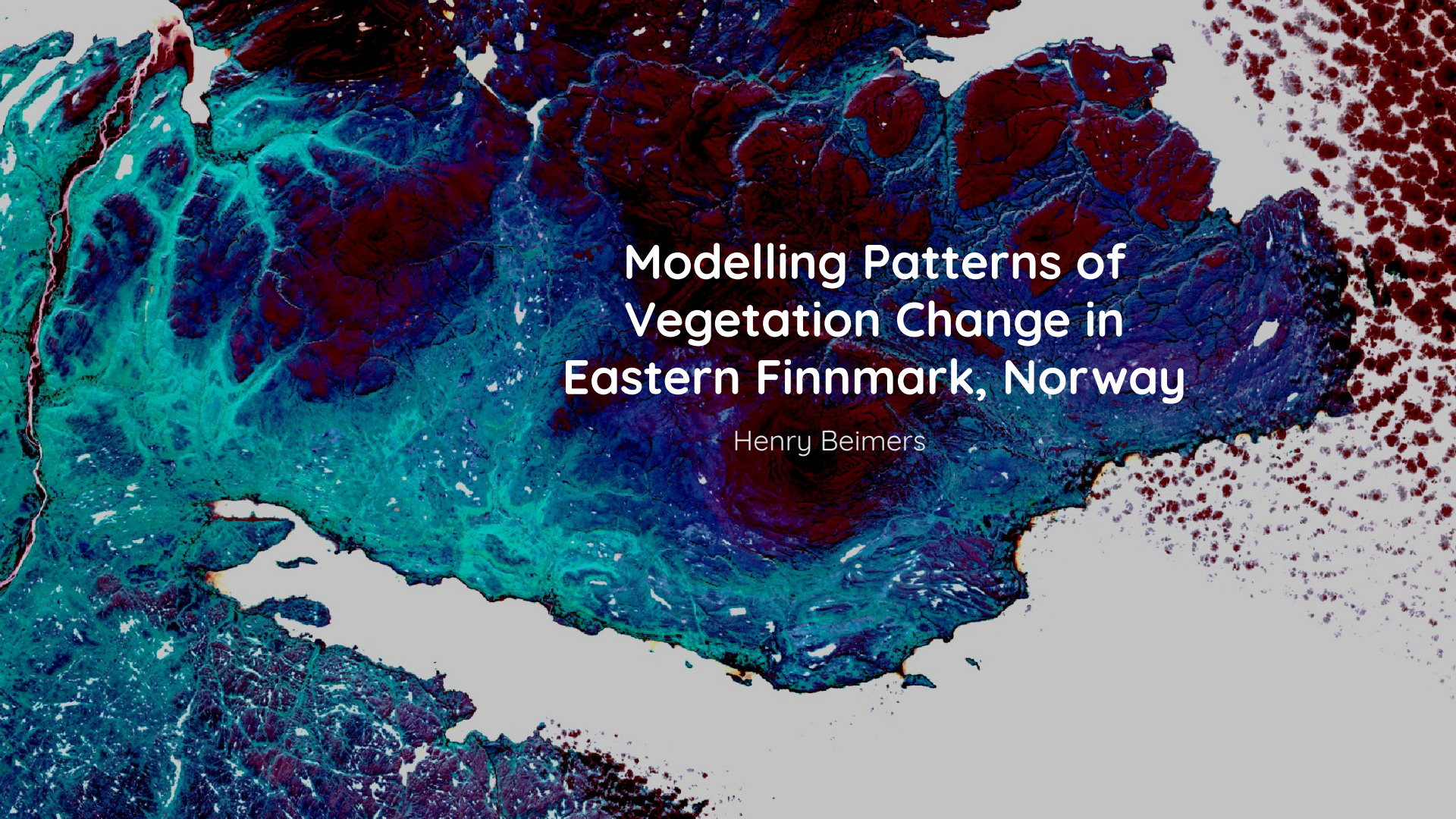
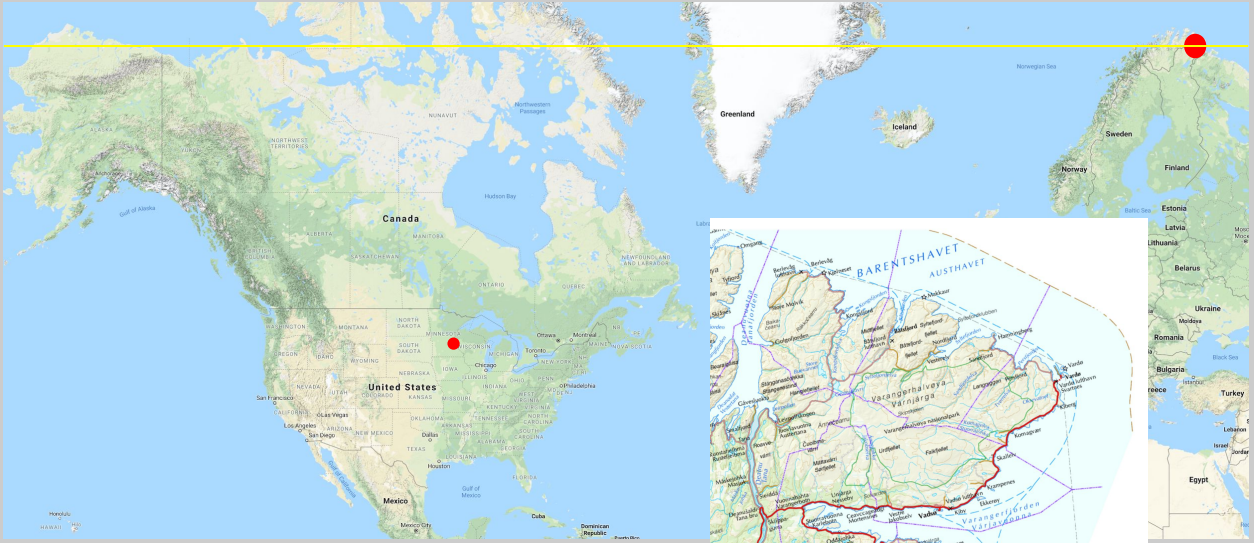
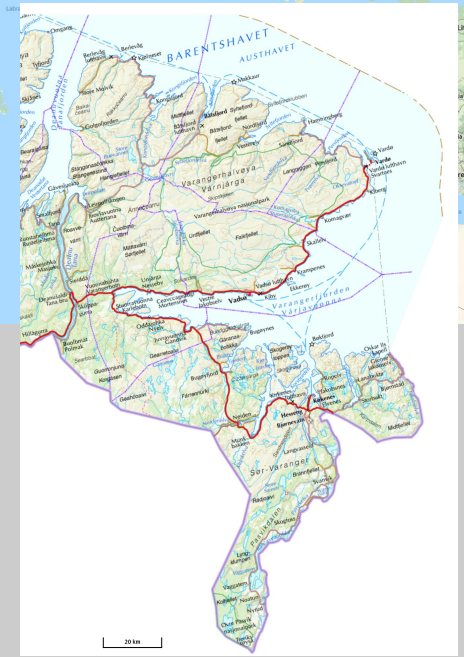


