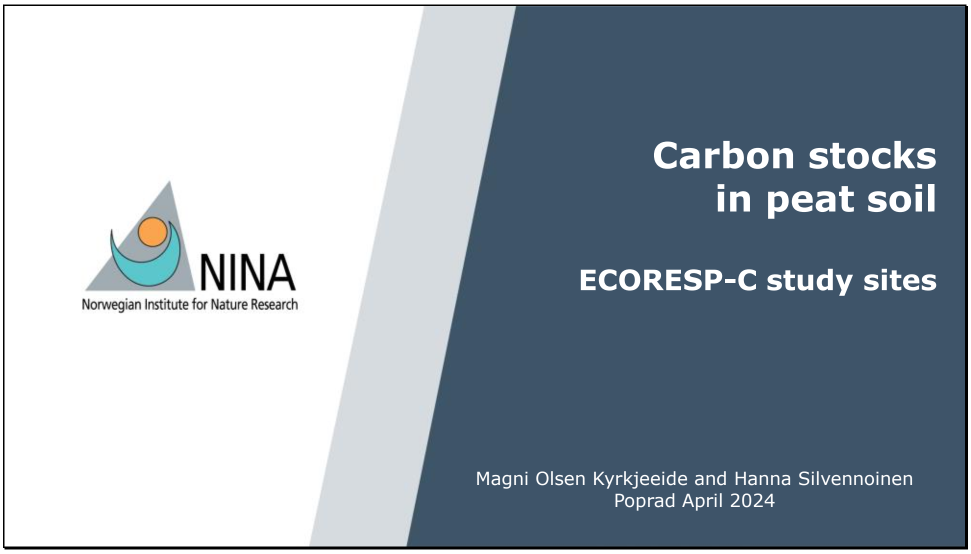
Slide 1



NINA
Norwegian Institute for Nature Research
Carbon stocks
in peat soil
ECORESP-C study sites
Magni Olsen Kyrkjeeide and Hanna Silvennoinen
Poprad April 2024

Slide 2

Bog at Klin, drained at edges and dominated by hummock species and bushes.

Slide 3

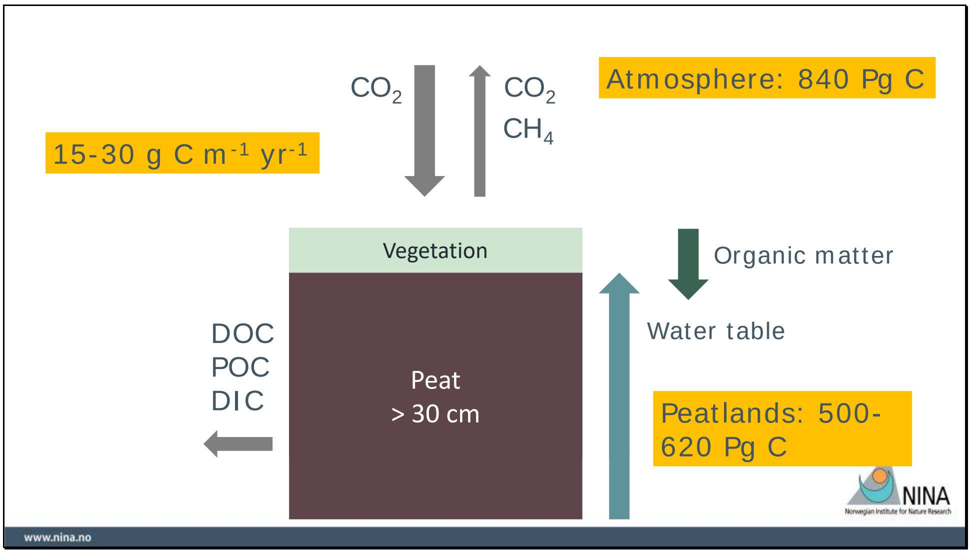
Wooded bog with Pinus. Carbon stocks below ground, but also in aboveground biomasse.

Slide 4

Slide 5

Large variation in peatland sites from bogs to salt marshes and former peat excavation sites, now rewetted by beavers.

