



Applied Geodata Science I

# Session 2

Prof. Dr. Benjamin Stocker  
Spring semester 2023

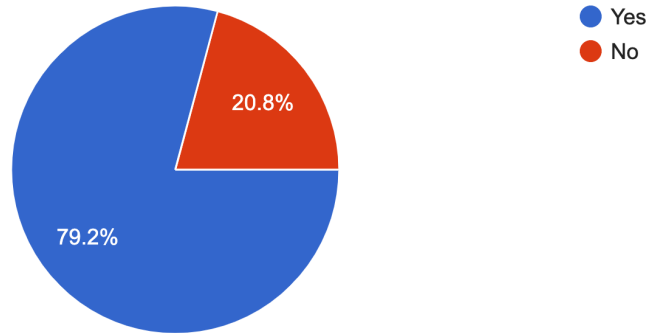


# Survey results

- 24 responses

Have you taken the course "Quantitative Methoden in der Geographie"?

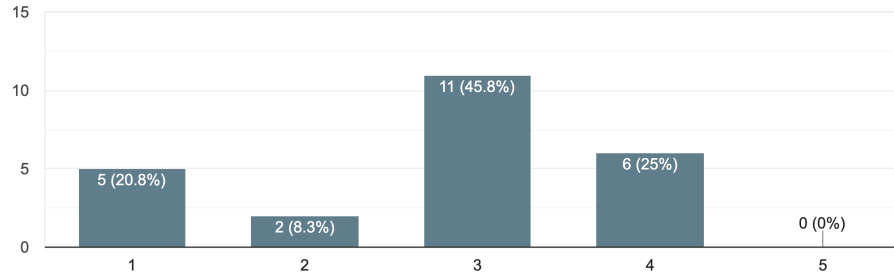
24 responses



# Survey results

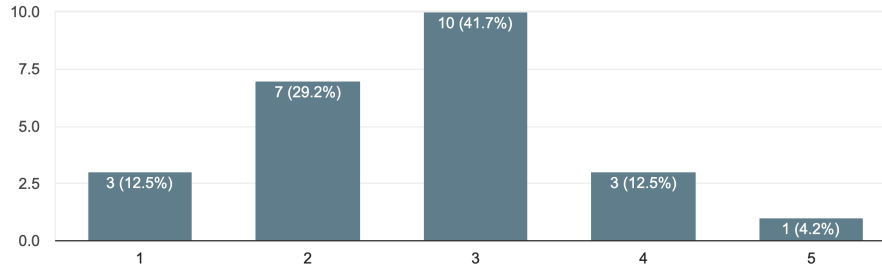
How comfortable are you with R?

24 responses



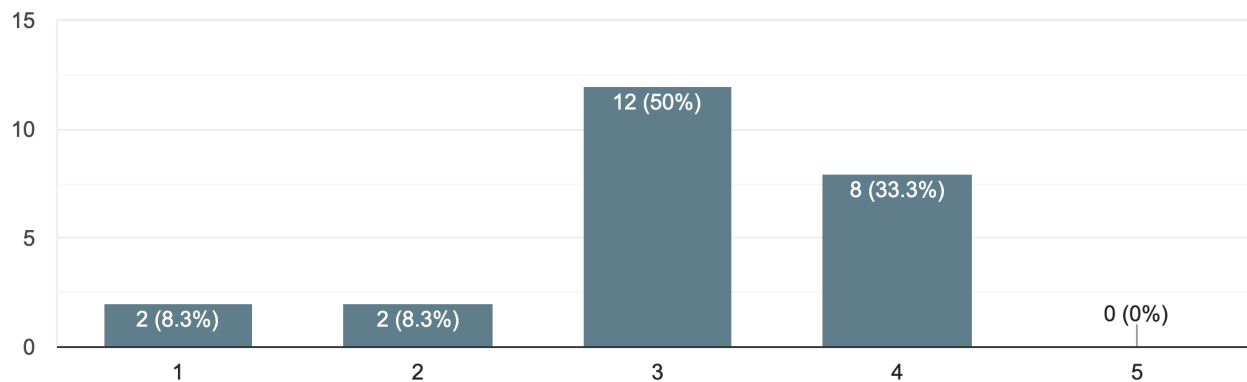
Are you familiar with Python?

