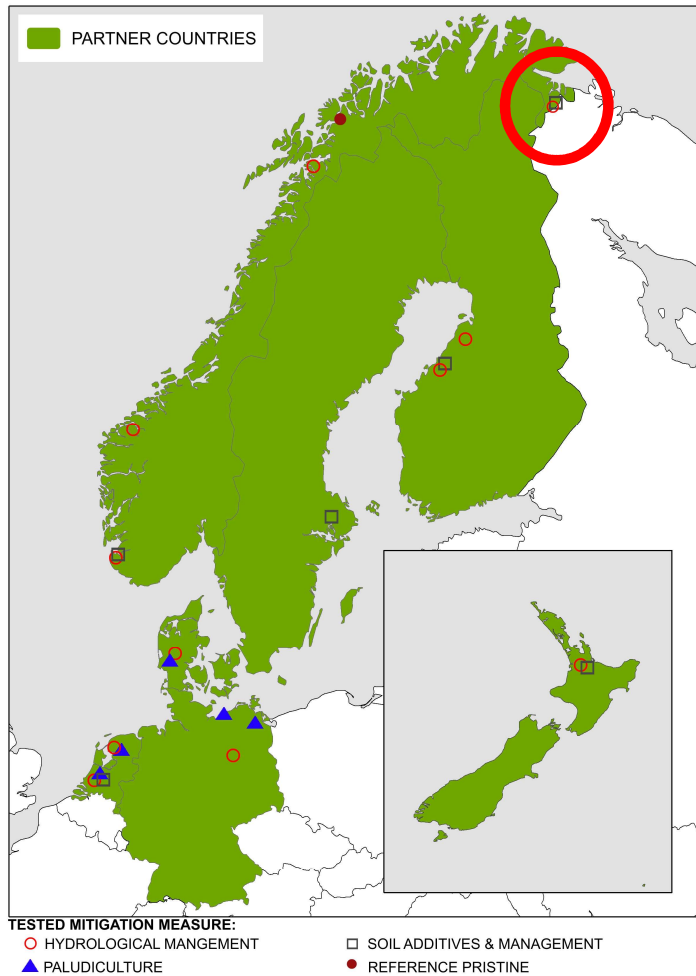




# PEATWISE

*Case study, Norway*





# Pasvikdalen, Norway

**Site type:**  
Grassland on organic soil

**Mitigation measure tested:**  
WTL elevation and management intensity



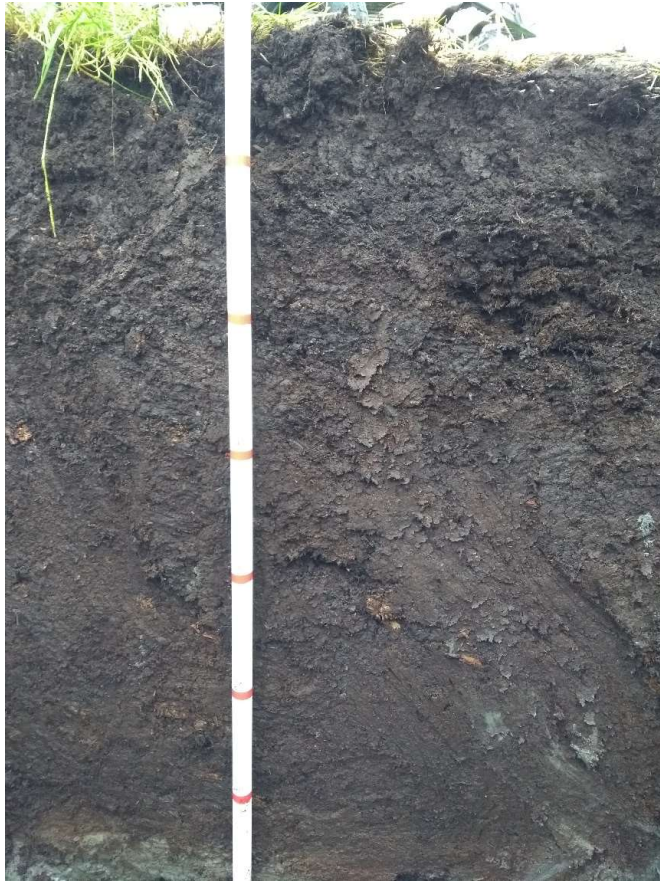
# Site description

**Contact person:** Hanna Silvennoinen ([Hanna.Silvennoinen@nibio.no](mailto:Hanna.Silvennoinen@nibio.no))

**Description, land use history:** Cultivated grassland since 1970. Soil quality (peat and overlying clay). Mixture of timothy and meadow fescue. 3km from NIBIO station.

