

SWEDISH AGRICULTURAL SOIL MONITORING



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EJP SOIL
European Joint Programme

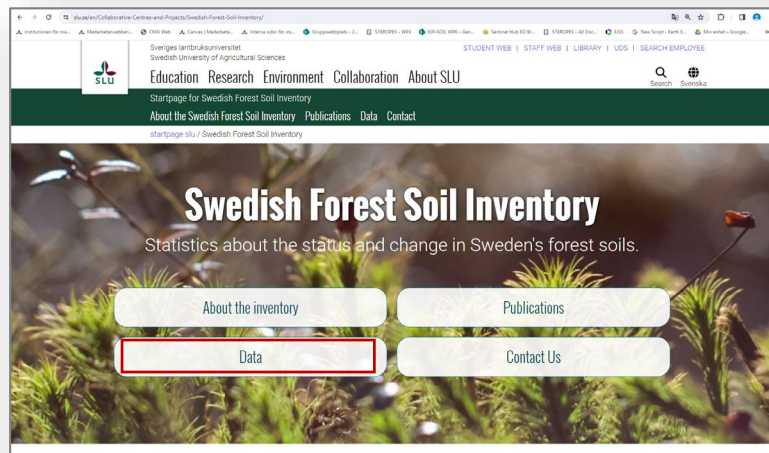
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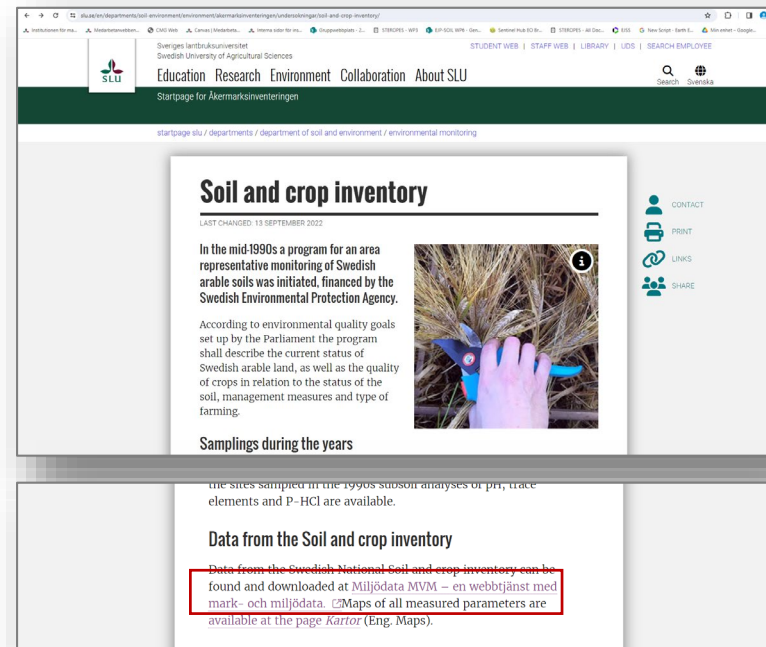
National scale soil monitoring in Sweden

Two national scale soil monitoring systems:

1. Swedish Forest Soil Inventory (natural, forest, semi natural grassland, mires and sub-alpine areas)
2. Soil and crop monitoring programme (agricultural soils)

