Contrasting drivers of community-level trait variation for vascular plants, lichens, and bryophytes

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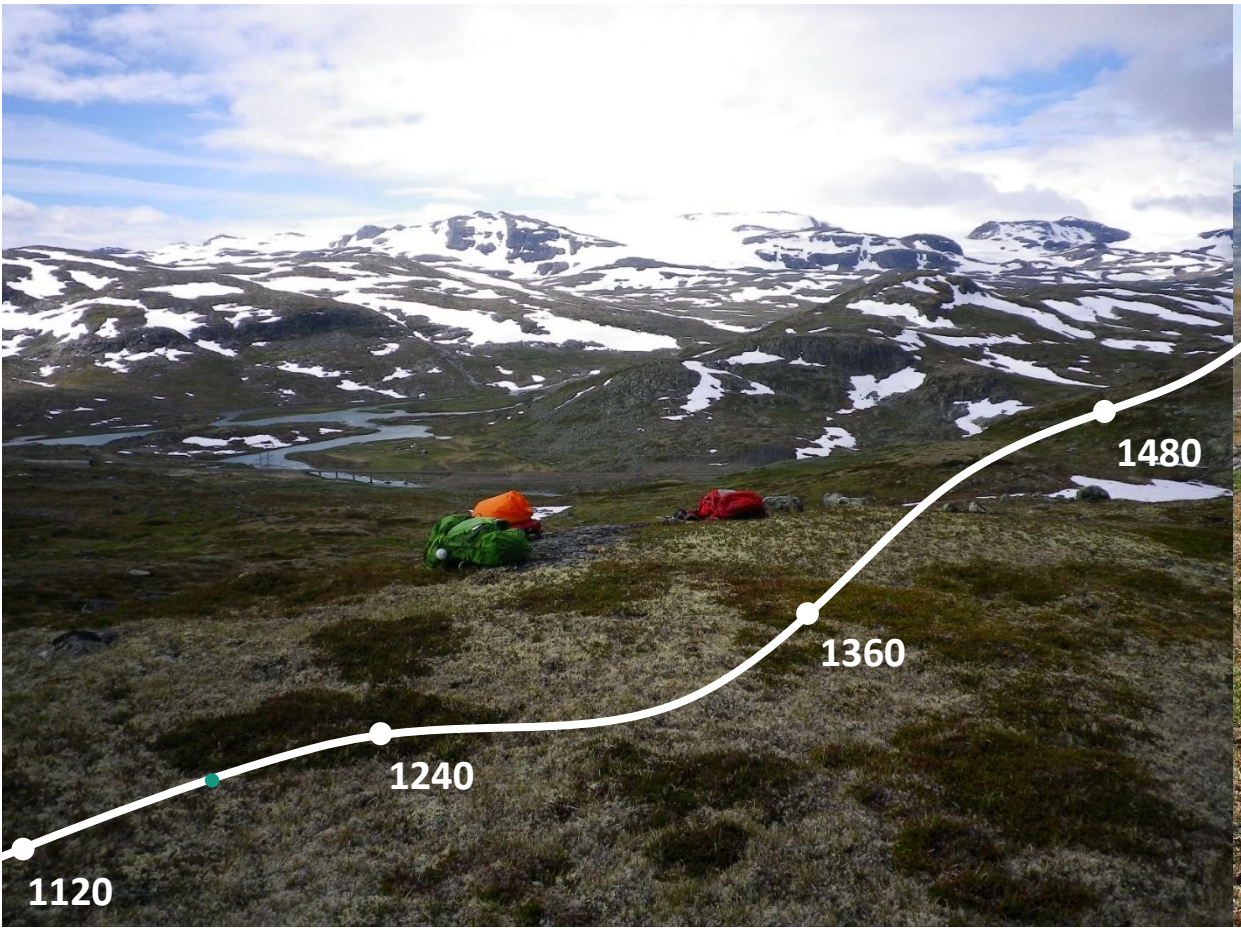
