

Les analyses multivariées exploratoires

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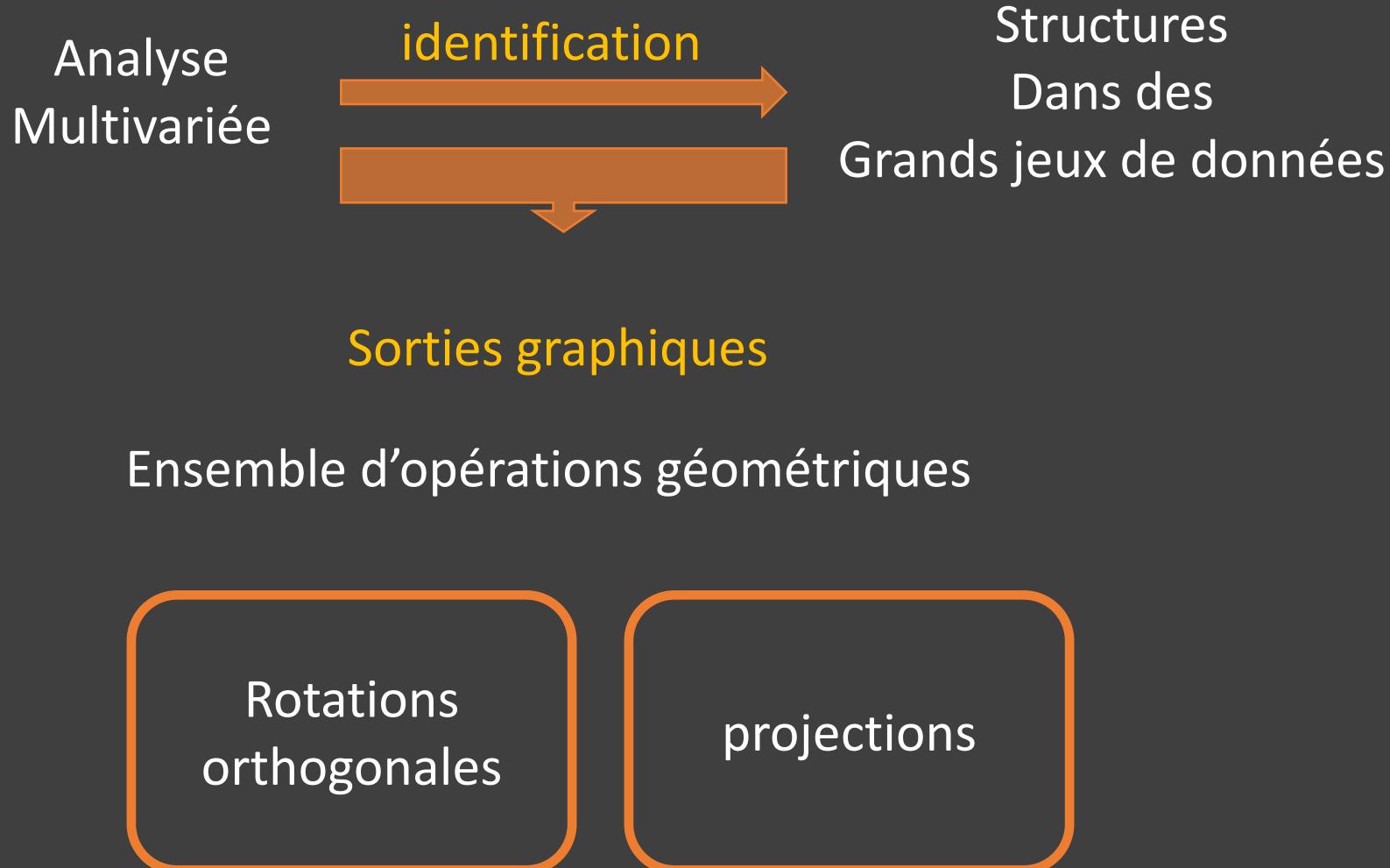
Université Claude Bernard



Lyon 1



Introduction



Introduction

Que voit-on ?

