

### No phylogenetic structure

The niche covariance does not vary with phylogenetic distance e.g. no covariance or constant covariance

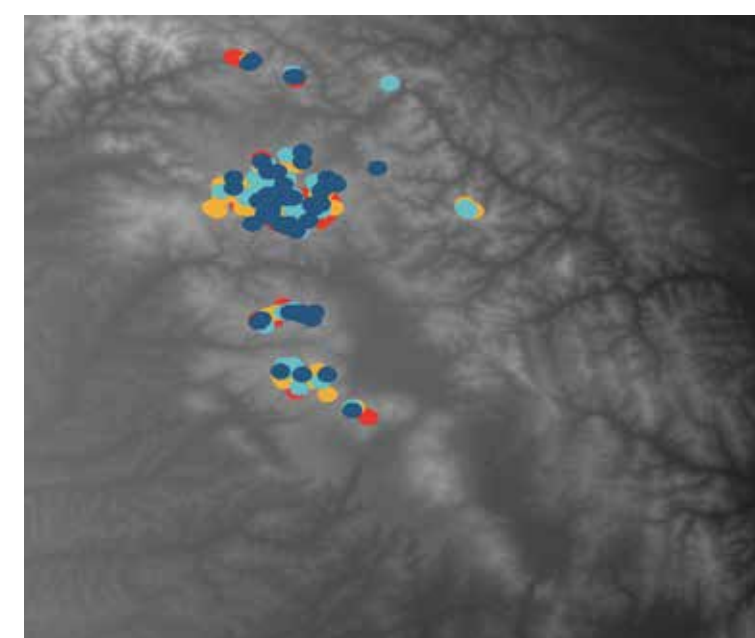
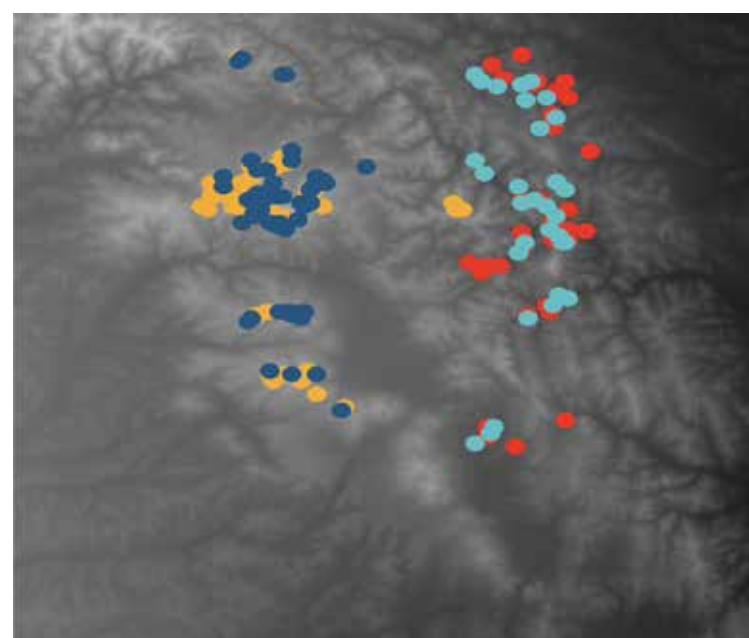
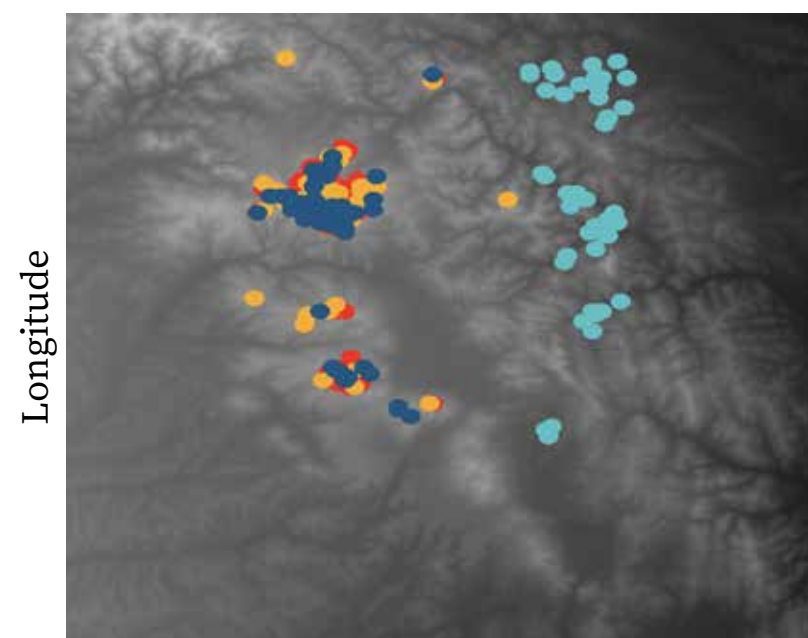
### Structured

