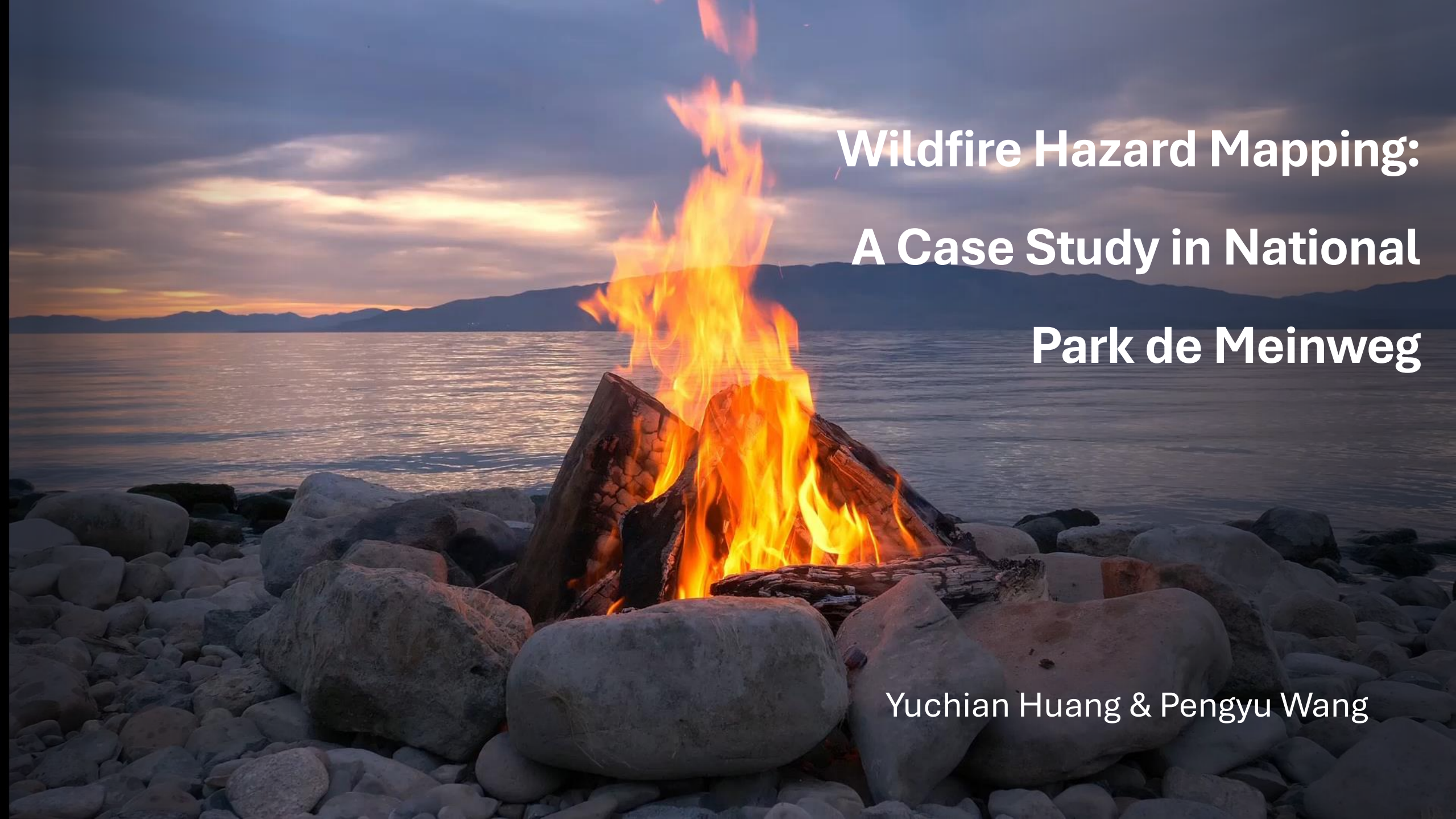


Wildfire Hazard Mapping: A Case Study in National Park de Meinweg

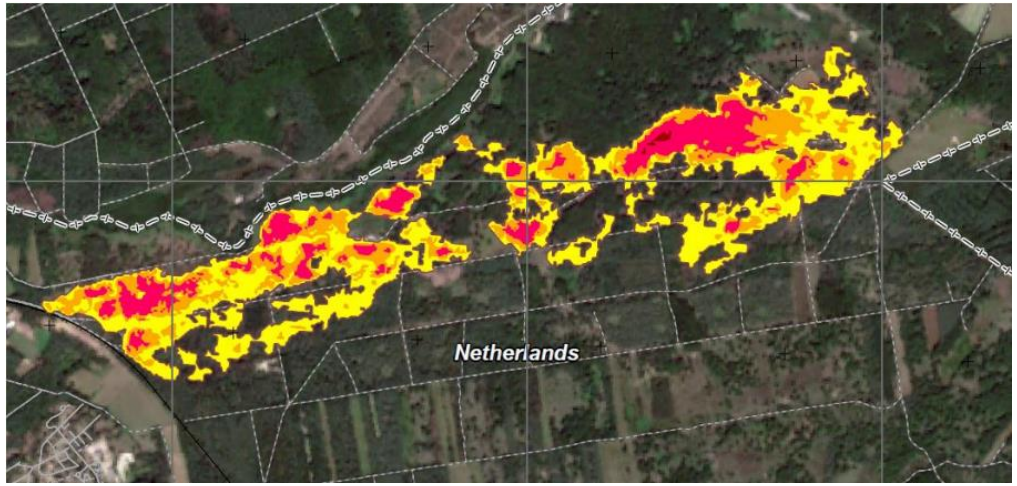
Yuchian Huang & Pengyu Wang

Overview

- Introduction
- Data and tools
- Input data
- NDVI visualization
- Fire severity mapping

Introduction

- In April 2020, a massive wildfire affected the National Park De Meinweg on the border between the Netherlands and Germany.
- Close to 110 hectares were impacted.
- The goal is to analyze satellite data before and after the incident to assess the damage using NDVI (Normalized Difference Vegetation Index).



