

Installing the PCNM package or the PCNM function

1. The PCNM package is a temporary package containing function PCNM, used in the Practicals of this course. It will be replaced by a new package for spatial and space-time analysis called **adespatial**. The PCNM package is distributed on the **R-Forge** page,

https://r-forge.r-project.org/R/?group_id=195

=> **If you cannot download the PCNM package, go to section 2 (below).**

To install the package, you have to download it and packages AEM and packfor from that page.

Windows operating systems

For Windows operating systems, you can download the packages AEM, PCNM and packfor from **R-forge** by clicking on the .zip button besides the flag in the section devoted to the package.

If you have problems running PCNM, use the method in **section 2** (below) for Mac OSX.

Mac OSX systems

The **R-Forge** site no longer distributes compiled versions of packages for Mac OSX systems.

1. You can obtain versions for R 3.0.x from the numeralecology.com web page. On that page, look in the section entitled “Forward selection of explanatory variables in multiple regression and redundancy analysis (RDA)” and download packages AEM, PCNM and packfor compiled for Mac OSX and R 3.0.x. Recuperate the three .tgz files from the trash and throw away the useless .tar files. Install them using the **Install.package(s)** option of the **Packages** menu. Instructions are found on p. 6 of the “Introduction_to_R.pdf” file.

=> **2.** If you are using R 3.2.x, you can run the functions of the PCNM package in R without compiling the package. Use this method if you have problems running PCNM in Windows.

2.1. Download the PCNM source file from the **R-Forge** Web page

https://r-forge.r-project.org/R/?group_id=195

or the PCNM package for Mac OSX from the page

<http://adn.biol.umontreal.ca/~numeralecology/Rcode/>

Look for the section PCNM, MEM and AEM spatial eigenfunctions. Click on the link **PCNM function** to download a folder containing two R functions and two documentation files.

On the **R-Forge** page, the source file has the extension .tar.gz. It is located next to the small penguin, which also represents the Linux operating system. Unpack the folder by clicking on it. Extract files **PCNM.R** and **pcoa.all.R** from the R sub-folder.

2.2. You can load these two functions to the R console using the **“Source File...”** command in the Files menu for Mac OSX users, or using the **“Source R Code...”** command in the File menu for Windows users.

2.3. You can now use these functions. Function PCNM() calls function pcoa.all(). The PCNM and pcoa.all documentation files, in pdf, are provided in the *Instruction* folder of the course.

These manipulations will no longer be necessary when the functions are integrated into the new package **adespatial**.

References

Borcard, D. and P. Legendre. 2002. All-scale spatial analysis of ecological data by means of principal coordinates of neighbour matrices. *Ecological Modelling* 153: 51-68.

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Dray, S., P. Legendre and P. R. Peres-Neto. 2006. Spatial modelling: a comprehensive framework for principal coordinate analysis of neighbour matrices (PCNM). *Ecological Modelling* 196: 483-493.

Griffith, D. A. & P. R. Peres-Neto. 2006. Spatial modelling in ecology: the flexibility of eigenfunction spatial analyses. *Ecology* 87: 2603-2613.

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