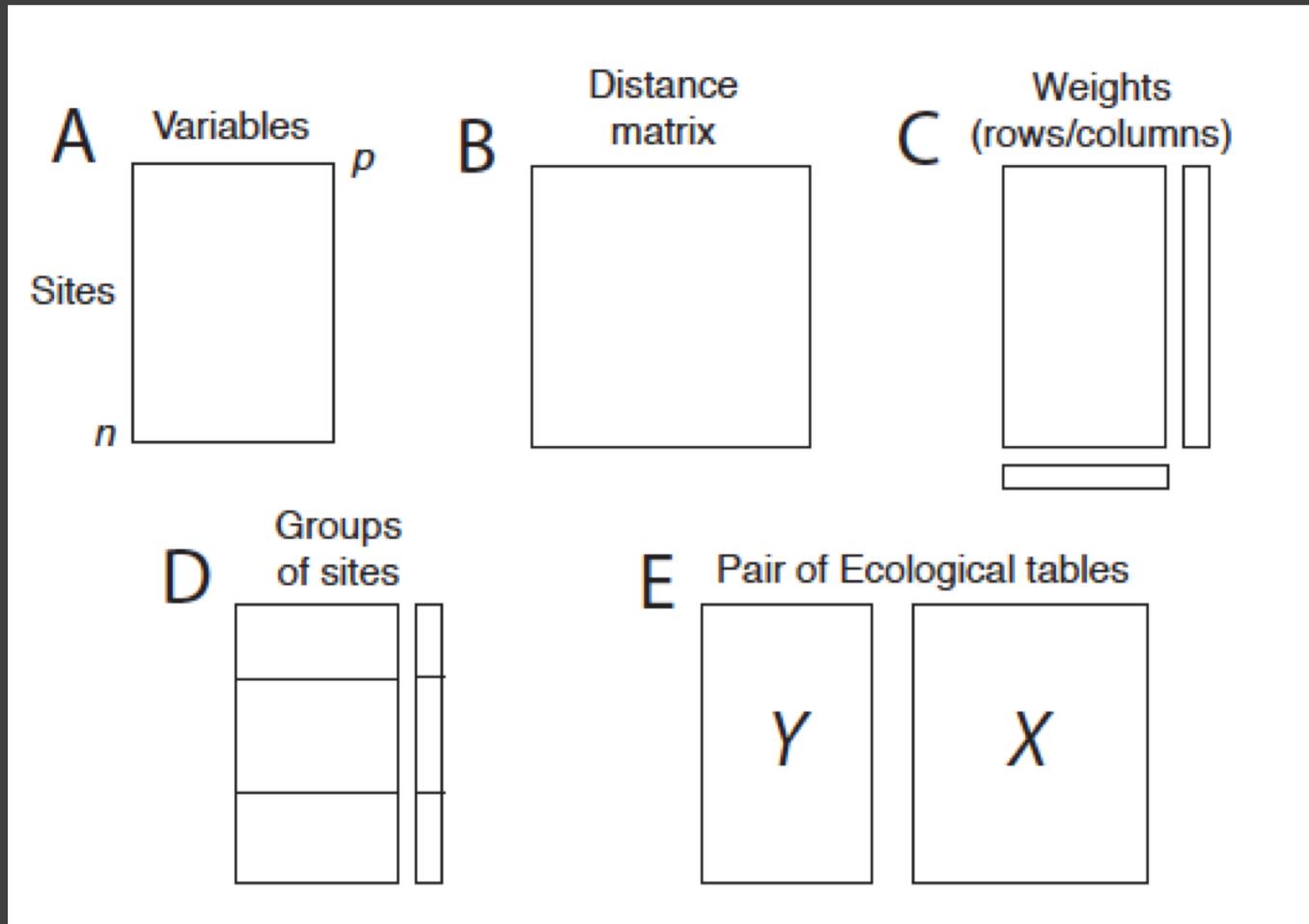
Un nuage de points...

Est-ce que cela définit une
Structure ?



