 | 0.60 | 0.60 | 0.70 | 0.70 |
| ## 70 | 0.65 | 0.75 | 0.65 | 0.65 | 0.75 |
| ## 71 | 0.60 | 0.60 | 0.60 | 0.70 | 0.80 |
| ## 72 | 0.65 | 0.65 | 0.65 | 0.60 | 0.70 |
| ## 73 | 0.70 | 0.70 | 0.85 | 0.75 | 0.50 |
| ## 74 | 0.60 | 0.50 | 0.70 | 0.55 | 0.75 |
| ## 75 | 0.60 | 0.55 | 0.70 | 0.45 | 0.55 |

```

## 76  0.65 0.75 0.90 0.60 0.55
## 77  0.85 0.75 0.70 0.75 0.70
## 78  0.60 0.60 0.55 0.60 0.65
## 79  0.50 0.70 0.70 0.65 0.75
## 80  0.70 0.60 0.45 0.60 0.50
## 81  0.65 0.70 0.75 0.60 0.80
## 82  0.60 0.65 0.45 0.70 0.60
## 83  0.60 0.50 0.65 0.65 0.70
## 84  0.75 0.75 0.80 0.90 0.85
## 85  0.70 0.35 0.75 0.65 0.80
## 86  0.65 0.65 0.60 0.65 0.50
## 87  0.65 0.65 0.55 0.55 0.70
## 88  0.60 0.75 0.70 0.65 0.60
## 89  0.65 0.55 0.70 0.75 0.70
## 90  0.60 0.70 0.55 0.60 0.55
## 91  0.60 0.70 0.60 0.60 0.55
## 92  0.70 0.70 0.80 0.55 0.80
## 93  0.60 0.60 0.80 0.70 0.80
## 94  0.65 0.60 0.75 0.75 0.65
## 95  0.70 0.55 0.65 0.65 0.75
## 96  0.60 0.65 0.60 0.70 0.75
## 97  0.50 0.75 0.65 0.80 0.70
## 98  0.55 0.50 0.70 0.45 0.80
## 99  0.55 0.55 0.40 0.45 0.50
## 100 0.55 0.65 0.55 0.60 0.55
## 101 0.65 0.55 0.80 0.75 0.55
## 102 0.75 0.70 0.75 0.65 0.75
## 103 0.65 0.70 0.65 0.60 0.85
## 104 0.45 0.75 0.65 0.50 0.65
## 105 0.60 0.65 0.65 0.65 0.65
## 106 0.70 0.65 0.70 0.75 0.60
## 107 0.70 0.80 0.75 0.75 0.65
## 108 0.70 0.70 0.55 0.80 0.60
## 109 0.60 0.65 0.55 0.55 0.65
## 110 0.70 0.60 0.60 0.40 0.65
## 111 0.65 0.75 0.60 0.80 0.75
## 112 0.65 0.85 0.65 0.70 0.50
## 113 0.60 0.80 0.55 0.55 0.75
## 114 0.70 0.60 0.40 0.60 0.65
## 115 0.60 0.50 0.65 0.55 0.55
## 116 0.60 0.80 0.75 0.80 0.55
## 117 0.50 0.45 0.55 0.50 0.55
## 118 0.70 0.35 0.60 0.75 0.60
## 119 0.80 0.85 0.75 0.75 0.65
## 120 0.70 0.60 0.55 0.60 0.45
## 121 0.40 0.50 0.65 0.60 0.70
## 122 0.75 0.60 0.65 0.60 0.45
## 123 0.45 0.55 0.65 0.60 0.45
## 124 0.80 0.65 0.75 0.75 0.65
## 125 0.80 0.65 0.75 0.70 0.75
## 126 0.75 0.65 0.60 0.70 0.70
## 127 0.65 0.60 0.70 0.60 0.60
## 128 0.65 0.55 0.60 0.75 0.50
## 129 0.70 0.65 0.75 0.65 0.50
## 130 0.65 0.60 0.60 0.75 0.65
## 131 0.60 0.70 0.55 0.60 0.60
## 132 0.50 0.55 0.75 0.50 0.60
## 133 0.80 0.55 0.80 0.75 0.70

```


134 0.65 0.65 0.50 0.60 0.80
135 0.40 0.60 0.50 0.50 0.60
136 0.70 0.60 0.65 0.70 0.65
137 0.60 0.45 0.50 0.60 0.60
138 0.60 0.65 0.50 0.60 0.70
139 0.65 0.55 0.65 0.55 0.60
140 0.60 0.80 0.65 0.70 0.75
141 0.70 0.75 0.75 0.65 0.60
142 0.70 0.60 0.75 0.70 0.75
143 0.75 0.60 0.60 0.55 0.60
144 0.65 0.60 0.65 0.60 0.65
145 0.80 0.75 0.55 0.65 0.75
146 0.65 0.70 0.50 0.80 0.80
147 0.75 0.70 0.85 0.75 0.75
148 0.60 0.60 0.65 0.65 0.70
149 0.55 0.50 0.60 0.60 0.60
150 0.80 0.75 0.80 0.75 0.60
151 0.75 0.75 0.60 0.65 0.65
152 0.70 0.75 0.75 0.75 0.75
153 0.70 0.55 0.75 0.75 0.75
154 0.70 0.75 0.80 0.70 0.75
155 0.85 0.55 0.65 0.80 0.65
156 0.85 0.85 0.70 0.75 0.85
157 0.80 0.80 0.80 0.80 0.80
158 0.55 0.55 0.65 0.65 0.55
159 0.50 0.50 0.75 0.60 0.45
160 0.90 0.75 0.70 0.75 0.75
161 0.80 0.85 0.75 0.85 0.85
162 0.85 0.70 0.75 0.75 0.80
163 0.75 0.70 0.80 0.80 0.75
164 0.70 0.70 0.70 0.65 0.90
165 0.80 0.70 0.75 0.75 0.75
166 0.85 0.70 0.95 0.90 0.65
167 0.55 0.55 0.85 0.45 0.60
168 0.65 0.70 0.70 1.00 0.85
169 0.85 0.70 0.65 0.75 0.90
170 0.60 0.65 0.65 0.65 0.75
171 0.65 0.75 0.85 0.70 0.65
172 0.70 0.60 0.60 0.65 0.65
173 0.65 0.55 0.45 0.70 0.55
174 0.70 0.60 0.75 0.90 0.60
175 0.65 0.70 0.70 0.50 0.55
176 0.80 0.70 0.80 0.55 0.75
177 0.75 0.80 0.85 0.80 0.80
178 0.65 0.50 0.45 0.50 0.50
179 0.70 0.55 0.75 0.60 0.65
180 0.65 0.75 0.65 0.70 0.55
181 0.75 0.85 0.80 0.90 0.85
182 0.55 0.60 0.65 0.75 0.60
183 0.65 0.75 0.55 0.80 0.85
184 0.70 0.70 0.80 0.80 0.90
185 0.75 0.90 0.80 0.70 0.85
186 0.75 0.90 0.80 0.80 0.70
187 0.80 0.70 0.60 0.80 0.55
188 0.60 0.75 0.70 0.80 0.75
189 0.75 0.75 0.70 0.65 0.70
190 0.65 0.80 0.60 0.55 0.60
191 0.65 0.55 0.70 0.70 0.70

192 0.55 0.80 0.60 0.55 0.65
193 0.75 0.70 0.75 0.80 0.90
194 0.70 0.75 0.75 0.80 0.80
195 0.75 0.80 0.65 0.65 0.85
196 0.65 0.85 0.75 0.75 0.85
197 0.70 0.70 0.65 0.70 0.85
198 0.70 0.75 0.70 0.85 0.90
199 0.70 0.80 0.80 0.90 0.95
200 0.55 0.55 0.80 0.65 0.80
201 0.90 0.85 0.80 0.85 0.90
202 0.75 0.85 0.70 0.60 0.70
203 0.50 0.50 0.55 0.60 0.60
204 0.90 0.90 0.85 0.80 0.85
205 0.70 0.95 0.75 0.80 0.75
206 0.75 0.85 0.85 0.85 0.90
207 0.75 0.75 0.85 0.75 0.75
208 0.85 0.80 0.65 0.75 0.90
209 0.75 0.75 0.80 0.65 0.60
210 0.75 0.65 0.65 0.85 0.80
211 0.80 0.95 0.90 0.85 0.80
212 0.85 0.85 0.75 0.75 0.65
213 0.85 0.80 0.65 0.65 0.70
214 0.65 0.80 0.90 0.70 0.90
215 0.65 0.85 0.75 0.60 0.70
216 0.65 0.75 0.75 0.75 0.80
217 0.50 0.65 0.65 0.50 0.70
218 0.80 0.80 0.90 0.80 0.70
219 0.75 0.70 0.80 0.70 0.60
220 0.75 0.75 0.75 0.70 0.70
221 0.75 0.75 0.75 0.90 0.90
222 0.90 0.90 0.85 0.85 0.85
223 0.85 0.85 0.80 0.90 0.85
224 0.70 0.70 0.75 0.65 0.75
225 1.00 0.80 0.95 0.80 0.80
226 0.80 0.80 0.75 0.75 0.80
227 0.80 0.70 0.65 0.75 0.80
228 0.80 0.75 0.95 0.80 0.65
229 0.90 0.85 0.80 0.85 0.75
230 0.90 0.80 0.90 0.75 0.60
231 0.75 0.75 0.75 0.75 0.70
232 0.85 0.75 0.70 0.85 0.85
233 0.80 0.70 0.85 0.75 0.60
234 0.85 0.80 0.80 0.85 0.80
235 0.75 0.80 0.90 0.80 0.60
236 0.75 0.85 0.85 0.85 0.70
237 0.85 0.70 0.80 0.85 0.75
238 0.75 0.70 0.60 0.75 0.75
239 0.95 0.75 0.85 0.75 0.80
240 0.85 0.90 0.85 0.75 0.75
241 0.75 0.75 0.85 0.75 0.70
242 0.80 0.70 0.80 0.95 0.90
243 0.80 0.80 0.70 0.80 0.80
244 0.70 0.80 1.00 0.85 0.85
245 0.85 0.75 0.90 1.00 0.85
246 0.85 0.90 0.90 0.85 0.75
247 0.85 1.00 0.80 0.90 0.85
248 0.95 0.70 0.70 0.95 0.75
249 0.80 0.80 0.90 0.95 0.80

```

## 250 0.95 0.95 0.90 0.90 0.85
## 251 0.75 0.95 0.90 0.85 0.85
## 252 0.70 0.95 1.00 1.00 0.95
## 253 0.90 0.95 0.85 0.80 0.80
## 254 0.80 0.95 0.80 1.00 0.85
## 255 0.90 0.75 1.00 0.95 0.80
## 256 0.90 0.85 0.90 0.85 0.85
## 257 0.75 0.70 0.70 0.85 0.75
## 258 0.80 0.85 0.85 0.80 0.80
## 259 0.85 0.85 0.80 0.95 0.85
## 260 0.90 0.85 0.85 0.85 0.85
## 261 0.85 0.65 0.75 0.75 0.70
## 262 0.85 0.90 0.80 0.85 0.85
## 263 0.85 0.85 0.90 0.90 0.90
## 264 0.85 1.00 0.85 0.85 0.90
## 265 0.75 0.70 0.80 0.85 0.90
## 266 0.75 0.80 1.00 1.00 0.90
## 267 0.90 1.00 0.85 0.85 0.80
## 268 0.80 0.90 0.90 0.75 0.90
## 269 0.85 0.85 0.90 0.75 0.85
## 270 0.95 0.75 0.85 0.80 0.90
## 271 0.85 0.90 0.85 0.80 0.80
## 272 0.75 0.85 0.80 0.80 0.95
## 273 0.90 0.75 0.65 0.80 0.80
## 274 0.90 0.90 0.90 0.90 0.85
## 275 0.75 0.85 0.85 0.75 0.85
## 276 0.65 0.70 0.60 0.75 0.65
## 277 0.65 0.75 0.80 0.75 0.65
## 278 0.60 0.60 0.70 0.75 0.60
## 279 0.50 0.55 0.65 0.70 0.60
## 280 0.45 0.50 0.55 0.45 0.65
## 281 0.75 0.80 1.00 0.75 0.65
## 282 0.55 0.60 0.60 0.70 0.65
## 283 0.75 0.60 0.80 0.75 0.80
## 284 0.75 0.65 0.55 0.75 0.70
## 285 0.80 0.65 0.80 0.70 0.85
## 286 0.70 0.85 0.65 0.70 0.75
## 287 0.80 0.85 0.80 0.80 0.85
## 288 0.80 0.85 0.85 0.80 0.85
## 289 0.85 0.85 0.85 0.75 0.90
## 290 1.00 0.90 0.80 0.75 0.75
## 291 0.85 0.75 0.75 0.80 0.85
## 292 0.90 0.90 0.80 0.75 0.80
## 293 0.85 0.75 0.85 0.85 0.85
## 294 0.80 0.75 0.75 0.80 0.80
## 295 0.75 0.80 0.80 0.70 0.70
## 296 0.65 0.90 0.90 0.75 0.90
## 297 0.90 0.75 0.70 0.80 0.75
## 298 0.70 0.85 0.65 0.60 0.75
## 299 0.85 0.90 0.90 0.95 0.90
## 300 0.95 0.80 0.85 0.90 0.85
##
## $sensitivity
##           1           2           3           4           5
## 1  0.5000000 0.0000000 0.0000000 0.4000000 0.2857143
## 2  0.4000000 0.4000000 0.3333333 0.3636364 0.3333333
## 3  0.5714286 0.5000000 0.5555556 0.4166667 0.4166667
## 4  0.4444444 0.4444444 0.4000000 0.2500000 0.5555556

```

| | | | | | |
|-------|-----------|-----------|-----------|-----------|-----------|
| ## 5 | 0.1666667 | 0.2000000 | 0.2222222 | 0.1666667 | 0.1666667 |
| ## 6 | 0.8888889 | 0.7272727 | 0.9000000 | 0.8181818 | 0.7500000 |
| ## 7 | 0.4444444 | 0.5000000 | 0.4285714 | 0.4444444 | 0.4000000 |
| ## 8 | 0.5555556 | 0.4166667 | 0.4545455 | 0.3333333 | 0.4166667 |
| ## 9 | 0.5000000 | 0.7142857 | 0.7500000 | 1.0000000 | 0.7500000 |
| ## 10 | 0.4000000 | 0.4545455 | 0.4444444 | 0.4444444 | 0.4000000 |
| ## 11 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| ## 12 | 0.8333333 | 0.8333333 | 0.8000000 | 0.7692308 | 0.9090909 |
| ## 13 | 0.7272727 | 1.0000000 | 0.8750000 | 0.7272727 | 0.8750000 |
| ## 14 | 0.4615385 | 0.5454545 | 0.7777778 | 0.6250000 | 0.5000000 |
| ## 15 | 0.8000000 | 0.6153846 | 0.6923077 | 0.8181818 | 0.6363636 |
| ## 16 | 0.7272727 | 0.6363636 | 0.7692308 | 0.6666667 | 0.5555556 |
| ## 17 | 0.4000000 | 0.5000000 | 0.4444444 | 0.5454545 | 0.3076923 |
| ## 18 | 0.6000000 | 0.4545455 | 0.6666667 | 0.7777778 | 0.5384615 |
| ## 19 | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 |
| ## 20 | 0.5000000 | 0.5833333 | 0.4000000 | 0.5000000 | 0.5384615 |
| ## 21 | 0.7500000 | 0.4545455 | 0.5000000 | 0.5833333 | 0.6250000 |
| ## 22 | 0.4615385 | 0.3333333 | 0.3846154 | 0.5000000 | 0.5833333 |
| ## 23 | 0.3333333 | 0.4000000 | 0.5000000 | 0.2000000 | 0.2727273 |
| ## 24 | 0.7000000 | 0.7142857 | 0.7142857 | 0.6666667 | 0.8571429 |
| ## 25 | 0.1666667 | 0.4000000 | 0.0000000 | 0.3333333 | 0.3333333 |
| ## 26 | 0.6250000 | 0.4285714 | 0.4444444 | 0.7142857 | 0.7142857 |
| ## 27 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| ## 28 | 0.5555556 | 0.5000000 | 0.4444444 | 0.6666667 | 0.5000000 |
| ## 29 | 0.7142857 | 0.5714286 | 0.6666667 | 0.5555556 | 0.6000000 |
| ## 30 | 0.5000000 | 0.5000000 | 0.5000000 | 0.4000000 | 0.4615385 |
| ## 31 | 0.7500000 | 0.6923077 | 0.6923077 | 0.8000000 | 0.6923077 |
| ## 32 | 0.8000000 | 0.7142857 | 0.7142857 | 0.8181818 | 0.7692308 |
| ## 33 | 0.7142857 | 0.5714286 | 0.6250000 | 0.5714286 | 0.5555556 |
| ## 34 | 0.7000000 | 0.4615385 | 0.5000000 | 0.5833333 | 0.6250000 |
| ## 35 | 0.6363636 | 0.6666667 | 0.7692308 | 0.6363636 | 0.8888889 |
| ## 36 | 0.6363636 | 0.5454545 | 0.6666667 | 0.7000000 | 0.5833333 |
| ## 37 | 0.8333333 | 0.8000000 | 0.9090909 | 0.8461538 | 0.9090909 |
| ## 38 | 0.4545455 | 0.5714286 | 0.4615385 | 0.5000000 | 0.5000000 |
| ## 39 | 0.5714286 | 0.7777778 | 0.5714286 | 0.6666667 | 0.6666667 |
| ## 40 | 0.8181818 | 0.9090909 | 0.7000000 | 0.8181818 | 0.8333333 |
| ## 41 | 1.0000000 | 1.0000000 | 0.8571429 | 0.9000000 | 0.7142857 |
| ## 42 | 0.5833333 | 0.5714286 | 0.6666667 | 0.6666667 | 0.6250000 |
| ## 43 | 0.7000000 | 0.5555556 | 0.3333333 | 0.3750000 | 0.7142857 |
| ## 44 | 0.6000000 | 0.7777778 | 0.6250000 | 0.6000000 | 0.7142857 |
| ## 45 | 0.8750000 | 0.7500000 | 0.7500000 | 0.8333333 | 0.8000000 |
| ## 46 | 0.6250000 | 0.5714286 | 0.6666667 | 0.6000000 | 0.6666667 |
| ## 47 | 0.5000000 | 0.5000000 | 0.5000000 | 0.6250000 | 0.3333333 |
| ## 48 | 0.6666667 | 1.0000000 | 0.7000000 | 0.6000000 | 0.5714286 |
| ## 49 | 1.0000000 | 0.6000000 | 0.6666667 | 0.5555556 | 0.7142857 |
| ## 50 | 0.9000000 | 1.0000000 | 0.7777778 | 0.9000000 | 0.9000000 |
| ## 51 | 1.0000000 | 0.6666667 | 0.8888889 | 0.7142857 | 1.0000000 |
| ## 52 | 0.2857143 | 0.0000000 | 0.3333333 | 0.6000000 | 0.4444444 |
| ## 53 | 0.6363636 | 0.6000000 | 0.6666667 | 0.6363636 | 0.5714286 |
| ## 54 | 0.9000000 | 0.8333333 | 0.7272727 | 0.6666667 | 0.6666667 |
| ## 55 | 0.5000000 | 0.5000000 | 0.3000000 | 0.2857143 | 0.5000000 |
| ## 56 | 0.1818182 | 0.3000000 | 0.2222222 | 0.3333333 | 0.4444444 |
| ## 57 | 0.5555556 | 0.6250000 | 0.5833333 | 0.7500000 | 0.7500000 |
| ## 58 | 0.6363636 | 0.6363636 | 0.5555556 | 0.4444444 | 0.5555556 |
| ## 59 | 0.7777778 | 0.7000000 | 1.0000000 | 0.7272727 | 0.8181818 |
| ## 60 | 0.3333333 | 0.2857143 | 0.8000000 | 0.2222222 | 0.5000000 |
| ## 61 | 0.8571429 | 0.7142857 | 0.8333333 | 0.7000000 | 1.0000000 |
| ## 62 | 0.8571429 | 0.8571429 | 0.7500000 | 0.5000000 | 1.0000000 |

| | | | | | |
|--------|-----------|-----------|-----------|-----------|-----------|
| ## 63 | 0.6250000 | 1.0000000 | 0.6666667 | 1.0000000 | 0.8750000 |
| ## 64 | 0.4285714 | 0.3333333 | 0.4444444 | 0.5000000 | 0.7500000 |
| ## 65 | 0.8000000 | 0.6666667 | 1.0000000 | 0.8333333 | 1.0000000 |
| ## 66 | 1.0000000 | 0.5000000 | 0.7500000 | 0.5000000 | 1.0000000 |
| ## 67 | 0.8000000 | 0.8000000 | 0.3333333 | 0.6000000 | 0.7500000 |
| ## 68 | 0.7272727 | 0.7500000 | 0.8750000 | 0.8888889 | 0.7500000 |
| ## 69 | 0.5000000 | 0.6000000 | 0.6000000 | 0.7142857 | 0.7142857 |
| ## 70 | 0.7777778 | 1.0000000 | 0.8571429 | 0.7777778 | 1.0000000 |
| ## 71 | 0.4000000 | 0.4000000 | 0.3750000 | 0.5000000 | 0.6666667 |
| ## 72 | 0.6153846 | 0.6666667 | 0.6363636 | 0.6000000 | 0.6666667 |
| ## 73 | 0.8571429 | 0.7777778 | 0.8333333 | 0.8000000 | 0.5714286 |
| ## 74 | 0.5555556 | 0.4285714 | 0.6666667 | 0.5000000 | 0.7000000 |
| ## 75 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| ## 76 | 1.0000000 | 0.9090909 | 1.0000000 | 1.0000000 | 0.8571429 |
| ## 77 | 0.9090909 | 0.8181818 | 0.8750000 | 0.8181818 | 0.7500000 |
| ## 78 | 1.0000000 | 0.7142857 | 0.6250000 | 0.7142857 | 0.7500000 |
| ## 79 | 0.0000000 | 0.1666667 | 0.1666667 | 0.2222222 | 0.0000000 |
| ## 80 | 0.5714286 | 0.4000000 | 0.2500000 | 0.4444444 | 0.2857143 |
| ## 81 | 0.8571429 | 1.0000000 | 1.0000000 | 0.8333333 | 0.9000000 |
| ## 82 | 0.5000000 | 0.6000000 | 0.0000000 | 0.6666667 | 0.5000000 |
| ## 83 | 0.8333333 | 0.6666667 | 0.8571429 | 1.0000000 | 0.8000000 |
| ## 84 | 0.0000000 | 0.0000000 | 0.0000000 | 0.5000000 | 0.3333333 |
| ## 85 | 0.3333333 | 0.0000000 | 0.3333333 | 0.1666667 | 0.4000000 |
| ## 86 | 0.8000000 | 0.7142857 | 1.0000000 | 0.8000000 | 0.5000000 |
| ## 87 | 0.8333333 | 0.8333333 | 0.6666667 | 0.6666667 | 1.0000000 |
| ## 88 | 0.6250000 | 0.8571429 | 0.7500000 | 0.6363636 | 0.7500000 |
| ## 89 | 0.6000000 | 0.4285714 | 0.6666667 | 0.7142857 | 0.6666667 |
| ## 90 | 0.6000000 | 0.7142857 | 0.5000000 | 0.6000000 | 0.5000000 |
| ## 91 | 0.6666667 | 0.7500000 | 0.7500000 | 0.7500000 | 0.6000000 |
| ## 92 | 0.8571429 | 0.7777778 | 0.8888889 | 0.6666667 | 0.8888889 |
| ## 93 | 0.7000000 | 0.7500000 | 0.8333333 | 0.8000000 | 1.0000000 |
| ## 94 | 0.4545455 | 0.4000000 | 0.5714286 | 0.5555556 | 0.4545455 |
| ## 95 | 0.8000000 | 0.7142857 | 0.7777778 | 0.7777778 | 0.8181818 |
| ## 96 | 0.6666667 | 0.7142857 | 0.6666667 | 0.8333333 | 0.8571429 |
| ## 97 | 0.3333333 | 0.6250000 | 0.5000000 | 0.7142857 | 0.6000000 |
| ## 98 | 0.5000000 | 0.4000000 | 0.7142857 | 0.3333333 | 0.7777778 |
| ## 99 | 0.7500000 | 0.7500000 | 0.4000000 | 0.5000000 | 0.6666667 |
| ## 100 | 0.4000000 | 0.6000000 | 0.4444444 | 0.5000000 | 0.3333333 |
| ## 101 | 0.5000000 | 0.4000000 | 0.8000000 | 0.7500000 | 0.3750000 |
| ## 102 | 1.0000000 | 0.6666667 | 0.8000000 | 0.6000000 | 0.8000000 |
| ## 103 | 0.6666667 | 0.6250000 | 0.5555556 | 0.5000000 | 0.8571429 |
| ## 104 | 0.5714286 | 0.8181818 | 0.7777778 | 0.6666667 | 0.7272727 |
| ## 105 | 0.3333333 | 0.5000000 | 0.5000000 | 0.5000000 | 0.5000000 |
| ## 106 | 0.6000000 | 0.5000000 | 0.6666667 | 0.6666667 | 0.3333333 |
| ## 107 | 0.5000000 | 0.7500000 | 0.6000000 | 0.6666667 | 0.4285714 |
| ## 108 | 0.8333333 | 0.8333333 | 0.6000000 | 0.8750000 | 0.6666667 |
| ## 109 | 0.6666667 | 0.8333333 | 0.6666667 | 0.6000000 | 0.7500000 |
| ## 110 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| ## 111 | 0.5714286 | 0.7142857 | 0.5000000 | 0.7500000 | 0.8000000 |
| ## 112 | 0.7142857 | 1.0000000 | 0.7142857 | 0.7500000 | 0.5000000 |
| ## 113 | 0.5000000 | 0.8333333 | 0.4000000 | 0.4000000 | 0.7142857 |
| ## 114 | 0.2857143 | 0.1428571 | 0.0000000 | 0.1428571 | 0.1666667 |
| ## 115 | 0.5000000 | 0.3750000 | 0.5714286 | 0.4444444 | 0.4000000 |
| ## 116 | 0.1111111 | 0.2000000 | 0.0000000 | 0.0000000 | 0.1000000 |
| ## 117 | 0.6666667 | 0.5000000 | 0.7500000 | 0.6666667 | 0.7500000 |
| ## 118 | 0.8888889 | 0.5000000 | 0.8571429 | 0.9000000 | 1.0000000 |
| ## 119 | 0.4000000 | 0.5000000 | 0.3750000 | 0.2500000 | 0.1666667 |
| ## 120 | 0.0000000 | 0.2222222 | 0.0000000 | 0.0000000 | 0.0000000 |

```

## 121 0.1250000 0.1666667 0.3333333 0.2500000 0.5000000
## 122 0.7500000 0.7142857 0.8333333 0.8000000 0.5000000
## 123 0.2500000 0.5000000 1.0000000 0.6666667 0.0000000
## 124 1.0000000 0.3333333 1.0000000 0.6666667 0.0000000
## 125 0.2500000 0.0000000 0.2000000 0.0000000 0.2000000
## 126 0.6666667 0.6000000 0.5000000 0.6666667 0.7500000
## 127 0.8333333 0.8000000 1.0000000 1.0000000 1.0000000
## 128 0.8333333 0.7500000 1.0000000 0.8750000 0.5714286
## 129 1.0000000 1.0000000 1.0000000 0.7142857 0.5000000
## 130 0.7142857 0.6666667 0.6250000 1.0000000 0.7142857
## 131 0.7500000 0.7500000 0.5714286 0.6666667 0.6666667
## 132 0.5000000 0.6000000 0.8571429 0.5000000 0.7500000
## 133 0.6000000 0.1666667 0.6666667 0.5000000 0.4000000
## 134 0.4000000 0.3750000 0.1428571 0.3333333 0.5714286
## 135 0.4000000 0.7142857 0.6000000 0.6000000 0.8000000
## 136 0.7500000 0.5000000 0.6000000 0.6666667 0.5555556
## 137 0.5714286 0.3333333 0.3333333 0.6000000 0.6000000
## 138 0.4000000 0.5000000 0.2857143 0.4285714 0.5555556
## 139 0.0000000 0.1428571 0.0000000 0.1428571 0.0000000
## 140 0.1428571 0.3333333 0.0000000 0.0000000 0.0000000
## 141 0.6666667 1.0000000 1.0000000 0.6000000 0.5000000
## 142 0.7500000 0.5000000 1.0000000 0.7500000 1.0000000
## 143 0.4000000 0.1666667 0.1666667 0.2222222 0.0000000
## 144 1.0000000 0.7500000 1.0000000 1.0000000 1.0000000
## 145 0.5714286 0.5000000 0.3000000 0.3333333 0.5000000
## 146 0.3750000 0.3333333 0.2222222 0.6666667 0.6666667
## 147 0.0000000 0.3333333 0.6666667 0.4000000 0.4000000
## 148 0.5000000 0.5000000 0.6000000 0.6000000 0.6666667
## 149 0.5714286 0.5000000 0.6250000 0.7500000 0.6666667
## 150 0.3333333 0.0000000 0.2500000 0.2000000 0.1250000
## 151 0.5714286 0.6000000 0.3750000 0.4000000 0.4000000
## 152 0.3333333 0.4000000 0.4000000 0.4000000 0.4000000
## 153 1.0000000 0.5000000 1.0000000 0.8333333 0.8333333
## 154 0.0000000 0.2500000 0.3333333 0.2000000 0.3333333
## 155 1.0000000 0.0000000 0.2500000 0.6000000 0.3333333
## 156 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 157 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 158 0.5000000 0.5000000 0.6250000 1.0000000 0.5000000
## 159 0.4000000 0.3333333 0.7500000 0.5714286 0.2500000
## 160 1.0000000 0.2500000 0.0000000 0.0000000 0.2500000
## 161 0.5000000 0.6666667 0.4000000 0.5714286 0.6000000
## 162 0.7500000 0.3333333 0.5000000 0.5000000 1.0000000
## 163 0.5000000 0.4000000 0.6666667 0.6666667 0.5000000
## 164 0.2500000 0.3333333 0.2500000 0.2000000 0.6666667
## 165 0.5000000 0.3333333 0.3333333 0.3333333 0.0000000
## 166 0.3333333 0.0000000 1.0000000 0.5000000 0.0000000
## 167 0.2500000 0.3333333 1.0000000 0.0000000 0.4444444
## 168 0.1428571 0.1666667 0.0000000 1.0000000 0.4000000
## 169 0.0000000 0.0000000 0.1250000 0.1666667 0.3333333
## 170 0.4000000 0.5000000 0.5000000 0.5000000 0.7500000
## 171 0.0000000 0.4000000 0.6000000 0.2500000 0.0000000
## 172 0.4000000 0.2857143 0.2857143 0.4000000 0.3750000
## 173 0.7142857 0.6000000 0.4285714 0.8333333 0.6000000
## 174 0.1666667 0.0000000 0.0000000 0.5000000 0.0000000
## 175 0.6000000 0.7500000 0.6250000 0.4000000 0.4285714
## 176 0.6666667 0.5000000 0.6250000 0.2857143 0.6000000
## 177 0.2500000 0.3333333 0.5000000 0.4285714 0.4000000
## 178 0.6666667 0.4000000 0.0000000 0.3333333 0.0000000

```

```

## 179 0.7500000 0.3333333 0.8000000 0.5000000 0.6666667
## 180 0.2500000 0.3333333 0.2500000 0.2857143 0.1250000
## 181 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 182 0.2000000 0.2500000 0.3333333 0.6000000 0.0000000
## 183 0.0000000 0.5000000 0.0000000 1.0000000 1.0000000
## 184 0.4000000 0.4000000 0.6666667 0.6666667 1.0000000
## 185 0.5000000 1.0000000 0.6666667 0.4000000 0.7500000
## 186 0.0000000 0.3333333 0.2000000 0.2000000 0.1428571
## 187 0.6666667 0.3333333 0.2000000 0.6000000 0.2500000
## 188 0.1428571 0.2500000 0.2000000 0.3333333 0.2500000
## 189 0.5000000      NaN 0.0000000 0.0000000 0.3333333
## 190 0.5555556 0.7500000 0.5000000 0.4285714 0.5000000
## 191 0.2500000 0.0000000 0.3333333 0.4000000 0.0000000
## 192 0.1250000 0.4000000 0.0000000 0.0000000 0.1666667
## 193 0.1666667 0.0000000 0.1666667 0.0000000 0.0000000
## 194      NaN 1.0000000 0.6666667 1.0000000 1.0000000
## 195 0.7500000 0.8000000 0.5000000 0.5000000 1.0000000
## 196 0.0000000 0.0000000 0.1666667 0.0000000 0.0000000
## 197 0.7500000 0.7500000 0.6000000 0.7500000 1.0000000
## 198 0.0000000 0.0000000 0.0000000 0.3333333 0.5000000
## 199 0.0000000 0.2500000 0.2500000 0.5000000 1.0000000
## 200 0.1111111 0.1111111 0.3333333 0.0000000 0.2500000
## 201 0.5000000 0.0000000 0.0000000 0.3333333      NaN
## 202 0.8000000 1.0000000 0.7500000 0.5000000 1.0000000
## 203 0.0000000 0.1250000 0.1428571 0.1666667 0.1666667
## 204 0.7500000 0.7500000 0.6666667 0.5000000 0.6000000
## 205 0.0000000 1.0000000 0.0000000 0.4000000 0.0000000
## 206 0.2000000 0.4000000 0.4000000 0.3333333 0.5000000
## 207 0.6000000 0.6000000 1.0000000 1.0000000 1.0000000
## 208 0.6666667 0.6666667 0.2500000 0.5000000 1.0000000
## 209 1.0000000 1.0000000 0.7500000 0.0000000 0.3333333
## 210 0.0000000 0.0000000 0.0000000 0.2500000 0.2000000
## 211 0.2500000 0.6666667 0.5000000 0.3333333 0.2500000
## 212 0.6666667 0.6000000 0.3333333 0.0000000 0.0000000
## 213 0.7500000 1.0000000 0.2500000 0.3333333 0.3333333
## 214 0.1666667 0.4000000 0.6000000 0.2000000 0.6000000
## 215 0.2500000 0.6666667 0.5000000 0.2000000 0.0000000
## 216 0.0000000 0.4000000 0.3333333 0.0000000 0.5000000
## 217 0.1250000 0.2857143 0.0000000 0.0000000 0.2500000
## 218 0.6000000 0.6666667 0.8000000 0.6666667 0.4000000
## 219 0.5000000 0.3333333 1.0000000 0.4000000 0.0000000
## 220 0.5000000 0.5000000 0.5000000 0.4000000 0.4000000
## 221 0.0000000 0.0000000 0.2500000 0.6666667 0.6000000
## 222 0.6666667 0.6000000 0.5000000 0.5000000 0.5000000
## 223 0.2500000 0.0000000 0.0000000 0.0000000 0.0000000
## 224 0.0000000 0.2500000 0.0000000 0.2000000 0.3333333
## 225 1.0000000 0.5000000 1.0000000 0.5000000 0.5000000
## 226 0.7500000 0.6666667 0.6666667 0.6666667 0.7500000
## 227 1.0000000 0.5000000 0.4000000 0.6666667 0.7500000
## 228 0.0000000 0.0000000 0.5000000 0.0000000 0.0000000
## 229 0.3333333 0.2500000 0.0000000 0.0000000 0.1666667
## 230 1.0000000 0.5000000 0.7500000 0.4000000 0.0000000
## 231 0.5000000      NaN 0.5000000 0.5000000 0.0000000
## 232 0.7500000 0.5000000 0.3333333 0.6666667 0.7500000
## 233 0.5000000 0.0000000 0.6666667 0.3333333 0.0000000
## 234 0.5000000 0.3333333 0.0000000 0.5000000 0.0000000
## 235 0.1666667 0.2000000 0.3333333 0.0000000 0.1111111
## 236 0.2500000 0.5000000 0.5000000 0.5000000 0.2000000

```

```

## 237 0.3333333 0.0000000 0.2500000 0.3333333 0.2000000
## 238 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 239 0.7500000 0.0000000      NaN 0.2500000 0.3333333
## 240 0.0000000 0.5000000 0.3333333 0.2000000 0.2000000
## 241 0.0000000 0.0000000 0.2500000 0.0000000 0.0000000
## 242 0.0000000 0.0000000 0.0000000 0.5000000 0.3333333
## 243 0.3333333 0.0000000 0.2000000 0.0000000 0.0000000
## 244 0.2000000 0.3333333 1.0000000 0.5000000      NaN
## 245 0.0000000 0.0000000 0.0000000      NaN 0.0000000
## 246 0.0000000 0.0000000 0.3333333 0.0000000 0.0000000
## 247 0.2500000 1.0000000 0.2000000 0.3333333 0.0000000
## 248 1.0000000 0.0000000 0.0000000 0.7500000 0.3333333
## 249 0.5000000 0.5000000 1.0000000 1.0000000 0.5000000
## 250 1.0000000 0.7500000 0.6000000 0.6666667 0.5000000
## 251 0.0000000 0.7500000 1.0000000 0.5000000 0.5000000
## 252 0.0000000 0.0000000      NaN      NaN 0.0000000
## 253 0.0000000 0.5000000 0.0000000 0.0000000 0.0000000
## 254 0.2000000 0.5000000 0.0000000 1.0000000 0.2500000
## 255 0.5000000 0.0000000 1.0000000 0.6666667 0.0000000
## 256 0.5000000 0.3333333 0.5000000 0.0000000 0.4000000
## 257 0.3333333 0.2500000 0.2500000 1.0000000 0.3333333
## 258 0.2500000 0.4000000 0.3333333 0.0000000 0.2500000
## 259 0.4000000 0.4000000 0.3333333 0.6666667 0.0000000
## 260 0.5000000 0.0000000 0.4000000 0.3333333 0.3333333
## 261 0.3333333 0.0000000 0.0000000 0.0000000 0.0000000
## 262 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 263 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 264 0.2500000 1.0000000 0.2500000 0.2500000 0.3333333
## 265 0.3750000 0.2857143 0.4000000 0.5000000 0.6666667
## 266 0.1666667 0.2000000 1.0000000 1.0000000 0.3333333
## 267 0.5000000 1.0000000 0.3333333 0.3333333 0.2500000
## 268 0.3333333 0.5000000 0.5000000 0.2857143 0.5000000
## 269 0.2500000 0.2500000 0.3333333 0.1666667 0.2500000
## 270 0.5000000 0.1666667 0.2500000 0.2000000 0.3333333
## 271 0.2500000 0.3333333 0.2500000 0.2000000 0.2000000
## 272 0.0000000 0.0000000 0.0000000 0.2000000 0.5000000
## 273 0.5000000 0.0000000 0.0000000 0.2500000 0.0000000
## 274 0.3333333 0.3333333 0.3333333 0.3333333 0.2500000
## 275 0.0000000 0.0000000 0.3333333 0.0000000 0.3333333
## 276 0.4444444 0.5000000 0.4166667 0.5714286 0.4285714
## 277 0.6000000 0.7142857 0.8333333 0.6666667 0.5454545
## 278 0.4444444 0.4545455 0.5454545 0.5833333 0.4615385
## 279 0.2857143 0.3333333 0.5000000 0.5714286 0.4285714
## 280 0.5000000 0.6000000 0.6666667 0.5000000 1.0000000
## 281 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
## 282 0.3333333 0.3333333 0.4285714 0.6000000 0.5000000
## 283 0.2000000 0.0000000 0.3333333 0.0000000 0.2500000
## 284 0.6666667 0.3333333 0.2000000 1.0000000 0.5000000
## 285 0.4000000 0.2500000 0.4000000 0.0000000 0.5000000
## 286 0.0000000 0.5000000 0.1666667 0.2000000 0.0000000
## 287 0.6000000 0.7500000 0.6666667 0.6000000 0.6666667
## 288 0.3333333 0.5000000 0.5000000 0.3333333 0.5000000
## 289 1.0000000 0.6666667 0.6000000 0.3333333 0.6666667
## 290 1.0000000 0.5000000 0.2500000 0.2000000 0.2000000
## 291 0.5000000 0.0000000 0.2500000 0.0000000 0.5000000
## 292 0.6666667 0.6666667 0.0000000 0.0000000 0.0000000
## 293 0.6666667 0.4000000 1.0000000 1.0000000 0.6000000
## 294 0.5000000 0.0000000 0.3333333 0.5000000 0.5000000

