



Question: Can we predict species responses to climate change according to their traits in a hierarchy?

Answer: Yes

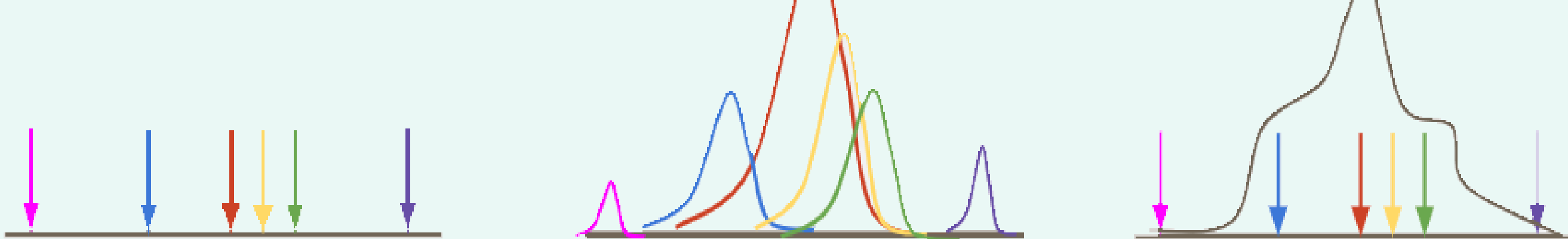
University of
Bergen

How you look matters!

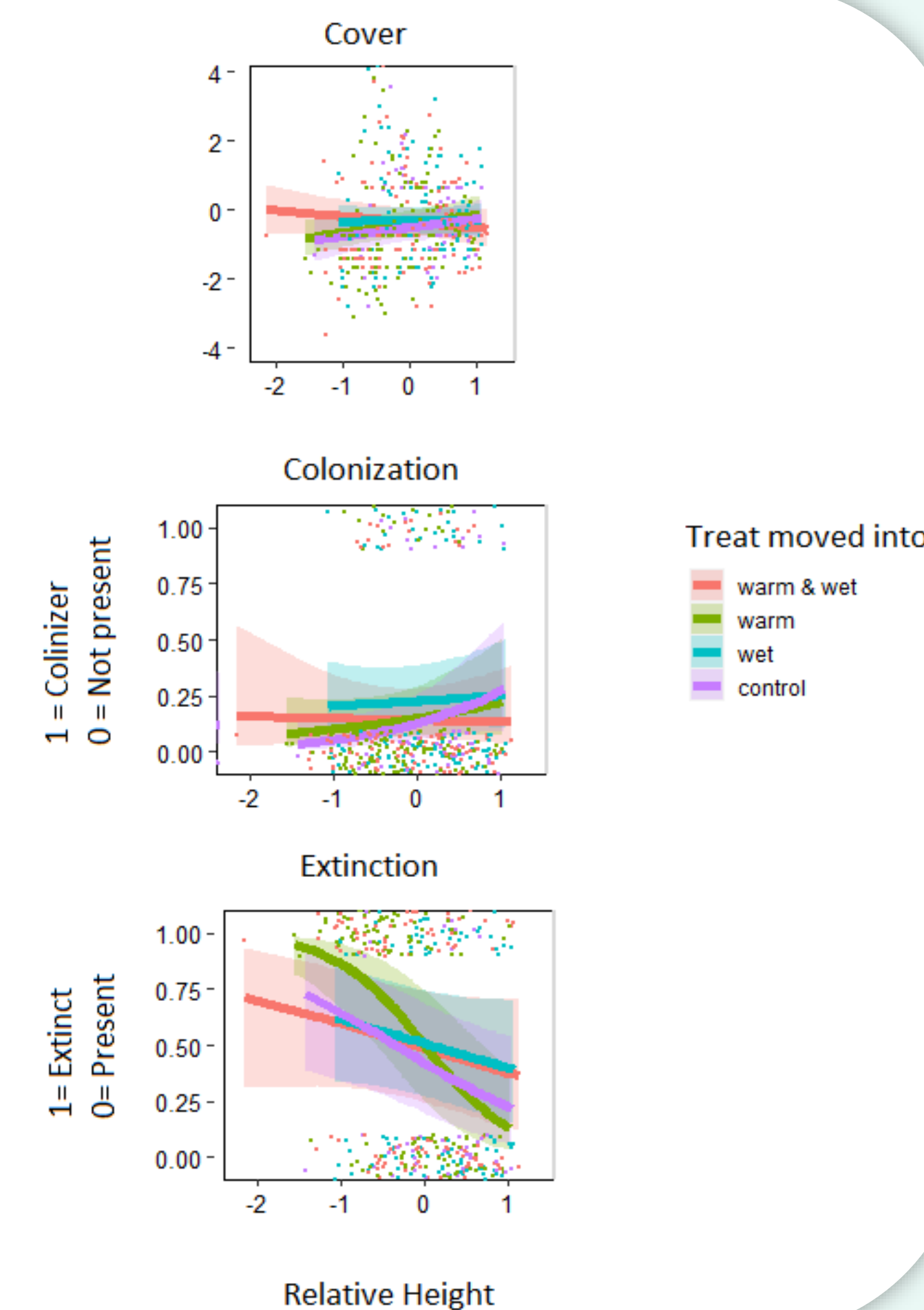
Plant traits and the competitive trait hierarchy hypothesis