Data and tools

Data Sources:

- Sentinel-2 images from April 2020 (before the fire) and May 2020 (after the fire).
- AOI (Area of Interest) shapefile for the National Park.

Tools Used:

- Python (GDAL, numpy, matplotlib, etc.)

Input data (Sentinel 2)

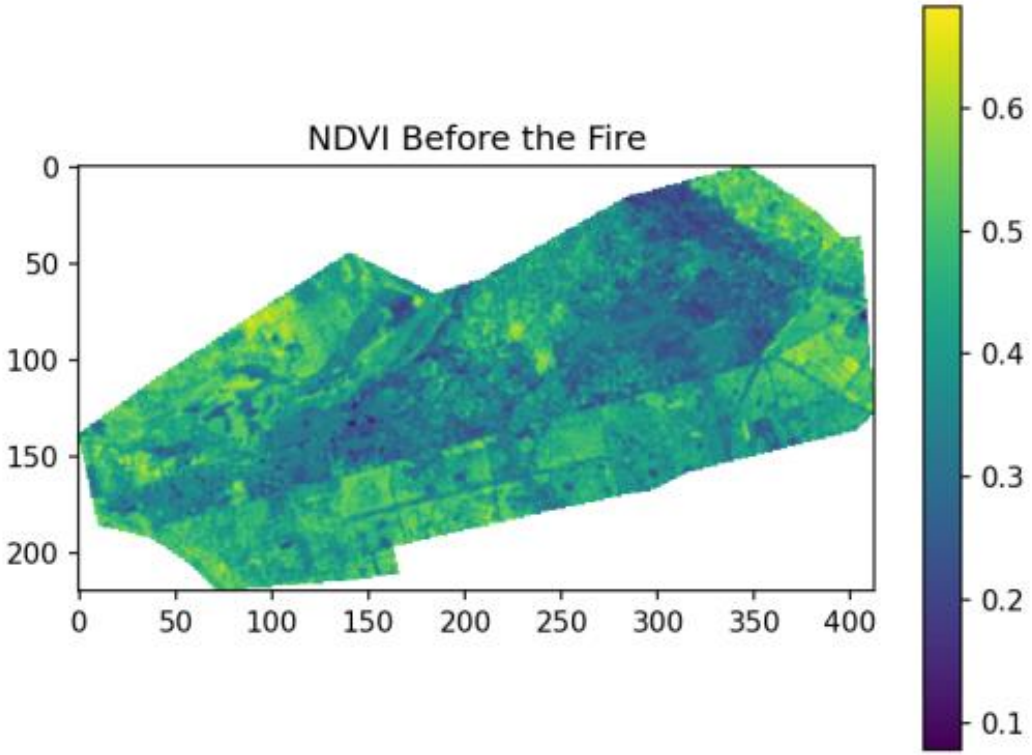
- Raster Size: Width = 424 pixels, Height = 228 pixels
- Projection: WGS 84 / UTM zone 31N
- Extent: [715720.0, 5672530.0, 719960.0, 5674810.0]
- Pixel Area: 0.01 hectares

