

A phylogenetic perspective on warming mediated drought

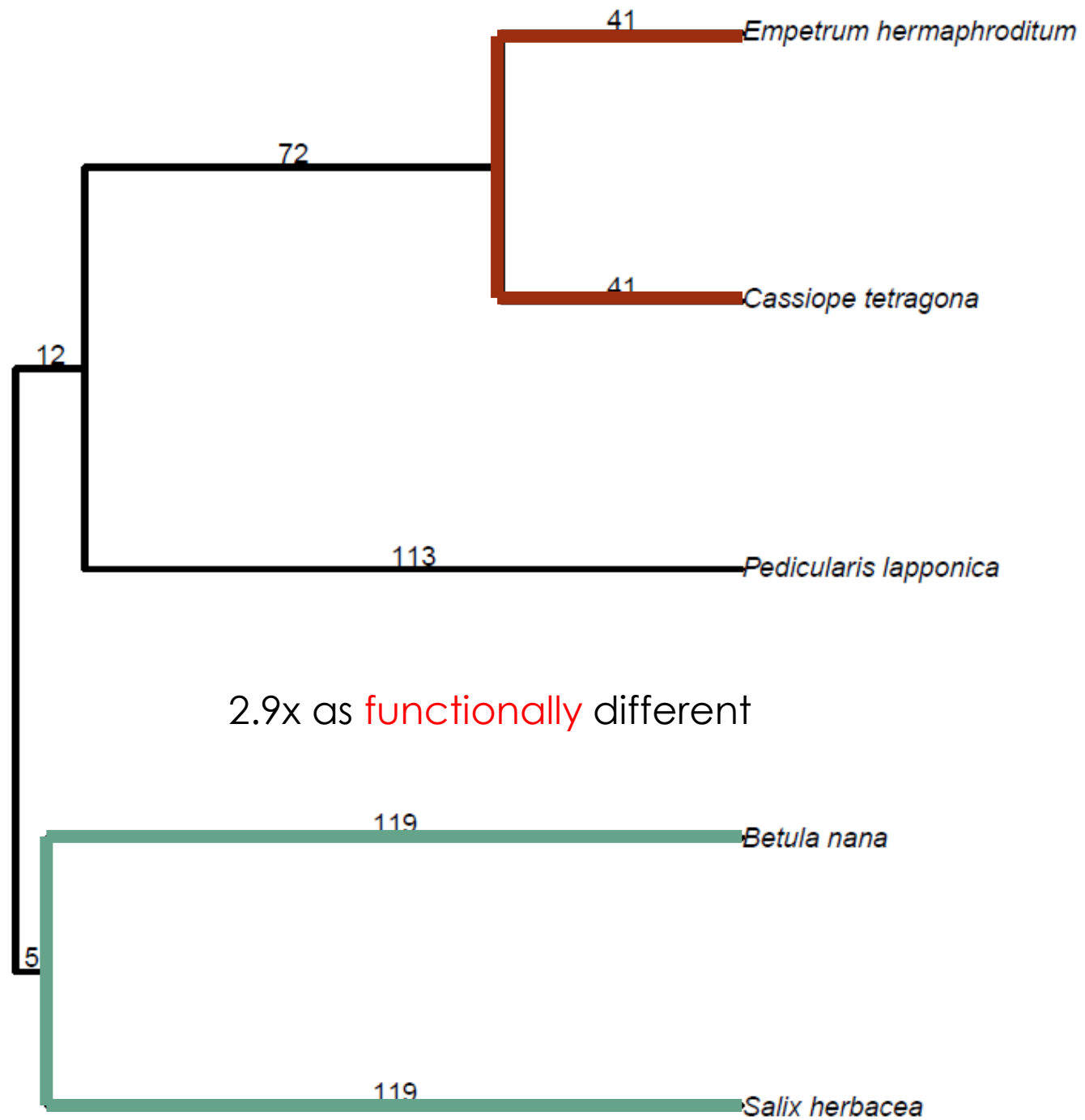
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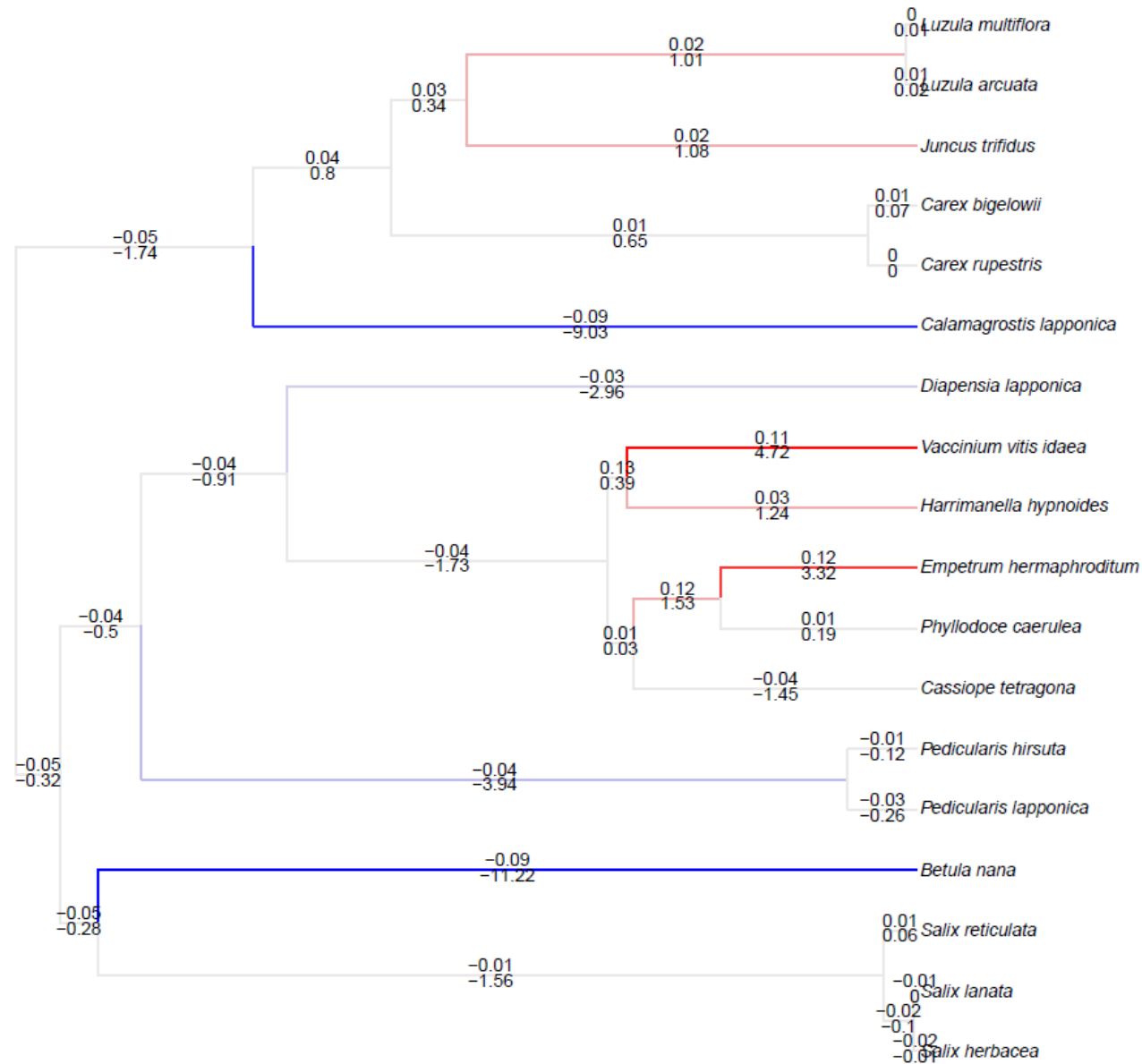
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The Swedish Research Council for Environment,
Agricultural Sciences and Spatial Planning



