



# Monitoring of palsamires in Norway

Mires and wetlands in the North Calotte Area  
Vadsø, 2-3 October 2019

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# Today

- Background and site selection
- Study design
- Results
  - Ferdesmyra example
  - Some general patterns
- Future



# Scientific relevance

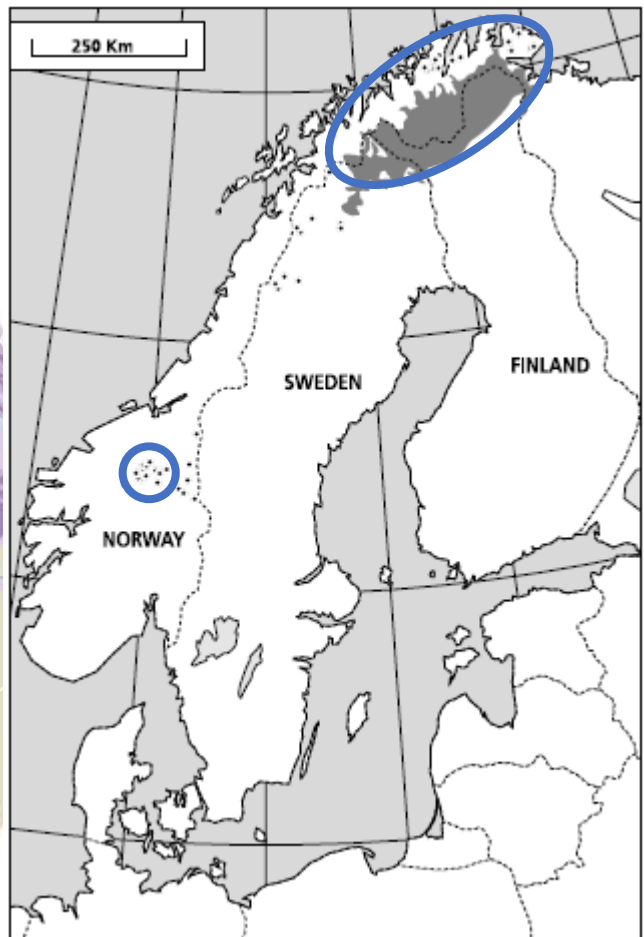
- Carbon pools, GHG
- Albedo, forest-tundra zone
- Fresh water flow into the Arctic Ocean
- Lake disappearance
- Lake appearance
- Biodiversity
- Land use



# Permafrost distribution



- Permafrost**
- Isolated
  - Sporadic
  - Discontinuous
  - Continuous



Source: Seppälä 1997; Sollid & Sørbel 1998

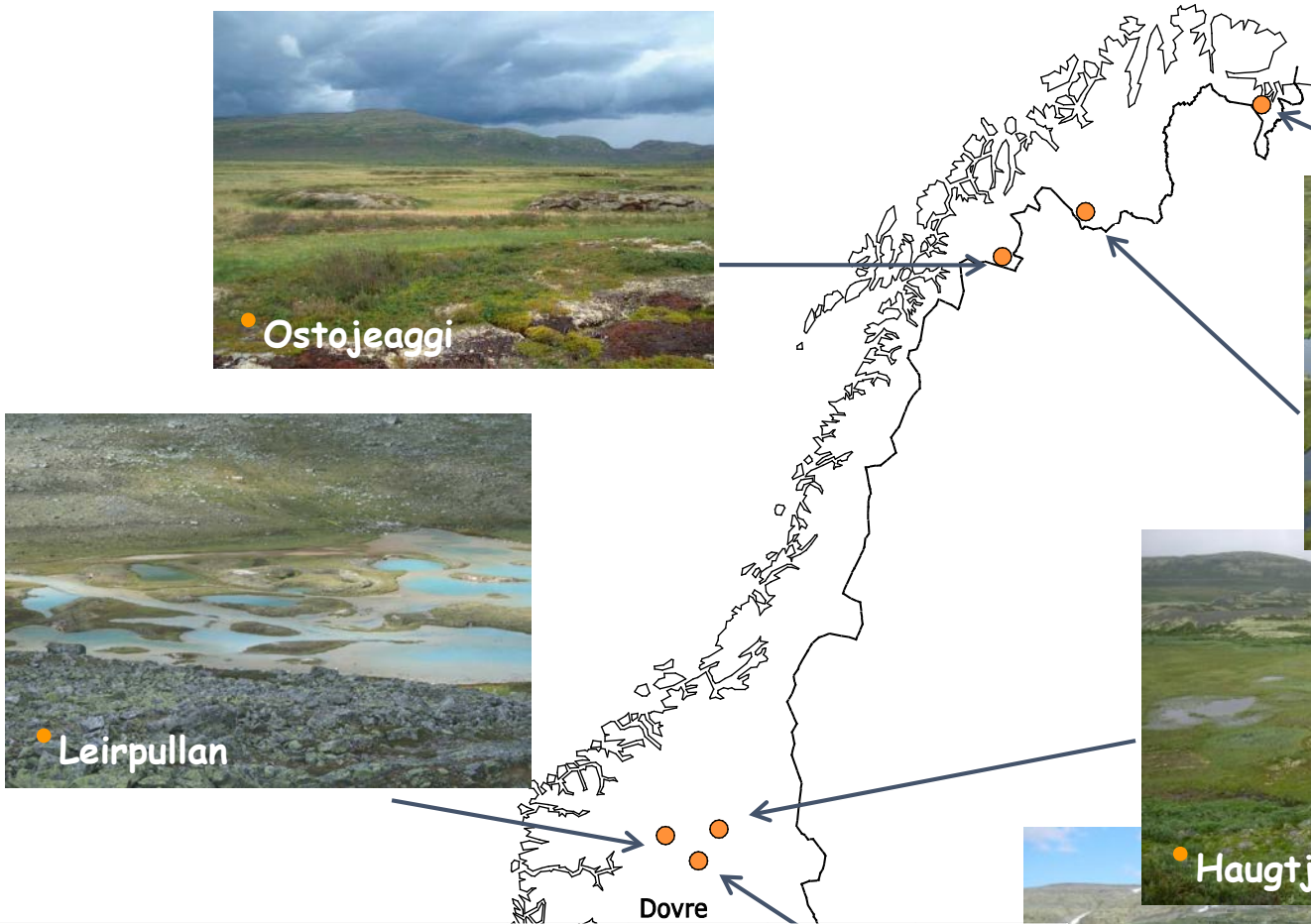
Source: International Permafrost Association, 1998. Circumpolar Active-Layer Permafrost System (CAPS), version 1.0.

