

Monitoring Large Area Land Cover Change in the SCERIN region

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SCERIN Area

- Long land use history
- Diverse climatic conditions
- Variety of changes in landscape
- Uncertain estimates of land cover changes
- Uncertain estimates of biogeochemical cycles



The job ahead

To improve our understanding of land change trends in SCERIN we need to:

- better quantify landscape changes
- better characterize/qualify these changes
- better characterize the uncertainty of our estimates
- integrate observed changes with biophysical variables
- help guide future conservation/resource management

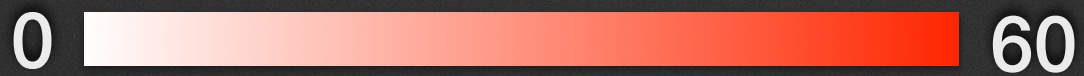
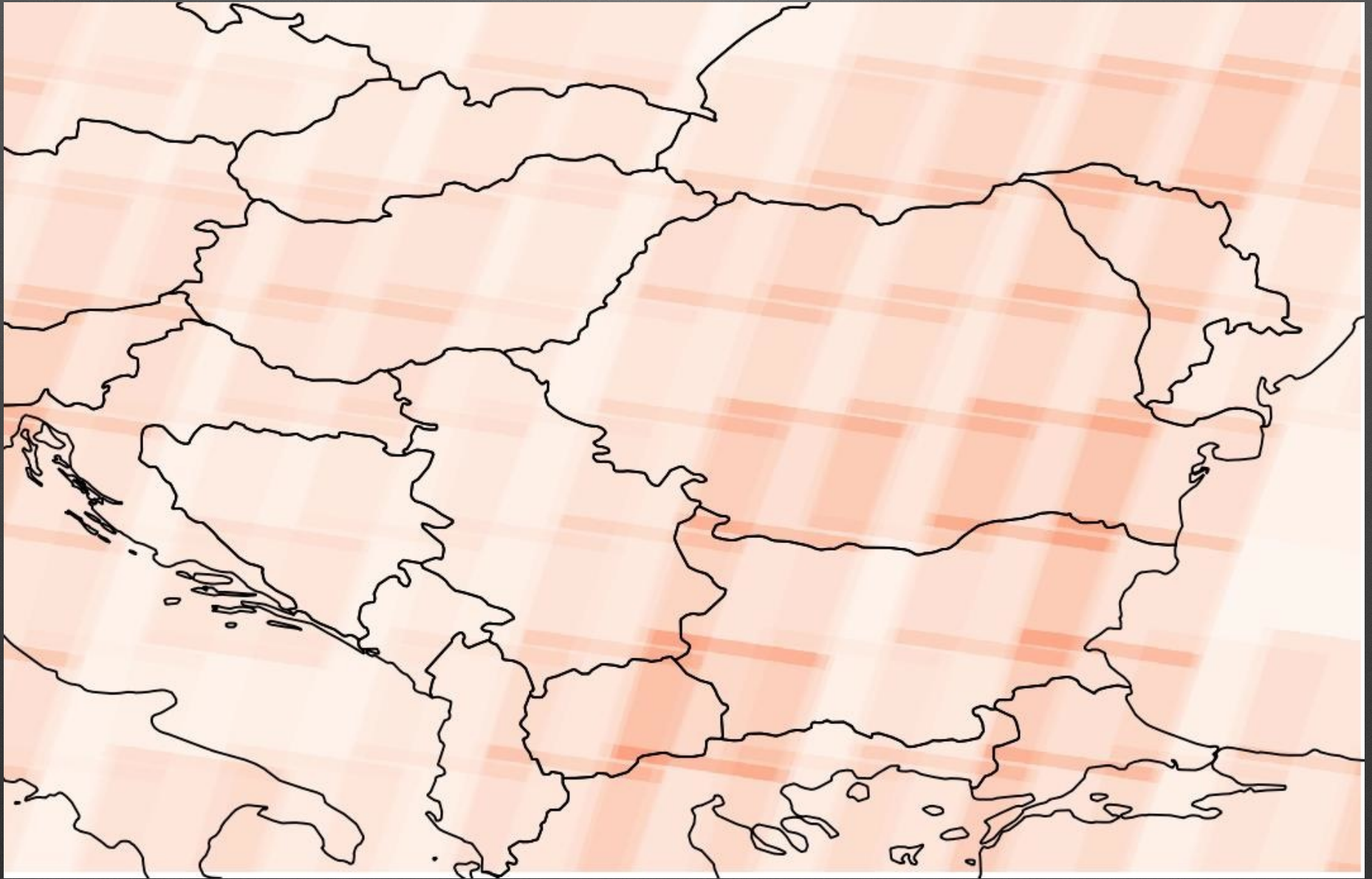
The role of remote sensing

- the archival nature of data
- spectral information
- landscapes that lend themselves to RS studies
- landscape diversity
- ability to integrate with other non-RS data
- experience rooted in other disciplines
- new and emerging technologies (such as cloud computing)

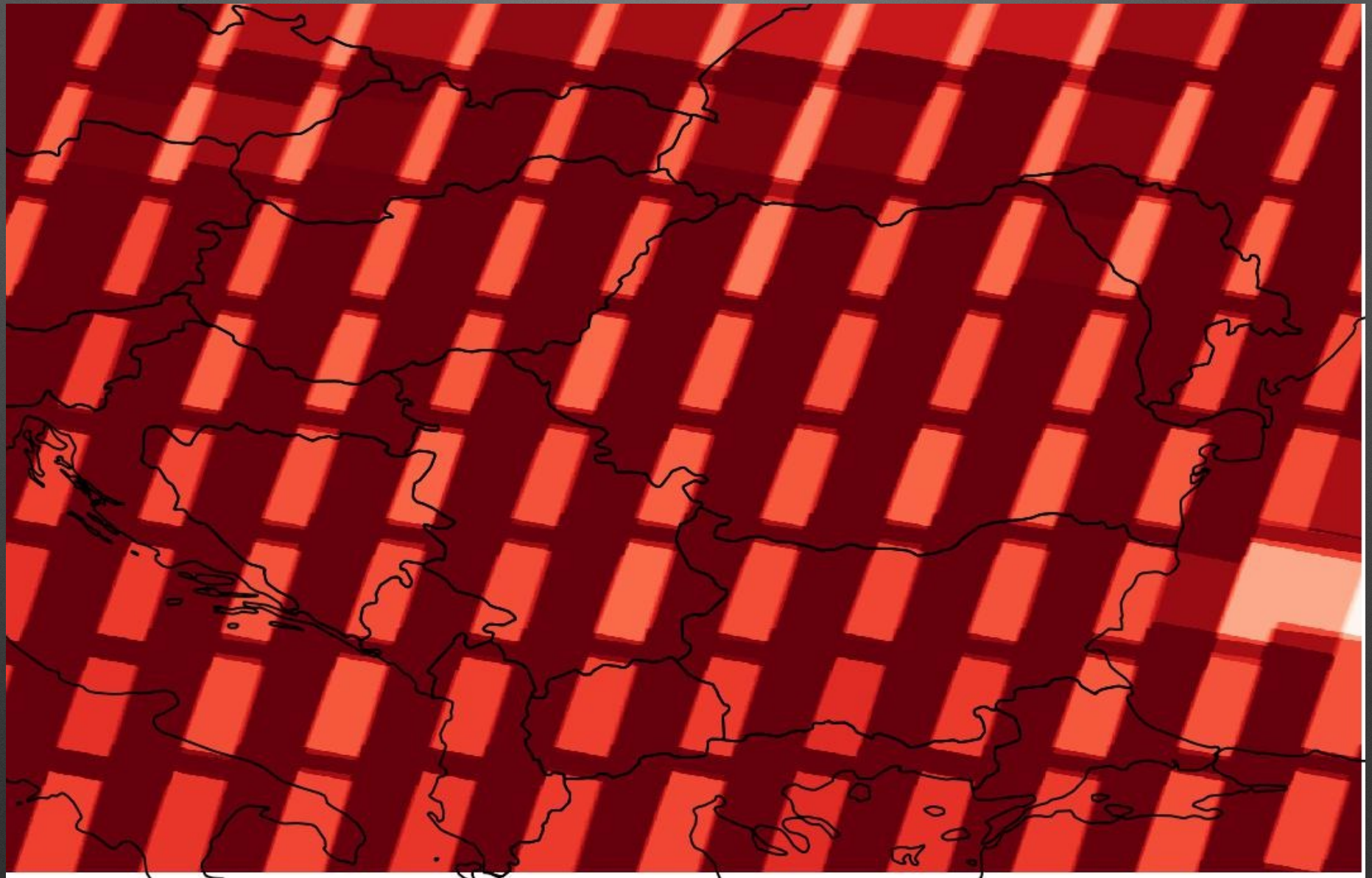
Challenges

- the archive is thin in earlier periods
- small changes in the landscape
- subtle (but important) changes
- fairly large area to be monitored
- capacity