24 responses



How comfortable are you with RStudio?

24 responses



# Survey results



Are you familiar with **other programming languages** than R or Python?

22 responses

No

Java

-

NO

no

no other by now

nothing else

Java, SQL

a little bit JAVA

Yes, java.

I used several languages in the past: e.g., C, C++, Octave and I'm familiar with programming microcontrollers (e.g., Arduino)

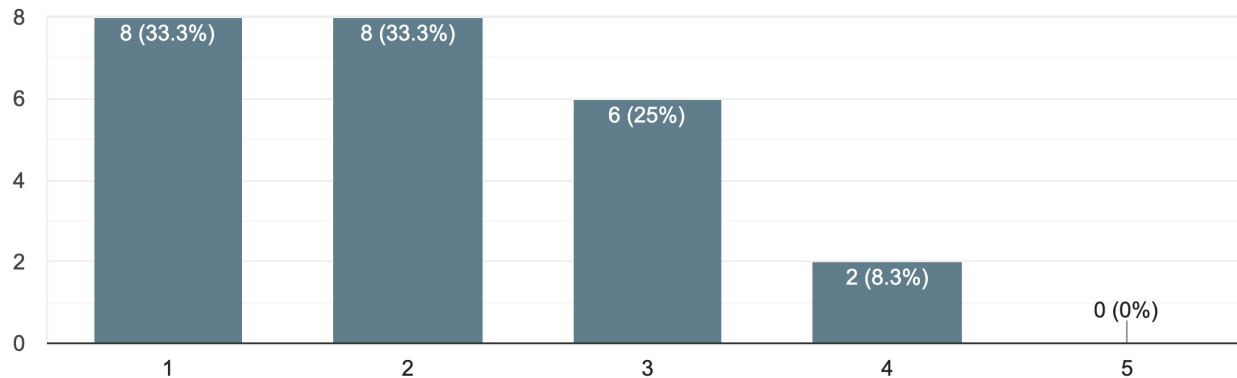
I know of Python and MatLab and have used both very briefly during my degree - but my knowledge is extremely base level.

MATLAB

Java, C++, SQL

How familiar are you with accessing, cleaning and visualising data?

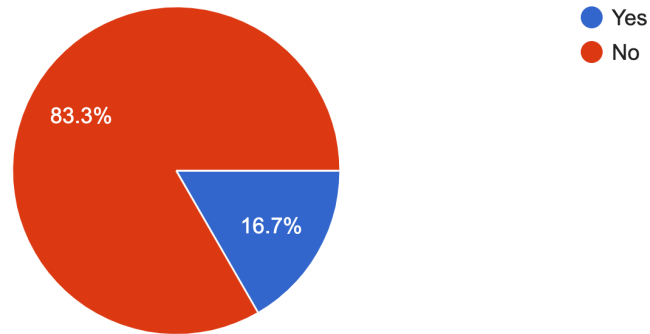
24 responses



# Survey results

Do you have previous knowledge of machine learning concepts (e.g., linear regressions, classifications, KNN, Random Forests, neural networks, etc.)

24 responses



**If you have previous knowledge**, please give a short overview of what you know and where you learned it (other courses, online tutorials, self-study, etc.).

11 responses

Programmieren für Naturwissenschaften

Introduction to Informatics lecture (Minor Informatics)

Basic programming experience from Minor Informatik

Only the regular statistics, math and Programmieren für Naturwissenschaften from the first year of Geography. And some knowlegde from an Informatics course "Programmieren 1" from the informatics department of Uni Bern.

N/A

Only linear regression from university courses (Statistik für Naturwissenschaften, Einführung Statistik für Sozialwissenschaften)

- Supervised classification (random forest) for my Bachelor's thesis (Local Climate Zones). I didn't look into the implementation much, but worked on the training data.
- Used KNN algorithm in R in my Bachelor's thesis. Self-study.