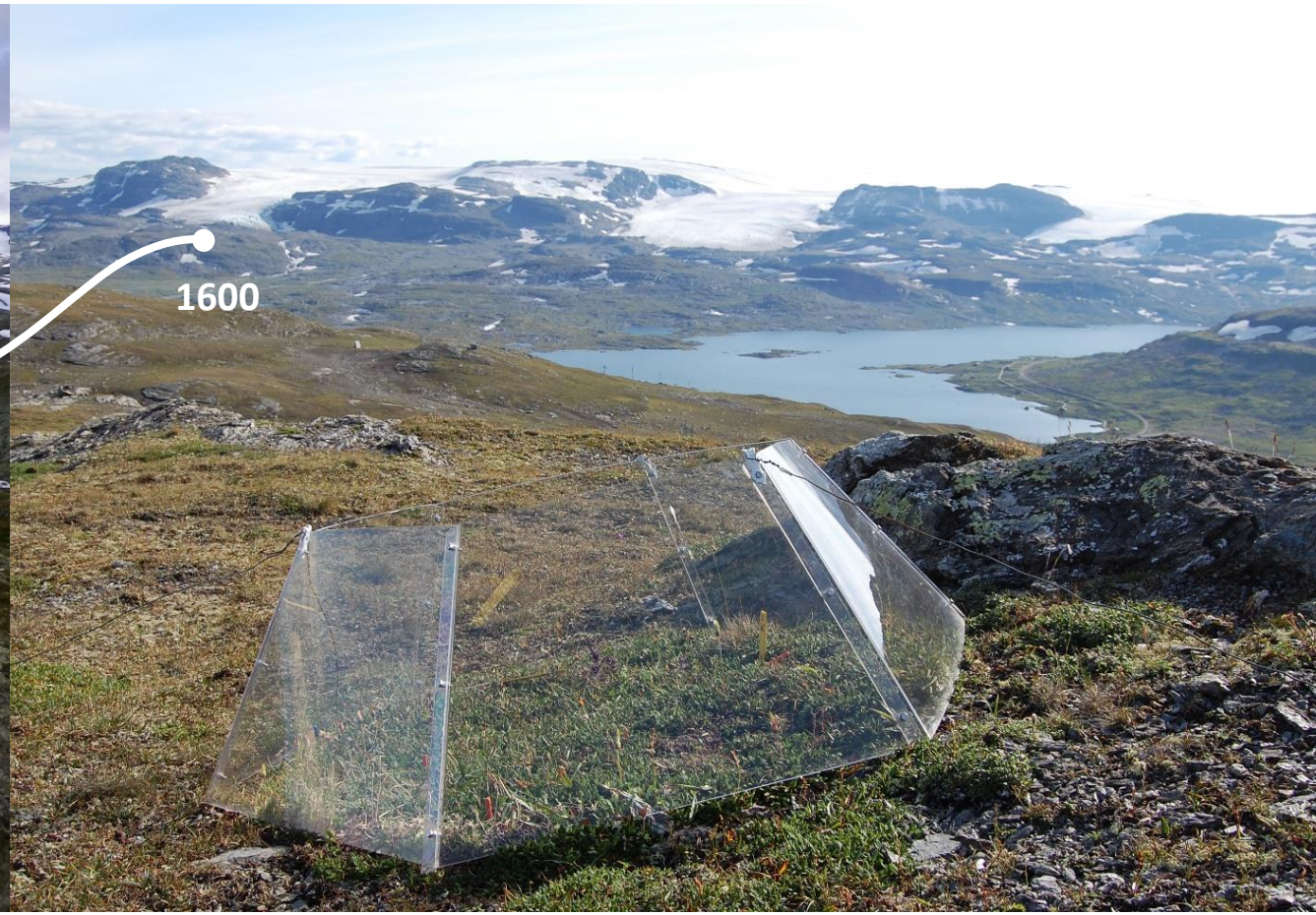
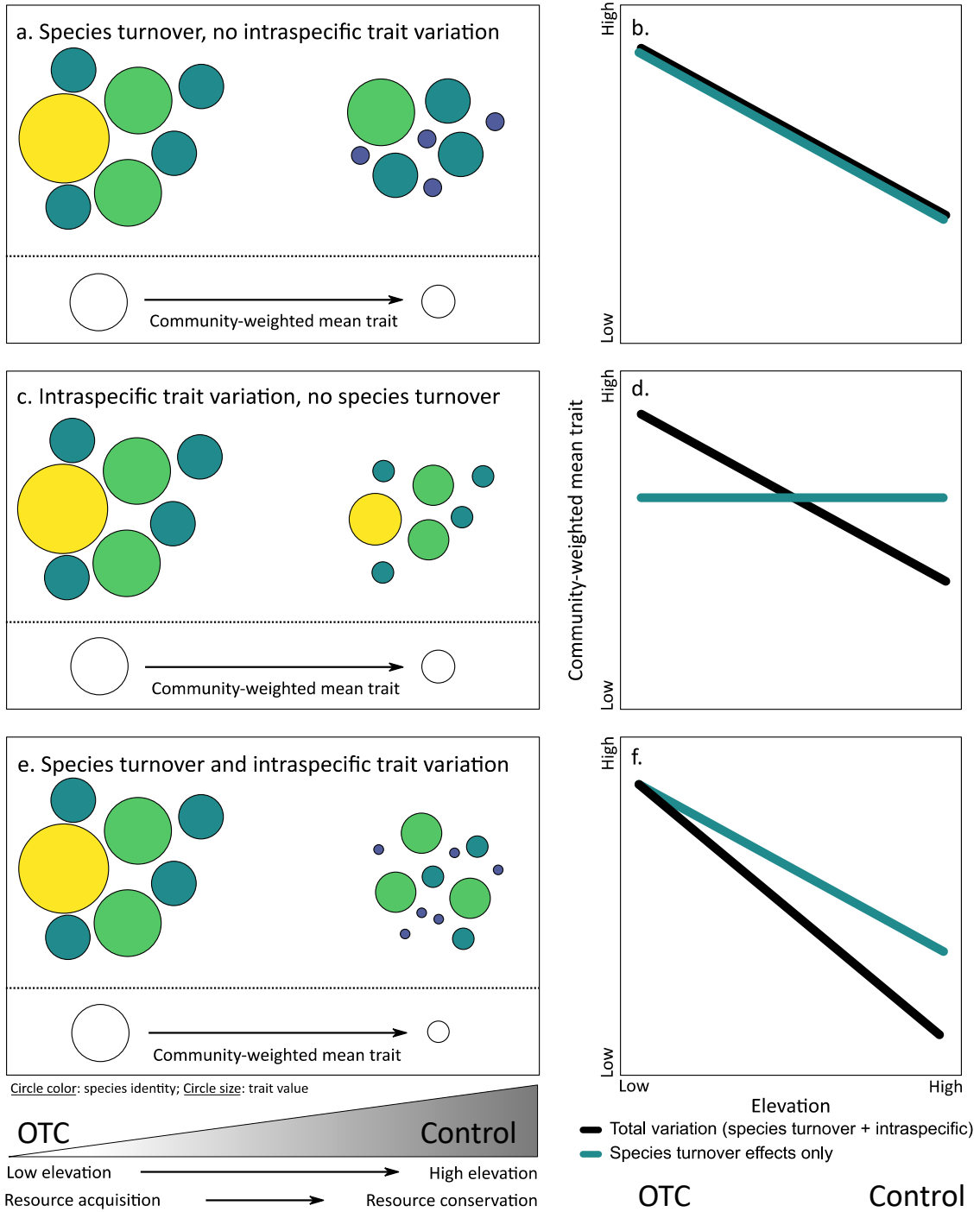
Trait responses along elevation gradient and 18 yrs OTC warming