Climate		Soil quality and agronomy		Hydrology and drainage	
Location	69°28'33.1"N 29°59'25.1"E	Peat depth	1.8-1.05m	Drainage started	1970
Mean annual precipitation (mm y <sup>-1</sup> )	480	Humification (von post)	3-6	Drain depth past (cm)	-
Mean annual T (° C)	-0.5	Underlying soil	Sandy clay/glay	Drain depth present (cm)	80
Mean length of growing season	3-4 months	Crops	Grassland: Phleum pretense Festuca pratensis	Drain spacing (m)	Variable, 4m most common
		Rotation	No rotation	WTL depth (m)	-0.15 to -0.8
		Fertilization Kg N ha y <sup>-1</sup>	500 (NPK 18-3-15)	Average Hydrological Conductivity (cm/day)	@ 25cm: 40 @ 100cm: 0.9
		Harvests	1-2		

# Soil profile



Profile description:

**0-25cm** root depth, macropores, (H3-H4, von post)

**25-105/180cm** organic soil, moderate decomposed (H4-H6, von post)

**105/180cm-x** mineral soil, sandy clay, macropores caused by old roots in decomposition



Clay layer: contains big stones.

# Hydrology profile

**Legend**

- Tile drains
- Sampling Unit



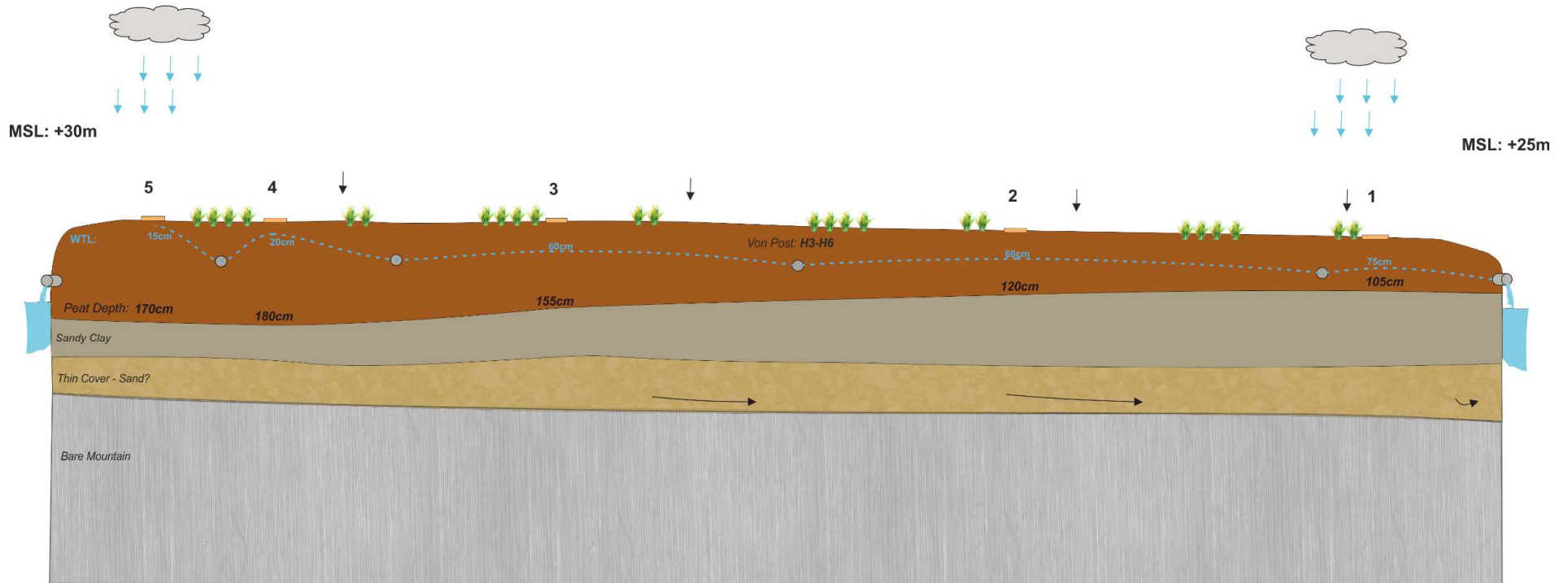
## Local Hydrogeology (Skrøytnes, conceptual)



