RIN

DataHarvest 2025 Masterclass

# SPATIAL ANALYSIS WITH QGIS

Pulitzer Center

22 May 2025

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# The Pulitzer Center champions the power of stories to make complex issues relevant and inspire action.

Rainforest Investigations Network

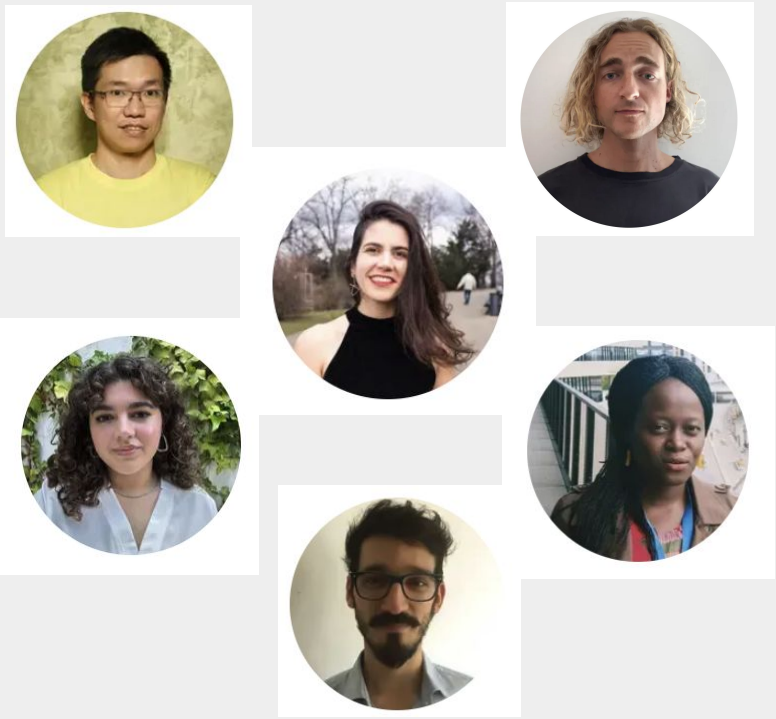
Ocean Reporting Network

# The AI Accountability Network

**We provide fellowships & grants to journalists for in-depth, high-impact reporting projects**

Our **Data and Research Team** assists journalists with their investigation, research, analysis and visualizations.

DATA RE



Our **International Education and Outreach Team** connect teachers, students, youth, influencers, and professionals with our reporting.