# Given criteria

- National perspective
- Long-term
- Build on consensus among national scientists
- Protected areas
- Limited funding
- Method development
- Start in 2004
- Annual reporting in Norwegian



# Selected sites



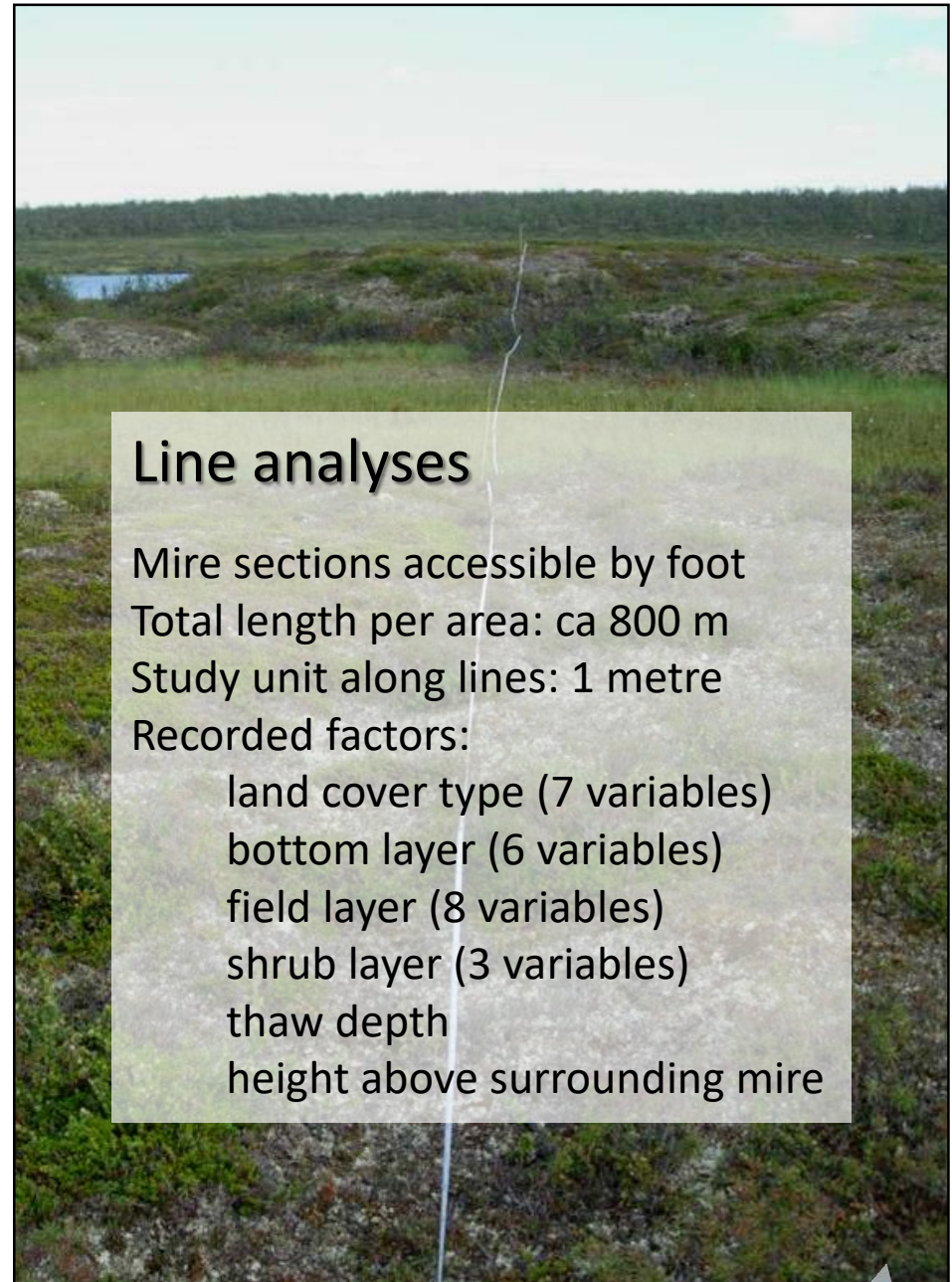
Characteristics of monitoring sites

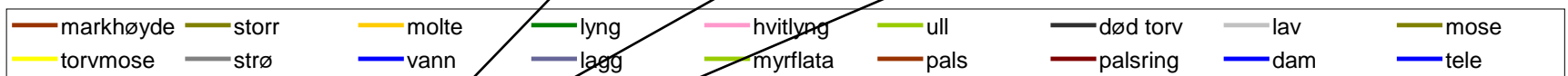
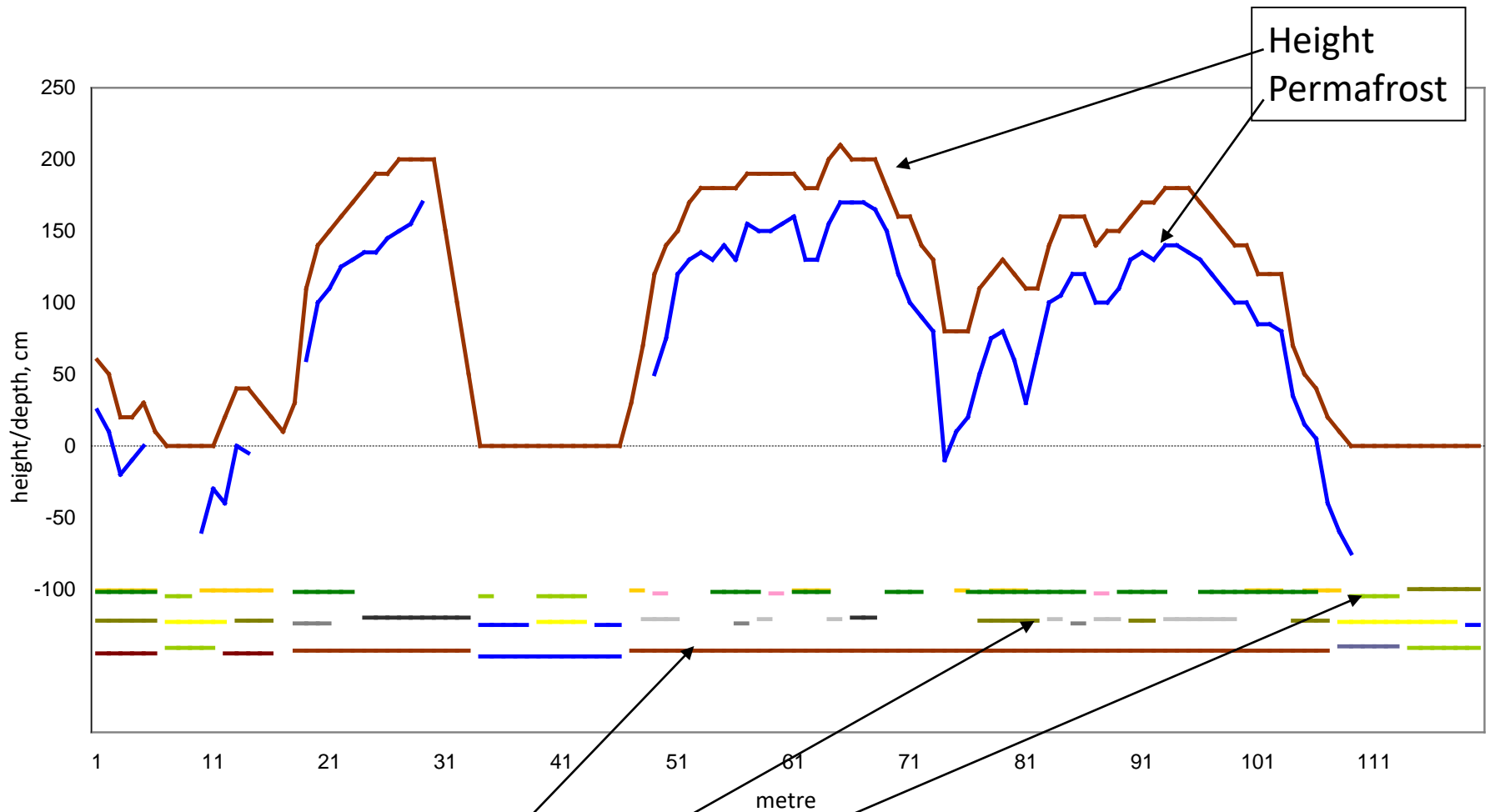
Site	First analyzes	Latitude	m a.s.l.	Substrate	Palsa type*	Height, max	Palsa recruitment
Ferdesmyra	2008	69°44'N	70	peat	d (p)	2,5	no
Goatheluoppal	2006	68°55'N	435	peat	d/p	2,5 - 3	(no)
Ostojeaggi	2004	68°29'N	495	peat	d/p	3,5	yes
Haugtjørnin	2005	62°21'N	1120	peat	(d) (p)	0,5	yes
Haukskardmyrin	2005	62°04'N	1050	peat	d (p)	1,5	yes
Leirpullan	2007	62°21'N	1437	mineral	d/p	1,5 - 2	yes