Alpine Finse, southern Norway



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Aim

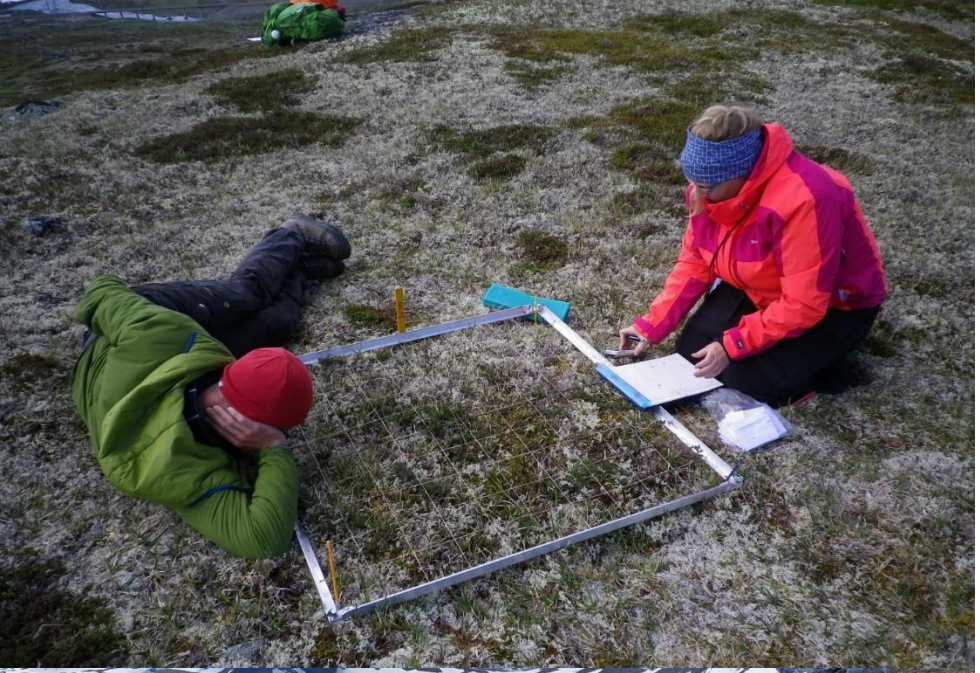
Assess species turnover versus intraspecific variation

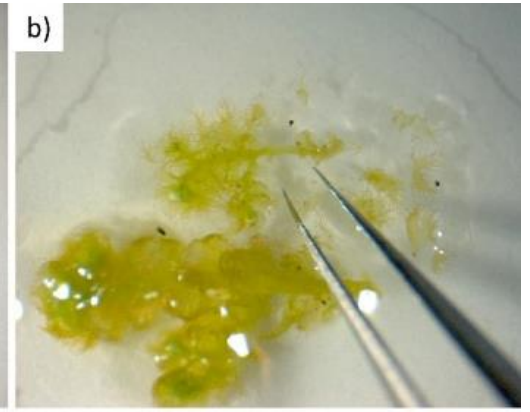
as drivers of community trait variability towards warmer climates

Hypotheses

- Shift from traits associated with resource conservation to acquisition towards warmer climates
- vascular plants driven most by species turnover
- lichens and bryophytes driven more by intraspecific variation since they are less capable of regulating their moisture and nutrient status and therefore reflect surroundings more

Vascular plants	**Lichens**	**Bryophytes**
tissue C	tissue C	tissue C
tissue N	tissue N	tissue N
tissue P	tissue P	tissue P
secondary compounds	secondary compounds	secondary compounds
tissue pH	tissue pH	tissue pH
specific leaf area SLA	specific thallus area STA	specific leaf area SLA
dry matter content LDMC		
	water-holding capacity WHC	water-holding capacity WHC