Modelling Patterns of Vegetation Change in Eastern Finnmark, Norway

Henry Beimers

Location

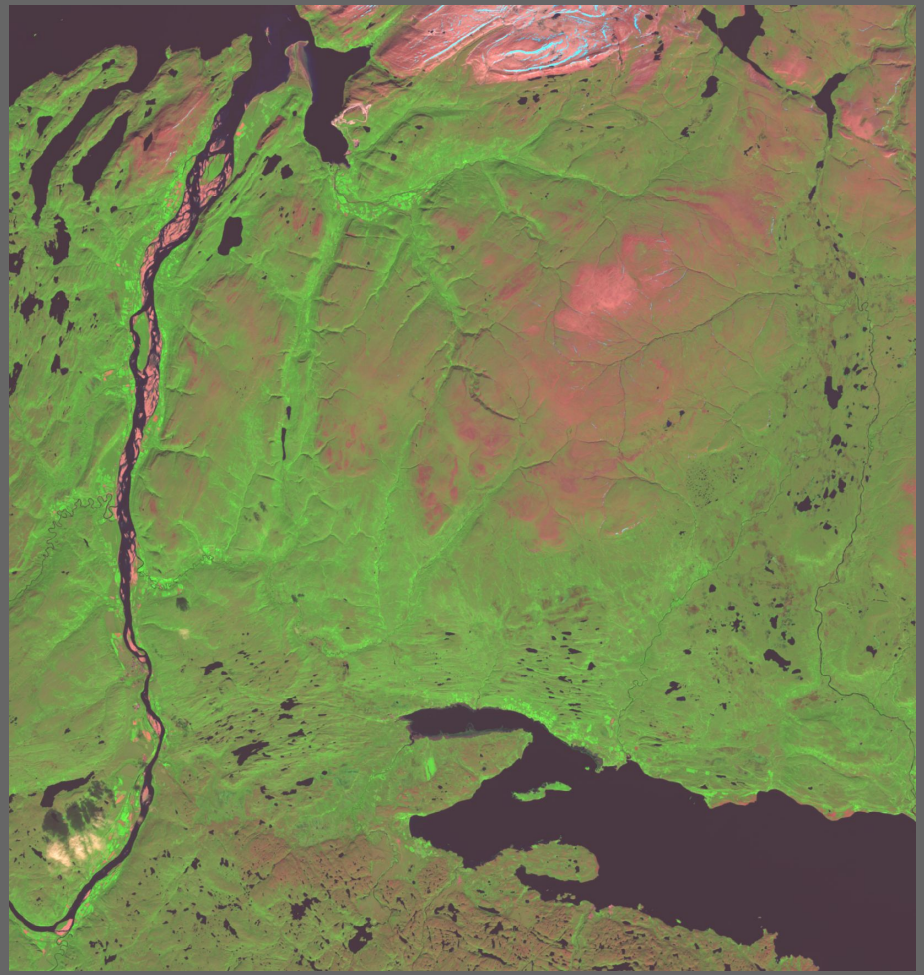

Canada
United States
Mexico
Greenland
Iceland
Sweden
Norway
Finland
Estonia
Latvia
Lithuania
Belarus
Ukraine
Romania
Bulgaria
Turkey
Egypt