More Agriculture/  
Watershed drainage



Pristine peatland



# Agriculture and land use



**Objective:** To study the impact of WTL and management (fertilization and ploughing) on GHG emissions and agronomic production on temperate grassland in Southern Norway

## Land use information:

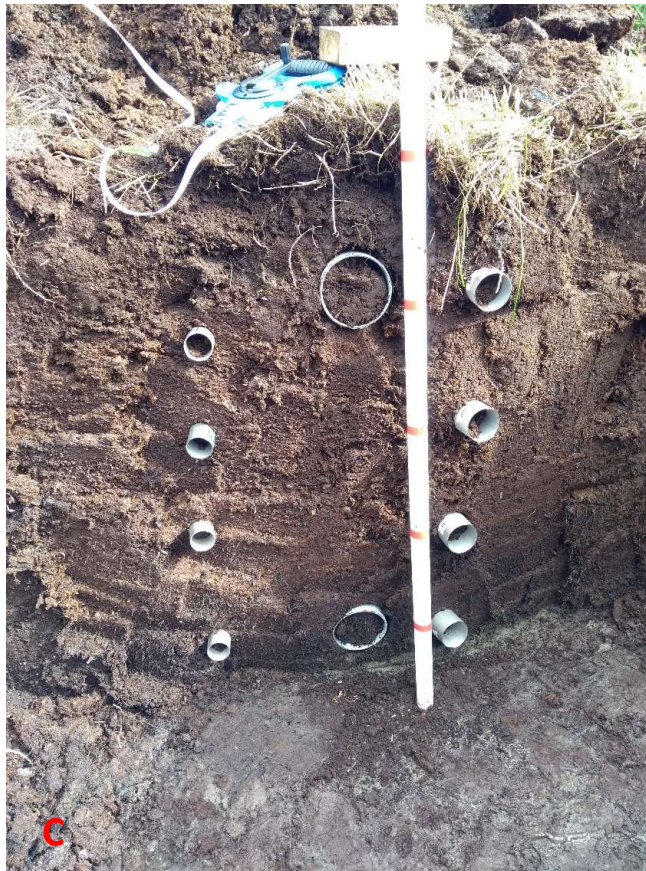
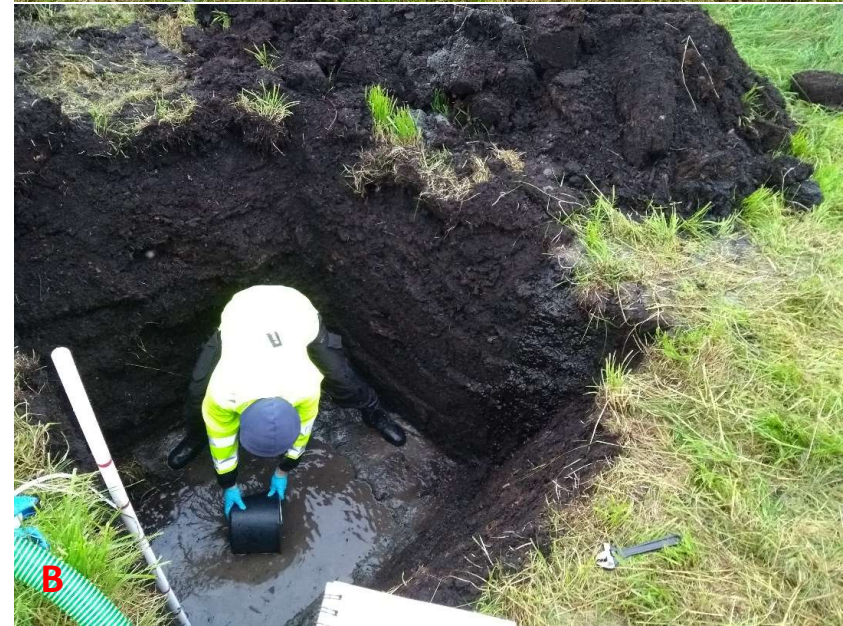
Grassland: *Phleum pretense* *Festuca pratensis*