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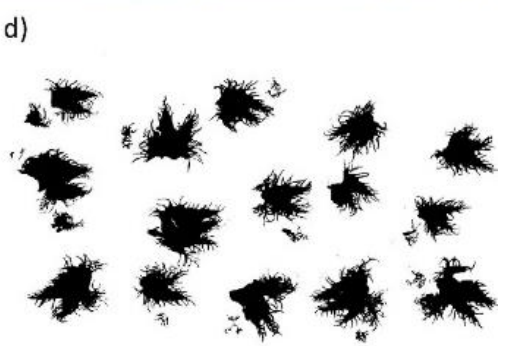
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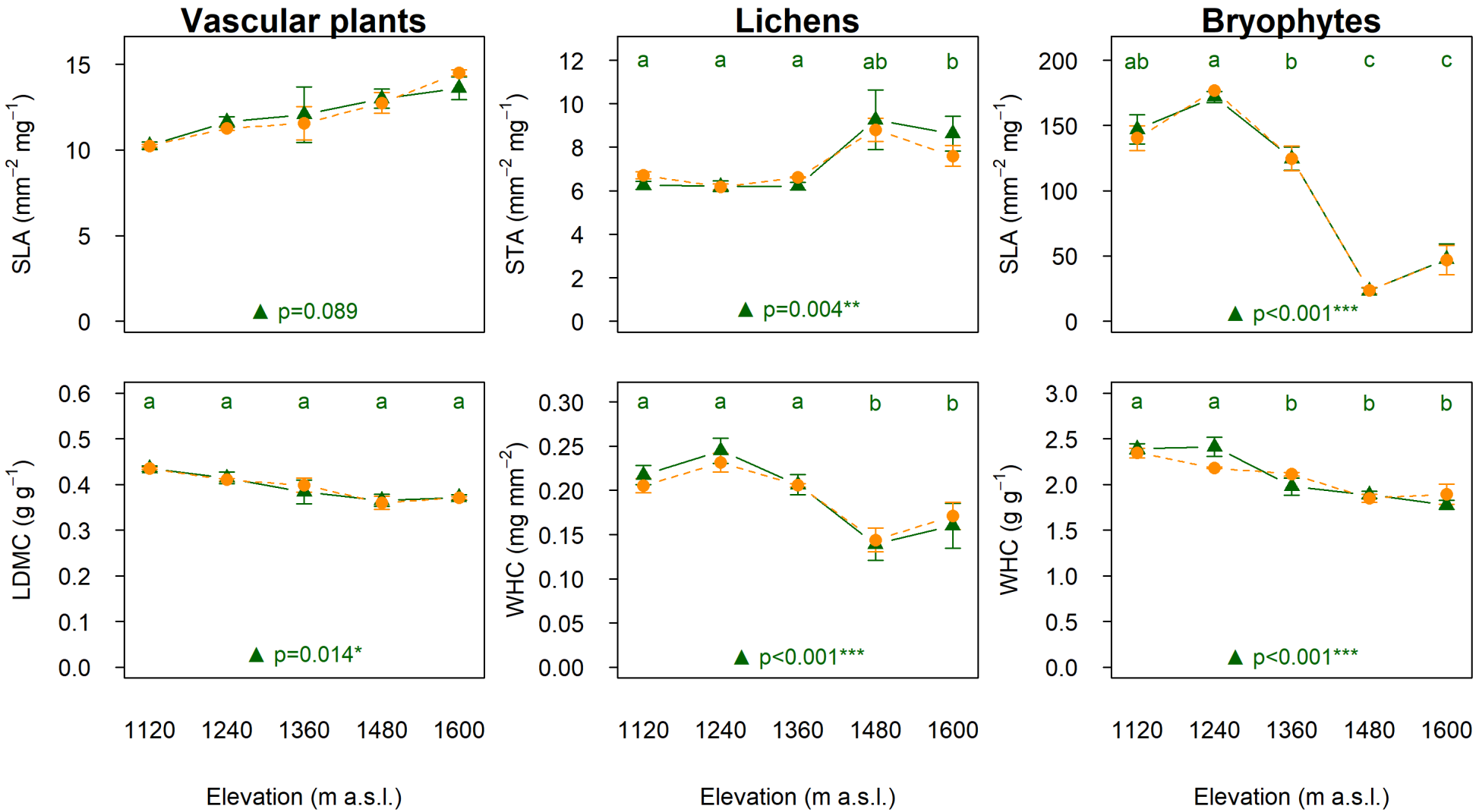

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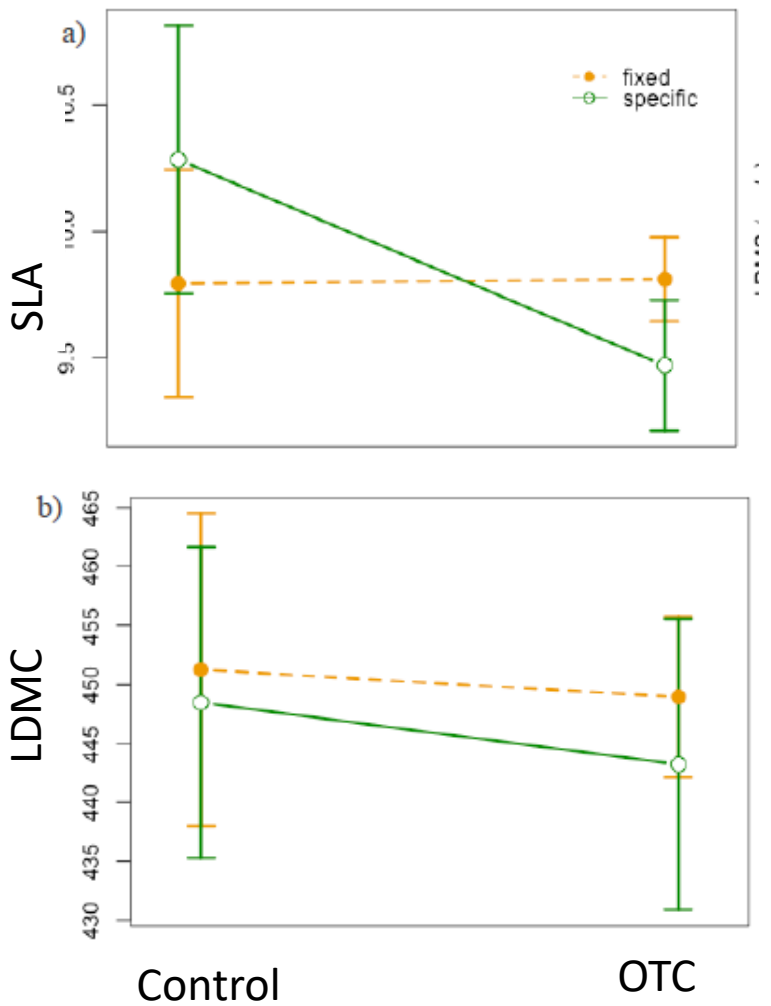
More variation explained by intraspecific variation in the warming experiment