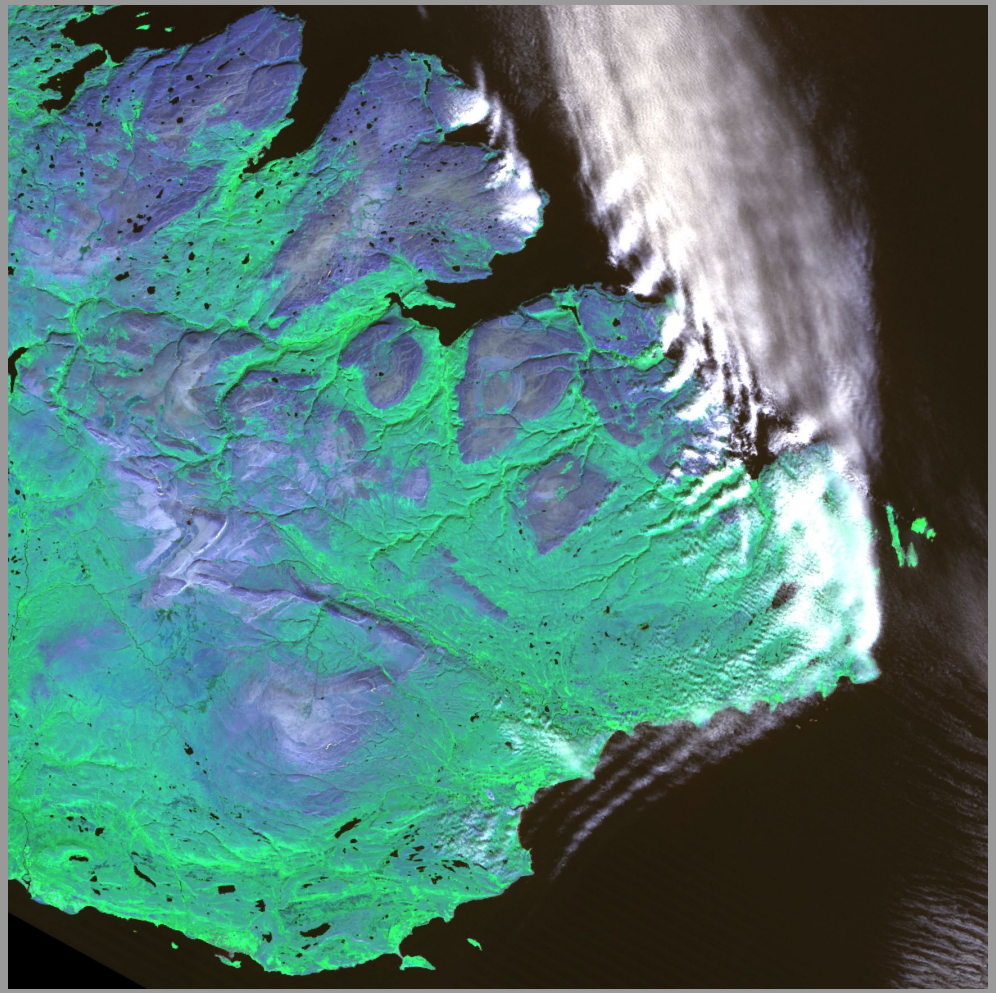

BARENTSHAVET
AUSTHAVET
Vadsø
Kirkenes
Sør-Varanger
20 km

ARCTIC REGION
North Pacific Ocean
Bering Sea
Sea of Okhotsk
Arctic Ocean
CANADA
RUSSIA
10°C (50°F) isotherm, July
Hudson Bay
Greenland (DENMARK)
Greenland Sea
Barents Sea
Norwegian Sea
North Atlantic Ocean
Scale 1:39,000,000
Azimuthal Equal-Area Projection

Problem Statement

- Two vegetation types
  a. Forest