Landsat acquisitions 1984



Landsat acquisitions 2016

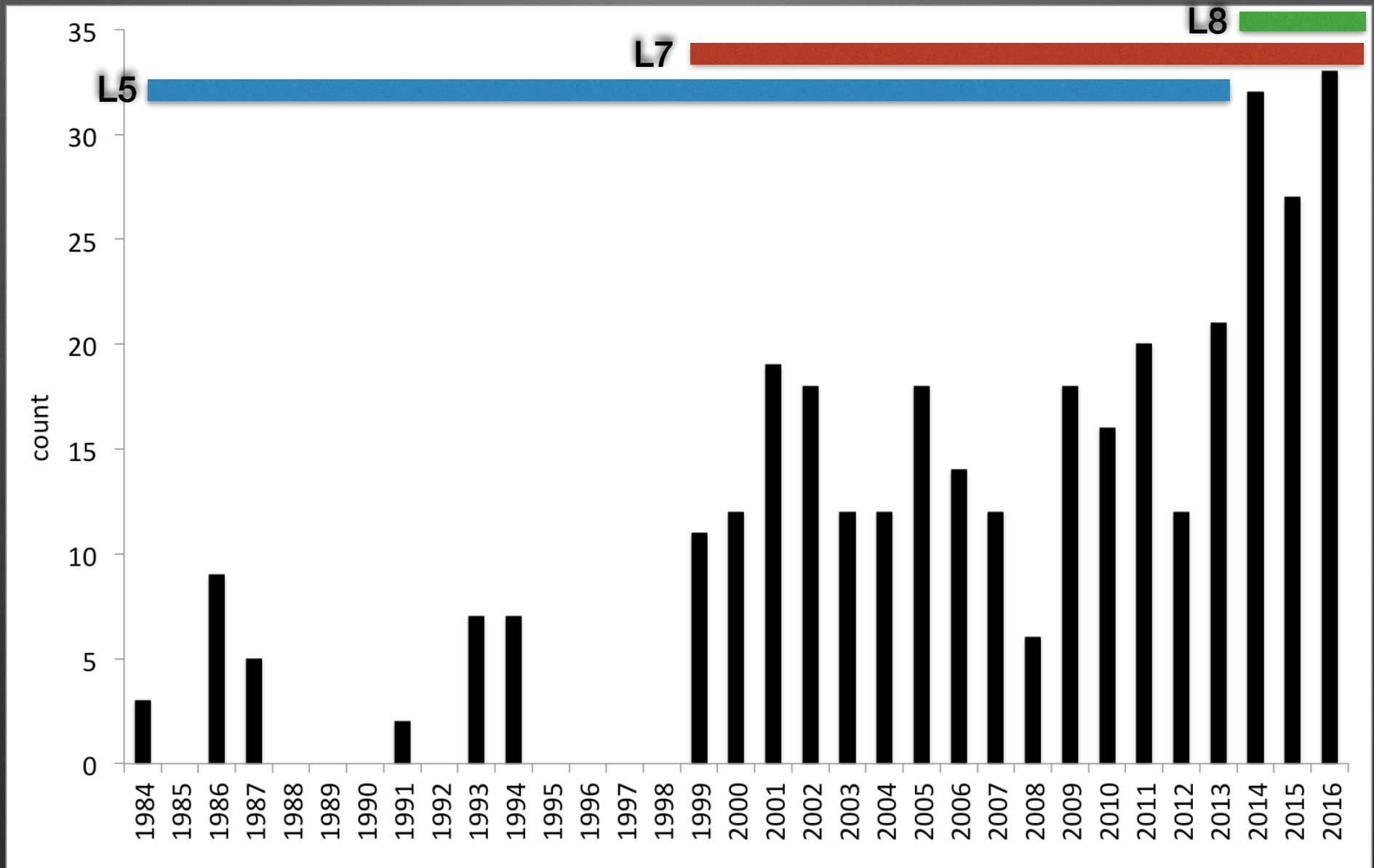


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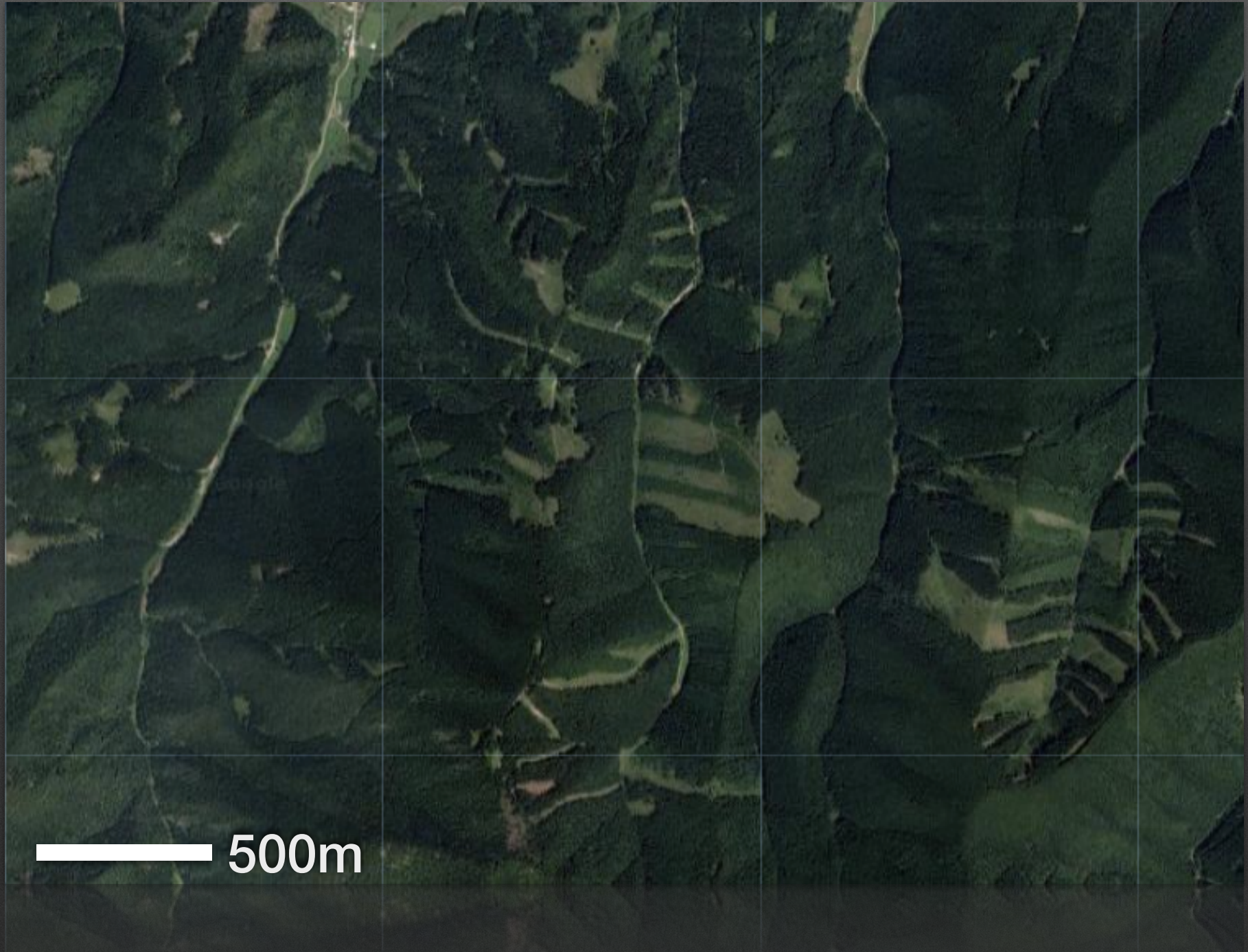


