

# *Term project*

Dr Labib SM

## **This meeting**

You will

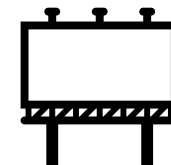
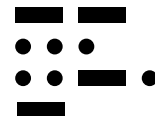
- Understand what the term project is about,
- And what the requirements are,
- Make a team,
- Brainstorm to come to a first idea for the topic,
- Make a planning,
- And agreements on how to achieve that planning.

## Overview of the term project

Objective: apply and adapt **spatial statistics and/or machine learning** techniques analyze geospatial data to a real-world problem in a group.

Methods: finding and cleaning spatial data, selecting the technique(s) and variables, implementing the method/ model, and visualizing and interpreting the results.

Output: a scientific paper of 1500 words,  
a poster, and  
scripts



## Criteria



You should:

- Use at least one **spatial dataset**
- Use at least one spatial statistics or machine learning technique
- Which is implemented by **coding in Python or R**
- Visualize your output in at least
  - one graph (plot)
  - and one map



The workload should be **fitting for four weeks work** for three students (maximum)

## Important dates

- March 12, kickoff, matchmaking and brainstorm
- March 19, project pitch
- April 2, project meetings with staff
- April 9, peer feedback on 1500-word project report (draft)
- **April 8, 12:00**, poster submission on BB
- April 11, poster presentation in KBG - GA0.02 (KBG under the stairs)
- **April 12, 17:00**, submission of project paper on BB

## Project pitch

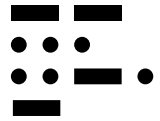
- You have **4 minutes** to pitch your idea
- (That's approximately 3-4 slides)
- Then some minutes for **peer-feedback / questions**
- After all presentations we'll walk around and you can get feedback from us.

Pitch should contain:

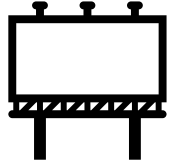
- Short intro/background
- Aim and preferably a research question
- Data and rough idea of the method
- Expected result / deliverable



## Paper



- Write a scientific short paper, with standard structure: introduction, study area, data & methods, results, discussion (these two may be combined), and conclusion.
- The length should be no more than 1500 words (excluding tables, figures, references and appendices).
- You add the **scripts as appendix or GitHub repo**
- The weights of each chapter for the final grade are:
  - Introduction = 5
  - Study area = 1
  - Data and methods = 5
  - Results = 5
  - Discussion = 2
  - Conclusion = 2
- More info in document on BB.



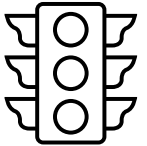
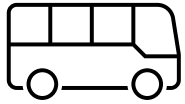
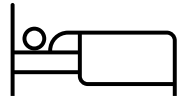
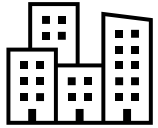
## Poster

- The poster should display your main question, findings and conclusions of your term project.
- This means that it does not need to contain all your results! “Kill your darlings.”
- A **document to guide you in poster design** can be found on BB folder.

We'll have a poster session where you can see each others' work!

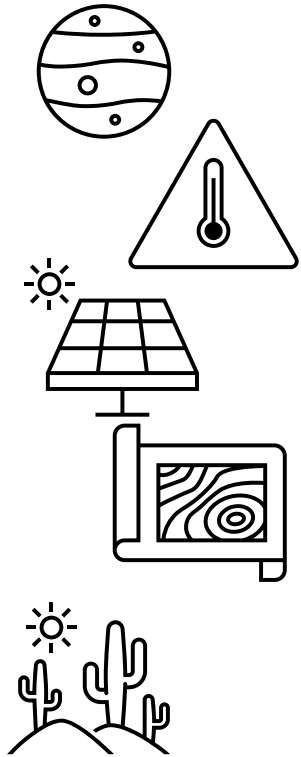


## Inspiration for topics (1)



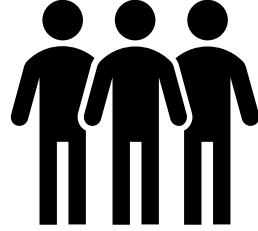
- Find determinants of rental prices in the city of Utrecht
- Find determinants of global Airbnb rental prices
- Optimize bus stop locations
- Predict bike sharing (follow up on the practical)
- Predict canopy loss and green space
- Measure greenspace accessibility and inequality
- Social and spatial disparities of health conditions
- Model trips for commuters during peak hours

