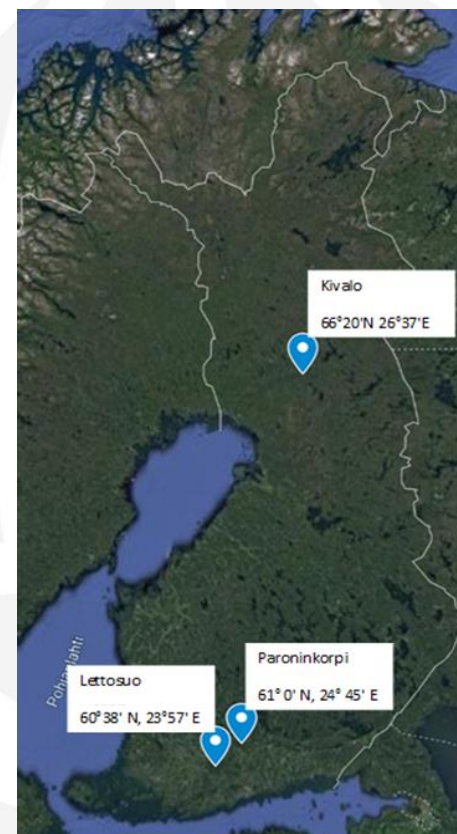


Preliminary results from 1st year measurements in demonstration sites in Finland

5th Steering group meeting

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Jani Anttila,
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LUKE*

LIFE OrgBalt, LIFE18 CCM/LV/001158



EU LIFE Programme project
“Demonstration of climate change mitigation potential
of nutrients rich organic soils in Baltic States and Finland”

Even aged management vs. continuous cover forestry

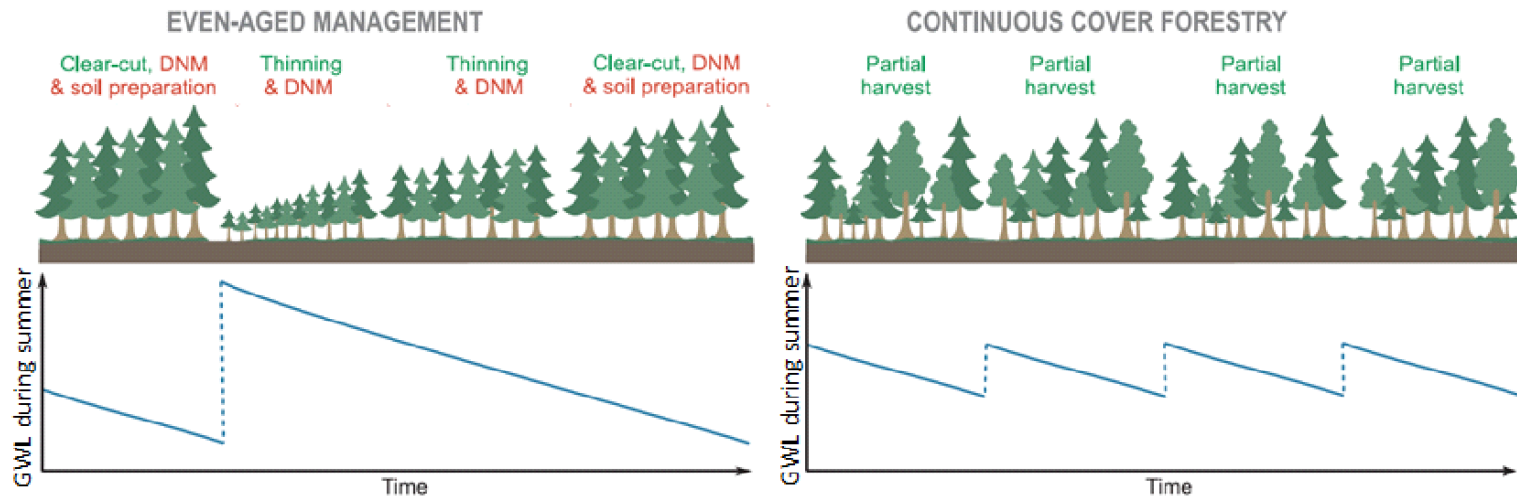
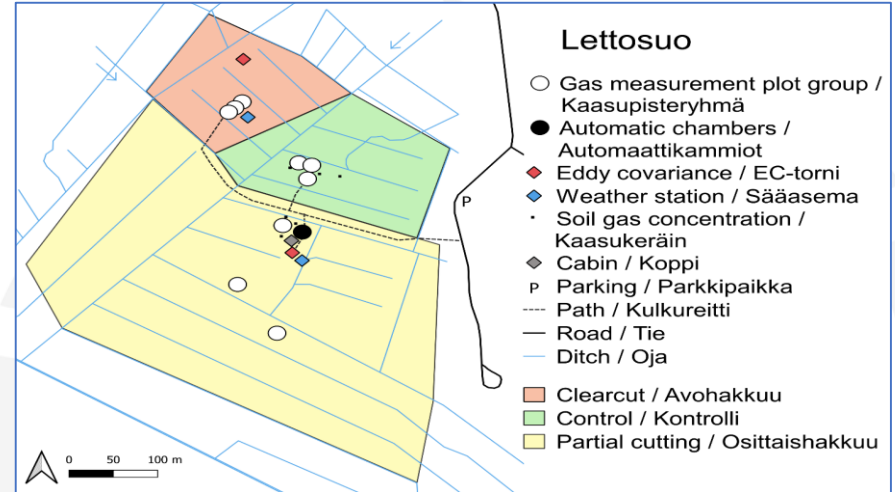