  b. Non-Forest
- Three decades
- Any changes
- Hypothesis: Forest cover has increased since 1985





Data

Temporal:

- 1985 - 2019
- Three Maps: 1985, 2004, 2019

Spatial:

- 30 x 30 resolution
- Landsat TM, ETM, OLI
- East of the Tana River but within Norway

Process

Training Data:

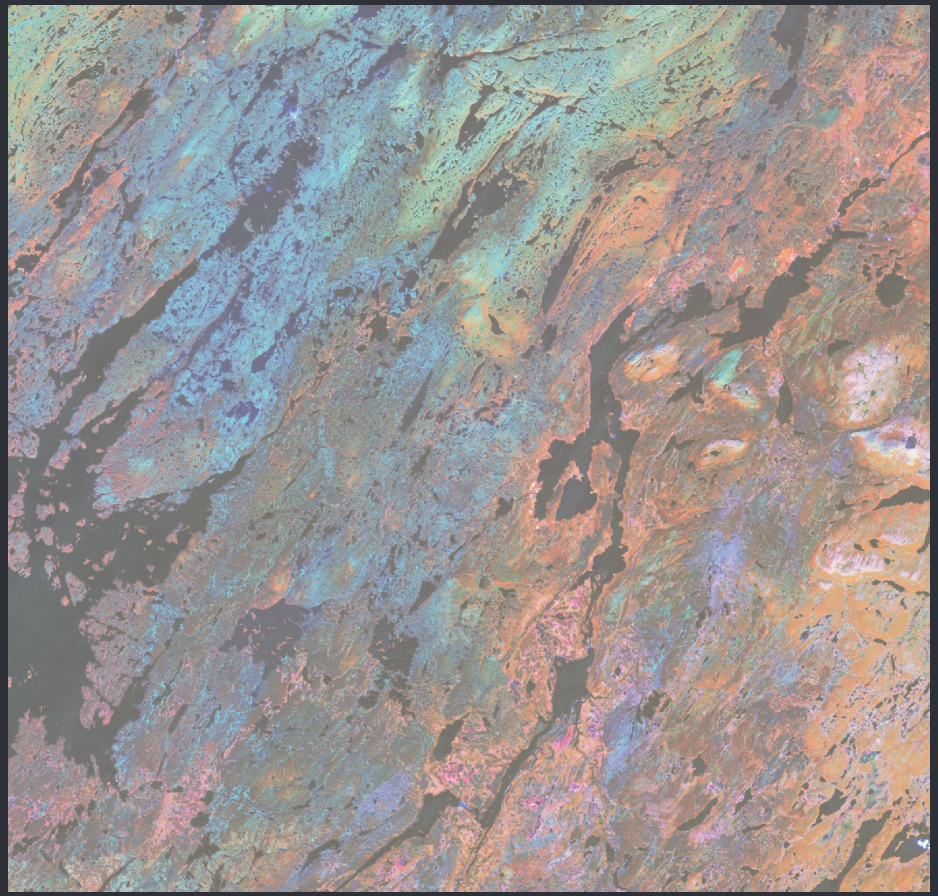
- Personal Experience
- Texture and variance
- Slightly different training locations each year

