Tutorial: Geocomputation with R

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Intro

Jannes Muenchow, Robin Lovelace

EGU Vienna, 2019-04-10
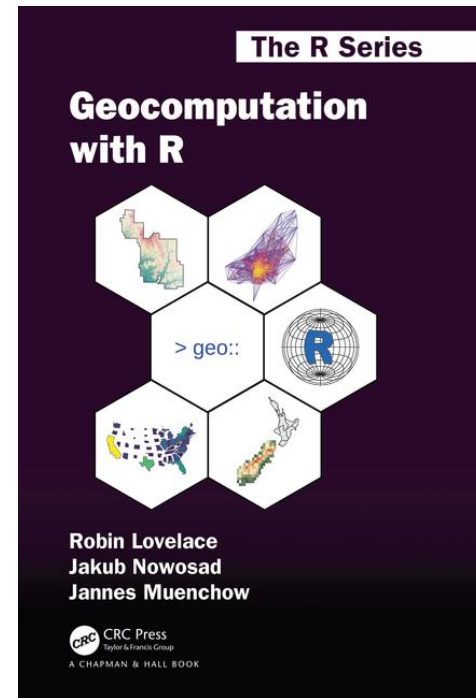
Who we are

Welcome to our tutorial!

We are the authors of Geocomputation with R

Find here the online home of our book.

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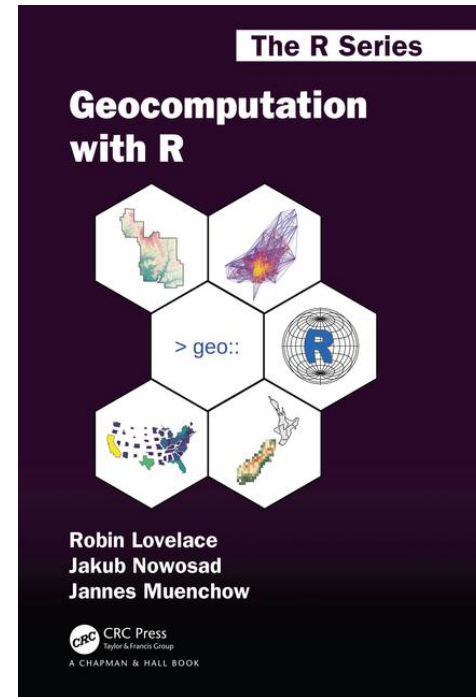- Jakub Nowosad - Computational geographer with a focus on the analysis of large datasets to understand environmental processes; creator of the **sabre** package.

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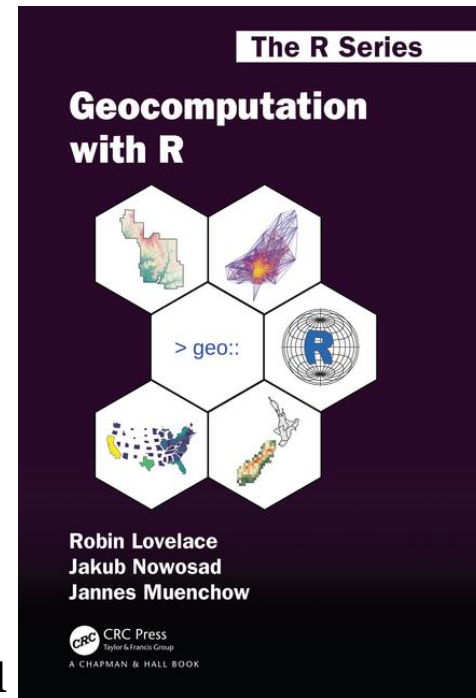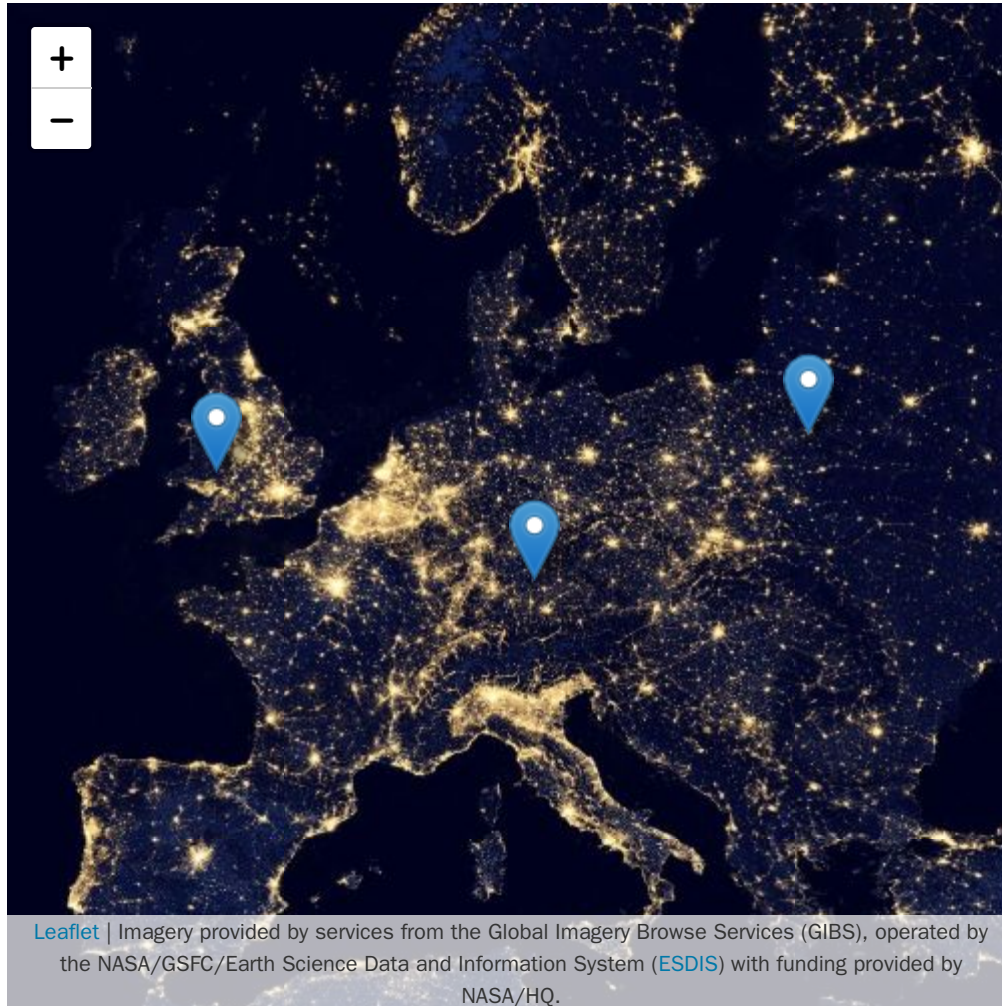- Jannes Muenchow - GIScientist with a special focus on ecology, landsliding and geomarketing; creator of the **RQGIS(3)** package.