\* dome (d), plateau (p)

# Study design

- Non-destructive
- Line analyses
- Photo documentation
- GPS
- Air photos
- Climate data
  - ✓ air temperature
  - ✓ soil temperature
  - ✓ precipitation
  - ✓ snow depth
- 5-year intervals
- August; 1<sup>st</sup> week



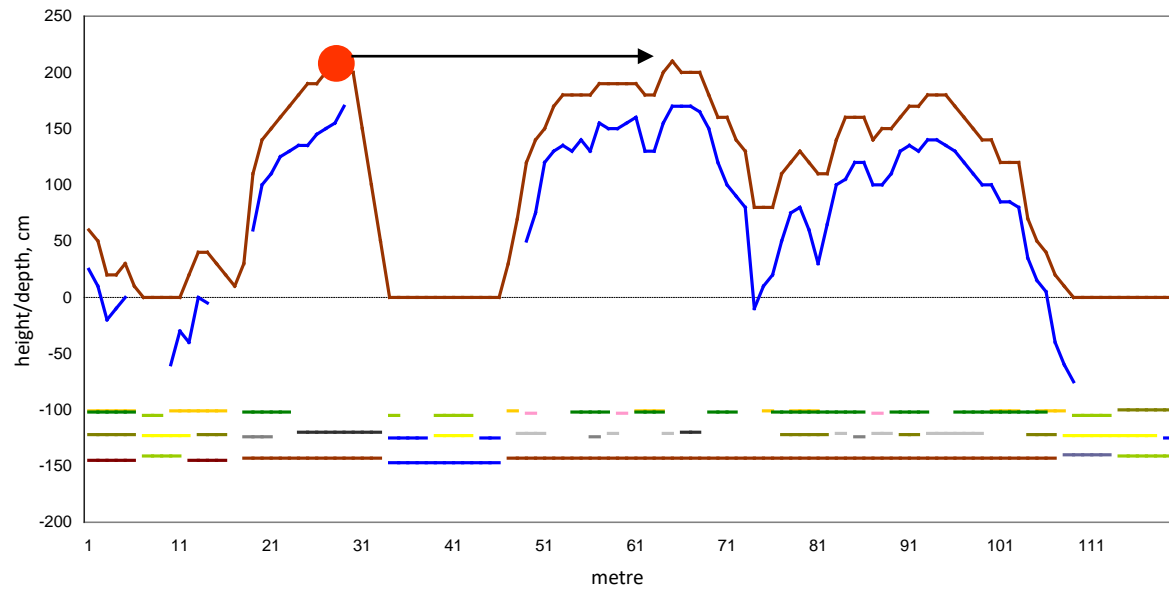


Land cover type  
 Bottom layer  
 Field layer





## Use of photo points



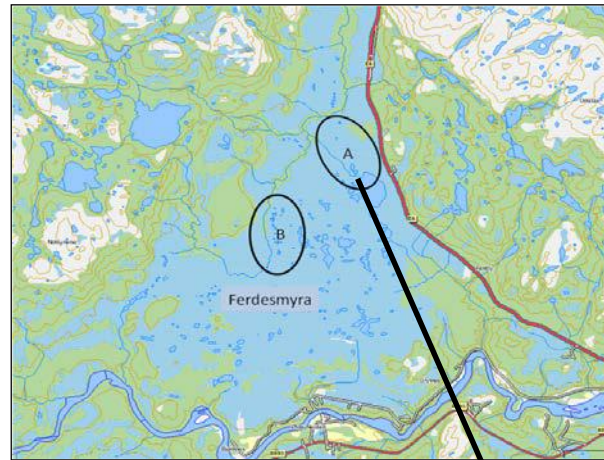
markhøyde	storr	molte	lyng	hvitlyng	ull	død torv	lav	mose
torvmose	strø	vann	lagg	myrflata	pals	palsring	dam	tele