60

Landsat acquisitions **Czechia**



Forest change in **Czechia**



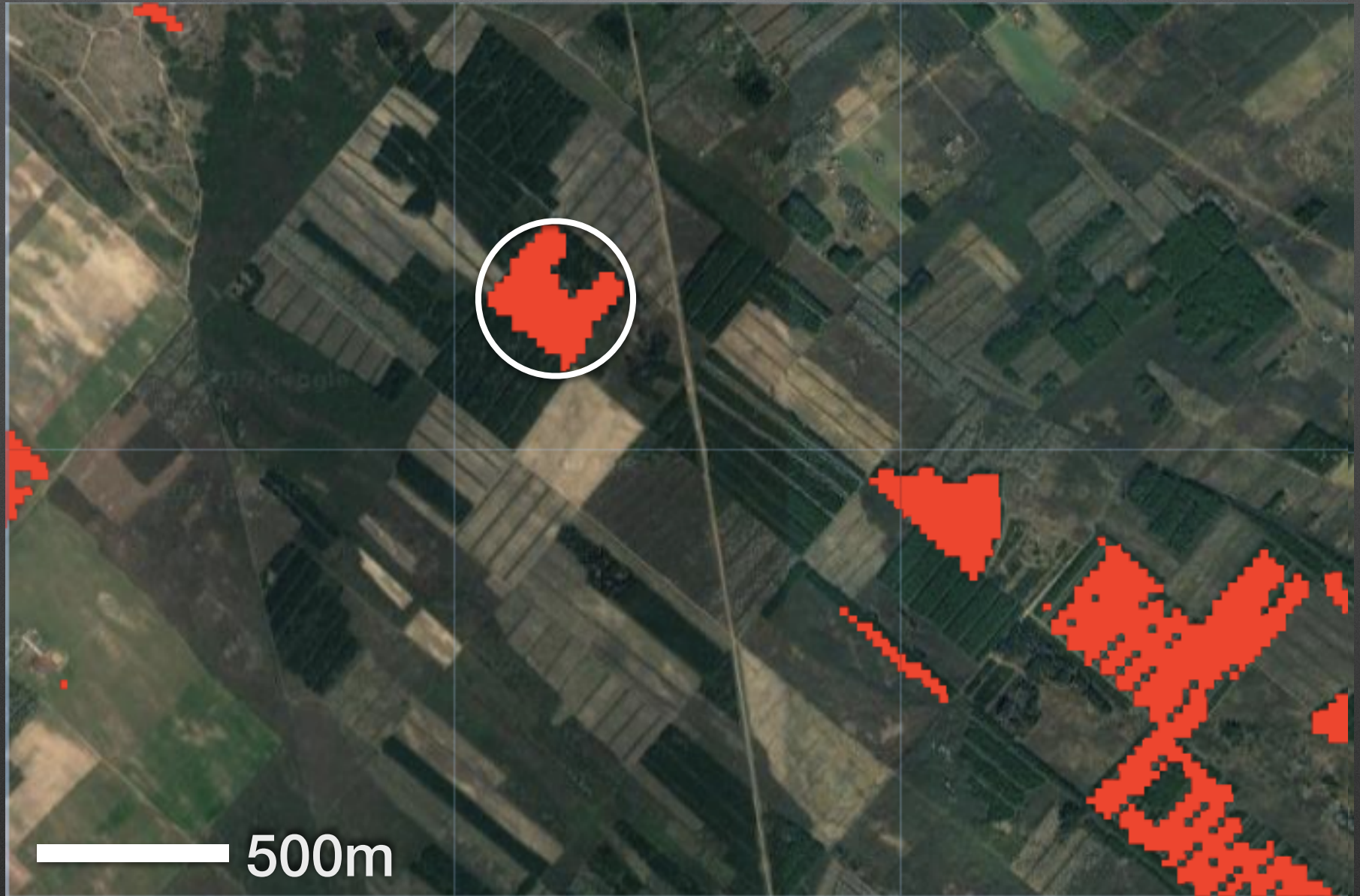
Forest recovery in Hungary



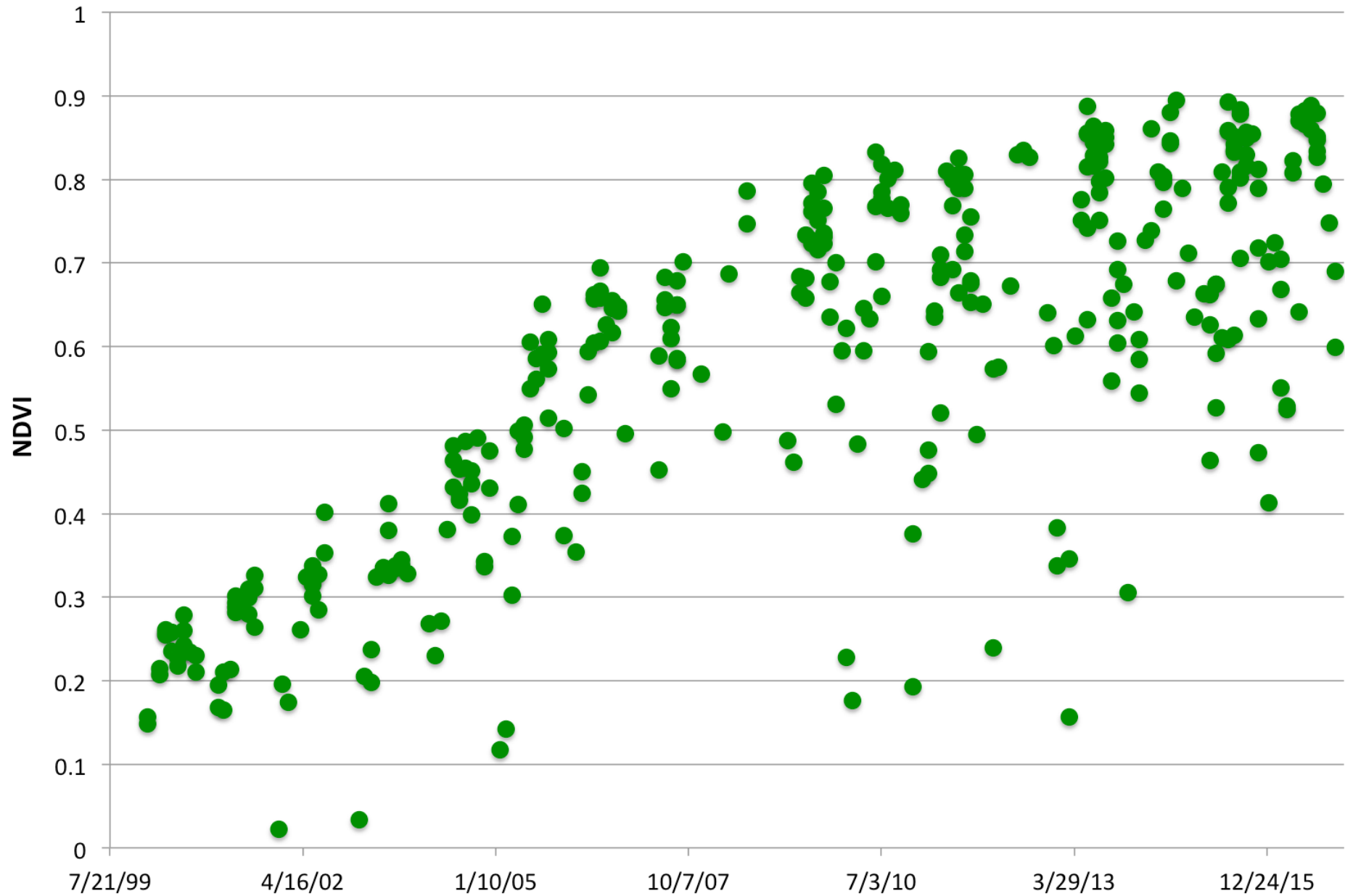
Forest recovery in Hungary



Forest recovery in Hungary



Forest recovery in Hungary