Similarity in niches follows phylogenetic distance, covariance is a linear function of time shared

### Clustered

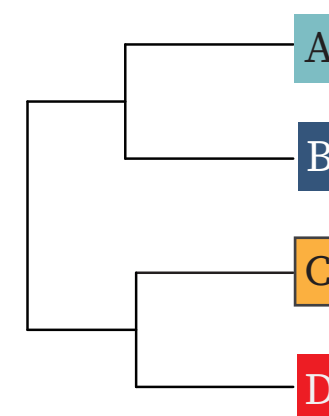
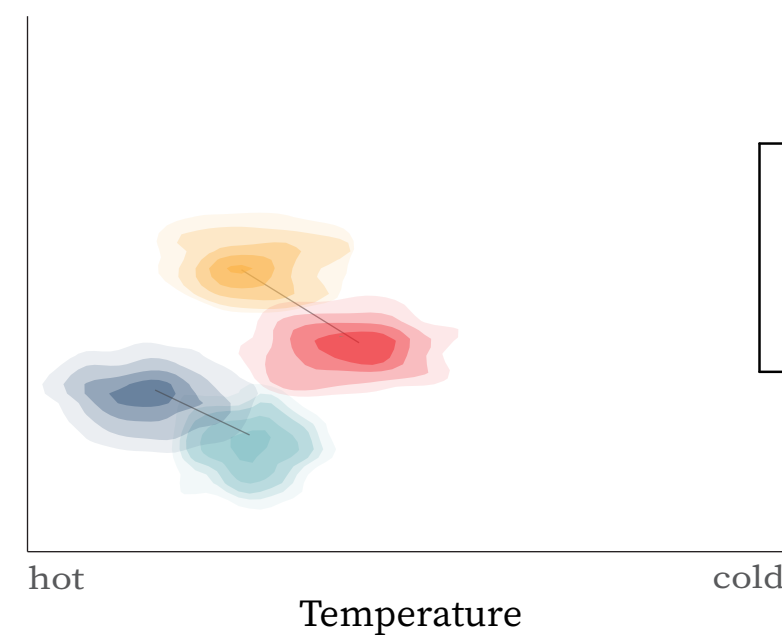
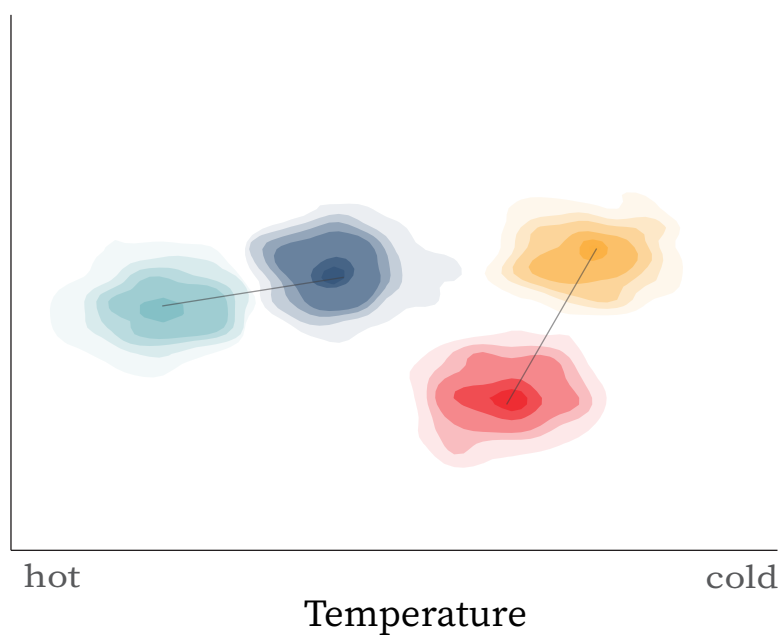
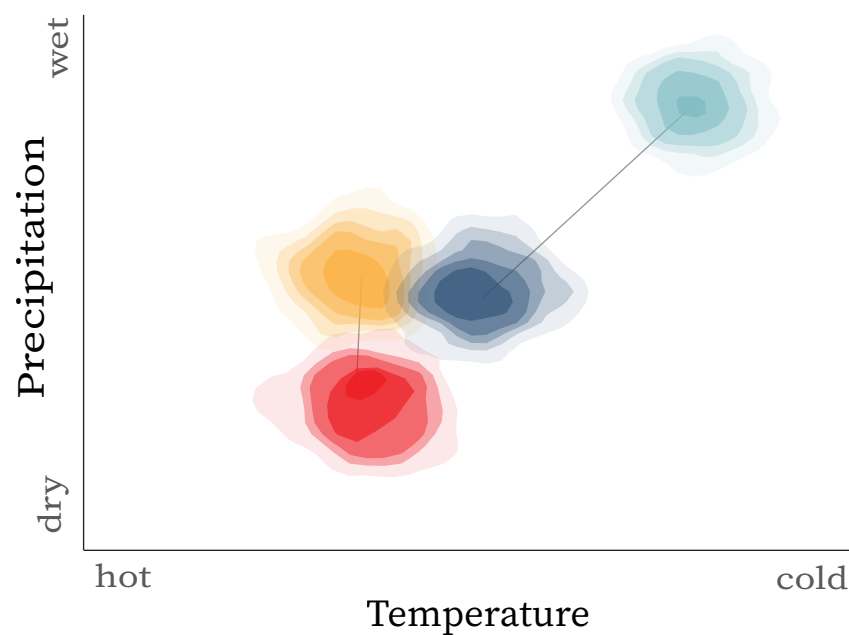
Similarity in species niches more than expected, covariance is a non-linear function of time shared