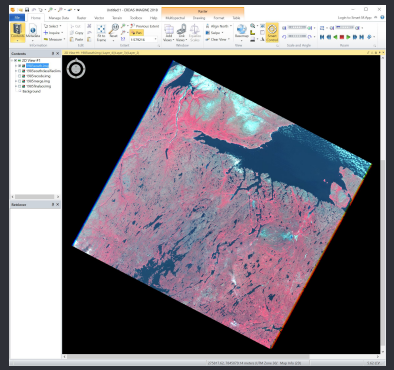
Classification:

- Minimum distance
- 4 classes

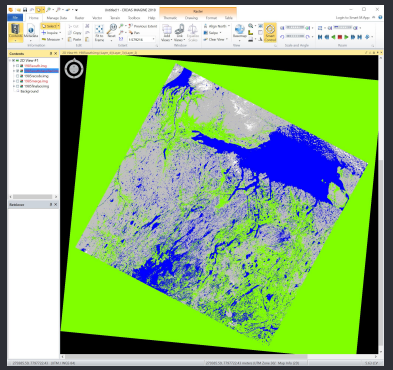
Additional processing:

- Mosaic
- AOI
- Recoding
- Model (F-F-F, F-NF-F, F-NF-NF, etc.)

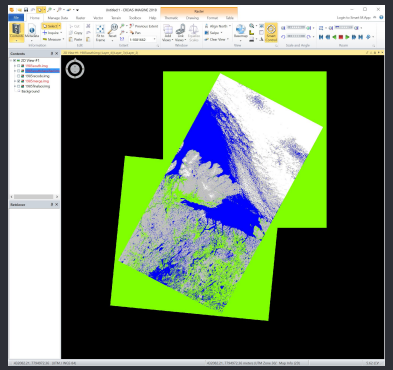




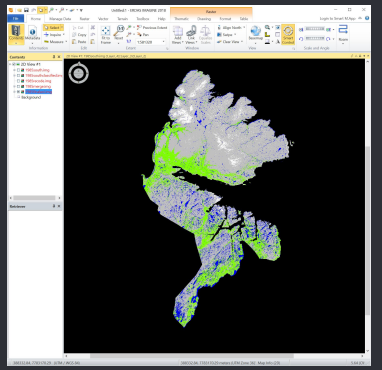
Stacked Image



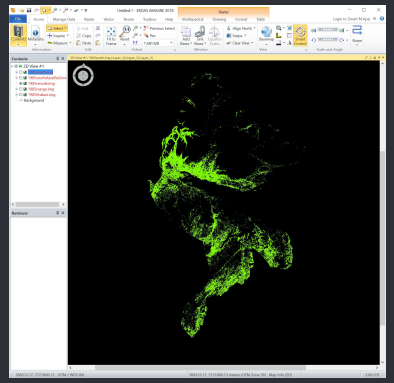
Supervised classification



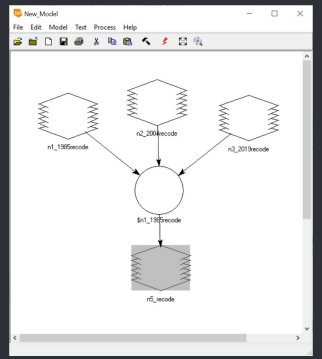
Mosaic



Shapefile AOI



Recoded for 2 classes



Model

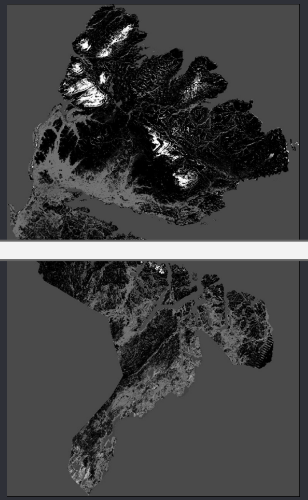
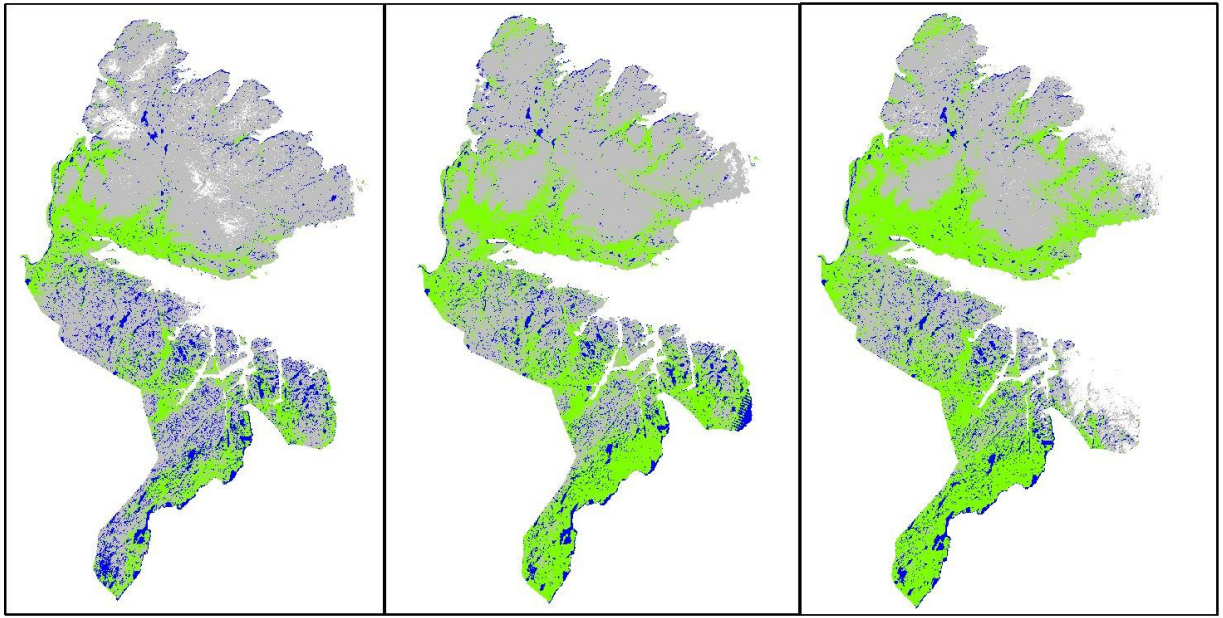


Image Difference (tried just to see)

