

Zoning and distance matrix

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5

```
library(geozoning)
```

This vignette illustrates a simple quantile-based zoning procedure without corrections. It uses the `initialZoning` function and shows how to use its output to display zones, distance matrices and zone labels.

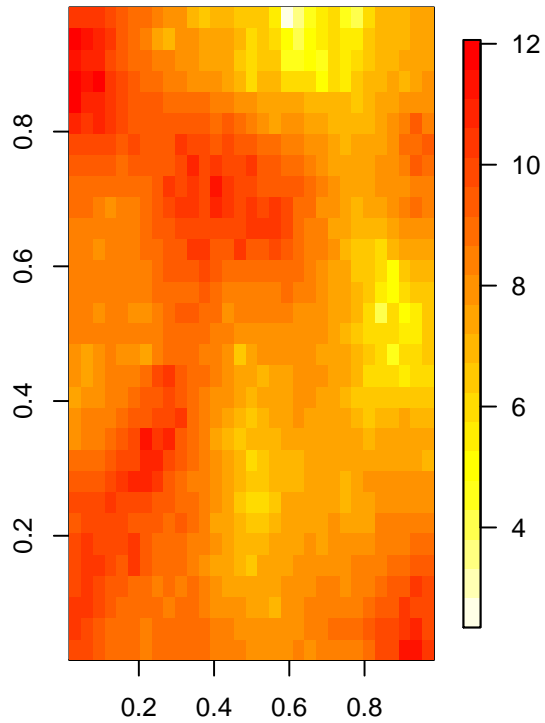
A map object is simulated with a Gaussian field. 450 points are randomly allocated on a square field of size 1. Then points are kriged using inverse distance weighted interpolation. A map with 2000 points is produced.

```
seed=80
map=genMap(DataObj=NULL,seed=seed,disp=FALSE,krig=2)
```

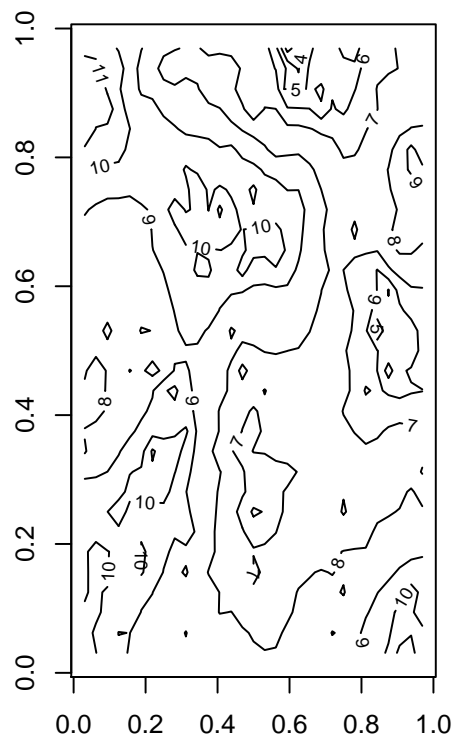
```
## [1] "DataObj=NULL, generating DataObj-seed= 80"
## [inverse distance weighted interpolation]
```

```
# display 2D map
plotMap(map)
```