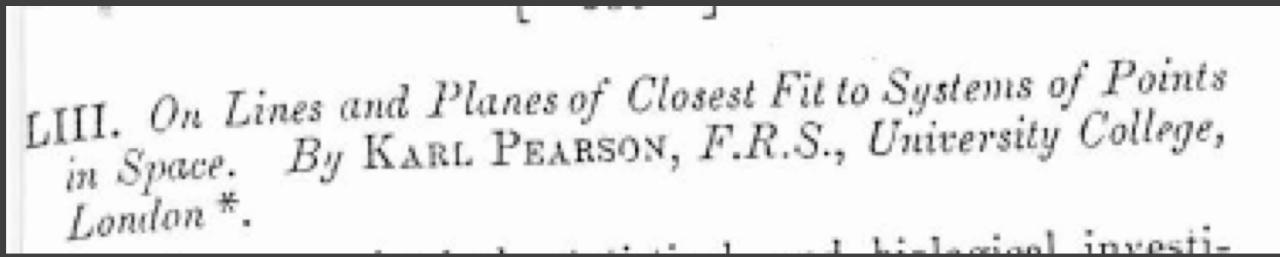
Introduction

Ensemble de Données écologiques

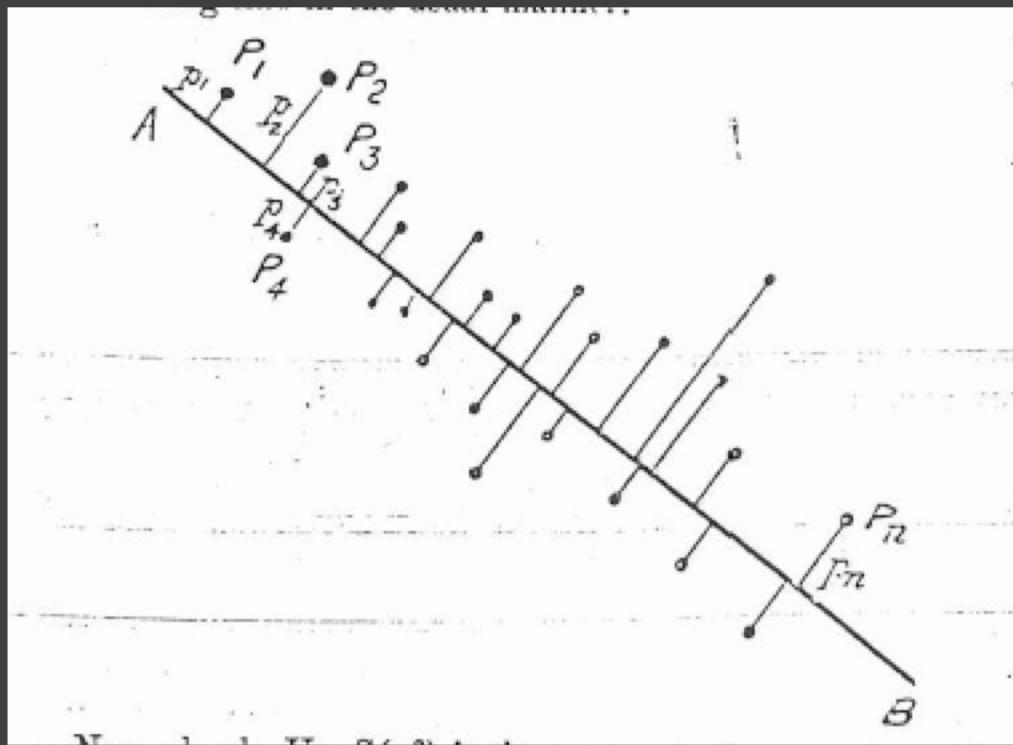


Histoire de l'ADE

1901

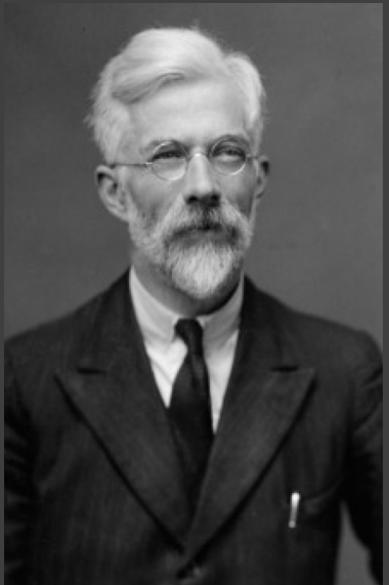


Karl Pearson



Analyse en Composantes Principales

1936



R.A. Fisher

Annals of
human genetics

Explore this journal >

THE USE OF MULTIPLE MEASUREMENTS IN TAXONOMIC PROBLEMS

R. A. FISHER Sc.D., F.R.S.

First published: September 1936 [Full publication history](#)



Iris Versicolor

Iris Setosa

Analyse discriminante
linéaire

Histoire de l'ADE

1965

Escofier B. [Cordier B.] (1965): *l'Analyse des correspondances*. Thèse, Faculté des Sciences de Rennes ; publiée en 1969 dans les *Cahiers du Bureau Universitaire de Recherche Opérationnelle*, n°13.

Tokyo, Analyse des données, 24-26 mars 1987



Japonais, Yves Escouffier, **Brigitte Escofier**, Ludovic Lebart, Israël-César Lerman, Guy Der-Megreditchian, Michel Jambu, Jean-Pierre Nakache, Maurice Roux, japonais...

Analyse des correspondances



K. Pearson 1906
Pas loin de la découverte de l'analyse
Spectral properties of matrices unknown