## Inspiration for topics (2)



- Compute spatial autocorrelation in grain size on Mars
- Define urban heat islands in Amsterdam
- Assess the photovoltaic potential for stand-alone solar panels using lidar
- Classify land cover in Ukraine using terrain data
- Model erosion and sedimentation of coastal wetlands in Bangladesh
- Assess desertification in the Sahel
- ... (many more options, but look at data availability)

## What is a team?



- Teams share a common goal
- Teamwork is defined by a shared commitment to the process (how you work together) and to the final product (what you are going to get done)
- The term project is a team effort, and only can be done as a team

## **Teamwork requires work!**

Factors determining successful teamwork:

1. Shared **understanding of the objective**
2. Commitment to the objective
3. **Clear roles and responsibilities (task division)**
4. Agreement on the basic rules of conduct (delivering assigned work)
5. Agreement on the form of communication & decision making (how often you meet, what is the time of responding to emails)
6. Commitment to open communication, accountability and self-assessment

**Each submission need to include task division of the team, who did which part of the work. Multiple tasks can be shared.**

# Teamwork requires work!- Task Division/CRediT (Contributor Roles Taxonomy) Statement

## 14 Contributor Roles

**Methodology:**  
Development or  
design of  
methodology;  
creation of models.

Conceptualization

Data curation

Formal Analysis

Funding acquisition

Investigation

Methodology

Project administration

Resources

Software

Supervision

Validation

Visualization

Writing – original draft

Writing – review &  
editing

CRediT authorship contribution statement

**Ilse Abril Vázquez Sánchez:** Data curation, Formal analysis, Methodology, Software, Validation, Visualization, Writing – original draft. **S.M. Labib:** Conceptualization, Methodology, Data curation, Resources, Investigation, Visualization, Writing – original draft, Writing – review & editing, Supervision.

Details: <https://credit.niso.org/>

## What is a good research aim?

Example:

“Do the term project” is not **SMART**.

**SMART** is:

- **S**pecific – Clear and narrowly defined
- **M**easurable – Ensure you can measure the level of success
- **A**ttainable – Your time (and expertise) is limited
- **R**elevant - Fitting the context of SSML
- **T**ime-bound – Before April 14

## **Examples of SMART scientific aims**

- Our aim is to analyze changes in annual deforestation rates in the Brazilian Amazon between 2012 and 2022.
- Our aim is to estimate the accuracy of a machine-learning based classification of housing types (detached, semi-detached, terraced, apartment) based on the BAG 2.0 in a neighborhood in Utrecht.
- Our aim is to find the within-city determinants of Airbnb rental prices in 2023 and their relative importance.

## **Rest of this session**

- Finalize group formation and introduction, 10 minute
- Brainstorm, 40 minutes
  - Diverging stage: compile topics without strict feasibility, **20 minutes**
  - (Break, **15 minutes**)
  - Converging stage: prioritization, **20 minutes**
- Planning, **20 minutes**



## **Brainstorm, Diverging stage (20 min)**

### **What real life project would you like to study?**

1. Everyone writes at least two ideas on a pink/orange post-it, suggest data and methods (**List topics from both parts of the course**)
2. Stick the post-its on a large piece of paper
3. Exchange the paper with one other group
4. Add two suggestions for the others on **yellow** post-its
5. Discuss the new options in your own group

## Brainstorm, Converging stage (20 min)

- Remove the four least interesting ideas
- Rank the top three topics (at least one topic from each part of the course)
- Elaborate on first two topics and draw an initial flow chart of data, methods and results.
- Make a list of what further information you need to take a decision.

## **Planning (20 min)**

- Make a planning of the steps between **now and the final deadline April 12**
- Agree on how often you will communicate (slide 'factors determining successful teamwork')
- Divide tasks (create a team structure based on individual strengths, split the tasks)
- Discuss consequences if the agreements and deadlines are not met.

## After this

- Please register your group!
- Please **register your group and topic on BB** once you know it, but certainly before **Monday March 18<sup>th</sup>, 12:00**, because we need to divide the groups between teachers/sessions.
- Prepare your pitch for **March 19<sup>th</sup>**
- We'll let you know on Monday 18<sup>th</sup> end of the day, who is your group supervisor and where the presentation will take place



**Utrecht  
University**

Sharing science,  
*shaping tomorrow*