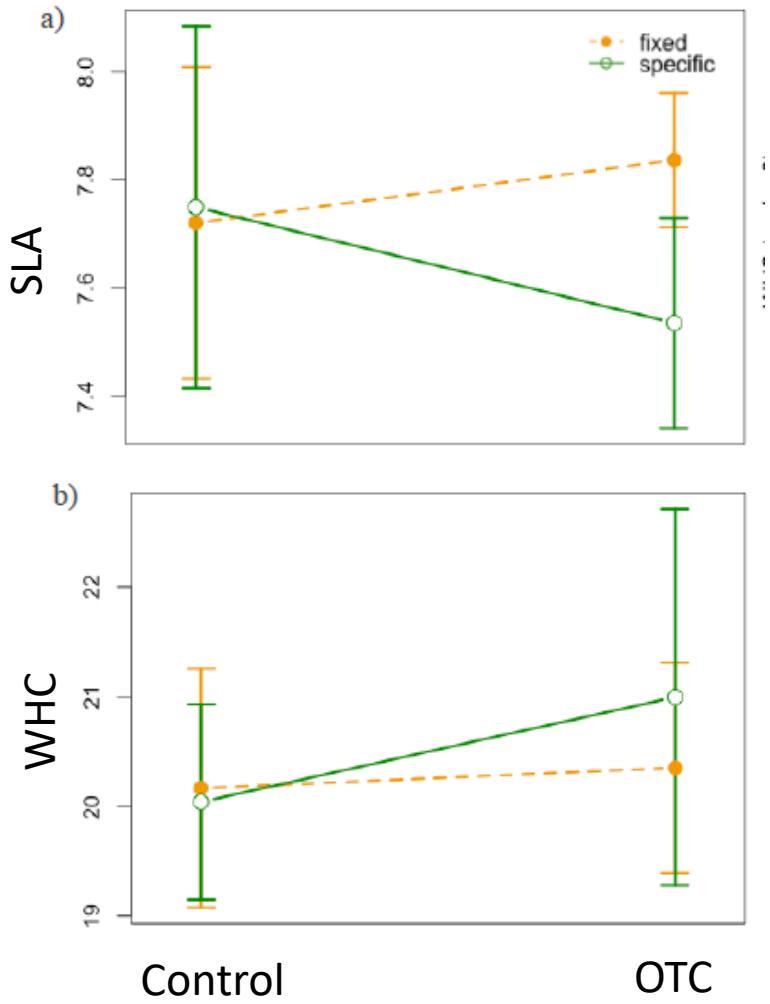
Total variation (species turnover + intraspecific)