Histoire de l'ADE

1994

The screenshot shows a journal article from the 'Freshwater Biology' journal. The title of the article is 'Co-inertia analysis: an alternative method for studying species-environment relationships'. It is authored by SYLVAIN DOLÉDEC and DANIEL CHESSEL. The article was first published in June 1994 and can be accessed via the DOI <https://doi.org/10.1111/j.1365-2427.1994.tb01741.x>. The citation count is 345.

Freshwater Biology

Co-inertia analysis: an alternative method for studying species-environment relationships

SYLVAIN DOLÉDEC, DANIEL CHESSEL

First published: June 1994 | <https://doi.org/10.1111/j.1365-2427.1994.tb01741.x> | Cited by: 345

Analyse de Coinertia

Pair of Ecological tables

Y

X

2003

Ecology, 84(11), 2003, pp. 3078–3089
© 2003 by the Ecological Society of America

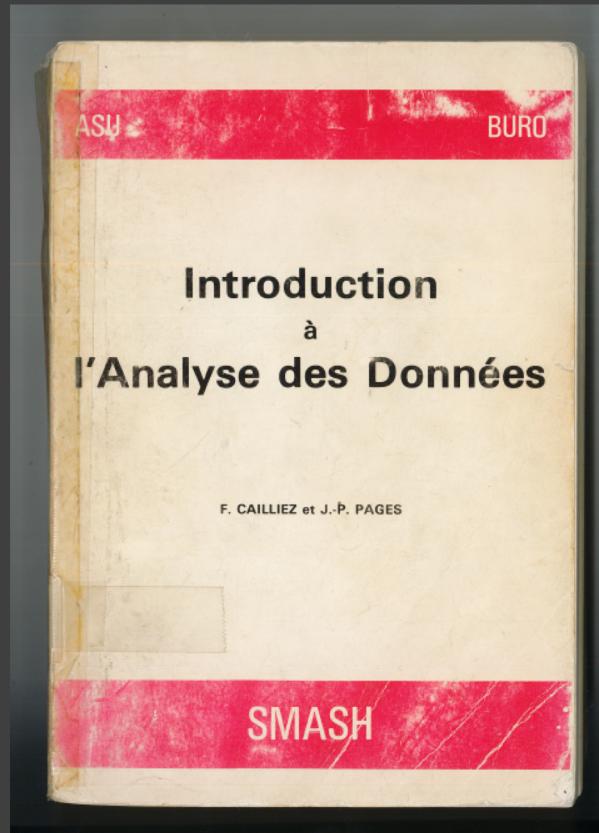
CO-INERTIA ANALYSIS AND THE LINKING OF ECOLOGICAL DATA TABLES

STÉPHANE DRAY,¹ DANIEL CHESSEL, AND JEAN THIOULOUSE

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69622 Villeurbanne Cedex, France