HD CTL vs OTC gaining 15.44 mj losing -36.13 mj





Tundra plant response to warming

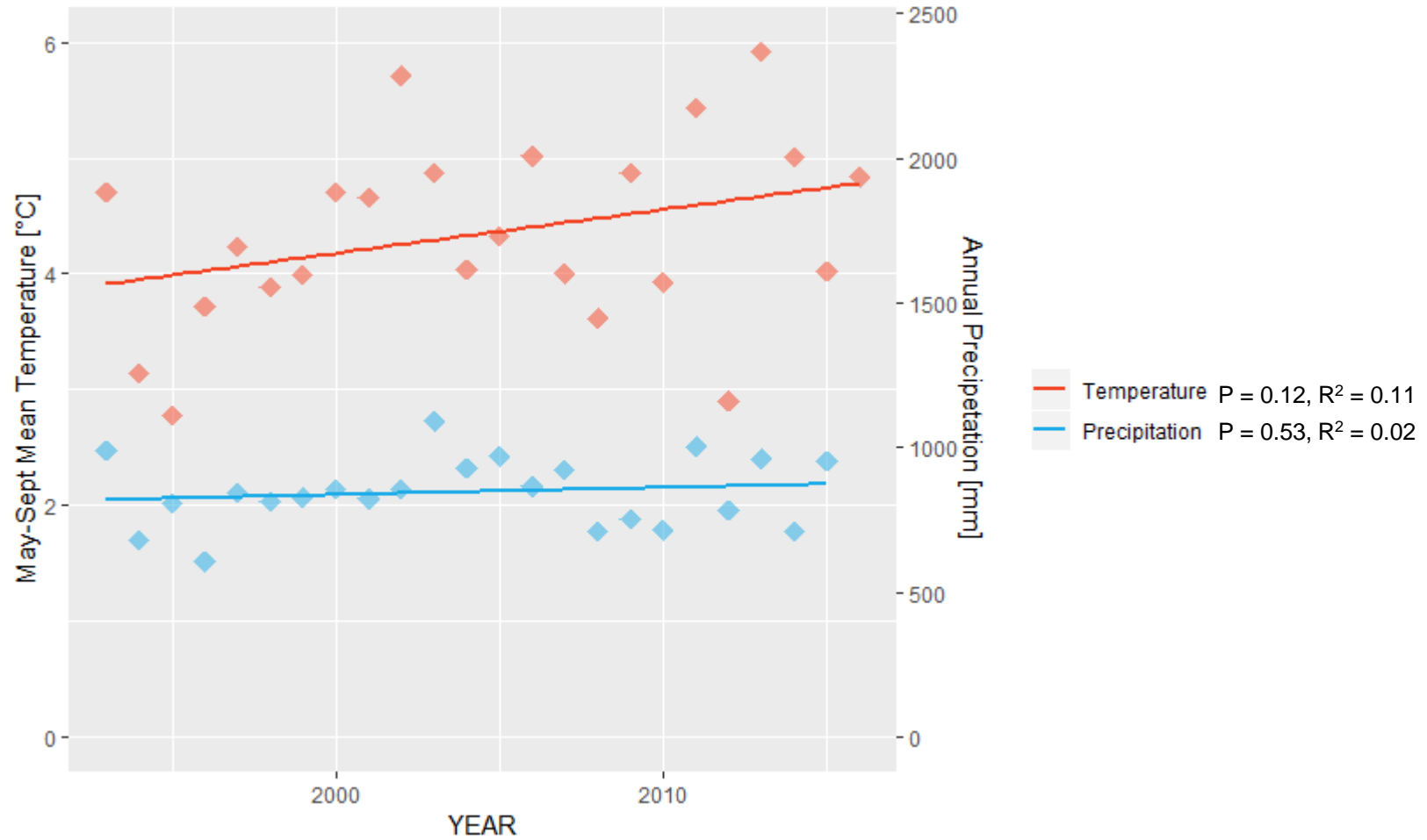
- We find general patterns but a lot of unexplained variation.
 - Strong regional heterogeneity in response to warming
 - Looking at a single site
 - Nutrient gradient
 - Moisture gradient
 - Heterogeneity of response within plant functional types
 - Use phylogenetic diversity.

