Soil Carbon Monitoring in Norwegian Forests

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Overarching aims

- Assessing National scale C stock and changes
- Evaluating of the Yasso model
How?

Sampling Scheme
- 300 NFI plot year\(^{-1}\)
- 10 year cycle

Target horizons
- Organic horizon
- Mineral horizon: 0-5, 5-15, 15-30 cm

Assays
- [Essential] C, N, pH
- [Desirable] texture, microbial biomass, metagenomics, MAOM, POM etc. etc.
Where are we now?
Optimising and developing protocols

Current design
- Core sampling: 12-20 cores plot$^{-1}$
- Profile sampling with a pit
Plan for this year (and onwards)

- **[Mar-Jun]** Test and Finalise protocols, training on soil classification
- **[July-Oct]** First field campaign
- **[Sep-Apr]** Sample assays and data generation
Major Challenges

- Resource allocation: number of cores plot\(^{-1}\) vs. number of NFI plots
- Split plot
- Quality control (e.g., separating layers in the field, selection of NFI plots)
- Limitations: compromise on bulk density, time management, sampling in stony areas
- Biosample storage and transportation
- Difficulty with linking soil C data with land/forest management
How we would contribute to the global soil carbon inventory.

→ Data from high latitude/mountainous area
Thank you for your attention!
Takk! Grazie!

Forest SOC monitoring in Norway

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Only half of the sites

Locate area for the Profile pit

Dig Profile

BULK DENSITY rings

X BD rings per horizons

Horizon01

Horizon02

Horizon03X

HumusProfile

HumusProfile Bio

HUMUS layer

HUMUS layer - bulked

Humus

Humus Bio

Mineral

Mineral 0-10 cm

Mineral 10-20 cm

Mineral 20-30 cm

Mineral bulked by depth

Mineral

HUMUS layer - bulked

Humus

HUMUS layer - bulked

HUMUS layer - bulked

HUMUS layer - bulked

MINERAL

MINERAL

discard

Final NFI Plot location

Locate the 20 sampling points around the NFI plot