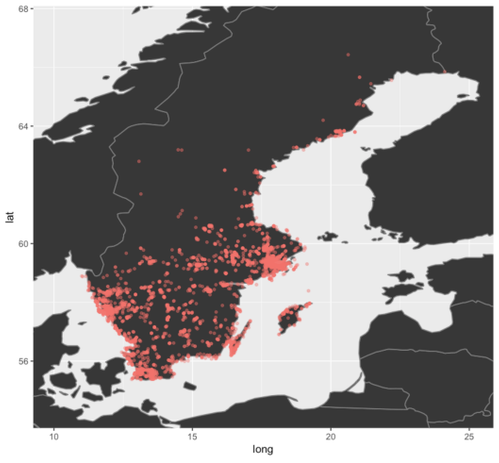
Handling spatial data in R

An introduction course

Gothenburg Global Biodiversity Centre - GGBC

Swedish LifeWatch

Welcome!

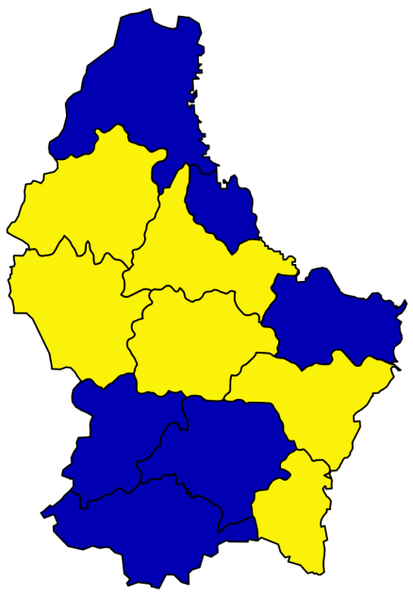


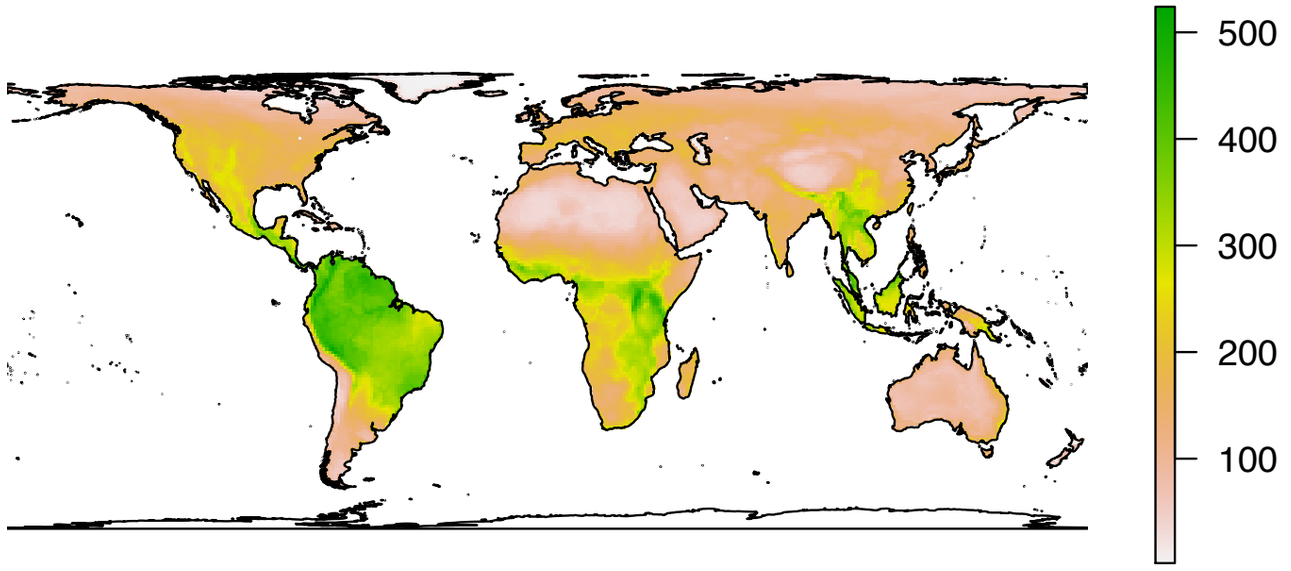
- Workshop series, first time as joint course and first time online

- **Day 1:** Introduction to understanding and handling spatial objects in R

- **Day 2:** Accessing biodiversity data from public databases

- **Day 3:** Advanced statistical analyses with spatial data





Zoom etiquette

- please **mute your microphone** during lectures

- at beginning of each day, please **have your camera on** (it's much nicer to talk to actual people than to black screens)

Who's here?

Short introduction:

- name
- home country
- your current position (PhD, Master, PostDoc,...)
- where are you right now?
- what are you working on?

General setup

<u>Mornings:</u>

We start mornings at **9:00am** (Swedish time) with some intro slides
--> **Zoom** with all participants 📹🎙️

Then you'll be working on tutorials
--> **Zoom** breakout rooms of 2-3 people (simulate class room setting) 📹🎙️

Short recap before coffee break (☕ 10:30-11:00) and before lunch (🍽️ 12:30-13:30)
--> **Zoom** with all participants 📹🎙️

I'll be going through the breakout rooms and check if there are any questions. If you are stuck, you can also write me a message (zoom or slack) and I will connect with you individually.

