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The Research Council
of Norway

Data collection on biodiversity and carbon fluxes responses to warmer climate, nitrogen deposition and grazing – the first field season (Three-D project)

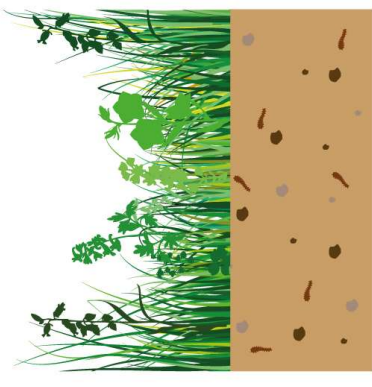
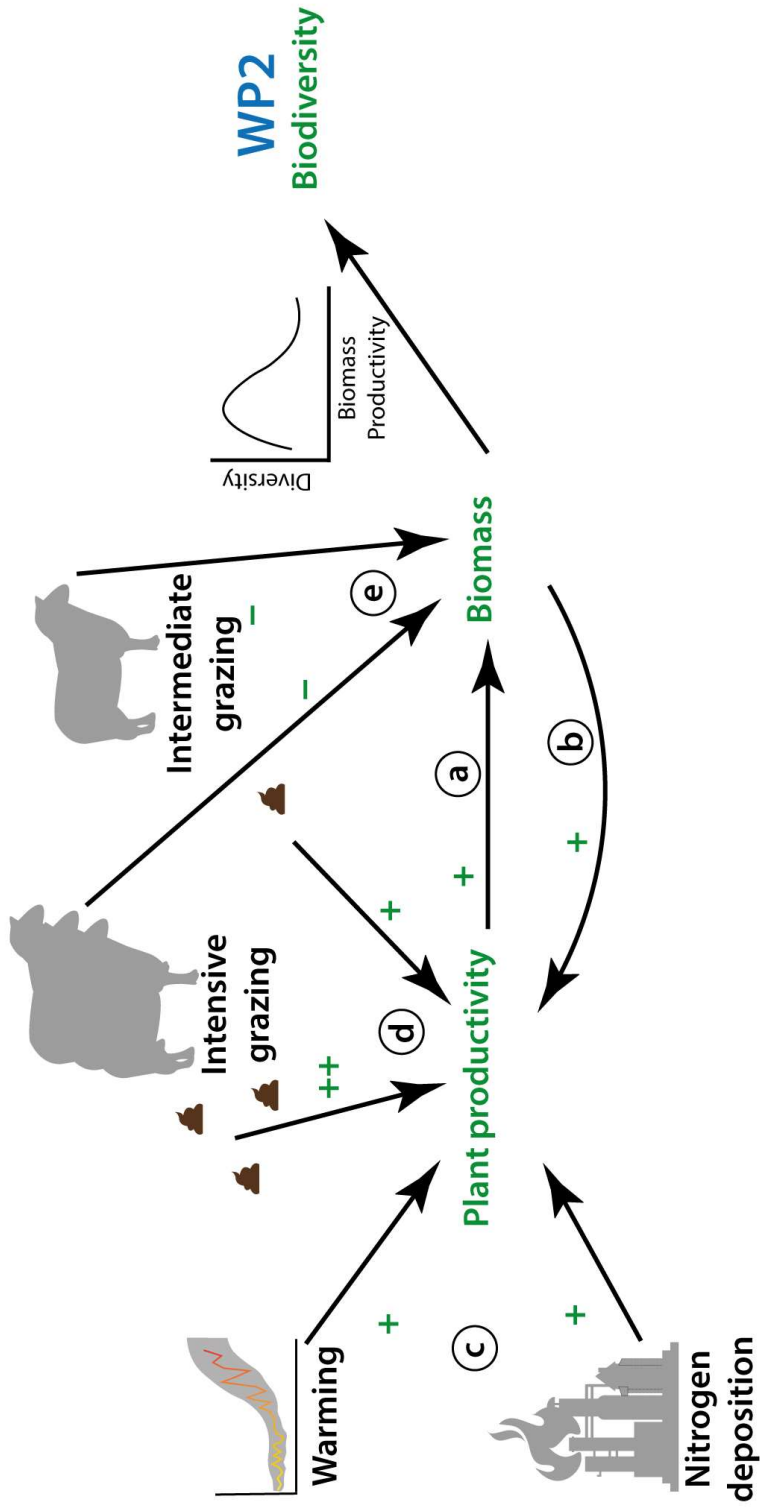
Aud H. Halbritter