Contexte Mathématique

1987



1976

[Developments in Numerical Ecology pp 139-156 | Cite as](#)

The Duality Diagram: A Means for Better Practical Applications

Authors [Authors and affiliations](#)

Y. Escoufier

The image shows a screenshot of a journal article page. At the top, there is a small thumbnail of the journal cover with a green and blue geometric pattern. Below the thumbnail, the journal title 'Developments in Numerical Ecology' is mentioned along with the page numbers 'pp 139-156' and a 'Cite as' link. The main title of the article is 'The Duality Diagram: A Means for Better Practical Applications'. Below the title, there are two tabs: 'Authors' and 'Authors and affiliations'. Under the 'Authors' tab, the name 'Y. Escoufier' is listed.

2007



The ade4 Package: Implementing the Duality Diagram for Ecologists

Stéphane Dray
Université de Lyon

Anne-Béatrice Dufour
Université de Lyon

Contexte Mathématique

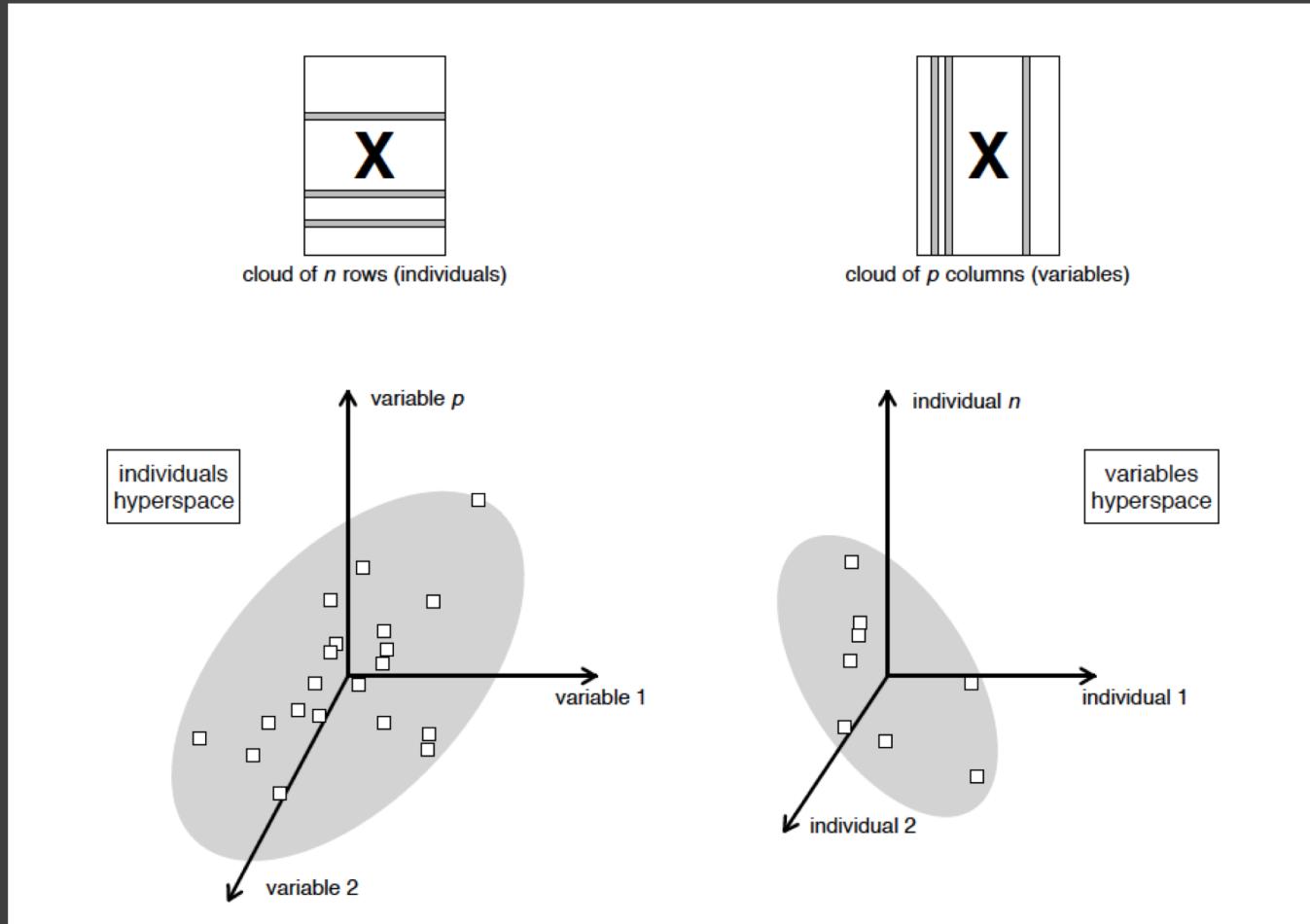
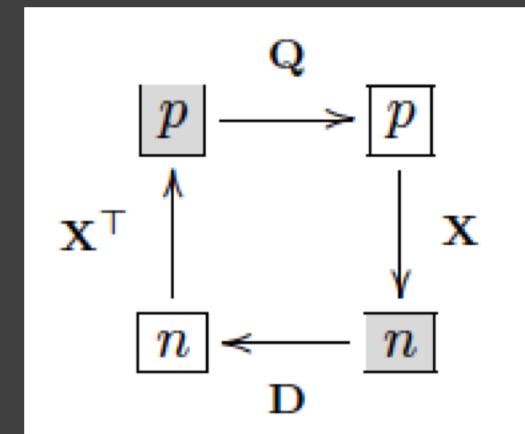