# Results

Ferdesmyra, Eastern Finnmark

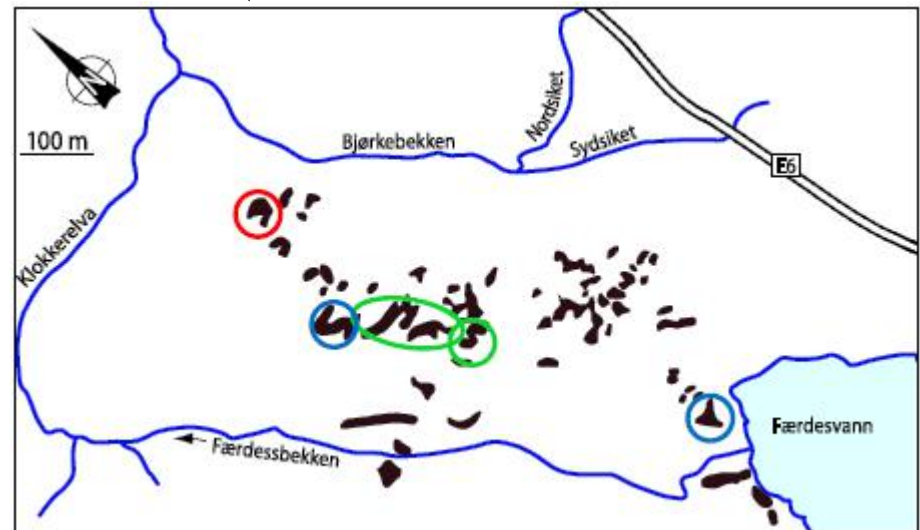


# Ferdesmyra - example

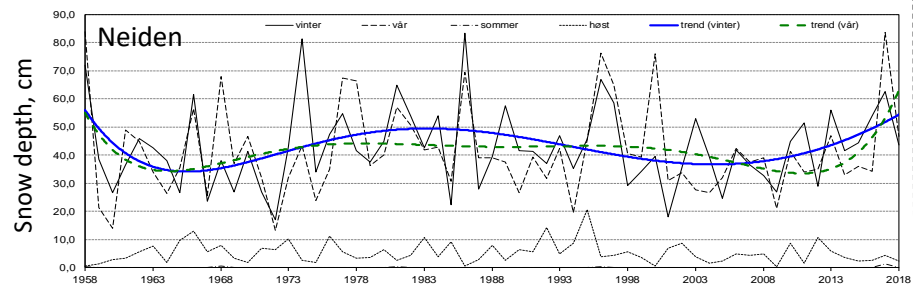
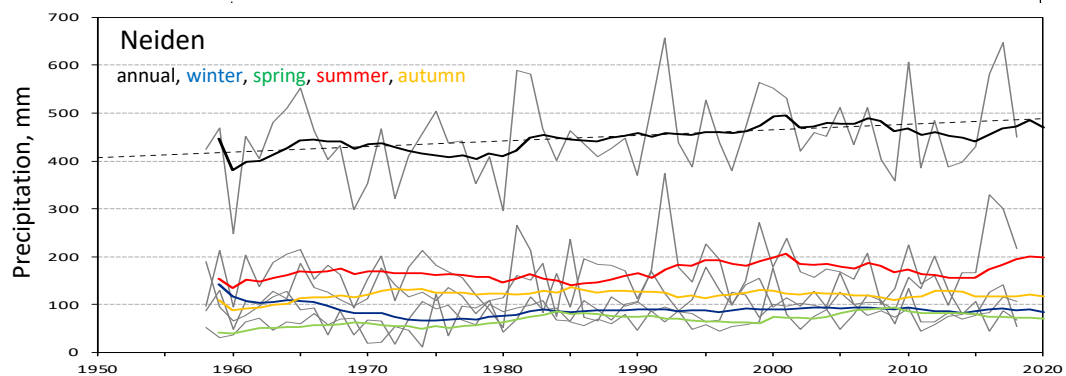
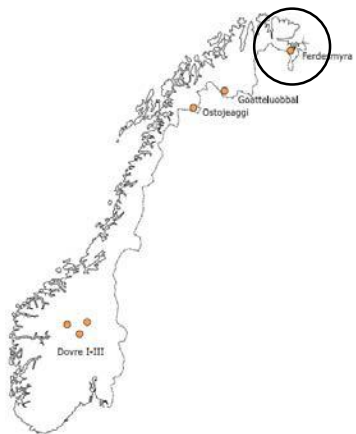
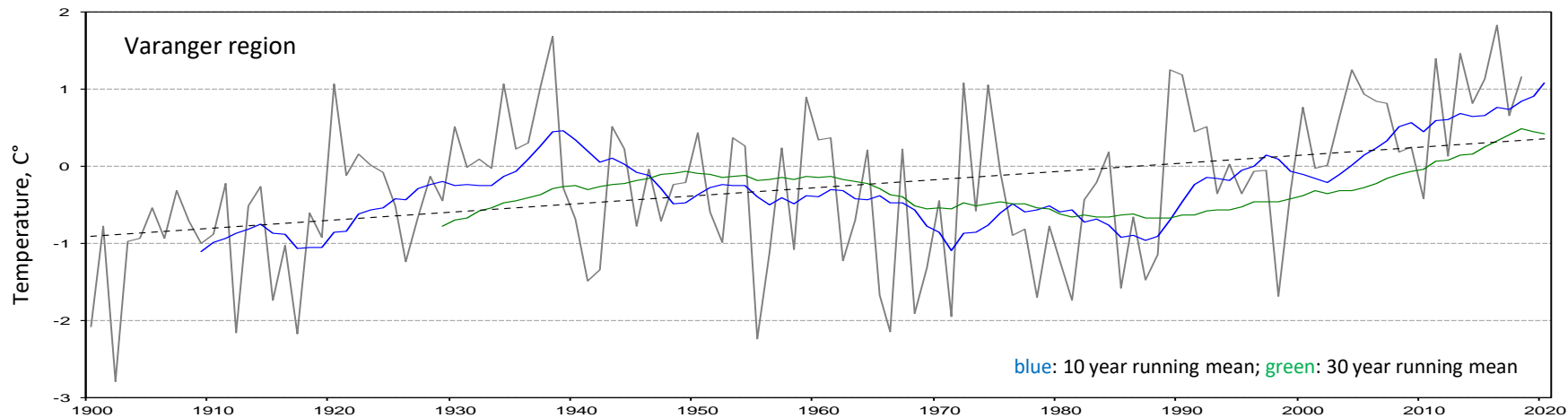


← Neiden  
Kirkenes (45 km) →

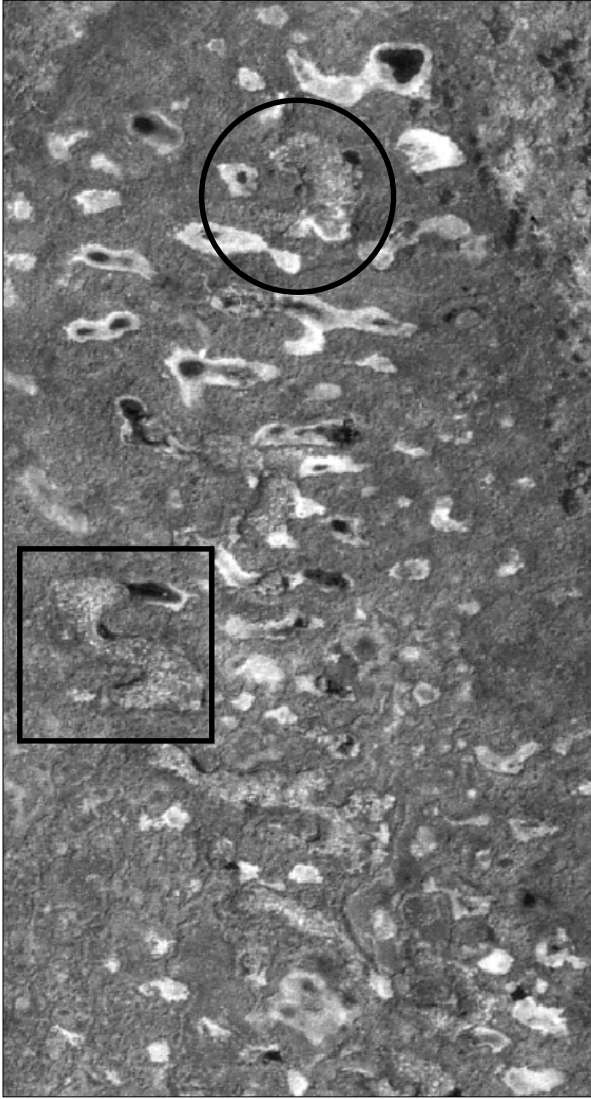
- Protection status: Nature reserve (1972)
- Latitude: 69°44'N
- Longitude: 29°17'E
- Altitude: 70 m a.s.l.
- Vegetation section: north boreal slightly continental section (Moen, 1999)
- Temperature data: Kirkenes
- Precipitation data: Neiden
- Monitoring years: 2008, 2013, 2018
- Additional year: 2004



