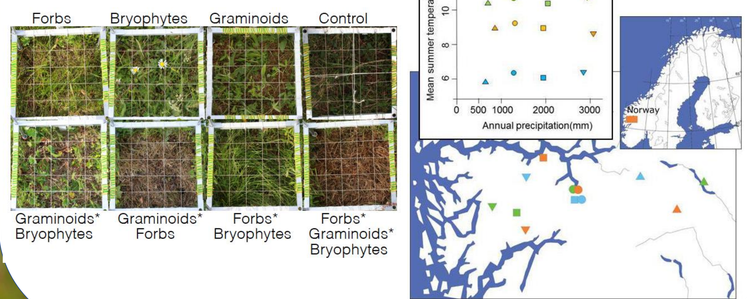
# Bryophytes mediate the effect of drought on seedling recruitment in alpine grasslands

## BACKGROUND

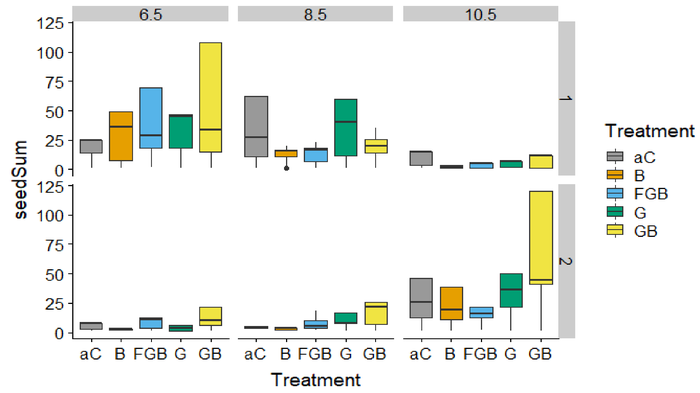
- When a drought occurs it will have an effect on the vegetation in the region.
- Seedlings represent the most delicate stage in the life cycle of a plant. To maintain a stable population a reproductive individual needs to be replaced by a successful seedling recruit.
- Species that cannot adapt to a changing environment face extinction. If seedling recruitment is impacted by drought, that will have a severe impact on the communities as new individuals will not be established.

## METHODS

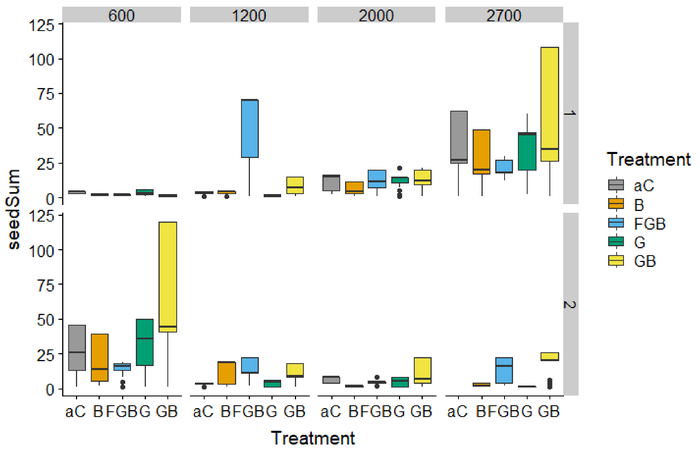
We removed functional groups (bryophytes, graminoids and forbs) in different combinations along temperature and precipitation gradients in south western Norway and monitored seedlings during and after drought.




## 1. Number of seedlings, interaction between temperature and treatment




## 2. Number of seedlings, interaction between precipitation and treatment




## RESEARCH QUESTIONS

1. Does the presence of the different functional groups affect seedling recruitment?
2. Does this effect change along regional climate gradients and during short-term extreme weather events?

## KEY RESULTS

There were more seedlings when **bryophytes** were removed than in intact vegetation.

→ Bryophytes are **competitors** of seedlings, as their presence limits seedling recruitment.

There were more seedlings when **graminoids** were removed than in intact vegetation.

→ Graminoids are **competitors** for seedlings, but the presence of bryophytes was still more important than graminoids.

Bryophytes and graminoids are bigger competitors for seedlings in **colder areas.** At higher temperatures, plots without bryophytes had fewer seedlings than the intact vegetation plots.

→ The presence of **bryophytes** helped **mediate** the effect of drought on seedling recruitment. This may be because bryophytes hold water, so the seedlings in plots where bryophytes are will have better access to this during droughts than seedlings in bare plots.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