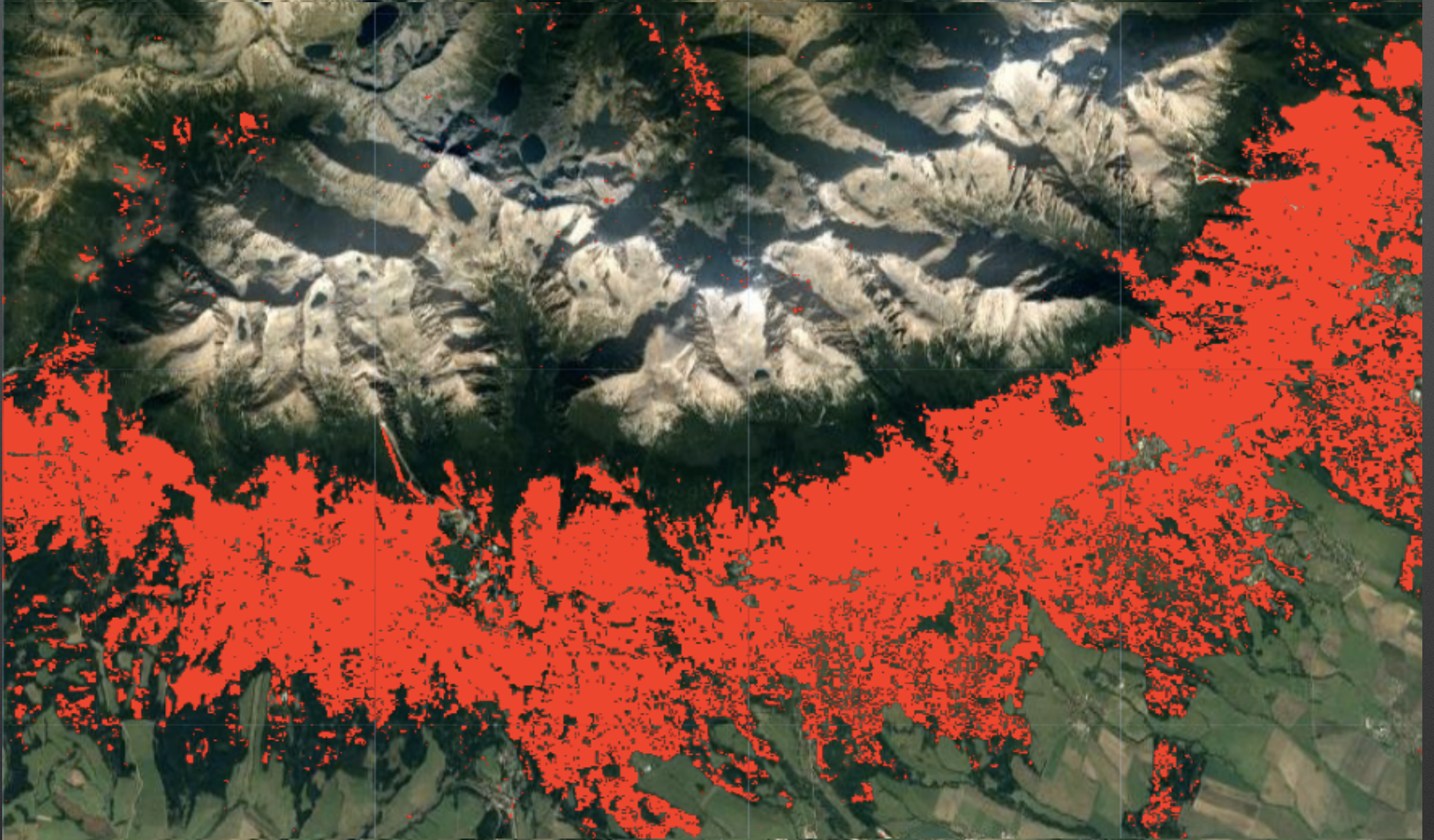
Opportunities

- improved observations (but we still need the archive!)
- better access to data
- better tools for qualifying change
- cloud computing
- more attention to capacity building
- inclusion from different regions and disciplines