Where are we from

Leaflet | Imagery provided by services from the Global Imagery Browse Services (GIBS), operated by the NASA/GSFC/Earth Science Data and Information System (ESDIS) with funding provided by NASA/HQ.

About the book

Take a look here: https://geocompr.robinlovelace.net/

Source code: https://github.com/robinlovelace/geocompr

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Win a copy of the book for:

1. Best map (upload a map to
   https://github.com/Robinlovelace/geocompr/issues/371)

2. Best questions (ask us!)

3. We'll decide at the end

Summer school 2019 in Jena

If you want more than a 1.5h tutorial, apply for our summer school!

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Summer school: 25 August to 1 September 2019
Application **deadline**: 15 May 2019
Fees: 100 €

Funded by the German Academic Exchange Service (**DAAD**), therefore accepted **international (PhD or Msc) students** will receive upon completion of the summer school:

- a flat-rate allowance of **250** Euros
- a country-dependent **travel stipend** amounting to at least 200 Euros

Workshop in Leeds, UK

- 2 day workshop in the Leeds Institute for Data Analytics: lida.leeds.ac.uk/event

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- More events? See the #geocompr hashtag on Twitter!

CDRC TRAINING / APR 25 @ 9:30 AM - APR 26 @ 4:30 PM

Geocomputation and Data Analysis with R

The aim of Geocomputation and Data Analysis with R is to get you up-to-speed with high performance geographic processing, analysis, visualisation and modelling capabilities from the command-line. The course will be delivered in R, a statistical programming language popular in academia, industry and, increasingly, the public sector. It will teach a range of techniques using recent developments in the package sf and the 'metapackage' tidyverse, based on the open source book Geocomputation with R (Lovelace, Nowosad, and Meunchow 2019).

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If you want to know more on "Bridges to GIS":

- RQGIS R Journal paper (Muenchow, Schratz, and Brenning, 2017)
- Bridges to GIS chapter (Lovelace, Nowosad, and Muenchow, 2019)

Some definitions

What is a GIS?

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- Typical GIS software packages: QGIS, SAGA-GIS, GRASS-GIS, ArcMap (commercial)

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Graphical User Interface (GUI) GIS vs Geocomputation with R

Attribute	Desktop GIS (GUI)	R
Home disciplines	Geography	Computing, Statistics
Software focus	Graphical User Interface	Command line
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Further reading: https://geocompr.robinlovelace.net/intro.html#what-is-geocomputation

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- Geographic data can quickly become big.
- Two data models for representing digitally geographic data: **the vector** (Pebesma, 2018c) and **the raster** (Hijmans, 2019) data model.

References

Hijmans, Robert J. (2019). *Raster: Geographic Data Analysis and Modeling*. R package version 2.8-19. URL: https://CRAN.R-project.org/package=raster.

Longley, Paul, Michael Goodchild, David Maguire, et al. (2015). *Geographic Information Science & Systems*. Fourth edition. Hoboken, NJ: Wiley. 477 pp. ISBN: 978-1-118-67695-0.

Lovelace, Robin, Jakub Nowosad, and Jannes Muenchow (2019). *Geocomputation with R*. The R Series. CRC Press.

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Pebesma, Edzer (2018). "Simple Features for R: Standardized Support for Spatial Vector Data". In: *The R Journal* 10.1, pp. 439-446. URL: https://journal.r-project.org/archive/2018/RJ-2018-009/index.html.