Site

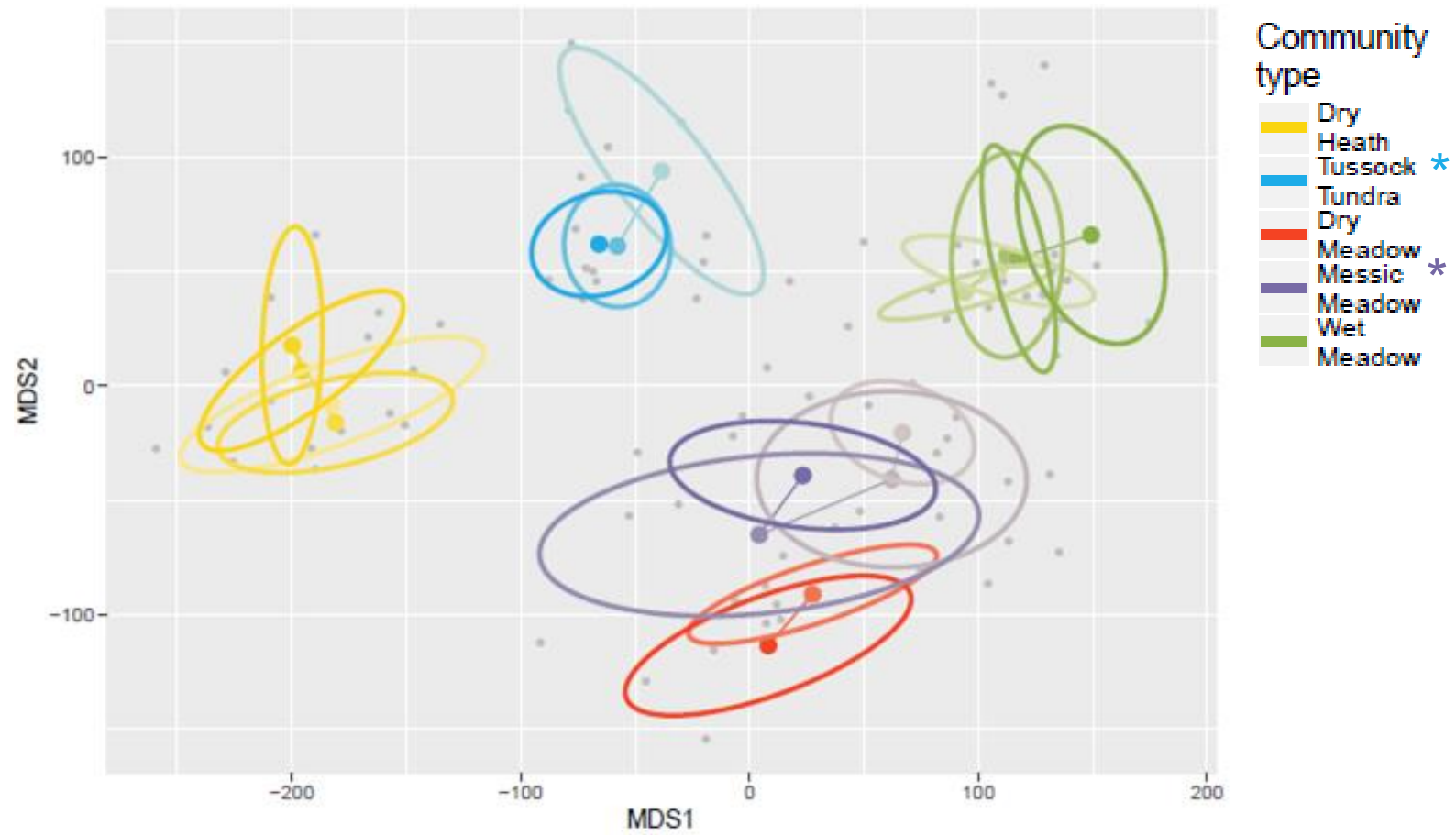
- Latnjajaure, mid alpine
- 5 communities
 - MW Wet Meadow
 - MM Mesic Meadow
 - MD Dry Meadow
 - HD Dry heath
 - TT Tussock (mesic) Tundra
- Treatment effects
 - Artificial Warming
 - Time