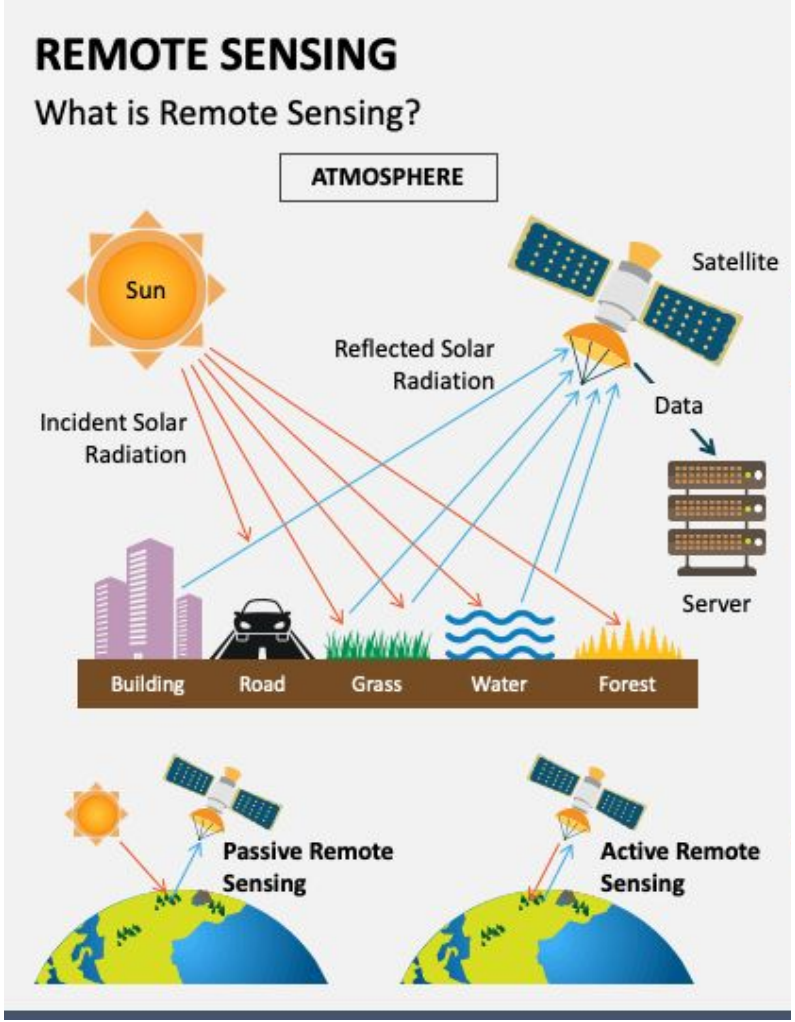

# Why use geo data in journalism?

It is an effective way of verifying facts, exploring insights and telling compelling stories about environment and it allow you to deal with large scales of space and time!

# How does remote sensing work?

**What?**
Remote sensing is the acquiring of information of an area from a distance.

**How?**
By measuring its reflected and emitted radiation using devices like satellite and aircraft.

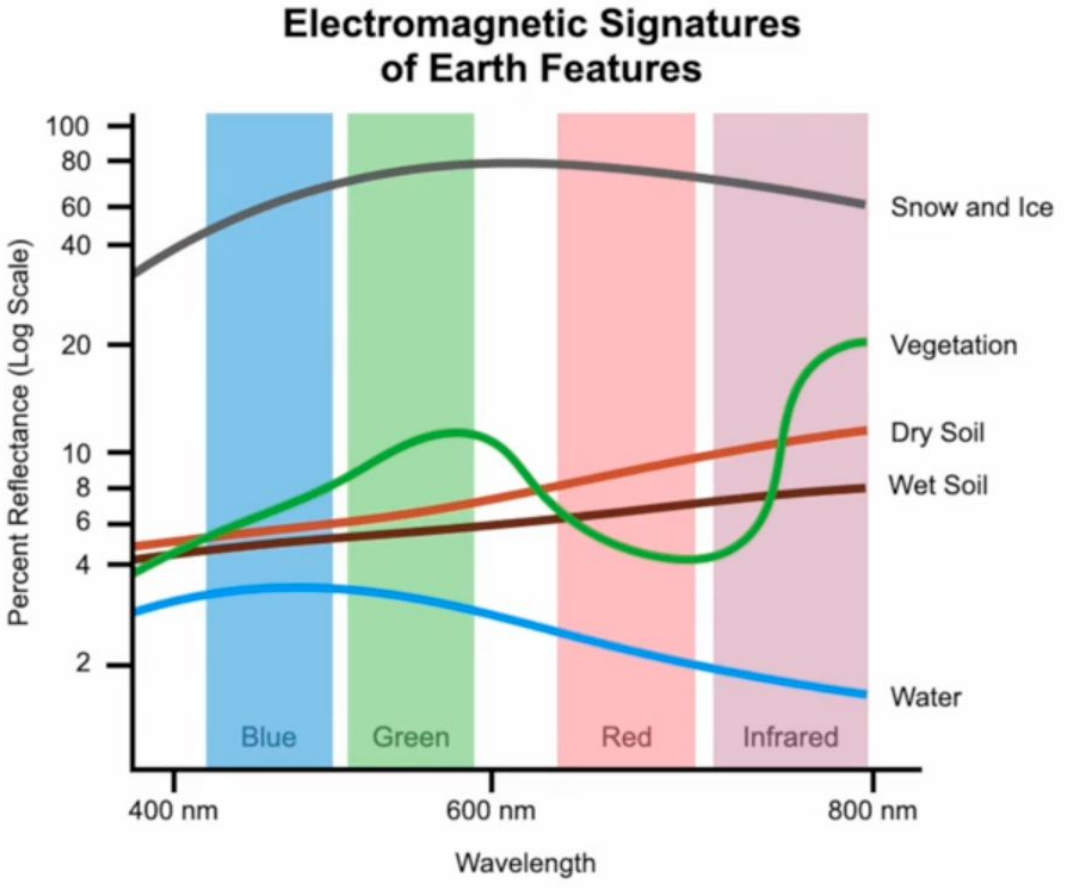


# How does remote sensing work?

Satellite can take pictures of the visible light that human can see.

But it can also detect radiation (or wavelength) that we cannot see.