```



```

## 295 0.3333333 0.5000000 0.5000000 0.2500000 0.2500000
## 296 0.0000000 0.6666667 0.6666667 0.2500000 0.6666667
## 297 0.6000000 0.3333333 0.2000000 0.4000000 0.2500000
## 298 0.6666667 0.7692308 0.6363636 0.6000000 0.7272727
## 299 0.3333333 0.5000000 0.5000000 1.0000000 0.5000000
## 300 0.6666667 0.2500000 0.0000000 0.5000000 0.3333333
##
## $specificity
##           1           2           3           4           5
## 1  0.8888889 0.8421053 0.7857143 0.9333333 0.9230769
## 2  1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 3  0.9230769 1.0000000 1.0000000 1.0000000 1.0000000
## 4  0.9090909 0.9090909 0.9000000 0.7500000 1.0000000
## 5  1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 6  0.8181818 0.7777778 0.9000000 0.8888889 0.8750000
## 7  0.9090909 0.8571429 0.8461538 0.9090909 0.9000000
## 8  1.0000000 1.0000000 1.0000000 0.8750000 1.0000000
## 9  0.5000000 0.6153846 0.8750000 0.6250000 0.5625000
## 10 0.9000000 1.0000000 0.9090909 0.9090909 0.9000000
## 11 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 12 0.7500000 0.7500000 0.6000000 0.7142857 0.7777778
## 13 0.7777778 0.9090909 0.7500000 0.7777778 0.7500000
## 14 0.8571429 0.8888889 1.0000000 0.8333333 0.7500000
## 15 0.7000000 0.5714286 0.7142857 0.7777778 0.5555556
## 16 0.7777778 0.6666667 1.0000000 1.0000000 0.5454545
## 17 0.8000000 0.8333333 0.8181818 1.0000000 0.7142857
## 18 0.9000000 0.7777778 0.9090909 1.0000000 1.0000000
## 19 0.7142857 0.5555556 0.7142857 0.3846154 0.5555556
## 20 0.8750000 1.0000000 0.7000000 0.8750000 1.0000000
## 21 0.8333333 0.6666667 0.7500000 0.8750000 0.7500000
## 22 0.8571429 0.6250000 0.7142857 0.8750000 1.0000000
## 23 0.9090909 1.0000000 1.0000000 0.8000000 0.8888889
## 24 0.7000000 0.6153846 0.6153846 0.6363636 0.6923077
## 25 0.7857143 0.8666667 0.7894737 0.8571429 1.0000000
## 26 0.9166667 0.7692308 0.8181818 0.9230769 0.9230769
## 27 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 28 0.8181818 0.8750000 0.7272727 0.9090909 0.7500000
## 29 0.7692308 0.6923077 0.7142857 0.7272727 0.6666667
## 30 0.9000000 0.8333333 0.9000000 0.8000000 1.0000000
## 31 0.8750000 0.8571429 0.8571429 0.8000000 0.8571429
## 32 0.7000000 0.8333333 0.5384615 0.7777778 0.8571429
## 33 0.8461538 0.7692308 0.8333333 0.7692308 0.8181818
## 34 1.0000000 0.8571429 0.8000000 1.0000000 0.8333333
## 35 0.6666667 0.6363636 1.0000000 0.6666667 0.8181818
## 36 0.8888889 0.7777778 0.8181818 0.9000000 0.8750000
## 37 0.6250000 0.5000000 0.6666667 0.7142857 0.6666667
## 38 0.7777778 0.7692308 0.8571429 0.8000000 0.8000000
## 39 0.5384615 0.7272727 0.5384615 0.6363636 0.7500000
## 40 0.8888889 1.0000000 0.7000000 0.8888889 1.0000000
## 41 0.7500000 0.9000000 0.6153846 0.8000000 0.5384615
## 42 0.6250000 0.5384615 0.5714286 0.5714286 0.5833333
## 43 0.9000000 0.7272727 0.5454545 0.5833333 0.7692308
## 44 0.5333333 0.7272727 0.5833333 0.5333333 0.6153846
## 45 0.7500000 0.6666667 0.6666667 0.6428571 0.8000000
## 46 0.7500000 0.6923077 0.8181818 0.8000000 0.8181818
## 47 0.8333333 0.7500000 0.7857143 0.9166667 0.7142857
## 48 0.7142857 0.7500000 0.9000000 0.6666667 0.6923077
## 49 0.9230769 0.8000000 0.8181818 0.7272727 0.7692308

```

```

## 50 0.7000000 0.8000000 0.5454545 0.7000000 0.7000000
## 51 0.6428571 0.5000000 0.7272727 0.5384615 0.6923077
## 52 0.7692308 0.6666667 0.7857143 0.8666667 0.9090909
## 53 0.7777778 0.7000000 0.6428571 0.7777778 0.6153846
## 54 0.7000000 0.7500000 0.5555556 0.5000000 0.5000000
## 55 1.0000000 0.9166667 0.8000000 0.7692308 0.9166667
## 56 0.7777778 0.9000000 0.8181818 0.8571429 1.0000000
## 57 0.6363636 0.6666667 0.7500000 0.7500000 0.7500000
## 58 0.8888889 0.8888889 0.7272727 0.6363636 0.7272727
## 59 0.6363636 0.6000000 0.6923077 0.6666667 0.7777778
## 60 0.7142857 0.6923077 0.8666667 0.6363636 0.7857143
## 61 0.6923077 0.6153846 0.6428571 0.7000000 0.8333333
## 62 0.7692308 0.7692308 0.7500000 0.5714286 0.7857143
## 63 0.6666667 0.6875000 0.6428571 0.6875000 0.8333333
## 64 0.7692308 0.7272727 0.8181818 0.7500000 0.8125000
## 65 0.6000000 0.5294118 0.5555556 0.6428571 0.7142857
## 66 0.5294118 0.4375000 0.5000000 0.4375000 0.6923077
## 67 0.5333333 0.7000000 0.2727273 0.5000000 0.5833333
## 68 0.6666667 0.7500000 0.6666667 0.7272727 0.5833333
## 69 0.6000000 0.6000000 0.6000000 0.6923077 0.6923077
## 70 0.5454545 0.6153846 0.5384615 0.5454545 0.6153846
## 71 0.8000000 0.8000000 0.7500000 0.9000000 0.8571429
## 72 0.7142857 0.6363636 0.6666667 0.6000000 0.7500000
## 73 0.6153846 0.6363636 0.8750000 0.7000000 0.4615385
## 74 0.6363636 0.5384615 0.7272727 0.5833333 0.8000000
## 75 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 76 0.4615385 0.5555556 0.7500000 0.4285714 0.3846154
## 77 0.7777778 0.6666667 0.5833333 0.6666667 0.6250000
## 78 0.5294118 0.5384615 0.5000000 0.5384615 0.5833333
## 79 0.8333333 0.9285714 0.9285714 1.0000000 0.8823529
## 80 0.7692308 0.6666667 0.5833333 0.7272727 0.6153846
## 81 0.5384615 0.5714286 0.6153846 0.5000000 0.7000000
## 82 0.6428571 0.6666667 0.5294118 0.7142857 0.6250000
## 83 0.5000000 0.4285714 0.5384615 0.5333333 0.6000000
## 84 0.8823529 0.8823529 0.8888889 1.0000000 0.9411765
## 85 1.0000000 0.7000000 0.9285714 0.8571429 0.9333333
## 86 0.6000000 0.6153846 0.5555556 0.6000000 0.5000000
## 87 0.5714286 0.5714286 0.5000000 0.5000000 0.6000000
## 88 0.5833333 0.6923077 0.6666667 0.6666667 0.5625000
## 89 0.6666667 0.6153846 0.7142857 0.7692308 0.7142857
## 90 0.6000000 0.6923077 0.5714286 0.6000000 0.5555556
## 91 0.5714286 0.6666667 0.5625000 0.5625000 0.5333333
## 92 0.6153846 0.6363636 0.7272727 0.5000000 0.7272727
## 93 0.5000000 0.5000000 0.7500000 0.6000000 0.6666667
## 94 0.8888889 0.8000000 0.8461538 0.9090909 0.8888889
## 95 0.6000000 0.4615385 0.5454545 0.5454545 0.6666667
## 96 0.5714286 0.6153846 0.5714286 0.6428571 0.6923077
## 97 0.6363636 0.8333333 0.7500000 0.8461538 0.7333333
## 98 0.5833333 0.5333333 0.6923077 0.5000000 0.8181818
## 99 0.5000000 0.5000000 0.4000000 0.4375000 0.4705882
## 100 0.6000000 0.6666667 0.6363636 0.6666667 0.5882353
## 101 0.7500000 0.7000000 0.8000000 0.7500000 0.6666667
## 102 0.7058824 0.7142857 0.7333333 0.6666667 0.7333333
## 103 0.6470588 0.7500000 0.7272727 0.6666667 0.8461538
## 104 0.3846154 0.6666667 0.5454545 0.4285714 0.5555556
## 105 0.6470588 0.6875000 0.6875000 0.6875000 0.6875000
## 106 0.7333333 0.7142857 0.7058824 0.7857143 0.6470588
## 107 0.7222222 0.8125000 0.8000000 0.7647059 0.7692308

```

```

## 108 0.6428571 0.6428571 0.5333333 0.7500000 0.5714286
## 109 0.5454545 0.5714286 0.5000000 0.5000000 0.5833333
## 110 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 111 0.6923077 0.7692308 0.6428571 0.8333333 0.7333333
## 112 0.6153846 0.7692308 0.6153846 0.6666667 0.5000000
## 113 0.6250000 0.7857143 0.6000000 0.6000000 0.7692308
## 114 0.9230769 0.8461538 0.7272727 0.8461538 0.8571429
## 115 0.6250000 0.5833333 0.6923077 0.6363636 0.6000000
## 116 1.0000000 1.0000000 0.9375000 0.9411765 1.0000000
## 117 0.4705882 0.4285714 0.5000000 0.4705882 0.5000000
## 118 0.5454545 0.2857143 0.4615385 0.6000000 0.4666667
## 119 0.9333333 0.9375000 1.0000000 0.8750000 0.8571429
## 120 0.8235294 0.9090909 0.7857143 0.8000000 0.7500000
## 121 0.5833333 0.6428571 0.7058824 0.6875000 0.7857143
## 122 0.7500000 0.5384615 0.5714286 0.5333333 0.4285714
## 123 0.5000000 0.5833333 0.6111111 0.5882353 0.5000000
## 124 0.7777778 0.7058824 0.7368421 0.7647059 0.6842105
## 125 0.9375000 0.8666667 0.9333333 0.8750000 0.9333333
## 126 0.8181818 0.6666667 0.6250000 0.7142857 0.6875000
## 127 0.5714286 0.5333333 0.6000000 0.5294118 0.5294118
## 128 0.5714286 0.5000000 0.5294118 0.6666667 0.4615385
## 129 0.6250000 0.5882353 0.6666667 0.6153846 0.5000000
## 130 0.6153846 0.5714286 0.5833333 0.6666667 0.6153846
## 131 0.5625000 0.6666667 0.5384615 0.5714286 0.5714286
## 132 0.5000000 0.5333333 0.6923077 0.5000000 0.5625000
## 133 0.8666667 0.7142857 0.8235294 0.8125000 0.8000000
## 134 0.9000000 0.8333333 0.6923077 0.8181818 0.9230769
## 135 0.4000000 0.5384615 0.4666667 0.4666667 0.5333333
## 136 0.6875000 0.6250000 0.6666667 0.7142857 0.7272727
## 137 0.6153846 0.5000000 0.5294118 0.6000000 0.6000000
## 138 0.6666667 0.6875000 0.6153846 0.6923077 0.8181818
## 139 0.7647059 0.7692308 0.7647059 0.7692308 0.7500000
## 140 0.8461538 0.8823529 0.8125000 0.8235294 0.8333333
## 141 0.7142857 0.7058824 0.7058824 0.6666667 0.6111111
## 142 0.6875000 0.6250000 0.7058824 0.6875000 0.7058824
## 143 0.8666667 0.7857143 0.7857143 0.8181818 0.7500000
## 144 0.5882353 0.5625000 0.5882353 0.5555556 0.5882353
## 145 0.9230769 0.9166667 0.8000000 0.7857143 1.0000000
## 146 0.8333333 0.7647059 0.7272727 0.8235294 0.8235294
## 147 0.7894737 0.8571429 0.8823529 0.8666667 0.8666667
## 148 0.6111111 0.6428571 0.6666667 0.6666667 0.7142857
## 149 0.5384615 0.5000000 0.5833333 0.5625000 0.5714286
## 150 1.0000000 0.8823529 0.9375000 0.9333333 0.9166667
## 151 0.8461538 0.8000000 0.7500000 0.7333333 0.7333333
## 152 0.8571429 0.8666667 0.8666667 0.8666667 0.8666667
## 153 0.6470588 0.5833333 0.6875000 0.7142857 0.7142857
## 154 0.8235294 0.8750000 0.8823529 0.8666667 0.9285714
## 155 0.8333333 0.6875000 0.7500000 0.8666667 0.7857143
## 156 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 157 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 158 0.5555556 0.5714286 0.6666667 0.6111111 0.5625000
## 159 0.5333333 0.5294118 0.7500000 0.6153846 0.5000000
## 160 0.8947368 0.8750000 0.8235294 0.8333333 0.8750000
## 161 0.8750000 0.8823529 0.8666667 1.0000000 0.9333333
## 162 0.8750000 0.7647059 0.8125000 0.7777778 0.7894737
## 163 0.8125000 0.8000000 0.8235294 0.8235294 0.7777778
## 164 0.8125000 0.8571429 0.8125000 0.8000000 1.0000000
## 165 0.8333333 0.8571429 0.8235294 0.8235294 0.7894737

```

```

## 166 0.9411765 0.8750000 0.9473684 0.9444444 0.8666667
## 167 0.6250000 0.6428571 0.8125000 0.5625000 0.7272727
## 168 0.9230769 0.9285714 0.8750000 1.0000000 1.0000000
## 169 0.9444444 0.9333333 1.0000000 1.0000000 1.0000000
## 170 0.6666667 0.6666667 0.6666667 0.6875000 0.7500000
## 171 0.7647059 0.8666667 0.9333333 0.8125000 0.7647059
## 172 0.8000000 0.7692308 0.7692308 0.9000000 0.8333333
## 173 0.6153846 0.5333333 0.4615385 0.6428571 0.5333333
## 174 0.9285714 0.8571429 0.8823529 0.9444444 0.8571429
## 175 0.6666667 0.6875000 0.7500000 0.6000000 0.6153846
## 176 0.8571429 0.7857143 0.9166667 0.6923077 0.8000000
## 177 0.8750000 0.8823529 0.9375000 1.0000000 0.9333333
## 178 0.6428571 0.5333333 0.5000000 0.5294118 0.5263158
## 179 0.6875000 0.5882353 0.7333333 0.6250000 0.6470588
## 180 0.9166667 0.9285714 0.9166667 0.9230769 0.8333333
## 181 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 182 0.6666667 0.6875000 0.7058824 0.8000000 0.6666667
## 183 0.7222222 0.7777778 0.6875000 0.7894737 0.8333333
## 184 0.8000000 0.8000000 0.8235294 0.8235294 0.8823529
## 185 0.8571429 0.8823529 0.8235294 0.8000000 0.8750000
## 186 0.9375000 1.0000000 1.0000000 1.0000000 1.0000000
## 187 0.8235294 0.7647059 0.7333333 0.8666667 0.7500000
## 188 0.8461538 0.8750000 0.8666667 0.8823529 0.8750000
## 189 0.7777778 0.7500000 0.7368421 0.7222222 0.7647059
## 190 0.7272727 0.8333333 0.6428571 0.6153846 0.6428571
## 191 0.7500000 0.6875000 0.7647059 0.8000000 0.7368421
## 192 0.8333333 0.9333333 0.8000000 0.7857143 0.8571429
## 193 1.0000000 0.9333333 1.0000000 0.9411765 0.9473684
## 194 0.7000000 0.7368421 0.7647059 0.7777778 0.7777778
## 195 0.7500000 0.8000000 0.6875000 0.6875000 0.8125000
## 196 0.9285714 0.9444444 1.0000000 0.9375000 0.9444444
## 197 0.6875000 0.6875000 0.6666667 0.6875000 0.8000000
## 198 0.8750000 0.8823529 0.8750000 0.9411765 0.9444444
## 199 0.8750000 0.9375000 0.9375000 0.9444444 0.9473684
## 200 0.9090909 0.9090909 1.0000000 0.8666667 0.9375000
## 201 1.0000000 0.8947368 0.8888889 0.9411765 0.9000000
## 202 0.7333333 0.8000000 0.6875000 0.6250000 0.6666667
## 203 0.7142857 0.7500000 0.7692308 0.7857143 0.7857143
## 204 0.9375000 0.9375000 0.8823529 0.8750000 0.9333333
## 205 0.8235294 0.9444444 0.8333333 0.9333333 0.8333333
## 206 0.9333333 1.0000000 1.0000000 0.9411765 1.0000000
## 207 0.8000000 0.8000000 0.8235294 0.7368421 0.7368421
## 208 0.9285714 0.8235294 0.7500000 0.7777778 0.8823529
## 209 0.7368421 0.7368421 0.8125000 0.6842105 0.7142857
## 210 0.9375000 0.9285714 0.9285714 1.0000000 1.0000000
## 211 0.9375000 1.0000000 0.9444444 0.9411765 0.9375000
## 212 0.8823529 0.9333333 0.8235294 0.7894737 0.7647059
## 213 0.8750000 0.7894737 0.7500000 0.7857143 0.7647059
## 214 0.8571429 0.9333333 1.0000000 0.8666667 1.0000000
## 215 0.7500000 0.9285714 0.8125000 0.7333333 0.7368421
## 216 0.7647059 0.8666667 0.8235294 0.7894737 0.8333333
## 217 0.7500000 0.8461538 0.7647059 0.7142857 0.8125000
## 218 0.8666667 0.8235294 0.9333333 0.8235294 0.8000000
## 219 0.7777778 0.7647059 0.7894737 0.8000000 0.7058824
## 220 0.8125000 0.7777778 0.8571429 0.8000000 0.8000000
## 221 0.8333333 0.8333333 0.8750000 0.9411765 1.0000000
## 222 0.9411765 1.0000000 1.0000000 0.9375000 1.0000000
## 223 1.0000000 0.9444444 0.9411765 0.9473684 0.9444444

```

```

## 224 0.7777778 0.8125000 0.7894737 0.8000000 0.8235294
## 225 1.0000000 0.8333333 0.9411765 0.8750000 0.8750000
## 226 0.8125000 0.8571429 0.7647059 0.7647059 0.8125000
## 227 0.7777778 0.7222222 0.7333333 0.7647059 0.8125000
## 228 0.9411765 0.9375000 1.0000000 0.9411765 0.9285714
## 229 1.0000000 1.0000000 0.9411765 0.9444444 1.0000000
## 230 0.8888889 0.8333333 0.9375000 0.8666667 0.7500000
## 231 0.8125000 0.7500000 0.7777778 0.7777778 0.7368421
## 232 0.8750000 0.7777778 0.7647059 0.9285714 0.8750000
## 233 0.8750000 0.7777778 0.8823529 0.8235294 0.7500000
## 234 0.8888889 0.8823529 0.8421053 0.8888889 0.8421053
## 235 1.0000000 1.0000000 1.0000000 0.9411765 1.0000000
## 236 0.8750000 0.9375000 1.0000000 0.9375000 0.8666667
## 237 0.9411765 0.8750000 0.9375000 0.9411765 0.9333333
## 238 0.9375000 0.9333333 0.9230769 0.9375000 0.9375000
## 239 1.0000000 0.8333333 0.8500000 0.8750000 0.8823529
## 240 0.8947368 1.0000000 0.9411765 0.9333333 0.9333333
## 241 0.9375000 0.9375000 1.0000000 0.9375000 0.9333333
## 242 0.9411765 0.9333333 0.9411765 1.0000000 1.0000000
## 243 0.8823529 0.8421053 0.8666667 0.8421053 0.8421053
## 244 0.8666667 0.8823529 1.0000000 0.8888889 0.8500000
## 245 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 246 0.9444444 0.9473684 1.0000000 0.9444444 0.9375000
## 247 1.0000000 1.0000000 1.0000000 1.0000000 0.9444444
## 248 0.9444444 0.8235294 0.8235294 1.0000000 0.9285714
## 249 0.8750000 0.8333333 0.8888889 0.9411765 0.8333333
## 250 0.9444444 1.0000000 1.0000000 0.9411765 0.8888889
## 251 0.8333333 1.0000000 0.8947368 0.8888889 0.8888889
## 252 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 253 0.9473684 1.0000000 0.9444444 0.9411765 0.9411765
## 254 1.0000000 1.0000000 0.9411765 1.0000000 1.0000000
## 255 1.0000000 0.8823529 1.0000000 1.0000000 0.8888889
## 256 0.9444444 0.9411765 1.0000000 0.8947368 1.0000000
## 257 0.8235294 0.8125000 0.8125000 0.8421053 0.8235294
## 258 0.9375000 1.0000000 0.9411765 0.8888889 0.9375000
## 259 1.0000000 1.0000000 1.0000000 1.0000000 0.8947368
## 260 0.9444444 0.8947368 1.0000000 0.9411765 0.9411765
## 261 0.9411765 0.8666667 0.8823529 0.8823529 0.8750000
## 262 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 263 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 264 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 265 1.0000000 0.9230769 0.9333333 0.9375000 0.9411765
## 266 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 267 1.0000000 1.0000000 0.9411765 0.9411765 0.9375000
## 268 1.0000000 0.9444444 1.0000000 1.0000000 0.9444444
## 269 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 270 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 271 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 272 0.9375000 0.9444444 0.9411765 1.0000000 1.0000000
## 273 1.0000000 0.8823529 0.8666667 0.9375000 0.8888889
## 274 1.0000000 1.0000000 1.0000000 1.0000000 1.0000000
## 275 0.8823529 0.8947368 0.9411765 0.8823529 0.9411765
## 276 0.8181818 0.7857143 0.8750000 0.8461538 0.7692308
## 277 0.6666667 0.7692308 0.7857143 0.8181818 0.7777778
## 278 0.7272727 0.7777778 0.8888889 1.0000000 0.8571429
## 279 0.6153846 0.6428571 0.7142857 0.7692308 0.6923077
## 280 0.4375000 0.4666667 0.5000000 0.4444444 0.5625000
## 281 0.9375000 0.9411765 1.0000000 0.9375000 0.9285714

```

```

## 282 0.6428571 0.6470588 0.6923077 0.7333333 0.6666667
## 283 0.9333333 0.8571429 1.0000000 0.8823529 0.9375000
## 284 0.7647059 0.7058824 0.6666667 0.7368421 0.7500000
## 285 0.9333333 0.9166667 0.9333333 0.8235294 0.9375000
## 286 0.8235294 0.9375000 0.8571429 0.8666667 0.8333333
## 287 0.8666667 0.8750000 0.8235294 0.8666667 0.9285714
## 288 0.8823529 0.8888889 0.9375000 0.8823529 0.9375000
## 289 0.8421053 0.8823529 0.9333333 0.8235294 1.0000000
## 290 1.0000000 1.0000000 0.9375000 0.9333333 0.9333333
## 291 0.9375000 0.8333333 0.8750000 0.8421053 0.8888889
## 292 0.9411765 0.9411765 0.8421053 0.8333333 0.8421053
## 293 0.8823529 0.8666667 0.8421053 0.8421053 0.9333333
## 294 0.8750000 0.7894737 0.8235294 0.9285714 0.8333333
## 295 0.8235294 0.8750000 0.8333333 0.8125000 0.8125000
## 296 0.8125000 0.9411765 0.9411765 0.8750000 0.9411765
## 297 1.0000000 0.9285714 0.8666667 0.9333333 0.8750000
## 298 0.7500000 1.0000000 0.6666667 0.6000000 0.7777778
## 299 0.9411765 1.0000000 1.0000000 0.9473684 0.9444444
## 300 1.0000000 0.9375000 0.8947368 0.9444444 0.9411765

```

```
##
```

```
## $kappa
```

```

##          1          2          3          4          5
## 1  0.31818182 -0.08108108 -0.25000000  0.38461538  0.24050633
## 2  0.40000000  0.40000000  0.28571429  0.33962264  0.28571429
## 3  0.52941176  0.50000000  0.57894737  0.36363636  0.36363636
## 4  0.36842105  0.36842105  0.30000000  0.00000000  0.57894737
## 5  0.13793103  0.20000000  0.23913043  0.13793103  0.13793103
## 6  0.70000000  0.50000000  0.80000000  0.70000000  0.60000000
## 7  0.36842105  0.37500000  0.29411765  0.36842105  0.30000000
## 8  0.57894737  0.36363636  0.42857143  0.18181818  0.36363636
## 9  0.00000000  0.30000000  0.60000000  0.40000000  0.20000000
## 10 0.30000000  0.42857143  0.36842105  0.36842105  0.30000000
## 11 0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
## 12 0.58333333  0.58333333  0.40000000  0.46808511  0.69387755
## 13 0.50000000  0.90000000  0.60000000  0.50000000  0.60000000
## 14 0.26605505  0.41747573  0.79381443  0.46808511  0.25531915
## 15 0.50000000  0.17525773  0.38144330  0.59595960  0.19191919
## 16 0.50000000  0.30000000  0.70000000  0.50000000  0.10000000
## 17 0.20000000  0.34782609  0.27083333  0.51923077  0.01785714
## 18 0.50000000  0.22330097  0.58762887  0.79381443  0.44954128
## 19 0.76470588  0.57894737  0.76470588  0.30434783  0.57894737
## 20 0.33962264  0.52830189  0.10000000  0.33962264  0.44954128
## 21 0.58333333  0.11764706  0.23076923  0.42307692  0.37500000
## 22 0.26605505 -0.03773585  0.08256881  0.33962264  0.52830189
## 23 0.25531915  0.40000000  0.54545455  0.00000000  0.15094340
## 24 0.40000000  0.30000000  0.30000000  0.30000000  0.50000000
## 25 -0.05263158  0.28571429 -0.08695652  0.21052632  0.28571429
## 26 0.56521739  0.20454545  0.27083333  0.65909091  0.65909091
## 27 0.00000000  0.00000000  0.00000000  0.00000000  0.00000000
## 28 0.38144330  0.33962264  0.17525773  0.58762887  0.25531915
## 29 0.46808511  0.25531915  0.34782609  0.28571429  0.22222222
## 30 0.40000000  0.34782609  0.40000000  0.20000000  0.37500000
## 31 0.60000000  0.50000000  0.50000000  0.60000000  0.50000000
## 32 0.50000000  0.47916667  0.22330097  0.59595960  0.58762887
## 33 0.56043956  0.34065934  0.46808511  0.34065934  0.38144330
## 34 0.70000000  0.26605505  0.30000000  0.52830189  0.46808511
## 35 0.30000000  0.30000000  0.70000000  0.30000000  0.70000000
## 36 0.50980392  0.31372549  0.48979592  0.60000000  0.42307692

```

| | | | | | |
|-------|-------------|-------------|-------------|-------------|-------------|
| ## 37 | 0.46808511 | 0.30000000 | 0.58762887 | 0.56043956 | 0.58762887 |
| ## 38 | 0.22330097 | 0.34065934 | 0.26605505 | 0.30000000 | 0.30000000 |
| ## 39 | 0.10000000 | 0.50000000 | 0.10000000 | 0.30000000 | 0.40000000 |
| ## 40 | 0.70000000 | 0.90000000 | 0.40000000 | 0.70000000 | 0.80000000 |
| ## 41 | 0.70588235 | 0.90000000 | 0.41747573 | 0.70000000 | 0.22330097 |
| ## 42 | 0.20000000 | 0.10000000 | 0.20000000 | 0.20000000 | 0.20000000 |
| ## 43 | 0.60000000 | 0.28571429 | -0.12244898 | -0.04166667 | 0.46808511 |
| ## 44 | 0.10000000 | 0.50000000 | 0.20000000 | 0.10000000 | 0.30000000 |
| ## 45 | 0.60000000 | 0.40000000 | 0.40000000 | 0.40000000 | 0.60000000 |
| ## 46 | 0.37500000 | 0.25531915 | 0.48979592 | 0.40000000 | 0.48979592 |
| ## 47 | 0.34782609 | 0.21052632 | 0.28571429 | 0.56521739 | 0.04761905 |
| ## 48 | 0.34782609 | 0.54545455 | 0.60000000 | 0.22222222 | 0.25531915 |
| ## 49 | 0.89361702 | 0.40000000 | 0.48979592 | 0.28571429 | 0.46808511 |
| ## 50 | 0.60000000 | 0.80000000 | 0.31372549 | 0.60000000 | 0.60000000 |
| ## 51 | 0.51923077 | 0.13461538 | 0.60396040 | 0.22330097 | 0.61165049 |
| ## 52 | 0.05882353 | -0.33333333 | 0.12500000 | 0.46666667 | 0.36842105 |
| ## 53 | 0.40594059 | 0.30000000 | 0.27083333 | 0.40594059 | 0.17525773 |
| ## 54 | 0.60000000 | 0.58333333 | 0.28571429 | 0.16666667 | 0.16666667 |
| ## 55 | 0.50000000 | 0.44444444 | 0.10000000 | 0.05882353 | 0.44444444 |
| ## 56 | -0.03773585 | 0.20000000 | 0.04255319 | 0.21052632 | 0.46808511 |
| ## 57 | 0.19191919 | 0.28571429 | 0.31372549 | 0.48979592 | 0.48979592 |
| ## 58 | 0.50980392 | 0.50980392 | 0.28571429 | 0.08163265 | 0.28571429 |
| ## 59 | 0.40594059 | 0.30000000 | 0.61165049 | 0.39393939 | 0.59595960 |
| ## 60 | 0.04761905 | -0.02272727 | 0.62500000 | -0.14583333 | 0.28571429 |
| ## 61 | 0.50000000 | 0.30000000 | 0.40000000 | 0.40000000 | 0.80000000 |
| ## 62 | 0.58762887 | 0.58762887 | 0.48979592 | 0.06250000 | 0.68750000 |
| ## 63 | 0.28571429 | 0.46808511 | 0.27083333 | 0.46808511 | 0.69387755 |
| ## 64 | 0.20454545 | 0.06250000 | 0.27083333 | 0.21052632 | 0.47368421 |
| ## 65 | 0.30000000 | 0.10000000 | 0.20000000 | 0.40000000 | 0.60000000 |
| ## 66 | 0.25233645 | -0.03773585 | 0.15094340 | -0.03773585 | 0.61165049 |
| ## 67 | 0.23809524 | 0.50000000 | -0.38613861 | 0.10000000 | 0.31372549 |
| ## 68 | 0.39393939 | 0.48979592 | 0.50980392 | 0.60396040 | 0.31372549 |
| ## 69 | 0.10000000 | 0.15789474 | 0.15789474 | 0.38144330 | 0.38144330 |
| ## 70 | 0.31372549 | 0.52830189 | 0.33962264 | 0.31372549 | 0.52830189 |
| ## 71 | 0.20000000 | 0.20000000 | 0.13043478 | 0.40000000 | 0.52380952 |
| ## 72 | 0.30000000 | 0.30000000 | 0.30000000 | 0.20000000 | 0.40000000 |
| ## 73 | 0.41747573 | 0.40594059 | 0.69387755 | 0.50000000 | 0.02912621 |
| ## 74 | 0.19191919 | -0.03092784 | 0.39393939 | 0.08163265 | 0.50000000 |
| ## 75 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 76 | 0.37500000 | 0.47916667 | 0.78260870 | 0.31034483 | 0.19642857 |
| ## 77 | 0.69387755 | 0.48979592 | 0.42307692 | 0.48979592 | 0.37500000 |
| ## 78 | 0.25233645 | 0.22330097 | 0.11764706 | 0.22330097 | 0.31372549 |
| ## 79 | -0.19047619 | 0.11764706 | 0.11764706 | 0.23913043 | -0.13636364 |
| ## 80 | 0.34065934 | 0.05882353 | -0.17021277 | 0.17525773 | -0.09890110 |
| ## 81 | 0.33962264 | 0.44444444 | 0.52830189 | 0.25925926 | 0.60000000 |
| ## 82 | 0.13043478 | 0.22222222 | -0.27906977 | 0.34782609 | 0.09090909 |
| ## 83 | 0.25925926 | 0.07407407 | 0.33962264 | 0.36363636 | 0.40000000 |
| ## 84 | -0.13636364 | -0.13636364 | -0.11111111 | 0.61538462 | 0.31818182 |
| ## 85 | 0.35483871 | -0.30000000 | 0.30555556 | 0.02777778 | 0.38461538 |
| ## 86 | 0.30000000 | 0.30000000 | 0.20000000 | 0.30000000 | 0.00000000 |
| ## 87 | 0.32692308 | 0.32692308 | 0.13461538 | 0.13461538 | 0.42857143 |
| ## 88 | 0.20000000 | 0.50000000 | 0.40000000 | 0.30000000 | 0.20000000 |
| ## 89 | 0.22222222 | 0.04255319 | 0.34782609 | 0.46808511 | 0.34782609 |
| ## 90 | 0.15789474 | 0.38144330 | 0.06250000 | 0.15789474 | 0.02173913 |
| ## 91 | 0.20000000 | 0.40000000 | 0.20000000 | 0.20000000 | 0.10000000 |
| ## 92 | 0.41747573 | 0.40594059 | 0.60396040 | 0.13461538 | 0.60396040 |
| ## 93 | 0.20000000 | 0.23076923 | 0.58333333 | 0.40000000 | 0.61538462 |
| ## 94 | 0.32692308 | 0.20000000 | 0.43181818 | 0.47916667 | 0.32692308 |

| | | | | | |
|--------|-------------|-------------|-------------|-------------|-------------|
| ## 95 | 0.40000000 | 0.15094340 | 0.31372549 | 0.31372549 | 0.48979592 |
| ## 96 | 0.20000000 | 0.30000000 | 0.20000000 | 0.40000000 | 0.50000000 |
| ## 97 | -0.03092784 | 0.46808511 | 0.25531915 | 0.56043956 | 0.29411765 |
| ## 98 | 0.08163265 | -0.05263158 | 0.38144330 | -0.14583333 | 0.59595960 |
| ## 99 | 0.15094340 | 0.15094340 | -0.14285714 | -0.03773585 | 0.06542056 |
| ## 100 | 0.00000000 | 0.22222222 | 0.08163265 | 0.16666667 | -0.04651163 |
| ## 101 | 0.25531915 | 0.10000000 | 0.52941176 | 0.39024390 | 0.04255319 |
| ## 102 | 0.41860465 | 0.34782609 | 0.44444444 | 0.22222222 | 0.44444444 |
| ## 103 | 0.18604651 | 0.37500000 | 0.28571429 | 0.16666667 | 0.68085106 |
| ## 104 | -0.03773585 | 0.48979592 | 0.31372549 | 0.07407407 | 0.28571429 |
| ## 105 | -0.01265823 | 0.14634146 | 0.14634146 | 0.14634146 | 0.14634146 |
| ## 106 | 0.29411765 | 0.20454545 | 0.24050633 | 0.43181818 | -0.01265823 |
| ## 107 | 0.11764706 | 0.47368421 | 0.37500000 | 0.30555556 | 0.20454545 |
| ## 108 | 0.40000000 | 0.40000000 | 0.10000000 | 0.60000000 | 0.20000000 |
| ## 109 | 0.20792079 | 0.32692308 | 0.13461538 | 0.10000000 | 0.31372549 |
| ## 110 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 111 | 0.25531915 | 0.46808511 | 0.13043478 | 0.58333333 | 0.44444444 |
| ## 112 | 0.30000000 | 0.70000000 | 0.30000000 | 0.40000000 | 0.00000000 |
| ## 113 | 0.09090909 | 0.56521739 | 0.00000000 | 0.00000000 | 0.46808511 |
| ## 114 | 0.24050633 | -0.01265823 | -0.29032258 | -0.01265823 | 0.02777778 |
| ## 115 | 0.09090909 | -0.04166667 | 0.25531915 | 0.08163265 | 0.00000000 |
| ## 116 | 0.12087912 | 0.27272727 | -0.08695652 | -0.08108108 | 0.10000000 |
| ## 117 | 0.06542056 | -0.05769231 | 0.15094340 | 0.06542056 | 0.15094340 |
| ## 118 | 0.41747573 | -0.16071429 | 0.26605505 | 0.50000000 | 0.30434783 |
| ## 119 | 0.38461538 | 0.48275862 | 0.41860465 | 0.13793103 | 0.02777778 |
| ## 120 | -0.17647059 | 0.13978495 | -0.25000000 | -0.23076923 | -0.27906977 |
| ## 121 | -0.30434783 | -0.19047619 | 0.02777778 | -0.05263158 | 0.28571429 |
| ## 122 | 0.48979592 | 0.22330097 | 0.32692308 | 0.23809524 | -0.05769231 |
| ## 123 | -0.17021277 | 0.08163265 | 0.23913043 | 0.13978495 | -0.19565217 |
| ## 124 | 0.41176471 | 0.02777778 | 0.21875000 | 0.30555556 | -0.09375000 |
| ## 125 | 0.23076923 | -0.16666667 | 0.16666667 | -0.15384615 | 0.16666667 |
| ## 126 | 0.48979592 | 0.22222222 | 0.09090909 | 0.34782609 | 0.31818182 |
| ## 127 | 0.32692308 | 0.23809524 | 0.42857143 | 0.25233645 | 0.25233645 |
| ## 128 | 0.32692308 | 0.15094340 | 0.25233645 | 0.50980392 | 0.02912621 |
| ## 129 | 0.40000000 | 0.30000000 | 0.50000000 | 0.30000000 | 0.00000000 |
| ## 130 | 0.30000000 | 0.20000000 | 0.20000000 | 0.50000000 | 0.30000000 |
| ## 131 | 0.20000000 | 0.40000000 | 0.10000000 | 0.20000000 | 0.20000000 |
| ## 132 | 0.00000000 | 0.10000000 | 0.50000000 | 0.00000000 | 0.20000000 |
| ## 133 | 0.46666667 | -0.12500000 | 0.38461538 | 0.28571429 | 0.20000000 |
| ## 134 | 0.30000000 | 0.22222222 | -0.17647059 | 0.15789474 | 0.52941176 |
| ## 135 | -0.14285714 | 0.22330097 | 0.04761905 | 0.04761905 | 0.23809524 |
| ## 136 | 0.31818182 | 0.09090909 | 0.22222222 | 0.34782609 | 0.28571429 |
| ## 137 | 0.17525773 | -0.14583333 | -0.07526882 | 0.15789474 | 0.15789474 |
| ## 138 | 0.05882353 | 0.14634146 | -0.09890110 | 0.12087912 | 0.38144330 |
| ## 139 | -0.20689655 | -0.09756098 | -0.20689655 | -0.09756098 | -0.25000000 |
| ## 140 | -0.01265823 | 0.21568627 | -0.20689655 | -0.17647059 | -0.13636364 |
| ## 141 | 0.34782609 | 0.41860465 | 0.41860465 | 0.22222222 | 0.04761905 |
| ## 142 | 0.31818182 | 0.09090909 | 0.41860465 | 0.31818182 | 0.41860465 |
| ## 143 | 0.28571429 | -0.05263158 | -0.05263158 | 0.04255319 | -0.25000000 |
| ## 144 | 0.30000000 | 0.20000000 | 0.30000000 | 0.20000000 | 0.30000000 |
| ## 145 | 0.52941176 | 0.44444444 | 0.10000000 | 0.12500000 | 0.50000000 |
| ## 146 | 0.22222222 | 0.07692308 | -0.05263158 | 0.38461538 | 0.38461538 |
| ## 147 | -0.08695652 | 0.21052632 | 0.48275862 | 0.28571429 | 0.28571429 |
| ## 148 | 0.04761905 | 0.13043478 | 0.22222222 | 0.22222222 | 0.34782609 |
| ## 149 | 0.10000000 | 0.00000000 | 0.20000000 | 0.20000000 | 0.20000000 |
| ## 150 | 0.41176471 | -0.13636364 | 0.23076923 | 0.16666667 | 0.04761905 |
| ## 151 | 0.43181818 | 0.37500000 | 0.13043478 | 0.12500000 | 0.12500000 |
| ## 152 | 0.21052632 | 0.28571429 | 0.28571429 | 0.28571429 | 0.28571429 |