Schéma de dualité



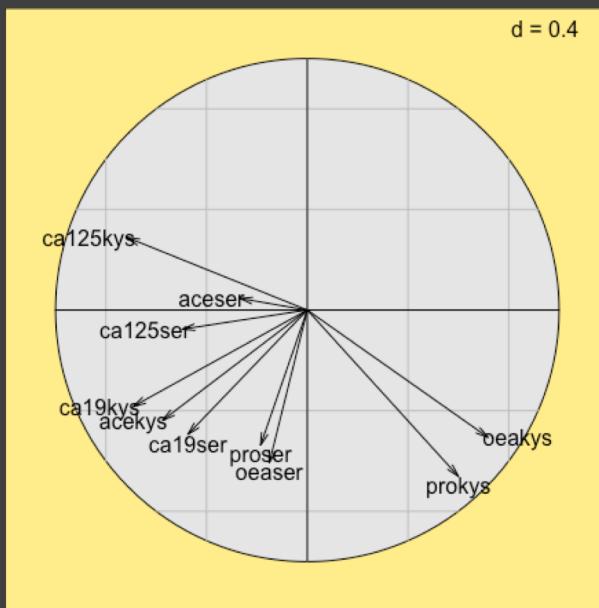
Le triplet (X, Q, D)

Implémentation Informatique



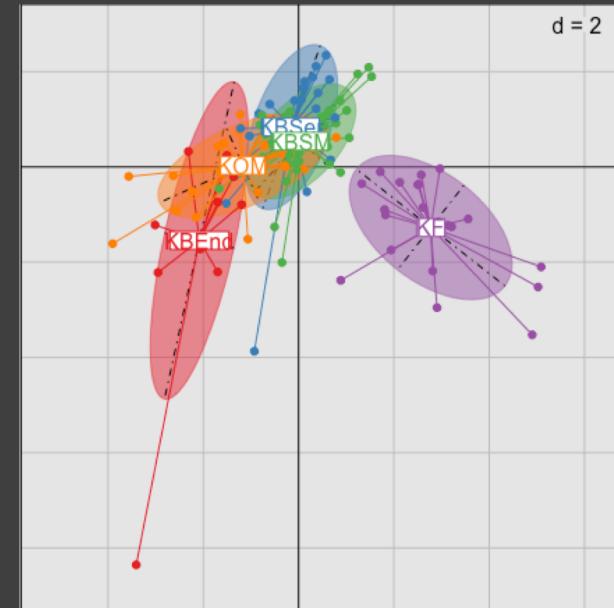
2002

library(ade4)