Joseph Gaudard

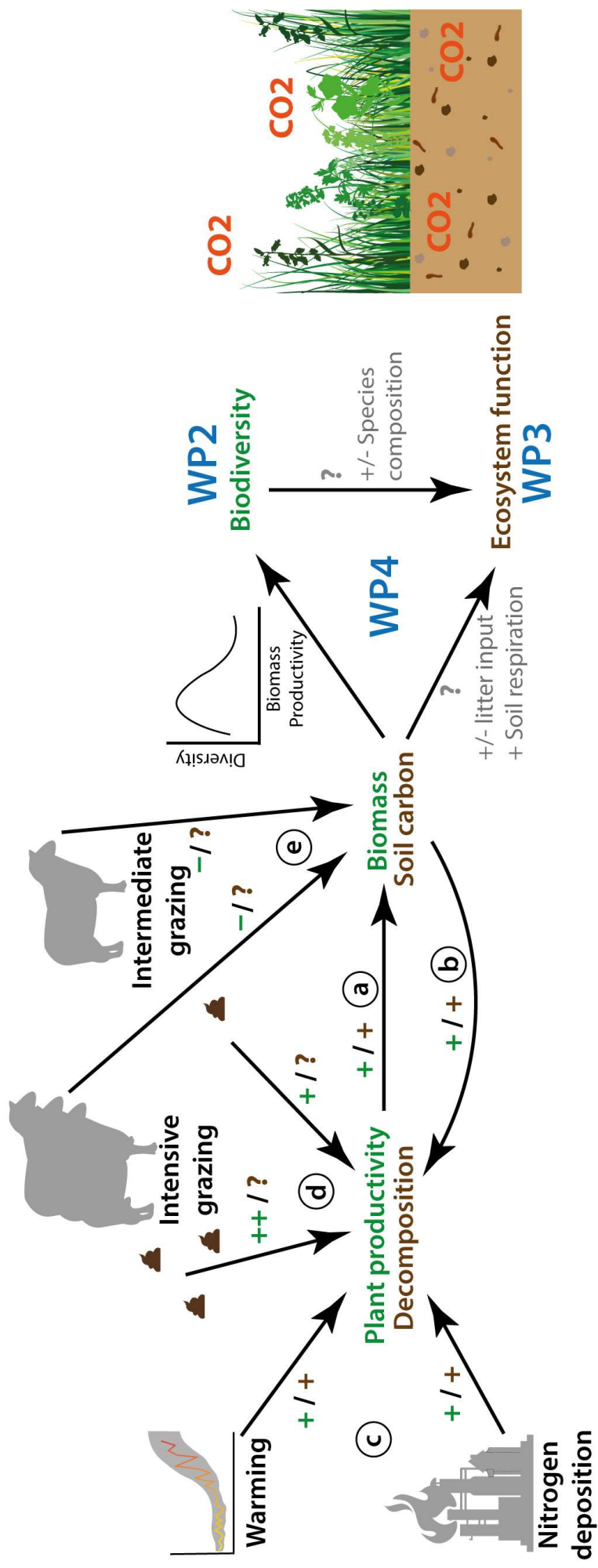
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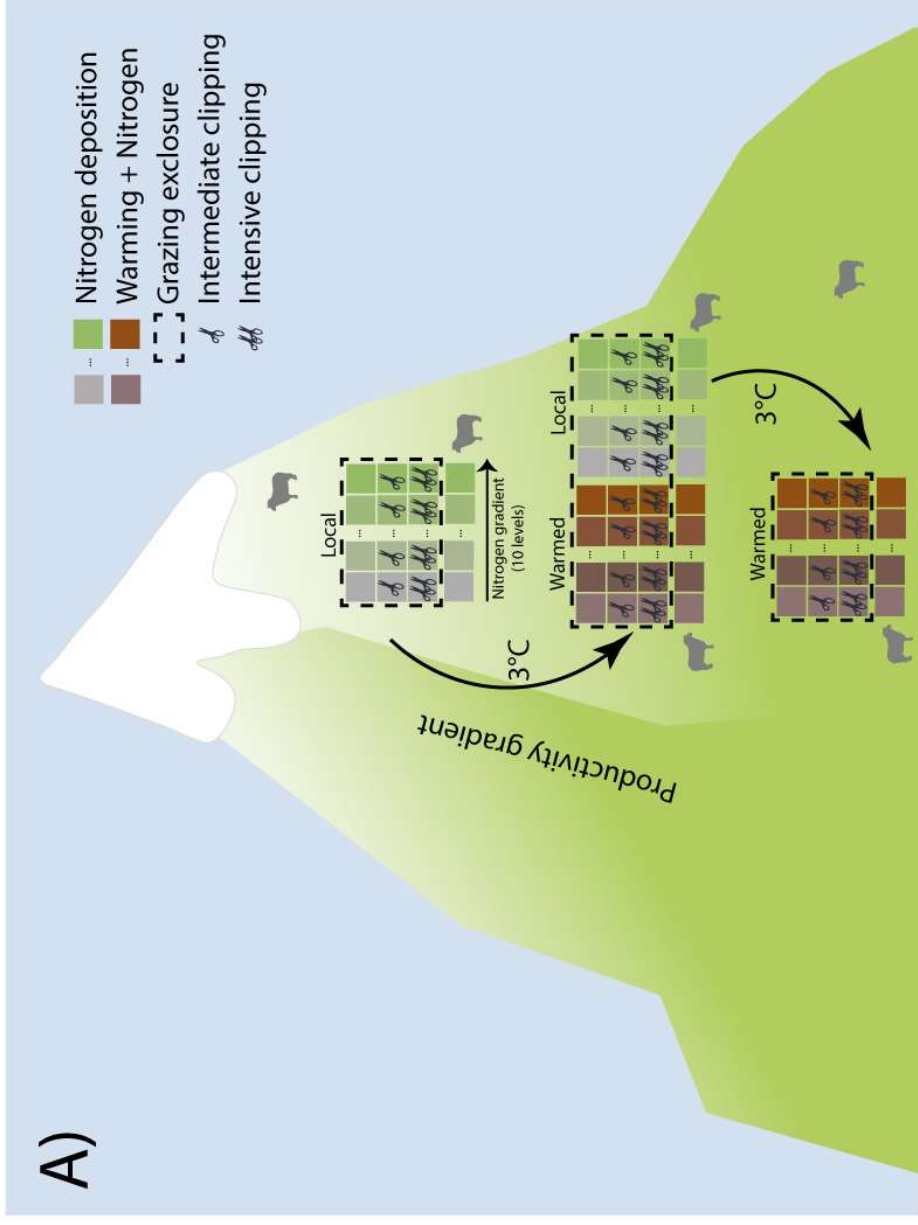
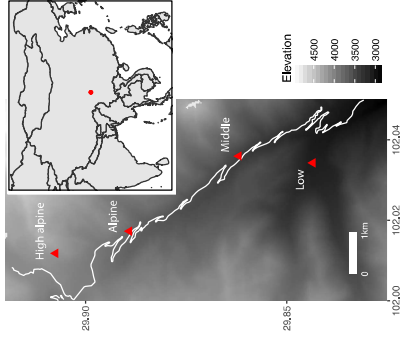
Effects of multiple global change drivers on biodiversity