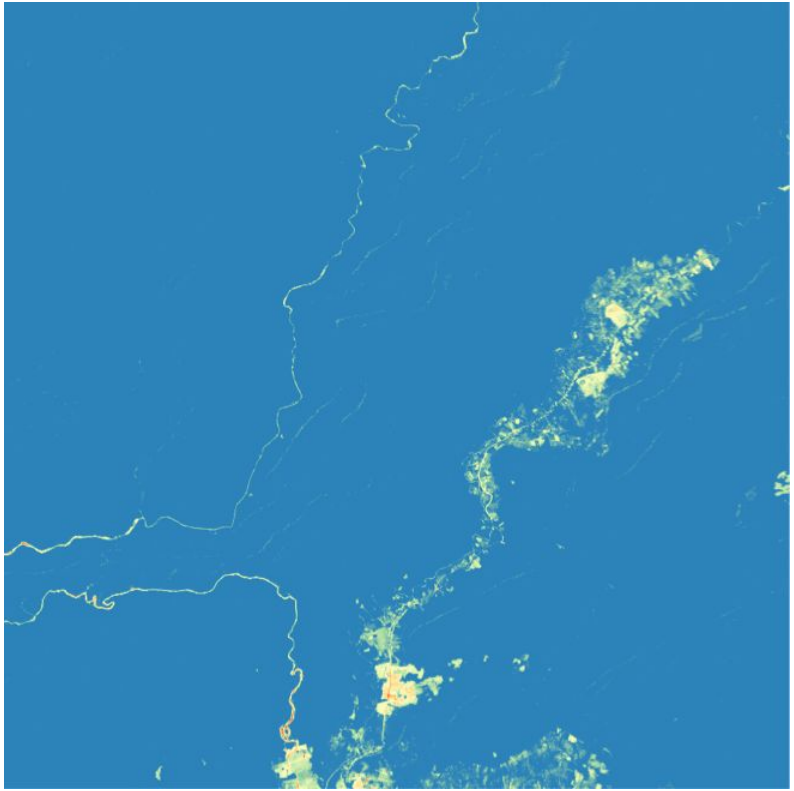
Different earth features and objects emit/reflect radiation differently, allow us to detect them.




[Learn more at Planet University online course (login needed).]

# Natural color (RGB)

# False color (NDVI)



# Geospatial analysis

## Resolution

- Local
- Regional
- Ecosystem
- Global

## Time Scale

- Frequency
- Duration
- Changes (Before and after)

## Dimensions

- Distance
- Area
- Intersection
- Perspective

# Spatial resolution

Low resolution: over 60m/pixel

Medium resolution: 10 – 30m/pixel

High resolution: 3m – 5m/pixel

Very high resolution: <1m/pixel


*Landsat 8 image of Reykjavik, Iceland, acquired July 7, 2019, illustrating the difference in pixel resolution. Credit: NASA Earth Observatory.*


Sentinel 2
10 m/px - medium res


AirBus
50 cm/px - hi-res

# AirBus
# <1 m/px - hi-res

# Earth Observation Satellites

| Satellite (provider) | Resolution | Access |
|---|---|---|
| Landsat (NASA) | 30 m - medium | Open via EO Browser or NASA Catalogs (Earth Observatory or Landsat Viewer) and via Google tools (Earth Engine + Timelapse) |
| CBERS-4 (INPE-China) | 20 m - medium | Open via INPE Imagery Catalog |
| Sentinel-2 (ESA) | 10 m - medium | Copernicus Browser |
| Planet satellites | 2~3m - high | Via NICFI (ended) |
| Pléiades (AirBus) | 30 cm - high | Purchase (e.g. SkiFi) |