Figure 1. Schematic presentation of tree stand development and growing season WL depth in even aged management and CCF in drained peat soils in Nordic conditions, where thinning from below and DNM are standard management practices in the even-aged grown forests (modified from Nieminen et al., 2018).

Potential of CCF in mitigating climate change and reducing anthropogenic environment impacts

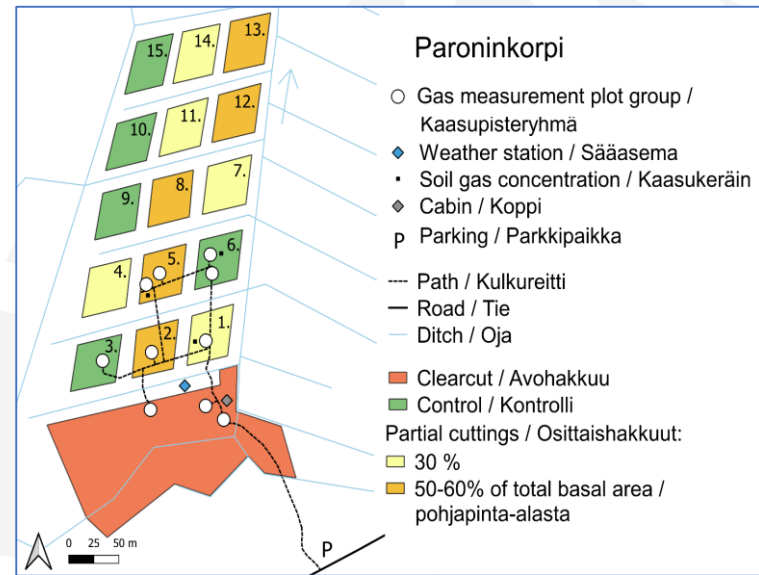
- Lower impact to environment conditions in forest stand
- Controlled rise in soil water-table level due to impact of remaining tree stand evapotranspiration;
- Reduced/no need for ditch network maintenance;
- Reduced soil CO₂ emissions from peat due to reduced change in soil water-table after harvesting;

Lettosuo (FIC302)



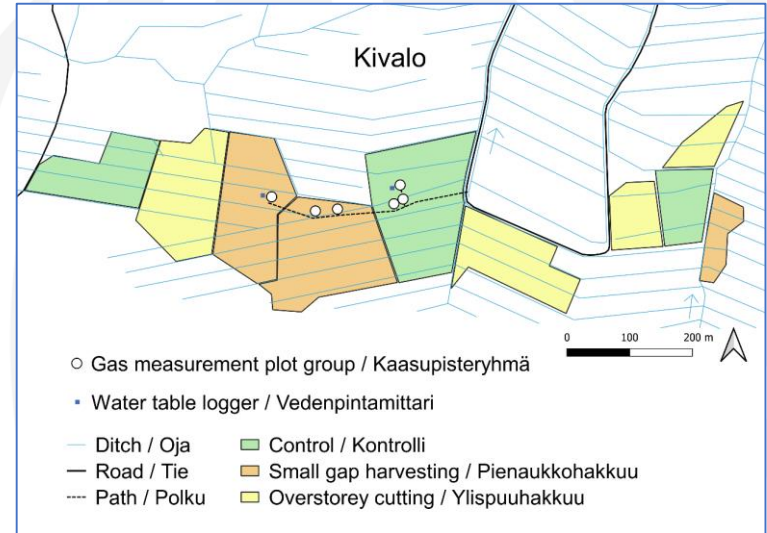
Shifting to CCF by **overstorey harvesting and release of spruce-birch understorey** in originally Scots pine dominated forest. Conventional clearcut + ditch mounding + planting of spruce seedlings, as well as uncut forest, are used as control treatments.