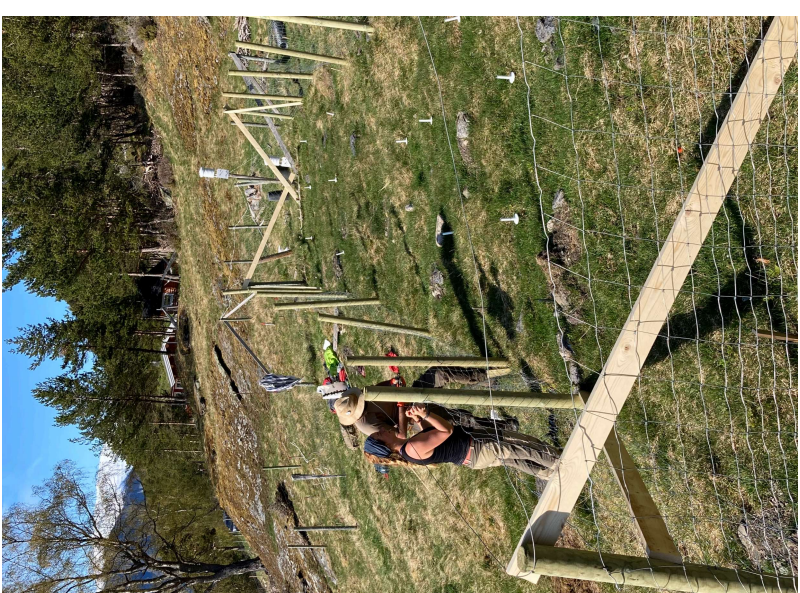
Effects of multiple global change drivers on carbon fluxes