No rotation

Mean length of growing season: 3-4 months



- Picture A: Experimental set-up
- Picture B: hole wet site, plot 3
- Picture C: hydrological conductivity samples dry site
- Picture D: Infiltrometer





# Jæren, Norway

**Site type:**  
Grassland on organic soil

**Mitigation measure tested:**  
WTL elevation and management intensity





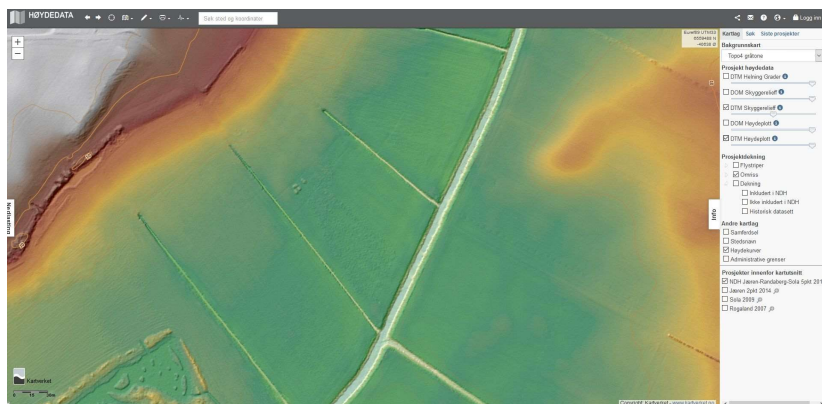
# Site description

**Contact person:** Hanna Silvennoinen (Hanna.Silvennoinen@nibio.no)

**Description, land use history:** Peat has been cultivated (grassland) since 19<sup>th</sup> century, hydraulic conductivity seems very low. 8km from NIBIO station.

Climate		Soil quality and agronomy		Hydrology and drainage	
<b>Location</b>	58°49'54.6"N 5°36'42.2"E	<b>Peat depth</b>	130-220cm	<b>Drainage started</b>	1800
<b>Mean annual precipitation (mm y-1)</b>	1500	<b>Humification (von post)</b>	7-10	<b>Drain depth past (cm)</b>	70 (old); 130 (newer)
<b>Mean annual T (° C)</b>	7.4	<b>Underlying soil</b>	Sandy clay	<b>Drain depth present (cm)</b>	60
<b>Mean length of growing season</b>	6-7 months	<b>Crops</b>	Grassland (Phleum pretense)	<b>Drain spacing (m)</b>	11-14
		<b>Rotation</b>	No rotation	<b>WTL depth (m)</b>	-0.20 to -1.30
		<b>Harvests</b>	2-3	<b>Average Hydrological Conductivity (cm/day)</b>	@ 25cm: 10 @ 100cm: 0.09

# Site location and information



DEM



Profile description:

- 0-50cm** root depth, macropores, earthworms, H6-H7 von post
- 50-170/220cm** organic soil, highly decomposed (H7-H10, von post)
- 170/220cm** mineral soil, sandy clay

## Organic material

### Annen mineraljord (other mineral soils)

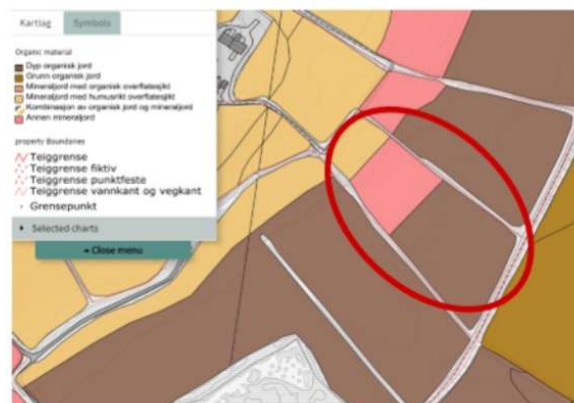
Mineral soil with less than 6% organic matter content in the surface layer