| | | | | | |
|--------|-------------|-------------|-------------|-------------|-------------|
| ## 153 | 0.35483871 | 0.08163265 | 0.46808511 | 0.47916667 | 0.47916667 |
| ## 154 | -0.17647059 | 0.13793103 | 0.21568627 | 0.07692308 | 0.30555556 |
| ## 155 | 0.50000000 | -0.28571429 | 0.00000000 | 0.46666667 | 0.12500000 |
| ## 156 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 157 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 158 | 0.02173913 | 0.06250000 | 0.28571429 | 0.23913043 | 0.04255319 |
| ## 159 | -0.05263158 | -0.07526882 | 0.48979592 | 0.17525773 | -0.17021277 |
| ## 160 | 0.45945946 | 0.13793103 | -0.17647059 | -0.13636364 | 0.13793103 |
| ## 161 | 0.37500000 | 0.48275862 | 0.28571429 | 0.63414634 | 0.57142857 |
| ## 162 | 0.57142857 | 0.07692308 | 0.28571429 | 0.16666667 | 0.27272727 |
| ## 163 | 0.28571429 | 0.20000000 | 0.38461538 | 0.38461538 | 0.16666667 |
| ## 164 | 0.06250000 | 0.21052632 | 0.06250000 | 0.00000000 | 0.73684211 |
| ## 165 | 0.23076923 | 0.21052632 | 0.13793103 | 0.13793103 | -0.08695652 |
| ## 166 | 0.31818182 | -0.15384615 | 0.64285714 | 0.44444444 | -0.16666667 |
| ## 167 | -0.09756098 | -0.02272727 | 0.63414634 | -0.34146341 | 0.17525773 |
| ## 168 | 0.07894737 | 0.11764706 | -0.15384615 | 1.00000000 | 0.50000000 |
| ## 169 | -0.07142857 | -0.09090909 | 0.14634146 | 0.21875000 | 0.45945946 |
| ## 170 | 0.05882353 | 0.07894737 | 0.07894737 | 0.14634146 | 0.39024390 |
| ## 171 | -0.20689655 | 0.28571429 | 0.57142857 | 0.06250000 | -0.20689655 |
| ## 172 | 0.20000000 | 0.05882353 | 0.05882353 | 0.30000000 | 0.22222222 |
| ## 173 | 0.30000000 | 0.10000000 | -0.10000000 | 0.40000000 | 0.10000000 |
| ## 174 | 0.11764706 | -0.17647059 | -0.13636364 | 0.44444444 | -0.17647059 |
| ## 175 | 0.22222222 | 0.31818182 | 0.37500000 | 0.00000000 | 0.04255319 |
| ## 176 | 0.52380952 | 0.28571429 | 0.56521739 | -0.02272727 | 0.37500000 |
| ## 177 | 0.13793103 | 0.21568627 | 0.48275862 | 0.49367089 | 0.38461538 |
| ## 178 | 0.27083333 | -0.05263158 | -0.19565217 | -0.07526882 | -0.09890110 |
| ## 179 | 0.31818182 | -0.04651163 | 0.44444444 | 0.09090909 | 0.18604651 |
| ## 180 | 0.18604651 | 0.30555556 | 0.18604651 | 0.24050633 | -0.04651163 |
| ## 181 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 182 | -0.12500000 | -0.05263158 | 0.02777778 | 0.37500000 | -0.17647059 |
| ## 183 | -0.16666667 | 0.16666667 | -0.28571429 | 0.27272727 | 0.50000000 |
| ## 184 | 0.20000000 | 0.20000000 | 0.38461538 | 0.38461538 | 0.69230769 |
| ## 185 | 0.37500000 | 0.69230769 | 0.38461538 | 0.20000000 | 0.57142857 |
| ## 186 | -0.08695652 | 0.45945946 | 0.27272727 | 0.27272727 | 0.17808219 |
| ## 187 | 0.38461538 | 0.07692308 | -0.06666667 | 0.46666667 | 0.00000000 |
| ## 188 | -0.01265823 | 0.13793103 | 0.07692308 | 0.21568627 | 0.13793103 |
| ## 189 | 0.16666667 | 0.00000000 | -0.09090909 | -0.16666667 | 0.07692308 |
| ## 190 | 0.28571429 | 0.58333333 | 0.13043478 | 0.04255319 | 0.13043478 |
| ## 191 | 0.00000000 | -0.28571429 | 0.07692308 | 0.20000000 | -0.09090909 |
| ## 192 | -0.04651163 | 0.38461538 | -0.23076923 | -0.25000000 | 0.02777778 |
| ## 193 | 0.21875000 | -0.09090909 | 0.21875000 | -0.08108108 | -0.05263158 |
| ## 194 | 0.00000000 | 0.21875000 | 0.30555556 | 0.41176471 | 0.41176471 |
| ## 195 | 0.39024390 | 0.52941176 | 0.14634146 | 0.14634146 | 0.63414634 |
| ## 196 | -0.09375000 | -0.07142857 | 0.21875000 | -0.08695652 | -0.07142857 |
| ## 197 | 0.31818182 | 0.31818182 | 0.22222222 | 0.31818182 | 0.66666667 |
| ## 198 | -0.15384615 | -0.13636364 | -0.15384615 | 0.31818182 | 0.44444444 |
| ## 199 | -0.15384615 | 0.23076923 | 0.23076923 | 0.44444444 | 0.64285714 |
| ## 200 | 0.02173913 | 0.02173913 | 0.41176471 | -0.16666667 | 0.23076923 |
| ## 201 | 0.61538462 | -0.07142857 | -0.11111111 | 0.31818182 | 0.00000000 |
| ## 202 | 0.44444444 | 0.66666667 | 0.31818182 | 0.09090909 | 0.28571429 |
| ## 203 | -0.31578947 | -0.13636364 | -0.09756098 | -0.05263158 | -0.05263158 |
| ## 204 | 0.68750000 | 0.68750000 | 0.48275862 | 0.37500000 | 0.57142857 |
| ## 205 | -0.17647059 | 0.77272727 | -0.13636364 | 0.38461538 | -0.13636364 |
| ## 206 | 0.16666667 | 0.50000000 | 0.50000000 | 0.31818182 | 0.61538462 |
| ## 207 | 0.37500000 | 0.37500000 | 0.58333333 | 0.21875000 | 0.21875000 |
| ## 208 | 0.62500000 | 0.38461538 | 0.00000000 | 0.16666667 | 0.69230769 |
| ## 209 | 0.21875000 | 0.21875000 | 0.47368421 | -0.09375000 | 0.04761905 |
| ## 210 | -0.08695652 | -0.09375000 | -0.09375000 | 0.34782609 | 0.27272727 |

| | | | | | |
|--------|-------------|-------------|-------------|-------------|-------------|
| ## 211 | 0.23076923 | 0.77272727 | 0.44444444 | 0.31818182 | 0.23076923 |
| ## 212 | 0.48275862 | 0.57142857 | 0.13793103 | -0.08695652 | -0.20689655 |
| ## 213 | 0.57142857 | 0.27272727 | 0.00000000 | 0.12500000 | 0.07692308 |
| ## 214 | 0.02777778 | 0.38461538 | 0.69230769 | 0.07692308 | 0.69230769 |
| ## 215 | 0.00000000 | 0.62500000 | 0.28571429 | -0.06666667 | -0.09090909 |
| ## 216 | -0.20689655 | 0.28571429 | 0.13793103 | -0.08695652 | 0.23076923 |
| ## 217 | -0.13636364 | 0.14634146 | -0.20689655 | -0.31578947 | 0.06250000 |
| ## 218 | 0.46666667 | 0.38461538 | 0.73333333 | 0.38461538 | 0.20000000 |
| ## 219 | 0.16666667 | 0.07692308 | 0.27272727 | 0.20000000 | -0.23076923 |
| ## 220 | 0.28571429 | 0.16666667 | 0.37500000 | 0.20000000 | 0.20000000 |
| ## 221 | -0.13636364 | -0.13636364 | 0.13793103 | 0.60784314 | 0.69230769 |
| ## 222 | 0.60784314 | 0.69230769 | 0.58333333 | 0.48275862 | 0.58333333 |
| ## 223 | 0.34782609 | -0.07142857 | -0.08108108 | -0.05263158 | -0.07142857 |
| ## 224 | -0.15384615 | 0.06250000 | -0.08695652 | 0.00000000 | 0.13793103 |
| ## 225 | 1.00000000 | 0.23076923 | 0.82758621 | 0.37500000 | 0.37500000 |
| ## 226 | 0.47368421 | 0.52380952 | 0.30555556 | 0.30555556 | 0.47368421 |
| ## 227 | 0.41176471 | 0.11764706 | 0.12500000 | 0.30555556 | 0.47368421 |
| ## 228 | -0.08108108 | -0.08695652 | 0.64285714 | -0.08108108 | -0.09375000 |
| ## 229 | 0.45945946 | 0.34782609 | -0.08108108 | -0.07142857 | 0.21875000 |
| ## 230 | 0.61538462 | 0.23076923 | 0.68750000 | 0.28571429 | -0.25000000 |
| ## 231 | 0.28571429 | 0.00000000 | 0.16666667 | 0.16666667 | -0.09090909 |
| ## 232 | 0.57142857 | 0.16666667 | 0.07692308 | 0.62500000 | 0.57142857 |
| ## 233 | 0.37500000 | -0.15384615 | 0.48275862 | 0.13793103 | -0.25000000 |
| ## 234 | 0.31818182 | 0.21568627 | -0.08108108 | 0.31818182 | -0.08108108 |
| ## 235 | 0.21875000 | 0.27272727 | 0.45945946 | -0.08108108 | 0.12087912 |
| ## 236 | 0.13793103 | 0.48275862 | 0.58333333 | 0.48275862 | 0.07692308 |
| ## 237 | 0.31818182 | -0.15384615 | 0.23076923 | 0.31818182 | 0.16666667 |
| ## 238 | -0.08695652 | -0.09090909 | -0.09589041 | -0.08695652 | -0.08695652 |
| ## 239 | 0.82758621 | -0.13636364 | 0.00000000 | 0.13793103 | 0.21568627 |
| ## 240 | -0.07142857 | 0.61538462 | 0.31818182 | 0.16666667 | 0.16666667 |
| ## 241 | -0.08695652 | -0.08695652 | 0.34782609 | -0.08695652 | -0.09090909 |
| ## 242 | -0.08108108 | -0.09090909 | -0.08108108 | 0.64285714 | 0.45945946 |
| ## 243 | 0.21568627 | -0.08108108 | 0.07692308 | -0.08108108 | -0.08108108 |
| ## 244 | 0.07692308 | 0.21568627 | 1.00000000 | 0.31818182 | 0.00000000 |
| ## 245 | 0.00000000 | 0.00000000 | 0.00000000 | NaN | 0.00000000 |
| ## 246 | -0.07142857 | -0.05263158 | 0.45945946 | -0.07142857 | -0.08695652 |
| ## 247 | 0.34782609 | 1.00000000 | 0.27272727 | 0.45945946 | -0.07142857 |
| ## 248 | 0.77272727 | -0.17647059 | -0.17647059 | 0.82758621 | 0.30555556 |
| ## 249 | 0.37500000 | 0.23076923 | 0.61538462 | 0.82758621 | 0.23076923 |
| ## 250 | 0.77272727 | 0.82758621 | 0.69230769 | 0.60784314 | 0.31818182 |
| ## 251 | -0.13636364 | 0.82758621 | 0.45945946 | 0.31818182 | 0.31818182 |
| ## 252 | 0.00000000 | 0.00000000 | NaN | NaN | 0.00000000 |
| ## 253 | -0.05263158 | 0.64285714 | -0.07142857 | -0.08108108 | -0.08108108 |
| ## 254 | 0.27272727 | 0.64285714 | -0.08108108 | 1.00000000 | 0.34782609 |
| ## 255 | 0.61538462 | -0.13636364 | 1.00000000 | 0.77272727 | -0.11111111 |
| ## 256 | 0.44444444 | 0.31818182 | 0.61538462 | -0.07142857 | 0.50000000 |
| ## 257 | 0.13793103 | 0.06250000 | 0.06250000 | 0.34782609 | 0.13793103 |
| ## 258 | 0.23076923 | 0.50000000 | 0.31818182 | -0.11111111 | 0.23076923 |
| ## 259 | 0.50000000 | 0.50000000 | 0.41176471 | 0.77272727 | -0.07142857 |
| ## 260 | 0.44444444 | -0.07142857 | 0.50000000 | 0.31818182 | 0.31818182 |
| ## 261 | 0.31818182 | -0.16666667 | -0.13636364 | -0.13636364 | -0.15384615 |
| ## 262 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 263 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 264 | 0.34782609 | 1.00000000 | 0.34782609 | 0.34782609 | 0.45945946 |
| ## 265 | 0.41860465 | 0.24050633 | 0.38461538 | 0.48275862 | 0.60784314 |
| ## 266 | 0.21875000 | 0.27272727 | 1.00000000 | 1.00000000 | 0.45945946 |
| ## 267 | 0.61538462 | 1.00000000 | 0.31818182 | 0.31818182 | 0.23076923 |
| ## 268 | 0.41176471 | 0.44444444 | 0.61538462 | 0.34210526 | 0.44444444 |

| | | | | | |
|----------|-------------|-------------|-------------|-------------|-------------|
| ## 269 | 0.34782609 | 0.34782609 | 0.45945946 | 0.21875000 | 0.34782609 |
| ## 270 | 0.64285714 | 0.21875000 | 0.34782609 | 0.27272727 | 0.45945946 |
| ## 271 | 0.34782609 | 0.45945946 | 0.34782609 | 0.27272727 | 0.27272727 |
| ## 272 | -0.08695652 | -0.07142857 | -0.08108108 | 0.27272727 | 0.64285714 |
| ## 273 | 0.61538462 | -0.13636364 | -0.16666667 | 0.23076923 | -0.11111111 |
| ## 274 | 0.45945946 | 0.45945946 | 0.45945946 | 0.45945946 | 0.34782609 |
| ## 275 | -0.13636364 | -0.07142857 | 0.31818182 | -0.13636364 | 0.31818182 |
| ## 276 | 0.27083333 | 0.28571429 | 0.25925926 | 0.43181818 | 0.20454545 |
| ## 277 | 0.22222222 | 0.46808511 | 0.56521739 | 0.48979592 | 0.31372549 |
| ## 278 | 0.17525773 | 0.22330097 | 0.41747573 | 0.52830189 | 0.26605505 |
| ## 279 | -0.09890110 | -0.02272727 | 0.20454545 | 0.34065934 | 0.12087912 |
| ## 280 | -0.03773585 | 0.04761905 | 0.13461538 | -0.01851852 | 0.33962264 |
| ## 281 | -0.08695652 | -0.08108108 | 1.00000000 | -0.08695652 | -0.09375000 |
| ## 282 | -0.02272727 | -0.01265823 | 0.12087912 | 0.29411765 | 0.07894737 |
| ## 283 | 0.16666667 | -0.17647059 | 0.41176471 | -0.13636364 | 0.23076923 |
| ## 284 | 0.30555556 | 0.02777778 | -0.12500000 | 0.21875000 | 0.21052632 |
| ## 285 | 0.38461538 | 0.18604651 | 0.38461538 | -0.17647059 | 0.48275862 |
| ## 286 | -0.17647059 | 0.48275862 | 0.02777778 | 0.07692308 | -0.13636364 |
| ## 287 | 0.46666667 | 0.57142857 | 0.38461538 | 0.46666667 | 0.62500000 |
| ## 288 | 0.21568627 | 0.31818182 | 0.48275862 | 0.21568627 | 0.48275862 |
| ## 289 | 0.34782609 | 0.48275862 | 0.57142857 | 0.13793103 | 0.73684211 |
| ## 290 | 1.00000000 | 0.61538462 | 0.23076923 | 0.16666667 | 0.16666667 |
| ## 291 | 0.48275862 | -0.13636364 | 0.13793103 | -0.08108108 | 0.31818182 |
| ## 292 | 0.60784314 | 0.60784314 | -0.08108108 | -0.13636364 | -0.08108108 |
| ## 293 | 0.48275862 | 0.28571429 | 0.34782609 | 0.34782609 | 0.57142857 |
| ## 294 | 0.37500000 | -0.08695652 | 0.13793103 | 0.47368421 | 0.23076923 |
| ## 295 | 0.13793103 | 0.37500000 | 0.23076923 | 0.06250000 | 0.06250000 |
| ## 296 | -0.20689655 | 0.60784314 | 0.60784314 | 0.13793103 | 0.60784314 |
| ## 297 | 0.69230769 | 0.30555556 | 0.07692308 | 0.38461538 | 0.13793103 |
| ## 298 | 0.40000000 | 0.70000000 | 0.30000000 | 0.20000000 | 0.50000000 |
| ## 299 | 0.31818182 | 0.61538462 | 0.61538462 | 0.64285714 | 0.44444444 |
| ## 300 | 0.77272727 | 0.23076923 | -0.07142857 | 0.44444444 | 0.31818182 |
| ## | | | | | |
| ## \$TSS | | | | | |
| ## | 1 | 2 | 3 | 4 | 5 |
| ## 1 | 0.38888889 | -0.15789474 | -0.21428571 | 0.33333333 | 0.20879121 |
| ## 2 | 0.40000000 | 0.40000000 | 0.33333333 | 0.36363636 | 0.33333333 |
| ## 3 | 0.49450549 | 0.50000000 | 0.55555556 | 0.41666667 | 0.41666667 |
| ## 4 | 0.35353535 | 0.35353535 | 0.30000000 | 0.00000000 | 0.55555556 |
| ## 5 | 0.16666667 | 0.20000000 | 0.22222222 | 0.16666667 | 0.16666667 |
| ## 6 | 0.70707071 | 0.50505051 | 0.80000000 | 0.70707071 | 0.62500000 |
| ## 7 | 0.35353535 | 0.35714286 | 0.27472527 | 0.35353535 | 0.30000000 |
| ## 8 | 0.55555556 | 0.41666667 | 0.45454545 | 0.20833333 | 0.41666667 |
| ## 9 | 0.00000000 | 0.32967033 | 0.62500000 | 0.62500000 | 0.31250000 |
| ## 10 | 0.30000000 | 0.45454545 | 0.35353535 | 0.35353535 | 0.30000000 |
| ## 11 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 12 | 0.58333333 | 0.58333333 | 0.40000000 | 0.48351648 | 0.68686869 |
| ## 13 | 0.50505051 | 0.90909091 | 0.62500000 | 0.50505051 | 0.62500000 |
| ## 14 | 0.31868132 | 0.43434343 | 0.77777778 | 0.45833333 | 0.25000000 |
| ## 15 | 0.50000000 | 0.18681319 | 0.40659341 | 0.59595960 | 0.19191919 |
| ## 16 | 0.50505051 | 0.30303030 | 0.76923077 | 0.66666667 | 0.10101010 |
| ## 17 | 0.20000000 | 0.33333333 | 0.26262626 | 0.54545455 | 0.02197802 |
| ## 18 | 0.50000000 | 0.23232323 | 0.57575758 | 0.77777778 | 0.53846154 |
| ## 19 | 0.71428571 | 0.55555556 | 0.71428571 | 0.38461538 | 0.55555556 |
| ## 20 | 0.37500000 | 0.58333333 | 0.10000000 | 0.37500000 | 0.53846154 |
| ## 21 | 0.58333333 | 0.12121212 | 0.25000000 | 0.45833333 | 0.37500000 |
| ## 22 | 0.31868132 | -0.04166667 | 0.09890110 | 0.37500000 | 0.58333333 |
| ## 23 | 0.24242424 | 0.40000000 | 0.50000000 | 0.00000000 | 0.16161616 |

| | | | | | |
|-------|-------------|-------------|-------------|-------------|-------------|
| ## 24 | 0.40000000 | 0.32967033 | 0.32967033 | 0.30303030 | 0.54945055 |
| ## 25 | -0.04761905 | 0.26666667 | -0.21052632 | 0.19047619 | 0.33333333 |
| ## 26 | 0.54166667 | 0.19780220 | 0.26262626 | 0.63736264 | 0.63736264 |
| ## 27 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 28 | 0.37373737 | 0.37500000 | 0.17171717 | 0.57575758 | 0.25000000 |
| ## 29 | 0.48351648 | 0.26373626 | 0.38095238 | 0.28282828 | 0.26666667 |
| ## 30 | 0.40000000 | 0.33333333 | 0.40000000 | 0.20000000 | 0.46153846 |
| ## 31 | 0.62500000 | 0.54945055 | 0.54945055 | 0.60000000 | 0.54945055 |
| ## 32 | 0.50000000 | 0.54761905 | 0.25274725 | 0.59595960 | 0.62637363 |
| ## 33 | 0.56043956 | 0.34065934 | 0.45833333 | 0.34065934 | 0.37373737 |
| ## 34 | 0.70000000 | 0.31868132 | 0.30000000 | 0.58333333 | 0.45833333 |
| ## 35 | 0.30303030 | 0.30303030 | 0.76923077 | 0.30303030 | 0.70707071 |
| ## 36 | 0.52525253 | 0.32323232 | 0.48484848 | 0.60000000 | 0.45833333 |
| ## 37 | 0.45833333 | 0.30000000 | 0.57575758 | 0.56043956 | 0.57575758 |
| ## 38 | 0.23232323 | 0.34065934 | 0.31868132 | 0.30000000 | 0.30000000 |
| ## 39 | 0.10989011 | 0.50505051 | 0.10989011 | 0.30303030 | 0.41666667 |
| ## 40 | 0.70707071 | 0.90909091 | 0.40000000 | 0.70707071 | 0.83333333 |
| ## 41 | 0.75000000 | 0.90000000 | 0.47252747 | 0.70000000 | 0.25274725 |
| ## 42 | 0.20833333 | 0.10989011 | 0.23809524 | 0.23809524 | 0.20833333 |
| ## 43 | 0.60000000 | 0.28282828 | -0.12121212 | -0.04166667 | 0.48351648 |
| ## 44 | 0.13333333 | 0.50505051 | 0.20833333 | 0.13333333 | 0.32967033 |
| ## 45 | 0.62500000 | 0.41666667 | 0.41666667 | 0.47619048 | 0.60000000 |
| ## 46 | 0.37500000 | 0.26373626 | 0.48484848 | 0.40000000 | 0.48484848 |
| ## 47 | 0.33333333 | 0.25000000 | 0.28571429 | 0.54166667 | 0.04761905 |
| ## 48 | 0.38095238 | 0.75000000 | 0.60000000 | 0.26666667 | 0.26373626 |
| ## 49 | 0.92307692 | 0.40000000 | 0.48484848 | 0.28282828 | 0.48351648 |
| ## 50 | 0.60000000 | 0.80000000 | 0.32323232 | 0.60000000 | 0.60000000 |
| ## 51 | 0.64285714 | 0.16666667 | 0.61616162 | 0.25274725 | 0.69230769 |
| ## 52 | 0.05494505 | -0.33333333 | 0.11904762 | 0.46666667 | 0.35353535 |
| ## 53 | 0.41414141 | 0.30000000 | 0.30952381 | 0.41414141 | 0.18681319 |
| ## 54 | 0.60000000 | 0.58333333 | 0.28282828 | 0.16666667 | 0.16666667 |
| ## 55 | 0.50000000 | 0.41666667 | 0.10000000 | 0.05494505 | 0.41666667 |
| ## 56 | -0.04040404 | 0.20000000 | 0.04040404 | 0.19047619 | 0.44444444 |
| ## 57 | 0.19191919 | 0.29166667 | 0.33333333 | 0.50000000 | 0.50000000 |
| ## 58 | 0.52525253 | 0.52525253 | 0.28282828 | 0.08080808 | 0.28282828 |
| ## 59 | 0.41414141 | 0.30000000 | 0.69230769 | 0.39393939 | 0.59595960 |
| ## 60 | 0.04761905 | -0.02197802 | 0.66666667 | -0.14141414 | 0.28571429 |
| ## 61 | 0.54945055 | 0.32967033 | 0.47619048 | 0.40000000 | 0.83333333 |
| ## 62 | 0.62637363 | 0.62637363 | 0.50000000 | 0.07142857 | 0.78571429 |
| ## 63 | 0.29166667 | 0.68750000 | 0.30952381 | 0.68750000 | 0.70833333 |
| ## 64 | 0.19780220 | 0.06060606 | 0.26262626 | 0.25000000 | 0.56250000 |
| ## 65 | 0.40000000 | 0.19607843 | 0.55555556 | 0.47619048 | 0.71428571 |
| ## 66 | 0.52941176 | -0.06250000 | 0.25000000 | -0.06250000 | 0.69230769 |
| ## 67 | 0.33333333 | 0.50000000 | -0.39393939 | 0.10000000 | 0.33333333 |
| ## 68 | 0.39393939 | 0.50000000 | 0.54166667 | 0.61616162 | 0.33333333 |
| ## 69 | 0.10000000 | 0.20000000 | 0.20000000 | 0.40659341 | 0.40659341 |
| ## 70 | 0.32323232 | 0.61538462 | 0.39560440 | 0.32323232 | 0.61538462 |
| ## 71 | 0.20000000 | 0.20000000 | 0.12500000 | 0.40000000 | 0.52380952 |
| ## 72 | 0.32967033 | 0.30303030 | 0.30303030 | 0.20000000 | 0.41666667 |
| ## 73 | 0.47252747 | 0.41414141 | 0.70833333 | 0.50000000 | 0.03296703 |
| ## 74 | 0.19191919 | -0.03296703 | 0.39393939 | 0.08333333 | 0.50000000 |
| ## 75 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 76 | 0.46153846 | 0.46464646 | 0.75000000 | 0.42857143 | 0.24175824 |
| ## 77 | 0.68686869 | 0.48484848 | 0.45833333 | 0.48484848 | 0.37500000 |
| ## 78 | 0.52941176 | 0.25274725 | 0.12500000 | 0.25274725 | 0.33333333 |
| ## 79 | -0.16666667 | 0.09523810 | 0.09523810 | 0.22222222 | -0.11764706 |
| ## 80 | 0.34065934 | 0.06666667 | -0.16666667 | 0.17171717 | -0.09890110 |
| ## 81 | 0.39560440 | 0.57142857 | 0.61538462 | 0.33333333 | 0.60000000 |

| | | | | | |
|--------|-------------|-------------|-------------|-------------|-------------|
| ## 82 | 0.14285714 | 0.26666667 | -0.47058824 | 0.38095238 | 0.12500000 |
| ## 83 | 0.33333333 | 0.09523810 | 0.39560440 | 0.53333333 | 0.40000000 |
| ## 84 | -0.11764706 | -0.11764706 | -0.11111111 | 0.50000000 | 0.27450980 |
| ## 85 | 0.33333333 | -0.30000000 | 0.26190476 | 0.02380952 | 0.33333333 |
| ## 86 | 0.40000000 | 0.32967033 | 0.55555556 | 0.40000000 | 0.00000000 |
| ## 87 | 0.40476190 | 0.40476190 | 0.16666667 | 0.16666667 | 0.60000000 |
| ## 88 | 0.20833333 | 0.54945055 | 0.41666667 | 0.30303030 | 0.31250000 |
| ## 89 | 0.26666667 | 0.04395604 | 0.38095238 | 0.48351648 | 0.38095238 |
| ## 90 | 0.20000000 | 0.40659341 | 0.07142857 | 0.20000000 | 0.05555556 |
| ## 91 | 0.23809524 | 0.41666667 | 0.31250000 | 0.31250000 | 0.13333333 |
| ## 92 | 0.47252747 | 0.41414141 | 0.61616162 | 0.16666667 | 0.61616162 |
| ## 93 | 0.20000000 | 0.25000000 | 0.58333333 | 0.40000000 | 0.66666667 |
| ## 94 | 0.34343434 | 0.20000000 | 0.41758242 | 0.46464646 | 0.34343434 |
| ## 95 | 0.40000000 | 0.17582418 | 0.32323232 | 0.32323232 | 0.48484848 |
| ## 96 | 0.23809524 | 0.32967033 | 0.23809524 | 0.47619048 | 0.54945055 |
| ## 97 | -0.03030303 | 0.45833333 | 0.25000000 | 0.56043956 | 0.33333333 |
| ## 98 | 0.08333333 | -0.06666667 | 0.40659341 | -0.16666667 | 0.59595960 |
| ## 99 | 0.25000000 | 0.25000000 | -0.20000000 | -0.06250000 | 0.13725490 |
| ## 100 | 0.00000000 | 0.26666667 | 0.08080808 | 0.16666667 | -0.07843137 |
| ## 101 | 0.25000000 | 0.10000000 | 0.60000000 | 0.50000000 | 0.04166667 |
| ## 102 | 0.70588235 | 0.38095238 | 0.53333333 | 0.26666667 | 0.53333333 |
| ## 103 | 0.31372549 | 0.37500000 | 0.28282828 | 0.16666667 | 0.70329670 |
| ## 104 | -0.04395604 | 0.48484848 | 0.32323232 | 0.09523810 | 0.28282828 |
| ## 105 | -0.01960784 | 0.18750000 | 0.18750000 | 0.18750000 | 0.18750000 |
| ## 106 | 0.33333333 | 0.21428571 | 0.37254902 | 0.45238095 | -0.01960784 |
| ## 107 | 0.22222222 | 0.56250000 | 0.40000000 | 0.43137255 | 0.19780220 |
| ## 108 | 0.47619048 | 0.47619048 | 0.13333333 | 0.62500000 | 0.23809524 |
| ## 109 | 0.21212121 | 0.40476190 | 0.16666667 | 0.10000000 | 0.33333333 |
| ## 110 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 111 | 0.26373626 | 0.48351648 | 0.14285714 | 0.58333333 | 0.53333333 |
| ## 112 | 0.32967033 | 0.76923077 | 0.32967033 | 0.41666667 | 0.00000000 |
| ## 113 | 0.12500000 | 0.61904762 | 0.00000000 | 0.00000000 | 0.48351648 |
| ## 114 | 0.20879121 | -0.01098901 | -0.27272727 | -0.01098901 | 0.02380952 |
| ## 115 | 0.12500000 | -0.04166667 | 0.26373626 | 0.08080808 | 0.00000000 |
| ## 116 | 0.11111111 | 0.20000000 | -0.06250000 | -0.05882353 | 0.10000000 |
| ## 117 | 0.13725490 | -0.07142857 | 0.25000000 | 0.13725490 | 0.25000000 |
| ## 118 | 0.43434343 | -0.21428571 | 0.31868132 | 0.50000000 | 0.46666667 |
| ## 119 | 0.33333333 | 0.43750000 | 0.37500000 | 0.12500000 | 0.02380952 |
| ## 120 | -0.17647059 | 0.13131313 | -0.21428571 | -0.20000000 | -0.25000000 |
| ## 121 | -0.29166667 | -0.19047619 | 0.03921569 | -0.06250000 | 0.28571429 |
| ## 122 | 0.50000000 | 0.25274725 | 0.40476190 | 0.33333333 | -0.07142857 |
| ## 123 | -0.25000000 | 0.08333333 | 0.61111111 | 0.25490196 | -0.50000000 |
| ## 124 | 0.77777778 | 0.03921569 | 0.73684211 | 0.43137255 | -0.31578947 |
| ## 125 | 0.18750000 | -0.13333333 | 0.13333333 | -0.12500000 | 0.13333333 |
| ## 126 | 0.48484848 | 0.26666667 | 0.12500000 | 0.38095238 | 0.43750000 |
| ## 127 | 0.40476190 | 0.33333333 | 0.60000000 | 0.52941176 | 0.52941176 |
| ## 128 | 0.40476190 | 0.25000000 | 0.52941176 | 0.54166667 | 0.03296703 |
| ## 129 | 0.62500000 | 0.58823529 | 0.66666667 | 0.32967033 | 0.00000000 |
| ## 130 | 0.32967033 | 0.23809524 | 0.20833333 | 0.66666667 | 0.32967033 |
| ## 131 | 0.31250000 | 0.41666667 | 0.10989011 | 0.23809524 | 0.23809524 |
| ## 132 | 0.00000000 | 0.13333333 | 0.54945055 | 0.00000000 | 0.31250000 |
| ## 133 | 0.46666667 | -0.11904762 | 0.49019608 | 0.31250000 | 0.20000000 |
| ## 134 | 0.30000000 | 0.20833333 | -0.16483516 | 0.15151515 | 0.49450549 |
| ## 135 | -0.20000000 | 0.25274725 | 0.06666667 | 0.06666667 | 0.33333333 |
| ## 136 | 0.43750000 | 0.12500000 | 0.26666667 | 0.38095238 | 0.28282828 |
| ## 137 | 0.18681319 | -0.16666667 | -0.13725490 | 0.20000000 | 0.20000000 |
| ## 138 | 0.06666667 | 0.18750000 | -0.09890110 | 0.12087912 | 0.37373737 |
| ## 139 | -0.23529412 | -0.08791209 | -0.23529412 | -0.08791209 | -0.25000000 |

| | | | | | |
|--------|-------------|-------------|-------------|-------------|-------------|
| ## 140 | -0.01098901 | 0.21568627 | -0.18750000 | -0.17647059 | -0.16666667 |
| ## 141 | 0.38095238 | 0.70588235 | 0.70588235 | 0.26666667 | 0.11111111 |
| ## 142 | 0.43750000 | 0.12500000 | 0.70588235 | 0.43750000 | 0.70588235 |
| ## 143 | 0.26666667 | -0.04761905 | -0.04761905 | 0.04040404 | -0.25000000 |
| ## 144 | 0.58823529 | 0.31250000 | 0.58823529 | 0.55555556 | 0.58823529 |
| ## 145 | 0.49450549 | 0.41666667 | 0.10000000 | 0.11904762 | 0.50000000 |
| ## 146 | 0.20833333 | 0.09803922 | -0.05050505 | 0.49019608 | 0.49019608 |
| ## 147 | -0.21052632 | 0.19047619 | 0.54901961 | 0.26666667 | 0.26666667 |
| ## 148 | 0.11111111 | 0.14285714 | 0.26666667 | 0.26666667 | 0.38095238 |
| ## 149 | 0.10989011 | 0.00000000 | 0.20833333 | 0.31250000 | 0.23809524 |
| ## 150 | 0.33333333 | -0.11764706 | 0.18750000 | 0.13333333 | 0.04166667 |
| ## 151 | 0.41758242 | 0.40000000 | 0.12500000 | 0.13333333 | 0.13333333 |
| ## 152 | 0.19047619 | 0.26666667 | 0.26666667 | 0.26666667 | 0.26666667 |
| ## 153 | 0.64705882 | 0.08333333 | 0.68750000 | 0.54761905 | 0.54761905 |
| ## 154 | -0.17647059 | 0.12500000 | 0.21568627 | 0.06666667 | 0.26190476 |
| ## 155 | 0.83333333 | -0.31250000 | 0.00000000 | 0.46666667 | 0.11904762 |
| ## 156 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 157 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 158 | 0.05555556 | 0.07142857 | 0.29166667 | 0.61111111 | 0.06250000 |
| ## 159 | -0.06666667 | -0.13725490 | 0.50000000 | 0.18681319 | -0.25000000 |
| ## 160 | 0.89473684 | 0.12500000 | -0.17647059 | -0.16666667 | 0.12500000 |
| ## 161 | 0.37500000 | 0.54901961 | 0.26666667 | 0.57142857 | 0.53333333 |
| ## 162 | 0.62500000 | 0.09803922 | 0.31250000 | 0.27777778 | 0.78947368 |
| ## 163 | 0.31250000 | 0.20000000 | 0.49019608 | 0.49019608 | 0.27777778 |
| ## 164 | 0.06250000 | 0.19047619 | 0.06250000 | 0.00000000 | 0.66666667 |
| ## 165 | 0.33333333 | 0.19047619 | 0.15686275 | 0.15686275 | -0.21052632 |
| ## 166 | 0.27450980 | -0.12500000 | 0.94736842 | 0.44444444 | -0.13333333 |
| ## 167 | -0.12500000 | -0.02380952 | 0.81250000 | -0.43750000 | 0.17171717 |
| ## 168 | 0.06593407 | 0.09523810 | -0.12500000 | 1.00000000 | 0.40000000 |
| ## 169 | -0.05555556 | -0.06666667 | 0.12500000 | 0.16666667 | 0.33333333 |
| ## 170 | 0.06666667 | 0.16666667 | 0.16666667 | 0.18750000 | 0.50000000 |
| ## 171 | -0.23529412 | 0.26666667 | 0.53333333 | 0.06250000 | -0.23529412 |
| ## 172 | 0.20000000 | 0.05494505 | 0.05494505 | 0.30000000 | 0.20833333 |
| ## 173 | 0.32967033 | 0.13333333 | -0.10989011 | 0.47619048 | 0.13333333 |
| ## 174 | 0.09523810 | -0.14285714 | -0.11764706 | 0.44444444 | -0.14285714 |
| ## 175 | 0.26666667 | 0.43750000 | 0.37500000 | 0.00000000 | 0.04395604 |
| ## 176 | 0.52380952 | 0.28571429 | 0.54166667 | -0.02197802 | 0.40000000 |
| ## 177 | 0.12500000 | 0.21568627 | 0.43750000 | 0.42857143 | 0.33333333 |
| ## 178 | 0.30952381 | -0.06666667 | -0.50000000 | -0.13725490 | -0.47368421 |
| ## 179 | 0.43750000 | -0.07843137 | 0.53333333 | 0.12500000 | 0.31372549 |
| ## 180 | 0.16666667 | 0.26190476 | 0.16666667 | 0.20879121 | -0.04166667 |
| ## 181 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 182 | -0.13333333 | -0.06250000 | 0.03921569 | 0.40000000 | -0.33333333 |
| ## 183 | -0.27777778 | 0.27777778 | -0.31250000 | 0.78947368 | 0.83333333 |
| ## 184 | 0.20000000 | 0.20000000 | 0.49019608 | 0.49019608 | 0.88235294 |
| ## 185 | 0.35714286 | 0.88235294 | 0.49019608 | 0.20000000 | 0.62500000 |
| ## 186 | -0.06250000 | 0.33333333 | 0.20000000 | 0.20000000 | 0.14285714 |
| ## 187 | 0.49019608 | 0.09803922 | -0.06666667 | 0.46666667 | 0.00000000 |
| ## 188 | -0.01098901 | 0.12500000 | 0.06666667 | 0.21568627 | 0.12500000 |
| ## 189 | 0.27777778 | NaN | -0.26315789 | -0.27777778 | 0.09803922 |
| ## 190 | 0.28282828 | 0.58333333 | 0.14285714 | 0.04395604 | 0.14285714 |
| ## 191 | 0.00000000 | -0.31250000 | 0.09803922 | 0.20000000 | -0.26315789 |
| ## 192 | -0.04166667 | 0.33333333 | -0.20000000 | -0.21428571 | 0.02380952 |
| ## 193 | 0.16666667 | -0.06666667 | 0.16666667 | -0.05882353 | -0.05263158 |
| ## 194 | NaN | 0.73684211 | 0.43137255 | 0.77777778 | 0.77777778 |
| ## 195 | 0.50000000 | 0.60000000 | 0.18750000 | 0.18750000 | 0.81250000 |
| ## 196 | -0.07142857 | -0.05555556 | 0.16666667 | -0.06250000 | -0.05555556 |
| ## 197 | 0.43750000 | 0.43750000 | 0.26666667 | 0.43750000 | 0.80000000 |