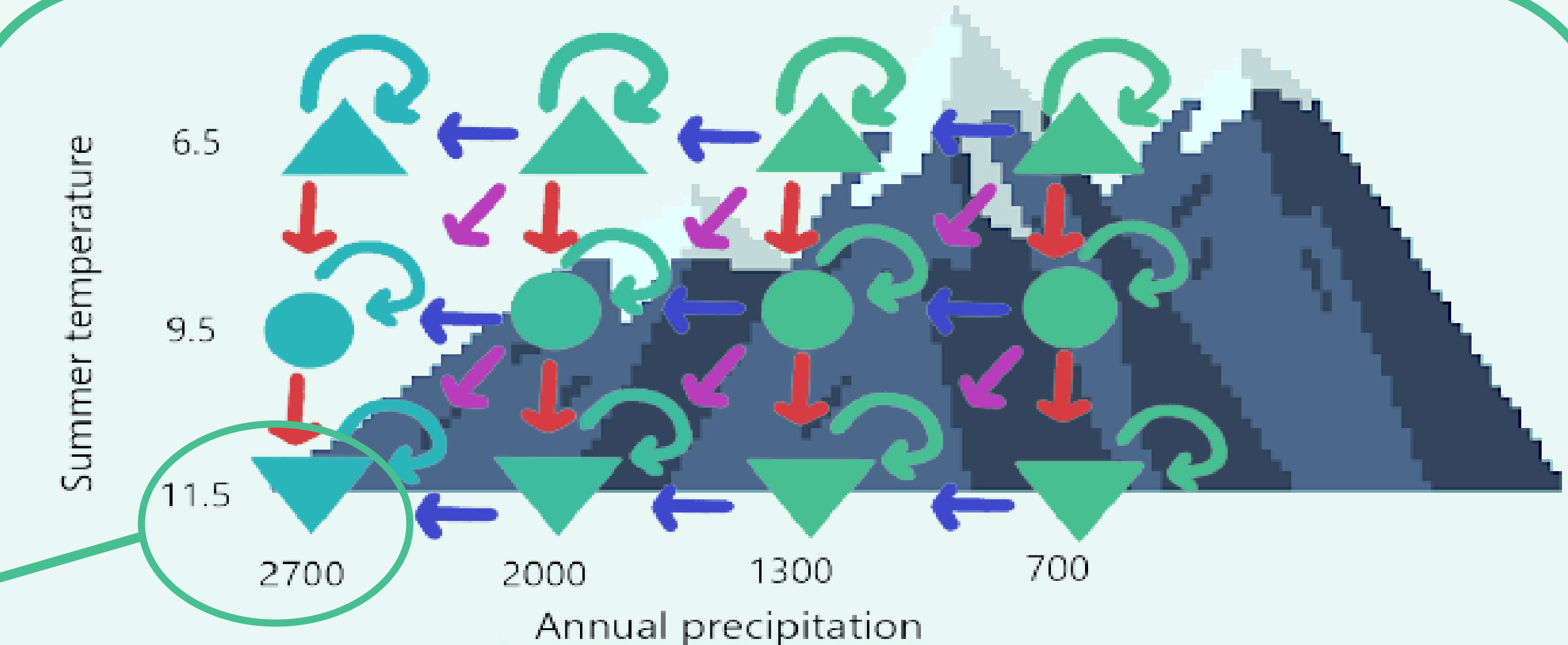
Individual trait values Relative abundance Community Weighted mean



Traits that are present in a community at any given time reflect the environmental conditions in the area



Conclusion
Height is a crucial trait for survival when the climate change to become more warmer and wetter.



Turf-transplant experiment across 12 grassland sites in southwestern Norway. It formed a climate grid with three levels of summer temperature crossed with four levels of annual precipitation

Competition-trait hierarchy hypothesis

The competitive effect of species A on species B will be related to the hierarchical distance of functional traits

Analysis

We ran the models for 50'000 iterations. Checked how well the models fit real data using PPCs, SSQs and "Bayesian P-values."

References:

- Perez-Harguindeguy, N., Dias, D., Garnier, E., Lavorel, D., Poorter, H., Jauregui-Berry, P., Bret-Harte, M.S., Cornwell, W.K., Craine, K.M., Gurvich, D.E., Urcelay, C., Veneklaas, E., J. Reich, P.B., Poorter, L., Weight, I.J., Ray, P., Enrico, L., Pausas, K., G., De Vos, A.C., Buchmann, N., Funes, G., Quetier, F., Hodgson, J.G., Thomson, K., Morgan, H.D., Ter Steege, H., Van der Heijden, M.G.A., Sack, L., Blonder, B., Poschlod, P., Vaieretti, M.V., Conti, G., Staver, A.C., Aquino, S., Cornelissen, J.H.C. (2013). New handbook for standardized measurement of plant functional traits worldwide. *Australian Journal of Botany* 61, 167-234.
- Smith, T.M., Smith, R.L. (2015). *Elements of ecology* (9th edition). Boston, Mass: Pearson.
- Grime, J. (1998). Benefits of plant diversity to ecosystems: immediate, filter and founder effects. *Journal of Ecology* 86, 902-910.