Forest disturbance in Slovakia

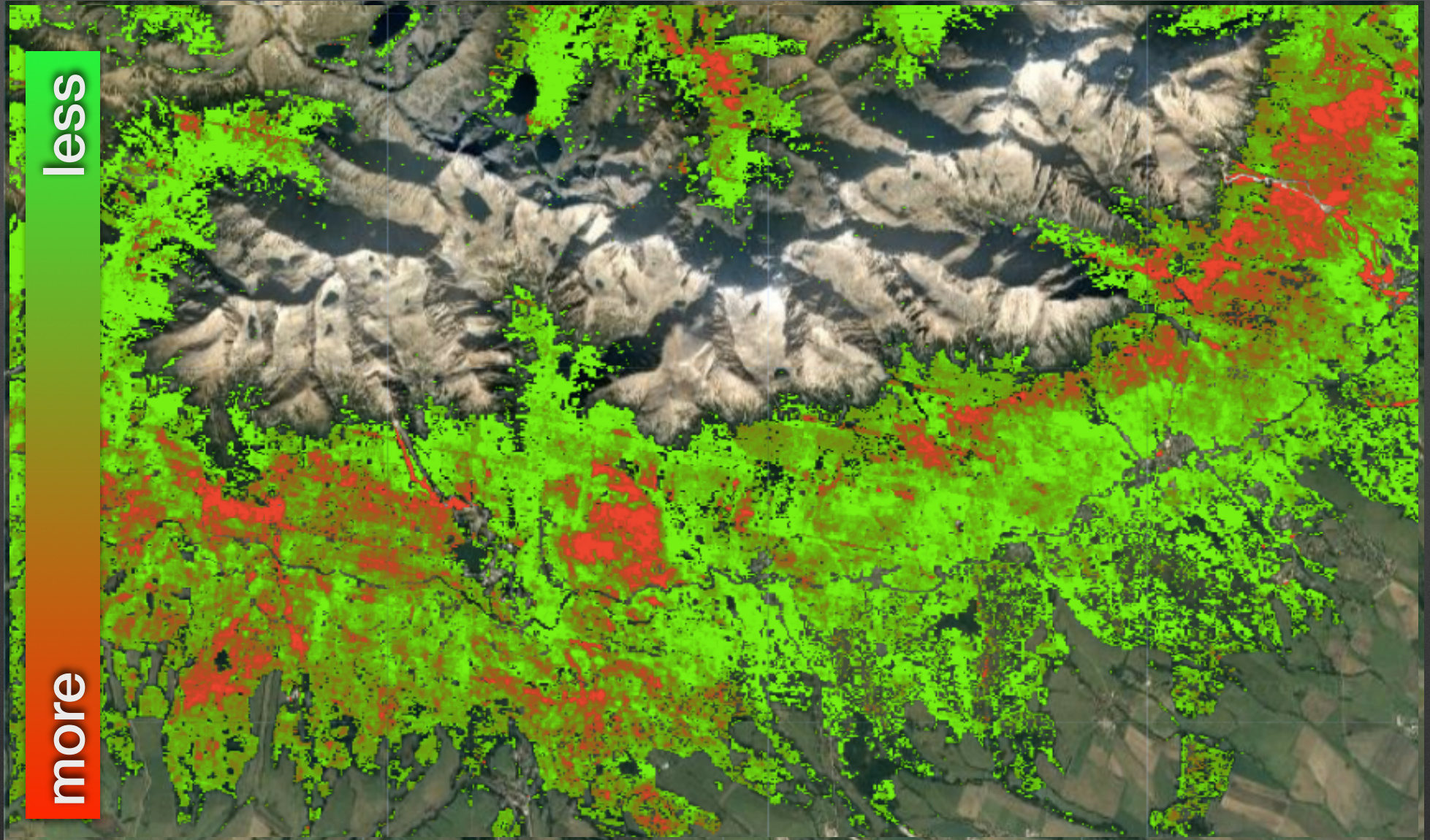


Forest disturbance in Slovakia



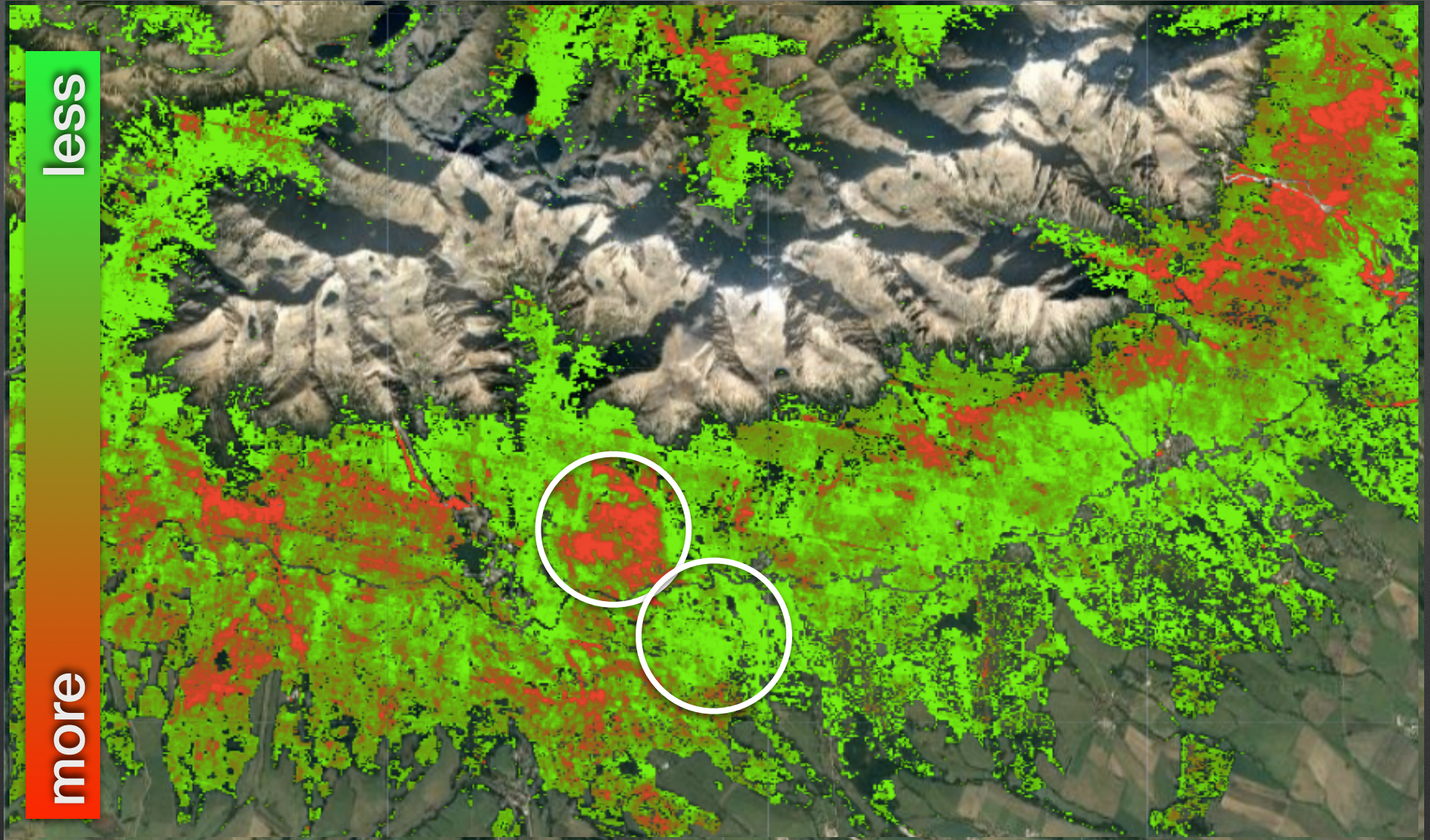
forest loss layer from Hansen et al

Forest disturbance in Slovakia



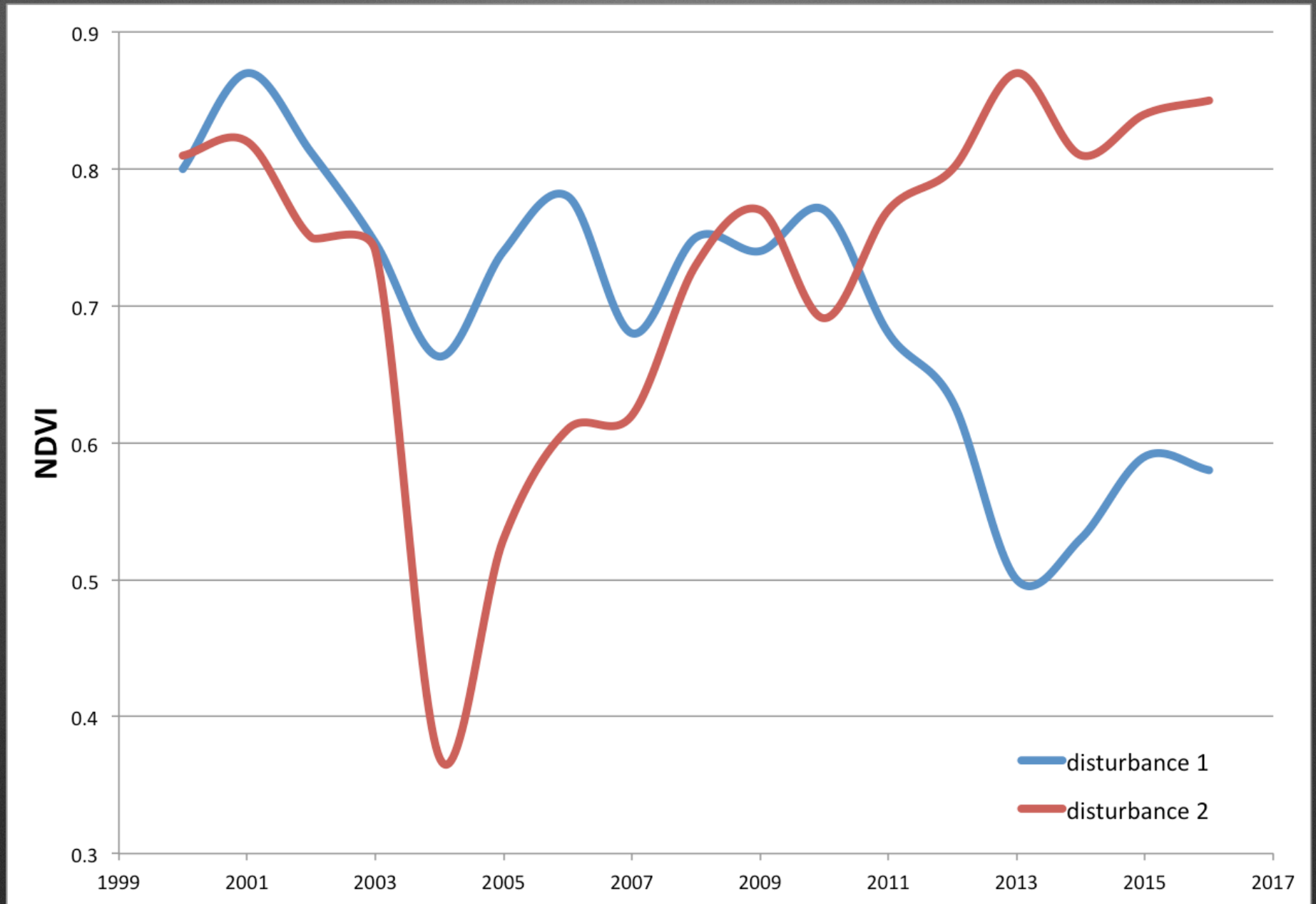
temporal segmentation of Landsat archive