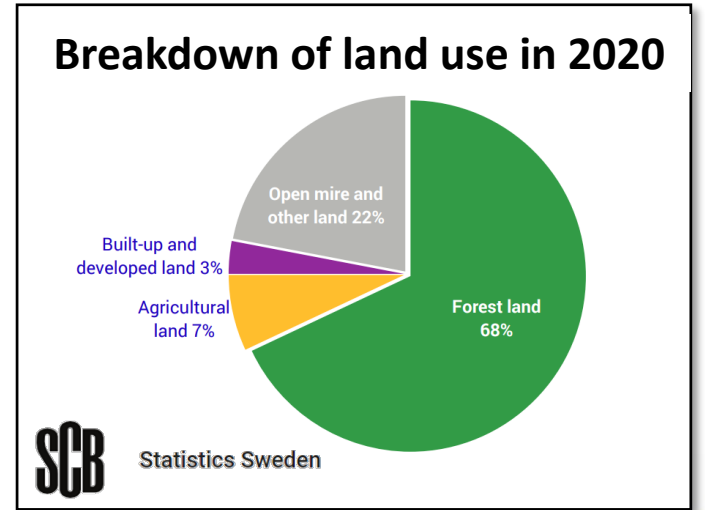
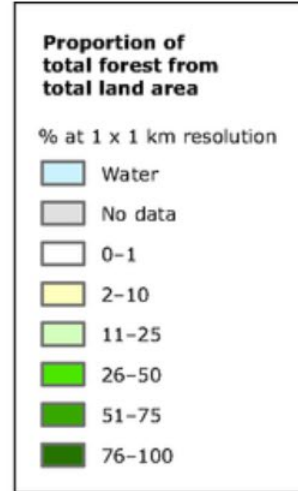
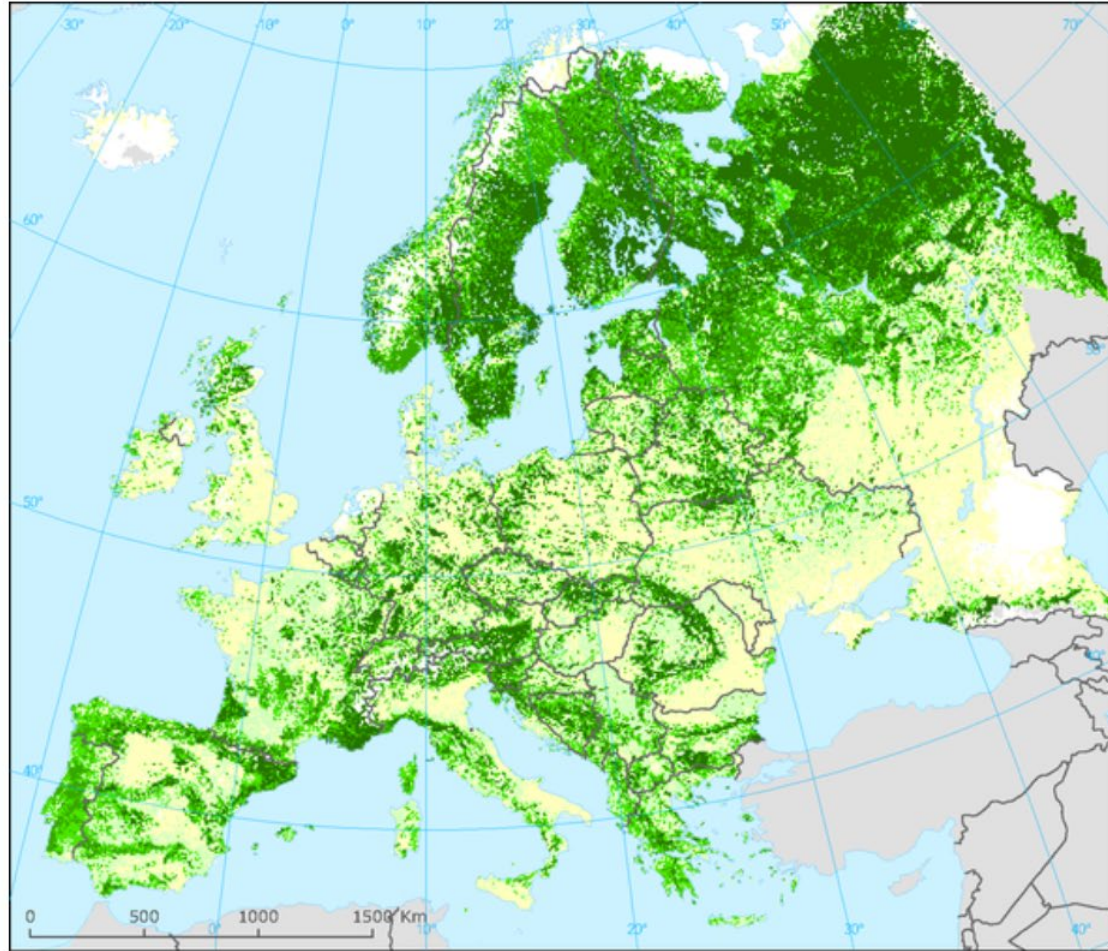


