HOW DO BRYOPHYTES BUFFER BOREAL FOREST CARBON DYNAMICS AGAINST THE IMPACT OF REDUCED SNOW COVER?

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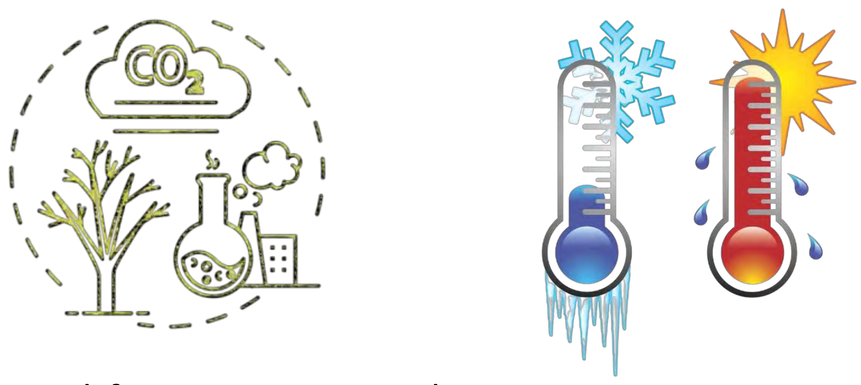
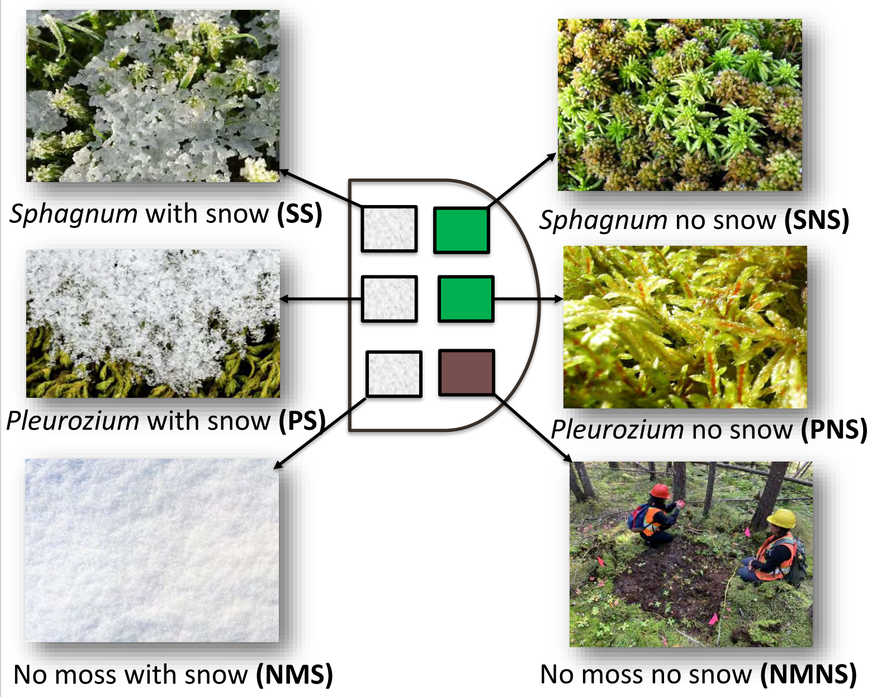
CONTEXT



- The boreal forest, a major carbon reservoir, is sensitive to climate change.
- Decreased snow cover leads to greater soil temperature variability, affecting below-ground carbon dynamics.
- Coniferous boreal forests, dominated by *Sphagnum* spp. and *Pleurozium schreberi* may play a moderating role in forest soil dynamics.