**Black:** palsa formations in the 1970s (source: Vorren 1972 & 1979); **red:** palsa disappeared between 2004 and 2008; **green:** palsa disappeared between 2013 and 2018; **blue:** palsa remains present in 2018



Ferdesmyra, area A



1972



2008



2015





2004



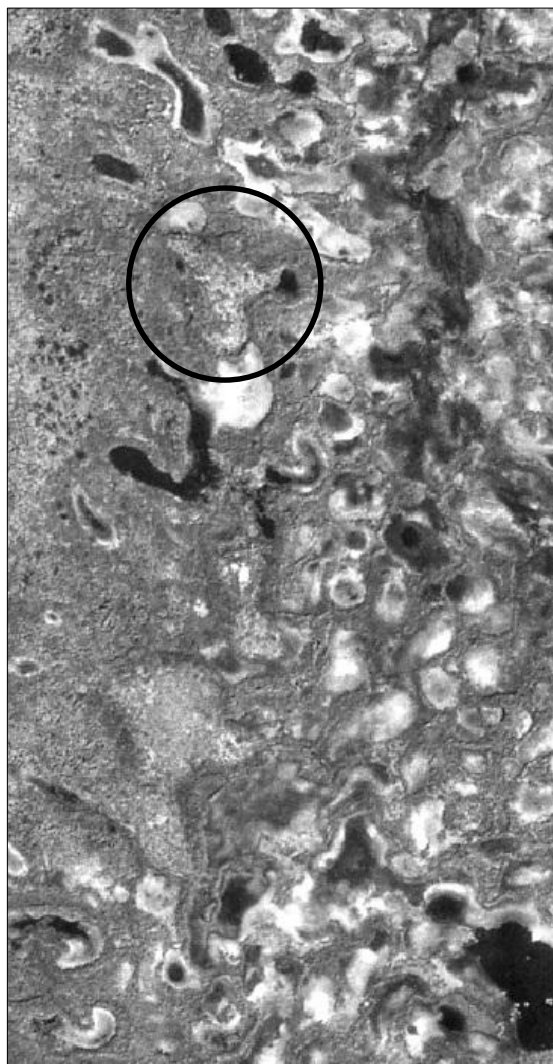
2008



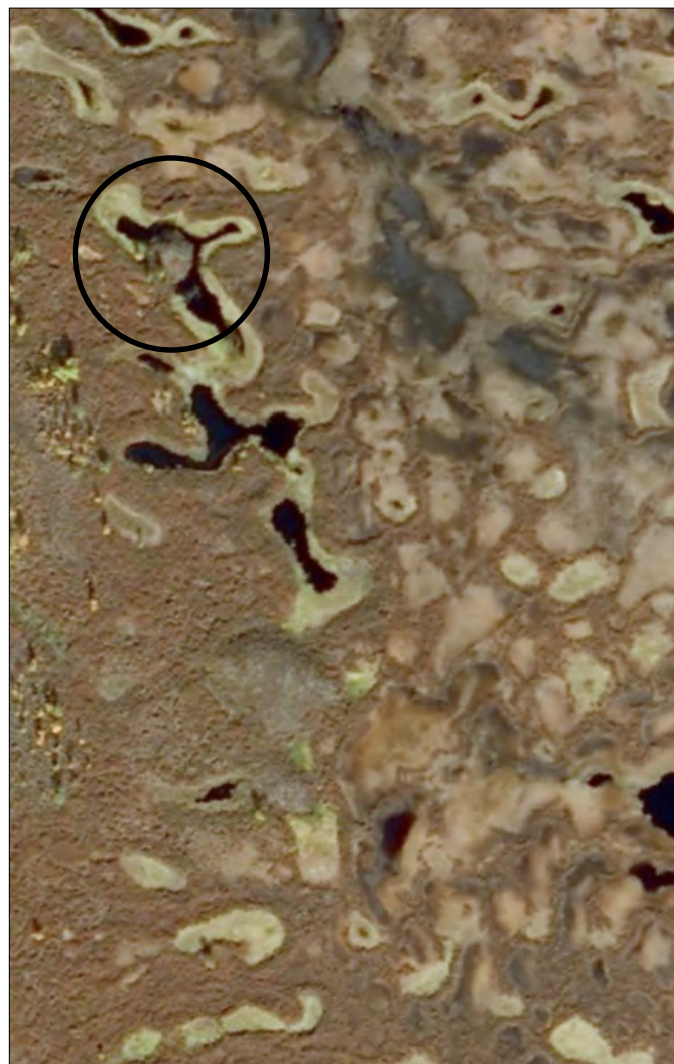
2013



2018



1972



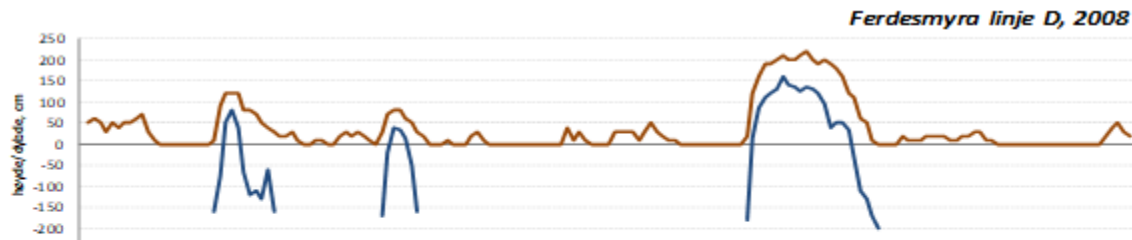
2008



2015

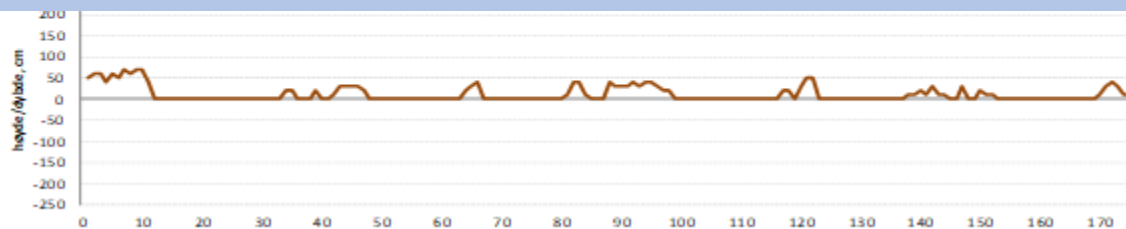






General pattern is decreasing palsa abundance, but that is not the full picture

Results after 5 years and 10 years show some variable-dependent deviations



# Ostojeaggi, Troms

495 m a.s.l.



# Haukskardmyrin

Dovre

1050 m a.s.l.



2005