Species turnover

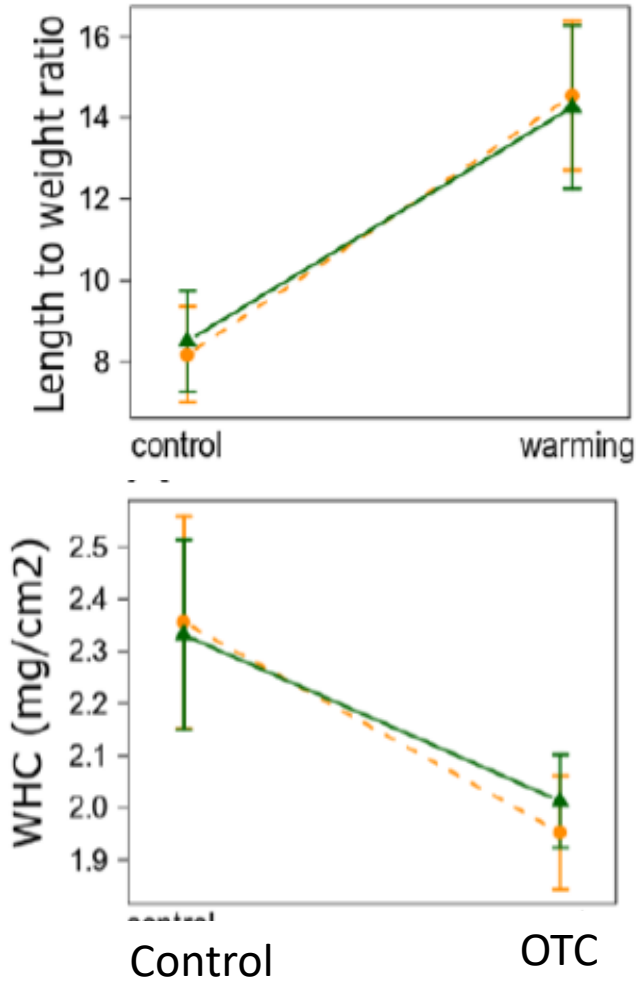
Vascular plants



Lichens

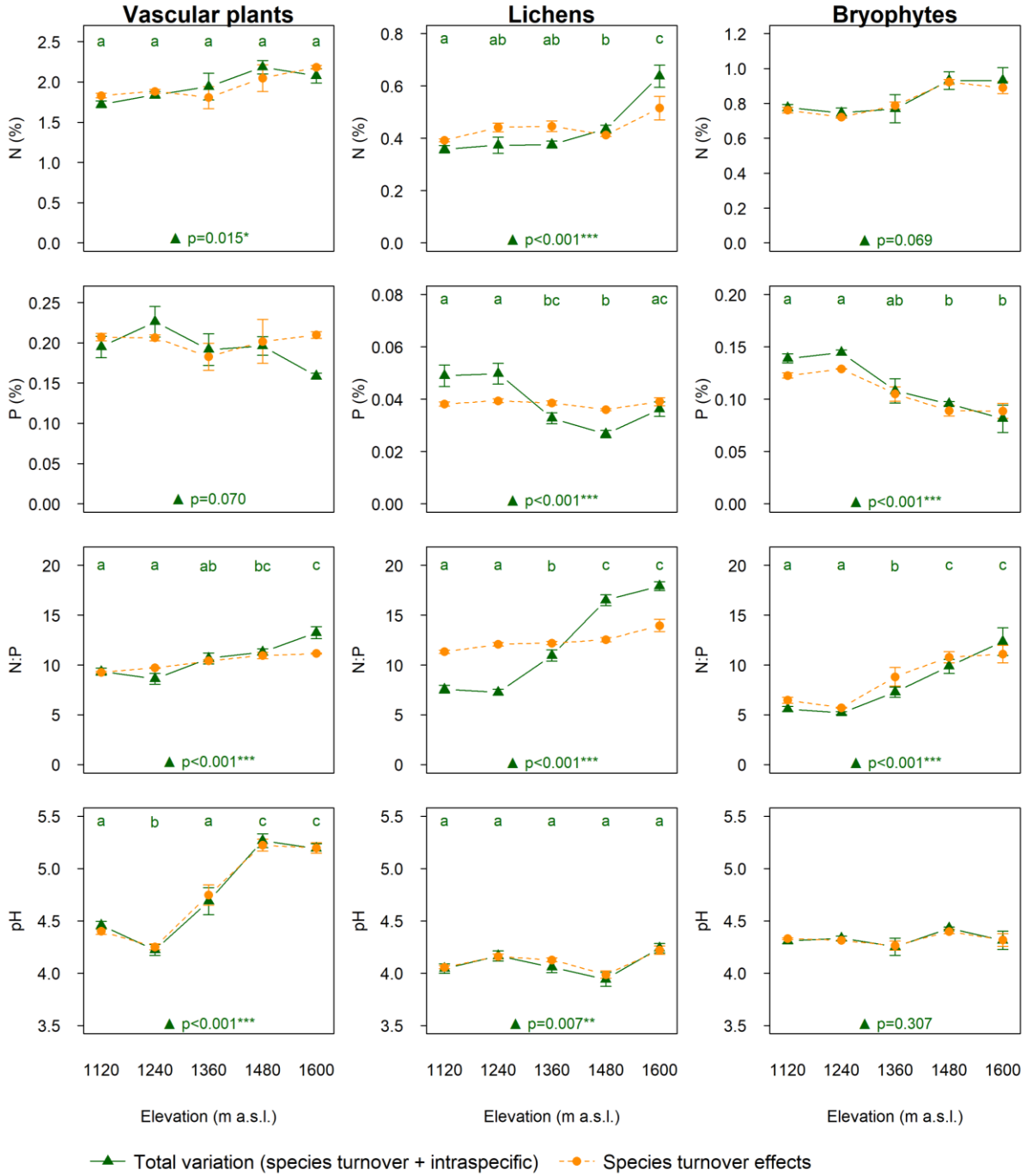


Bryophytes



Chemical traits along elevaton gradient

More variation explained by Intraspcific variation for lichens



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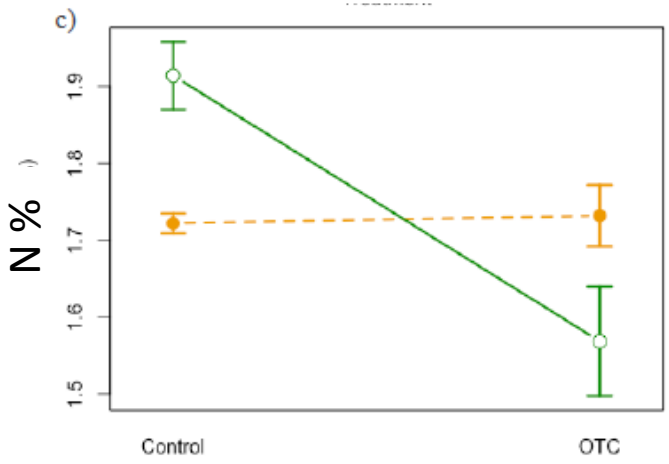
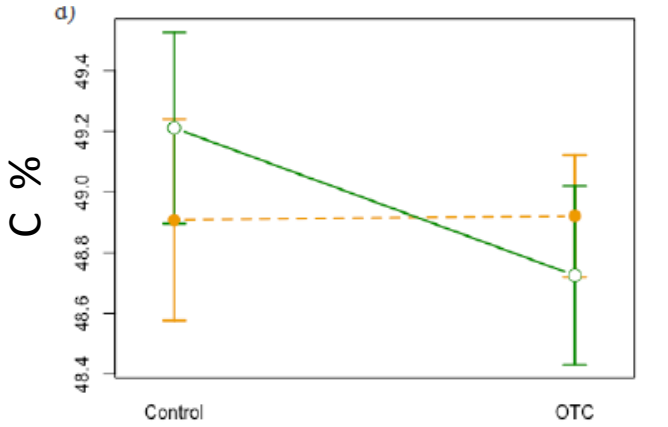
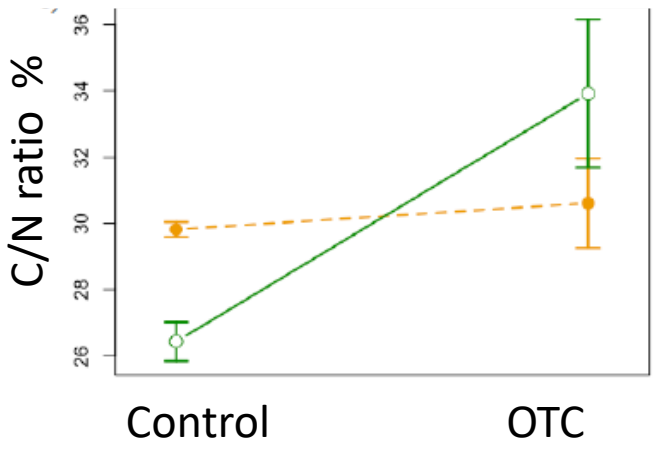
Vascular plants