Paroninkorpi (FIC301)



CCF in spruce stands using **selective felling without full ditch network maintenance**. Conventional clear cut and uncut plots are used as comparison.

Kivalo (FIC303)



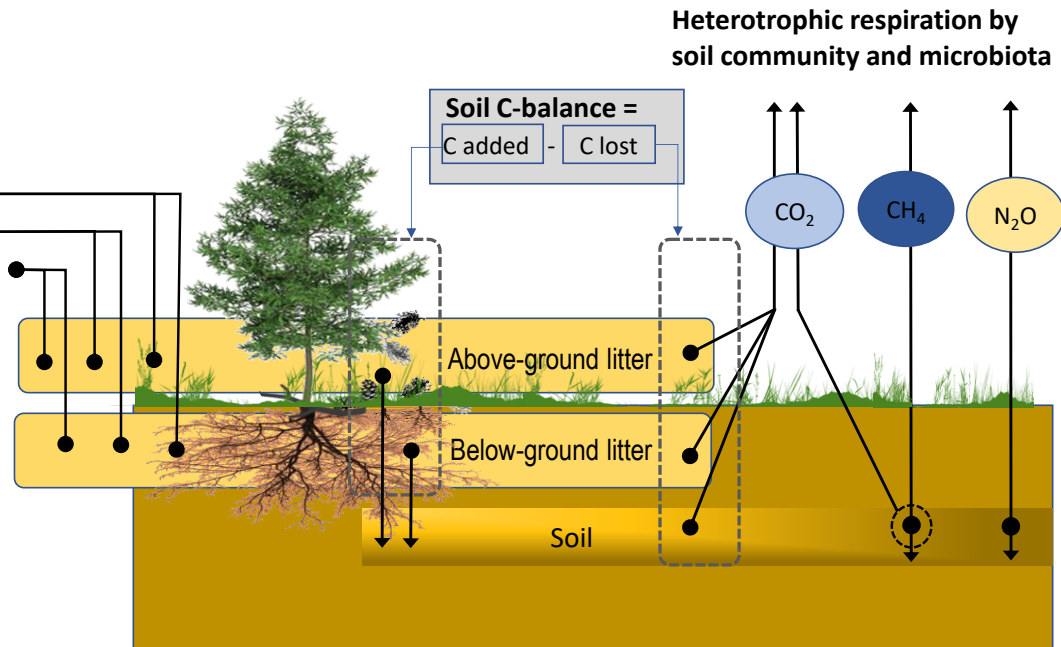
CCF by using **small gap harvesting** and **natural regeneration** as a forest regeneration method in mixed stands. Spruce shelter tree stand with advanced natural regeneration is used as comparison.

