



Impact of experimentally-induced summer drought on ecosystem processes in alpine grassland




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Objectives

... to study the impact of experimentally-induced **summer drought** on key **ecosystem processes** in **alpine grassland**

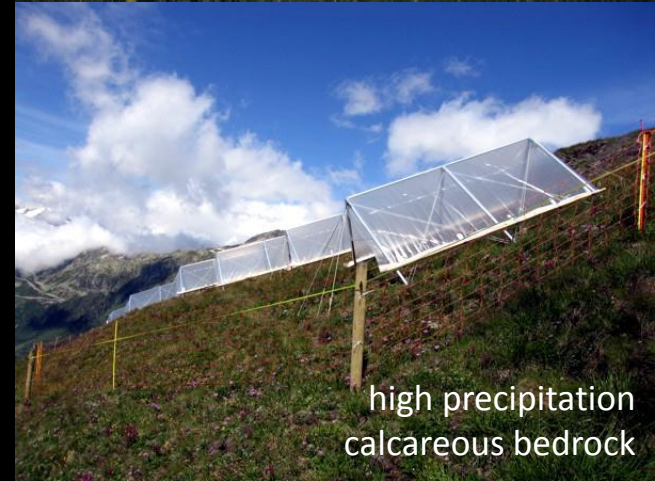
- **Primary production** and vegetation structure
- Species-specific water stress responses
- Litter decomposition and nitrogen-cycling

Treatments

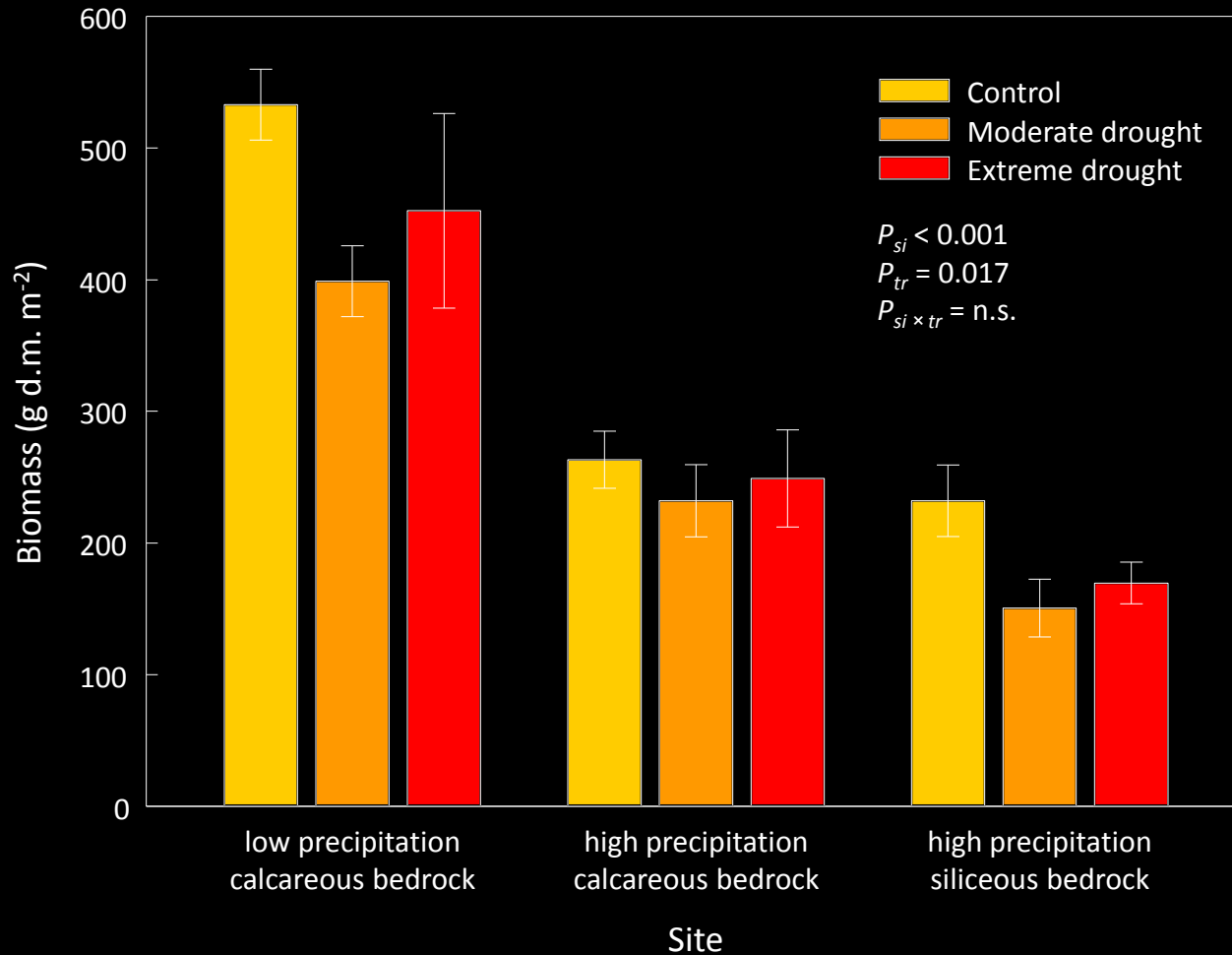
-  Control
-  Moderate drought
-  Extreme drought