Slide 6

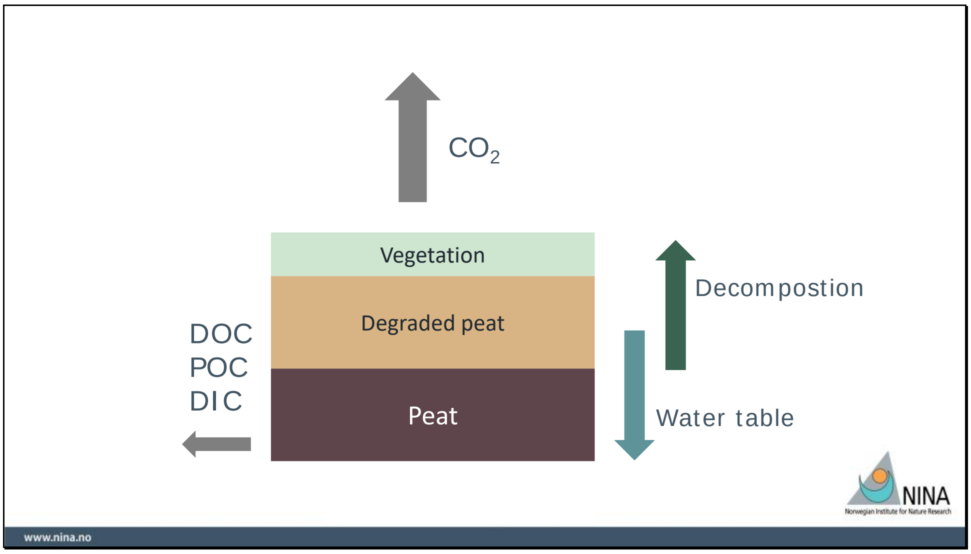


Carbon stocks below ground is huge in peatlands. The total amount is correlated to the depth of the peat. The peat is formed under water saturated conditions, with low decomposition due to the lack of oxygen in the system. Dead vegetation decompose very slowly and a lot of it goes into the soillayer below as peat. As long as the water table stays high, meaning no draining, the ecosystem will keep functioning as a carbon storage and likely also sequester carbon from the atmosphere.

Slide 7

However, a lot of peatlands are drained and the hydrology is disturbed with a lowering of the water table.

Slide 8

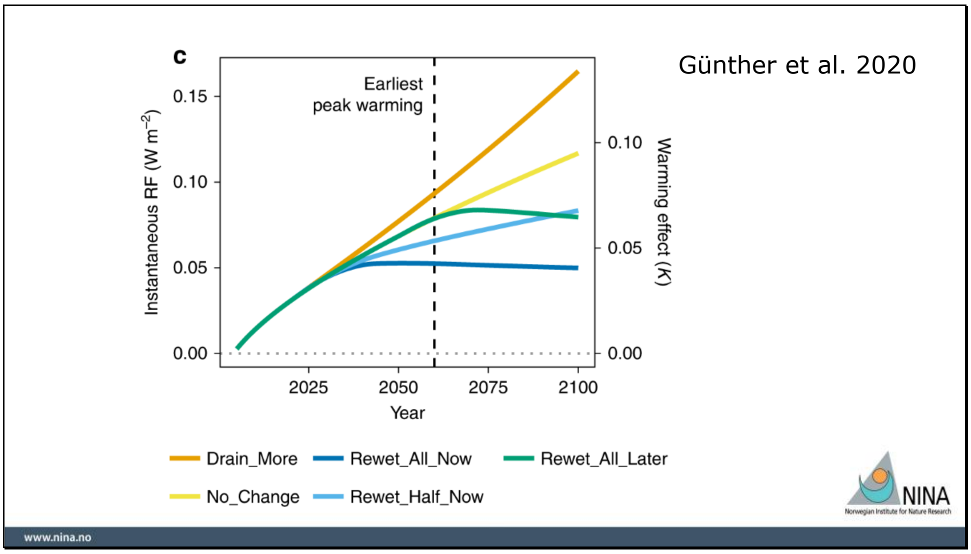


This drains the top layer and alow oxygen to enter the system, thus decomposers can decompose the dead plants – the peat, and the CO2 is released.

