

Fushan Botanical Garden, Ilan, Taiwan

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

*Short course on*

## **Spatial analysis of beta diversity in multi-species communities**

April 27–29, 2016

### **Day 1**

1. Origin of spatial structures (15 or 20 min.)
2. Review of the classical (PCA, CA, PCoA) and canonical ordination methods (RDA, CCA).

### **Day 2**

3. Beta diversity partitioning and LCBD indices. Examples of space-time and time(weeks)-time(years) analyses.
4. Replacement and richness difference components of beta diversity.
5. Temporal beta diversity: computation and interpretation.

### **Day 3**

6. Spatial modelling: Multi-scale modelling of the spatial structure of ecological communities. The dbMEM, generalized MEM, and AEM methods.
7. Community surveys through space and time: testing the space-time interaction in repeated surveys.

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⇒ **Lectures in the morning.**

⇒ **Afternoons: Practicals about these topics using the R language**

The following files are distributed in the folder Practicals\_in\_R.zip –

- Day-by-day list of the practical exercises (file: Short\_course\_practicals.pdf)
- Introduction to the R statistical language (file: Introduction\_to\_R.pdf)
- Practicals in the R language: Basic matrix operations (file: Basic\_matrix\_operations.pdf)
- Practicals using the R statistical language (file: Practicals\_in\_R.pdf)
- Documentation file for PCNM function (file: PCNM\_documentation.pdf)
- Documentation file for pcoa.all function (file: pcoa.all\_documentation.pdf)

The following files are distributed in the folder Spatial\_eigenfunction\_practicals.zip –

- NEwR Script Chapter 7
- Gault\_forest\_reserve
- Legendre-Gauthier practicals