2010

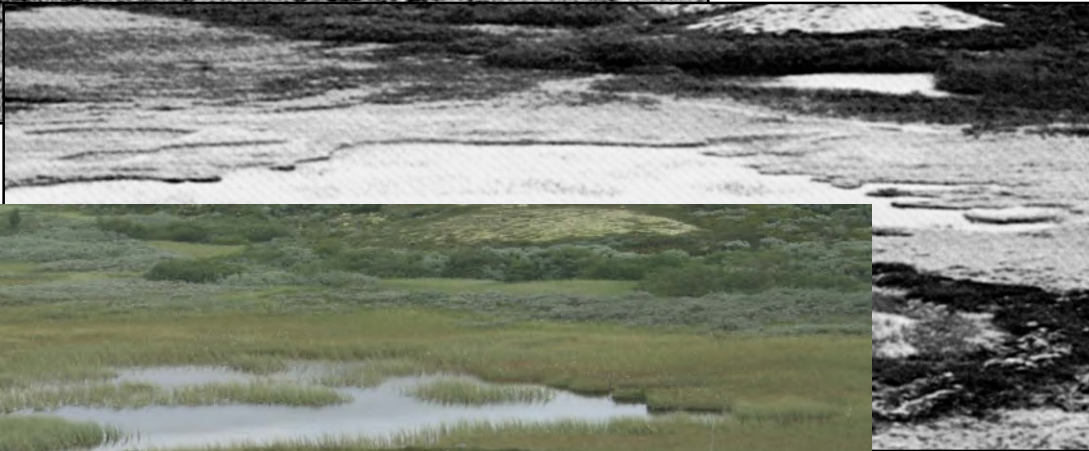
# Haugtjørnin

## Dovre

1120 m a.s.l.



1974



2010



2005

# Into the future

A person wearing a blue jacket and a red hat stands on a rocky, moss-covered hillside. A light-colored dog is standing next to them. In the background, there is a large pond and a cloudy sky. The foreground is filled with green grass and low-lying vegetation.

Long-term funding (?)

Annual applications for fieldwork and reporting costs

No funding for scientific peer reviewed publications

Additional fund raising for summary reports

Summary report for first 10 years

Pond colonisation rate and implications for biodiversity

Vegetation succession – functional group level vs. species level

*Thanks!*