Slide 9

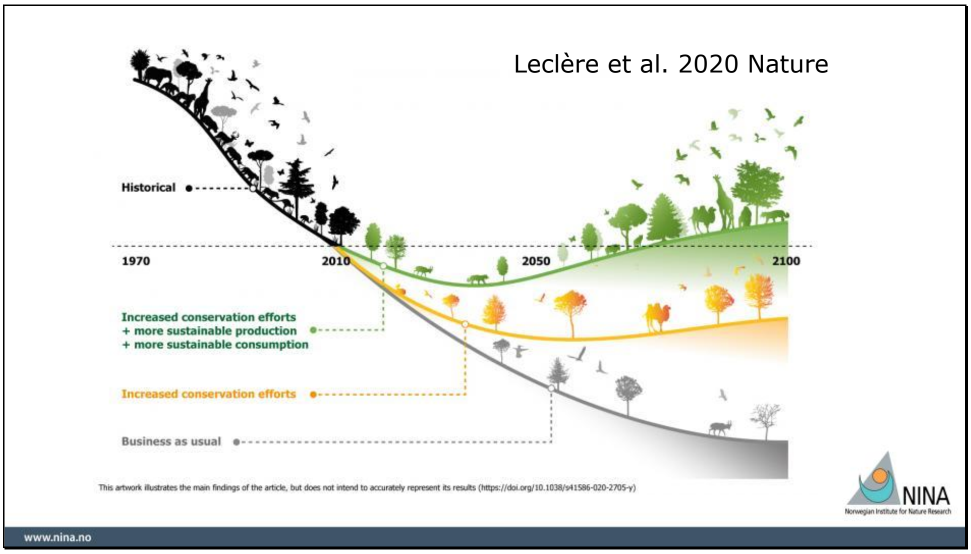
Rewetting peatlands are a main action to prevent carbon loss from peat

Slide 10



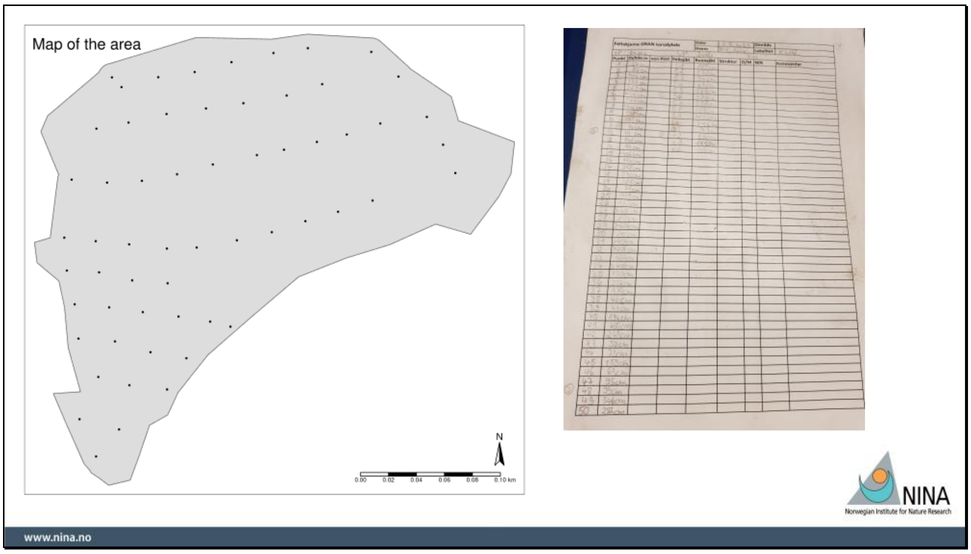
Different scenarios of rewetting – the warming effect of the different scenarios. Rewett all now will lead to a stagnation of emissions, while buisness as usual gives a warming effect.

Slide 11



In addition, rewetting will provide habiats for peatland species, and prevent biodiversity loss.

