

# MORITZ RÖSCH

## EDUCATION

12/2023  
|  
10/2021

- **M.Sc., Applied Earth Observation and Geoanalysis**  
Julius-Maximilians-University Würzburg  Würzburg, Germany

- Final grade: 1,0

09/2021  
|  
10/2017

- **B.Sc., Geography**  
Julius-Maximilians-University Würzburg  Würzburg, Germany
- Specialization: Remote Sensing, Physical Geography
  - Final grade: 1,3
  - Member of the Geography Student Council (internal organization, treasurer, first semester advising, institute communication, organization of events and lecture series)



## RESEARCH AND WORK EXPERIENCE

11/2023  
|  
05/2023

- **Master-Thesis**  
Team Information Systems and Geomatics - Department Geo-Risks and Civil Security  
**German Aerospace Center (DLR)**  
Chair of Remote Sensing  
Julius-Maximilians-University Würzburg  Weßling, Germany
- Thesis-Title: Daily spread prediction of European wildfires based on historical burned area time series from Earth observation data using a spatio-temporal graph neural network
  - Development of a data-driven modeling framework to predict the spread of wildfires in Europe
  - Application and test of spatio-temporal Graph Neural Network to predict daily burnt areas using historical remote sensing products and environmental data

03/2023  
|  
01/2023

- **Intern**  
Team Information Systems and Geomatics - Department Geo-Risks and Civil Security  
**German Aerospace Center (DLR)**  Weßling, Germany
- Establish a database for analyzing historic forest fire activity from 2016-2022 in Europe based on a discrete H3 grid system
  - Processing and combination of fire-relevant data sources on a S3 cloud storage and automated generation of daily updating datasets for individual wildfires

12/2022  
|  
10/2022

- **Intern**  
**RSS - Remote Sensing Solutions GmbH**  München, Germany
- Development of an automated processing pipeline for mapping bare soil areas at regional scale using Sentinel-2 time series
  - Modeling soil organic carbon content at regional scale based on spectral bare soil composite and LUCAS reference data

## BIOGRAPHY

Born on 29.04.1997 in Radolfzell, Germany.

I am passionate about the analysis and visualization of geodata. My interests and research focuses on the use of Earth observation data and machine or deep learning methods for the analysis of geographic processes of the Earth's surface, especially the monitoring of natural hazards. Thereby, I am passionate about studying wildfires in the context of anthropogenic climate change.

## CONTACT

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-  +49 176 55116149
-  [moritzroesch](#)
-  [moritzroesch](#)
-  [ResearchGate](#)

09/2022  
|  
04/2022

● **Research assistant project “Megacities”**

Team City and Society - Department Geo-Risks and Civil Security  
**German Aerospace Center (DLR)**  
 Chair of English Linguistics  
**Julius-Maximilians-University Würzburg**

📍 Würzburg, Germany

- Analyzing sociocultural structures in megacities using the spatial distribution of Twitter data
- Cleaning and processing of Tweets from different European countries
- Application of geostatistical and linguistic methods

07/2021  
|  
04/2021

● **Bachelor-Thesis**

Team Natural Hazards - Department Geo-Risks and Civil Security  
**German Aerospace Center (DLR)**  
 Chair of Remote Sensing  
**Julius-Maximilians-University Würzburg**

📍 Remote

- **Thesis-Title:** Monitoring of volcanic natural hazards in Indonesia. Change analyses based on high-resolution PlanetScope data combined with further Earth observation data (in German)
- Develop new methods for mapping volcanic natural hazards (e.g., lava) based on high-resolution PlanetScope data, infrared data (Sentinel-2, Landsat-8, Terra/Aqua MODIS, Soumi-NPP VIIRS), and digital elevation models

02/2021  
|  
04/2020

● **Student assistant project “AgriSens”**

Chair of Remote Sensing  
**Julius-Maximilians-University Würzburg**

📍 Würzburg, Germany

- Collaboration in the development of an Open Data Cube (ODC) infrastructure
- Co-development of a Python package for processing multitemporal satellite data on the ODC platform
- Development of training and tutorial Jupyter notebooks for spatiotemporal analysis of geospatial data on the ODC platform