Forest disturbance in Slovakia

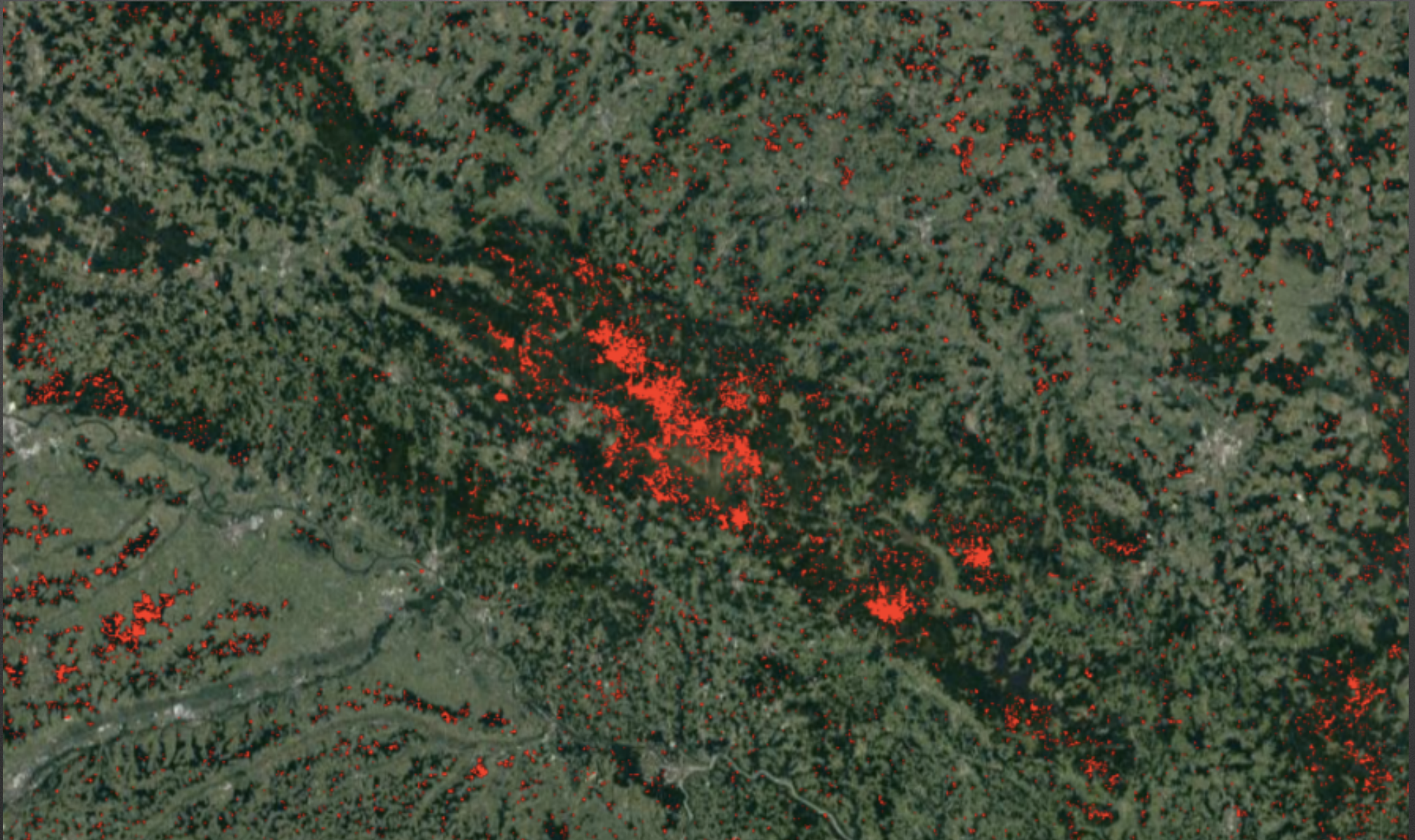


temporal segmentation of Landsat archive

Forest disturbance in Slovakia

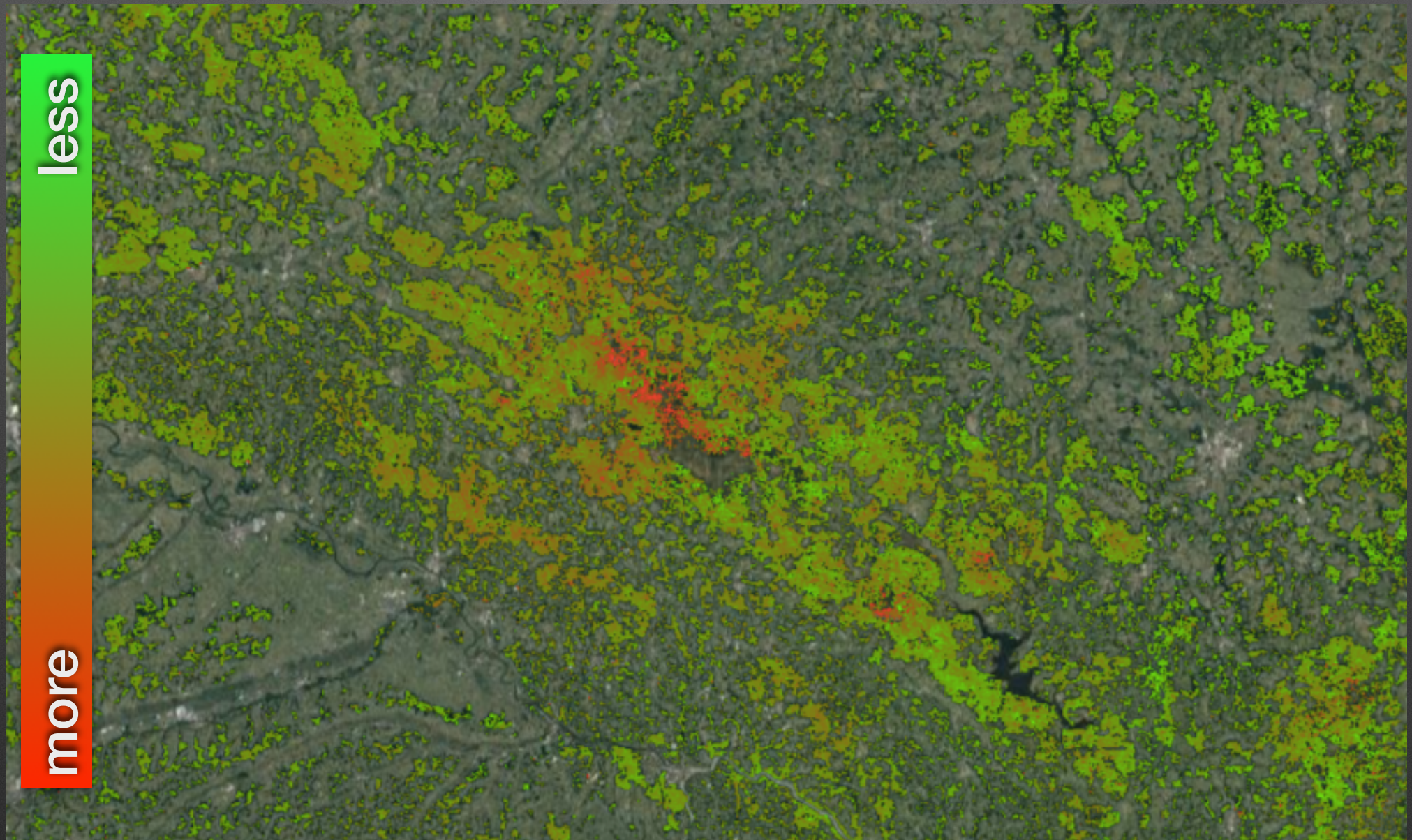


Forest disturbance in **Czechia**



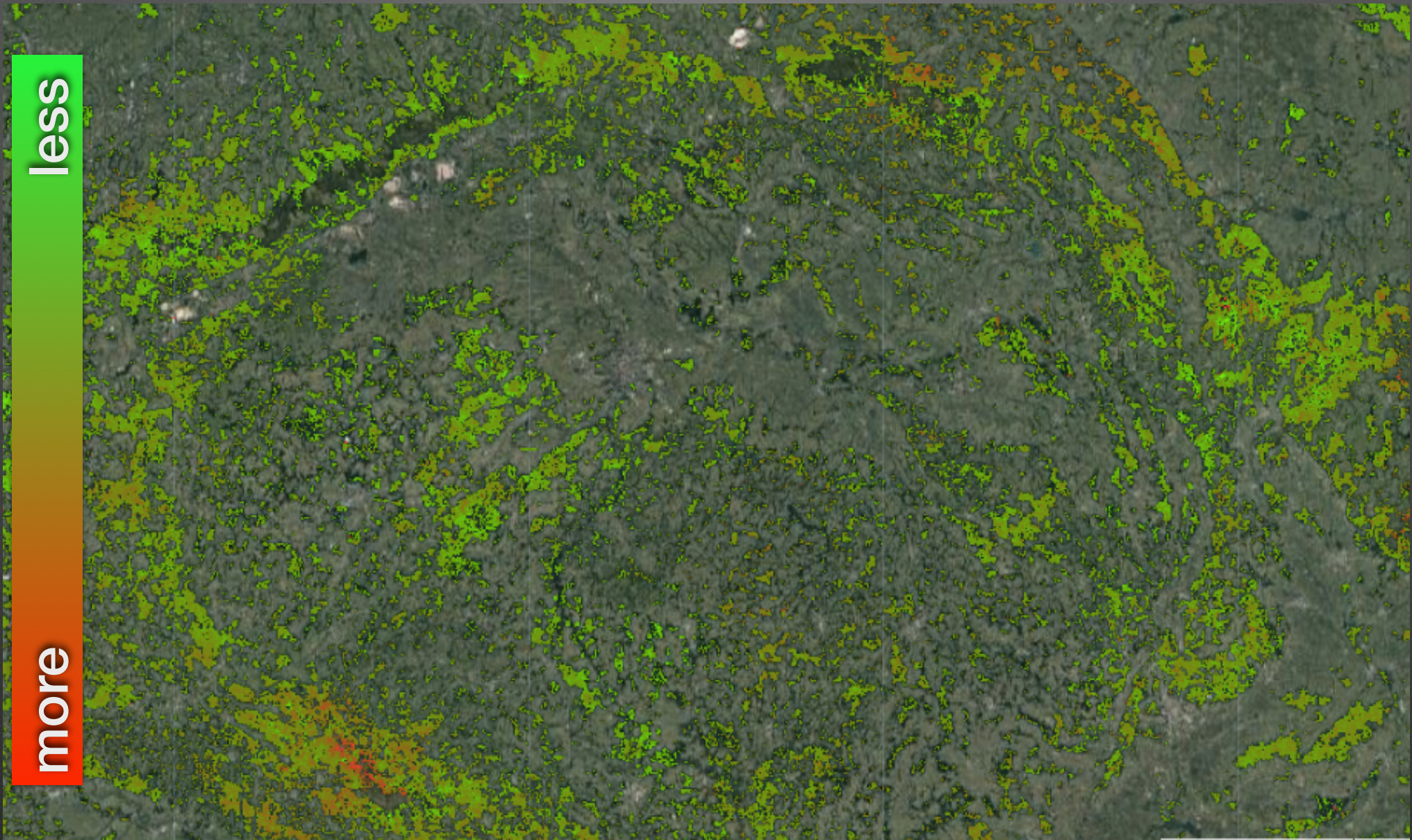
forest loss layer from Hansen et al

Forest disturbance in **Czechia**



temporal segmentation of Landsat archive

Forest disturbance in **Czechia**

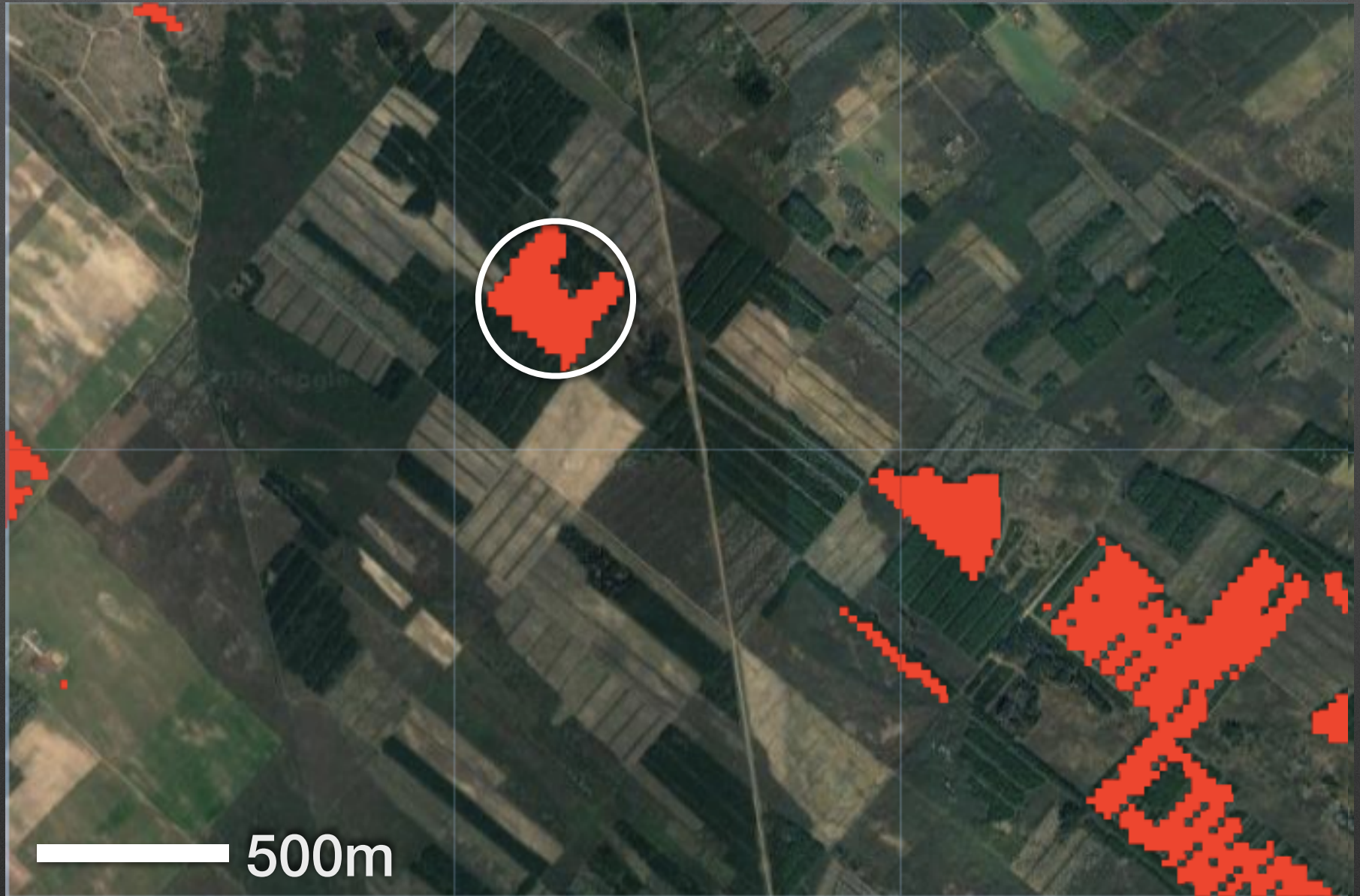


temporal segmentation of Landsat archive

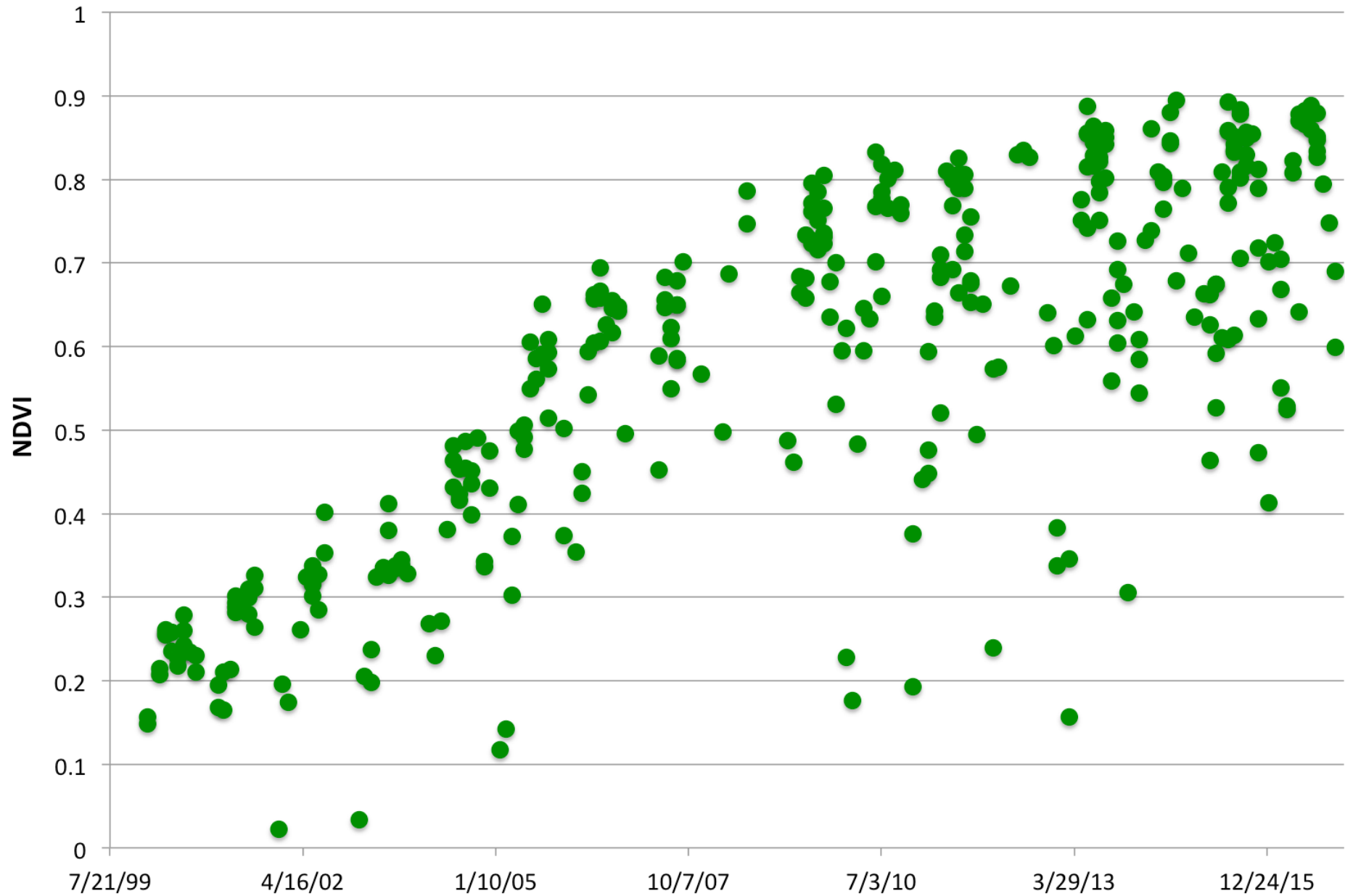
Forest recovery in Hungary



Forest recovery in Hungary



Forest recovery in Hungary



Cloud computing

← → ↻ 🏠 [Secure https://code.earthengine.google.com](https://code.earthengine.google.com) 🔍 ⭐ ⋮