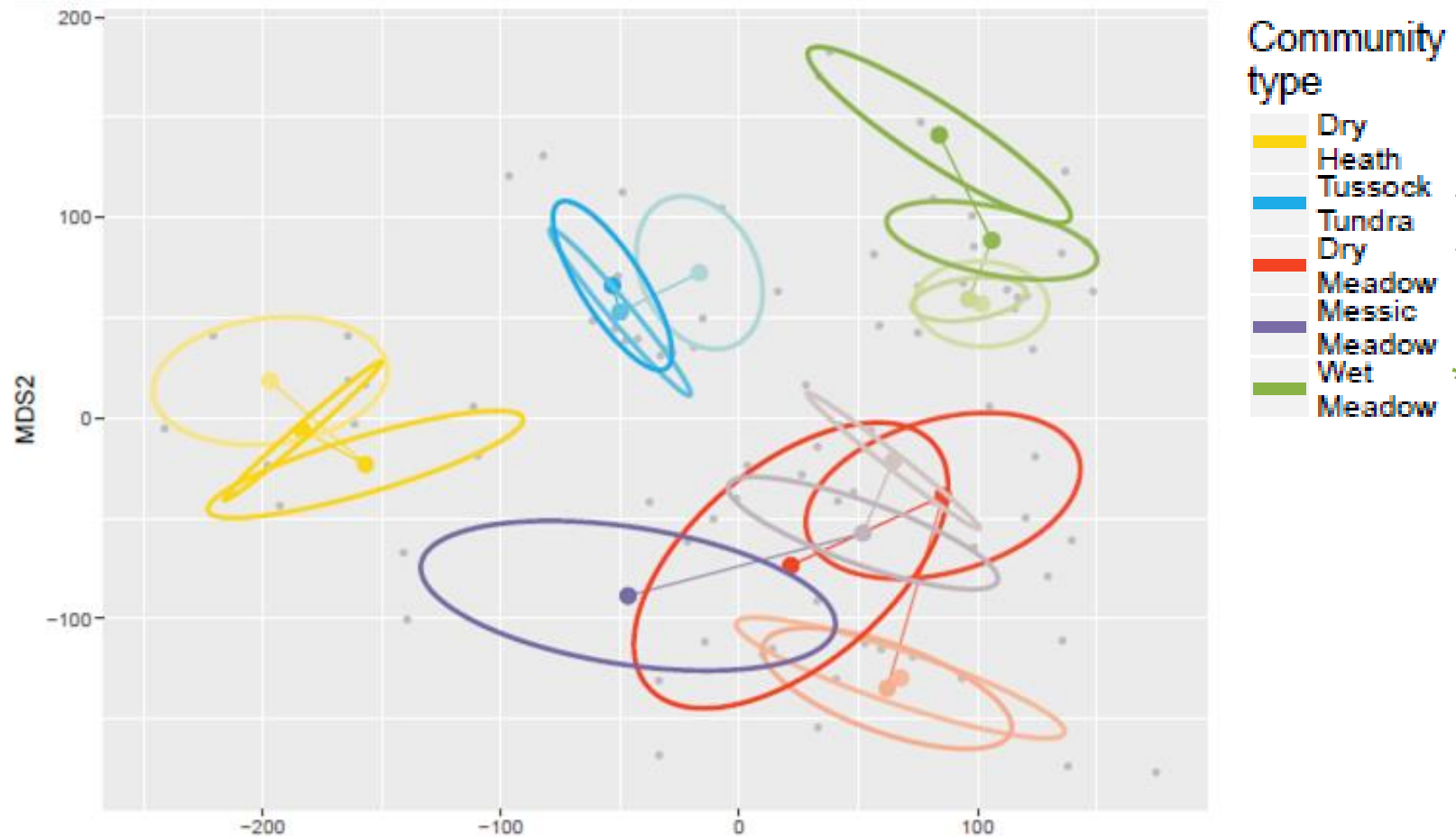
Climate 1993-2018



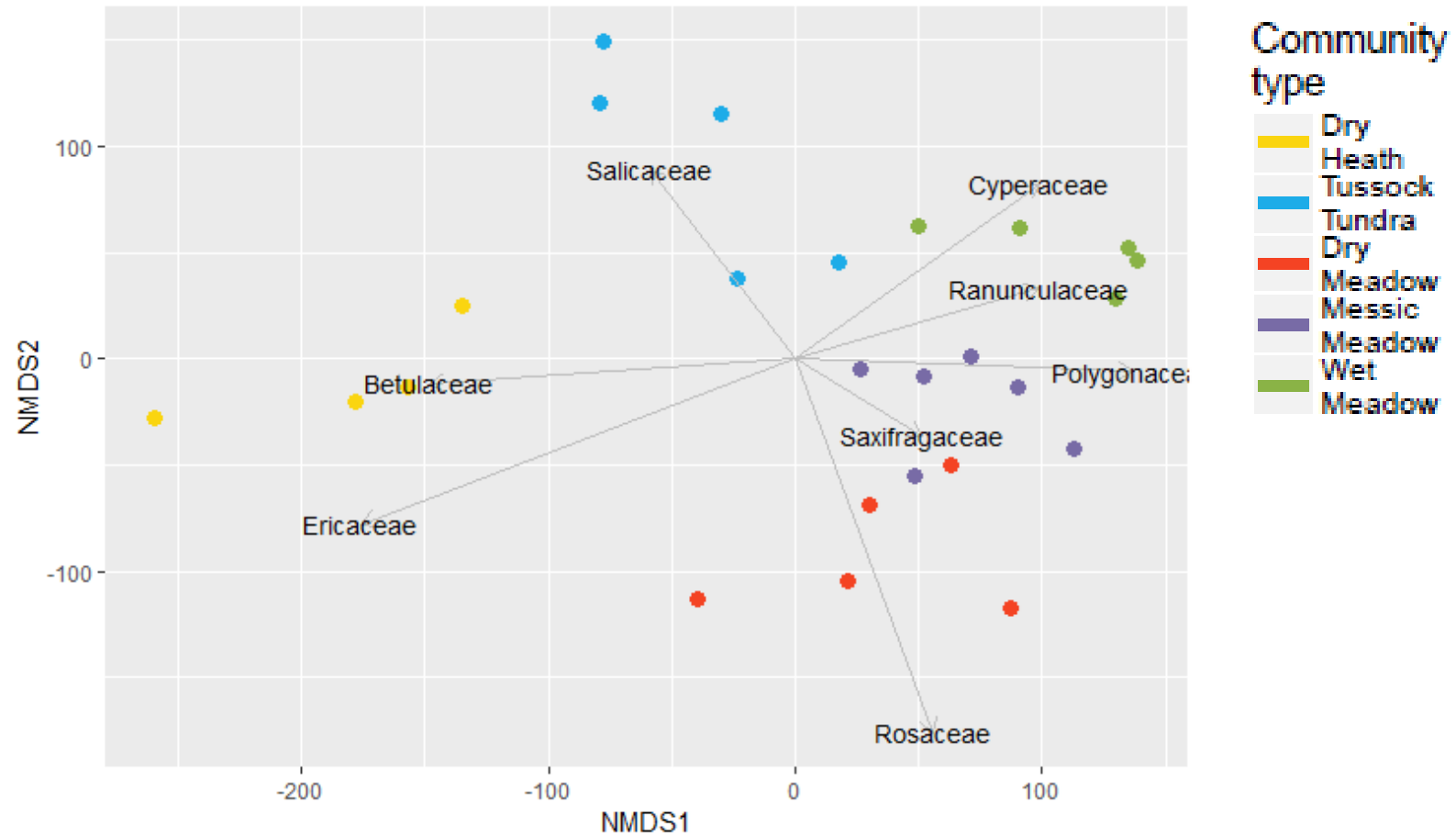
Ambient



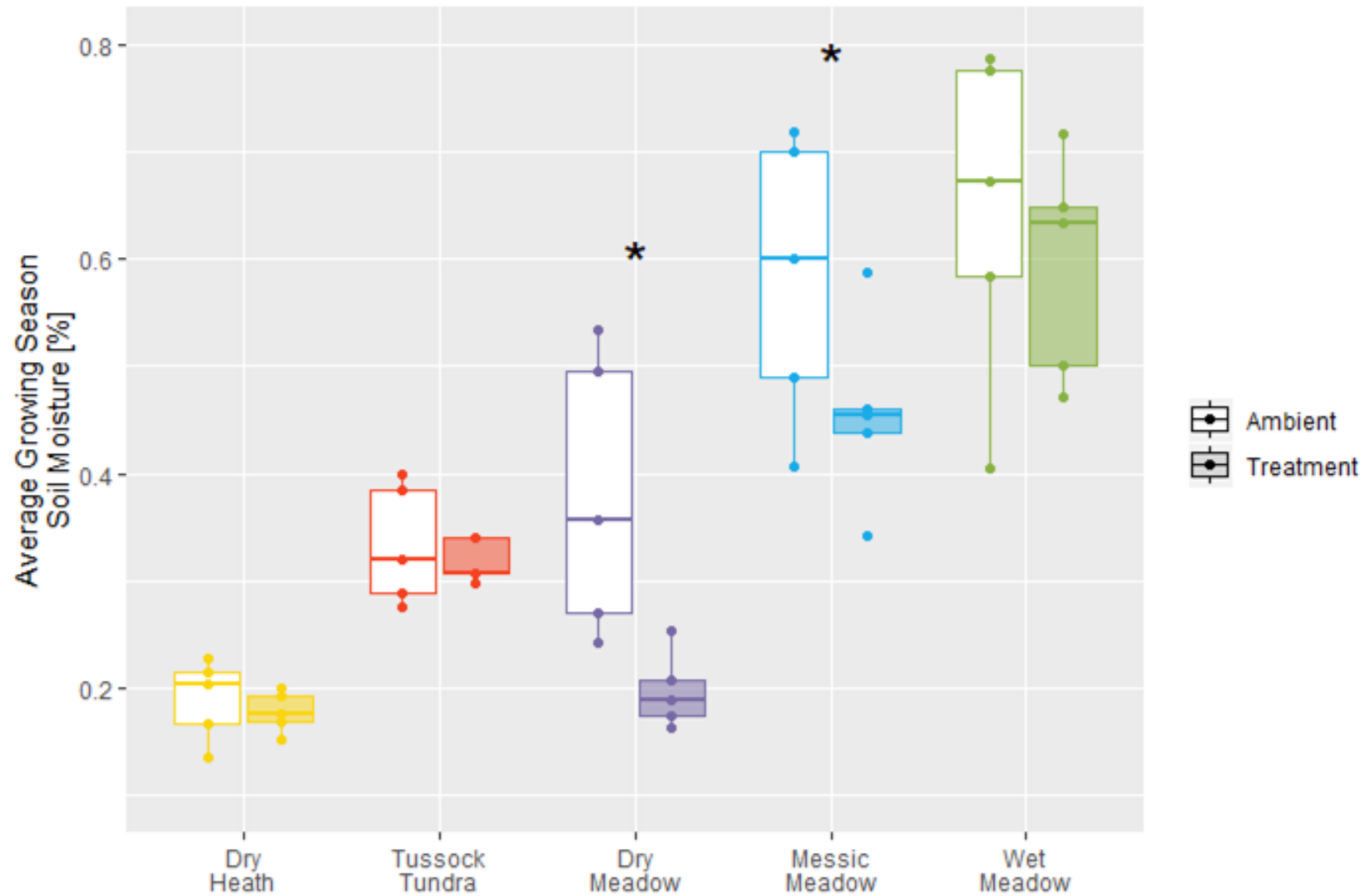
Warming (OTC)



Plant family contributions



Soil moisture





Conclusions

- Mesic and Dry meadow plots increased in similarity to the Dry Heath
 - This is likely driven by a decrease in soil moisture in the OTCs
 - Might reflect their dependence on snow cover as moisture source
- Tussock Tundra had a strong initial response to permafrost loss that slowed over time
 - Initial colonisation of new habitat after decreasing moisture level