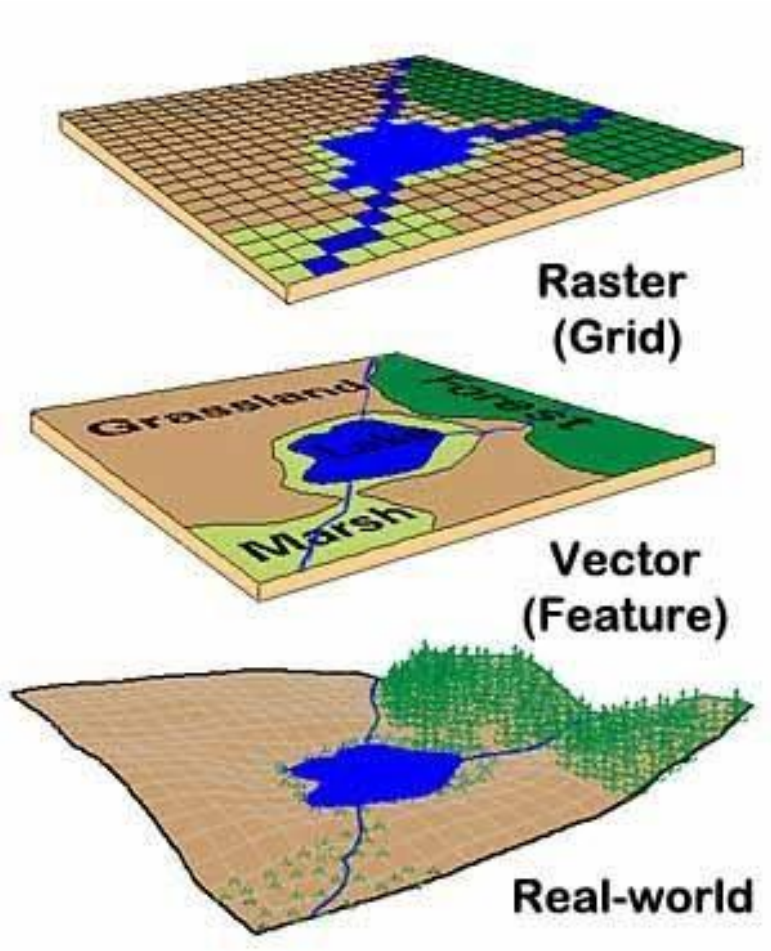
# Data formats (most common)

## Vector

- CSV
- XLS
- SHP
- GPX
- Geojson
- TXT
- KML/KMZ (Google)

## RASTER

- Tiff or Geotiff


Raster
(Grid)
Grassland
Forest
Marsh
Vector
(Feature)
Real-world

# The layer mindset

Placing different layers of geospatial data together allows them to dialogue with each other.

# Tools to get started

## Where to find satellite images

### Copernicus Browser
https://browser.dataspace.copernicus.eu/

### Google Earth Pro (desktop version)
https://www.google.com/earth/versions/#earth-pro

### NASA Worldview
https://worldview.earthdata.nasa.gov/

### Planet Explorer (paid)
https://www.planet.com/

## Where to find geospatial data

### Protected Planet
https://www.protectedplanet.net/en

### Global Forest Watch
https://www.globalforestwatch.org/

### Natural Earth
https://www.naturalearthdata.com/

### NASA Earth Data
https://earthdata.nasa.gov/

### Resource Watch
https://resourcewatch.org/data/explore

### Earth Map
https://earthmap.org/

# Tools to get started

## Mapping tools

### QGIS
https://qgis.org/en/site/

### ArcGIS
https://www.arcgis.com/index.html

### Mapbox
https://www.mapbox.com/

### Carto
https://carto.com/

## Self-learning resources

### Mapping for Journalists (video)
https://datajournalism.com/watch/mapping-for-journalists

### QGIS Uncovered by Steven Bernard (video)
https://www.youtube.com/channel/UCrBM8Ka8HhDAYvQY1VX2P0w

### Intro to Mapping and GIS for Journalists(video)
https://journalismcourses.org/course/mappingandgis/

### Mapping and QGIS for Journalists
https://jonathansoma.com/tutorials/mapping/

### Mapping and OSINT video tutorials by Bendobrown
https://www.youtube.com/c/Bendobrown/videos

# RIN stories used in this workshop

## Revealed: Illegal Cattle Boom in Arariboia Territory in Deadliest Year for Indigenous Guajajara

https://pulitzercenter.org/stories/revealed-illegal-cattle-boom-arariboia-territory-deadliest-year-indigenous-guajajara

## Mongabay investigation spurs Brazil crackdown on illegal cattle in Amazon's Arariboia territory

https://news.mongabay.com/2025/04/mongabay-investigation-spurs-brazil-crackdown-on-illegal-cattle-in-amazons-arariboia-territory/

## Rise of Electric Cars Threatens Philippine Forests

https://pulitzercenter.org/stories/rise-electric-cars-threatens-philippine-forests

## Over 800 million trees felled to feed appetite for Brazilian beef

https://www.thebureauinvestigates.com/stories/2023-06-02/almost-a-billion-trees-felled-to-feed-appetite-for-brazilian-beef

# Let's get to work!

Access notes, files and tutorials from this shared folder:

bit.ly/dataharvest2025-qgis

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# THANK YOU!

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