| | | | | | |
|--------|-------------|-------------|-------------|-------------|-------------|
| ## 198 | -0.12500000 | -0.11764706 | -0.12500000 | 0.27450980 | 0.44444444 |
| ## 199 | -0.12500000 | 0.18750000 | 0.18750000 | 0.44444444 | 0.94736842 |
| ## 200 | 0.02020202 | 0.02020202 | 0.33333333 | -0.13333333 | 0.18750000 |
| ## 201 | 0.50000000 | -0.10526316 | -0.11111111 | 0.27450980 | NaN |
| ## 202 | 0.53333333 | 0.80000000 | 0.43750000 | 0.12500000 | 0.66666667 |
| ## 203 | -0.28571429 | -0.12500000 | -0.08791209 | -0.04761905 | -0.04761905 |
| ## 204 | 0.68750000 | 0.68750000 | 0.54901961 | 0.37500000 | 0.53333333 |
| ## 205 | -0.17647059 | 0.94444444 | -0.16666667 | 0.33333333 | -0.16666667 |
| ## 206 | 0.13333333 | 0.40000000 | 0.40000000 | 0.27450980 | 0.50000000 |
| ## 207 | 0.40000000 | 0.40000000 | 0.82352941 | 0.73684211 | 0.73684211 |
| ## 208 | 0.59523810 | 0.49019608 | 0.00000000 | 0.27777778 | 0.88235294 |
| ## 209 | 0.73684211 | 0.73684211 | 0.56250000 | -0.31578947 | 0.04761905 |
| ## 210 | -0.06250000 | -0.07142857 | -0.07142857 | 0.25000000 | 0.20000000 |
| ## 211 | 0.18750000 | 0.66666667 | 0.44444444 | 0.27450980 | 0.18750000 |
| ## 212 | 0.54901961 | 0.53333333 | 0.15686275 | -0.21052632 | -0.23529412 |
| ## 213 | 0.62500000 | 0.78947368 | 0.00000000 | 0.11904762 | 0.09803922 |
| ## 214 | 0.02380952 | 0.33333333 | 0.60000000 | 0.06666667 | 0.60000000 |
| ## 215 | 0.00000000 | 0.59523810 | 0.31250000 | -0.06666667 | -0.26315789 |
| ## 216 | -0.23529412 | 0.26666667 | 0.15686275 | -0.21052632 | 0.33333333 |
| ## 217 | -0.12500000 | 0.13186813 | -0.23529412 | -0.28571429 | 0.06250000 |
| ## 218 | 0.46666667 | 0.49019608 | 0.73333333 | 0.49019608 | 0.20000000 |
| ## 219 | 0.27777778 | 0.09803922 | 0.78947368 | 0.20000000 | -0.29411765 |
| ## 220 | 0.31250000 | 0.27777778 | 0.35714286 | 0.20000000 | 0.20000000 |
| ## 221 | -0.16666667 | -0.16666667 | 0.12500000 | 0.60784314 | 0.60000000 |
| ## 222 | 0.60784314 | 0.60000000 | 0.50000000 | 0.43750000 | 0.50000000 |
| ## 223 | 0.25000000 | -0.05555556 | -0.05882353 | -0.05263158 | -0.05555556 |
| ## 224 | -0.22222222 | 0.06250000 | -0.21052632 | 0.00000000 | 0.15686275 |
| ## 225 | 1.00000000 | 0.33333333 | 0.94117647 | 0.37500000 | 0.37500000 |
| ## 226 | 0.56250000 | 0.52380952 | 0.43137255 | 0.43137255 | 0.56250000 |
| ## 227 | 0.77777778 | 0.22222222 | 0.13333333 | 0.43137255 | 0.56250000 |
| ## 228 | -0.05882353 | -0.06250000 | 0.50000000 | -0.05882353 | -0.07142857 |
| ## 229 | 0.33333333 | 0.25000000 | -0.05882353 | -0.05555556 | 0.16666667 |
| ## 230 | 0.88888889 | 0.33333333 | 0.68750000 | 0.26666667 | -0.25000000 |
| ## 231 | 0.31250000 | NaN | 0.27777778 | 0.27777778 | -0.26315789 |
| ## 232 | 0.62500000 | 0.27777778 | 0.09803922 | 0.59523810 | 0.62500000 |
| ## 233 | 0.37500000 | -0.22222222 | 0.54901961 | 0.15686275 | -0.25000000 |
| ## 234 | 0.38888889 | 0.21568627 | -0.15789474 | 0.38888889 | -0.15789474 |
| ## 235 | 0.16666667 | 0.20000000 | 0.33333333 | -0.05882353 | 0.11111111 |
| ## 236 | 0.12500000 | 0.43750000 | 0.50000000 | 0.43750000 | 0.06666667 |
| ## 237 | 0.27450980 | -0.12500000 | 0.18750000 | 0.27450980 | 0.13333333 |
| ## 238 | -0.06250000 | -0.06666667 | -0.07692308 | -0.06250000 | -0.06250000 |
| ## 239 | 0.75000000 | -0.16666667 | NaN | 0.12500000 | 0.21568627 |
| ## 240 | -0.10526316 | 0.50000000 | 0.27450980 | 0.13333333 | 0.13333333 |
| ## 241 | -0.06250000 | -0.06250000 | 0.25000000 | -0.06250000 | -0.06666667 |
| ## 242 | -0.05882353 | -0.06666667 | -0.05882353 | 0.50000000 | 0.33333333 |
| ## 243 | 0.21568627 | -0.15789474 | 0.06666667 | -0.15789474 | -0.15789474 |
| ## 244 | 0.06666667 | 0.21568627 | 1.00000000 | 0.38888889 | NaN |
| ## 245 | 0.00000000 | 0.00000000 | 0.00000000 | NaN | 0.00000000 |
| ## 246 | -0.05555556 | -0.05263158 | 0.33333333 | -0.05555556 | -0.06250000 |
| ## 247 | 0.25000000 | 1.00000000 | 0.20000000 | 0.33333333 | -0.05555556 |
| ## 248 | 0.94444444 | -0.17647059 | -0.17647059 | 0.75000000 | 0.26190476 |
| ## 249 | 0.37500000 | 0.33333333 | 0.88888889 | 0.94117647 | 0.33333333 |
| ## 250 | 0.94444444 | 0.75000000 | 0.60000000 | 0.60784314 | 0.38888889 |
| ## 251 | -0.16666667 | 0.75000000 | 0.89473684 | 0.38888889 | 0.38888889 |
| ## 252 | 0.00000000 | 0.00000000 | NaN | NaN | 0.00000000 |
| ## 253 | -0.05263158 | 0.50000000 | -0.05555556 | -0.05882353 | -0.05882353 |
| ## 254 | 0.20000000 | 0.50000000 | -0.05882353 | 1.00000000 | 0.25000000 |
| ## 255 | 0.50000000 | -0.11764706 | 1.00000000 | 0.66666667 | -0.11111111 |

```

## 256 0.44444444 0.27450980 0.50000000 -0.10526316 0.40000000
## 257 0.15686275 0.06250000 0.06250000 0.84210526 0.15686275
## 258 0.18750000 0.40000000 0.27450980 -0.11111111 0.18750000
## 259 0.40000000 0.40000000 0.33333333 0.66666667 -0.10526316
## 260 0.44444444 -0.10526316 0.40000000 0.27450980 0.27450980
## 261 0.27450980 -0.13333333 -0.11764706 -0.11764706 -0.12500000
## 262 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## 263 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## 264 0.25000000 1.00000000 0.25000000 0.25000000 0.33333333
## 265 0.37500000 0.20879121 0.33333333 0.43750000 0.60784314
## 266 0.16666667 0.20000000 1.00000000 1.00000000 0.33333333
## 267 0.50000000 1.00000000 0.27450980 0.27450980 0.18750000
## 268 0.33333333 0.44444444 0.50000000 0.28571429 0.44444444
## 269 0.25000000 0.25000000 0.33333333 0.16666667 0.25000000
## 270 0.50000000 0.16666667 0.25000000 0.20000000 0.33333333
## 271 0.25000000 0.33333333 0.25000000 0.20000000 0.20000000
## 272 -0.06250000 -0.05555556 -0.05882353 0.20000000 0.50000000
## 273 0.50000000 -0.11764706 -0.13333333 0.18750000 -0.11111111
## 274 0.33333333 0.33333333 0.33333333 0.33333333 0.25000000
## 275 -0.11764706 -0.10526316 0.27450980 -0.11764706 0.27450980
## 276 0.26262626 0.28571429 0.29166667 0.41758242 0.19780220
## 277 0.26666667 0.48351648 0.61904762 0.48484848 0.32323232
## 278 0.17171717 0.23232323 0.43434343 0.58333333 0.31868132
## 279 -0.09890110 -0.02380952 0.21428571 0.34065934 0.12087912
## 280 -0.06250000 0.06666667 0.16666667 -0.05555556 0.56250000
## 281 -0.06250000 -0.05882353 1.00000000 -0.06250000 -0.07142857
## 282 -0.02380952 -0.01960784 0.12087912 0.33333333 0.16666667
## 283 0.13333333 -0.14285714 0.33333333 -0.11764706 0.18750000
## 284 0.43137255 0.03921569 -0.13333333 0.73684211 0.25000000
## 285 0.33333333 0.16666667 0.33333333 -0.17647059 0.43750000
## 286 -0.17647059 0.43750000 0.02380952 0.06666667 -0.16666667
## 287 0.46666667 0.62500000 0.49019608 0.46666667 0.59523810
## 288 0.21568627 0.38888889 0.43750000 0.21568627 0.43750000
## 289 0.84210526 0.54901961 0.53333333 0.15686275 0.66666667
## 290 1.00000000 0.50000000 0.18750000 0.13333333 0.13333333
## 291 0.43750000 -0.16666667 0.12500000 -0.15789474 0.38888889
## 292 0.60784314 0.60784314 -0.15789474 -0.16666667 -0.15789474
## 293 0.54901961 0.26666667 0.84210526 0.84210526 0.53333333
## 294 0.37500000 -0.21052632 0.15686275 0.42857143 0.33333333
## 295 0.15686275 0.37500000 0.33333333 0.06250000 0.06250000
## 296 -0.18750000 0.60784314 0.60784314 0.12500000 0.60784314
## 297 0.60000000 0.26190476 0.06666667 0.33333333 0.12500000
## 298 0.41666667 0.76923077 0.30303030 0.20000000 0.50505051
## 299 0.27450980 0.50000000 0.50000000 0.94736842 0.44444444
## 300 0.66666667 0.18750000 -0.10526316 0.44444444 0.27450980
##
## $similarity
##      1      2      3      4      5
## 1 0.4000000 0.0000000 0.0000000 0.5000000 0.4000000
## 2 0.5714286 0.5714286 0.5000000 0.5333333 0.5000000
## 3 0.6666667 0.6666667 0.7142857 0.5882353 0.5882353
## 4 0.5714286 0.5714286 0.5333333 0.3076923 0.7142857
## 5 0.2857143 0.3333333 0.3636364 0.2857143 0.2857143
## 6 0.8421053 0.7619048 0.9000000 0.8571429 0.8181818
## 7 0.5714286 0.5454545 0.5000000 0.5714286 0.5333333
## 8 0.7142857 0.5882353 0.6250000 0.4705882 0.5882353
## 9 0.4444444 0.5882353 0.8181818 0.5714286 0.4285714
## 10 0.5333333 0.6250000 0.5714286 0.5714286 0.5333333

```


| | | | | | |
|-------|-----------|-----------|-----------|-----------|-----------|
| ## 11 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| ## 12 | 0.8333333 | 0.8333333 | 0.7272727 | 0.8000000 | 0.8695652 |
| ## 13 | 0.7619048 | 0.9473684 | 0.7777778 | 0.7619048 | 0.7777778 |
| ## 14 | 0.6000000 | 0.6666667 | 0.8750000 | 0.6666667 | 0.5333333 |
| ## 15 | 0.7619048 | 0.6666667 | 0.7500000 | 0.8181818 | 0.6363636 |
| ## 16 | 0.7619048 | 0.6666667 | 0.8695652 | 0.8000000 | 0.5263158 |
| ## 17 | 0.5000000 | 0.5714286 | 0.5333333 | 0.7058824 | 0.4210526 |
| ## 18 | 0.7058824 | 0.5555556 | 0.7500000 | 0.8750000 | 0.7000000 |
| ## 19 | 0.9285714 | 0.8461538 | 0.9285714 | 0.6363636 | 0.8461538 |
| ## 20 | 0.6315789 | 0.7368421 | 0.4705882 | 0.6315789 | 0.7000000 |
| ## 21 | 0.7500000 | 0.5263158 | 0.6000000 | 0.7000000 | 0.6250000 |
| ## 22 | 0.6000000 | 0.4210526 | 0.5000000 | 0.6315789 | 0.7368421 |
| ## 23 | 0.4615385 | 0.5714286 | 0.6666667 | 0.2857143 | 0.4000000 |
| ## 24 | 0.7000000 | 0.5882353 | 0.5882353 | 0.6315789 | 0.7058824 |
| ## 25 | 0.2000000 | 0.4444444 | 0.0000000 | 0.4000000 | 0.5000000 |
| ## 26 | 0.7142857 | 0.4615385 | 0.5333333 | 0.7692308 | 0.7692308 |
| ## 27 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| ## 28 | 0.6250000 | 0.6315789 | 0.5000000 | 0.7500000 | 0.5333333 |
| ## 29 | 0.6666667 | 0.5333333 | 0.5714286 | 0.5882353 | 0.4615385 |
| ## 30 | 0.6250000 | 0.5714286 | 0.6250000 | 0.5000000 | 0.6315789 |
| ## 31 | 0.8181818 | 0.7826087 | 0.7826087 | 0.8000000 | 0.7826087 |
| ## 32 | 0.7619048 | 0.8000000 | 0.5555556 | 0.8181818 | 0.8333333 |
| ## 33 | 0.7142857 | 0.5714286 | 0.6666667 | 0.5714286 | 0.6250000 |
| ## 34 | 0.8235294 | 0.6000000 | 0.5882353 | 0.7368421 | 0.6666667 |
| ## 35 | 0.6666667 | 0.6315789 | 0.8695652 | 0.6666667 | 0.8421053 |
| ## 36 | 0.7368421 | 0.6315789 | 0.7058824 | 0.7777778 | 0.7000000 |
| ## 37 | 0.8000000 | 0.6956522 | 0.8333333 | 0.8461538 | 0.8333333 |
| ## 38 | 0.5555556 | 0.5714286 | 0.6000000 | 0.5882353 | 0.5882353 |
| ## 39 | 0.4705882 | 0.7368421 | 0.4705882 | 0.6315789 | 0.7272727 |
| ## 40 | 0.8571429 | 0.9523810 | 0.7000000 | 0.8571429 | 0.9090909 |
| ## 41 | 0.8421053 | 0.9523810 | 0.6666667 | 0.8571429 | 0.5555556 |
| ## 42 | 0.6363636 | 0.4705882 | 0.5000000 | 0.5000000 | 0.5555556 |
| ## 43 | 0.7777778 | 0.5882353 | 0.3529412 | 0.3750000 | 0.6666667 |
| ## 44 | 0.4000000 | 0.7368421 | 0.5555556 | 0.4000000 | 0.5882353 |
| ## 45 | 0.7777778 | 0.6666667 | 0.6666667 | 0.6250000 | 0.8000000 |
| ## 46 | 0.6250000 | 0.5333333 | 0.7058824 | 0.6666667 | 0.7058824 |
| ## 47 | 0.5714286 | 0.4000000 | 0.5000000 | 0.7142857 | 0.3333333 |
| ## 48 | 0.5714286 | 0.6666667 | 0.7777778 | 0.4615385 | 0.5333333 |
| ## 49 | 0.9333333 | 0.6666667 | 0.7058824 | 0.5882353 | 0.6666667 |
| ## 50 | 0.8181818 | 0.9090909 | 0.6666667 | 0.8181818 | 0.8181818 |
| ## 51 | 0.7058824 | 0.4705882 | 0.8000000 | 0.5555556 | 0.7777778 |
| ## 52 | 0.3333333 | 0.0000000 | 0.3636364 | 0.6000000 | 0.5714286 |
| ## 53 | 0.7000000 | 0.6315789 | 0.5333333 | 0.7000000 | 0.5000000 |
| ## 54 | 0.8181818 | 0.8333333 | 0.6956522 | 0.6666667 | 0.6666667 |
| ## 55 | 0.6666667 | 0.6153846 | 0.4000000 | 0.3333333 | 0.6153846 |
| ## 56 | 0.2666667 | 0.4285714 | 0.3076923 | 0.4000000 | 0.6153846 |
| ## 57 | 0.5555556 | 0.5882353 | 0.6666667 | 0.7058824 | 0.7058824 |
| ## 58 | 0.7368421 | 0.7368421 | 0.5882353 | 0.4705882 | 0.5882353 |
| ## 59 | 0.7000000 | 0.6666667 | 0.7777778 | 0.7272727 | 0.8181818 |
| ## 60 | 0.3333333 | 0.3076923 | 0.7272727 | 0.2666667 | 0.5000000 |
| ## 61 | 0.7058824 | 0.5882353 | 0.6250000 | 0.7000000 | 0.8888889 |
| ## 62 | 0.7500000 | 0.7500000 | 0.7058824 | 0.4000000 | 0.8000000 |
| ## 63 | 0.5882353 | 0.6153846 | 0.5333333 | 0.6153846 | 0.8235294 |
| ## 64 | 0.4615385 | 0.4000000 | 0.5333333 | 0.4000000 | 0.6000000 |
| ## 65 | 0.5333333 | 0.3076923 | 0.3333333 | 0.6250000 | 0.7500000 |
| ## 66 | 0.4285714 | 0.2666667 | 0.4000000 | 0.2666667 | 0.7777778 |
| ## 67 | 0.5000000 | 0.7619048 | 0.3000000 | 0.5714286 | 0.6315789 |
| ## 68 | 0.7272727 | 0.7826087 | 0.7368421 | 0.8000000 | 0.6315789 |

| | | | | | |
|--------|-----------|-----------|-----------|-----------|-----------|
| ## 69 | 0.5263158 | 0.4285714 | 0.4285714 | 0.6250000 | 0.6250000 |
| ## 70 | 0.6666667 | 0.7368421 | 0.6315789 | 0.6666667 | 0.7368421 |
| ## 71 | 0.5000000 | 0.5000000 | 0.4285714 | 0.6250000 | 0.6666667 |
| ## 72 | 0.6956522 | 0.6315789 | 0.6666667 | 0.6000000 | 0.7272727 |
| ## 73 | 0.6666667 | 0.7000000 | 0.8695652 | 0.7619048 | 0.4444444 |
| ## 74 | 0.5555556 | 0.3750000 | 0.6666667 | 0.4705882 | 0.7368421 |
| ## 75 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| ## 76 | 0.6666667 | 0.8000000 | 0.9230769 | 0.6000000 | 0.5714286 |
| ## 77 | 0.8695652 | 0.7826087 | 0.7000000 | 0.7826087 | 0.7500000 |
| ## 78 | 0.4285714 | 0.5555556 | 0.5263158 | 0.5555556 | 0.6315789 |
| ## 79 | 0.0000000 | 0.2500000 | 0.2500000 | 0.3636364 | 0.0000000 |
| ## 80 | 0.5714286 | 0.3333333 | 0.2666667 | 0.5000000 | 0.2857143 |
| ## 81 | 0.6315789 | 0.6666667 | 0.7368421 | 0.5555556 | 0.8181818 |
| ## 82 | 0.4285714 | 0.4615385 | 0.0000000 | 0.5714286 | 0.3333333 |
| ## 83 | 0.5555556 | 0.4444444 | 0.6315789 | 0.5882353 | 0.7272727 |
| ## 84 | 0.0000000 | 0.0000000 | 0.0000000 | 0.6666667 | 0.4000000 |
| ## 85 | 0.5000000 | 0.0000000 | 0.4444444 | 0.2222222 | 0.5000000 |
| ## 86 | 0.5333333 | 0.5882353 | 0.3333333 | 0.5333333 | 0.1666667 |
| ## 87 | 0.5882353 | 0.5882353 | 0.4705882 | 0.4705882 | 0.6250000 |
| ## 88 | 0.5555556 | 0.7058824 | 0.6666667 | 0.6666667 | 0.4285714 |
| ## 89 | 0.4615385 | 0.4000000 | 0.5714286 | 0.6666667 | 0.5714286 |
| ## 90 | 0.4285714 | 0.6250000 | 0.4000000 | 0.4285714 | 0.1818182 |
| ## 91 | 0.5000000 | 0.6666667 | 0.4285714 | 0.4285714 | 0.4000000 |
| ## 92 | 0.6666667 | 0.7000000 | 0.8000000 | 0.4705882 | 0.8000000 |
| ## 93 | 0.6363636 | 0.6000000 | 0.8333333 | 0.7272727 | 0.8000000 |
| ## 94 | 0.5882353 | 0.5000000 | 0.6153846 | 0.6666667 | 0.5882353 |
| ## 95 | 0.7272727 | 0.5263158 | 0.6666667 | 0.6666667 | 0.7826087 |
| ## 96 | 0.5000000 | 0.5882353 | 0.5000000 | 0.6250000 | 0.7058824 |
| ## 97 | 0.3750000 | 0.6666667 | 0.5333333 | 0.7142857 | 0.5000000 |
| ## 98 | 0.4705882 | 0.2857143 | 0.6250000 | 0.2666667 | 0.7777778 |
| ## 99 | 0.4000000 | 0.4000000 | 0.2500000 | 0.2666667 | 0.2857143 |
| ## 100 | 0.3076923 | 0.4615385 | 0.4705882 | 0.5000000 | 0.1818182 |
| ## 101 | 0.5333333 | 0.4705882 | 0.6666667 | 0.5454545 | 0.4000000 |
| ## 102 | 0.5454545 | 0.5714286 | 0.6153846 | 0.4615385 | 0.6153846 |
| ## 103 | 0.3636364 | 0.6250000 | 0.5882353 | 0.5000000 | 0.8000000 |
| ## 104 | 0.4210526 | 0.7826087 | 0.6666667 | 0.4444444 | 0.6956522 |
| ## 105 | 0.2000000 | 0.3636364 | 0.3636364 | 0.3636364 | 0.3636364 |
| ## 106 | 0.5000000 | 0.4615385 | 0.4000000 | 0.6153846 | 0.2000000 |
| ## 107 | 0.2500000 | 0.6000000 | 0.5454545 | 0.4444444 | 0.4615385 |
| ## 108 | 0.6250000 | 0.6250000 | 0.4000000 | 0.7777778 | 0.5000000 |
| ## 109 | 0.6000000 | 0.5882353 | 0.4705882 | 0.5714286 | 0.6315789 |
| ## 110 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| ## 111 | 0.5333333 | 0.6666667 | 0.4285714 | 0.7500000 | 0.6153846 |
| ## 112 | 0.5882353 | 0.8235294 | 0.5882353 | 0.6666667 | 0.3750000 |
| ## 113 | 0.3333333 | 0.7142857 | 0.3076923 | 0.3076923 | 0.6666667 |
| ## 114 | 0.4000000 | 0.2000000 | 0.0000000 | 0.2000000 | 0.2222222 |
| ## 115 | 0.3333333 | 0.3750000 | 0.5333333 | 0.4705882 | 0.3076923 |
| ## 116 | 0.2000000 | 0.3333333 | 0.0000000 | 0.0000000 | 0.1818182 |
| ## 117 | 0.2857143 | 0.3529412 | 0.4000000 | 0.2857143 | 0.4000000 |
| ## 118 | 0.7272727 | 0.3157895 | 0.6000000 | 0.7826087 | 0.5555556 |
| ## 119 | 0.5000000 | 0.5714286 | 0.5454545 | 0.2857143 | 0.2222222 |
| ## 120 | 0.0000000 | 0.3333333 | 0.0000000 | 0.0000000 | 0.0000000 |
| ## 121 | 0.1428571 | 0.1666667 | 0.2222222 | 0.2000000 | 0.5000000 |
| ## 122 | 0.7826087 | 0.5555556 | 0.5882353 | 0.5000000 | 0.3529412 |
| ## 123 | 0.1538462 | 0.4705882 | 0.3636364 | 0.3333333 | 0.0000000 |
| ## 124 | 0.5000000 | 0.2222222 | 0.2857143 | 0.4444444 | 0.0000000 |
| ## 125 | 0.3333333 | 0.0000000 | 0.2857143 | 0.0000000 | 0.2857143 |
| ## 126 | 0.7058824 | 0.4615385 | 0.3333333 | 0.5714286 | 0.5000000 |

```

## 127 0.5882353 0.5000000 0.6250000 0.4285714 0.4285714
## 128 0.5882353 0.4000000 0.4285714 0.7368421 0.4444444
## 129 0.5714286 0.4615385 0.6666667 0.5882353 0.1666667
## 130 0.5882353 0.5000000 0.5555556 0.6666667 0.5882353
## 131 0.4285714 0.6666667 0.4705882 0.5000000 0.5000000
## 132 0.2857143 0.4000000 0.7058824 0.2857143 0.4285714
## 133 0.6000000 0.1818182 0.5000000 0.4444444 0.4000000
## 134 0.5333333 0.4615385 0.1666667 0.4285714 0.6666667
## 135 0.2500000 0.5555556 0.3750000 0.3750000 0.5000000
## 136 0.5000000 0.3333333 0.4615385 0.5714286 0.5882353
## 137 0.5000000 0.2666667 0.1666667 0.4285714 0.4285714
## 138 0.3333333 0.3636364 0.2857143 0.4285714 0.6250000
## 139 0.0000000 0.1818182 0.0000000 0.1818182 0.0000000
## 140 0.2000000 0.3333333 0.0000000 0.0000000 0.0000000
## 141 0.5714286 0.5454545 0.5454545 0.4615385 0.2000000
## 142 0.5000000 0.3333333 0.5454545 0.5000000 0.5454545
## 143 0.4444444 0.2000000 0.2000000 0.3076923 0.0000000
## 144 0.4615385 0.4285714 0.4615385 0.3333333 0.4615385
## 145 0.6666667 0.6153846 0.4000000 0.3636364 0.6666667
## 146 0.4615385 0.2500000 0.2857143 0.5000000 0.5000000
## 147 0.0000000 0.4000000 0.5714286 0.4444444 0.4444444
## 148 0.2000000 0.4285714 0.4615385 0.4615385 0.5714286
## 149 0.4705882 0.3750000 0.5555556 0.4285714 0.5000000
## 150 0.5000000 0.0000000 0.3333333 0.2857143 0.2000000
## 151 0.6153846 0.5454545 0.4285714 0.3636364 0.3636364
## 152 0.4000000 0.4444444 0.4444444 0.4444444 0.4444444
## 153 0.5000000 0.4705882 0.6153846 0.6666667 0.6666667
## 154 0.0000000 0.2857143 0.3333333 0.2500000 0.4444444
## 155 0.5714286 0.0000000 0.2222222 0.6000000 0.3636364
## 156 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 157 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 158 0.1818182 0.4000000 0.5882353 0.3636364 0.3076923
## 159 0.2857143 0.1666667 0.7058824 0.5000000 0.1538462
## 160 0.5000000 0.2857143 0.0000000 0.0000000 0.2857143
## 161 0.5000000 0.5714286 0.4444444 0.7272727 0.6666667
## 162 0.6666667 0.2500000 0.4444444 0.2857143 0.3333333
## 163 0.4444444 0.4000000 0.5000000 0.5000000 0.2857143
## 164 0.2500000 0.4000000 0.2500000 0.2222222 0.8000000
## 165 0.3333333 0.4000000 0.2857143 0.2857143 0.0000000
## 166 0.4000000 0.0000000 0.6666667 0.5000000 0.0000000
## 167 0.1818182 0.3076923 0.7272727 0.0000000 0.5000000
## 168 0.2222222 0.2500000 0.0000000 1.0000000 0.5714286
## 169 0.0000000 0.0000000 0.2222222 0.2857143 0.5000000
## 170 0.3333333 0.2222222 0.2222222 0.3636364 0.5454545
## 171 0.0000000 0.4444444 0.6666667 0.2500000 0.0000000
## 172 0.4000000 0.3333333 0.3333333 0.5333333 0.4615385
## 173 0.5882353 0.4000000 0.3529412 0.6250000 0.4000000
## 174 0.2500000 0.0000000 0.0000000 0.5000000 0.0000000
## 175 0.4615385 0.5000000 0.6250000 0.4444444 0.4000000
## 176 0.6666667 0.5000000 0.7142857 0.3076923 0.5454545
## 177 0.2857143 0.3333333 0.5714286 0.6000000 0.5000000
## 178 0.5333333 0.2857143 0.0000000 0.1666667 0.0000000
## 179 0.5000000 0.1818182 0.6153846 0.3333333 0.3636364
## 180 0.3636364 0.4444444 0.3636364 0.4000000 0.1818182
## 181 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 182 0.1818182 0.2000000 0.2222222 0.5454545 0.0000000
## 183 0.0000000 0.2857143 0.0000000 0.3333333 0.5714286
## 184 0.4000000 0.4000000 0.5000000 0.5000000 0.7500000

```

```

## 185 0.5454545 0.7500000 0.5000000 0.4000000 0.6666667
## 186 0.0000000 0.5000000 0.3333333 0.3333333 0.2500000
## 187 0.5000000 0.2500000 0.2000000 0.6000000 0.3076923
## 188 0.2000000 0.2857143 0.2500000 0.3333333 0.2857143
## 189 0.2857143 0.0000000 0.0000000 0.0000000 0.2500000
## 190 0.5882353 0.7500000 0.4285714 0.4000000 0.4285714
## 191 0.2222222 0.0000000 0.2500000 0.4000000 0.0000000
## 192 0.1818182 0.5000000 0.0000000 0.0000000 0.2222222
## 193 0.2857143 0.0000000 0.2857143 0.0000000 0.0000000
## 194 0.0000000 0.2857143 0.4444444 0.5000000 0.5000000
## 195 0.5454545 0.6666667 0.3636364 0.3636364 0.7272727
## 196 0.0000000 0.0000000 0.2857143 0.0000000 0.0000000
## 197 0.5000000 0.5000000 0.4615385 0.5000000 0.7692308
## 198 0.0000000 0.0000000 0.0000000 0.4000000 0.5000000
## 199 0.0000000 0.3333333 0.3333333 0.5000000 0.6666667
## 200 0.1818182 0.1818182 0.5000000 0.0000000 0.3333333
## 201 0.6666667 0.0000000 0.0000000 0.4000000 0.0000000
## 202 0.6153846 0.7692308 0.5000000 0.3333333 0.4000000
## 203 0.0000000 0.1666667 0.1818182 0.2000000 0.2000000
## 204 0.7500000 0.7500000 0.5714286 0.5000000 0.6666667
## 205 0.0000000 0.8000000 0.0000000 0.5000000 0.0000000
## 206 0.2857143 0.5714286 0.5714286 0.4000000 0.6666667
## 207 0.5454545 0.5454545 0.6666667 0.2857143 0.2857143
## 208 0.7272727 0.5000000 0.2222222 0.2857143 0.7500000
## 209 0.2857143 0.2857143 0.6000000 0.0000000 0.3333333
## 210 0.0000000 0.0000000 0.0000000 0.4000000 0.3333333
## 211 0.3333333 0.8000000 0.5000000 0.4000000 0.3333333
## 212 0.5714286 0.6666667 0.2857143 0.0000000 0.0000000
## 213 0.6666667 0.3333333 0.2222222 0.3636364 0.2500000
## 214 0.2222222 0.5000000 0.7500000 0.2500000 0.7500000
## 215 0.2222222 0.7272727 0.4444444 0.2000000 0.0000000
## 216 0.0000000 0.4444444 0.2857143 0.0000000 0.3333333
## 217 0.1666667 0.3636364 0.0000000 0.0000000 0.2500000
## 218 0.6000000 0.5000000 0.8000000 0.5000000 0.4000000
## 219 0.2857143 0.2500000 0.3333333 0.4000000 0.0000000
## 220 0.4444444 0.2857143 0.5454545 0.4000000 0.4000000
## 221 0.0000000 0.0000000 0.2857143 0.6666667 0.7500000
## 222 0.6666667 0.7500000 0.6666667 0.5714286 0.6666667
## 223 0.4000000 0.0000000 0.0000000 0.0000000 0.0000000
## 224 0.0000000 0.2500000 0.0000000 0.2222222 0.2857143
## 225 1.0000000 0.3333333 0.8571429 0.5000000 0.5000000
## 226 0.6000000 0.6666667 0.4444444 0.4444444 0.6000000
## 227 0.5000000 0.2500000 0.3636364 0.4444444 0.6000000
## 228 0.0000000 0.0000000 0.6666667 0.0000000 0.0000000
## 229 0.5000000 0.4000000 0.0000000 0.0000000 0.2857143
## 230 0.6666667 0.3333333 0.7500000 0.4444444 0.0000000
## 231 0.4444444 0.0000000 0.2857143 0.2857143 0.0000000
## 232 0.6666667 0.2857143 0.2500000 0.7272727 0.6666667
## 233 0.5000000 0.0000000 0.5714286 0.2857143 0.0000000
## 234 0.4000000 0.3333333 0.0000000 0.4000000 0.0000000
## 235 0.2857143 0.3333333 0.5000000 0.0000000 0.2000000
## 236 0.2857143 0.5714286 0.6666667 0.5714286 0.2500000
## 237 0.4000000 0.0000000 0.3333333 0.4000000 0.2857143
## 238 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 239 0.8571429 0.0000000 0.0000000 0.2857143 0.3333333
## 240 0.0000000 0.6666667 0.4000000 0.2857143 0.2857143
## 241 0.0000000 0.0000000 0.4000000 0.0000000 0.0000000
## 242 0.0000000 0.0000000 0.0000000 0.6666667 0.5000000

```

```

## 243 0.3333333 0.0000000 0.2500000 0.0000000 0.0000000
## 244 0.2500000 0.3333333 1.0000000 0.4000000 0.0000000
## 245 0.0000000 0.0000000 0.0000000      NaN 0.0000000
## 246 0.0000000 0.0000000 0.5000000 0.0000000 0.0000000
## 247 0.4000000 1.0000000 0.3333333 0.5000000 0.0000000
## 248 0.8000000 0.0000000 0.0000000 0.8571429 0.4444444
## 249 0.5000000 0.3333333 0.6666667 0.8571429 0.3333333
## 250 0.8000000 0.8571429 0.7500000 0.6666667 0.4000000
## 251 0.0000000 0.8571429 0.5000000 0.4000000 0.4000000
## 252 0.0000000 0.0000000      NaN      NaN 0.0000000
## 253 0.0000000 0.6666667 0.0000000 0.0000000 0.0000000
## 254 0.3333333 0.6666667 0.0000000 1.0000000 0.4000000
## 255 0.6666667 0.0000000 1.0000000 0.8000000 0.0000000
## 256 0.5000000 0.4000000 0.6666667 0.0000000 0.5714286
## 257 0.2857143 0.2500000 0.2500000 0.4000000 0.2857143
## 258 0.3333333 0.5714286 0.4000000 0.0000000 0.3333333
## 259 0.5714286 0.5714286 0.5000000 0.8000000 0.0000000
## 260 0.5000000 0.0000000 0.5714286 0.4000000 0.4000000
## 261 0.4000000 0.0000000 0.0000000 0.0000000 0.0000000
## 262 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 263 0.0000000 0.0000000 0.0000000 0.0000000 0.0000000
## 264 0.4000000 1.0000000 0.4000000 0.4000000 0.5000000
## 265 0.5454545 0.4000000 0.5000000 0.5714286 0.6666667
## 266 0.2857143 0.3333333 1.0000000 1.0000000 0.5000000
## 267 0.6666667 1.0000000 0.4000000 0.4000000 0.3333333
## 268 0.5000000 0.5000000 0.6666667 0.4444444 0.5000000
## 269 0.4000000 0.4000000 0.5000000 0.2857143 0.4000000
## 270 0.6666667 0.2857143 0.4000000 0.3333333 0.5000000
## 271 0.4000000 0.5000000 0.4000000 0.3333333 0.3333333
## 272 0.0000000 0.0000000 0.0000000 0.3333333 0.6666667
## 273 0.6666667 0.0000000 0.0000000 0.3333333 0.0000000
## 274 0.5000000 0.5000000 0.5000000 0.5000000 0.4000000
## 275 0.0000000 0.0000000 0.4000000 0.0000000 0.4000000
## 276 0.5333333 0.5000000 0.5555556 0.6153846 0.4615385
## 277 0.4615385 0.6666667 0.7142857 0.7058824 0.6315789
## 278 0.5000000 0.5555556 0.6666667 0.7368421 0.6000000
## 279 0.2857143 0.3076923 0.4615385 0.5714286 0.4285714
## 280 0.2666667 0.3750000 0.4705882 0.1538462 0.5333333
## 281 0.0000000 0.0000000 1.0000000 0.0000000 0.0000000
## 282 0.3076923 0.2000000 0.4285714 0.5000000 0.2222222
## 283 0.2857143 0.0000000 0.5000000 0.0000000 0.3333333
## 284 0.4444444 0.2222222 0.1818182 0.2857143 0.4000000
## 285 0.5000000 0.3636364 0.5000000 0.0000000 0.5714286
## 286 0.0000000 0.5714286 0.2222222 0.2500000 0.0000000
## 287 0.6000000 0.6666667 0.5000000 0.6000000 0.7272727
## 288 0.3333333 0.4000000 0.5714286 0.3333333 0.5714286
## 289 0.4000000 0.5714286 0.6666667 0.2857143 0.8000000
## 290 1.0000000 0.6666667 0.3333333 0.2857143 0.2857143
## 291 0.5714286 0.0000000 0.2857143 0.0000000 0.4000000
## 292 0.6666667 0.6666667 0.0000000 0.0000000 0.0000000
## 293 0.5714286 0.4444444 0.4000000 0.4000000 0.6666667
## 294 0.5000000 0.0000000 0.2857143 0.6000000 0.3333333
## 295 0.2857143 0.5000000 0.3333333 0.2500000 0.2500000
## 296 0.0000000 0.6666667 0.6666667 0.2857143 0.6666667
## 297 0.7500000 0.4444444 0.2500000 0.5000000 0.2857143
## 298 0.7272727 0.8695652 0.6666667 0.6000000 0.7619048
## 299 0.4000000 0.6666667 0.6666667 0.6666667 0.5000000
## 300 0.8000000 0.3333333 0.0000000 0.5000000 0.4000000

```

```

##
## $Jaccard
##      1      2      3      4      5
## 1  0.25000000 0.00000000 0.00000000 0.33333333 0.25000000
## 2  0.40000000 0.40000000 0.33333333 0.36363636 0.33333333
## 3  0.50000000 0.50000000 0.55555556 0.41666667 0.41666667
## 4  0.40000000 0.40000000 0.36363636 0.18181818 0.55555556
## 5  0.16666667 0.20000000 0.22222222 0.16666667 0.16666667
## 6  0.72727273 0.61538462 0.81818182 0.75000000 0.69230769
## 7  0.40000000 0.37500000 0.33333333 0.40000000 0.36363636
## 8  0.55555556 0.41666667 0.45454545 0.30769231 0.41666667
## 9  0.28571429 0.41666667 0.69230769 0.40000000 0.27272727
## 10 0.36363636 0.45454545 0.40000000 0.40000000 0.36363636
## 11 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## 12 0.71428571 0.71428571 0.57142857 0.66666667 0.76923077
## 13 0.61538462 0.90000000 0.63636364 0.61538462 0.63636364
## 14 0.42857143 0.50000000 0.77777778 0.50000000 0.36363636
## 15 0.61538462 0.50000000 0.60000000 0.69230769 0.46666667
## 16 0.61538462 0.50000000 0.76923077 0.66666667 0.35714286
## 17 0.33333333 0.40000000 0.36363636 0.54545455 0.26666667
## 18 0.54545455 0.38461538 0.60000000 0.77777778 0.53846154
## 19 0.86666667 0.73333333 0.86666667 0.46666667 0.73333333
## 20 0.46153846 0.58333333 0.30769231 0.46153846 0.53846154
## 21 0.60000000 0.35714286 0.42857143 0.53846154 0.45454545
## 22 0.42857143 0.26666667 0.33333333 0.46153846 0.58333333
## 23 0.30000000 0.40000000 0.50000000 0.16666667 0.25000000
## 24 0.53846154 0.41666667 0.41666667 0.46153846 0.54545455
## 25 0.11111111 0.28571429 0.00000000 0.25000000 0.33333333
## 26 0.55555556 0.30000000 0.36363636 0.62500000 0.62500000
## 27 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## 28 0.45454545 0.46153846 0.33333333 0.60000000 0.36363636
## 29 0.50000000 0.36363636 0.40000000 0.41666667 0.30000000
## 30 0.45454545 0.40000000 0.45454545 0.33333333 0.46153846
## 31 0.69230769 0.64285714 0.64285714 0.66666667 0.64285714
## 32 0.61538462 0.66666667 0.38461538 0.69230769 0.71428571
## 33 0.55555556 0.40000000 0.50000000 0.40000000 0.45454545
## 34 0.70000000 0.42857143 0.41666667 0.58333333 0.50000000
## 35 0.50000000 0.46153846 0.76923077 0.50000000 0.72727273
## 36 0.58333333 0.46153846 0.54545455 0.63636364 0.53846154
## 37 0.66666667 0.53333333 0.71428571 0.73333333 0.71428571
## 38 0.38461538 0.40000000 0.42857143 0.41666667 0.41666667
## 39 0.30769231 0.58333333 0.30769231 0.46153846 0.57142857
## 40 0.75000000 0.90909091 0.53846154 0.75000000 0.83333333
## 41 0.72727273 0.90909091 0.50000000 0.75000000 0.38461538
## 42 0.46666667 0.30769231 0.33333333 0.33333333 0.38461538
## 43 0.63636364 0.41666667 0.21428571 0.23076923 0.50000000
## 44 0.25000000 0.58333333 0.38461538 0.25000000 0.41666667
## 45 0.63636364 0.50000000 0.50000000 0.45454545 0.66666667
## 46 0.45454545 0.36363636 0.54545455 0.50000000 0.54545455
## 47 0.40000000 0.25000000 0.33333333 0.55555556 0.20000000
## 48 0.40000000 0.50000000 0.63636364 0.30000000 0.36363636
## 49 0.87500000 0.50000000 0.54545455 0.41666667 0.50000000
## 50 0.69230769 0.83333333 0.50000000 0.69230769 0.69230769
## 51 0.54545455 0.30769231 0.66666667 0.38461538 0.63636364
## 52 0.20000000 0.00000000 0.22222222 0.42857143 0.40000000
## 53 0.53846154 0.46153846 0.36363636 0.53846154 0.33333333
## 54 0.69230769 0.71428571 0.53333333 0.50000000 0.50000000
## 55 0.50000000 0.44444444 0.25000000 0.20000000 0.44444444