02/2021  
|  
10/2018

● **Student assistant (tutor)**

Chair of Remote Sensing  
**Julius-Maximilians-University Würzburg**

📍 Würzburg, Germany

- Direction and preparation of the tutorials for the lecture *Introduction to Geographic Remote Sensing and Application of Remote Sensing in Geography*

03/2020  
|  
01/2020

● **Intern**

Institute for Earth Observation  
**Eurac research**

📍 Bolzano, Italy

- Evaluation of high-resolution PlanetScope data for applications in alpine regions
- Development of classification workflows for the mapping of mountain pine in South Tyrol
- Satellite-based monitoring of pest infestation and forest vitality

12/2019  
|  
10/2019

● **Intern**

Team Natural Hazards - Department Geo-Risks and Civil Security  
**German Aerospace Center (DLR)**

📍 Weßling, Germany

- Satellite-based volcano monitoring using thermal and infrared data
- Development of automated scripts for the calculation of erupted lava volume

09/2019  
|  
05/2019

### ● Student assistant project “*LandKlif*”

Chair of Remote Sensing  
Julius-Maximilians-University Würzburg

📍 Würzburg, Germany

- Planning drone field campaign and taking aerial photos
- Processing of digital terrain models and orthophotos

## PUBLICATIONS

Franke, J.; **Rösch, M.**; Wiedemann, W.; Ließ, M.; Reyes Millalon, J. A. (2023). S2SOCmonit - Sentinel-2 based bare soil spectral compositing for soil organic carbon estimation. *BonaRes Repository*. <https://doi.org/10.20387/bonares-xbqw-r296>

**Rösch, M.**; Sonnenschein, R.; Buchelt, S.; Ullmann, T. (2022). Comparing PlanetScope and Sentinel-2 imagery for mapping mountain pines in the Sarntal Alps, Italy. *Remote Sensing*, 14, 3190. <https://doi.org/10.3390/rs14133190>

**Rösch, M.**; Plank, S. (2022). Detailed Mapping of Lava and Ash Deposits at Indonesian Volcanoes by Means of VHR PlanetScope Change Detection. *Remote Sensing*, 14, 1168. <https://doi.org/10.3390/rs14051168>

## CONFERENCE CONTRIBUTIONS

**Rösch, M.**; Plank, S. (2022). Combining VHR PlanetScope imagery, HR short-wave infrared data and digital elevation models for mapping of lava flow deposits. Poster. *ESA Living Planet Symposium 2022*, 23.05. - 27.05.2022, Bonn, Germany.

## SKILLS

### ● Coding

R, Python (*advanced*)

### ● GIS / Remote Sensing Software

QGIS, ArcGIS, ENVI (*advanced*)  
Google Earth Engine (*advanced*)  
SNAP, eCognition (*intermediate*)  
GRASS GIS, SAGA GIS (*basic*)

### ● Database / Cloud

PostgreSQL, PostGIS (*basic*)  
AWS S3 (*basic*)

### ● Version Control

Git, GitHub, GitLab (*advanced*)

### ● Other Software

MS Office (*advanced*)

## LANGUAGES

### ● German

Native language

### ● English

fluent in spoken and written

## Research interests

Passive & active remote sensing

Spatial data science

Machine Learning & Deep Learning

GIS & webmap

Natural hazards

Wildfires

Volcanoes

Alpine regions

Forest ecosystems

Climate change

- French

school knowledge

## ☰ FURTHER EDUCATION

09/2019

- SAR EDU summer school for applied radar remote sensing

Friedrich-Schiller-University Jena

📍 Jena, Germany

- five-day seminar (40 hours)

Made with the R package  
`datadrivencv` and `pagedown`.

The source code is available on  
[GitHub](#).

Last updated on 2023-12-07.