Experimental sites

- Swiss Central Alps
- 2500 m a.s.l.
- contrasting macroclimate and geology



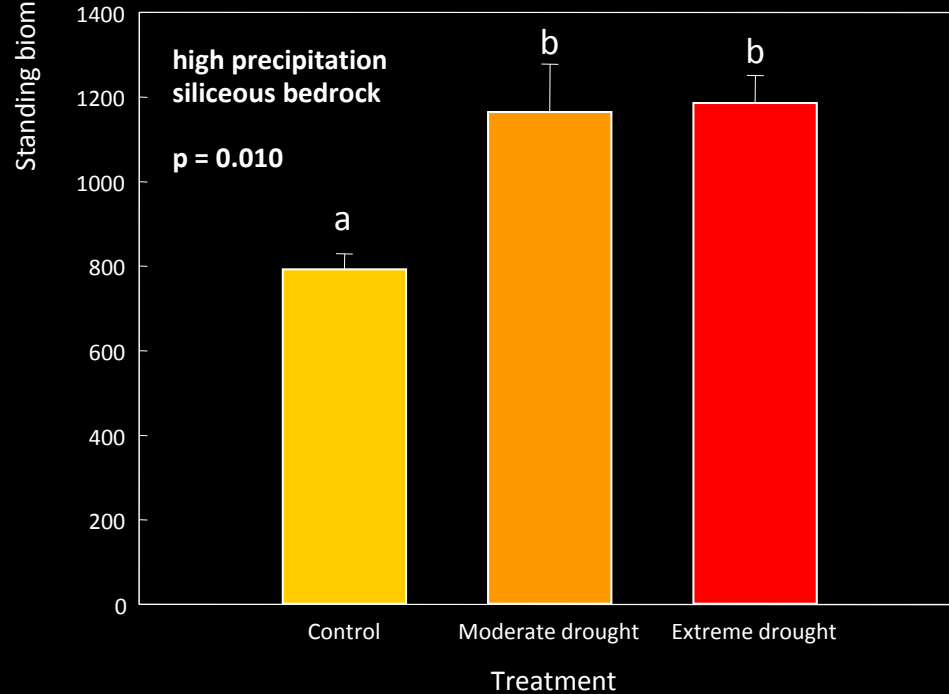
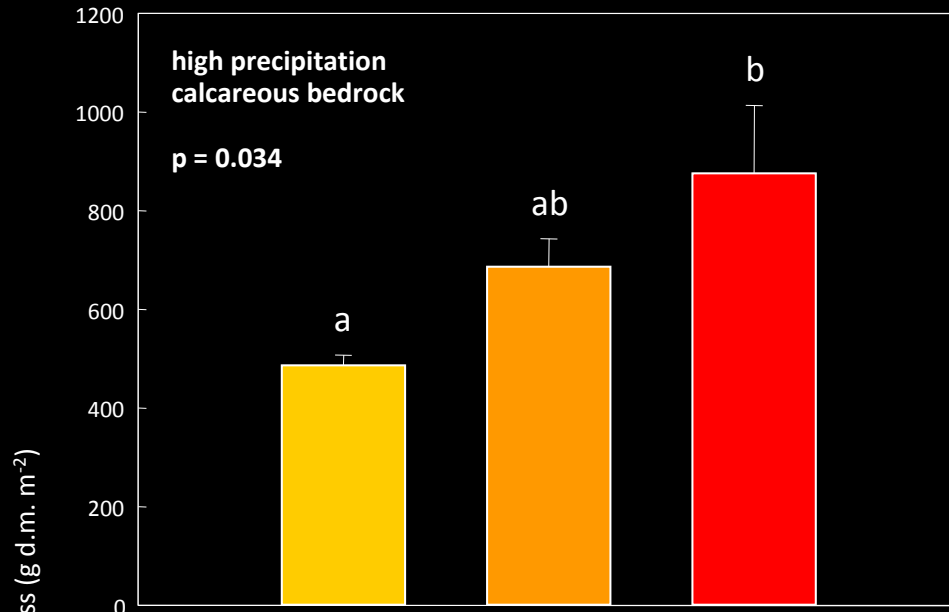
Community standing aboveground biomass



Standing aboveground biomass responses of individual plant species (trends)

Species calcareous bedrock	Response	Species siliceous bedrock	Response
<i>Sesleria caerulea</i>	↘	<i>Carex curvula</i>	↘
<i>Carex sempervirens</i>	↘	<i>Helictotrichon versicolor</i>	→
<i>Anthyllis vulneraria</i>	↗	<i>Trifolium alpinum</i>	↗
<i>Helianthemum spp.</i>	↘	<i>Leontodon helveticus</i>	↘
<i>Aster alpinus</i>	↘	<i>Homogyne alpina</i>	↘
<i>Dryas octopetala</i>	↗	<i>Geum montanum</i>	↘
<i>Saxifraga paniculata</i>	↘	<i>Gentiana punctata</i>	↘

Community standing belowground biomass



- Control
- Moderate drought
- Extreme drought

Conclusions

- summer drought considerably shifted the community biomass production from above- to belowground
- different species seem to respond differently to drought
- alpine grassland ecosystems could be particularly susceptible to prolonged drought in the future

A scenic mountain landscape featuring a steep, grassy slope in the foreground. The grass is a mix of green and brown, with several long, narrow patches of snow melting down the hillside. In the background, rugged, rocky mountain peaks are partially covered in snow under a clear, bright blue sky. The overall scene is bright and clear, suggesting a sunny day in a high-altitude environment.

**Thank you for
your attention!**