```

| | | | | | |
|--------|------------|------------|------------|------------|------------|
| ## 56 | 0.15384615 | 0.27272727 | 0.18181818 | 0.25000000 | 0.44444444 |
| ## 57 | 0.38461538 | 0.41666667 | 0.50000000 | 0.54545455 | 0.54545455 |
| ## 58 | 0.58333333 | 0.58333333 | 0.41666667 | 0.30769231 | 0.41666667 |
| ## 59 | 0.53846154 | 0.50000000 | 0.63636364 | 0.57142857 | 0.69230769 |
| ## 60 | 0.20000000 | 0.18181818 | 0.57142857 | 0.15384615 | 0.33333333 |
| ## 61 | 0.54545455 | 0.41666667 | 0.45454545 | 0.53846154 | 0.80000000 |
| ## 62 | 0.60000000 | 0.60000000 | 0.54545455 | 0.25000000 | 0.66666667 |
| ## 63 | 0.41666667 | 0.44444444 | 0.36363636 | 0.44444444 | 0.70000000 |
| ## 64 | 0.30000000 | 0.25000000 | 0.36363636 | 0.25000000 | 0.42857143 |
| ## 65 | 0.36363636 | 0.18181818 | 0.20000000 | 0.45454545 | 0.60000000 |
| ## 66 | 0.27272727 | 0.15384615 | 0.25000000 | 0.15384615 | 0.63636364 |
| ## 67 | 0.33333333 | 0.61538462 | 0.17647059 | 0.40000000 | 0.46153846 |
| ## 68 | 0.57142857 | 0.64285714 | 0.58333333 | 0.66666667 | 0.46153846 |
| ## 69 | 0.35714286 | 0.27272727 | 0.27272727 | 0.45454545 | 0.45454545 |
| ## 70 | 0.50000000 | 0.58333333 | 0.46153846 | 0.50000000 | 0.58333333 |
| ## 71 | 0.33333333 | 0.33333333 | 0.27272727 | 0.45454545 | 0.50000000 |
| ## 72 | 0.53333333 | 0.46153846 | 0.50000000 | 0.42857143 | 0.57142857 |
| ## 73 | 0.50000000 | 0.53846154 | 0.76923077 | 0.61538462 | 0.28571429 |
| ## 74 | 0.38461538 | 0.23076923 | 0.50000000 | 0.30769231 | 0.58333333 |
| ## 75 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 76 | 0.50000000 | 0.66666667 | 0.85714286 | 0.42857143 | 0.40000000 |
| ## 77 | 0.76923077 | 0.64285714 | 0.53846154 | 0.64285714 | 0.60000000 |
| ## 78 | 0.27272727 | 0.38461538 | 0.35714286 | 0.38461538 | 0.46153846 |
| ## 79 | 0.00000000 | 0.14285714 | 0.14285714 | 0.22222222 | 0.00000000 |
| ## 80 | 0.40000000 | 0.20000000 | 0.15384615 | 0.33333333 | 0.16666667 |
| ## 81 | 0.46153846 | 0.50000000 | 0.58333333 | 0.38461538 | 0.69230769 |
| ## 82 | 0.27272727 | 0.30000000 | 0.00000000 | 0.40000000 | 0.20000000 |
| ## 83 | 0.38461538 | 0.28571429 | 0.46153846 | 0.41666667 | 0.57142857 |
| ## 84 | 0.00000000 | 0.00000000 | 0.00000000 | 0.50000000 | 0.25000000 |
| ## 85 | 0.33333333 | 0.00000000 | 0.28571429 | 0.12500000 | 0.33333333 |
| ## 86 | 0.36363636 | 0.41666667 | 0.20000000 | 0.36363636 | 0.09090909 |
| ## 87 | 0.41666667 | 0.41666667 | 0.30769231 | 0.30769231 | 0.45454545 |
| ## 88 | 0.38461538 | 0.54545455 | 0.50000000 | 0.50000000 | 0.27272727 |
| ## 89 | 0.30000000 | 0.25000000 | 0.40000000 | 0.50000000 | 0.40000000 |
| ## 90 | 0.27272727 | 0.45454545 | 0.25000000 | 0.27272727 | 0.10000000 |
| ## 91 | 0.33333333 | 0.50000000 | 0.27272727 | 0.27272727 | 0.25000000 |
| ## 92 | 0.50000000 | 0.53846154 | 0.66666667 | 0.30769231 | 0.66666667 |
| ## 93 | 0.46666667 | 0.42857143 | 0.71428571 | 0.57142857 | 0.66666667 |
| ## 94 | 0.41666667 | 0.33333333 | 0.44444444 | 0.50000000 | 0.41666667 |
| ## 95 | 0.57142857 | 0.35714286 | 0.50000000 | 0.50000000 | 0.64285714 |
| ## 96 | 0.33333333 | 0.41666667 | 0.33333333 | 0.45454545 | 0.54545455 |
| ## 97 | 0.23076923 | 0.50000000 | 0.36363636 | 0.55555556 | 0.33333333 |
| ## 98 | 0.30769231 | 0.16666667 | 0.45454545 | 0.15384615 | 0.63636364 |
| ## 99 | 0.25000000 | 0.25000000 | 0.14285714 | 0.15384615 | 0.16666667 |
| ## 100 | 0.18181818 | 0.30000000 | 0.30769231 | 0.33333333 | 0.10000000 |
| ## 101 | 0.36363636 | 0.30769231 | 0.50000000 | 0.37500000 | 0.25000000 |
| ## 102 | 0.37500000 | 0.40000000 | 0.44444444 | 0.30000000 | 0.44444444 |
| ## 103 | 0.22222222 | 0.45454545 | 0.41666667 | 0.33333333 | 0.66666667 |
| ## 104 | 0.26666667 | 0.64285714 | 0.50000000 | 0.28571429 | 0.53333333 |
| ## 105 | 0.11111111 | 0.22222222 | 0.22222222 | 0.22222222 | 0.22222222 |
| ## 106 | 0.33333333 | 0.30000000 | 0.25000000 | 0.44444444 | 0.11111111 |
| ## 107 | 0.14285714 | 0.42857143 | 0.37500000 | 0.28571429 | 0.30000000 |
| ## 108 | 0.45454545 | 0.45454545 | 0.25000000 | 0.63636364 | 0.33333333 |
| ## 109 | 0.42857143 | 0.41666667 | 0.30769231 | 0.40000000 | 0.46153846 |
| ## 110 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| ## 111 | 0.36363636 | 0.50000000 | 0.27272727 | 0.60000000 | 0.44444444 |
| ## 112 | 0.41666667 | 0.70000000 | 0.41666667 | 0.50000000 | 0.23076923 |
| ## 113 | 0.20000000 | 0.55555556 | 0.18181818 | 0.18181818 | 0.50000000 |

```

## 114 0.25000000 0.11111111 0.00000000 0.11111111 0.12500000
## 115 0.20000000 0.23076923 0.36363636 0.30769231 0.18181818
## 116 0.11111111 0.20000000 0.00000000 0.00000000 0.10000000
## 117 0.16666667 0.21428571 0.25000000 0.16666667 0.25000000
## 118 0.57142857 0.18750000 0.42857143 0.64285714 0.38461538
## 119 0.33333333 0.40000000 0.37500000 0.16666667 0.12500000
## 120 0.00000000 0.20000000 0.00000000 0.00000000 0.00000000
## 121 0.07692308 0.09090909 0.12500000 0.11111111 0.33333333
## 122 0.64285714 0.38461538 0.41666667 0.33333333 0.21428571
## 123 0.08333333 0.30769231 0.22222222 0.20000000 0.00000000
## 124 0.33333333 0.12500000 0.16666667 0.28571429 0.00000000
## 125 0.20000000 0.00000000 0.16666667 0.00000000 0.16666667
## 126 0.54545455 0.30000000 0.20000000 0.40000000 0.33333333
## 127 0.41666667 0.33333333 0.45454545 0.27272727 0.27272727
## 128 0.41666667 0.25000000 0.27272727 0.58333333 0.28571429
## 129 0.40000000 0.30000000 0.50000000 0.41666667 0.09090909
## 130 0.41666667 0.33333333 0.38461538 0.50000000 0.41666667
## 131 0.27272727 0.50000000 0.30769231 0.33333333 0.33333333
## 132 0.16666667 0.25000000 0.54545455 0.16666667 0.27272727
## 133 0.42857143 0.10000000 0.33333333 0.28571429 0.25000000
## 134 0.36363636 0.30000000 0.09090909 0.27272727 0.50000000
## 135 0.14285714 0.38461538 0.23076923 0.23076923 0.33333333
## 136 0.33333333 0.20000000 0.30000000 0.40000000 0.41666667
## 137 0.33333333 0.15384615 0.09090909 0.27272727 0.27272727
## 138 0.20000000 0.22222222 0.16666667 0.27272727 0.45454545
## 139 0.00000000 0.10000000 0.00000000 0.10000000 0.00000000
## 140 0.11111111 0.20000000 0.00000000 0.00000000 0.00000000
## 141 0.40000000 0.37500000 0.37500000 0.30000000 0.11111111
## 142 0.33333333 0.20000000 0.37500000 0.33333333 0.37500000
## 143 0.28571429 0.11111111 0.11111111 0.18181818 0.00000000
## 144 0.30000000 0.27272727 0.30000000 0.20000000 0.30000000
## 145 0.50000000 0.44444444 0.25000000 0.22222222 0.50000000
## 146 0.30000000 0.14285714 0.16666667 0.33333333 0.33333333
## 147 0.00000000 0.25000000 0.40000000 0.28571429 0.28571429
## 148 0.11111111 0.27272727 0.30000000 0.30000000 0.40000000
## 149 0.30769231 0.23076923 0.38461538 0.27272727 0.33333333
## 150 0.33333333 0.00000000 0.20000000 0.16666667 0.11111111
## 151 0.44444444 0.37500000 0.27272727 0.22222222 0.22222222
## 152 0.25000000 0.28571429 0.28571429 0.28571429 0.28571429
## 153 0.33333333 0.30769231 0.44444444 0.50000000 0.50000000
## 154 0.00000000 0.16666667 0.20000000 0.14285714 0.28571429
## 155 0.40000000 0.00000000 0.12500000 0.42857143 0.22222222
## 156 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## 157 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## 158 0.10000000 0.25000000 0.41666667 0.22222222 0.18181818
## 159 0.16666667 0.09090909 0.54545455 0.33333333 0.08333333
## 160 0.33333333 0.16666667 0.00000000 0.00000000 0.16666667
## 161 0.33333333 0.40000000 0.28571429 0.57142857 0.50000000
## 162 0.50000000 0.14285714 0.28571429 0.16666667 0.20000000
## 163 0.28571429 0.25000000 0.33333333 0.33333333 0.16666667
## 164 0.14285714 0.25000000 0.14285714 0.12500000 0.66666667
## 165 0.20000000 0.25000000 0.16666667 0.16666667 0.00000000
## 166 0.25000000 0.00000000 0.50000000 0.33333333 0.00000000
## 167 0.10000000 0.18181818 0.57142857 0.00000000 0.33333333
## 168 0.12500000 0.14285714 0.00000000 1.00000000 0.40000000
## 169 0.00000000 0.00000000 0.12500000 0.16666667 0.33333333
## 170 0.20000000 0.12500000 0.12500000 0.22222222 0.37500000
## 171 0.00000000 0.28571429 0.50000000 0.14285714 0.00000000

```



```

## 172 0.25000000 0.20000000 0.20000000 0.36363636 0.30000000
## 173 0.41666667 0.25000000 0.21428571 0.45454545 0.25000000
## 174 0.14285714 0.00000000 0.00000000 0.33333333 0.00000000
## 175 0.30000000 0.33333333 0.45454545 0.28571429 0.25000000
## 176 0.50000000 0.33333333 0.55555556 0.18181818 0.37500000
## 177 0.16666667 0.20000000 0.40000000 0.42857143 0.33333333
## 178 0.36363636 0.16666667 0.00000000 0.09090909 0.00000000
## 179 0.33333333 0.10000000 0.44444444 0.20000000 0.22222222
## 180 0.22222222 0.28571429 0.22222222 0.25000000 0.10000000
## 181 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## 182 0.10000000 0.11111111 0.12500000 0.37500000 0.00000000
## 183 0.00000000 0.16666667 0.00000000 0.20000000 0.40000000
## 184 0.25000000 0.25000000 0.33333333 0.33333333 0.60000000
## 185 0.37500000 0.60000000 0.33333333 0.25000000 0.50000000
## 186 0.00000000 0.33333333 0.20000000 0.20000000 0.14285714
## 187 0.33333333 0.14285714 0.11111111 0.42857143 0.18181818
## 188 0.11111111 0.16666667 0.14285714 0.20000000 0.16666667
## 189 0.16666667 0.00000000 0.00000000 0.00000000 0.14285714
## 190 0.41666667 0.60000000 0.27272727 0.25000000 0.27272727
## 191 0.12500000 0.00000000 0.14285714 0.25000000 0.00000000
## 192 0.10000000 0.33333333 0.00000000 0.00000000 0.12500000
## 193 0.16666667 0.00000000 0.16666667 0.00000000 0.00000000
## 194 0.00000000 0.16666667 0.28571429 0.33333333 0.33333333
## 195 0.37500000 0.50000000 0.22222222 0.22222222 0.57142857
## 196 0.00000000 0.00000000 0.16666667 0.00000000 0.00000000
## 197 0.33333333 0.33333333 0.30000000 0.33333333 0.62500000
## 198 0.00000000 0.00000000 0.00000000 0.25000000 0.33333333
## 199 0.00000000 0.20000000 0.20000000 0.33333333 0.50000000
## 200 0.10000000 0.10000000 0.33333333 0.00000000 0.20000000
## 201 0.50000000 0.00000000 0.00000000 0.25000000 0.00000000
## 202 0.44444444 0.62500000 0.33333333 0.20000000 0.25000000
## 203 0.00000000 0.09090909 0.10000000 0.11111111 0.11111111
## 204 0.60000000 0.60000000 0.40000000 0.33333333 0.50000000
## 205 0.00000000 0.66666667 0.00000000 0.33333333 0.00000000
## 206 0.16666667 0.40000000 0.40000000 0.25000000 0.50000000
## 207 0.37500000 0.37500000 0.50000000 0.16666667 0.16666667
## 208 0.57142857 0.33333333 0.12500000 0.16666667 0.60000000
## 209 0.16666667 0.16666667 0.42857143 0.00000000 0.20000000
## 210 0.00000000 0.00000000 0.00000000 0.25000000 0.20000000
## 211 0.20000000 0.66666667 0.33333333 0.25000000 0.20000000
## 212 0.40000000 0.50000000 0.16666667 0.00000000 0.00000000
## 213 0.50000000 0.20000000 0.12500000 0.22222222 0.14285714
## 214 0.12500000 0.33333333 0.60000000 0.14285714 0.60000000
## 215 0.12500000 0.57142857 0.28571429 0.11111111 0.00000000
## 216 0.00000000 0.28571429 0.16666667 0.00000000 0.20000000
## 217 0.09090909 0.22222222 0.00000000 0.00000000 0.14285714
## 218 0.42857143 0.33333333 0.66666667 0.33333333 0.25000000
## 219 0.16666667 0.14285714 0.20000000 0.25000000 0.00000000
## 220 0.28571429 0.16666667 0.37500000 0.25000000 0.25000000
## 221 0.00000000 0.00000000 0.16666667 0.50000000 0.60000000
## 222 0.50000000 0.60000000 0.50000000 0.40000000 0.50000000
## 223 0.25000000 0.00000000 0.00000000 0.00000000 0.00000000
## 224 0.00000000 0.14285714 0.00000000 0.12500000 0.16666667
## 225 1.00000000 0.20000000 0.75000000 0.33333333 0.33333333
## 226 0.42857143 0.50000000 0.28571429 0.28571429 0.42857143
## 227 0.33333333 0.14285714 0.22222222 0.28571429 0.42857143
## 228 0.00000000 0.00000000 0.50000000 0.00000000 0.00000000
## 229 0.33333333 0.25000000 0.00000000 0.00000000 0.16666667

```

```

## 230 0.50000000 0.20000000 0.60000000 0.28571429 0.00000000
## 231 0.28571429 0.00000000 0.16666667 0.16666667 0.00000000
## 232 0.50000000 0.16666667 0.14285714 0.57142857 0.50000000
## 233 0.33333333 0.00000000 0.40000000 0.16666667 0.00000000
## 234 0.25000000 0.20000000 0.00000000 0.25000000 0.00000000
## 235 0.16666667 0.20000000 0.33333333 0.00000000 0.11111111
## 236 0.16666667 0.40000000 0.50000000 0.40000000 0.14285714
## 237 0.25000000 0.00000000 0.20000000 0.25000000 0.16666667
## 238 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## 239 0.75000000 0.00000000 0.00000000 0.16666667 0.20000000
## 240 0.00000000 0.50000000 0.25000000 0.16666667 0.16666667
## 241 0.00000000 0.00000000 0.25000000 0.00000000 0.00000000
## 242 0.00000000 0.00000000 0.00000000 0.50000000 0.33333333
## 243 0.20000000 0.00000000 0.14285714 0.00000000 0.00000000
## 244 0.14285714 0.20000000 1.00000000 0.25000000 0.00000000
## 245 0.00000000 0.00000000 0.00000000 NaN 0.00000000
## 246 0.00000000 0.00000000 0.33333333 0.00000000 0.00000000
## 247 0.25000000 1.00000000 0.20000000 0.33333333 0.00000000
## 248 0.66666667 0.00000000 0.00000000 0.75000000 0.28571429
## 249 0.33333333 0.20000000 0.50000000 0.75000000 0.20000000
## 250 0.66666667 0.75000000 0.60000000 0.50000000 0.25000000
## 251 0.00000000 0.75000000 0.33333333 0.25000000 0.25000000
## 252 0.00000000 0.00000000 NaN NaN 0.00000000
## 253 0.00000000 0.50000000 0.00000000 0.00000000 0.00000000
## 254 0.20000000 0.50000000 0.00000000 1.00000000 0.25000000
## 255 0.50000000 0.00000000 1.00000000 0.66666667 0.00000000
## 256 0.33333333 0.25000000 0.50000000 0.00000000 0.40000000
## 257 0.16666667 0.14285714 0.14285714 0.25000000 0.16666667
## 258 0.20000000 0.40000000 0.25000000 0.00000000 0.20000000
## 259 0.40000000 0.40000000 0.33333333 0.66666667 0.00000000
## 260 0.33333333 0.00000000 0.40000000 0.25000000 0.25000000
## 261 0.25000000 0.00000000 0.00000000 0.00000000 0.00000000
## 262 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## 263 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## 264 0.25000000 1.00000000 0.25000000 0.25000000 0.33333333
## 265 0.37500000 0.25000000 0.33333333 0.40000000 0.50000000
## 266 0.16666667 0.20000000 1.00000000 1.00000000 0.33333333
## 267 0.50000000 1.00000000 0.25000000 0.25000000 0.20000000
## 268 0.33333333 0.33333333 0.50000000 0.28571429 0.33333333
## 269 0.25000000 0.25000000 0.33333333 0.16666667 0.25000000
## 270 0.50000000 0.16666667 0.25000000 0.20000000 0.33333333
## 271 0.25000000 0.33333333 0.25000000 0.20000000 0.20000000
## 272 0.00000000 0.00000000 0.00000000 0.20000000 0.50000000
## 273 0.50000000 0.00000000 0.00000000 0.20000000 0.00000000
## 274 0.33333333 0.33333333 0.33333333 0.33333333 0.25000000
## 275 0.00000000 0.00000000 0.25000000 0.00000000 0.25000000
## 276 0.36363636 0.33333333 0.38461538 0.44444444 0.30000000
## 277 0.30000000 0.50000000 0.55555556 0.54545455 0.46153846
## 278 0.33333333 0.38461538 0.50000000 0.58333333 0.42857143
## 279 0.16666667 0.18181818 0.30000000 0.40000000 0.27272727
## 280 0.15384615 0.23076923 0.30769231 0.08333333 0.36363636
## 281 0.00000000 0.00000000 1.00000000 0.00000000 0.00000000
## 282 0.18181818 0.11111111 0.27272727 0.33333333 0.12500000
## 283 0.16666667 0.00000000 0.33333333 0.00000000 0.20000000
## 284 0.28571429 0.12500000 0.10000000 0.16666667 0.25000000
## 285 0.33333333 0.22222222 0.33333333 0.00000000 0.40000000
## 286 0.00000000 0.40000000 0.12500000 0.14285714 0.00000000
## 287 0.42857143 0.50000000 0.33333333 0.42857143 0.57142857

```

```
## 288 0.20000000 0.25000000 0.40000000 0.20000000 0.40000000
## 289 0.25000000 0.40000000 0.50000000 0.16666667 0.66666667
## 290 1.00000000 0.50000000 0.20000000 0.16666667 0.16666667
## 291 0.40000000 0.00000000 0.16666667 0.00000000 0.25000000
## 292 0.50000000 0.50000000 0.00000000 0.00000000 0.00000000
## 293 0.40000000 0.28571429 0.25000000 0.25000000 0.50000000
## 294 0.33333333 0.00000000 0.16666667 0.42857143 0.20000000
## 295 0.16666667 0.33333333 0.20000000 0.14285714 0.14285714
## 296 0.00000000 0.50000000 0.50000000 0.16666667 0.50000000
## 297 0.60000000 0.28571429 0.14285714 0.33333333 0.16666667
## 298 0.57142857 0.76923077 0.50000000 0.42857143 0.61538462
## 299 0.25000000 0.50000000 0.50000000 0.50000000 0.33333333
## 300 0.66666667 0.20000000 0.00000000 0.33333333 0.25000000
```

3.2 Spatial Predictions and Projections

3.2.1 ESM Ensemble of Small Models

```
library(biomod2)
```

```
## Loading required package: raster
```

```
##
```

```
## Attaching package: 'raster'
```

```
## The following objects are masked from 'package:ape':
```

```
##
```

```
##      rotate, zoom
```

```
## Loading required package: reshape
```

```
## Loading required package: ggplot2
```

```
## biomod2 3.3-7 loaded.
```

```
##
```

```
## Type browseVignettes(package='biomod2') to access directly biomod2 vignettes.
```

```
path.wd<-getwd()
```

```
# species
```

```
# occurrences
```

```
xy <- inv[,1:2]
```

```
head(xy)
```

```
##      x      y
## 1 142.25 -10.25
## 2 142.25 -10.75
## 3 131.25 -11.25
## 4 132.25 -11.25
## 5 142.25 -11.25
## 6 142.75 -11.25
```

```
sp_occ <- inv[11]
```

```
# env
```

```
current <- inv[3:7]
```

```
head(current)
```

```
##      aetpet    gdd      p      pet    stdp
## 1 0.3180346 7965.1 1595.7 1950.320 137.8134
## 2 0.2807616 7888.9 1693.7 1991.475 156.3950
## 3 0.2638533 8165.3 1595.0 2179.968 127.0621
## 4 0.2790938 8195.6 1346.0 1919.897 114.7686
## 5 0.3030646 7858.1 1711.1 1795.255 158.3286
## 6 0.3217786 7888.5 1711.1 1788.220 151.8030
```

```
## BIOMOD
```

```
setwd(path.wd)
```

```
t1 <- Sys.time()
```

```
sp<-1
```

```
### Formating the data with the BIOMOD_FormatingData() function form the package biomod2
```

```
myBiomodData <- BIOMOD_FormatingData( resp.var = as.numeric(sp_occ[,sp]),
                                       expl.var = current,
                                       resp.xy = xy,
                                       resp.name = colnames(sp_occ)[sp])
```

```
##
```

```
## ----- species_occ Data Formating -----
```

```
##
```

```
## Response variable name was converted into species.occ
```

```
## > No pseudo absences selection !
```

```
## ! No data has been set aside for modeling evaluation
```

```
## ----- Done -----
```

```
myBiomodOption <- Print_Default_ModelingOptions()
```

```
##
```

```
## Defaut modeling options. copy, change what you want paste it as arg to BIOMOD_ModelingOptions
```

```
##
```

```
##
```

```
## ----- 'BIOMOD.Model.Options' -----
```

```
##
```

```
##
```

```
## GLM = list( type = 'quadratic',
##             interaction.level = 0,
##             myFormula = NULL,
##             test = 'AIC',
##             family = binomial(link = 'logit'),
##             mustart = 0.5,
##             control = glm.control(epsilon = 1e-08, maxit = 50
## , trace = FALSE) ),
##
```

```
##
```

```
##
```

```
## GBM = list( distribution = 'bernoulli',
##             n.trees = 2500,
##             interaction.depth = 7,
```

```

##             n.minobsinnode = 5,
##             shrinkage = 0.001,
##             bag.fraction = 0.5,
##             train.fraction = 1,
##             cv.folds = 3,
##             keep.data = FALSE,
##             verbose = FALSE,
##             perf.method = 'cv'),
##
## GAM = list( algo = 'GAM_mgcv',
##             type = 's_smoother',
##             k = -1,
##             interaction.level = 0,
##             myFormula = NULL,
##             family = binomial(link = 'logit'),
##             method = 'GCV.Cp',
##             optimizer = c('outer','newton'),
##             select = FALSE,
##             knots = NULL,
##             paraPen = NULL,
##             control = list(nthreads = 1, irls.reg = 0, epsilon = 1e-07
## , maxit = 200, trace = FALSE, mgcv.tol = 1e-07, mgcv.half = 15
## , rank.tol = 1.49011611938477e-08
## , nlm = list(ndigit=7, gradtol=1e-06, stepmax=2, steptol=1e-04, iterlim=200, check.analyticals=0)
## , optim = list(factr=1e+07)
## , newton = list(conv.tol=1e-06, maxNstep=5, maxSstep=2, maxHalf=30, use.svd=0)
## , outerPIsteps = 0, idLinksBases = TRUE, scalePenalty = TRUE
## , keepData = FALSE, scale.est = fletcher, edge.correct = FALSE) ),
##
##
## CTA = list( method = 'class',
##             parms = 'default',
##             cost = NULL,
##             control = list(xval = 5, minbucket = 5, minsplit = 5
## , cp = 0.001, maxdepth = 25) ),
##
##
## ANN = list( NbCV = 5,
##             size = NULL,
##             decay = NULL,
##             rang = 0.1,
##             maxit = 200),
##
## SRE = list( quant = 0.025),
##
## FDA = list( method = 'mars',
##             add_args = NULL),
##
## MARS = list( type = 'simple',
##             interaction.level = 0,
##             myFormula = NULL,
##             nk = NULL,
##             penalty = 2,
##             thresh = 0.001,
##             nprune = NULL,
##             pmethod = 'backward'),
##
## RF = list( do.classif = TRUE,

```

```

##          ntree = 500,
##          mtry = 'default',
##          nodesize = 5,
##          maxnodes = NULL),
##
## MAXENT.Phillips = list( path_to_maxent.jar = 'C:/Users/obroenni/AppData/Local/Temp/RtmpAJ2NWH/Rbu
##          memory_allocated = 512,
##          background_data_dir = 'default',
##          maximumbackground = 'default',
##          maximumiterations = 200,
##          visible = FALSE,
##          linear = TRUE,
##          quadratic = TRUE,
##          product = TRUE,
##          threshold = TRUE,
##          hinge = TRUE,
##          lq2lqptthreshold = 80,
##          l2lqthreshold = 10,
##          hingethreshold = 15,
##          beta_threshold = -1,
##          beta_categorical = -1,
##          beta_lqp = -1,
##          beta_hinge = -1,
##          betamultiplier = 1,
##          defaultprevalence = 0.5),
##
## MAXENT.Tsuruoka = list( l1_regularizer = 0,
##          l2_regularizer = 0,
##          use_sgd = FALSE,
##          set_heldout = 0,
##          verbose = FALSE)
## =====

```

```

myBiomodOption@GLM$test = 'none'
myBiomodOption@GBM$interaction.depth = 2

```

```

### Calibration of simple bivariate models
my.ESM <- ecospat.ESM.Modeling( data=myBiomodData,
                                models=c('GLM','RF'),
                                models.options=myBiomodOption,
                                NbRunEval=1,
                                DataSplit=70,
                                weighting.score=c("AUC"),
                                parallel=F)

```

```

##
## > Automatic weights creation to rise a 0.5 prevalence
##
## Loading required library...
##
## Checking Models arguments...
##
## ! User defined data-split table was given -> NbRunEval, DataSplit and do.full.models argument wil
## Creating suitable Workdir...
##
## > Automatic weights creation to rise a 0.5 prevalence
##

```

```

##
## ----- ESM.BIOMOD.1 Modeling Summary -----
##
## 2 environmental variables ( aetpet gdd )
## Number of evaluation repetitions : 2
## Models selected : GLM RF
##
## Total number of model runs : 4
##
## -----
##
##
## ----- Run : ESM.BIOMOD.1_AllData
##
##
## ----- ESM.BIOMOD.1_AllData_RUN1
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.1 ~ 1 + aetpet + I(aetpet^2) + gdd + I(gdd^2)
## <environment: 0x0000000024cb2980>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...
## Evaluating Model stuff...
##
## ----- ESM.BIOMOD.1_AllData_RUN2
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.1 ~ 1 + aetpet + I(aetpet^2) + gdd + I(gdd^2)
## <environment: 0x0000000024580f10>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

##
## Evaluating Model stuff...
## ----- Done -----
##
##
## Loading required library...
##
## Checking Models arguments...
##
## ! User defined data-split table was given -> NbRunEval, DataSplit and do.full.models argument wil
## Creating suitable Workdir...
##
## > Automatic weights creation to rise a 0.5 prevalence
##

```

```

##
## ----- ESM.BIOMOD.2 Modeling Summary -----
##
## 2 environmental variables ( aetpet p )
## Number of evaluation repetitions : 2
## Models selected : GLM RF
##
## Total number of model runs : 4
##
## -----
##
##
## ----- Run : ESM.BIOMOD.2_AllData
##
##
## ----- ESM.BIOMOD.2_AllData_RUN1
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.2 ~ 1 + aetpet + I(aetpet^2) + p + I(p^2)
## <environment: 0x00000002187c0d0>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...
## Evaluating Model stuff...
##
## ----- ESM.BIOMOD.2_AllData_RUN2
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.2 ~ 1 + aetpet + I(aetpet^2) + p + I(p^2)
## <environment: 0x000000001dc15e30>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

##
## Evaluating Model stuff...
## ----- Done -----
##
##
## Loading required library...
##
## Checking Models arguments...
##
## ! User defined data-split table was given -> NbRunEval, DataSplit and do.full.models argument wil
## Creating suitable Workdir...
##
## > Automatic weights creation to rise a 0.5 prevalence
##

```



```

##
## ----- ESM.BIOMOD.3 Modeling Summary -----
##
## 2 environmental variables ( aetpet pet )
## Number of evaluation repetitions : 2
## Models selected : GLM RF
##
## Total number of model runs : 4
##
## -----
##
##
## ----- Run : ESM.BIOMOD.3_AllData
##
##
## ----- ESM.BIOMOD.3_AllData_RUN1
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.3 ~ 1 + aetpet + I(aetpet^2) + pet + I(pet^2)
## <environment: 0x000000001e69ab00>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...
## Evaluating Model stuff...
##
## ----- ESM.BIOMOD.3_AllData_RUN2
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.3 ~ 1 + aetpet + I(aetpet^2) + pet + I(pet^2)
## <environment: 0x0000000022e873b8>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...

## Warning: glm.fit: algorithm did not converge

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

##
## Evaluating Model stuff...
## ----- Done -----
##
##
## Loading required library...
##
## Checking Models arguments...
##
## ! User defined data-split table was given -> NbRunEval, DataSplit and do.full.models argument wil
## Creating suitable Workdir...
##

```

```

## > Automatic weights creation to rise a 0.5 prevalence
##
##
## ----- ESM.BIOMOD.4 Modeling Summary -----
##
## 2 environmental variables ( aetpet stdp )
## Number of evaluation repetitions : 2
## Models selected : GLM RF
##
## Total number of model runs : 4
##
## -----
##
##
## ----- Run : ESM.BIOMOD.4_AllData
##
##
## ----- ESM.BIOMOD.4_AllData_RUN1
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.4 ~ 1 + aetpet + I(aetpet^2) + stdp + I(stdp^2)
## <environment: 0x00000001d4dd3b0>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...
## Evaluating Model stuff...
##
## ----- ESM.BIOMOD.4_AllData_RUN2
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.4 ~ 1 + aetpet + I(aetpet^2) + stdp + I(stdp^2)
## <environment: 0x000000001dbf3410>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

##
## Evaluating Model stuff...
## ----- Done -----
##
##
## Loading required library...
##
## Checking Models arguments...
##
## ! User defined data-split table was given -> NbRunEval, DataSplit and do.full.models argument wil
## Creating suitable Workdir...
##

```

```

## > Automatic weights creation to rise a 0.5 prevalence
##
##
## ----- ESM.BIOMOD.5 Modeling Summary -----
##
## 2 environmental variables ( gdd p )
## Number of evaluation repetitions : 2
## Models selected : GLM RF
##
## Total number of model runs : 4
##
## -----
##
##
## ----- Run : ESM.BIOMOD.5_AllData
##
##
## ----- ESM.BIOMOD.5_AllData_RUN1
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.5 ~ 1 + gdd + I(gdd^2) + p + I(p^2)
## <environment: 0x00000001e6a4b38>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...
## Evaluating Model stuff...
##
## ----- ESM.BIOMOD.5_AllData_RUN2
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.5 ~ 1 + gdd + I(gdd^2) + p + I(p^2)
## <environment: 0x000000002022f438>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

##
## Evaluating Model stuff...
## ----- Done -----
##
##
## Loading required library...
##
## Checking Models arguments...
##
## ! User defined data-split table was given -> NbRunEval, DataSplit and do.full.models argument wil
## Creating suitable Workdir...
##

```

```

## > Automatic weights creation to rise a 0.5 prevalence
##
##
## ----- ESM.BIOMOD.6 Modeling Summary -----
##
## 2 environmental variables ( gdd pet )
## Number of evaluation repetitions : 2
## Models selected : GLM RF
##
## Total number of model runs : 4
##
## -----
##
##
## ----- Run : ESM.BIOMOD.6_AllData
##
##
## ----- ESM.BIOMOD.6_AllData_RUN1
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.6 ~ 1 + gdd + I(gdd^2) + pet + I(pet^2)
## <environment: 0x00000001dc1c5a0>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...
## Evaluating Model stuff...
##
## ----- ESM.BIOMOD.6_AllData_RUN2
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.6 ~ 1 + gdd + I(gdd^2) + pet + I(pet^2)
## <environment: 0x00000001dc0bf80>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...

## Warning: glm.fit: algorithm did not converge

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

##
## Evaluating Model stuff...
## ----- Done -----
##
##
## Loading required library...
##
## Checking Models arguments...
##
## ! User defined data-split table was given -> NbRunEval, DataSplit and do.full.models argument wil

```

```

## Creating suitable Workdir...
##
## > Automatic weights creation to rise a 0.5 prevalence
##
## ----- ESM.BIOMOD.7 Modeling Summary -----
##
## 2 environmental variables ( gdd stdp )
## Number of evaluation repetitions : 2
## Models selected : GLM RF
##
## Total number of model runs : 4
##
## -----
##
## ----- Run : ESM.BIOMOD.7_AllData
##
## ----- ESM.BIOMOD.7_AllData_RUN1
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.7 ~ 1 + gdd + I(gdd^2) + stdp + I(stdp^2)
## <environment: 0x0000000020acc3d8>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...
## Evaluating Model stuff...
##
## ----- ESM.BIOMOD.7_AllData_RUN2
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.7 ~ 1 + gdd + I(gdd^2) + stdp + I(stdp^2)
## <environment: 0x00000000241142e8>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

##
## Evaluating Model stuff...
## ----- Done -----
##
## Loading required library...
##
## Checking Models arguments...
##
## ! User defined data-split table was given -> NbRunEval, DataSplit and do.full.models argument wil

```

```

## Creating suitable Workdir...
##
## > Automatic weights creation to rise a 0.5 prevalence
##
##
## ----- ESM.BIOMOD.8 Modeling Summary -----
##
## 2 environmental variables ( p pet )
## Number of evaluation repetitions : 2
## Models selected : GLM RF
##
## Total number of model runs : 4
##
## -----
##
## ----- Run : ESM.BIOMOD.8_AllData
##
##
## ----- ESM.BIOMOD.8_AllData_RUN1
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.8 ~ 1 + p + I(p^2) + pet + I(pet^2)
## <environment: 0x000000001dc1f3b0>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...
## Evaluating Model stuff...
##
## ----- ESM.BIOMOD.8_AllData_RUN2
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.8 ~ 1 + p + I(p^2) + pet + I(pet^2)
## <environment: 0x000000002022f048>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

##
## Evaluating Model stuff...
## ----- Done -----
##
##
## Loading required library...
##
## Checking Models arguments...
##
## ! User defined data-split table was given -> NbRunEval, DataSplit and do.full.models argument wil

```

```

## Creating suitable Workdir...
##
## > Automatic weights creation to rise a 0.5 prevalence
##
## ----- ESM.BIOMOD.9 Modeling Summary -----
##
## 2 environmental variables ( p stdp )
## Number of evaluation repetitions : 2
## Models selected : GLM RF
##
## Total number of model runs : 4
##
## -----
##
## ----- Run : ESM.BIOMOD.9_AllData
##
## ----- ESM.BIOMOD.9_AllData_RUN1
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.9 ~ 1 + p + I(p^2) + stdp + I(stdp^2)
## <environment: 0x000000001e6a1158>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

##
## Evaluating Model stuff...
##
## ----- ESM.BIOMOD.9_AllData_RUN2
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.9 ~ 1 + p + I(p^2) + stdp + I(stdp^2)
## <environment: 0x000000002443a550>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

##
## Evaluating Model stuff...
## ----- Done -----
##
##

```

```

## Loading required library...
##
## Checking Models arguments...
##
## ! User defined data-split table was given -> NbRunEval, DataSplit and do.full.models argument wil
## Creating suitable Workdir...
##
## > Automatic weights creation to rise a 0.5 prevalence
##
##
## ----- ESM.BIOMOD.10 Modeling Summary -----
##
## 2 environmental variables ( pet stdp )
## Number of evaluation repetitions : 2
## Models selected : GLM RF
##
## Total number of model runs : 4
##
## -----
##
##
## ----- Run : ESM.BIOMOD.10_AllData
##
##
## ----- ESM.BIOMOD.10_AllData_RUN1
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.10 ~ 1 + pet + I(pet^2) + stdp + I(stdp^2)
## <environment: 0x000000001dc21960>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...
## Evaluating Model stuff...
##
## ----- ESM.BIOMOD.10_AllData_RUN2
##
## Model=GLM ( quadratic with no interaction )
## No stepwise procedure
## ! You might be confronted to models convergence issues !
## selected formula : ESM.BIOMOD.10 ~ 1 + pet + I(pet^2) + stdp + I(stdp^2)
## <environment: 0x000000001dc075e0>
##
## Model scaling...
## Evaluating Model stuff...
## Model=Breiman and Cutler's random forests for classification and regression
## Model scaling...

## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

##
## Evaluating Model stuff...
## ----- Done -----

```



```
### Evaluation and average of simple bivariate models to ESMs
my.ESM_EF <- ecospat.ESM.EnsembleModeling(my.ESM,weighting.score=c("SomersD"),threshold=0)
```

```
### Projection of simple bivariate models into new space
my.ESM_proj_current <- ecospat.ESM.Projection(ESM.modeling.output=my.ESM,
                                              new.env=current)
```

```
##
## ===== Do Models Projections =====
##
##      ! 'do.stack' arg is always set as TRUE for data.frame/matrix dataset
## > Projecting ESM.BIOMOD.1_AllData_RUN2_GLM ...
## > Projecting ESM.BIOMOD.1_AllData_RUN2_RF ...
## ===== Done =====
##
## ===== Do Models Projections =====
##
##      ! 'do.stack' arg is always set as TRUE for data.frame/matrix dataset
## > Projecting ESM.BIOMOD.2_AllData_RUN2_GLM ...
## > Projecting ESM.BIOMOD.2_AllData_RUN2_RF ...
## ===== Done =====
##
## ===== Do Models Projections =====
##
##      ! 'do.stack' arg is always set as TRUE for data.frame/matrix dataset
## > Projecting ESM.BIOMOD.3_AllData_RUN2_GLM ...
## > Projecting ESM.BIOMOD.3_AllData_RUN2_RF ...
## ===== Done =====
##
## ===== Do Models Projections =====
##
##      ! 'do.stack' arg is always set as TRUE for data.frame/matrix dataset
## > Projecting ESM.BIOMOD.4_AllData_RUN2_GLM ...
## > Projecting ESM.BIOMOD.4_AllData_RUN2_RF ...
## ===== Done =====
##
## ===== Do Models Projections =====
##
##      ! 'do.stack' arg is always set as TRUE for data.frame/matrix dataset
## > Projecting ESM.BIOMOD.5_AllData_RUN2_GLM ...
## > Projecting ESM.BIOMOD.5_AllData_RUN2_RF ...
## ===== Done =====
##
## ===== Do Models Projections =====
##
##      ! 'do.stack' arg is always set as TRUE for data.frame/matrix dataset
## > Projecting ESM.BIOMOD.6_AllData_RUN2_GLM ...
## > Projecting ESM.BIOMOD.6_AllData_RUN2_RF ...
## ===== Done =====
##
## ===== Do Models Projections =====
##
##      ! 'do.stack' arg is always set as TRUE for data.frame/matrix dataset
## > Projecting ESM.BIOMOD.7_AllData_RUN2_GLM ...
## > Projecting ESM.BIOMOD.7_AllData_RUN2_RF ...
## ===== Done =====
##
```

```
## ----- Do Models Projections -----
##
##      ! 'do.stack' arg is always set as TRUE for data.frame/matrix dataset
## > Projecting ESM.BIOMOD.8_AllData_RUN2_GLM ...
## > Projecting ESM.BIOMOD.8_AllData_RUN2_RF ...
## ----- Done -----
##
## ----- Do Models Projections -----
##
##      ! 'do.stack' arg is always set as TRUE for data.frame/matrix dataset
## > Projecting ESM.BIOMOD.9_AllData_RUN2_GLM ...
## > Projecting ESM.BIOMOD.9_AllData_RUN2_RF ...
## ----- Done -----
##
## ----- Do Models Projections -----
##
##      ! 'do.stack' arg is always set as TRUE for data.frame/matrix dataset
## > Projecting ESM.BIOMOD.10_AllData_RUN2_GLM ...
## > Projecting ESM.BIOMOD.10_AllData_RUN2_RF ...
## ----- Done -----

#### Projection of calibrated ESMs into new space
my.ESM_EFproj_current <- ecospat.ESM.EnsembleProjection(ESM.prediction.output=my.ESM_proj_current,
                                                         ESM.EnsembleModeling.output=my.ESM_EF)
```