📱 Apps ⭐ Bookmarks 📧 Wiscmail 📧 UW Box 📄 METRIC-EEFLUX 🌐 Earth Engine Code... 📄 New Tab 📁 Google Drive - Clo... 📁 Other Bookmarks

Google Earth Engine Search places and datasets... 🔍 Help ▾ ozdogan05 ▾

Scripts Docs Assets

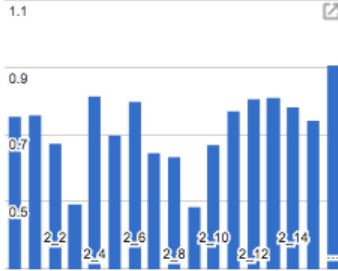
CZ_annual_maxNDVI Get Link Save Run Reset ⚙

```
Imports (1 entry)
  ▶ var point: Point (15.52, 50.76) ⚙ ⛶

1 // load global country boundaries and filter for Hungary
2 var czech = ee.FeatureCollection('USDOS/LSIB/2013')
3   .filterMetadata('cc', 'equals', 'EZ');
4
5
6 var palette = ['#00ff00', '#ff0000']
7
8 var hansen = ee.Image('UMD/hansen/global_forest_change_2015_v1_3')
9   .select('treecover2000');
10
11 var forest = ee.Image(0)
12 var forest = forest.where(hansen.gt(75), 1)
13
14 var loss = ee.Image('UMD/hansen/global_forest_change_2015_v1_3')
15   .select('loss');
16
17 loss = loss.mask(forest)
18
```

Inspector Console Tasks

Series: List (17 Images)



▼ Linear trend: Image (1 band)
t: 0.007672770880162716

▼ masked Linear trend: Image (1 band)
t: masked

📍 📏 📐 📄 Geometry Imports

📄 Layers Map Satellite

Google

Imagery ©2017 TerraMetrics | 20 km | Terms of Use | Report a map error

Capacity building



Capacity building



Summary

- We have better tools/data quantify landscape changes
- We can better characterize/qualify these changes
- We are working on quantifying/reducing the uncertainty of our estimates
- We are integrating observed changes with biophysical variables
- Cloud-based tools are a big help to map variables over large areas
- We will do a better job in future conservation/resource management

Thank you

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