

GIS in R

Syllabus, Winter 2015
Room 2-22 Ocean Sciences Bldg.

Bring your laptop to class!

Class schedule: Monday, Thursday, 13:00-15:00

Office hours: Tuesday, Friday, 14:30-16:30

All class material is available on my GitHub account:
<https://github.com/MarieAugerMethe/GISinR> and will be updated throughout the class.
The material is also available on the OTN GitLab page
(<https://utility.oceantrack.org/gitlab/otn-statistical-modelling-group/gisinr/tree/master>).

Grades: Pass/Fail need 70% to pass

Pre-class assignment – 5%

4 Tutorials – 40%

3 Assignments – 30%

Final assignment – 25%

Class 1:

- Lecture:
 - What is GIS
 - Coordinate reference system
 - Points data
 - Where you can get info/help
- Tutorial:
 - My basic R set up: RStudio project + R scripts + Version control
 - Intro to package sp
 - Importing GPS point data (import .csv file)
 - SpatialPoints
 - SpatialPointsDataFrame
 - Intro to map packages
 - Intro to RGDAL & PROJ4

Class 2:

- Lecture:
 - Vector data manipulation

- Vector data visualization
- Tutorial:
 - More on SP objects: SpatialLines
 - SpatialLines from points (e.g., movement track)
 - Plotting SpatialLines

Class 3:

- Lecture:
 - More on vector data – SpatialPolygons
- Tutorial:
 - More on SP objects: SpatialPolygons
 - SpatialPolygons from points (e.g., Study site)
 - Basic plotting functions

Class 4:

- Lecture:
 - Handling vector data
 - Intro to GEOS and rgeos
- Tutorial:
 - Layers
 - Intro to rgeos tools

Resources:

- Websites:
 - CRAN Task View: Analysis of Spatial Data
Brief description of all of the main packages available for spatial data.
<http://cran.r-project.org/web/views/Spatial.html>
 - Cheat sheet available on Barry Rowlingson website:
<http://www.maths.lancs.ac.uk/~rowlings/Teaching/UseR2012/cheatsheet.html>
- Mailing lists/message boards
 - R-Sig-Geo mailing list
Mailing list for questions/answers for R spatial.
Info is found here:
<https://stat.ethz.ch/mailman/listinfo/R-SIG-Geo/>
Searchable archive is found here:
<http://r-sig-geo.2731867.n2.nabble.com/>
 - Stackoverflow
Message board to post questions on coding.
<http://stackoverflow.com/>
You can use tags to focus your search. Tags of interest are: R, geospatial, sp, raster.

Do not post statistical questions. For stats questions use Cross Validated (<http://stats.stackexchange.com/>)

- Book:
 - Applied Spatial Data Analysis with R, 2nd Edition
Roger S. Bivand, Edzer Pebesma and V. Gómez-Rubio
Available through Dal library
- Online tutorials:
 - Francisco Rodriguez-Sanchez tutorial:
<https://github.com/Pakillo/R-GIS-tutorial>