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Web site (distribution of R functions and PDFs of research papers):
<http://numeralecology.com>

A short course on
**Recent advances in Analysis of Multivariate
Ecological Data: Theory and Practice**

24–28 October 2016

Day 1

0. Short introduction to the course [PL].
1. Ordination in reduced space: principal component analysis (PCA) [PL].
2. Transformation of species abundance data tables prior to linear analyses [DB].
3. Ordination in reduced space: correspondence analysis (CA), principal coordinate analysis (PCoA) [DB].

Day 2

4. Measures of similarity and distance, especially for community composition data [PL].
5. Multiple linear regression. R-square, adjusted R-square, AIC, tests of significance [PL].
6. Polynomial regression [DB].
7. Partial regression and variation partitioning [DB].

Day 3

8. Statistical testing by permutation [PL].
9. Canonical redundancy analysis (RDA) and canonical correspondence analysis (CCA) [PL].

10. Multivariate analysis of variance by canonical analysis [DB].

11. Selection of environmental variables in RDA [DB].

Day 4

12. Beta diversity partitioning and LCBBD indices [PL].

13. Replacement and richness difference components of beta diversity [PL].

14. Spatial modelling: origin of spatial structures [PL].

15. Mantel correlogram [DB].

Day 5

16. Multi-scale modelling of the spatial structure of ecological communities: dbMEM [DB], generalized MEM, and AEM methods [PL].

17. Community surveys through space and time: testing the space-time interaction in repeated surveys [DB].

18. Is the Mantel test useful for spatial analysis in ecology and genetics? [PL].

⇒ Lectures in the morning

⇒ Afternoons: Practicals about these topics using the R language

The following files are distributed in the folder **Instructions for ICTP practicals**

- Day-by-day list of the practical exercises (file: Short_Course_Practicals.pdf)
- Introduction to the R statistical language (file: Introduction_to_R.pdf)
- Basic matrix operations (file: Basic_matrix_operations.pdf)
- Practicals in the R statistical language:
 - File “Practicals_in_R (Legendre).pdf”
 - Folder “Instructions for DB practicals (NEwR)”
- Instructions for installation of R packages: file “InitialPackageInstall_R33.R”

The following files are available in the folder **Spatial_eigenfunction_practicals** –

- Gault_forest_reserve
- Legendre-Gauthier practicals

Data sets used in the practical exercises are in the folder **Data_sets**

R functions written for the NEwR book are in the folder **R_functions**