### Mineraljord med humusrikt overflatesjikt (Mineral soil with humus-rich surface layers)

Organic matter content is between 6% and 20%

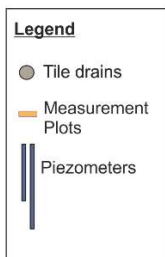
### Dyp organisk jord (Deep organic soil)

Organic matter content is over 20% through to 1 meter depth



Soil type map

# Hydrology profile

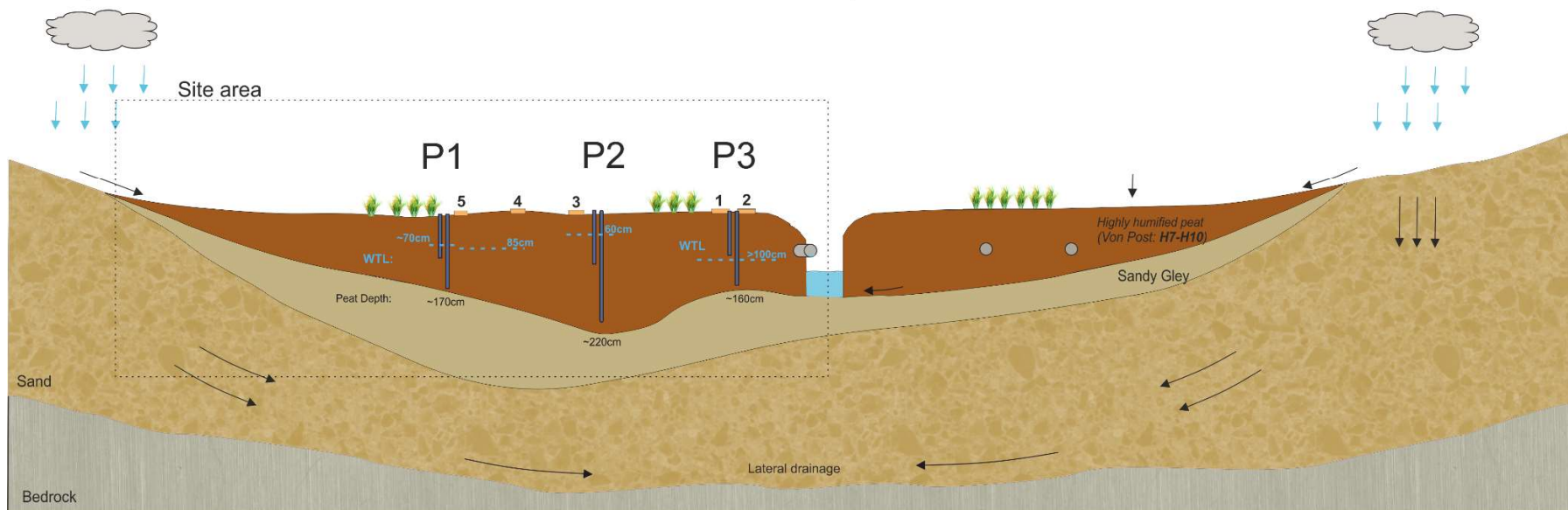


## Local Hydrogeology (Tjelta, September 2018)



Interpretation of Piezometer data from August 2018

		P1 (wet)	P2 (wet)	P3 (dry)
<b>Shallow Piezo</b>	Level (cm)	69	70	no water
	Screen depth (cm)	~65-80	~80-95	~85-95
<b>Deep Piezo</b>	Level (cm)	65	89	90
	Screen depth (cm)	~150-165	~190-205	~145-160
Assumed Head flow:		↑	↓	↑



# Agriculture and land use



## Land use information:

Grassland (*Phleum pretense*)

No rotation

Mean length of growing season: 6-7 months



**Objective:** To study the impact of WTL and management (fertilization and ploughing) on GHG emissions and agronomic production on temperate grassland in Southern Norway

- Picture A: Experimental set-up
- Picture B: plot 2
- Picture C: hydrological conductivity samples