# Survey results

Why did you pick this course, and **what are your expectations towards AGDS I?**

20 responses

New insights on working with data & forms of visualizations, as well as being able to do work with bigger datasets.

Getting a idea about data science

Personal interest

To improve my analytical skills for future paper I'll write (hopefully :))

to learn something new and learn to work with data as i expect it to be more important in the future. (as i think that the importance of data work will be increasingly important)

I think it is very future oriented.

just get an overview of the possibilities with data science

Learn more about ggplot and tidy-data and ML. Also getting to know the group

I chose this course as I am set to do my dissertation next year in my home university and I hoped to gain some skills in coding that I might be able to use for my dissertation. Although I have used coding languages before I found them quite hard I think in part due to the fact that we didn't get the in-person help sessions that are set out for us during this course. I hope that, with help, coding becomes less daunting and I can gain some skills that I can use for further projects.

To learn more about Data Science

I hope to learn a lot of practical skills for working with geodata and get more comfortable with work environments like GitHub.

## Data handling

Interested in learning how to handle Data For Future Work

I expect a introduction in Data Sciences. That means an improvement to my coding skill and to handle a big data set very efficient. If possible more to know about statistics methods.

I did not expect the lecture to be on data modeling and this much "hands-on". But I think it's important to learn these skills and therefore I am looking forward to this course.

The description sounded interesting and i think the tools we learn here are important for a modern geographer.

I think being able to deal with data is getting more and more important. Given the fact that the studies of geography do not contain a lot of programming or math, I expect this course to treat the basics and prepare us for further data science courses.

I liked working with R in Quantitative Methoden and i'm interested in learning more about data science, i think it is important to be able to handle data and work in the right way with it.

Interest for the new course, learn how to handle data packages.

I have chosen this course as I expect to use R and RStudio for my Bachelor dissertation but do not have any experience in coding. My expectations towards AGDS I is to be introduced to using R and RStudio in research.

Getting more knowledge about processing big geographic data.

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## Preparing for research

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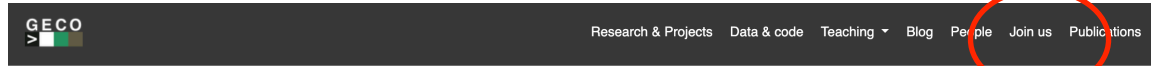
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# Everyone on board?



- R, RStudio, R packages
- git
- NetCDF
- GitHub, personal repository
- Local R project
- Exercises solved

[geco-group.org/event](https://geco-group.org/event)



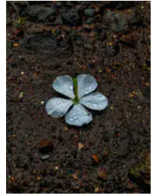
## Join us - open theses

2023

### Bachelor thesis - Soil texture for ET modelling

Background Global terrestrial gross primary production (GPP), i.e., the uptake of CO<sub>2</sub> by terrestrial plants, is often limited by the availability of soil water for evapotranspiration (ET). The amount of water a plant can take up from the soil depends on the soil texture, the depth of plant roots, and the storage capacity of the soil in the plant's rooting zone.

Feb 21, 2023 — · Institute of Geography, University of Bern  
Jaideep Joshi



### Master thesis - Modelling optimal acclimation across canopy gradients

Background The rate of CO<sub>2</sub> uptake by photosynthesis is determined by the acclimation of leaves to the prevailing light environment. In dense forests, light intensity decreases exponentially as we go from the top of the canopy towards the ground, as light is absorbed and scattered by leaves.

Feb 21, 2023 — · Institute of Geography, University of Bern  
Jaideep Joshi



### Master thesis - High resolution quantification of seasonal water deficits

Background Seasonal water deficits, caused by the imbalance of water from the land surface through evapotranspiration and runoff and the gain through precipitation, are an important driver of agricultural productivity and forest growth.

Feb 21, 2023 — · Institute of Geography, University of Bern  
Benjamin Stocker

