

# Patrick Schratz

PHD STUDENT · DATA SCIENTIST

Friedrich-Schiller-University Jena, Department of Geography, GIScience group

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*To which open source project do you contribute to?*

## Work Experience

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### Friedrich Schiller University Jena

*Jena, Germany*

RESEARCHER (PHD STUDENT)

*Oct. 2016 - PRESENT*

- Project: [EU LIFE Healthy Forest](#)
- Description: "Early detection and advanced management systems to reduce forest decline caused by invasive and pathogenic agents"
- Statistical and machine learning data analysis

### Friedrich Schiller University Jena

*Jena, Germany*

RESEARCH ASSISTANT

*Mar. 2016 - Sept. 2016*

- Project: [EU LIFE Healthy Forest](#)
- Description: "Early detection and advanced management systems to reduce forest decline caused by invasive and pathogenic agents"

### Chinese Academy of Forestry

*Beijing, China*

RESEARCH INTERN

*Aug. 2015 - Oct. 2015*

- [Project work within ESA-MOST Forest DRAGON 3](#)
- [Schmullius et al. \(2016\)](#): Decadal trends of Northeastern Forests in China from Earth Observation Synergy (see also 'publications')

### TU Ilmenau

*Ilmenau, Thüringen*

STUDENT ASSISTANT

*Feb. 2014 - Apr. 2015*

- GIS support within [Obschonka et al. \(2015\)](#): "Entrepreneurial Regions: Do Macro-Psychological Cultural Characteristics of Regions Help Solve the "Knowledge Paradox" of Economics?"

### Centre for Geographical Analysis

*Stellenbosch, South Africa*

INTERN

*Mar. 2014 - May 2014*

- [CGA Stellenbosch](#)
- Validation of a country wide land cover map for South Africa

### Friedrich Schiller University Jena

*Jena, Germany*

STUDENT ASSISTANT

*Oct. 2013 - Feb. 2014*

- Tutorial on image processing for 2nd year undergraduates

## Skills

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**Programming languages** R (main), Python, LaTeX, Git, Docker, HTML, CSS

**Programming specializations**

- Machine learning & statistical learning
- (Geo)statistics
- Handling of spatial data
- Parallelization

**Spoken Languages** German, English

## Education

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### Friedrich Schiller University Jena

Jena, Germany

M.Sc. IN GEOINFORMATICS

Oct. 2014 - Sep. 2016

- Thesis title: "Modeling the Spatial Distribution of Hail Damage in Pine Plantations of Northern Spain as a Major Risk Factor for Forest Disease"

### Friedrich Schiller University Jena

Jena, Germany

B.Sc. IN GEOGRAPHY

Oct. 2011 - Sep. 2014

- Specialization in Remote Sensing and Geoinformatics
- Thesis title: "Investigation of the ASAR BIOMASAR GSV maps from 2005 and 2010 using optical satellite data at different temporal and spatial resolution in Northeast China"

## Personal Projects

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### oddsratio

Github

CREATOR, AUTHOR, MAINTAINER

Oct. 2016 - Present

- Functions for calculation and plotting of odds ratios of Generalized Additive (Mixed) Models and Generalized Linear (Mixed) Models with a binomial response variable (i.e. logistic regression models)
- <https://pat-s.github.io/oddsratio/index.html>
- <https://doi.org/10.5281/zenodo.807719>

### sperrorest

Github

AUTHOR, MAINTAINER

July 2016 - Present

- Parallelized spatial error estimation and variable importance assessment for geospatial machine learning
- <https://pat-s.github.io/sperrorest/index.html>
- <https://doi.org/10.5281/zenodo.807710>

### RQGIS

Github

AUTHOR

April 2016 - Present

- Integrating R with QGIS
- <http://jannes-m.github.io/RQGIS/index.html>

## Miscellaneous Activity

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### Spring School on "Statistical Analysis of Hyperspectral and High-Dimensional Remote-Sensing Data")

Jena, Germany

MAIN ORGANIZER

March 13 - March 17, 2017

- State of the art statistical analysis of high-dimensional and especially hyperspectral data
- A mixture of lectures and lab classes / hands-on sessions using the widely used programming language R
- Networking with other data- focused scientists
- <http://tinyurl.com/MSCJ-Flyer>

### List of Internships

Jena, Germany

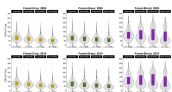
CREATOR, MAINTAINER

2015 - PRESENT

- List of internships with relation to Geoinformatics/Remote Sensing for the Institute of Geography at Friedrich Schiller University Jena

## Publications

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Schmullius, C., Balling, J, Schratz, P. et al. (2016)

### Decadal trends of Northeastern Forests in China from Earth Observation Synergy

ESA MOST DRAGON 3 Conference Proceedings, Wuhan · DOI

Mixed pixel investigation of Growing Stock Volume (GSV) derivations derived from the BIOMASAR algorithm.



Muenchow, J., Schratz, P. and Brenning, A.

### RQGIS: Integrating R with QGIS for Facilitated Automated Statistical Geocomputing

In preparation, R Journal · DOI

R Package RQGIS: Integrating R with QGIS

## Presentations

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### European Geoscience Union (EGU) Conference 2017

*Vienna, Austria*

PICO PRESENTATION

*Apr. 2017*

- The R package "sperrorest": Parallelized spatial error estimation and variable importance assessment for geospatial machine learning
- Slides: [https://speakerdeck.com/pat\\_s/sperrorest-egu2017-presentation](https://speakerdeck.com/pat_s/sperrorest-egu2017-presentation)

### Working group on quantitative theories and methods in Geography

*Leipzig, Germany*

ORAL PRESENTATION

*Feb. 2017*

- Using R as a GIS (in German)
- Slides: [https://speakerdeck.com/pat\\_s/r-als-gis](https://speakerdeck.com/pat_s/r-als-gis)

## Writing

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### Spatial Modeling Using Statistical Learning Techniques

*r-spatial*

BLOG POST

*Mar. 2017*

<http://r-spatial.org/r/2017/03/13/sperrorest-update.html>

### Introducing R package 'oddsratio'

*Homepage*

BLOG POST

*Nov. 2016*

<https://pat-s.github.io/post/oddsratio/>

## Teaching

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### M.Sc. Geoinformatics, Winter term 2017/2018

*Jena, Germany*

GEO 404

*Oct. 2017 - Feb. 2018*

- Geoprocessing using R
- Scientific reporting using Rmarkdown

### B.Sc. Geography, Winter term 2016/2017

*Jena, Germany*

GEO 311

*Oct. 2016 - Feb. 2017*

- Introduction to Python
- Python for geoprocessing with arcpy
- Introduction to scientific reporting using Rmarkdown