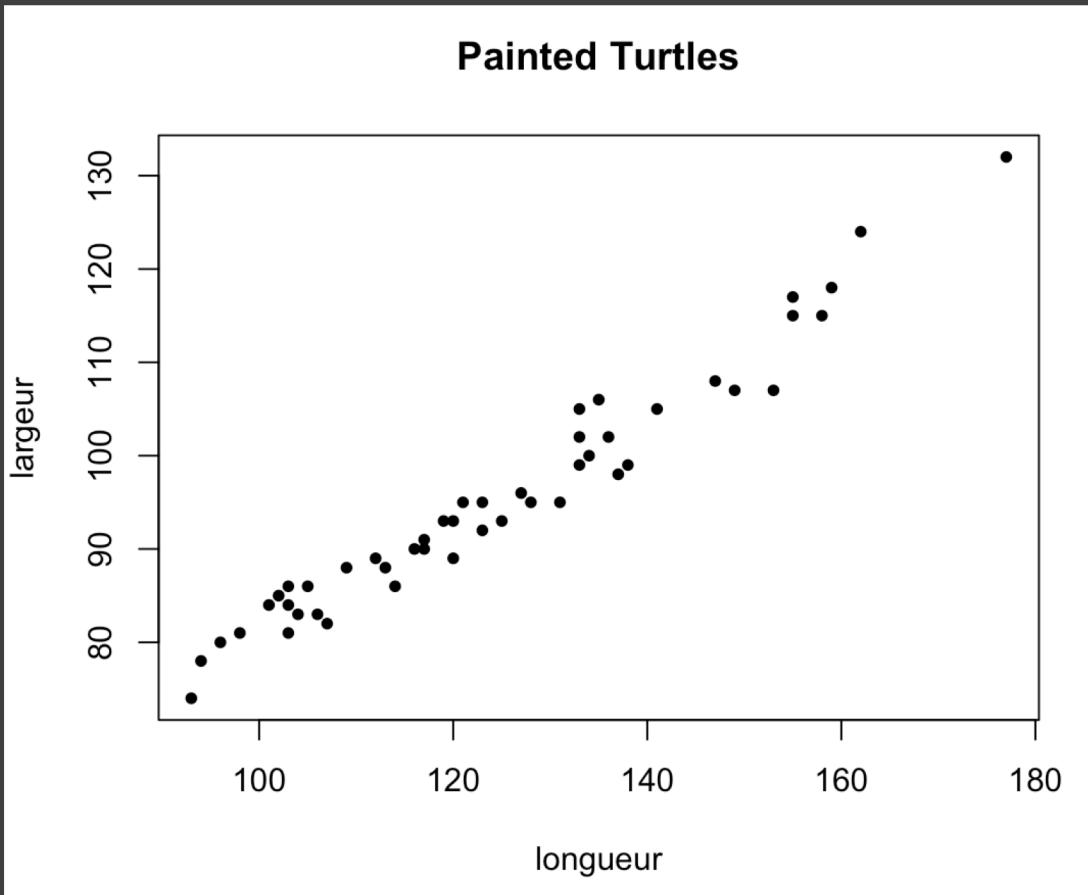
Ecological Data Analysis
Exploratory and Euclidean Methods in Environmental Sciences

Analyse des Données Ecologiques
Méthodes Exploratoires et Euclidiennes en Sciences de l'Environnement