<https://www.slu.se/en/Collaborative-Centres-and-Projects/Swedish-Forest-Soil-Inventory/>



<https://www.slu.se/en/departments/soil-environment/environment/akermarksinventeringen/undersokningar/soil-and-crop-inventory/>

National scale soil monitoring in Sweden



Forest map of Europe



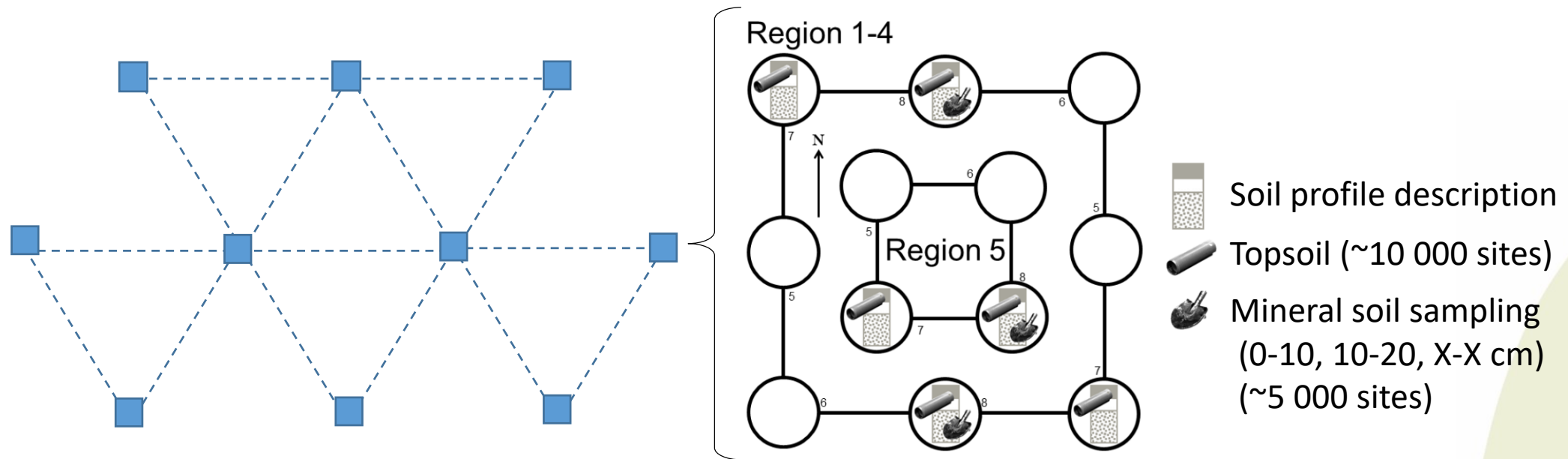
<https://www.eea.europa.eu/data-and-maps/figures/forest-map-of-europe-1>

Swedish Forest Soil Inventory

In close collaboration with the Swedish National Forest Inventory (1923).