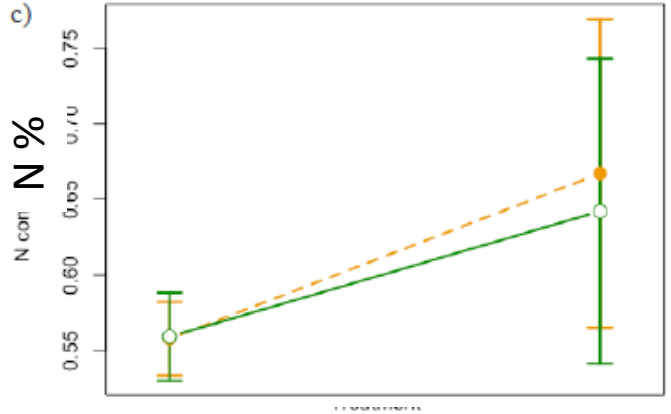
Lichens

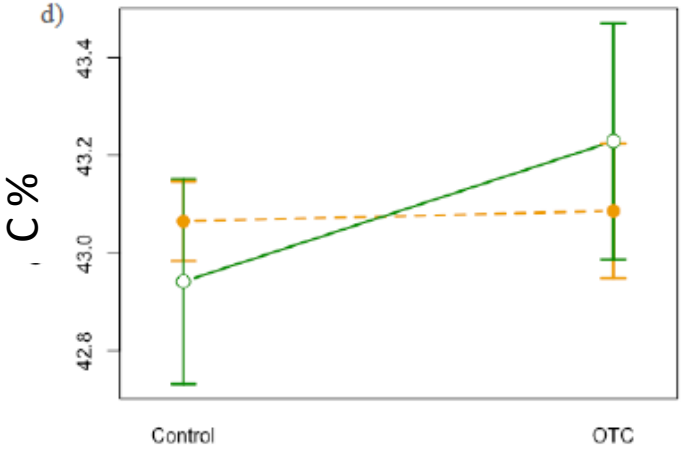
Bryophytes

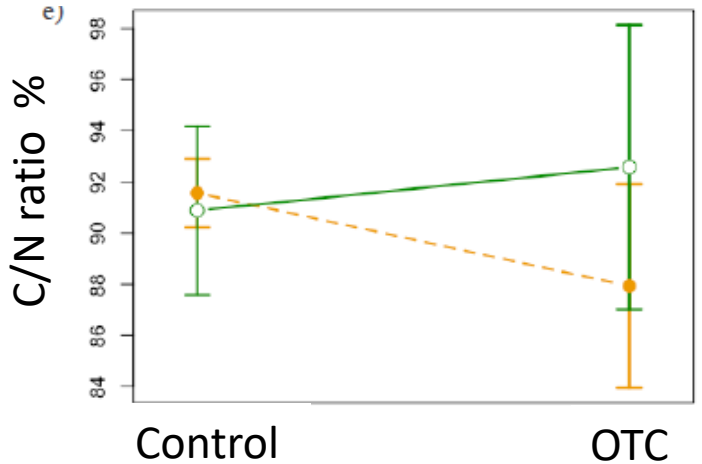






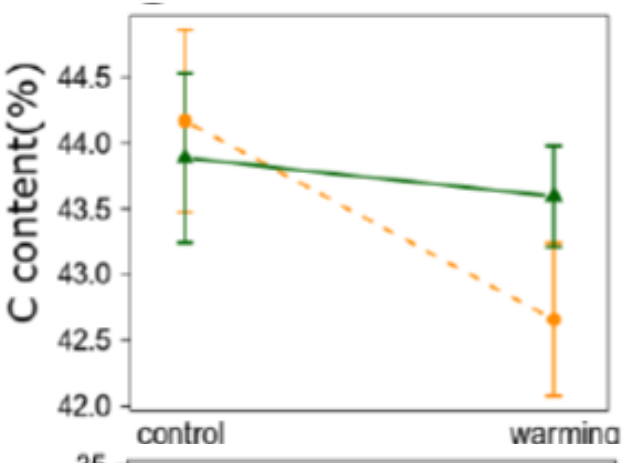


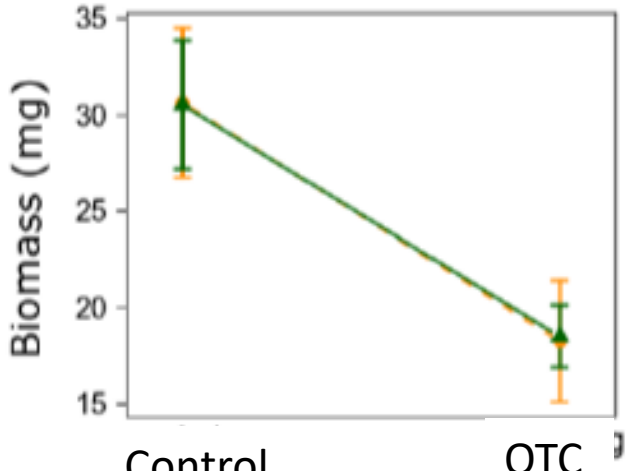




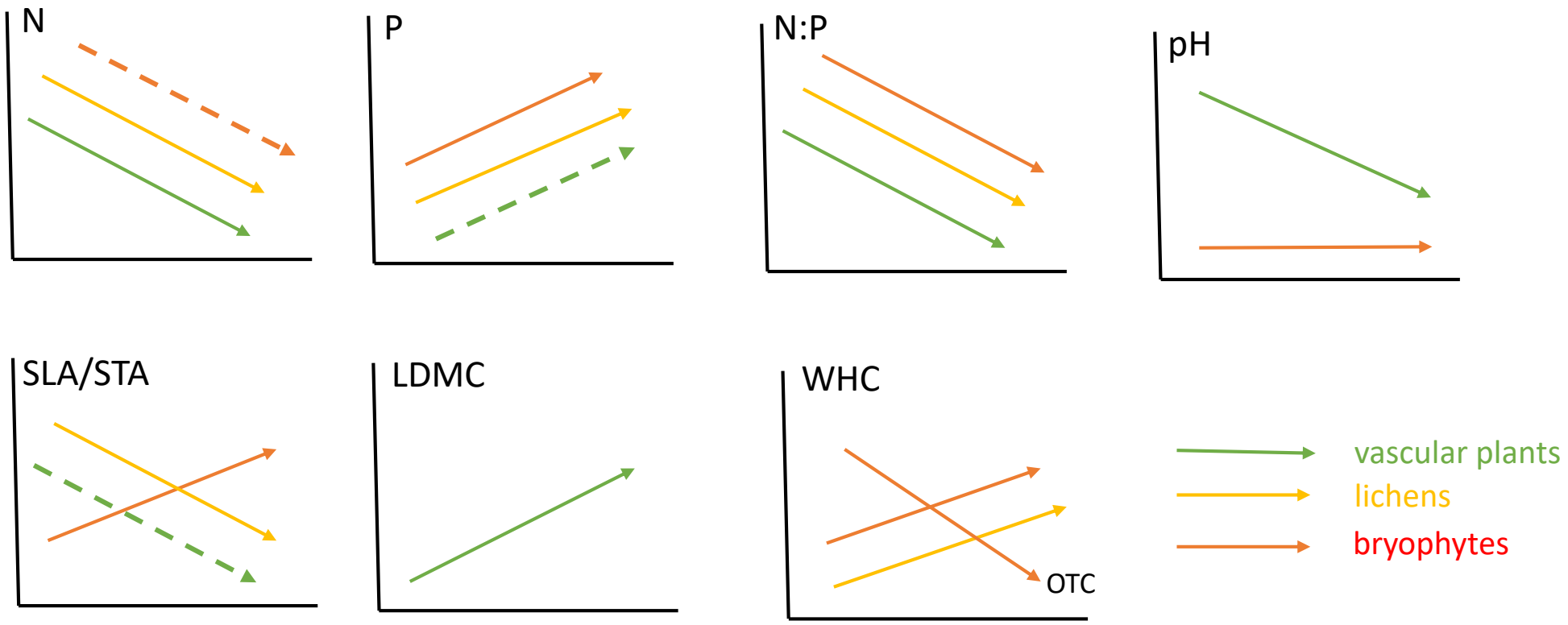
Total variation (species turnover + intraspecific)

Species turnover

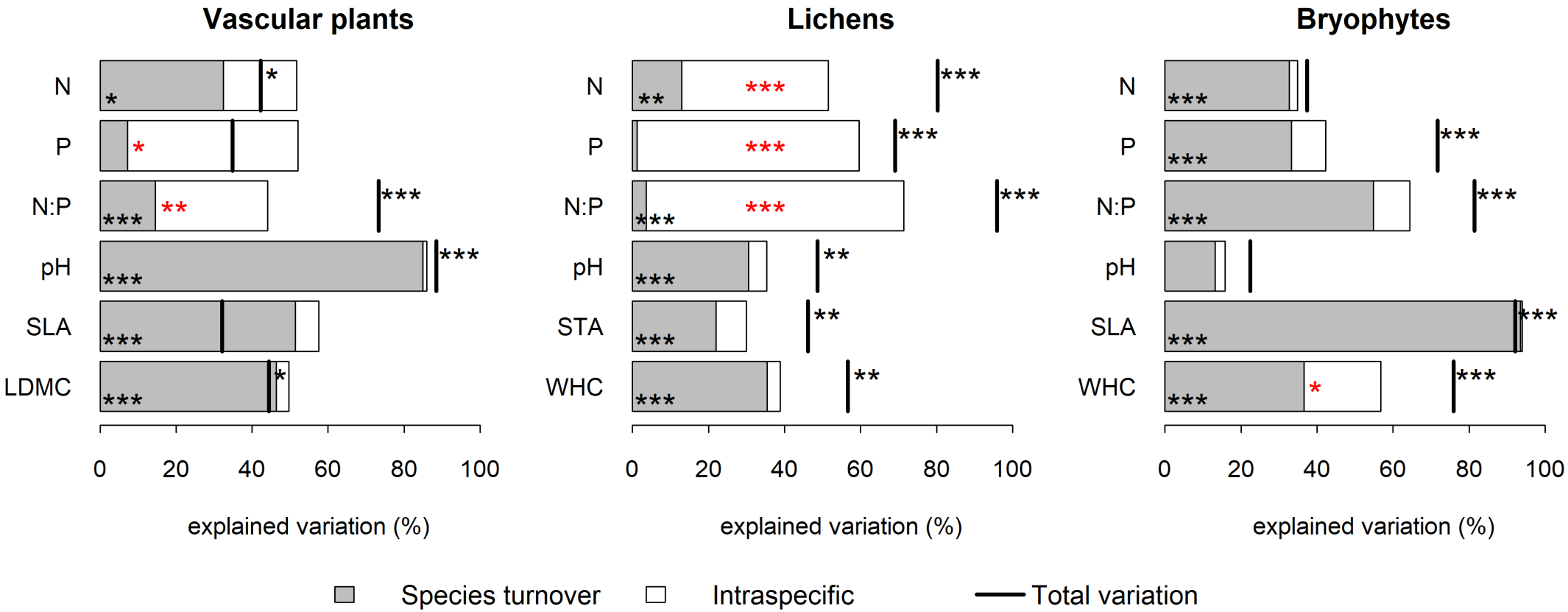




Shift towards resource acquistion with higher temperatures…?



Intraspecific variation most important for nutrient concentrations
in lichens along the gradient, and in vascular plants in warming experiment



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Conclusions and implications

- Species turnover most important for vascular plants and bryophytes
- Intraspecific variation more important in lichens, in particular for nutrient traits, and also for nutrient traits in vascular plants

Climate warming

- More intraspecific plasticity in lichens
- Shift towards resource acquisition traits in bryophytes, more mixed in vascular plants and lichens