METHODOLOGY

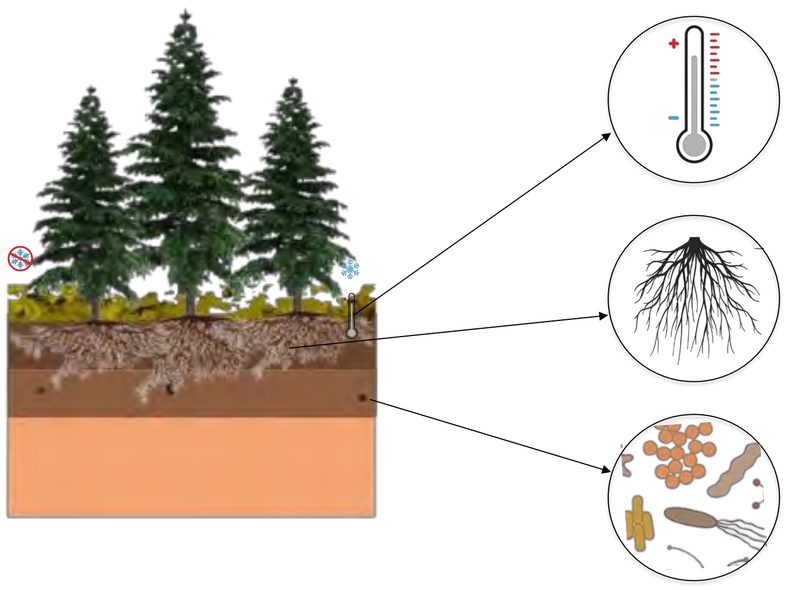


Snow removal during winter

Installation of temp. data loggers

RESEARCH QUESTIONS

1. Below-ground carbon dynamics

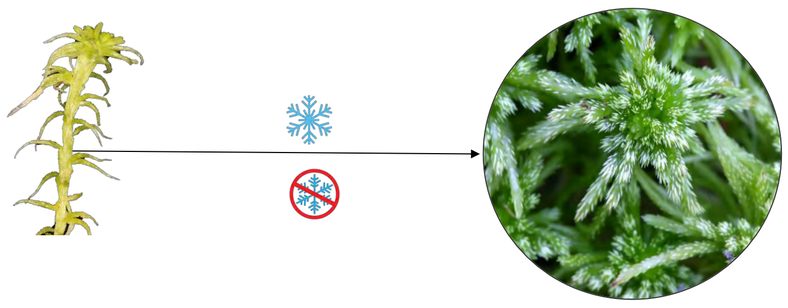


Soil temperature??

Root dynamics??

Soil microbial activity and biomass??

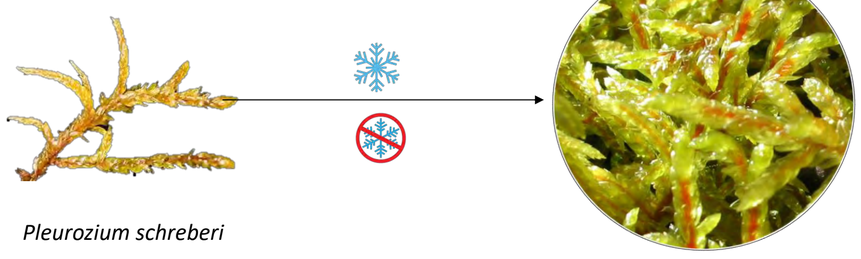
2. Functional traits of mosses



Sphagnum spps.

Water absorption capacity??

Colony density??



Pleurozium schreberi

Nutrient content??

