

Seasonal transitions in soil microbial community composition and function triggered by snowmelt in Alpine grasslands

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Climate change =
reduced winter snow cover
earlier spring snowmelt
more freeze-thaw cycles



Credit: @bryanthealpinist



Impact on microbial
community composition
and functioning?

And consequences for biogeochemical cycles?



Location: Hohe mut, Obergurgl, Austria (2650m)

Treatments:

Control

Snow removal

Snow addition



Six sampling dates:

Pre-melt (28 Mar)

Snow-melt (1 Jun, 8 Jun)

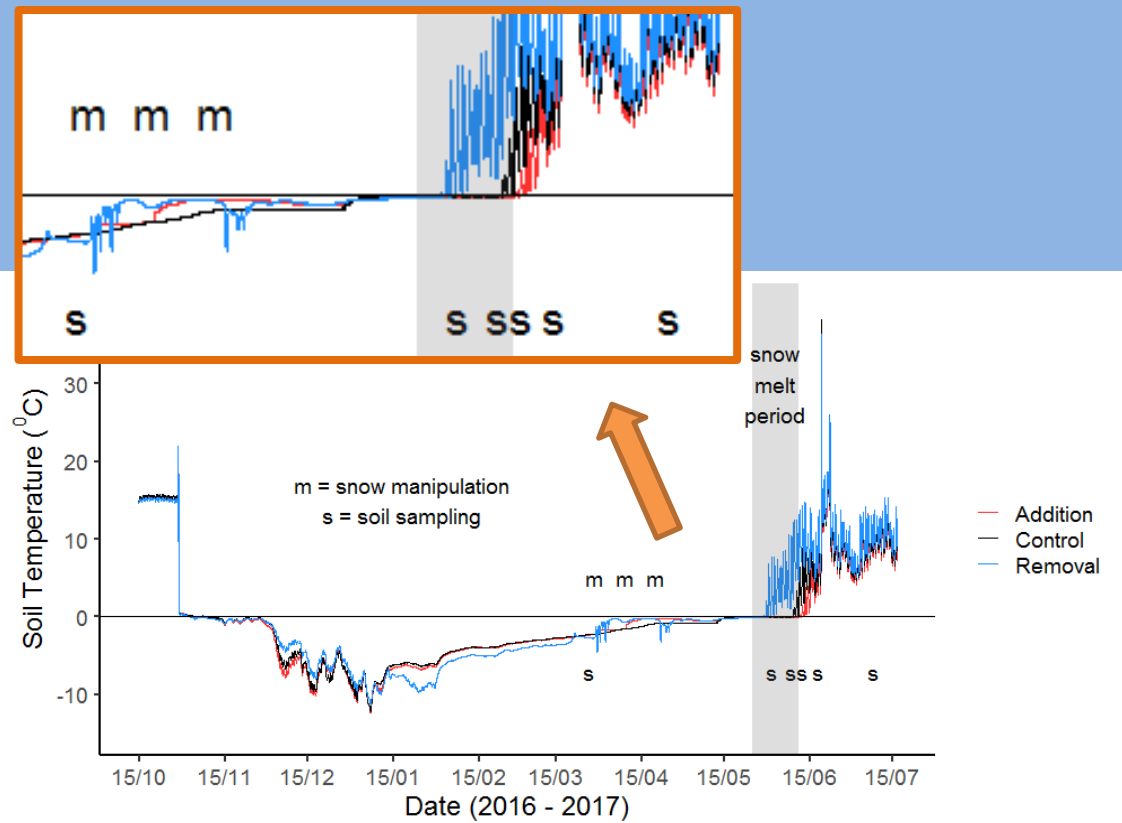
Post-melt (12 Jun, 18 Jun, 8 Jul)

Variables:

Microbial composition
(PLFA, 16S, ITS)

Microbial functioning
(enzymes,
metagenomics)

Biogeochemical
(soil C and N pools
and fluxes)



Snowmelt triggers
rapid shift in **microbial**
 community **composition**
 and **functioning**,
 and **soil C** and **N** pools

Advanced by snow removal
 Delayed by snow addition

Effects transient but likely
 to become **more important**
under future climate
projections

= **weakened winter**
functioning in alpine
 grasslands?