General setup

<u>Afternoons:</u>

Starting **13:30**: Time for discussing any general questions about the content of the tutorial

--> **Zoom** with all participants 📹🎙

After that: continued work on tutorial (if not finished) or working on additional task with your own data or provided example data
--> communication via **Slack channel**

Share any cool plots you create with the example data or your own data in the slack channel!

Slack intro

Work at your own speed

- Different R skill levels and expectations

- If you are completely new to R, don't worry, work at own pace through the tutorials

- If you struggle with the first spatial R tutorial, do the general R introduction tutorial first

- **Main aim:** Improve your R-skills and understand spatial data types, and **have fun** trying something new!

"Mr. Osborne, may I be excused? My brain is full."

Day 1: Introduction to spatial objects in R

Tutorials:

https://github.com/tobiashofmann88/spatial_R_course

Download the GitHub repo for getting tutorial data

Using R studio

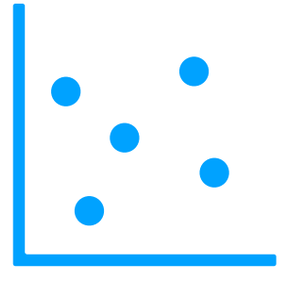
- Demo

Spatial data types

Vector data

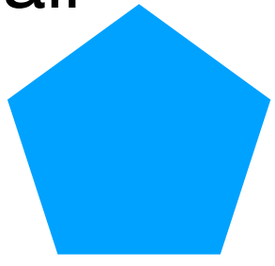
- consists of sets of coordinate pairs (x, y)

- **points**: coordinate pair and associated variables, multipoint structures



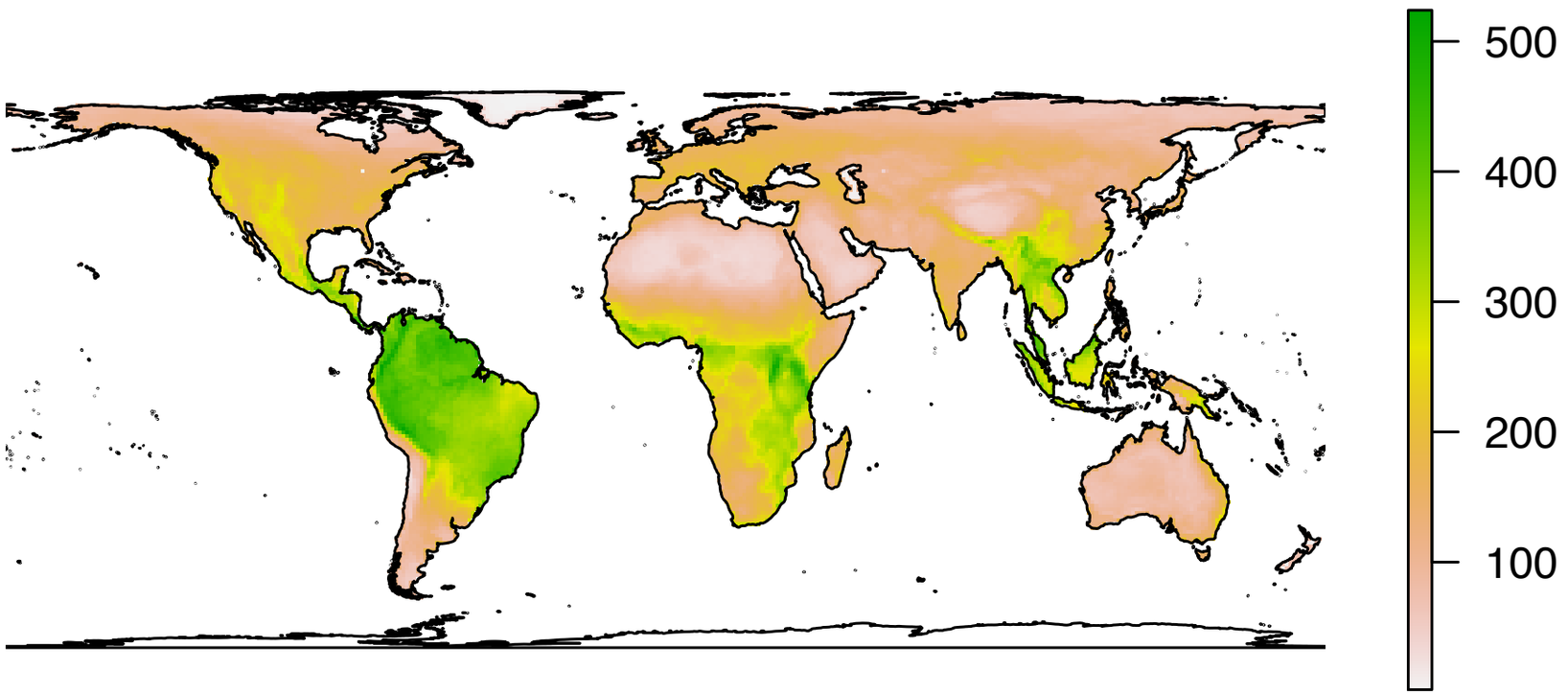
- **lines**: ordered sets of coordinates

- **polygons**: closed polyline geometry (last coordinate pair coincides with the first pair)



Raster data

- spatially continuous phenomena (e.g. elevation)
- divides the world into a grid of equally sized rectangles (cell or pixel)
- each cell has one or more values associated



Plotting spatial data

- Plotting in particular coordinate system

- Convention: order of coordinates is P(longitude, latitude)