Training in ade4 in R - Module I: Basic methods

Correspondence analysis

Stéphane Dray

2021-04-20

Data

We will analyze the `doubs` data set (see `?doubs`)

```
library(ade4)
library(adegraphics)
data(doubs)
names(doubs)
```

```
## [1] "env"     "fish"    "xy"      "species"
```

```
names(doubs$fish)
```

```
##  [1] "Cogo" "Satr" "Phph" "Neba" "Thth" "Teso" "Chna" "Chto" "Lele" "Lece"
## [14] "Eslu" "Pefl" "Rham" "Legi" "Scer" "Cyca" "Titi" "Abbr" "Icme" "Acce"
## [27] "Anan"
```

Correspondence Analysis

- Perform CA
- Display the barplot of eigenvalues

Inertia statistics

- Compute the percentage of variation explained bu the first PCA axes

Graphical representation of CA results

- Plot the results using the `biplot` function

CA scores on the geographical map

- Draw maps of CA scores on the first two axes
- Interpret the maps to describe how the fish communities vary along the river

Principal Component Analysis

PCA can also be applied on the abundance table. Perform PCAon `doubs$fish` table. Should we scale or not?

PCA vs CA

Compare the biplots of CA and PCA

Principal Coordinates Analysis

- Compute Jaccard distances between sites
- Perform principal coordinates analysis and display the ordination of sites

PCA and PCoA

- Compare the results of PCA and those of PCoA applied on Euclidean distance (function `dist`)