Field experiment in Norway and China







Nitrogen treatment



7 different Nitrogen levels are applied
2x per growing season (early, mid).

0.0 N kg ha⁻¹ y⁻¹ (3x)

0.5 N kg ha⁻¹ y⁻¹

1.0 N kg ha⁻¹ y⁻¹

5.0 N kg ha⁻¹ y⁻¹

10 N kg ha⁻¹ y⁻¹

50 N kg ha⁻¹ y⁻¹

100 N kg ha⁻¹ y⁻¹

150 N kg ha⁻¹ y⁻¹

Grazing treatment

4 different grazing treatments:

Control	no grazing
Intermediate grazing	2x clipping
Intensive grazing	4x clipping
Natural grazing	outside fence

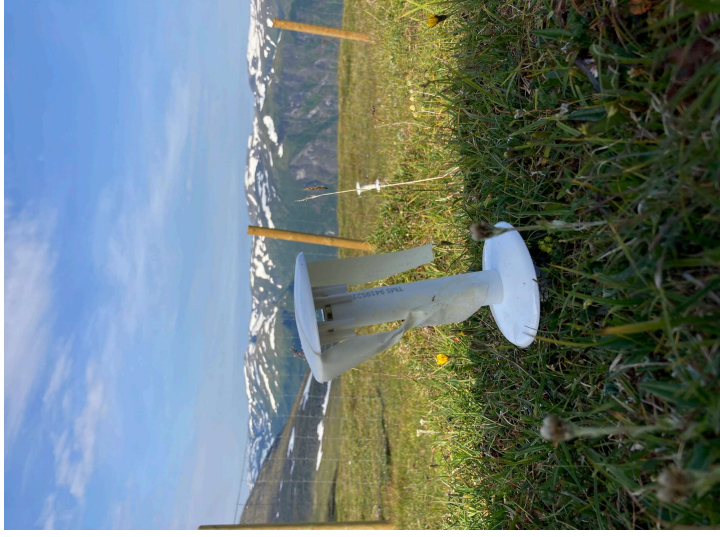
Clip the vegetation ca. 2cm above the ground

Sort the biomass into functional groups:

- Grasses (Poaceae, Juncaceae)
- Cyperaceae
- Forbs
- Legumes
- Bryophytes
- Shrubs
- Lichen
- Litter



Measuring biodiversity, biomass, carbon and nutrients, decomposition and microclimate



- Species composition
- Ecosystem fluxes
- Biomass
- CN stocks
- Available nutrients
- Decomposition
- pH
- Organic C
- Soil structure
- Reflectance
- Leaf traits
- Temperature
- Soil moisture

Ecosystem fluxes



Focus on warm vs. ambient temperature

Light and dark measurements: 4x (june, july, 2x august)

Light response curves

Reflectance



Measuring reflectance using a Greenseeker.

C. 4 times during the growing season (combined with the carbon flux measurements)

After clipping treatments

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