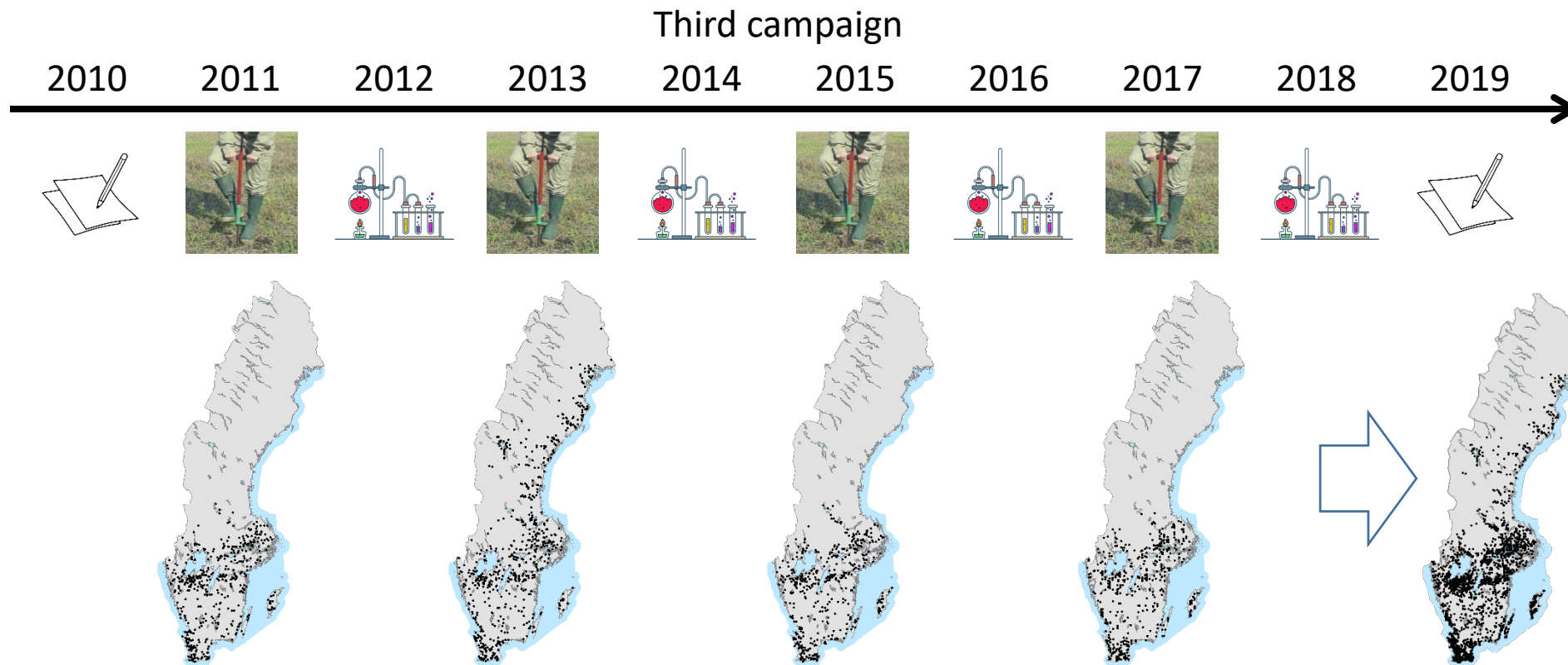
Permanent sites started from 1983 and these are used in the soil monitoring.

The sites are revisited for soil sampling every 10th year and 1/10 of the sites are sampled each year.



Soil and crop monitoring programme

First campaign in the mid 1990s (3 000 samples). However, without GPS locations.
 Form 2001, ~2 000 samples in a regular grid revisited every 10th year.



Soil and crop monitoring programme



Soil samples

0-20 cm: soil texture (ones), organic carbon, total nitrogen

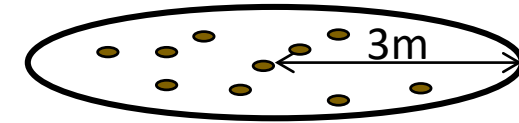
pH, carbonates, CEC

plant available nutrients

micro nutrients and trace elements

40-60 cm (ones): soil texture, trace elements

visible and near infrared reflectance spectroscopy (vis-NIR), DNA



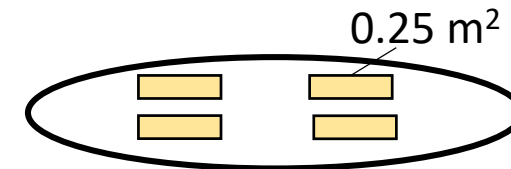
All samples are air dried and sieved < 2mm



Crop samples

Winter wheat, Barely or Oats

micro nutrients and trace elements



Soil and crop samples are archived.



Examples of what we can see

SOIL

Small but significant increase in SOC

- Increased proportion of ley a possible explanation
- Poeplau et al, 2015; Henryson et al., 2022

Available phosphorus seem to decrease

The increase in lead, cadmium and zinc, has stopped and stabilised

Micro nutrients: No sign of depletion due to yields

- Hamner et al 2012, Kirchmann et al. 2013



CROP

Decrease in cadmium in barley and oats, however not in wheat.