

Effects of labile carbon on anaerobic decomposition processes in permafrost wetlands

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Hypothesis:

Input of fresh C from plants significantly affects the anaerobic decomposition processes in Arctic wetlands

- Modern & old C interact at permafrost collapse sites & deep subsoils of active layer

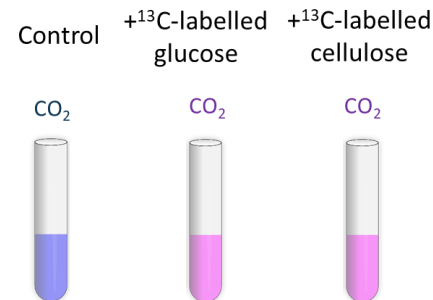
Materials and methods:

Anaerobic incubation w/ and w/o C-amendments



Zackenberg, Greenland
Fen & grassland subsoil

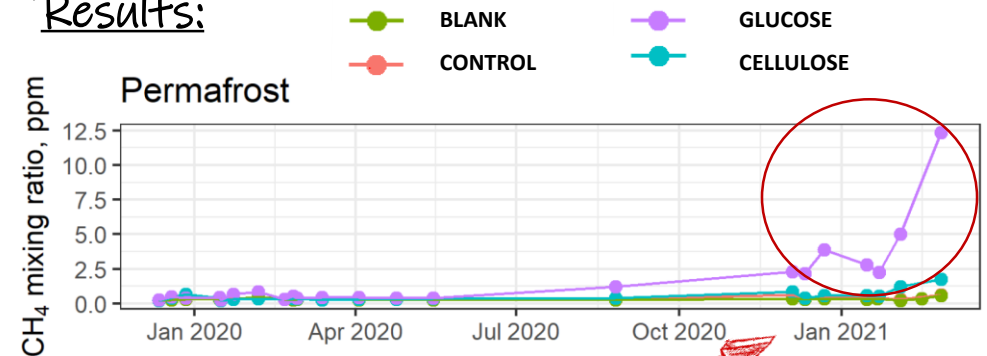
Tavvavuoma palsa mire, Sweden
Active layer & permafrost



Gas analysis with a $\delta^{13}\text{C}\text{-CO}_2/\text{CH}_4$ laser



Results:



After 1+ years of anaerobic incubation,
CH₄ production kicks off in permafrost peat.
Lag-time: glucose < cellulose < control

Further work:

- Microbial analysis at start and end
 - CH₄ cycling genes, overall community structure
- Tracing ¹³C label to different C pools
 - CH₄, CO₂, DOC, C_{mic}
- Estimation of priming effect on anaerobic decomposition in arctic permafrost affected wetlands

PANDA project
funded by:



Affiliations: 1



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