Slide 12

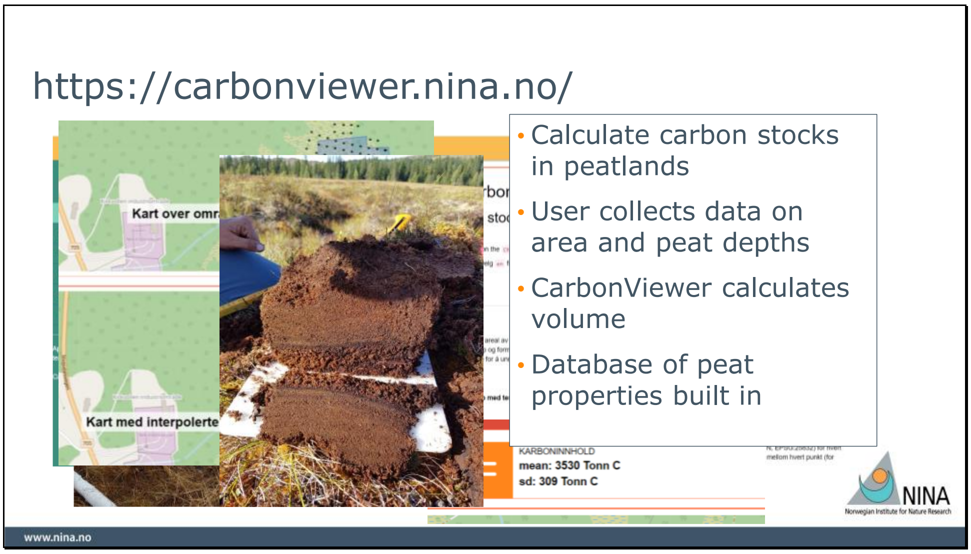


Multiple peat depth measurements are needed from a given peatland area to estimate a reliable peat volume. Thus, we measured peat depth with regular intervals at each site, ranging from 10 meters between measurements at small sites and 30 meters at large sites. Depths were taken using a peat probe (Hisco). The peat probe was inserted into the peat soil till it hit solid ground, then the total length of the peat probe in ground was recorded together with the coordinates of the measuring spot.

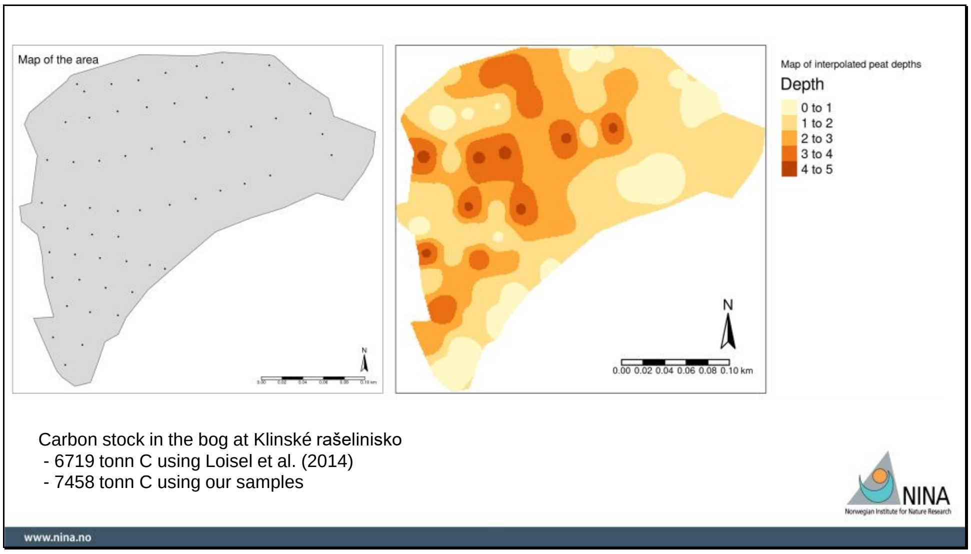
Slide 13

Furthermore, peat samples were collected at three sites to provide peat property data for carbon stock calculations. Peat samples were taken at least at three spots at each site and at several depth where possible (Table 2). The site Klinské Rašelinisko (Klin) is a large bog that is drained in the upper layer, at least down to 50 cm. Spišskoteplické slatiny had shallow peat, and the first sample were taken from highly degraded peat.

Slide 14

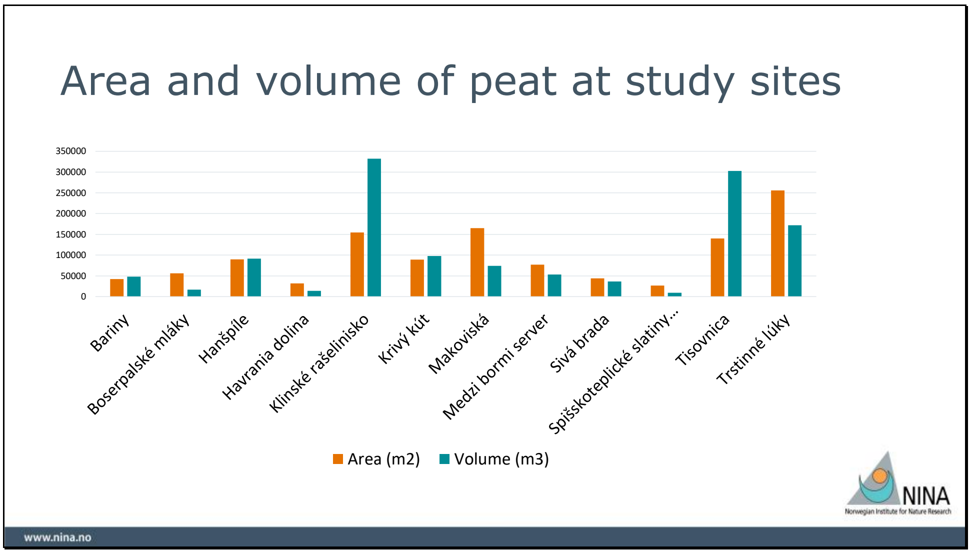

https://carbonviewer.nina.no/
Calculate carbon stocks in peatlands
User collects data on area and peat depths
CarbonViewer calculates volume
Database of peat properties built in
KARBONINNHOLD
mean: 3530 Tonn C
sd: 309 Tonn C
NINA
Norwegian Institute for Nature Research
www.nina.no