Implémentation Informatique

data(tortues)



plot

paramètres

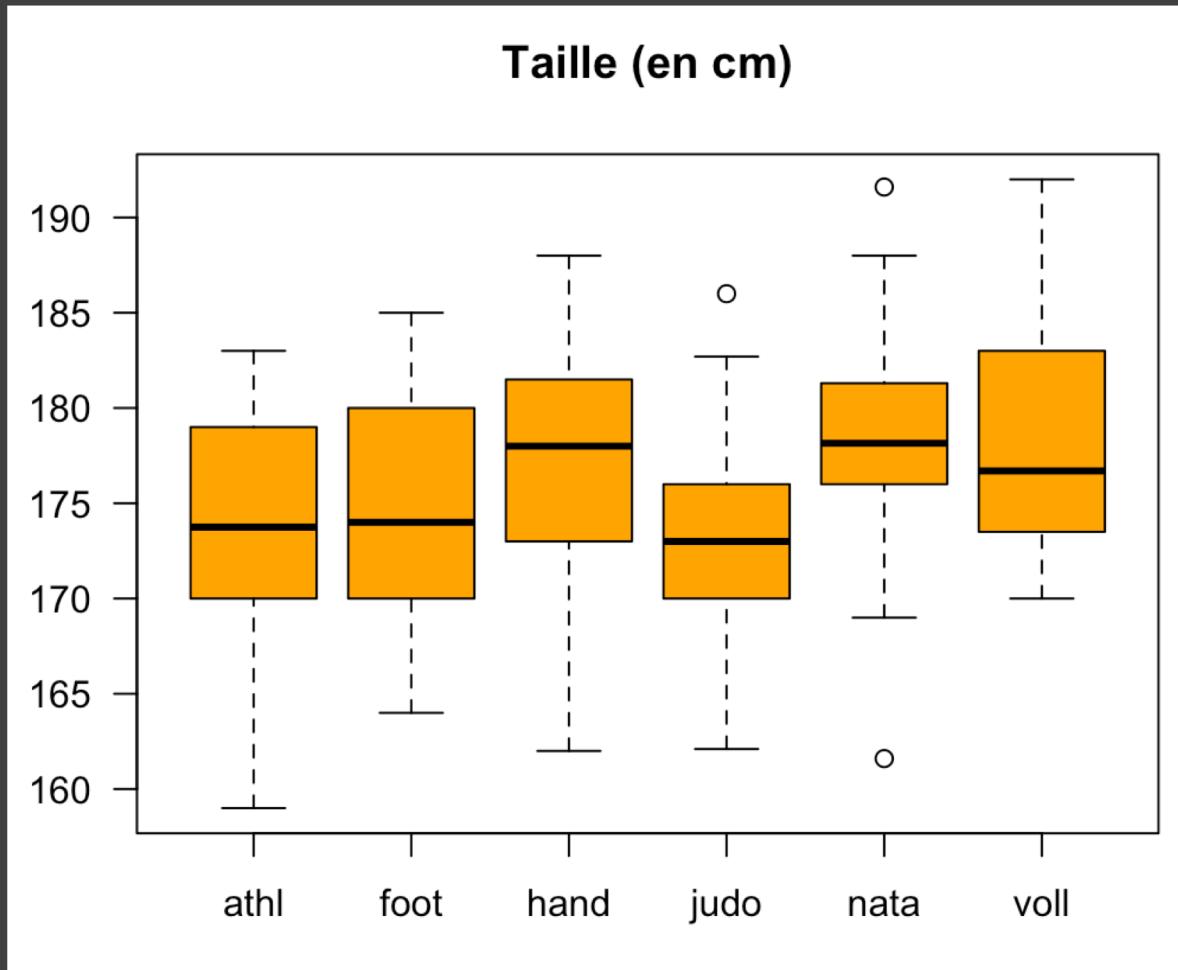
Correlation coefficient
Determination coefficient

$$r = 0.9772$$

$$r^2 = 0.9550$$

Implémentation Informatique

```
data(morphosport)
```



paramètre

Correlation Ratio

$$\eta^2 = 0.0810$$

Implémentation Informatique

data(housetasks)

mosaicplot



paramètres

Chi-squared
Cramer coefficient

$\chi^2 = 1944.5$

$cv = 0.6096$