Soil C-balance data in Life OrgBalt

Mass based C in vegetation

Vegetation

- Composition
- Biomass
 - Litter production rate
 - Litter decomposition rate



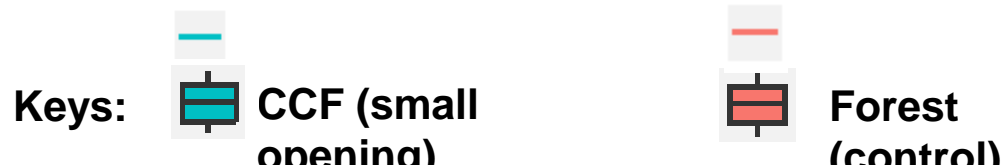
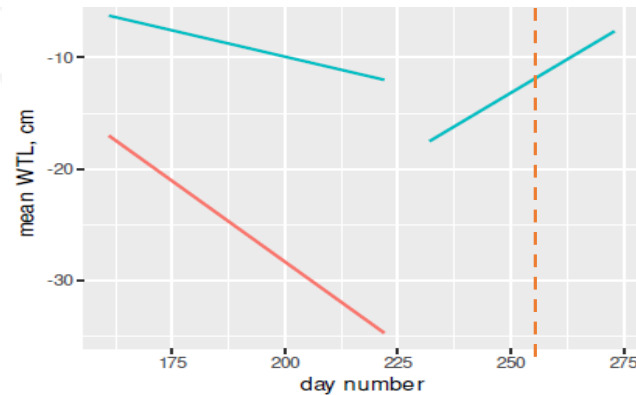
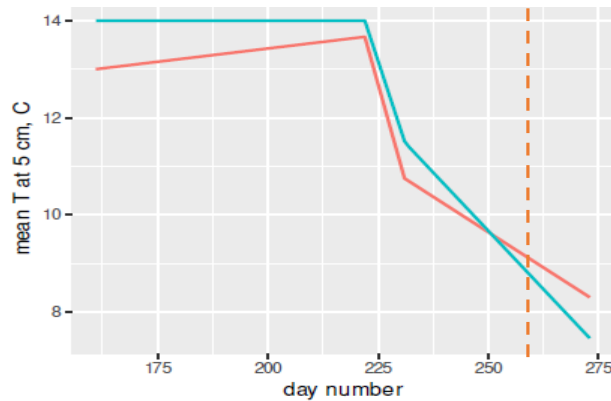
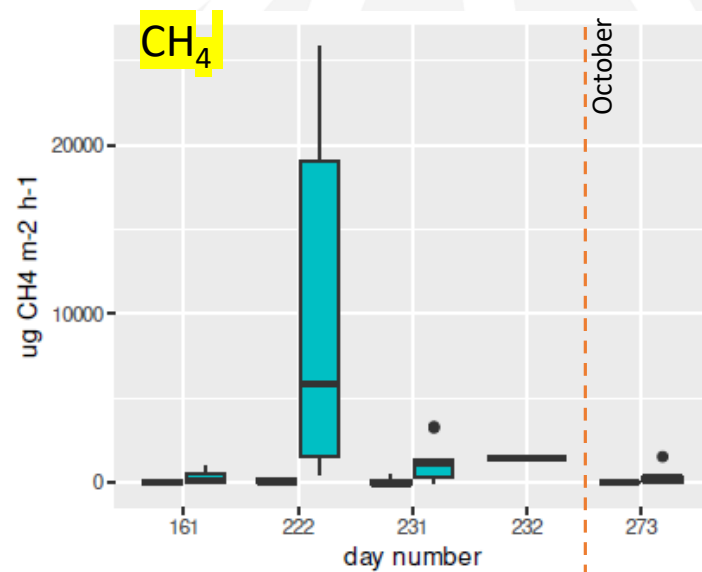
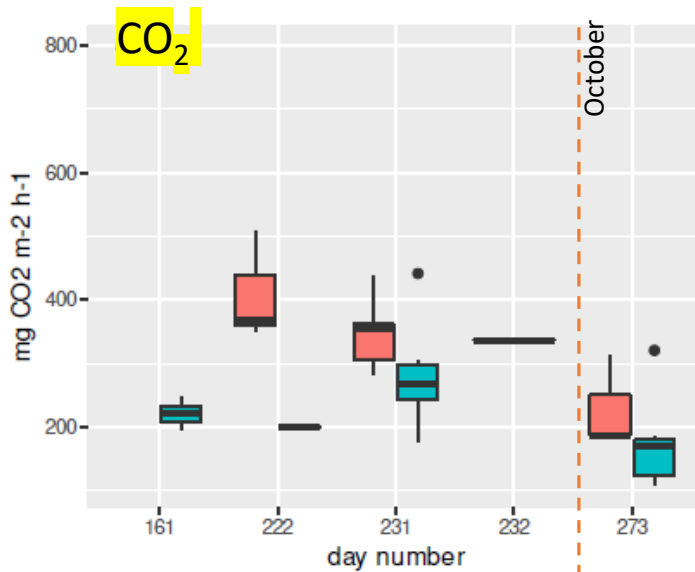
Mass based data (in progress)

- Litter monitoring started 2020
- Biomass data collection 2020 – 2021 (trees 2016, 2020/2022)
- Decomposition experiments started 2021 and we have data from older experiments