3.3 Spatial prediction of communities

Input data for the first argument (proba) as data frame of rough probabilities from SDMs for all species in columns in the considered sites in rows.

```
proba <- ecospat.testData[,73:92]
```

Input data for the second argument (sr) as data frame with richness value in the first column and sites.

```
sr <- as.data.frame(rowSums(proba))
```

3.4 SESAM framework with *ecospat.SESAM.prr()*

```
ecospat.SESAM.prr(proba, sr)
```

```
## [1] "test.prr, processing row 1"
## [1] "test.prr, processing row 2"
## [1] "test.prr, processing row 3"
## [1] "test.prr, processing row 4"
## [1] "test.prr, processing row 5"
## [1] "test.prr, processing row 6"
## [1] "test.prr, processing row 7"
## [1] "test.prr, processing row 8"
## [1] "test.prr, processing row 9"
## [1] "test.prr, processing row 10"
## [1] "test.prr, processing row 11"
## [1] "test.prr, processing row 12"
## [1] "test.prr, processing row 13"
```

[illegible]

[illegible]


```

## [1] "test.prr, processing row 246"
## [1] "test.prr, processing row 247"
## [1] "test.prr, processing row 248"
## [1] "test.prr, processing row 249"
## [1] "test.prr, processing row 250"
## [1] "test.prr, processing row 251"
## [1] "test.prr, processing row 252"
## [1] "test.prr, processing row 253"
## [1] "test.prr, processing row 254"
## [1] "test.prr, processing row 255"
## [1] "test.prr, processing row 256"
## [1] "test.prr, processing row 257"
## [1] "test.prr, processing row 258"
## [1] "test.prr, processing row 259"
## [1] "test.prr, processing row 260"
## [1] "test.prr, processing row 261"
## [1] "test.prr, processing row 262"
## [1] "test.prr, processing row 263"
## [1] "test.prr, processing row 264"
## [1] "test.prr, processing row 265"
## [1] "test.prr, processing row 266"
## [1] "test.prr, processing row 267"
## [1] "test.prr, processing row 268"
## [1] "test.prr, processing row 269"
## [1] "test.prr, processing row 270"
## [1] "test.prr, processing row 271"
## [1] "test.prr, processing row 272"
## [1] "test.prr, processing row 273"
## [1] "test.prr, processing row 274"
## [1] "test.prr, processing row 275"
## [1] "test.prr, processing row 276"
## [1] "test.prr, processing row 277"
## [1] "test.prr, processing row 278"
## [1] "test.prr, processing row 279"
## [1] "test.prr, processing row 280"
## [1] "test.prr, processing row 281"
## [1] "test.prr, processing row 282"
## [1] "test.prr, processing row 283"
## [1] "test.prr, processing row 284"
## [1] "test.prr, processing row 285"
## [1] "test.prr, processing row 286"
## [1] "test.prr, processing row 287"
## [1] "test.prr, processing row 288"
## [1] "test.prr, processing row 289"
## [1] "test.prr, processing row 290"
## [1] "test.prr, processing row 291"
## [1] "test.prr, processing row 292"
## [1] "test.prr, processing row 293"
## [1] "test.prr, processing row 294"
## [1] "test.prr, processing row 295"
## [1] "test.prr, processing row 296"
## [1] "test.prr, processing row 297"
## [1] "test.prr, processing row 298"
## [1] "test.prr, processing row 299"
## [1] "test.prr, processing row 300"
##      glm_Agrostis_capillaris glm_Leontodon_hispidus_sl
## 1                      0                      1
## 2                      1                      0

```

| | | |
|-------|---|---|
| ## 3 | 1 | 0 |
| ## 4 | 1 | 0 |
| ## 5 | 1 | 0 |
| ## 6 | 1 | 0 |
| ## 7 | 1 | 0 |
| ## 8 | 1 | 0 |
| ## 9 | 1 | 0 |
| ## 10 | 0 | 0 |
| ## 11 | 1 | 0 |
| ## 12 | 1 | 0 |
| ## 13 | 1 | 0 |
| ## 14 | 1 | 0 |
| ## 15 | 1 | 0 |
| ## 16 | 0 | 0 |
| ## 17 | 1 | 0 |
| ## 18 | 1 | 0 |
| ## 19 | 0 | 0 |
| ## 20 | 1 | 0 |
| ## 21 | 1 | 0 |
| ## 22 | 1 | 0 |
| ## 23 | 1 | 0 |
| ## 24 | 0 | 0 |
| ## 25 | 1 | 0 |
| ## 26 | 1 | 0 |
| ## 27 | 1 | 0 |
| ## 28 | 1 | 0 |
| ## 29 | 1 | 0 |
| ## 30 | 1 | 0 |
| ## 31 | 1 | 0 |
| ## 32 | 1 | 0 |
| ## 33 | 1 | 0 |
| ## 34 | 1 | 0 |
| ## 35 | 1 | 0 |
| ## 36 | 1 | 0 |
| ## 37 | 0 | 0 |
| ## 38 | 1 | 1 |
| ## 39 | 1 | 0 |
| ## 40 | 1 | 0 |
| ## 41 | 1 | 0 |
| ## 42 | 1 | 0 |
| ## 43 | 1 | 0 |
| ## 44 | 0 | 0 |
| ## 45 | 1 | 0 |
| ## 46 | 1 | 0 |
| ## 47 | 0 | 0 |
| ## 48 | 1 | 0 |
| ## 49 | 1 | 0 |
| ## 50 | 1 | 0 |
| ## 51 | 0 | 0 |
| ## 52 | 1 | 0 |
| ## 53 | 1 | 1 |
| ## 54 | 1 | 1 |
| ## 55 | 1 | 0 |
| ## 56 | 1 | 0 |
| ## 57 | 1 | 1 |
| ## 58 | 1 | 1 |
| ## 59 | 1 | 0 |
| ## 60 | 1 | 0 |

| | | |
|--------|---|---|
| ## 61 | 0 | 0 |
| ## 62 | 0 | 0 |
| ## 63 | 1 | 0 |
| ## 64 | 1 | 0 |
| ## 65 | 1 | 0 |
| ## 66 | 1 | 0 |
| ## 67 | 1 | 1 |
| ## 68 | 0 | 0 |
| ## 69 | 1 | 0 |
| ## 70 | 1 | 1 |
| ## 71 | 1 | 1 |
| ## 72 | 1 | 1 |
| ## 73 | 1 | 1 |
| ## 74 | 1 | 1 |
| ## 75 | 1 | 0 |
| ## 76 | 0 | 0 |
| ## 77 | 1 | 1 |
| ## 78 | 1 | 1 |
| ## 79 | 1 | 1 |
| ## 80 | 1 | 0 |
| ## 81 | 1 | 1 |
| ## 82 | 1 | 1 |
| ## 83 | 1 | 0 |
| ## 84 | 1 | 0 |
| ## 85 | 1 | 1 |
| ## 86 | 1 | 1 |
| ## 87 | 1 | 1 |
| ## 88 | 1 | 1 |
| ## 89 | 1 | 1 |
| ## 90 | 1 | 0 |
| ## 91 | 1 | 0 |
| ## 92 | 1 | 1 |
| ## 93 | 1 | 1 |
| ## 94 | 1 | 1 |
| ## 95 | 1 | 1 |
| ## 96 | 1 | 0 |
| ## 97 | 1 | 1 |
| ## 98 | 1 | 0 |
| ## 99 | 1 | 1 |
| ## 100 | 1 | 0 |
| ## 101 | 1 | 1 |
| ## 102 | 1 | 1 |
| ## 103 | 1 | 1 |
| ## 104 | 1 | 1 |
| ## 105 | 0 | 0 |
| ## 106 | 1 | 0 |
| ## 107 | 1 | 1 |
| ## 108 | 1 | 1 |
| ## 109 | 1 | 1 |
| ## 110 | 1 | 1 |
| ## 111 | 1 | 1 |
| ## 112 | 1 | 1 |
| ## 113 | 1 | 1 |
| ## 114 | 1 | 1 |
| ## 115 | 1 | 1 |
| ## 116 | 1 | 1 |
| ## 117 | 1 | 1 |
| ## 118 | 1 | 1 |

| | | |
|--------|---|---|
| ## 119 | 1 | 1 |
| ## 120 | 1 | 0 |
| ## 121 | 1 | 1 |
| ## 122 | 1 | 1 |
| ## 123 | 1 | 1 |
| ## 124 | 1 | 0 |
| ## 125 | 1 | 1 |
| ## 126 | 1 | 1 |
| ## 127 | 1 | 1 |
| ## 128 | 1 | 1 |
| ## 129 | 1 | 1 |
| ## 130 | 1 | 1 |
| ## 131 | 1 | 1 |
| ## 132 | 1 | 1 |
| ## 133 | 1 | 1 |
| ## 134 | 1 | 1 |
| ## 135 | 1 | 1 |
| ## 136 | 1 | 1 |
| ## 137 | 1 | 1 |
| ## 138 | 1 | 1 |
| ## 139 | 1 | 1 |
| ## 140 | 1 | 1 |
| ## 141 | 1 | 1 |
| ## 142 | 1 | 0 |
| ## 143 | 1 | 1 |
| ## 144 | 1 | 1 |
| ## 145 | 0 | 1 |
| ## 146 | 1 | 1 |
| ## 147 | 1 | 1 |
| ## 148 | 1 | 1 |
| ## 149 | 1 | 1 |
| ## 150 | 0 | 1 |
| ## 151 | 1 | 1 |
| ## 152 | 1 | 1 |
| ## 153 | 1 | 1 |
| ## 154 | 0 | 1 |
| ## 155 | 1 | 1 |
| ## 156 | 1 | 1 |
| ## 157 | 0 | 1 |
| ## 158 | 1 | 1 |
| ## 159 | 1 | 1 |
| ## 160 | 1 | 1 |
| ## 161 | 1 | 1 |
| ## 162 | 1 | 1 |
| ## 163 | 1 | 1 |
| ## 164 | 1 | 1 |
| ## 165 | 1 | 1 |
| ## 166 | 1 | 1 |
| ## 167 | 1 | 1 |
| ## 168 | 1 | 1 |
| ## 169 | 1 | 1 |
| ## 170 | 1 | 1 |
| ## 171 | 1 | 1 |
| ## 172 | 1 | 1 |
| ## 173 | 1 | 1 |
| ## 174 | 1 | 1 |
| ## 175 | 1 | 1 |
| ## 176 | 1 | 1 |

| | | |
|--------|---|---|
| ## 177 | 1 | 0 |
| ## 178 | 1 | 1 |
| ## 179 | 1 | 1 |
| ## 180 | 1 | 1 |
| ## 181 | 1 | 1 |
| ## 182 | 1 | 1 |
| ## 183 | 1 | 1 |
| ## 184 | 1 | 1 |
| ## 185 | 1 | 1 |
| ## 186 | 0 | 1 |
| ## 187 | 1 | 1 |
| ## 188 | 1 | 1 |
| ## 189 | 0 | 1 |
| ## 190 | 1 | 1 |
| ## 191 | 1 | 1 |
| ## 192 | 0 | 1 |
| ## 193 | 0 | 1 |
| ## 194 | 1 | 1 |
| ## 195 | 1 | 1 |
| ## 196 | 1 | 1 |
| ## 197 | 1 | 1 |
| ## 198 | 0 | 1 |
| ## 199 | 1 | 1 |
| ## 200 | 0 | 1 |
| ## 201 | 1 | 1 |
| ## 202 | 1 | 1 |
| ## 203 | 1 | 1 |
| ## 204 | 0 | 1 |
| ## 205 | 1 | 1 |
| ## 206 | 1 | 1 |
| ## 207 | 0 | 0 |
| ## 208 | 1 | 1 |
| ## 209 | 1 | 1 |
| ## 210 | 0 | 1 |
| ## 211 | 1 | 0 |
| ## 212 | 0 | 1 |
| ## 213 | 0 | 1 |
| ## 214 | 1 | 1 |
| ## 215 | 1 | 1 |
| ## 216 | 0 | 1 |
| ## 217 | 1 | 1 |
| ## 218 | 1 | 1 |
| ## 219 | 0 | 1 |
| ## 220 | 0 | 1 |
| ## 221 | 0 | 1 |
| ## 222 | 1 | 1 |
| ## 223 | 1 | 0 |
| ## 224 | 1 | 1 |
| ## 225 | 0 | 1 |
| ## 226 | 0 | 1 |
| ## 227 | 0 | 1 |
| ## 228 | 0 | 0 |
| ## 229 | 0 | 1 |
| ## 230 | 0 | 1 |
| ## 231 | 0 | 1 |
| ## 232 | 0 | 1 |
| ## 233 | 0 | 1 |
| ## 234 | 0 | 1 |

| | | |
|--------|---|---|
| ## 235 | 0 | 0 |
| ## 236 | 0 | 1 |
| ## 237 | 0 | 1 |
| ## 238 | 0 | 0 |
| ## 239 | 0 | 1 |
| ## 240 | 0 | 1 |
| ## 241 | 0 | 0 |
| ## 242 | 0 | 0 |
| ## 243 | 0 | 1 |
| ## 244 | 0 | 1 |
| ## 245 | 0 | 1 |
| ## 246 | 0 | 1 |
| ## 247 | 0 | 0 |
| ## 248 | 0 | 0 |
| ## 249 | 0 | 1 |
| ## 250 | 0 | 1 |
| ## 251 | 0 | 1 |
| ## 252 | 0 | 1 |
| ## 253 | 0 | 0 |
| ## 254 | 0 | 0 |
| ## 255 | 0 | 0 |
| ## 256 | 0 | 1 |
| ## 257 | 0 | 0 |
| ## 258 | 0 | 0 |
| ## 259 | 0 | 0 |
| ## 260 | 0 | 0 |
| ## 261 | 0 | 0 |
| ## 262 | 0 | 0 |
| ## 263 | 0 | 0 |
| ## 264 | 0 | 0 |
| ## 265 | 0 | 0 |
| ## 266 | 0 | 0 |
| ## 267 | 0 | 0 |
| ## 268 | 0 | 0 |
| ## 269 | 0 | 0 |
| ## 270 | 0 | 0 |
| ## 271 | 0 | 0 |
| ## 272 | 0 | 0 |
| ## 273 | 0 | 0 |
| ## 274 | 0 | 0 |
| ## 275 | 0 | 1 |
| ## 276 | 1 | 1 |
| ## 277 | 1 | 0 |
| ## 278 | 1 | 1 |
| ## 279 | 1 | 1 |
| ## 280 | 1 | 1 |
| ## 281 | 1 | 1 |
| ## 282 | 1 | 1 |
| ## 283 | 1 | 0 |
| ## 284 | 1 | 1 |
| ## 285 | 1 | 1 |
| ## 286 | 1 | 1 |
| ## 287 | 0 | 1 |
| ## 288 | 0 | 1 |
| ## 289 | 0 | 1 |
| ## 290 | 1 | 1 |
| ## 291 | 0 | 1 |
| ## 292 | 0 | 1 |

| | | |
|--------|------------------------|---------------------------|
| ## 293 | 0 | 1 |
| ## 294 | 0 | 1 |
| ## 295 | 0 | 1 |
| ## 296 | 0 | 0 |
| ## 297 | 0 | 0 |
| ## 298 | 1 | 0 |
| ## 299 | 0 | 0 |
| ## 300 | 0 | 0 |
| ## | glm_Dactylis_glomerata | glm_Trifolium_repens_sstr |
| ## 1 | 1 | 0 |
| ## 2 | 1 | 1 |
| ## 3 | 1 | 1 |
| ## 4 | 1 | 1 |
| ## 5 | 1 | 1 |
| ## 6 | 1 | 1 |
| ## 7 | 1 | 1 |
| ## 8 | 1 | 1 |
| ## 9 | 1 | 0 |
| ## 10 | 1 | 1 |
| ## 11 | 1 | 1 |
| ## 12 | 1 | 1 |
| ## 13 | 1 | 1 |
| ## 14 | 1 | 1 |
| ## 15 | 1 | 1 |
| ## 16 | 1 | 1 |
| ## 17 | 1 | 1 |
| ## 18 | 1 | 1 |
| ## 19 | 1 | 1 |
| ## 20 | 1 | 1 |
| ## 21 | 1 | 1 |
| ## 22 | 1 | 1 |
| ## 23 | 1 | 1 |
| ## 24 | 1 | 1 |
| ## 25 | 1 | 0 |
| ## 26 | 1 | 0 |
| ## 27 | 1 | 0 |
| ## 28 | 1 | 1 |
| ## 29 | 1 | 1 |
| ## 30 | 1 | 1 |
| ## 31 | 1 | 1 |
| ## 32 | 1 | 1 |
| ## 33 | 1 | 1 |
| ## 34 | 1 | 1 |
| ## 35 | 1 | 1 |
| ## 36 | 1 | 1 |
| ## 37 | 1 | 1 |
| ## 38 | 1 | 1 |
| ## 39 | 1 | 1 |
| ## 40 | 1 | 1 |
| ## 41 | 1 | 1 |
| ## 42 | 1 | 1 |
| ## 43 | 1 | 1 |
| ## 44 | 1 | 1 |
| ## 45 | 1 | 1 |
| ## 46 | 1 | 1 |
| ## 47 | 1 | 1 |
| ## 48 | 1 | 1 |
| ## 49 | 1 | 1 |

| | | |
|--------|---|---|
| ## 50 | 1 | 1 |
| ## 51 | 1 | 1 |
| ## 52 | 1 | 1 |
| ## 53 | 1 | 1 |
| ## 54 | 1 | 1 |
| ## 55 | 1 | 1 |
| ## 56 | 1 | 1 |
| ## 57 | 1 | 1 |
| ## 58 | 1 | 1 |
| ## 59 | 1 | 1 |
| ## 60 | 1 | 1 |
| ## 61 | 1 | 0 |
| ## 62 | 1 | 1 |
| ## 63 | 1 | 0 |
| ## 64 | 1 | 0 |
| ## 65 | 1 | 0 |
| ## 66 | 1 | 0 |
| ## 67 | 1 | 0 |
| ## 68 | 1 | 0 |
| ## 69 | 1 | 1 |
| ## 70 | 1 | 0 |
| ## 71 | 1 | 1 |
| ## 72 | 1 | 0 |
| ## 73 | 1 | 1 |
| ## 74 | 1 | 1 |
| ## 75 | 1 | 0 |
| ## 76 | 1 | 0 |
| ## 77 | 1 | 1 |
| ## 78 | 1 | 1 |
| ## 79 | 1 | 1 |
| ## 80 | 1 | 1 |
| ## 81 | 1 | 1 |
| ## 82 | 0 | 1 |
| ## 83 | 1 | 1 |
| ## 84 | 0 | 0 |
| ## 85 | 1 | 1 |
| ## 86 | 0 | 0 |
| ## 87 | 1 | 1 |
| ## 88 | 1 | 1 |
| ## 89 | 1 | 1 |
| ## 90 | 1 | 1 |
| ## 91 | 1 | 1 |
| ## 92 | 1 | 1 |
| ## 93 | 1 | 1 |
| ## 94 | 1 | 1 |
| ## 95 | 1 | 1 |
| ## 96 | 1 | 0 |
| ## 97 | 1 | 1 |
| ## 98 | 1 | 1 |
| ## 99 | 1 | 1 |
| ## 100 | 1 | 1 |
| ## 101 | 1 | 1 |
| ## 102 | 1 | 0 |
| ## 103 | 1 | 1 |
| ## 104 | 1 | 0 |
| ## 105 | 1 | 0 |
| ## 106 | 1 | 0 |
| ## 107 | 1 | 0 |

| | | |
|--------|---|---|
| ## 108 | 1 | 1 |
| ## 109 | 1 | 0 |
| ## 110 | 1 | 0 |
| ## 111 | 1 | 0 |
| ## 112 | 1 | 0 |
| ## 113 | 1 | 0 |
| ## 114 | 1 | 0 |
| ## 115 | 1 | 1 |
| ## 116 | 1 | 1 |
| ## 117 | 1 | 0 |
| ## 118 | 1 | 1 |
| ## 119 | 0 | 1 |
| ## 120 | 0 | 1 |
| ## 121 | 0 | 1 |
| ## 122 | 1 | 1 |
| ## 123 | 0 | 0 |
| ## 124 | 0 | 0 |
| ## 125 | 0 | 0 |
| ## 126 | 1 | 1 |
| ## 127 | 0 | 0 |
| ## 128 | 1 | 1 |
| ## 129 | 0 | 0 |
| ## 130 | 1 | 1 |
| ## 131 | 1 | 1 |
| ## 132 | 1 | 1 |
| ## 133 | 1 | 1 |
| ## 134 | 1 | 1 |
| ## 135 | 1 | 0 |
| ## 136 | 1 | 0 |
| ## 137 | 1 | 1 |
| ## 138 | 1 | 1 |
| ## 139 | 1 | 1 |
| ## 140 | 0 | 0 |
| ## 141 | 0 | 0 |
| ## 142 | 0 | 1 |
| ## 143 | 1 | 1 |
| ## 144 | 0 | 0 |
| ## 145 | 1 | 0 |
| ## 146 | 1 | 0 |
| ## 147 | 1 | 0 |
| ## 148 | 1 | 0 |
| ## 149 | 1 | 0 |
| ## 150 | 1 | 0 |
| ## 151 | 1 | 0 |
| ## 152 | 1 | 0 |
| ## 153 | 1 | 0 |
| ## 154 | 1 | 0 |
| ## 155 | 0 | 0 |
| ## 156 | 0 | 0 |
| ## 157 | 0 | 1 |
| ## 158 | 0 | 1 |
| ## 159 | 0 | 1 |
| ## 160 | 0 | 0 |
| ## 161 | 0 | 1 |
| ## 162 | 0 | 0 |
| ## 163 | 0 | 0 |
| ## 164 | 0 | 1 |
| ## 165 | 0 | 0 |

| | | |
|--------|---|---|
| ## 166 | 0 | 1 |
| ## 167 | 1 | 1 |
| ## 168 | 0 | 0 |
| ## 169 | 0 | 0 |
| ## 170 | 0 | 0 |
| ## 171 | 0 | 1 |
| ## 172 | 0 | 1 |
| ## 173 | 1 | 0 |
| ## 174 | 0 | 0 |
| ## 175 | 1 | 1 |
| ## 176 | 0 | 0 |
| ## 177 | 0 | 0 |
| ## 178 | 0 | 0 |
| ## 179 | 1 | 0 |
| ## 180 | 0 | 0 |
| ## 181 | 0 | 0 |
| ## 182 | 0 | 0 |
| ## 183 | 0 | 0 |
| ## 184 | 0 | 0 |
| ## 185 | 0 | 0 |
| ## 186 | 1 | 0 |
| ## 187 | 1 | 0 |
| ## 188 | 0 | 0 |
| ## 189 | 1 | 0 |
| ## 190 | 1 | 0 |
| ## 191 | 0 | 0 |
| ## 192 | 1 | 0 |
| ## 193 | 0 | 0 |
| ## 194 | 0 | 0 |
| ## 195 | 0 | 0 |
| ## 196 | 0 | 0 |
| ## 197 | 0 | 0 |
| ## 198 | 0 | 0 |
| ## 199 | 0 | 0 |
| ## 200 | 0 | 1 |
| ## 201 | 0 | 0 |
| ## 202 | 0 | 0 |
| ## 203 | 1 | 0 |
| ## 204 | 0 | 0 |
| ## 205 | 0 | 0 |
| ## 206 | 0 | 0 |
| ## 207 | 0 | 0 |
| ## 208 | 0 | 0 |
| ## 209 | 1 | 0 |
| ## 210 | 1 | 0 |
| ## 211 | 0 | 0 |
| ## 212 | 0 | 0 |
| ## 213 | 0 | 0 |
| ## 214 | 0 | 0 |
| ## 215 | 0 | 0 |
| ## 216 | 1 | 0 |
| ## 217 | 1 | 0 |
| ## 218 | 0 | 0 |
| ## 219 | 0 | 0 |
| ## 220 | 0 | 0 |
| ## 221 | 0 | 0 |
| ## 222 | 0 | 0 |
| ## 223 | 0 | 0 |

| | | |
|--------|---|---|
| ## 224 | 0 | 0 |
| ## 225 | 0 | 0 |
| ## 226 | 0 | 0 |
| ## 227 | 0 | 0 |
| ## 228 | 0 | 0 |
| ## 229 | 0 | 0 |
| ## 230 | 0 | 0 |
| ## 231 | 0 | 0 |
| ## 232 | 0 | 0 |
| ## 233 | 0 | 0 |
| ## 234 | 0 | 0 |
| ## 235 | 0 | 0 |
| ## 236 | 0 | 0 |
| ## 237 | 0 | 0 |
| ## 238 | 0 | 0 |
| ## 239 | 0 | 0 |
| ## 240 | 0 | 0 |
| ## 241 | 0 | 0 |
| ## 242 | 0 | 0 |
| ## 243 | 0 | 0 |
| ## 244 | 0 | 0 |
| ## 245 | 0 | 0 |
| ## 246 | 0 | 0 |
| ## 247 | 0 | 0 |
| ## 248 | 0 | 0 |
| ## 249 | 0 | 0 |
| ## 250 | 0 | 0 |
| ## 251 | 0 | 0 |
| ## 252 | 0 | 0 |
| ## 253 | 0 | 0 |
| ## 254 | 0 | 0 |
| ## 255 | 0 | 0 |
| ## 256 | 0 | 0 |
| ## 257 | 0 | 0 |
| ## 258 | 0 | 0 |
| ## 259 | 0 | 0 |
| ## 260 | 0 | 0 |
| ## 261 | 0 | 0 |
| ## 262 | 0 | 0 |
| ## 263 | 0 | 0 |
| ## 264 | 0 | 0 |
| ## 265 | 0 | 0 |
| ## 266 | 0 | 0 |
| ## 267 | 0 | 0 |
| ## 268 | 0 | 0 |
| ## 269 | 0 | 0 |
| ## 270 | 0 | 0 |
| ## 271 | 0 | 0 |
| ## 272 | 0 | 0 |
| ## 273 | 0 | 0 |
| ## 274 | 0 | 0 |
| ## 275 | 0 | 0 |
| ## 276 | 1 | 1 |
| ## 277 | 1 | 1 |
| ## 278 | 1 | 1 |
| ## 279 | 1 | 1 |
| ## 280 | 0 | 0 |
| ## 281 | 0 | 0 |

| | | | |
|--------|-------------------------|-------------------------|-----------------------|
| ## 282 | 0 | 0 | |
| ## 283 | 0 | 0 | |
| ## 284 | 0 | 1 | |
| ## 285 | 0 | 0 | |
| ## 286 | 0 | 1 | |
| ## 287 | 0 | 0 | |
| ## 288 | 0 | 0 | |
| ## 289 | 0 | 0 | |
| ## 290 | 0 | 0 | |
| ## 291 | 0 | 0 | |
| ## 292 | 0 | 0 | |
| ## 293 | 0 | 0 | |
| ## 294 | 0 | 0 | |
| ## 295 | 0 | 0 | |
| ## 296 | 0 | 0 | |
| ## 297 | 0 | 0 | |
| ## 298 | 1 | 1 | |
| ## 299 | 0 | 0 | |
| ## 300 | 0 | 0 | |
| ## | glm_Geranium_sylvaticum | glm_Ranunculus_acris_sl | glm_Prunella_vulgaris |
| ## 1 | 0 | 0 | 0 |
| ## 2 | 1 | 1 | 1 |
| ## 3 | 1 | 1 | 1 |
| ## 4 | 1 | 1 | 1 |
| ## 5 | 1 | 1 | 1 |
| ## 6 | 1 | 1 | 1 |
| ## 7 | 1 | 1 | 1 |
| ## 8 | 1 | 1 | 1 |
| ## 9 | 0 | 1 | 1 |
| ## 10 | 0 | 1 | 1 |
| ## 11 | 0 | 1 | 1 |
| ## 12 | 0 | 1 | 1 |
| ## 13 | 0 | 1 | 1 |
| ## 14 | 1 | 1 | 1 |
| ## 15 | 1 | 1 | 1 |
| ## 16 | 1 | 1 | 1 |
| ## 17 | 1 | 1 | 1 |
| ## 18 | 0 | 1 | 1 |
| ## 19 | 0 | 1 | 1 |
| ## 20 | 1 | 1 | 0 |
| ## 21 | 1 | 1 | 1 |
| ## 22 | 1 | 1 | 1 |
| ## 23 | 1 | 1 | 1 |
| ## 24 | 0 | 1 | 1 |
| ## 25 | 1 | 1 | 1 |
| ## 26 | 0 | 1 | 1 |
| ## 27 | 0 | 1 | 1 |
| ## 28 | 1 | 1 | 1 |
| ## 29 | 1 | 1 | 1 |
| ## 30 | 1 | 1 | 1 |
| ## 31 | 1 | 1 | 1 |
| ## 32 | 1 | 1 | 1 |
| ## 33 | 0 | 1 | 1 |
| ## 34 | 1 | 1 | 0 |
| ## 35 | 0 | 1 | 1 |
| ## 36 | 1 | 1 | 0 |
| ## 37 | 0 | 1 | 1 |
| ## 38 | 1 | 0 | 0 |

| | | | |
|-------|---|---|---|
| ## 39 | 0 | 1 | 1 |
| ## 40 | 1 | 1 | 1 |
| ## 41 | 1 | 1 | 1 |
| ## 42 | 1 | 1 | 1 |
| ## 43 | 0 | 1 | 1 |
| ## 44 | 0 | 1 | 1 |
| ## 45 | 1 | 1 | 1 |
| ## 46 | 1 | 1 | 1 |
| ## 47 | 0 | 1 | 1 |
| ## 48 | 1 | 1 | 1 |
| ## 49 | 0 | 1 | 1 |
| ## 50 | 1 | 1 | 1 |
| ## 51 | 0 | 1 | 1 |
| ## 52 | 0 | 1 | 1 |
| ## 53 | 0 | 1 | 0 |
| ## 54 | 1 | 1 | 0 |
| ## 55 | 1 | 1 | 0 |
| ## 56 | 1 | 1 | 0 |
| ## 57 | 1 | 1 | 0 |
| ## 58 | 1 | 1 | 1 |
| ## 59 | 1 | 1 | 1 |
| ## 60 | 1 | 1 | 1 |
| ## 61 | 0 | 1 | 1 |
| ## 62 | 0 | 1 | 1 |
| ## 63 | 0 | 1 | 1 |
| ## 64 | 0 | 1 | 1 |
| ## 65 | 0 | 1 | 1 |
| ## 66 | 0 | 1 | 1 |
| ## 67 | 0 | 0 | 0 |
| ## 68 | 0 | 1 | 1 |
| ## 69 | 1 | 0 | 1 |
| ## 70 | 0 | 0 | 1 |
| ## 71 | 1 | 0 | 0 |
| ## 72 | 0 | 0 | 0 |
| ## 73 | 0 | 0 | 0 |
| ## 74 | 0 | 0 | 0 |
| ## 75 | 0 | 1 | 1 |
| ## 76 | 0 | 1 | 1 |
| ## 77 | 1 | 1 | 0 |
| ## 78 | 1 | 1 | 1 |
| ## 79 | 1 | 1 | 0 |
| ## 80 | 0 | 1 | 1 |
| ## 81 | 1 | 1 | 0 |
| ## 82 | 0 | 1 | 0 |
| ## 83 | 1 | 1 | 0 |
| ## 84 | 0 | 1 | 1 |
| ## 85 | 1 | 1 | 1 |
| ## 86 | 1 | 1 | 1 |
| ## 87 | 1 | 1 | 1 |
| ## 88 | 0 | 0 | 0 |
| ## 89 | 1 | 0 | 0 |
| ## 90 | 1 | 1 | 1 |
| ## 91 | 1 | 1 | 0 |
| ## 92 | 0 | 0 | 0 |
| ## 93 | 1 | 1 | 0 |
| ## 94 | 1 | 1 | 0 |
| ## 95 | 1 | 1 | 0 |
| ## 96 | 0 | 1 | 1 |

| | | | |
|--------|---|---|---|
| ## 97 | 1 | 0 | 0 |
| ## 98 | 1 | 1 | 0 |
| ## 99 | 1 | 0 | 0 |
| ## 100 | 1 | 1 | 0 |
| ## 101 | 1 | 0 | 0 |
| ## 102 | 1 | 0 | 1 |
| ## 103 | 1 | 1 | 1 |
| ## 104 | 1 | 0 | 0 |
| ## 105 | 0 | 1 | 1 |
| ## 106 | 0 | 0 | 1 |
| ## 107 | 0 | 0 | 0 |
| ## 108 | 1 | 0 | 1 |
| ## 109 | 1 | 0 | 0 |
| ## 110 | 0 | 0 | 0 |
| ## 111 | 0 | 0 | 0 |
| ## 112 | 1 | 0 | 0 |
| ## 113 | 0 | 0 | 0 |
| ## 114 | 1 | 0 | 0 |
| ## 115 | 0 | 0 | 0 |
| ## 116 | 1 | 0 | 1 |
| ## 117 | 1 | 0 | 0 |
| ## 118 | 1 | 0 | 0 |
| ## 119 | 0 | 1 | 0 |
| ## 120 | 1 | 1 | 0 |
| ## 121 | 1 | 1 | 0 |
| ## 122 | 1 | 1 | 0 |
| ## 123 | 0 | 0 | 0 |
| ## 124 | 0 | 1 | 1 |
| ## 125 | 0 | 0 | 0 |
| ## 126 | 1 | 0 | 0 |
| ## 127 | 0 | 1 | 0 |
| ## 128 | 1 | 1 | 0 |
| ## 129 | 1 | 0 | 1 |
| ## 130 | 1 | 0 | 0 |
| ## 131 | 1 | 0 | 0 |
| ## 132 | 0 | 0 | 0 |
| ## 133 | 0 | 0 | 0 |
| ## 134 | 1 | 0 | 0 |
| ## 135 | 0 | 0 | 0 |
| ## 136 | 0 | 0 | 0 |
| ## 137 | 1 | 0 | 0 |
| ## 138 | 0 | 1 | 0 |
| ## 139 | 1 | 0 | 0 |
| ## 140 | 1 | 0 | 0 |
| ## 141 | 0 | 0 | 0 |
| ## 142 | 0 | 1 | 1 |
| ## 143 | 1 | 0 | 0 |
| ## 144 | 0 | 0 | 0 |
| ## 145 | 0 | 0 | 0 |
| ## 146 | 0 | 0 | 0 |
| ## 147 | 0 | 0 | 0 |
| ## 148 | 0 | 0 | 0 |
| ## 149 | 0 | 0 | 0 |
| ## 150 | 0 | 0 | 0 |
| ## 151 | 0 | 0 | 0 |
| ## 152 | 1 | 0 | 0 |
| ## 153 | 1 | 0 | 0 |
| ## 154 | 0 | 0 | 0 |

| | | | |
|--------|---|---|---|
| ## 155 | 0 | 0 | 0 |
| ## 156 | 0 | 0 | 1 |
| ## 157 | 0 | 0 | 0 |
| ## 158 | 0 | 0 | 0 |
| ## 159 | 0 | 0 | 0 |
| ## 160 | 0 | 1 | 0 |
| ## 161 | 0 | 1 | 0 |
| ## 162 | 0 | 0 | 0 |
| ## 163 | 0 | 0 | 0 |
| ## 164 | 1 | 0 | 0 |
| ## 165 | 0 | 0 | 0 |
| ## 166 | 1 | 0 | 0 |
| ## 167 | 0 | 0 | 0 |
| ## 168 | 0 | 0 | 0 |
| ## 169 | 0 | 0 | 0 |
| ## 170 | 0 | 0 | 1 |
| ## 171 | 1 | 0 | 0 |
| ## 172 | 0 | 0 | 0 |
| ## 173 | 0 | 0 | 0 |
| ## 174 | 0 | 0 | 0 |
| ## 175 | 1 | 0 | 0 |
| ## 176 | 1 | 0 | 0 |
| ## 177 | 0 | 0 | 0 |
| ## 178 | 0 | 0 | 0 |
| ## 179 | 0 | 0 | 0 |
| ## 180 | 0 | 0 | 0 |
| ## 181 | 0 | 0 | 0 |
| ## 182 | 0 | 0 | 0 |
| ## 183 | 0 | 0 | 0 |
| ## 184 | 0 | 0 | 0 |
| ## 185 | 0 | 0 | 0 |
| ## 186 | 0 | 0 | 0 |
| ## 187 | 0 | 0 | 0 |
| ## 188 | 0 | 0 | 0 |
| ## 189 | 0 | 0 | 0 |
| ## 190 | 1 | 0 | 0 |
| ## 191 | 0 | 0 | 0 |
| ## 192 | 0 | 0 | 0 |
| ## 193 | 0 | 0 | 0 |
| ## 194 | 0 | 0 | 0 |
| ## 195 | 0 | 0 | 0 |
| ## 196 | 0 | 0 | 0 |
| ## 197 | 0 | 0 | 0 |
| ## 198 | 0 | 0 | 0 |
| ## 199 | 0 | 0 | 0 |
| ## 200 | 0 | 0 | 0 |
| ## 201 | 0 | 0 | 0 |
| ## 202 | 0 | 0 | 0 |
| ## 203 | 0 | 0 | 0 |
| ## 204 | 0 | 0 | 0 |
| ## 205 | 0 | 0 | 0 |
| ## 206 | 0 | 0 | 0 |
| ## 207 | 0 | 0 | 0 |
| ## 208 | 0 | 0 | 0 |
| ## 209 | 0 | 0 | 0 |
| ## 210 | 1 | 0 | 0 |
| ## 211 | 0 | 0 | 0 |
| ## 212 | 0 | 0 | 0 |

| | | | |
|--------|---|---|---|
| ## 213 | 0 | 0 | 0 |
| ## 214 | 0 | 0 | 0 |
| ## 215 | 0 | 0 | 0 |
| ## 216 | 0 | 0 | 0 |
| ## 217 | 0 | 0 | 0 |
| ## 218 | 0 | 0 | 0 |
| ## 219 | 0 | 0 | 0 |
| ## 220 | 0 | 0 | 0 |
| ## 221 | 0 | 0 | 0 |
| ## 222 | 0 | 0 | 0 |
| ## 223 | 0 | 0 | 0 |
| ## 224 | 0 | 0 | 0 |
| ## 225 | 0 | 0 | 0 |
| ## 226 | 0 | 0 | 0 |
| ## 227 | 0 | 0 | 0 |
| ## 228 | 0 | 0 | 0 |
| ## 229 | 0 | 0 | 0 |
| ## 230 | 0 | 0 | 0 |
| ## 231 | 0 | 0 | 0 |
| ## 232 | 0 | 0 | 0 |
| ## 233 | 0 | 0 | 0 |
| ## 234 | 0 | 0 | 0 |
| ## 235 | 0 | 0 | 0 |
| ## 236 | 0 | 0 | 0 |
| ## 237 | 0 | 0 | 0 |
| ## 238 | 0 | 0 | 0 |
| ## 239 | 0 | 0 | 0 |
| ## 240 | 0 | 0 | 0 |
| ## 241 | 0 | 0 | 0 |
| ## 242 | 0 | 0 | 0 |
| ## 243 | 0 | 0 | 0 |
| ## 244 | 0 | 0 | 0 |
| ## 245 | 0 | 0 | 0 |
| ## 246 | 0 | 0 | 0 |
| ## 247 | 0 | 0 | 0 |
| ## 248 | 0 | 0 | 0 |
| ## 249 | 0 | 0 | 0 |
| ## 250 | 0 | 0 | 0 |
| ## 251 | 0 | 0 | 0 |
| ## 252 | 0 | 0 | 0 |
| ## 253 | 0 | 0 | 0 |
| ## 254 | 0 | 0 | 0 |
| ## 255 | 0 | 0 | 0 |
| ## 256 | 0 | 0 | 0 |
| ## 257 | 0 | 0 | 0 |
| ## 258 | 0 | 0 | 0 |
| ## 259 | 0 | 0 | 0 |
| ## 260 | 0 | 0 | 0 |
| ## 261 | 0 | 0 | 0 |
| ## 262 | 0 | 0 | 0 |
| ## 263 | 0 | 0 | 0 |
| ## 264 | 0 | 0 | 0 |
| ## 265 | 0 | 0 | 0 |
| ## 266 | 0 | 0 | 0 |
| ## 267 | 0 | 0 | 0 |
| ## 268 | 0 | 0 | 0 |
| ## 269 | 0 | 0 | 0 |
| ## 270 | 0 | 0 | 0 |