PRELIMINARY RESULTS

1. Soil temperature

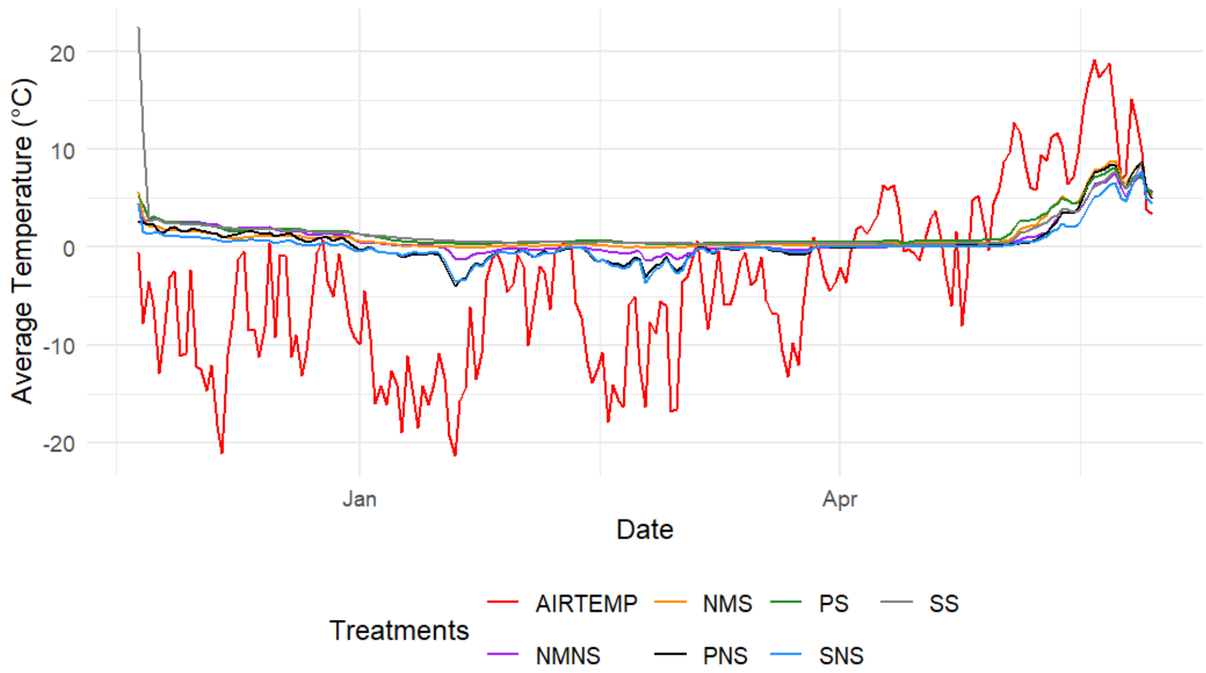


Fig: The average daily soil temperature changes with different treatments.

2. Root dynamics

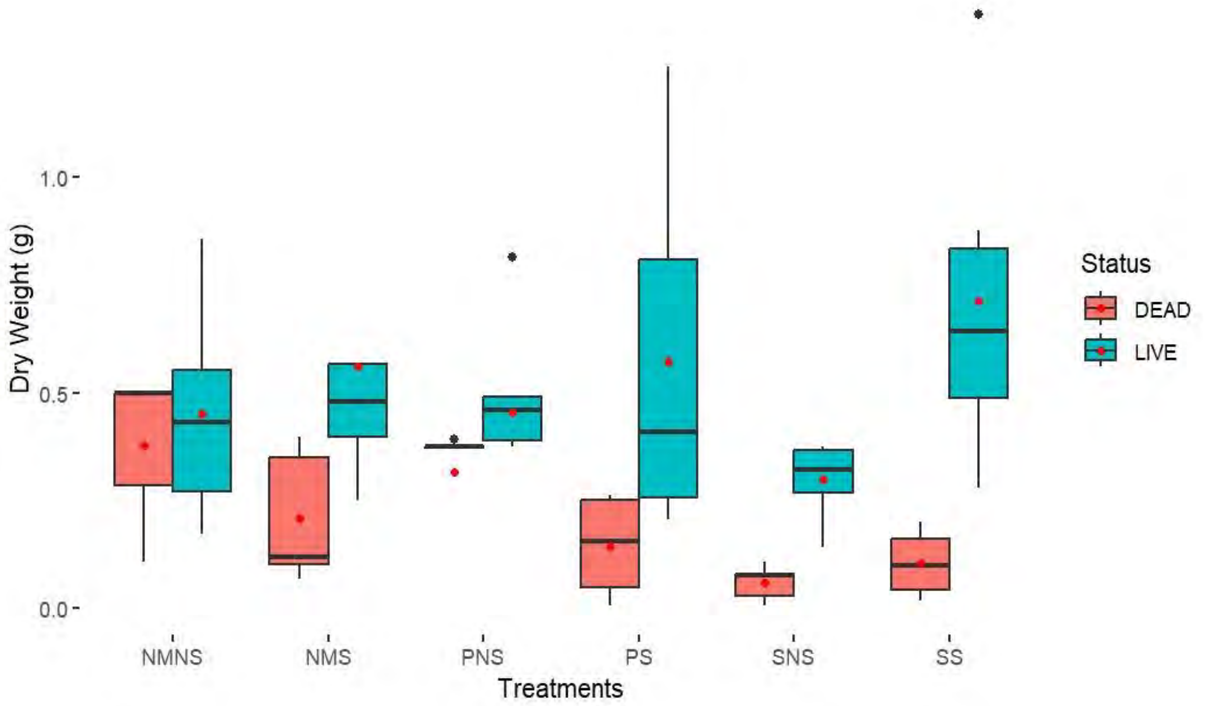


Fig: Root biomass with different treatments

HYPOTHESIS

- *Sphagnum* spp. buffers snow-removal impacts on soil temp, microbes and roots; more than *Pleurozium schreberi*.
- Snow removal negatively impacts colony density, moisture, and C & N fixation, with lesser effects on *Sphagnum* spp. than *Pleurozium schreberi*.

CONCLUSIONS

- Treatments with snow removal causes more soil temperature fluctuations in *Pleurozium schreberi* and *Sphagnum* spps. than no moss.
- *Sphagnum* spps. under snow supports higher live roots than *Pleurozium schreberi*.
- Mosses and snow cover helps in protecting root systems, which could be vital for carbon sequestration and soil health under climate change scenarios where snow cover may be reduced.

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