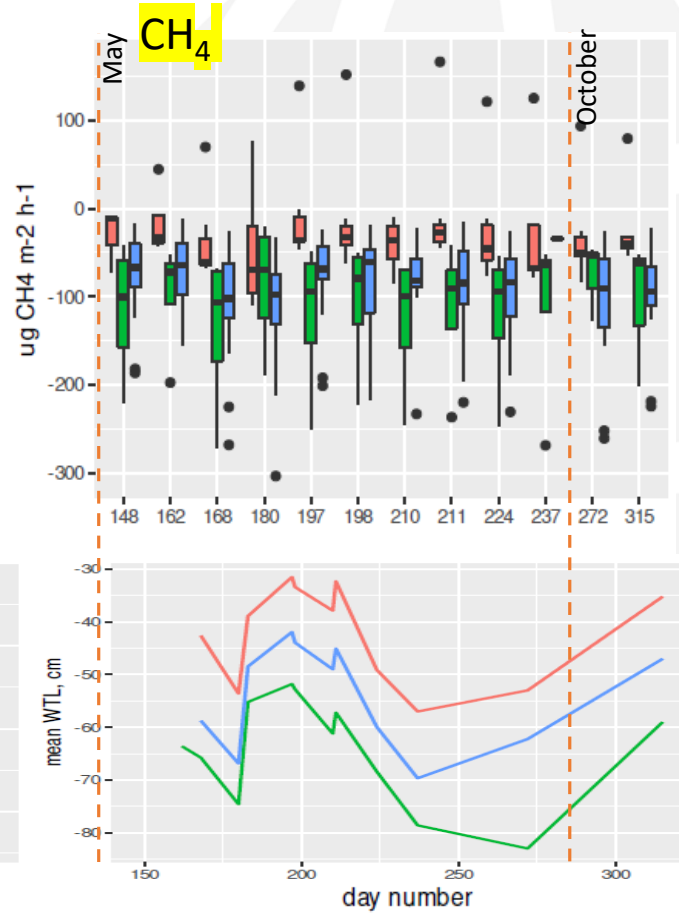
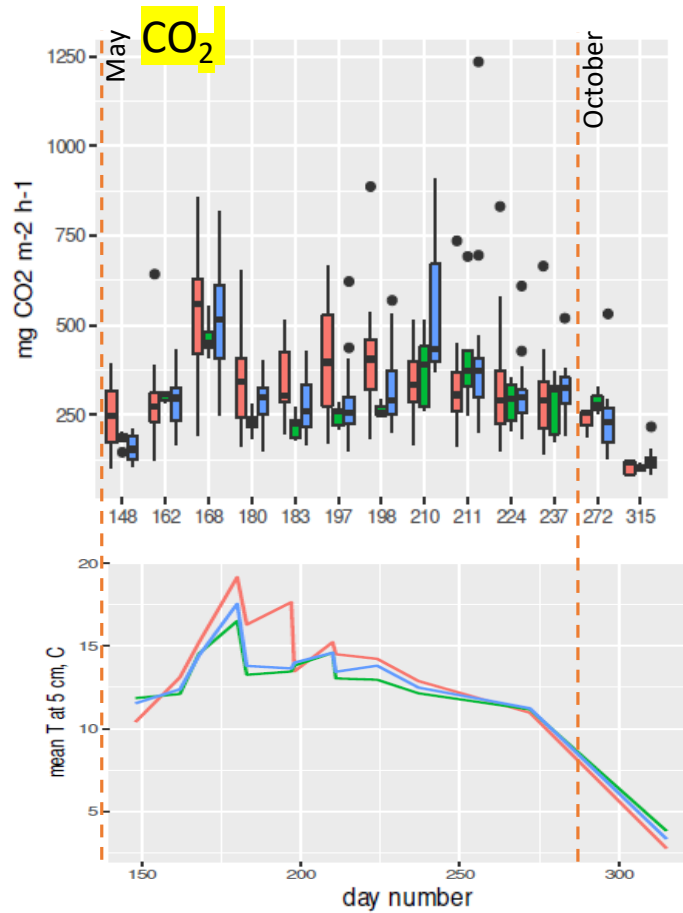
Gaseous GHG data & environment parameters

- Monitoring May 2020 - April 2022
 - 2020 database status
 - CO₂ ready
 - CH₄ ready
 - N₂O in progress
 - Combining flux and environment data (in progress)