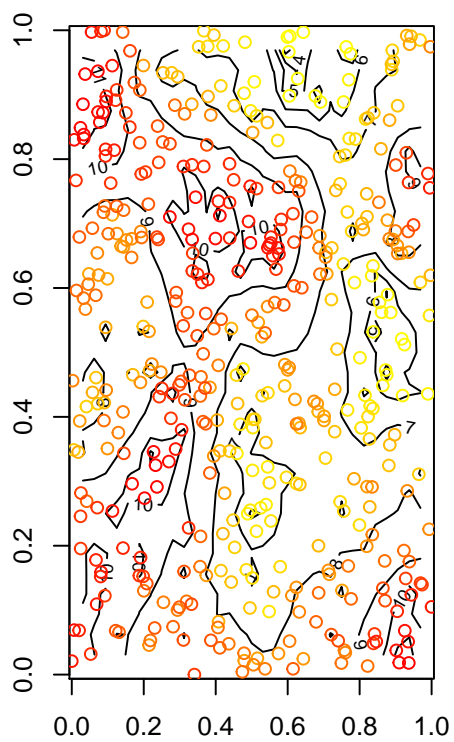
Kriged data



Contour lines on kriged data



**Contour lines on kriged data
plus raw data points**

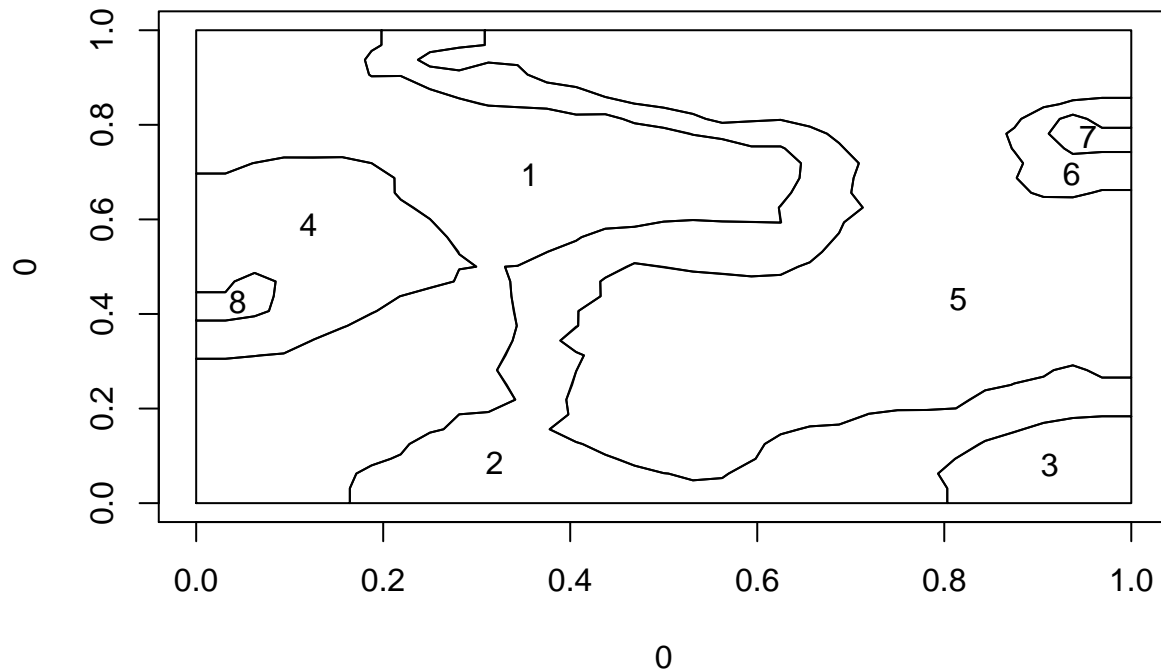


Generate

zoning Z from map, quantile vector (0.4) and plot zoning (7 zones in this case)

```
ZK=initialZoning(qProb=c(0.4,0.7),map,pErr=0.9,simplitol=1e-3,optiCrit=2,disp=0) # names(Z) "resCri
# initialZoning calls zoneGeneration, calNei, calDistance, calCrit
# zoneGeneration calls contourAuto
# contourAuto calls contourLines and extensionLine
Z=ZK$resZ$zonePolygone
K=ZK$resZ

plotZ(Z) #only zones
```



NULL

```
# obtain normalized corrected distance matrix
DCO=ZK$resD$matDistanceCorr
DCON=normDistMat(DCO,2)
```

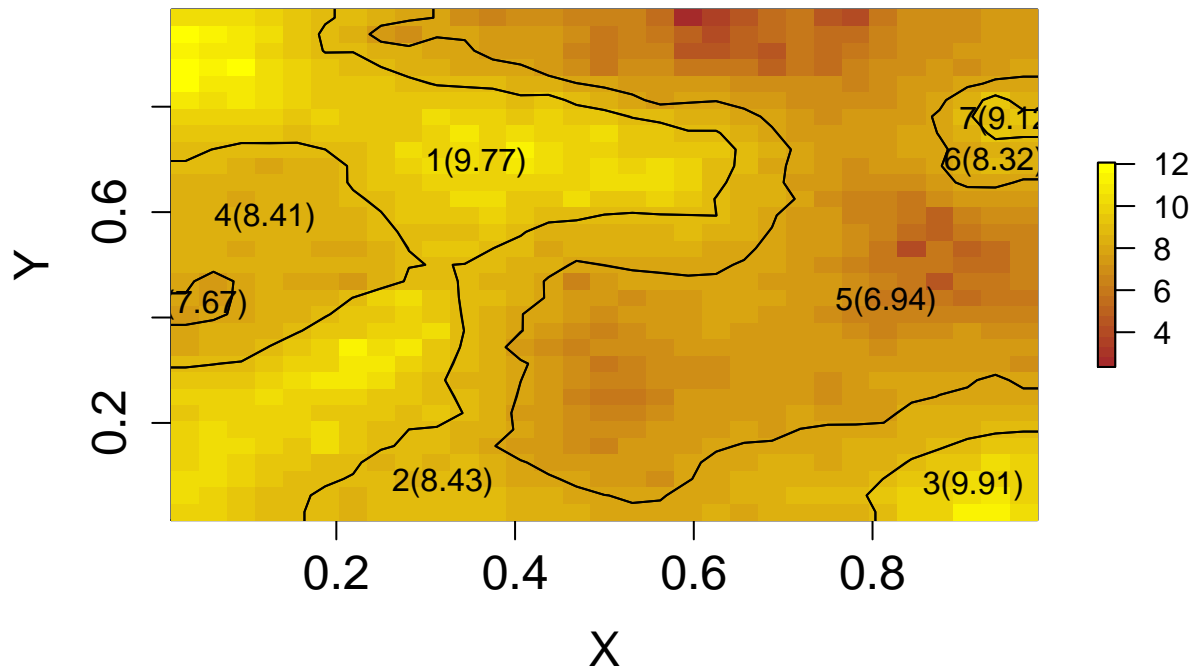
```
# more detailed plot
```

```
valRef=quantile(map$krigGrid,na.rm=TRUE,prob=c(0.4,0.7))
dispZ(map$step,map$krigGrid,zonePolygone=Z,K=K,boundary=map$boundary,nbLvl=0,id=FALSE,mu=2)
```