| | | | |
|--------|-------------------------|-------------------------------|---|
| ## 271 | 0 | 0 | 0 |
| ## 272 | 0 | 0 | 0 |
| ## 273 | 0 | 0 | 0 |
| ## 274 | 0 | 0 | 0 |
| ## 275 | 0 | 0 | 0 |
| ## 276 | 1 | 0 | 0 |
| ## 277 | 1 | 1 | 1 |
| ## 278 | 1 | 0 | 0 |
| ## 279 | 1 | 0 | 0 |
| ## 280 | 1 | 0 | 1 |
| ## 281 | 0 | 0 | 1 |
| ## 282 | 0 | 0 | 0 |
| ## 283 | 0 | 0 | 1 |
| ## 284 | 0 | 1 | 0 |
| ## 285 | 1 | 0 | 0 |
| ## 286 | 0 | 0 | 0 |
| ## 287 | 0 | 0 | 0 |
| ## 288 | 0 | 0 | 0 |
| ## 289 | 0 | 0 | 0 |
| ## 290 | 0 | 0 | 0 |
| ## 291 | 0 | 0 | 0 |
| ## 292 | 0 | 0 | 0 |
| ## 293 | 0 | 0 | 0 |
| ## 294 | 0 | 0 | 0 |
| ## 295 | 0 | 0 | 0 |
| ## 296 | 0 | 0 | 0 |
| ## 297 | 0 | 0 | 0 |
| ## 298 | 1 | 1 | 1 |
| ## 299 | 0 | 0 | 0 |
| ## 300 | 0 | 0 | 0 |
| ## | glm_Veronica_chamaedrys | glm_Taraxacum_officinale_aggr | |
| ## 1 | 0 | 0 | |
| ## 2 | 1 | 1 | |
| ## 3 | 1 | 1 | |
| ## 4 | 1 | 1 | |
| ## 5 | 1 | 1 | |
| ## 6 | 1 | 1 | |
| ## 7 | 1 | 0 | |
| ## 8 | 1 | 1 | |
| ## 9 | 1 | 0 | |
| ## 10 | 1 | 1 | |
| ## 11 | 1 | 0 | |
| ## 12 | 1 | 1 | |
| ## 13 | 1 | 1 | |
| ## 14 | 1 | 1 | |
| ## 15 | 1 | 1 | |
| ## 16 | 1 | 1 | |
| ## 17 | 1 | 1 | |
| ## 18 | 1 | 1 | |
| ## 19 | 1 | 1 | |
| ## 20 | 1 | 1 | |
| ## 21 | 1 | 1 | |
| ## 22 | 1 | 1 | |
| ## 23 | 1 | 1 | |
| ## 24 | 1 | 0 | |
| ## 25 | 1 | 0 | |
| ## 26 | 1 | 0 | |
| ## 27 | 0 | 0 | |

| | | |
|-------|---|---|
| ## 28 | 1 | 0 |
| ## 29 | 1 | 0 |
| ## 30 | 1 | 1 |
| ## 31 | 1 | 1 |
| ## 32 | 1 | 1 |
| ## 33 | 1 | 1 |
| ## 34 | 1 | 1 |
| ## 35 | 1 | 1 |
| ## 36 | 1 | 1 |
| ## 37 | 1 | 0 |
| ## 38 | 1 | 1 |
| ## 39 | 1 | 1 |
| ## 40 | 1 | 1 |
| ## 41 | 1 | 1 |
| ## 42 | 0 | 1 |
| ## 43 | 1 | 1 |
| ## 44 | 1 | 1 |
| ## 45 | 1 | 1 |
| ## 46 | 1 | 1 |
| ## 47 | 1 | 1 |
| ## 48 | 1 | 1 |
| ## 49 | 1 | 1 |
| ## 50 | 1 | 1 |
| ## 51 | 1 | 0 |
| ## 52 | 1 | 1 |
| ## 53 | 1 | 1 |
| ## 54 | 1 | 1 |
| ## 55 | 1 | 1 |
| ## 56 | 1 | 1 |
| ## 57 | 1 | 1 |
| ## 58 | 1 | 1 |
| ## 59 | 1 | 1 |
| ## 60 | 1 | 0 |
| ## 61 | 1 | 1 |
| ## 62 | 1 | 0 |
| ## 63 | 1 | 0 |
| ## 64 | 1 | 0 |
| ## 65 | 0 | 0 |
| ## 66 | 1 | 0 |
| ## 67 | 1 | 1 |
| ## 68 | 1 | 0 |
| ## 69 | 0 | 0 |
| ## 70 | 1 | 0 |
| ## 71 | 1 | 1 |
| ## 72 | 1 | 1 |
| ## 73 | 1 | 1 |
| ## 74 | 1 | 1 |
| ## 75 | 1 | 0 |
| ## 76 | 1 | 1 |
| ## 77 | 1 | 1 |
| ## 78 | 0 | 1 |
| ## 79 | 0 | 1 |
| ## 80 | 0 | 1 |
| ## 81 | 0 | 1 |
| ## 82 | 0 | 1 |
| ## 83 | 0 | 1 |
| ## 84 | 0 | 0 |
| ## 85 | 0 | 0 |

| | | |
|--------|---|---|
| ## 86 | 0 | 0 |
| ## 87 | 0 | 0 |
| ## 88 | 1 | 1 |
| ## 89 | 1 | 0 |
| ## 90 | 0 | 0 |
| ## 91 | 0 | 1 |
| ## 92 | 1 | 1 |
| ## 93 | 1 | 1 |
| ## 94 | 1 | 1 |
| ## 95 | 1 | 1 |
| ## 96 | 1 | 0 |
| ## 97 | 1 | 0 |
| ## 98 | 0 | 1 |
| ## 99 | 0 | 0 |
| ## 100 | 0 | 1 |
| ## 101 | 1 | 0 |
| ## 102 | 0 | 0 |
| ## 103 | 1 | 0 |
| ## 104 | 1 | 0 |
| ## 105 | 1 | 0 |
| ## 106 | 0 | 0 |
| ## 107 | 0 | 0 |
| ## 108 | 0 | 0 |
| ## 109 | 1 | 0 |
| ## 110 | 1 | 0 |
| ## 111 | 1 | 0 |
| ## 112 | 0 | 0 |
| ## 113 | 0 | 0 |
| ## 114 | 1 | 0 |
| ## 115 | 1 | 0 |
| ## 116 | 0 | 0 |
| ## 117 | 0 | 0 |
| ## 118 | 0 | 1 |
| ## 119 | 0 | 1 |
| ## 120 | 0 | 1 |
| ## 121 | 0 | 1 |
| ## 122 | 0 | 1 |
| ## 123 | 0 | 0 |
| ## 124 | 0 | 0 |
| ## 125 | 0 | 0 |
| ## 126 | 0 | 0 |
| ## 127 | 0 | 0 |
| ## 128 | 0 | 1 |
| ## 129 | 0 | 0 |
| ## 130 | 0 | 1 |
| ## 131 | 0 | 1 |
| ## 132 | 0 | 0 |
| ## 133 | 0 | 1 |
| ## 134 | 0 | 1 |
| ## 135 | 0 | 0 |
| ## 136 | 0 | 0 |
| ## 137 | 1 | 0 |
| ## 138 | 0 | 1 |
| ## 139 | 0 | 0 |
| ## 140 | 0 | 0 |
| ## 141 | 0 | 0 |
| ## 142 | 0 | 0 |
| ## 143 | 0 | 1 |

| | | |
|--------|---|---|
| ## 144 | 0 | 0 |
| ## 145 | 1 | 0 |
| ## 146 | 0 | 0 |
| ## 147 | 0 | 0 |
| ## 148 | 0 | 0 |
| ## 149 | 0 | 0 |
| ## 150 | 0 | 0 |
| ## 151 | 0 | 0 |
| ## 152 | 0 | 0 |
| ## 153 | 0 | 0 |
| ## 154 | 0 | 0 |
| ## 155 | 0 | 0 |
| ## 156 | 0 | 0 |
| ## 157 | 0 | 0 |
| ## 158 | 0 | 1 |
| ## 159 | 0 | 0 |
| ## 160 | 0 | 0 |
| ## 161 | 0 | 1 |
| ## 162 | 0 | 0 |
| ## 163 | 0 | 0 |
| ## 164 | 0 | 1 |
| ## 165 | 0 | 0 |
| ## 166 | 0 | 0 |
| ## 167 | 0 | 0 |
| ## 168 | 0 | 0 |
| ## 169 | 0 | 0 |
| ## 170 | 0 | 0 |
| ## 171 | 0 | 0 |
| ## 172 | 0 | 1 |
| ## 173 | 0 | 0 |
| ## 174 | 0 | 0 |
| ## 175 | 0 | 1 |
| ## 176 | 0 | 0 |
| ## 177 | 0 | 0 |
| ## 178 | 0 | 0 |
| ## 179 | 0 | 0 |
| ## 180 | 0 | 0 |
| ## 181 | 0 | 0 |
| ## 182 | 0 | 0 |
| ## 183 | 0 | 0 |
| ## 184 | 0 | 0 |
| ## 185 | 0 | 0 |
| ## 186 | 0 | 0 |
| ## 187 | 0 | 0 |
| ## 188 | 0 | 0 |
| ## 189 | 1 | 0 |
| ## 190 | 0 | 0 |
| ## 191 | 0 | 0 |
| ## 192 | 1 | 0 |
| ## 193 | 0 | 0 |
| ## 194 | 0 | 0 |
| ## 195 | 0 | 0 |
| ## 196 | 0 | 0 |
| ## 197 | 0 | 0 |
| ## 198 | 0 | 0 |
| ## 199 | 0 | 0 |
| ## 200 | 0 | 0 |
| ## 201 | 0 | 0 |

| | | |
|--------|---|---|
| ## 202 | 0 | 0 |
| ## 203 | 0 | 1 |
| ## 204 | 0 | 0 |
| ## 205 | 0 | 0 |
| ## 206 | 0 | 0 |
| ## 207 | 0 | 0 |
| ## 208 | 0 | 0 |
| ## 209 | 0 | 0 |
| ## 210 | 0 | 0 |
| ## 211 | 0 | 0 |
| ## 212 | 0 | 0 |
| ## 213 | 0 | 0 |
| ## 214 | 0 | 0 |
| ## 215 | 0 | 0 |
| ## 216 | 0 | 0 |
| ## 217 | 0 | 0 |
| ## 218 | 0 | 0 |
| ## 219 | 0 | 0 |
| ## 220 | 0 | 0 |
| ## 221 | 0 | 0 |
| ## 222 | 0 | 0 |
| ## 223 | 0 | 0 |
| ## 224 | 0 | 0 |
| ## 225 | 0 | 0 |
| ## 226 | 0 | 0 |
| ## 227 | 0 | 0 |
| ## 228 | 0 | 0 |
| ## 229 | 0 | 0 |
| ## 230 | 0 | 0 |
| ## 231 | 1 | 0 |
| ## 232 | 0 | 0 |
| ## 233 | 0 | 0 |
| ## 234 | 0 | 0 |
| ## 235 | 0 | 0 |
| ## 236 | 0 | 0 |
| ## 237 | 0 | 0 |
| ## 238 | 0 | 0 |
| ## 239 | 0 | 0 |
| ## 240 | 0 | 0 |
| ## 241 | 0 | 0 |
| ## 242 | 0 | 0 |
| ## 243 | 0 | 0 |
| ## 244 | 0 | 0 |
| ## 245 | 0 | 0 |
| ## 246 | 0 | 0 |
| ## 247 | 0 | 0 |
| ## 248 | 0 | 0 |
| ## 249 | 0 | 0 |
| ## 250 | 0 | 0 |
| ## 251 | 0 | 0 |
| ## 252 | 0 | 0 |
| ## 253 | 0 | 0 |
| ## 254 | 0 | 0 |
| ## 255 | 0 | 0 |
| ## 256 | 0 | 0 |
| ## 257 | 0 | 0 |
| ## 258 | 0 | 0 |
| ## 259 | 0 | 0 |

| | | | |
|--------|-------------------------|-----------------------|------------------------|
| ## 260 | 0 | 0 | |
| ## 261 | 0 | 0 | |
| ## 262 | 0 | 0 | |
| ## 263 | 0 | 0 | |
| ## 264 | 0 | 0 | |
| ## 265 | 0 | 0 | |
| ## 266 | 0 | 0 | |
| ## 267 | 0 | 0 | |
| ## 268 | 0 | 0 | |
| ## 269 | 0 | 0 | |
| ## 270 | 0 | 0 | |
| ## 271 | 0 | 0 | |
| ## 272 | 0 | 0 | |
| ## 273 | 0 | 0 | |
| ## 274 | 0 | 0 | |
| ## 275 | 0 | 0 | |
| ## 276 | 1 | 1 | |
| ## 277 | 1 | 0 | |
| ## 278 | 1 | 1 | |
| ## 279 | 0 | 1 | |
| ## 280 | 0 | 0 | |
| ## 281 | 0 | 0 | |
| ## 282 | 0 | 0 | |
| ## 283 | 0 | 0 | |
| ## 284 | 0 | 1 | |
| ## 285 | 0 | 0 | |
| ## 286 | 0 | 0 | |
| ## 287 | 0 | 0 | |
| ## 288 | 0 | 0 | |
| ## 289 | 0 | 0 | |
| ## 290 | 0 | 0 | |
| ## 291 | 0 | 0 | |
| ## 292 | 0 | 0 | |
| ## 293 | 0 | 0 | |
| ## 294 | 0 | 0 | |
| ## 295 | 0 | 0 | |
| ## 296 | 0 | 0 | |
| ## 297 | 0 | 0 | |
| ## 298 | 1 | 0 | |
| ## 299 | 0 | 0 | |
| ## 300 | 0 | 0 | |
| ## | glm_Plantago_lanceolata | glm_Potentilla_erecta | glm_Carex sempervirens |
| ## 1 | 0 | 1 | 1 |
| ## 2 | 1 | 0 | 0 |
| ## 3 | 1 | 0 | 0 |
| ## 4 | 1 | 0 | 0 |
| ## 5 | 1 | 0 | 0 |
| ## 6 | 1 | 0 | 0 |
| ## 7 | 1 | 0 | 0 |
| ## 8 | 1 | 0 | 0 |
| ## 9 | 0 | 0 | 0 |
| ## 10 | 1 | 0 | 0 |
| ## 11 | 1 | 0 | 0 |
| ## 12 | 1 | 0 | 0 |
| ## 13 | 1 | 0 | 0 |
| ## 14 | 1 | 0 | 0 |
| ## 15 | 1 | 0 | 0 |
| ## 16 | 1 | 0 | 0 |

| | | | |
|-------|---|---|---|
| ## 17 | 1 | 0 | 0 |
| ## 18 | 1 | 0 | 0 |
| ## 19 | 1 | 0 | 0 |
| ## 20 | 1 | 0 | 0 |
| ## 21 | 1 | 0 | 0 |
| ## 22 | 1 | 0 | 0 |
| ## 23 | 1 | 0 | 0 |
| ## 24 | 1 | 0 | 0 |
| ## 25 | 0 | 0 | 0 |
| ## 26 | 0 | 0 | 0 |
| ## 27 | 0 | 0 | 0 |
| ## 28 | 1 | 0 | 0 |
| ## 29 | 0 | 0 | 0 |
| ## 30 | 1 | 0 | 0 |
| ## 31 | 1 | 0 | 0 |
| ## 32 | 1 | 1 | 0 |
| ## 33 | 1 | 0 | 0 |
| ## 34 | 1 | 0 | 0 |
| ## 35 | 1 | 0 | 0 |
| ## 36 | 1 | 1 | 0 |
| ## 37 | 1 | 0 | 0 |
| ## 38 | 1 | 1 | 0 |
| ## 39 | 1 | 0 | 0 |
| ## 40 | 1 | 0 | 0 |
| ## 41 | 0 | 0 | 0 |
| ## 42 | 0 | 0 | 0 |
| ## 43 | 0 | 0 | 0 |
| ## 44 | 0 | 0 | 0 |
| ## 45 | 1 | 0 | 0 |
| ## 46 | 0 | 0 | 0 |
| ## 47 | 0 | 0 | 0 |
| ## 48 | 0 | 0 | 0 |
| ## 49 | 0 | 0 | 0 |
| ## 50 | 1 | 0 | 0 |
| ## 51 | 0 | 0 | 0 |
| ## 52 | 0 | 0 | 0 |
| ## 53 | 1 | 0 | 0 |
| ## 54 | 1 | 0 | 0 |
| ## 55 | 1 | 0 | 0 |
| ## 56 | 1 | 0 | 0 |
| ## 57 | 1 | 0 | 0 |
| ## 58 | 1 | 0 | 0 |
| ## 59 | 1 | 0 | 0 |
| ## 60 | 0 | 0 | 0 |
| ## 61 | 1 | 0 | 0 |
| ## 62 | 0 | 0 | 0 |
| ## 63 | 0 | 0 | 0 |
| ## 64 | 0 | 0 | 0 |
| ## 65 | 0 | 1 | 0 |
| ## 66 | 0 | 0 | 0 |
| ## 67 | 1 | 1 | 0 |
| ## 68 | 1 | 0 | 0 |
| ## 69 | 1 | 1 | 0 |
| ## 70 | 1 | 1 | 0 |
| ## 71 | 1 | 0 | 0 |
| ## 72 | 1 | 1 | 0 |
| ## 73 | 1 | 1 | 0 |
| ## 74 | 1 | 1 | 0 |

| | | | |
|--------|---|---|---|
| ## 75 | 1 | 1 | 0 |
| ## 76 | 1 | 0 | 0 |
| ## 77 | 1 | 0 | 0 |
| ## 78 | 0 | 0 | 0 |
| ## 79 | 0 | 0 | 0 |
| ## 80 | 0 | 0 | 0 |
| ## 81 | 0 | 0 | 0 |
| ## 82 | 0 | 0 | 0 |
| ## 83 | 0 | 0 | 0 |
| ## 84 | 0 | 0 | 0 |
| ## 85 | 0 | 0 | 0 |
| ## 86 | 0 | 0 | 0 |
| ## 87 | 0 | 0 | 0 |
| ## 88 | 1 | 0 | 0 |
| ## 89 | 0 | 0 | 0 |
| ## 90 | 0 | 0 | 0 |
| ## 91 | 0 | 0 | 0 |
| ## 92 | 1 | 0 | 0 |
| ## 93 | 1 | 0 | 0 |
| ## 94 | 1 | 0 | 0 |
| ## 95 | 1 | 0 | 0 |
| ## 96 | 0 | 0 | 0 |
| ## 97 | 1 | 1 | 0 |
| ## 98 | 0 | 0 | 0 |
| ## 99 | 0 | 0 | 0 |
| ## 100 | 0 | 0 | 0 |
| ## 101 | 1 | 0 | 0 |
| ## 102 | 0 | 0 | 0 |
| ## 103 | 0 | 0 | 0 |
| ## 104 | 1 | 1 | 0 |
| ## 105 | 1 | 0 | 0 |
| ## 106 | 0 | 1 | 0 |
| ## 107 | 0 | 0 | 1 |
| ## 108 | 0 | 0 | 0 |
| ## 109 | 1 | 1 | 0 |
| ## 110 | 1 | 1 | 0 |
| ## 111 | 1 | 1 | 0 |
| ## 112 | 1 | 1 | 0 |
| ## 113 | 1 | 1 | 0 |
| ## 114 | 1 | 1 | 0 |
| ## 115 | 1 | 1 | 0 |
| ## 116 | 0 | 0 | 0 |
| ## 117 | 0 | 1 | 0 |
| ## 118 | 0 | 0 | 0 |
| ## 119 | 0 | 0 | 0 |
| ## 120 | 0 | 0 | 0 |
| ## 121 | 0 | 0 | 0 |
| ## 122 | 0 | 0 | 0 |
| ## 123 | 0 | 0 | 0 |
| ## 124 | 0 | 0 | 0 |
| ## 125 | 0 | 0 | 0 |
| ## 126 | 0 | 0 | 0 |
| ## 127 | 0 | 0 | 0 |
| ## 128 | 0 | 0 | 0 |
| ## 129 | 0 | 0 | 0 |
| ## 130 | 1 | 0 | 0 |
| ## 131 | 0 | 0 | 0 |
| ## 132 | 0 | 0 | 1 |

| | | | |
|--------|---|---|---|
| ## 133 | 0 | 0 | 0 |
| ## 134 | 1 | 0 | 0 |
| ## 135 | 0 | 0 | 1 |
| ## 136 | 1 | 0 | 1 |
| ## 137 | 0 | 0 | 0 |
| ## 138 | 0 | 0 | 0 |
| ## 139 | 1 | 0 | 0 |
| ## 140 | 0 | 0 | 0 |
| ## 141 | 0 | 0 | 0 |
| ## 142 | 0 | 0 | 0 |
| ## 143 | 0 | 0 | 0 |
| ## 144 | 0 | 0 | 0 |
| ## 145 | 1 | 1 | 0 |
| ## 146 | 0 | 0 | 1 |
| ## 147 | 0 | 1 | 1 |
| ## 148 | 0 | 0 | 1 |
| ## 149 | 1 | 0 | 1 |
| ## 150 | 1 | 0 | 1 |
| ## 151 | 1 | 1 | 1 |
| ## 152 | 1 | 0 | 0 |
| ## 153 | 0 | 0 | 0 |
| ## 154 | 1 | 1 | 1 |
| ## 155 | 0 | 1 | 0 |
| ## 156 | 0 | 0 | 0 |
| ## 157 | 0 | 0 | 0 |
| ## 158 | 0 | 0 | 0 |
| ## 159 | 0 | 0 | 0 |
| ## 160 | 0 | 0 | 0 |
| ## 161 | 0 | 0 | 0 |
| ## 162 | 0 | 0 | 0 |
| ## 163 | 0 | 0 | 0 |
| ## 164 | 0 | 0 | 0 |
| ## 165 | 0 | 0 | 0 |
| ## 166 | 0 | 0 | 0 |
| ## 167 | 0 | 0 | 1 |
| ## 168 | 0 | 0 | 1 |
| ## 169 | 0 | 0 | 1 |
| ## 170 | 0 | 0 | 0 |
| ## 171 | 0 | 0 | 0 |
| ## 172 | 0 | 0 | 1 |
| ## 173 | 0 | 0 | 1 |
| ## 174 | 0 | 0 | 1 |
| ## 175 | 0 | 0 | 0 |
| ## 176 | 0 | 0 | 0 |
| ## 177 | 0 | 0 | 0 |
| ## 178 | 0 | 0 | 1 |
| ## 179 | 0 | 0 | 1 |
| ## 180 | 0 | 0 | 1 |
| ## 181 | 0 | 0 | 0 |
| ## 182 | 0 | 0 | 0 |
| ## 183 | 0 | 0 | 0 |
| ## 184 | 0 | 0 | 0 |
| ## 185 | 0 | 0 | 1 |
| ## 186 | 0 | 0 | 1 |
| ## 187 | 0 | 0 | 1 |
| ## 188 | 0 | 0 | 1 |
| ## 189 | 0 | 0 | 0 |
| ## 190 | 0 | 1 | 0 |

| | | | |
|--------|---|---|---|
| ## 191 | 0 | 0 | 1 |
| ## 192 | 1 | 0 | 1 |
| ## 193 | 0 | 0 | 1 |
| ## 194 | 0 | 0 | 0 |
| ## 195 | 0 | 0 | 1 |
| ## 196 | 0 | 1 | 0 |
| ## 197 | 0 | 0 | 1 |
| ## 198 | 0 | 0 | 1 |
| ## 199 | 0 | 0 | 0 |
| ## 200 | 0 | 0 | 1 |
| ## 201 | 0 | 0 | 0 |
| ## 202 | 0 | 0 | 1 |
| ## 203 | 1 | 1 | 0 |
| ## 204 | 0 | 0 | 1 |
| ## 205 | 0 | 0 | 0 |
| ## 206 | 0 | 0 | 0 |
| ## 207 | 0 | 0 | 1 |
| ## 208 | 0 | 0 | 0 |
| ## 209 | 0 | 0 | 1 |
| ## 210 | 0 | 0 | 1 |
| ## 211 | 0 | 0 | 0 |
| ## 212 | 0 | 0 | 1 |
| ## 213 | 0 | 0 | 1 |
| ## 214 | 0 | 0 | 1 |
| ## 215 | 0 | 0 | 0 |
| ## 216 | 1 | 0 | 1 |
| ## 217 | 0 | 0 | 1 |
| ## 218 | 0 | 0 | 0 |
| ## 219 | 0 | 0 | 1 |
| ## 220 | 0 | 0 | 1 |
| ## 221 | 0 | 0 | 1 |
| ## 222 | 0 | 0 | 1 |
| ## 223 | 0 | 0 | 0 |
| ## 224 | 0 | 0 | 0 |
| ## 225 | 0 | 0 | 0 |
| ## 226 | 0 | 0 | 1 |
| ## 227 | 0 | 0 | 0 |
| ## 228 | 0 | 0 | 1 |
| ## 229 | 0 | 0 | 1 |
| ## 230 | 0 | 0 | 1 |
| ## 231 | 0 | 0 | 0 |
| ## 232 | 0 | 0 | 1 |
| ## 233 | 0 | 0 | 1 |
| ## 234 | 0 | 0 | 1 |
| ## 235 | 0 | 0 | 1 |
| ## 236 | 0 | 0 | 1 |
| ## 237 | 0 | 0 | 0 |
| ## 238 | 0 | 0 | 0 |
| ## 239 | 0 | 0 | 1 |
| ## 240 | 0 | 0 | 1 |
| ## 241 | 0 | 0 | 1 |
| ## 242 | 0 | 0 | 1 |
| ## 243 | 0 | 0 | 1 |
| ## 244 | 0 | 0 | 1 |
| ## 245 | 0 | 0 | 1 |
| ## 246 | 0 | 0 | 1 |
| ## 247 | 0 | 0 | 1 |
| ## 248 | 0 | 0 | 1 |

| | | | |
|--------|-----------------------|-------------------------|---|
| ## 249 | 0 | 0 | 1 |
| ## 250 | 0 | 0 | 1 |
| ## 251 | 0 | 0 | 1 |
| ## 252 | 0 | 0 | 1 |
| ## 253 | 0 | 0 | 1 |
| ## 254 | 0 | 0 | 0 |
| ## 255 | 0 | 0 | 1 |
| ## 256 | 0 | 0 | 1 |
| ## 257 | 0 | 0 | 1 |
| ## 258 | 0 | 0 | 0 |
| ## 259 | 0 | 0 | 1 |
| ## 260 | 0 | 0 | 1 |
| ## 261 | 0 | 0 | 1 |
| ## 262 | 0 | 0 | 0 |
| ## 263 | 0 | 0 | 1 |
| ## 264 | 0 | 0 | 1 |
| ## 265 | 0 | 0 | 1 |
| ## 266 | 0 | 0 | 0 |
| ## 267 | 0 | 0 | 0 |
| ## 268 | 0 | 0 | 0 |
| ## 269 | 0 | 0 | 1 |
| ## 270 | 0 | 0 | 1 |
| ## 271 | 0 | 0 | 1 |
| ## 272 | 0 | 0 | 1 |
| ## 273 | 0 | 0 | 1 |
| ## 274 | 0 | 0 | 1 |
| ## 275 | 0 | 0 | 1 |
| ## 276 | 1 | 1 | 0 |
| ## 277 | 0 | 0 | 0 |
| ## 278 | 1 | 1 | 0 |
| ## 279 | 1 | 0 | 0 |
| ## 280 | 0 | 0 | 0 |
| ## 281 | 0 | 0 | 0 |
| ## 282 | 0 | 0 | 0 |
| ## 283 | 0 | 0 | 0 |
| ## 284 | 0 | 0 | 0 |
| ## 285 | 0 | 0 | 0 |
| ## 286 | 0 | 0 | 0 |
| ## 287 | 0 | 0 | 1 |
| ## 288 | 0 | 0 | 1 |
| ## 289 | 0 | 0 | 1 |
| ## 290 | 0 | 0 | 1 |
| ## 291 | 0 | 0 | 1 |
| ## 292 | 0 | 0 | 1 |
| ## 293 | 0 | 0 | 1 |
| ## 294 | 0 | 0 | 1 |
| ## 295 | 0 | 0 | 1 |
| ## 296 | 0 | 0 | 1 |
| ## 297 | 0 | 0 | 1 |
| ## 298 | 1 | 0 | 0 |
| ## 299 | 0 | 0 | 0 |
| ## 300 | 0 | 0 | 1 |
| ## | glm_Soldanella_alpina | glm_Cynosurus_cristatus | |
| ## 1 | 0 | 0 | |
| ## 2 | 0 | 1 | |
| ## 3 | 0 | 1 | |
| ## 4 | 0 | 1 | |
| ## 5 | 0 | 1 | |

| | | |
|-------|---|---|
| ## 6 | 0 | 1 |
| ## 7 | 0 | 0 |
| ## 8 | 0 | 1 |
| ## 9 | 0 | 0 |
| ## 10 | 0 | 1 |
| ## 11 | 0 | 1 |
| ## 12 | 0 | 1 |
| ## 13 | 0 | 1 |
| ## 14 | 0 | 0 |
| ## 15 | 0 | 1 |
| ## 16 | 0 | 1 |
| ## 17 | 0 | 1 |
| ## 18 | 0 | 1 |
| ## 19 | 0 | 1 |
| ## 20 | 0 | 1 |
| ## 21 | 0 | 1 |
| ## 22 | 0 | 0 |
| ## 23 | 0 | 1 |
| ## 24 | 0 | 1 |
| ## 25 | 0 | 1 |
| ## 26 | 0 | 0 |
| ## 27 | 0 | 1 |
| ## 28 | 0 | 0 |
| ## 29 | 0 | 0 |
| ## 30 | 0 | 1 |
| ## 31 | 0 | 0 |
| ## 32 | 0 | 0 |
| ## 33 | 0 | 1 |
| ## 34 | 0 | 0 |
| ## 35 | 0 | 1 |
| ## 36 | 0 | 0 |
| ## 37 | 0 | 1 |
| ## 38 | 0 | 0 |
| ## 39 | 0 | 0 |
| ## 40 | 0 | 1 |
| ## 41 | 0 | 1 |
| ## 42 | 0 | 0 |
| ## 43 | 0 | 1 |
| ## 44 | 0 | 1 |
| ## 45 | 0 | 0 |
| ## 46 | 0 | 0 |
| ## 47 | 0 | 1 |
| ## 48 | 0 | 0 |
| ## 49 | 0 | 1 |
| ## 50 | 0 | 0 |
| ## 51 | 0 | 1 |
| ## 52 | 0 | 1 |
| ## 53 | 0 | 1 |
| ## 54 | 0 | 1 |
| ## 55 | 0 | 1 |
| ## 56 | 0 | 1 |
| ## 57 | 0 | 0 |
| ## 58 | 0 | 0 |
| ## 59 | 0 | 1 |
| ## 60 | 0 | 0 |
| ## 61 | 0 | 1 |
| ## 62 | 0 | 1 |
| ## 63 | 0 | 0 |

| | | |
|--------|---|---|
| ## 64 | 0 | 0 |
| ## 65 | 0 | 0 |
| ## 66 | 0 | 0 |
| ## 67 | 0 | 0 |
| ## 68 | 0 | 1 |
| ## 69 | 0 | 0 |
| ## 70 | 0 | 0 |
| ## 71 | 0 | 0 |
| ## 72 | 0 | 0 |
| ## 73 | 0 | 0 |
| ## 74 | 0 | 0 |
| ## 75 | 0 | 0 |
| ## 76 | 0 | 1 |
| ## 77 | 0 | 0 |
| ## 78 | 0 | 0 |
| ## 79 | 0 | 0 |
| ## 80 | 0 | 1 |
| ## 81 | 0 | 0 |
| ## 82 | 1 | 0 |
| ## 83 | 0 | 0 |
| ## 84 | 0 | 1 |
| ## 85 | 0 | 0 |
| ## 86 | 0 | 0 |
| ## 87 | 0 | 0 |
| ## 88 | 0 | 0 |
| ## 89 | 0 | 0 |
| ## 90 | 0 | 0 |
| ## 91 | 0 | 0 |
| ## 92 | 0 | 0 |
| ## 93 | 0 | 0 |
| ## 94 | 0 | 0 |
| ## 95 | 0 | 0 |
| ## 96 | 0 | 0 |
| ## 97 | 0 | 0 |
| ## 98 | 0 | 0 |
| ## 99 | 0 | 0 |
| ## 100 | 0 | 0 |
| ## 101 | 0 | 0 |
| ## 102 | 0 | 0 |
| ## 103 | 0 | 0 |
| ## 104 | 0 | 0 |
| ## 105 | 0 | 0 |
| ## 106 | 0 | 0 |
| ## 107 | 0 | 0 |
| ## 108 | 0 | 0 |
| ## 109 | 0 | 0 |
| ## 110 | 0 | 0 |
| ## 111 | 0 | 0 |
| ## 112 | 0 | 0 |
| ## 113 | 0 | 0 |
| ## 114 | 0 | 0 |
| ## 115 | 0 | 0 |
| ## 116 | 0 | 0 |
| ## 117 | 0 | 0 |
| ## 118 | 1 | 0 |
| ## 119 | 1 | 0 |
| ## 120 | 1 | 0 |
| ## 121 | 0 | 0 |

| | | |
|--------|---|---|
| ## 122 | 0 | 0 |
| ## 123 | 1 | 0 |
| ## 124 | 0 | 0 |
| ## 125 | 1 | 0 |
| ## 126 | 1 | 0 |
| ## 127 | 1 | 0 |
| ## 128 | 0 | 0 |
| ## 129 | 0 | 0 |
| ## 130 | 0 | 0 |
| ## 131 | 0 | 0 |
| ## 132 | 0 | 0 |
| ## 133 | 0 | 0 |
| ## 134 | 0 | 0 |
| ## 135 | 0 | 0 |
| ## 136 | 0 | 0 |
| ## 137 | 0 | 0 |
| ## 138 | 0 | 0 |
| ## 139 | 0 | 0 |
| ## 140 | 1 | 0 |
| ## 141 | 1 | 0 |
| ## 142 | 0 | 0 |
| ## 143 | 0 | 0 |
| ## 144 | 1 | 0 |
| ## 145 | 0 | 0 |
| ## 146 | 0 | 0 |
| ## 147 | 0 | 0 |
| ## 148 | 0 | 0 |
| ## 149 | 0 | 0 |
| ## 150 | 0 | 0 |
| ## 151 | 0 | 0 |
| ## 152 | 0 | 0 |
| ## 153 | 1 | 0 |
| ## 154 | 0 | 0 |
| ## 155 | 1 | 0 |
| ## 156 | 1 | 0 |
| ## 157 | 1 | 0 |
| ## 158 | 1 | 0 |
| ## 159 | 1 | 0 |
| ## 160 | 1 | 0 |
| ## 161 | 0 | 0 |
| ## 162 | 1 | 0 |
| ## 163 | 1 | 0 |
| ## 164 | 1 | 0 |
| ## 165 | 1 | 0 |
| ## 166 | 1 | 0 |
| ## 167 | 0 | 0 |
| ## 168 | 1 | 0 |
| ## 169 | 0 | 0 |
| ## 170 | 1 | 0 |
| ## 171 | 1 | 0 |
| ## 172 | 0 | 0 |
| ## 173 | 0 | 0 |
| ## 174 | 1 | 0 |
| ## 175 | 0 | 0 |
| ## 176 | 1 | 0 |
| ## 177 | 1 | 0 |
| ## 178 | 1 | 0 |
| ## 179 | 0 | 0 |

| | | |
|--------|---|---|
| ## 180 | 1 | 0 |
| ## 181 | 1 | 0 |
| ## 182 | 1 | 0 |
| ## 183 | 1 | 0 |
| ## 184 | 1 | 0 |
| ## 185 | 1 | 0 |
| ## 186 | 0 | 0 |
| ## 187 | 0 | 0 |
| ## 188 | 1 | 0 |
| ## 189 | 0 | 0 |
| ## 190 | 0 | 0 |
| ## 191 | 0 | 0 |
| ## 192 | 0 | 0 |
| ## 193 | 0 | 0 |
| ## 194 | 1 | 0 |
| ## 195 | 1 | 0 |
| ## 196 | 0 | 0 |
| ## 197 | 1 | 0 |
| ## 198 | 1 | 0 |
| ## 199 | 1 | 0 |
| ## 200 | 1 | 0 |
| ## 201 | 1 | 0 |
| ## 202 | 1 | 0 |
| ## 203 | 0 | 0 |
| ## 204 | 1 | 0 |
| ## 205 | 1 | 0 |
| ## 206 | 1 | 0 |
| ## 207 | 1 | 0 |
| ## 208 | 1 | 0 |
| ## 209 | 0 | 0 |
| ## 210 | 0 | 0 |
| ## 211 | 1 | 0 |
| ## 212 | 1 | 0 |
| ## 213 | 0 | 0 |
| ## 214 | 1 | 0 |
| ## 215 | 1 | 0 |
| ## 216 | 0 | 0 |
| ## 217 | 0 | 0 |
| ## 218 | 1 | 0 |
| ## 219 | 1 | 0 |
| ## 220 | 1 | 0 |
| ## 221 | 1 | 0 |
| ## 222 | 1 | 0 |
| ## 223 | 1 | 0 |
| ## 224 | 1 | 0 |
| ## 225 | 1 | 0 |
| ## 226 | 1 | 0 |
| ## 227 | 1 | 0 |
| ## 228 | 1 | 0 |
| ## 229 | 1 | 0 |
| ## 230 | 0 | 0 |
| ## 231 | 0 | 0 |
| ## 232 | 1 | 0 |
| ## 233 | 1 | 0 |
| ## 234 | 0 | 0 |
| ## 235 | 1 | 0 |
| ## 236 | 1 | 0 |
| ## 237 | 1 | 0 |

| | | |
|--------|---|---|
| ## 238 | 1 | 0 |
| ## 239 | 0 | 0 |
| ## 240 | 1 | 0 |
| ## 241 | 1 | 0 |
| ## 242 | 1 | 0 |
| ## 243 | 0 | 0 |
| ## 244 | 0 | 0 |
| ## 245 | 1 | 0 |
| ## 246 | 0 | 0 |
| ## 247 | 0 | 0 |
| ## 248 | 1 | 0 |
| ## 249 | 0 | 0 |
| ## 250 | 0 | 0 |
| ## 251 | 0 | 0 |
| ## 252 | 0 | 0 |
| ## 253 | 0 | 0 |
| ## 254 | 1 | 0 |
| ## 255 | 1 | 0 |
| ## 256 | 0 | 0 |
| ## 257 | 1 | 0 |
| ## 258 | 1 | 0 |
| ## 259 | 0 | 0 |
| ## 260 | 1 | 0 |
| ## 261 | 0 | 0 |
| ## 262 | 0 | 0 |
| ## 263 | 0 | 0 |
| ## 264 | 0 | 0 |
| ## 265 | 1 | 0 |
| ## 266 | 1 | 0 |
| ## 267 | 0 | 0 |
| ## 268 | 0 | 0 |
| ## 269 | 1 | 0 |
| ## 270 | 0 | 0 |
| ## 271 | 1 | 0 |
| ## 272 | 0 | 0 |
| ## 273 | 1 | 0 |
| ## 274 | 0 | 0 |
| ## 275 | 0 | 0 |
| ## 276 | 0 | 0 |
| ## 277 | 0 | 0 |
| ## 278 | 0 | 0 |
| ## 279 | 0 | 0 |
| ## 280 | 0 | 0 |
| ## 281 | 0 | 0 |
| ## 282 | 1 | 0 |
| ## 283 | 1 | 0 |
| ## 284 | 0 | 0 |
| ## 285 | 1 | 0 |
| ## 286 | 0 | 0 |
| ## 287 | 1 | 0 |
| ## 288 | 0 | 0 |
| ## 289 | 1 | 0 |
| ## 290 | 0 | 0 |
| ## 291 | 0 | 0 |
| ## 292 | 0 | 0 |
| ## 293 | 1 | 0 |
| ## 294 | 0 | 0 |
| ## 295 | 0 | 0 |

| | | |
|--------|---------------------------|--------------------------|
| ## 296 | 1 | 0 |
| ## 297 | 1 | 0 |
| ## 298 | 0 | 0 |
| ## 299 | 0 | 0 |
| ## 300 | 0 | 0 |
| ## | glm_Campanula_scheuchzeri | glm_Festuca_pratensis_sl |
| ## 1 | 0 | 0 |
| ## 2 | 0 | 0 |
| ## 3 | 0 | 0 |
| ## 4 | 0 | 0 |
| ## 5 | 0 | 0 |
| ## 6 | 0 | 1 |
| ## 7 | 0 | 1 |
| ## 8 | 0 | 1 |
| ## 9 | 0 | 1 |
| ## 10 | 0 | 1 |
| ## 11 | 0 | 1 |
| ## 12 | 0 | 1 |
| ## 13 | 0 | 1 |
| ## 14 | 0 | 1 |
| ## 15 | 0 | 1 |
| ## 16 | 0 | 1 |
| ## 17 | 0 | 0 |
| ## 18 | 0 | 0 |
| ## 19 | 0 | 1 |
| ## 20 | 0 | 1 |
| ## 21 | 0 | 1 |
| ## 22 | 0 | 1 |
| ## 23 | 0 | 0 |
| ## 24 | 0 | 1 |
| ## 25 | 0 | 1 |
| ## 26 | 0 | 1 |
| ## 27 | 0 | 1 |
| ## 28 | 0 | 1 |
| ## 29 | 0 | 1 |
| ## 30 | 0 | 1 |
| ## 31 | 0 | 1 |
| ## 32 | 0 | 1 |
| ## 33 | 0 | 0 |
| ## 34 | 0 | 1 |
| ## 35 | 0 | 0 |
| ## 36 | 0 | 1 |
| ## 37 | 0 | 1 |
| ## 38 | 0 | 0 |
| ## 39 | 0 | 1 |
| ## 40 | 0 | 0 |
| ## 41 | 0 | 0 |
| ## 42 | 0 | 0 |
| ## 43 | 0 | 0 |
| ## 44 | 0 | 0 |
| ## 45 | 0 | 0 |
| ## 46 | 0 | 0 |
| ## 47 | 0 | 1 |
| ## 48 | 0 | 0 |
| ## 49 | 0 | 0 |
| ## 50 | 0 | 0 |
| ## 51 | 0 | 1 |
| ## 52 | 0 | 0 |