CO₂ and CH₄ first year measurements 2020 at Kivalo



CO₂ and CH₄ first year measurements 2020 at Paroninkorpi

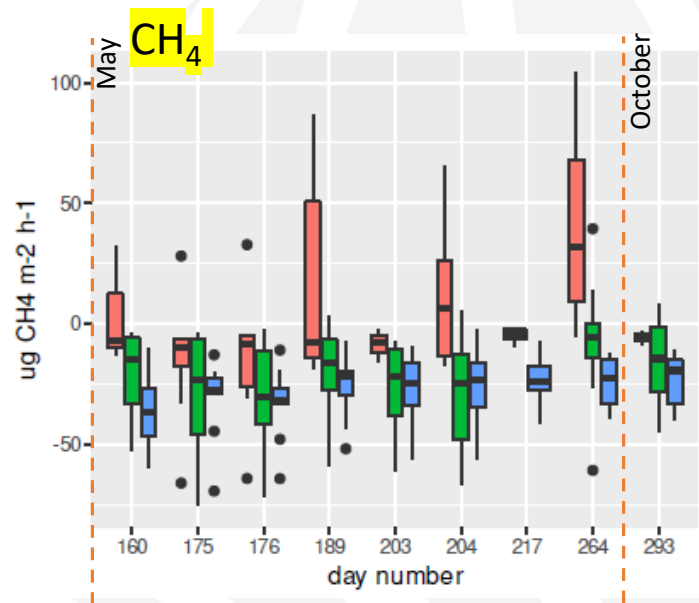
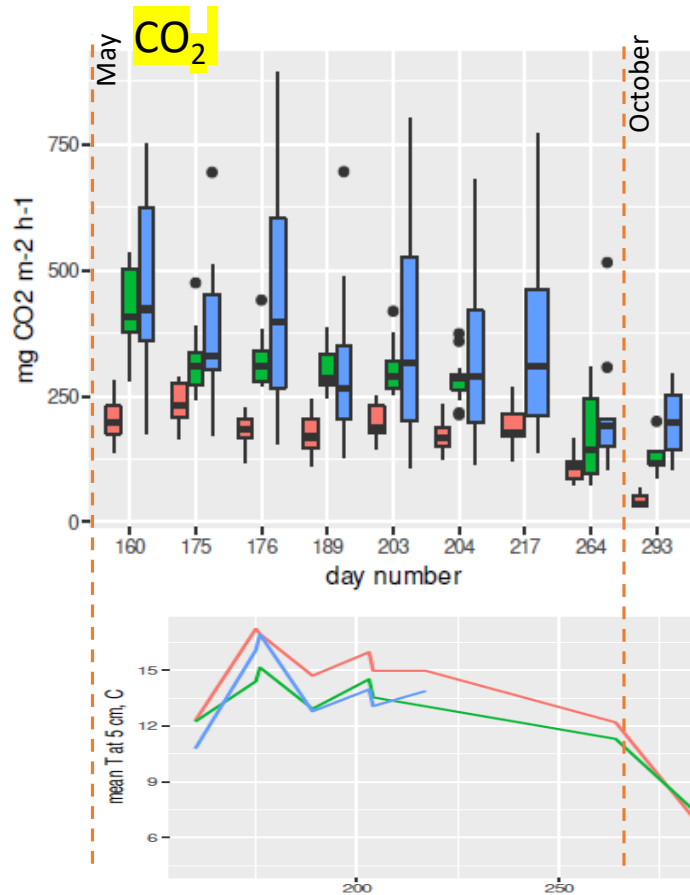


Keys:



- CCForest
- Clearcut & planted (control)

Forest (control)

CO₂ and CH₄ first year measurements 2020 at Lettosuo



Keys:

-  **CCF**
-  **Clearcut & planted (control)**

 **Forest (control)**

Summary

- Shading keeps soil temperatures relatively similar in CCF and mature even aged forest sites, and generally lower compared to open canopy conditions
=> temperature impact to CO₂ emissions remain moderate in CCF site compared to open canopy conditions (recently planted)
- Soil water table (WT) is usually moderately close to soil surface in CCF site
 - deep WT level (typical to ditched mature forest sites in July/August) may be avoided
 - wide WT amplitude conditions are typical to open sites (low evapotranspiration, impact of ditch network maintenance)
=> cumulative annual CO₂, CH₄ and N₂O fluxes are being studied
- Soil C balance in these forests is roughly outcome of “about equally” high C organic matter inputs and C losses in decomposition
=> GHG fluxes form only part (/half) of the “story” and mass based C inputs and decomposition remains to be incorporated

Thank you!

**World
Wetlands Day**
2 February 2022



Wetlands Action for People and Nature

VALUE - MANAGE - RESTORE - **LOVE**
WETLANDS

