

Data Analysis in Environmental Sciences

Synopsis

this teaching re-introduces the fundamentals of statistical analysis applied to environmental sciences. Its five major sections address probability distributions, estimation and hypothesis testing, analysis of variance, Regression and correlation, multivariate analysis methods and time series analysis methods. For most of the statistical techniques, concrete applications are investigated through practical sessions using the free software R.

Aims

Provide a broad and comprehensive overview of the most outstanding statistical methods for data analysis in environmental sciences.

Objectives

At the end of the Unit, you should be able to choose, implement and interpret data analysis methods based on scientific objectives and sampling/experimental strategies in environmental sciences

Key Skills Acquired

At the end of this Unit, you should be able to :

- 1.use the potential of R to conduct a data analysis
- 2.provide a detailed and critical analysis of the results

Syllabus

Topics covered include:

- Discrete and continuous random variables
- Sample and population: statistical inference
- Regression and correlation
- Multivariate analysis
- Time series analysis

Learning & Teaching

- Lectures: 21 hr

- Practical work : 30 hr

Teaching Staff

Bertrand Lubac

Semester 1

Timetable slot

ECTS 6

Level Compulsory

Bibliography

- R.E. Thomson and W.J. Emery 2014. Data Analysis Methods in Physical Oceanography, Third Edition, Elsevier.
- W.W. Daniel and C.L. Cross 2013, Biostatistics: A Foundation for Analysis in the Health Sciences, 10th Edition.

Assessment

- Written theory examination (60%)
- Practical work examination (40%)

Course Evaluation

Evaluation Questionnaire by students, annual assessment by Unit Coordinator