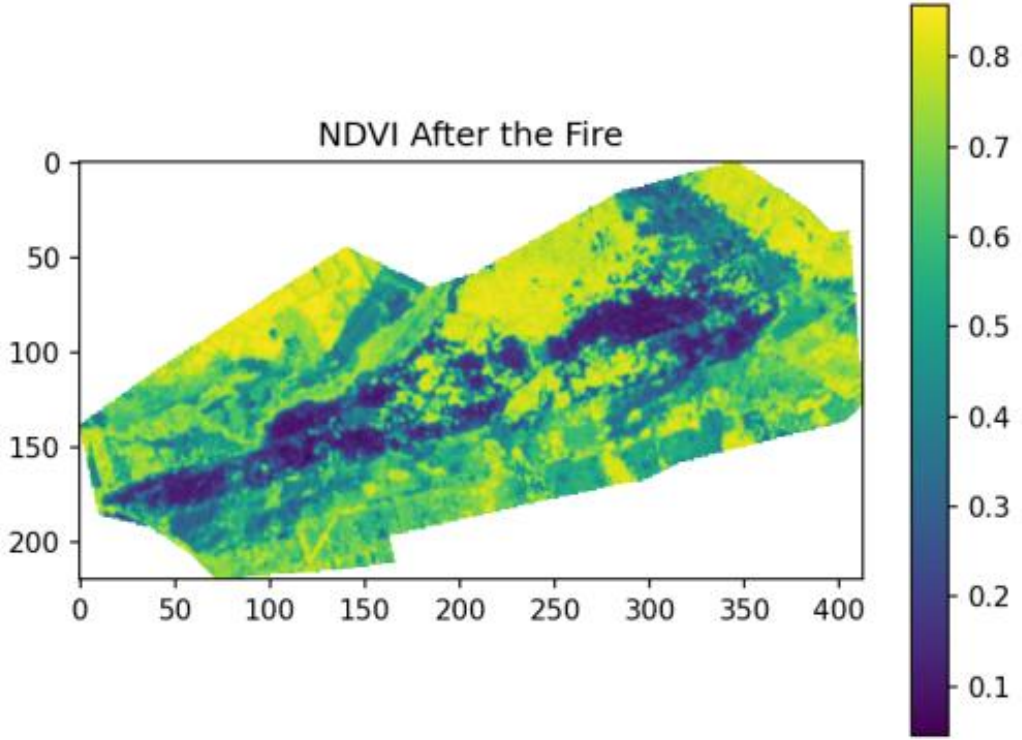
Input data (AOI Shapefile)

- AOI Extent: [6.0868, 6.1460, 51.1635, 51.1823]
- AOI Area: 1373.57696 hectares

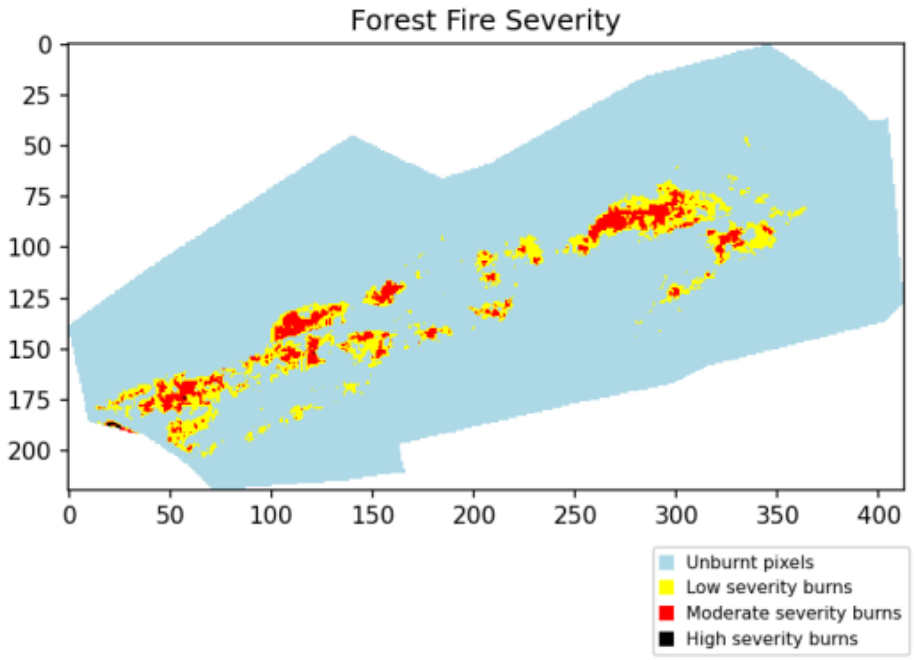
NDVI visualization

- Normalized difference vegetation index (NDVI) can be uded to assess vegetation health
- NDVI = $\frac{NIR-RED}{NIR+RED}$





Fire severity mapping



Class	New pixel value	Label
Less than 0.1	0	Unburnt pixels
0.1 to 0.2	1	low severity burns
0.2 to 0.3	2	moderate severity burns
Greater than 0.3	3	high severity burns

- Use dNDVI to distinguish unburned from fire-burned pixels by detecting vegetation loss.
- dNDVI=NDVI before−NDVI after
- Moderate and high severity burns covered 15.17 hectares.