Slide 15



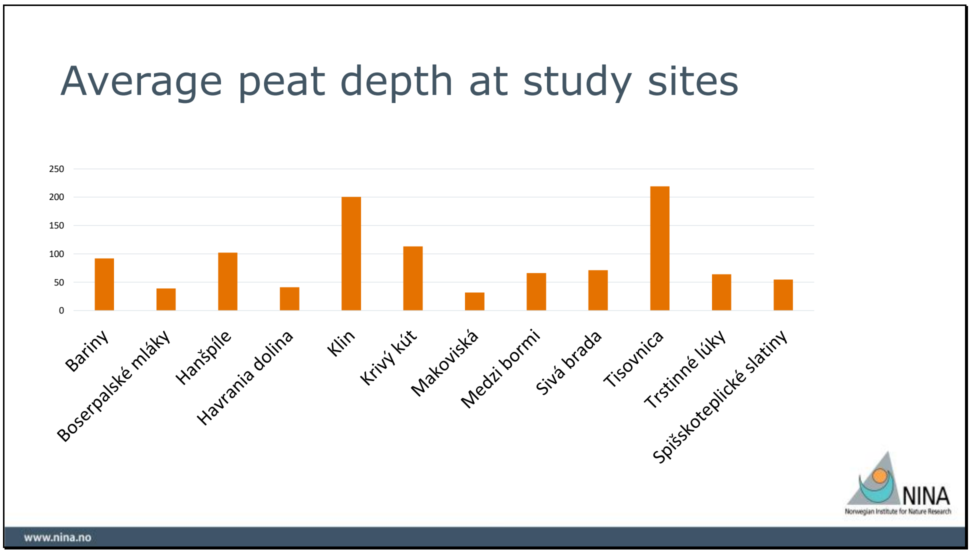
Calculating the carbon stock for the bog at Klinské rašelinisko gives a carbon stock of 6719 tonn C using Loisel et al. (2014), but 7458 tonn C using the numbers in Table 5.

Slide 16



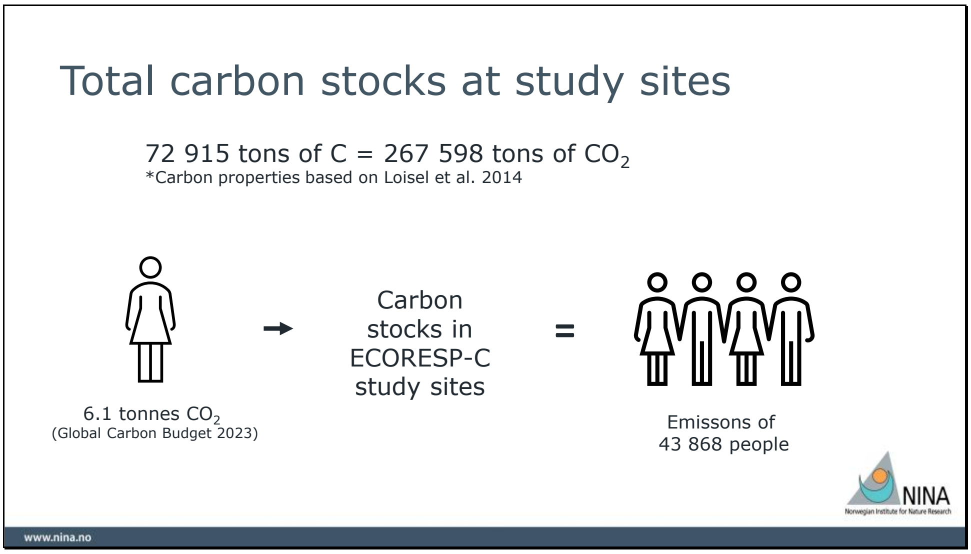
Highest volume at the bog sites.

Slide 17



Deepest peat layers at the bog sites.

Slide 18


Total carbon stocks at study sites
72 915 tons of C = 267 598 tons of CO_2
*Carbon properties based on Loisel et al. 2014
6.1 tonnes CO_2
(Global Carbon Budget 2023)
Carbon stocks in ECORESP-C study sites
=
Emissons of 43 868 people
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