Model Output

Classifying Land Cover in Eastern Finnmark, Norway - 1985, 2004, 2019

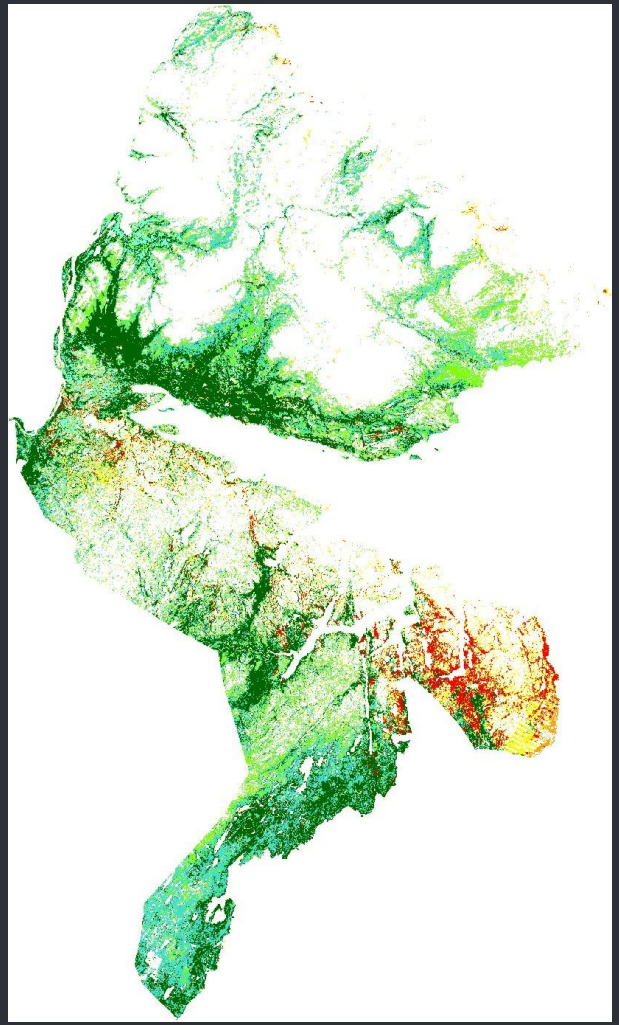


Class_Names
water
cloud

Class_Names
otherland
Birch

Kilometers
50 0
Miles
20 0 20

Cartographer: Henry Beimers --- 12/9/2019 --- Data: Landsat ETM, OLI


F + F + F
F + F + NF
F + NF + F
F + NF + NF
NF + F + F
NF + F + NF
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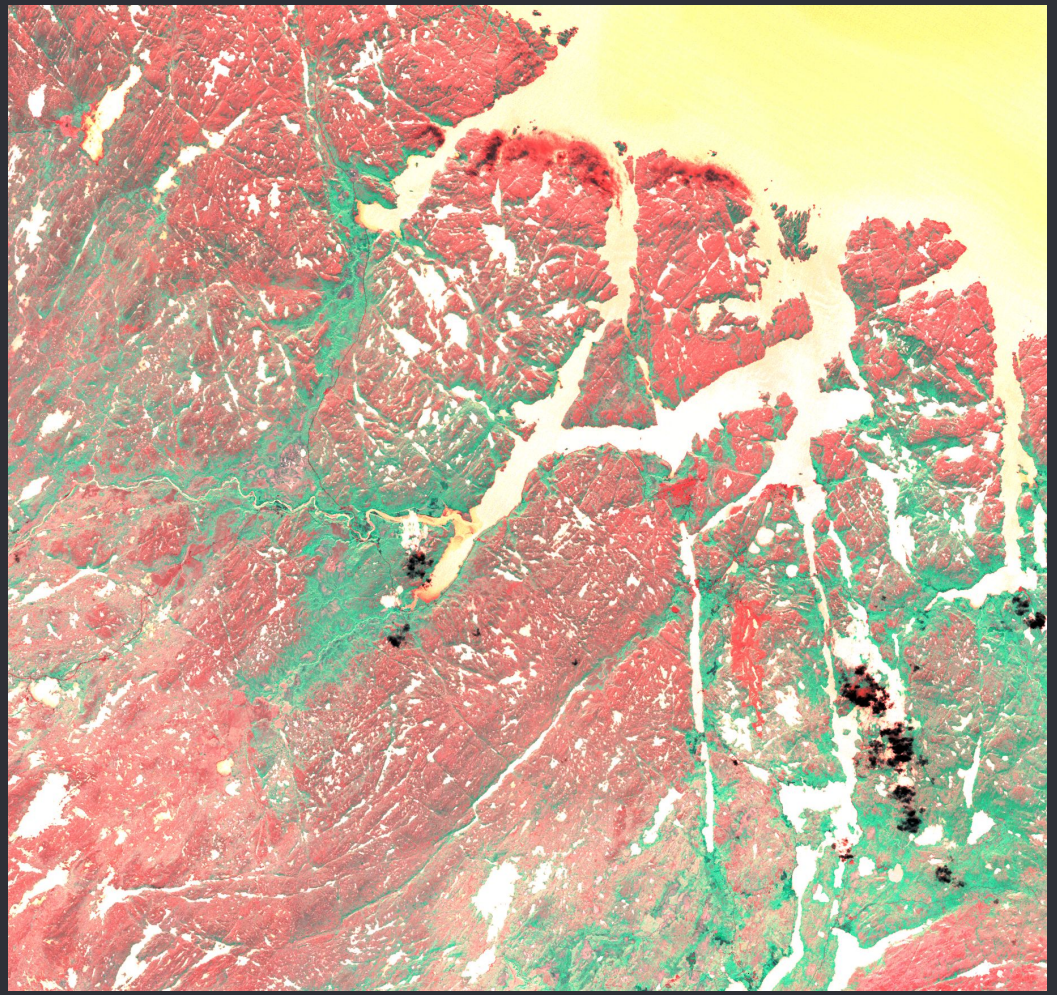
Discussion

Causes?

- Climate
- Grazing
- Invasive Species

Error?

- Training Data

Future Research?

- Causes
- Vegetation Types
- Statistical analysis