NULL

```
title(paste(" q=[" ,toString(round(valRef,2)), "]" crit=" ,round(ZK$resCrit,2),sep=""))
```

q=[7.92, 8.91] crit=3.41



```
# print zoning labels
printLabZ(list(ZK$resZ))
```

```
## [1] "2q zone labels= c(3, 2, 3, 2, 1, 2, 3, 1)"
```

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

```
## [1] 3 2 3 2 1 2 3 1
```

```
# print zoning surfaces
printZsurf(ZK$resZ$zonePolygone)
```

```
## [1] "iZ= 1 area= 0.26918"
```

```
## [1] "iZ= 2 area= 0.19976"
```

```
## [1] "iZ= 3 area= 0.03089"
```

```
## [1] "iZ= 4 area= 0.08394"
```

```
## [1] "iZ= 5 area= 0.38709"
```

```
## [1] "iZ= 6 area= 0.01823"
```

```
## [1] "iZ=7 area=0.00506 < minSize(0.012)"
```

```
## [1] "iZ=8 area=0.00591 < minSize(0.012)"
```

```
## [1] 7 8
```

```
# print zoning ids
printZid(ZK$resZ$zonePolygone)
```

```
## [1] "ii= 1 ID= 1"
```

```
## [1] "ii= 2 ID= 2"
```

```
## [1] "ii= 3 ID= 3"
```

```
## [1] "ii= 4 ID= 4"
```

```
## [1] "ii= 5 ID= 5"
```

```
## [1] "ii= 6 ID= 6"
```

```
## [1] "ii= 7 ID= 7"
```

```
## [1] "ii= 8 ID= 8"
```

Session informations

```
## R version 3.4.0 (2017-04-21)
## Platform: x86_64-pc-linux-gnu (64-bit)
## Running under: Debian GNU/Linux 8 (jessie)
##
## Matrix products: default
## BLAS: /usr/lib/libblas/libblas.so.3.0
## LAPACK: /usr/lib/lapack/liblapack.so.3.0
##
## locale:
##  [1] LC_CTYPE=fr_FR.utf8      LC_NUMERIC=C
##  [3] LC_TIME=fr_FR.utf8      LC_COLLATE=C
##  [5] LC_MONETARY=fr_FR.utf8  LC_MESSAGES=fr_FR.utf8
##  [7] LC_PAPER=fr_FR.utf8     LC_NAME=C
##  [9] LC_ADDRESS=C            LC_TELEPHONE=C
## [11] LC_MEASUREMENT=fr_FR.utf8 LC_IDENTIFICATION=C
##
## attached base packages:
## [1] stats      graphics  grDevices  utils      datasets  methods    base
##
## other attached packages:
## [1] geozoning_1.0.0
##
## loaded via a namespace (and not attached):
##  [1] Rcpp_0.12.11      raster_2.5-8
##  [3] knitr_1.17        magrittr_1.5
##  [5] maptools_0.9-2    maps_3.1.1
##  [7] lattice_0.20-35   FNN_1.1
##  [9] stringr_1.2.0     xts_0.9-7
## [11] fields_8.15       tools_3.4.0
## [13] RandomFields_3.1.50 grid_3.4.0
## [15] gstat_1.1-5       spam_1.4-0
## [17] deldir_0.1-14     intervals_0.15.1
## [19] RandomFieldsUtils_0.3.25 htmltools_0.3.6
## [21] rgeos_0.3-23      yaml_2.1.14
## [23] rprojroot_1.2     digest_0.6.12
## [25] evaluate_0.10.1   rmarkdown_1.6
## [27] sp_1.2-4          stringi_1.1.5
## [29] compiler_3.4.0    backports_1.1.0
## [31] spacetime_1.2-0   foreign_0.8-68
## [33] zoo_1.8-0
```