| | | |
|--------|---|---|
| ## 53 | 0 | 0 |
| ## 54 | 0 | 0 |
| ## 55 | 0 | 0 |
| ## 56 | 0 | 0 |
| ## 57 | 0 | 0 |
| ## 58 | 0 | 0 |
| ## 59 | 0 | 1 |
| ## 60 | 0 | 0 |
| ## 61 | 0 | 1 |
| ## 62 | 0 | 1 |
| ## 63 | 0 | 1 |
| ## 64 | 0 | 1 |
| ## 65 | 0 | 0 |
| ## 66 | 0 | 1 |
| ## 67 | 0 | 0 |
| ## 68 | 0 | 1 |
| ## 69 | 0 | 0 |
| ## 70 | 0 | 0 |
| ## 71 | 0 | 0 |
| ## 72 | 0 | 1 |
| ## 73 | 0 | 0 |
| ## 74 | 0 | 0 |
| ## 75 | 0 | 1 |
| ## 76 | 0 | 1 |
| ## 77 | 0 | 1 |
| ## 78 | 0 | 0 |
| ## 79 | 0 | 0 |
| ## 80 | 0 | 0 |
| ## 81 | 0 | 0 |
| ## 82 | 0 | 0 |
| ## 83 | 0 | 0 |
| ## 84 | 0 | 0 |
| ## 85 | 0 | 0 |
| ## 86 | 0 | 0 |
| ## 87 | 0 | 0 |
| ## 88 | 0 | 0 |
| ## 89 | 0 | 0 |
| ## 90 | 0 | 0 |
| ## 91 | 0 | 0 |
| ## 92 | 0 | 0 |
| ## 93 | 0 | 0 |
| ## 94 | 0 | 0 |
| ## 95 | 0 | 0 |
| ## 96 | 0 | 0 |
| ## 97 | 0 | 0 |
| ## 98 | 0 | 0 |
| ## 99 | 0 | 0 |
| ## 100 | 0 | 0 |
| ## 101 | 0 | 0 |
| ## 102 | 0 | 0 |
| ## 103 | 0 | 0 |
| ## 104 | 0 | 0 |
| ## 105 | 0 | 0 |
| ## 106 | 0 | 0 |
| ## 107 | 1 | 0 |
| ## 108 | 0 | 0 |
| ## 109 | 0 | 0 |
| ## 110 | 0 | 0 |

| | | |
|--------|---|---|
| ## 111 | 0 | 0 |
| ## 112 | 0 | 0 |
| ## 113 | 0 | 0 |
| ## 114 | 0 | 0 |
| ## 115 | 0 | 0 |
| ## 116 | 0 | 0 |
| ## 117 | 0 | 0 |
| ## 118 | 0 | 0 |
| ## 119 | 0 | 0 |
| ## 120 | 0 | 0 |
| ## 121 | 0 | 0 |
| ## 122 | 0 | 0 |
| ## 123 | 1 | 0 |
| ## 124 | 0 | 0 |
| ## 125 | 1 | 0 |
| ## 126 | 0 | 0 |
| ## 127 | 0 | 0 |
| ## 128 | 0 | 0 |
| ## 129 | 0 | 0 |
| ## 130 | 0 | 0 |
| ## 131 | 0 | 0 |
| ## 132 | 0 | 0 |
| ## 133 | 0 | 0 |
| ## 134 | 0 | 0 |
| ## 135 | 1 | 0 |
| ## 136 | 0 | 0 |
| ## 137 | 0 | 0 |
| ## 138 | 0 | 0 |
| ## 139 | 0 | 0 |
| ## 140 | 0 | 0 |
| ## 141 | 1 | 0 |
| ## 142 | 0 | 0 |
| ## 143 | 0 | 0 |
| ## 144 | 0 | 0 |
| ## 145 | 0 | 0 |
| ## 146 | 1 | 0 |
| ## 147 | 0 | 0 |
| ## 148 | 0 | 0 |
| ## 149 | 1 | 0 |
| ## 150 | 1 | 0 |
| ## 151 | 0 | 0 |
| ## 152 | 0 | 0 |
| ## 153 | 0 | 0 |
| ## 154 | 0 | 0 |
| ## 155 | 0 | 0 |
| ## 156 | 0 | 0 |
| ## 157 | 1 | 0 |
| ## 158 | 0 | 0 |
| ## 159 | 1 | 0 |
| ## 160 | 0 | 0 |
| ## 161 | 0 | 0 |
| ## 162 | 1 | 0 |
| ## 163 | 1 | 0 |
| ## 164 | 0 | 0 |
| ## 165 | 0 | 0 |
| ## 166 | 0 | 0 |
| ## 167 | 0 | 0 |
| ## 168 | 1 | 0 |

| | | |
|--------|---|---|
| ## 169 | 1 | 0 |
| ## 170 | 0 | 0 |
| ## 171 | 1 | 0 |
| ## 172 | 1 | 0 |
| ## 173 | 1 | 0 |
| ## 174 | 1 | 0 |
| ## 175 | 0 | 0 |
| ## 176 | 1 | 0 |
| ## 177 | 1 | 0 |
| ## 178 | 1 | 0 |
| ## 179 | 1 | 0 |
| ## 180 | 1 | 0 |
| ## 181 | 1 | 0 |
| ## 182 | 0 | 0 |
| ## 183 | 0 | 0 |
| ## 184 | 1 | 0 |
| ## 185 | 1 | 0 |
| ## 186 | 1 | 0 |
| ## 187 | 1 | 0 |
| ## 188 | 1 | 0 |
| ## 189 | 0 | 0 |
| ## 190 | 0 | 0 |
| ## 191 | 1 | 0 |
| ## 192 | 0 | 0 |
| ## 193 | 1 | 0 |
| ## 194 | 0 | 0 |
| ## 195 | 1 | 0 |
| ## 196 | 0 | 0 |
| ## 197 | 1 | 0 |
| ## 198 | 1 | 0 |
| ## 199 | 1 | 0 |
| ## 200 | 1 | 0 |
| ## 201 | 1 | 0 |
| ## 202 | 1 | 0 |
| ## 203 | 0 | 0 |
| ## 204 | 1 | 0 |
| ## 205 | 0 | 0 |
| ## 206 | 1 | 0 |
| ## 207 | 1 | 0 |
| ## 208 | 1 | 0 |
| ## 209 | 0 | 0 |
| ## 210 | 1 | 0 |
| ## 211 | 1 | 0 |
| ## 212 | 1 | 0 |
| ## 213 | 1 | 0 |
| ## 214 | 1 | 0 |
| ## 215 | 1 | 0 |
| ## 216 | 0 | 0 |
| ## 217 | 1 | 0 |
| ## 218 | 1 | 0 |
| ## 219 | 1 | 0 |
| ## 220 | 1 | 0 |
| ## 221 | 1 | 0 |
| ## 222 | 1 | 0 |
| ## 223 | 0 | 0 |
| ## 224 | 1 | 0 |
| ## 225 | 1 | 0 |
| ## 226 | 1 | 0 |

| | | |
|--------|---|---|
| ## 227 | 1 | 0 |
| ## 228 | 1 | 0 |
| ## 229 | 1 | 0 |
| ## 230 | 1 | 0 |
| ## 231 | 0 | 0 |
| ## 232 | 1 | 0 |
| ## 233 | 1 | 0 |
| ## 234 | 1 | 0 |
| ## 235 | 1 | 0 |
| ## 236 | 1 | 0 |
| ## 237 | 1 | 0 |
| ## 238 | 1 | 0 |
| ## 239 | 1 | 0 |
| ## 240 | 1 | 0 |
| ## 241 | 1 | 0 |
| ## 242 | 1 | 0 |
| ## 243 | 1 | 0 |
| ## 244 | 1 | 0 |
| ## 245 | 1 | 0 |
| ## 246 | 1 | 0 |
| ## 247 | 1 | 0 |
| ## 248 | 1 | 0 |
| ## 249 | 1 | 0 |
| ## 250 | 1 | 0 |
| ## 251 | 1 | 0 |
| ## 252 | 0 | 0 |
| ## 253 | 0 | 0 |
| ## 254 | 0 | 0 |
| ## 255 | 1 | 0 |
| ## 256 | 1 | 0 |
| ## 257 | 1 | 0 |
| ## 258 | 1 | 0 |
| ## 259 | 1 | 0 |
| ## 260 | 1 | 0 |
| ## 261 | 1 | 0 |
| ## 262 | 1 | 0 |
| ## 263 | 1 | 0 |
| ## 264 | 1 | 0 |
| ## 265 | 1 | 0 |
| ## 266 | 1 | 0 |
| ## 267 | 1 | 0 |
| ## 268 | 1 | 0 |
| ## 269 | 1 | 0 |
| ## 270 | 1 | 0 |
| ## 271 | 1 | 0 |
| ## 272 | 1 | 0 |
| ## 273 | 1 | 0 |
| ## 274 | 1 | 0 |
| ## 275 | 1 | 0 |
| ## 276 | 0 | 0 |
| ## 277 | 0 | 0 |
| ## 278 | 0 | 0 |
| ## 279 | 0 | 0 |
| ## 280 | 0 | 0 |
| ## 281 | 0 | 0 |
| ## 282 | 1 | 0 |
| ## 283 | 0 | 0 |
| ## 284 | 0 | 0 |

| | | |
|--------|-------------------------|---|
| ## 285 | 0 | 0 |
| ## 286 | 1 | 0 |
| ## 287 | 1 | 0 |
| ## 288 | 1 | 0 |
| ## 289 | 1 | 0 |
| ## 290 | 1 | 0 |
| ## 291 | 1 | 0 |
| ## 292 | 1 | 0 |
| ## 293 | 1 | 0 |
| ## 294 | 1 | 0 |
| ## 295 | 1 | 0 |
| ## 296 | 1 | 0 |
| ## 297 | 1 | 0 |
| ## 298 | 0 | 1 |
| ## 299 | 1 | 0 |
| ## 300 | 0 | 0 |
| ## | glm_Bromus_erectus_sstr | glm_Saxifraga_oppositifolia glm_Daucus_carota |
| ## 1 | 0 | 0 0 |
| ## 2 | 0 | 0 0 |
| ## 3 | 0 | 0 0 |
| ## 4 | 0 | 0 0 |
| ## 5 | 0 | 0 0 |
| ## 6 | 0 | 0 0 |
| ## 7 | 0 | 0 0 |
| ## 8 | 0 | 0 0 |
| ## 9 | 0 | 0 0 |
| ## 10 | 0 | 0 0 |
| ## 11 | 0 | 0 0 |
| ## 12 | 1 | 0 0 |
| ## 13 | 0 | 0 0 |
| ## 14 | 0 | 0 0 |
| ## 15 | 0 | 0 0 |
| ## 16 | 1 | 0 1 |
| ## 17 | 0 | 0 0 |
| ## 18 | 0 | 0 0 |
| ## 19 | 1 | 0 1 |
| ## 20 | 1 | 0 1 |
| ## 21 | 0 | 0 0 |
| ## 22 | 1 | 0 1 |
| ## 23 | 0 | 0 0 |
| ## 24 | 0 | 0 0 |
| ## 25 | 0 | 0 0 |
| ## 26 | 0 | 0 0 |
| ## 27 | 0 | 0 0 |
| ## 28 | 0 | 0 0 |
| ## 29 | 0 | 0 0 |
| ## 30 | 0 | 0 0 |
| ## 31 | 1 | 0 1 |
| ## 32 | 0 | 0 0 |
| ## 33 | 0 | 0 0 |
| ## 34 | 1 | 0 1 |
| ## 35 | 0 | 0 0 |
| ## 36 | 1 | 0 1 |
| ## 37 | 1 | 0 1 |
| ## 38 | 1 | 0 1 |
| ## 39 | 0 | 0 0 |
| ## 40 | 0 | 0 0 |
| ## 41 | 0 | 0 0 |

| | | | |
|-------|---|---|---|
| ## 42 | 0 | 0 | 0 |
| ## 43 | 0 | 0 | 0 |
| ## 44 | 0 | 0 | 0 |
| ## 45 | 0 | 0 | 0 |
| ## 46 | 0 | 0 | 0 |
| ## 47 | 0 | 0 | 0 |
| ## 48 | 0 | 0 | 0 |
| ## 49 | 0 | 0 | 0 |
| ## 50 | 0 | 0 | 0 |
| ## 51 | 0 | 0 | 0 |
| ## 52 | 0 | 0 | 0 |
| ## 53 | 0 | 0 | 0 |
| ## 54 | 0 | 0 | 0 |
| ## 55 | 0 | 0 | 0 |
| ## 56 | 0 | 0 | 0 |
| ## 57 | 0 | 0 | 0 |
| ## 58 | 0 | 0 | 0 |
| ## 59 | 0 | 0 | 0 |
| ## 60 | 0 | 0 | 0 |
| ## 61 | 1 | 0 | 0 |
| ## 62 | 0 | 0 | 0 |
| ## 63 | 0 | 0 | 0 |
| ## 64 | 0 | 0 | 0 |
| ## 65 | 0 | 0 | 0 |
| ## 66 | 0 | 0 | 0 |
| ## 67 | 0 | 0 | 0 |
| ## 68 | 1 | 0 | 1 |
| ## 69 | 0 | 0 | 0 |
| ## 70 | 0 | 0 | 0 |
| ## 71 | 1 | 0 | 0 |
| ## 72 | 1 | 0 | 1 |
| ## 73 | 1 | 0 | 1 |
| ## 74 | 0 | 0 | 0 |
| ## 75 | 1 | 0 | 0 |
| ## 76 | 1 | 0 | 0 |
| ## 77 | 0 | 0 | 0 |
| ## 78 | 0 | 0 | 0 |
| ## 79 | 0 | 0 | 0 |
| ## 80 | 0 | 0 | 0 |
| ## 81 | 0 | 0 | 0 |
| ## 82 | 0 | 0 | 0 |
| ## 83 | 0 | 0 | 0 |
| ## 84 | 0 | 0 | 0 |
| ## 85 | 0 | 0 | 0 |
| ## 86 | 0 | 0 | 0 |
| ## 87 | 0 | 0 | 0 |
| ## 88 | 0 | 0 | 0 |
| ## 89 | 0 | 0 | 0 |
| ## 90 | 0 | 0 | 0 |
| ## 91 | 0 | 0 | 0 |
| ## 92 | 0 | 0 | 0 |
| ## 93 | 0 | 0 | 0 |
| ## 94 | 0 | 0 | 0 |
| ## 95 | 0 | 0 | 0 |
| ## 96 | 0 | 0 | 0 |
| ## 97 | 0 | 0 | 0 |
| ## 98 | 0 | 0 | 0 |
| ## 99 | 0 | 0 | 0 |

| | | | |
|--------|---|---|---|
| ## 100 | 0 | 0 | 0 |
| ## 101 | 0 | 0 | 0 |
| ## 102 | 0 | 0 | 0 |
| ## 103 | 0 | 0 | 0 |
| ## 104 | 0 | 0 | 0 |
| ## 105 | 0 | 0 | 0 |
| ## 106 | 0 | 0 | 0 |
| ## 107 | 0 | 0 | 0 |
| ## 108 | 0 | 0 | 0 |
| ## 109 | 0 | 0 | 0 |
| ## 110 | 1 | 0 | 0 |
| ## 111 | 0 | 0 | 0 |
| ## 112 | 0 | 0 | 0 |
| ## 113 | 0 | 0 | 0 |
| ## 114 | 0 | 0 | 0 |
| ## 115 | 0 | 0 | 0 |
| ## 116 | 0 | 0 | 0 |
| ## 117 | 0 | 0 | 0 |
| ## 118 | 0 | 0 | 0 |
| ## 119 | 0 | 0 | 0 |
| ## 120 | 0 | 0 | 0 |
| ## 121 | 0 | 0 | 0 |
| ## 122 | 0 | 0 | 0 |
| ## 123 | 0 | 0 | 0 |
| ## 124 | 0 | 0 | 0 |
| ## 125 | 0 | 0 | 0 |
| ## 126 | 0 | 0 | 0 |
| ## 127 | 0 | 0 | 0 |
| ## 128 | 0 | 0 | 0 |
| ## 129 | 0 | 0 | 0 |
| ## 130 | 0 | 0 | 0 |
| ## 131 | 0 | 0 | 0 |
| ## 132 | 0 | 0 | 0 |
| ## 133 | 0 | 0 | 0 |
| ## 134 | 0 | 0 | 0 |
| ## 135 | 0 | 0 | 0 |
| ## 136 | 0 | 0 | 0 |
| ## 137 | 0 | 0 | 0 |
| ## 138 | 0 | 0 | 0 |
| ## 139 | 0 | 0 | 0 |
| ## 140 | 0 | 0 | 0 |
| ## 141 | 0 | 0 | 0 |
| ## 142 | 0 | 0 | 0 |
| ## 143 | 0 | 0 | 0 |
| ## 144 | 0 | 0 | 0 |
| ## 145 | 1 | 0 | 1 |
| ## 146 | 0 | 0 | 0 |
| ## 147 | 0 | 0 | 0 |
| ## 148 | 0 | 0 | 0 |
| ## 149 | 0 | 0 | 0 |
| ## 150 | 0 | 0 | 0 |
| ## 151 | 0 | 0 | 0 |
| ## 152 | 0 | 0 | 0 |
| ## 153 | 0 | 0 | 0 |
| ## 154 | 0 | 0 | 0 |
| ## 155 | 0 | 0 | 0 |
| ## 156 | 0 | 0 | 0 |
| ## 157 | 0 | 0 | 0 |

| | | | |
|--------|---|---|---|
| ## 158 | 0 | 0 | 0 |
| ## 159 | 0 | 0 | 0 |
| ## 160 | 0 | 0 | 0 |
| ## 161 | 0 | 0 | 0 |
| ## 162 | 0 | 0 | 0 |
| ## 163 | 0 | 0 | 0 |
| ## 164 | 0 | 0 | 0 |
| ## 165 | 0 | 0 | 0 |
| ## 166 | 0 | 0 | 0 |
| ## 167 | 0 | 0 | 0 |
| ## 168 | 0 | 0 | 0 |
| ## 169 | 0 | 0 | 0 |
| ## 170 | 0 | 0 | 0 |
| ## 171 | 0 | 0 | 0 |
| ## 172 | 0 | 0 | 0 |
| ## 173 | 0 | 0 | 0 |
| ## 174 | 0 | 0 | 0 |
| ## 175 | 0 | 0 | 0 |
| ## 176 | 0 | 0 | 0 |
| ## 177 | 0 | 0 | 0 |
| ## 178 | 0 | 0 | 0 |
| ## 179 | 0 | 0 | 0 |
| ## 180 | 0 | 0 | 0 |
| ## 181 | 0 | 0 | 0 |
| ## 182 | 0 | 0 | 0 |
| ## 183 | 0 | 0 | 0 |
| ## 184 | 0 | 0 | 0 |
| ## 185 | 0 | 0 | 0 |
| ## 186 | 0 | 0 | 0 |
| ## 187 | 0 | 0 | 0 |
| ## 188 | 0 | 0 | 0 |
| ## 189 | 0 | 0 | 0 |
| ## 190 | 0 | 0 | 0 |
| ## 191 | 0 | 0 | 0 |
| ## 192 | 0 | 0 | 0 |
| ## 193 | 0 | 0 | 0 |
| ## 194 | 0 | 0 | 0 |
| ## 195 | 0 | 0 | 0 |
| ## 196 | 0 | 0 | 0 |
| ## 197 | 0 | 0 | 0 |
| ## 198 | 0 | 0 | 0 |
| ## 199 | 0 | 0 | 0 |
| ## 200 | 0 | 0 | 0 |
| ## 201 | 0 | 0 | 0 |
| ## 202 | 0 | 0 | 0 |
| ## 203 | 0 | 0 | 0 |
| ## 204 | 0 | 0 | 0 |
| ## 205 | 0 | 0 | 0 |
| ## 206 | 0 | 0 | 0 |
| ## 207 | 0 | 0 | 0 |
| ## 208 | 0 | 0 | 0 |
| ## 209 | 0 | 0 | 0 |
| ## 210 | 0 | 0 | 0 |
| ## 211 | 0 | 0 | 0 |
| ## 212 | 0 | 0 | 0 |
| ## 213 | 0 | 0 | 0 |
| ## 214 | 0 | 0 | 0 |
| ## 215 | 0 | 0 | 0 |

| | | | |
|--------|---|---|---|
| ## 216 | 0 | 0 | 0 |
| ## 217 | 0 | 0 | 0 |
| ## 218 | 0 | 0 | 0 |
| ## 219 | 0 | 0 | 0 |
| ## 220 | 0 | 0 | 0 |
| ## 221 | 0 | 0 | 0 |
| ## 222 | 0 | 0 | 0 |
| ## 223 | 0 | 0 | 0 |
| ## 224 | 0 | 0 | 0 |
| ## 225 | 0 | 0 | 0 |
| ## 226 | 0 | 0 | 0 |
| ## 227 | 0 | 0 | 0 |
| ## 228 | 0 | 0 | 0 |
| ## 229 | 0 | 0 | 0 |
| ## 230 | 0 | 0 | 0 |
| ## 231 | 0 | 0 | 0 |
| ## 232 | 0 | 0 | 0 |
| ## 233 | 0 | 0 | 0 |
| ## 234 | 0 | 0 | 0 |
| ## 235 | 0 | 0 | 0 |
| ## 236 | 0 | 1 | 0 |
| ## 237 | 0 | 0 | 0 |
| ## 238 | 0 | 0 | 0 |
| ## 239 | 0 | 0 | 0 |
| ## 240 | 0 | 0 | 0 |
| ## 241 | 0 | 0 | 0 |
| ## 242 | 0 | 0 | 0 |
| ## 243 | 0 | 0 | 0 |
| ## 244 | 0 | 0 | 0 |
| ## 245 | 0 | 0 | 0 |
| ## 246 | 0 | 0 | 0 |
| ## 247 | 0 | 0 | 0 |
| ## 248 | 0 | 1 | 0 |
| ## 249 | 0 | 0 | 0 |
| ## 250 | 0 | 0 | 0 |
| ## 251 | 0 | 0 | 0 |
| ## 252 | 0 | 0 | 0 |
| ## 253 | 0 | 1 | 0 |
| ## 254 | 0 | 1 | 0 |
| ## 255 | 0 | 0 | 0 |
| ## 256 | 0 | 1 | 0 |
| ## 257 | 0 | 0 | 0 |
| ## 258 | 0 | 1 | 0 |
| ## 259 | 0 | 1 | 0 |
| ## 260 | 0 | 0 | 0 |
| ## 261 | 0 | 1 | 0 |
| ## 262 | 0 | 1 | 0 |
| ## 263 | 0 | 1 | 0 |
| ## 264 | 0 | 1 | 0 |
| ## 265 | 0 | 0 | 0 |
| ## 266 | 0 | 1 | 0 |
| ## 267 | 0 | 1 | 0 |
| ## 268 | 0 | 1 | 0 |
| ## 269 | 0 | 1 | 0 |
| ## 270 | 0 | 1 | 0 |
| ## 271 | 0 | 1 | 0 |
| ## 272 | 0 | 1 | 0 |
| ## 273 | 0 | 1 | 0 |

| | | | |
|--------|----------------------------|---|---|
| ## 274 | 0 | 1 | 0 |
| ## 275 | 0 | 1 | 0 |
| ## 276 | 0 | 0 | 0 |
| ## 277 | 0 | 0 | 0 |
| ## 278 | 1 | 0 | 1 |
| ## 279 | 0 | 0 | 0 |
| ## 280 | 0 | 0 | 0 |
| ## 281 | 0 | 0 | 0 |
| ## 282 | 0 | 0 | 0 |
| ## 283 | 0 | 0 | 0 |
| ## 284 | 0 | 0 | 0 |
| ## 285 | 0 | 0 | 0 |
| ## 286 | 0 | 0 | 0 |
| ## 287 | 0 | 0 | 0 |
| ## 288 | 0 | 0 | 0 |
| ## 289 | 0 | 0 | 0 |
| ## 290 | 0 | 0 | 0 |
| ## 291 | 0 | 0 | 0 |
| ## 292 | 0 | 0 | 0 |
| ## 293 | 0 | 0 | 0 |
| ## 294 | 0 | 0 | 0 |
| ## 295 | 0 | 0 | 0 |
| ## 296 | 0 | 0 | 0 |
| ## 297 | 0 | 1 | 0 |
| ## 298 | 0 | 0 | 0 |
| ## 299 | 0 | 1 | 0 |
| ## 300 | 0 | 1 | 0 |
| ## | glm_Pritzelago_alpina_sstr | | |
| ## 1 | 0 | | |
| ## 2 | 0 | | |
| ## 3 | 0 | | |
| ## 4 | 0 | | |
| ## 5 | 0 | | |
| ## 6 | 0 | | |
| ## 7 | 0 | | |
| ## 8 | 0 | | |
| ## 9 | 0 | | |
| ## 10 | 0 | | |
| ## 11 | 0 | | |
| ## 12 | 0 | | |
| ## 13 | 0 | | |
| ## 14 | 0 | | |
| ## 15 | 0 | | |
| ## 16 | 0 | | |
| ## 17 | 0 | | |
| ## 18 | 0 | | |
| ## 19 | 0 | | |
| ## 20 | 0 | | |
| ## 21 | 0 | | |
| ## 22 | 0 | | |
| ## 23 | 0 | | |
| ## 24 | 0 | | |
| ## 25 | 0 | | |
| ## 26 | 0 | | |
| ## 27 | 0 | | |
| ## 28 | 0 | | |
| ## 29 | 0 | | |
| ## 30 | 0 | | |

| | |
|-------|---|
| ## 31 | 0 |
| ## 32 | 0 |
| ## 33 | 0 |
| ## 34 | 0 |
| ## 35 | 0 |
| ## 36 | 0 |
| ## 37 | 0 |
| ## 38 | 0 |
| ## 39 | 0 |
| ## 40 | 0 |
| ## 41 | 0 |
| ## 42 | 0 |
| ## 43 | 0 |
| ## 44 | 0 |
| ## 45 | 0 |
| ## 46 | 0 |
| ## 47 | 0 |
| ## 48 | 0 |
| ## 49 | 0 |
| ## 50 | 0 |
| ## 51 | 0 |
| ## 52 | 0 |
| ## 53 | 0 |
| ## 54 | 0 |
| ## 55 | 0 |
| ## 56 | 0 |
| ## 57 | 0 |
| ## 58 | 0 |
| ## 59 | 0 |
| ## 60 | 0 |
| ## 61 | 0 |
| ## 62 | 0 |
| ## 63 | 0 |
| ## 64 | 0 |
| ## 65 | 0 |
| ## 66 | 0 |
| ## 67 | 0 |
| ## 68 | 0 |
| ## 69 | 0 |
| ## 70 | 0 |
| ## 71 | 0 |
| ## 72 | 0 |
| ## 73 | 0 |
| ## 74 | 0 |
| ## 75 | 0 |
| ## 76 | 0 |
| ## 77 | 0 |
| ## 78 | 0 |
| ## 79 | 0 |
| ## 80 | 0 |
| ## 81 | 0 |
| ## 82 | 0 |
| ## 83 | 0 |
| ## 84 | 0 |
| ## 85 | 0 |
| ## 86 | 0 |
| ## 87 | 0 |
| ## 88 | 0 |

| | |
|--------|---|
| ## 89 | 0 |
| ## 90 | 0 |
| ## 91 | 0 |
| ## 92 | 0 |
| ## 93 | 0 |
| ## 94 | 0 |
| ## 95 | 0 |
| ## 96 | 0 |
| ## 97 | 0 |
| ## 98 | 0 |
| ## 99 | 0 |
| ## 100 | 0 |
| ## 101 | 0 |
| ## 102 | 0 |
| ## 103 | 0 |
| ## 104 | 0 |
| ## 105 | 0 |
| ## 106 | 0 |
| ## 107 | 0 |
| ## 108 | 0 |
| ## 109 | 0 |
| ## 110 | 0 |
| ## 111 | 0 |
| ## 112 | 0 |
| ## 113 | 0 |
| ## 114 | 0 |
| ## 115 | 0 |
| ## 116 | 0 |
| ## 117 | 0 |
| ## 118 | 0 |
| ## 119 | 0 |
| ## 120 | 0 |
| ## 121 | 0 |
| ## 122 | 0 |
| ## 123 | 0 |
| ## 124 | 0 |
| ## 125 | 0 |
| ## 126 | 0 |
| ## 127 | 0 |
| ## 128 | 0 |
| ## 129 | 0 |
| ## 130 | 0 |
| ## 131 | 0 |
| ## 132 | 0 |
| ## 133 | 0 |
| ## 134 | 0 |
| ## 135 | 0 |
| ## 136 | 0 |
| ## 137 | 0 |
| ## 138 | 0 |
| ## 139 | 0 |
| ## 140 | 0 |
| ## 141 | 0 |
| ## 142 | 0 |
| ## 143 | 0 |
| ## 144 | 0 |
| ## 145 | 0 |
| ## 146 | 0 |

| | |
|--------|---|
| ## 147 | 0 |
| ## 148 | 0 |
| ## 149 | 0 |
| ## 150 | 0 |
| ## 151 | 0 |
| ## 152 | 0 |
| ## 153 | 0 |
| ## 154 | 0 |
| ## 155 | 0 |
| ## 156 | 0 |
| ## 157 | 0 |
| ## 158 | 0 |
| ## 159 | 0 |
| ## 160 | 0 |
| ## 161 | 0 |
| ## 162 | 0 |
| ## 163 | 0 |
| ## 164 | 0 |
| ## 165 | 0 |
| ## 166 | 0 |
| ## 167 | 0 |
| ## 168 | 0 |
| ## 169 | 0 |
| ## 170 | 0 |
| ## 171 | 0 |
| ## 172 | 0 |
| ## 173 | 0 |
| ## 174 | 0 |
| ## 175 | 0 |
| ## 176 | 0 |
| ## 177 | 1 |
| ## 178 | 0 |
| ## 179 | 0 |
| ## 180 | 0 |
| ## 181 | 0 |
| ## 182 | 0 |
| ## 183 | 0 |
| ## 184 | 0 |
| ## 185 | 0 |
| ## 186 | 0 |
| ## 187 | 0 |
| ## 188 | 0 |
| ## 189 | 0 |
| ## 190 | 0 |
| ## 191 | 0 |
| ## 192 | 0 |
| ## 193 | 0 |
| ## 194 | 0 |
| ## 195 | 0 |
| ## 196 | 0 |
| ## 197 | 0 |
| ## 198 | 0 |
| ## 199 | 1 |
| ## 200 | 0 |
| ## 201 | 0 |
| ## 202 | 0 |
| ## 203 | 0 |
| ## 204 | 0 |

| | |
|--------|---|
| ## 205 | 0 |
| ## 206 | 0 |
| ## 207 | 0 |
| ## 208 | 0 |
| ## 209 | 0 |
| ## 210 | 0 |
| ## 211 | 1 |
| ## 212 | 0 |
| ## 213 | 0 |
| ## 214 | 0 |
| ## 215 | 0 |
| ## 216 | 0 |
| ## 217 | 0 |
| ## 218 | 0 |
| ## 219 | 0 |
| ## 220 | 0 |
| ## 221 | 0 |
| ## 222 | 0 |
| ## 223 | 1 |
| ## 224 | 0 |
| ## 225 | 0 |
| ## 226 | 0 |
| ## 227 | 0 |
| ## 228 | 1 |
| ## 229 | 0 |
| ## 230 | 0 |
| ## 231 | 0 |
| ## 232 | 0 |
| ## 233 | 0 |
| ## 234 | 0 |
| ## 235 | 1 |
| ## 236 | 0 |
| ## 237 | 1 |
| ## 238 | 1 |
| ## 239 | 0 |
| ## 240 | 0 |
| ## 241 | 1 |
| ## 242 | 0 |
| ## 243 | 0 |
| ## 244 | 0 |
| ## 245 | 0 |
| ## 246 | 0 |
| ## 247 | 1 |
| ## 248 | 0 |
| ## 249 | 0 |
| ## 250 | 0 |
| ## 251 | 0 |
| ## 252 | 0 |
| ## 253 | 0 |
| ## 254 | 1 |
| ## 255 | 0 |
| ## 256 | 0 |
| ## 257 | 0 |
| ## 258 | 1 |
| ## 259 | 0 |
| ## 260 | 0 |
| ## 261 | 0 |
| ## 262 | 1 |

| | |
|--------|---|
| ## 263 | 0 |
| ## 264 | 1 |
| ## 265 | 1 |
| ## 266 | 1 |
| ## 267 | 1 |
| ## 268 | 1 |
| ## 269 | 0 |
| ## 270 | 0 |
| ## 271 | 0 |
| ## 272 | 0 |
| ## 273 | 0 |
| ## 274 | 1 |
| ## 275 | 0 |
| ## 276 | 0 |
| ## 277 | 0 |
| ## 278 | 0 |
| ## 279 | 0 |
| ## 280 | 0 |
| ## 281 | 0 |
| ## 282 | 0 |
| ## 283 | 0 |
| ## 284 | 0 |
| ## 285 | 0 |
| ## 286 | 0 |
| ## 287 | 0 |
| ## 288 | 0 |
| ## 289 | 0 |
| ## 290 | 0 |
| ## 291 | 0 |
| ## 292 | 0 |
| ## 293 | 0 |
| ## 294 | 0 |
| ## 295 | 0 |
| ## 296 | 0 |
| ## 297 | 0 |
| ## 298 | 0 |
| ## 299 | 1 |
| ## 300 | 0 |

4 Post-Modelling

4.1 Spatial Predictions of species assemblages

4.1.1 Co-occurrence analysis & Environmentally Constrained Null Models

Input data as a matrix of plots (rows) x species (columns). Input matrices should have column names (species names) and row names (sampling plots).

```
presence<-ecospat.testData[c(53,62,58,70,61,66,65,71,69,43,63,56,68,57,55,60,54,67,59,64)]
pred<-ecospat.testData[c(73:92)]
```

Define the number of permutations. It is recommended to use at least 10000 permutations for the test. As an example we used `nperm = 100`, to reduce the computational time.

```
nbpermut <- 100
```

Define the outpath

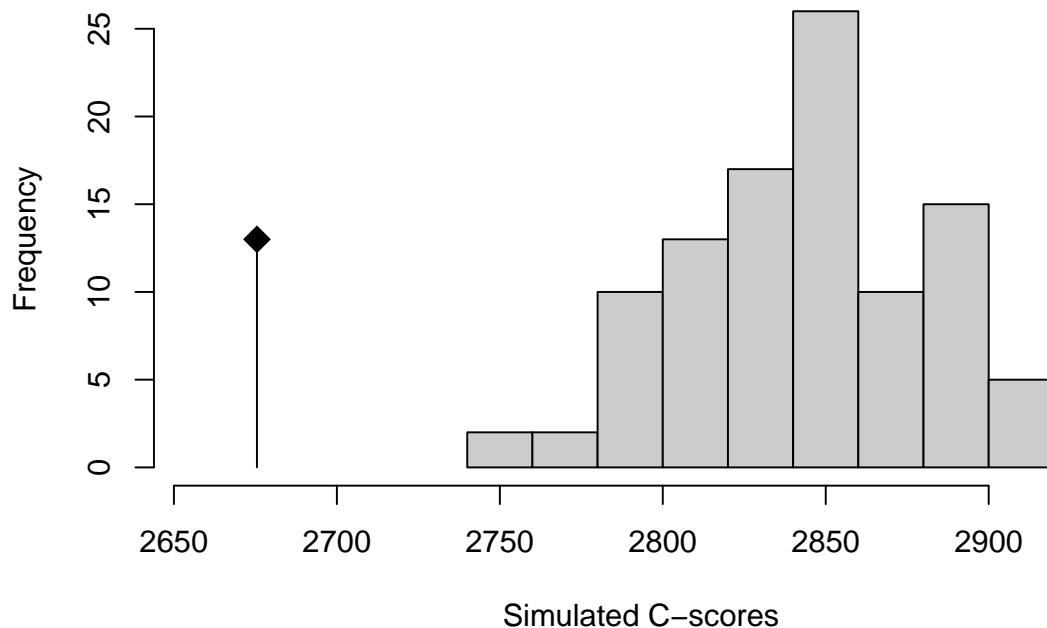
```
outpath <- getwd()
```

Run the function *ecospat.cons_Cscore*

The function tests for non-random patterns of species co-occurrence in a presence-absence matrix. It calculates the C-score index for the whole community and for each species pair. An environmental constraint is applied during the generation of the null communities.

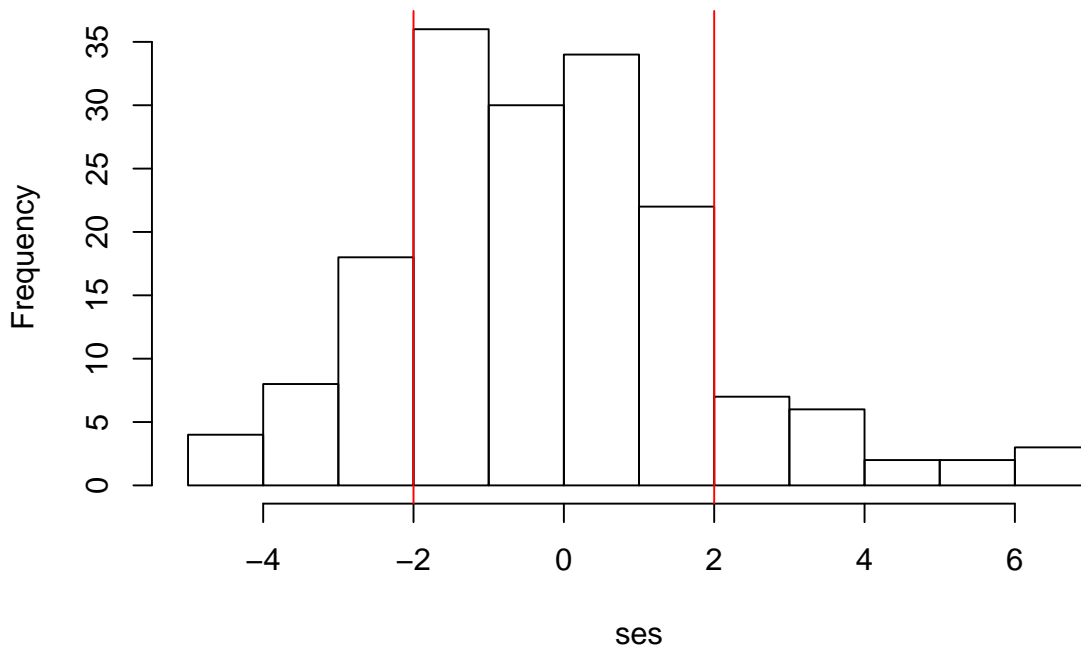
```
ecospat.cons_Cscore(presence, pred, nbpermut, outpath)
```

```
## Computing observed co-occurrence matrix
## .....
## .....
## .....
##Computing permutations
## .....
## .....
## .....
```



```
## Permutations finished Thu Jun 14 15:10:36 2018
## .....
## .....
## Exporting dataset
## .....
## .....
## .....
```

Histogram of standardized effect size



```
## $ObsCscoreTot
## [1] 2675.468
##
## $SimCscoreTot
## [1] 2842.198
##
## $PVal.less
## [1] 0.00990099
##
## $PVal.greater
## [1] 1
##
## $SES.Tot
## [1] -4.609203
```

The function returns - the C-score index for the observed community (ObsCscoreTot), - the mean of C-score for the simulated communities (SimCscoreTot), - the p.values (PVal.less and PVal.greater) to evaluate the significance of the difference between the former two indices. - the standardized effect size for the whole community (SES.Tot). A SES that is greater than 2 or less than -2 is statistically significant with a tail probability of less than 0.05 (Gotelli & McCabe 2002 - Ecology). If a community is structured by competition, we would expect the C-score to be large relative to a randomly assembled community (positive SES). In this case the observed C-score is significantly lower than expected by chance, this meaning that the community is dominated by positive interactions (aggregated pattern).

A table is saved in the path specified where the same metrics are calculated for each species pair (only the table with species pairs with significant p.values is saved).