Observation

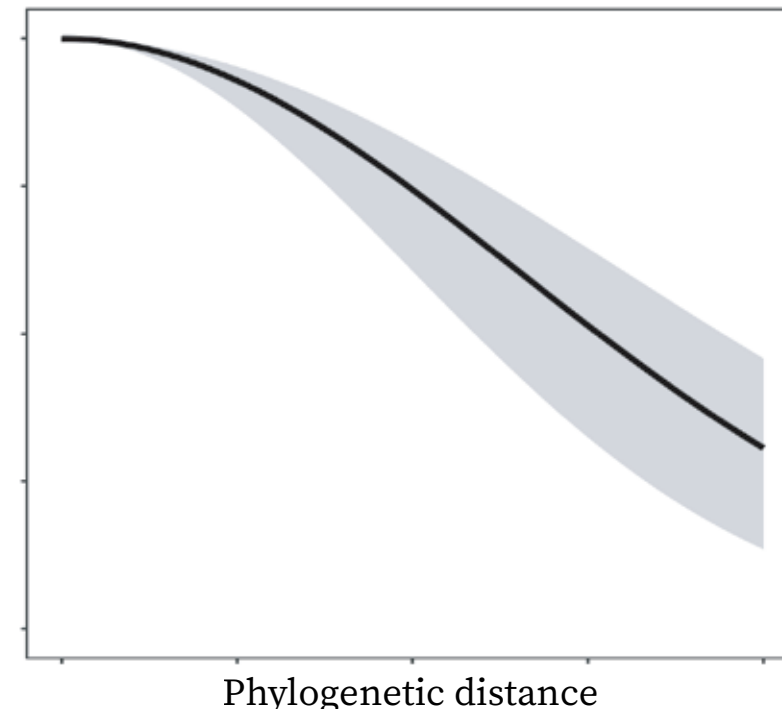
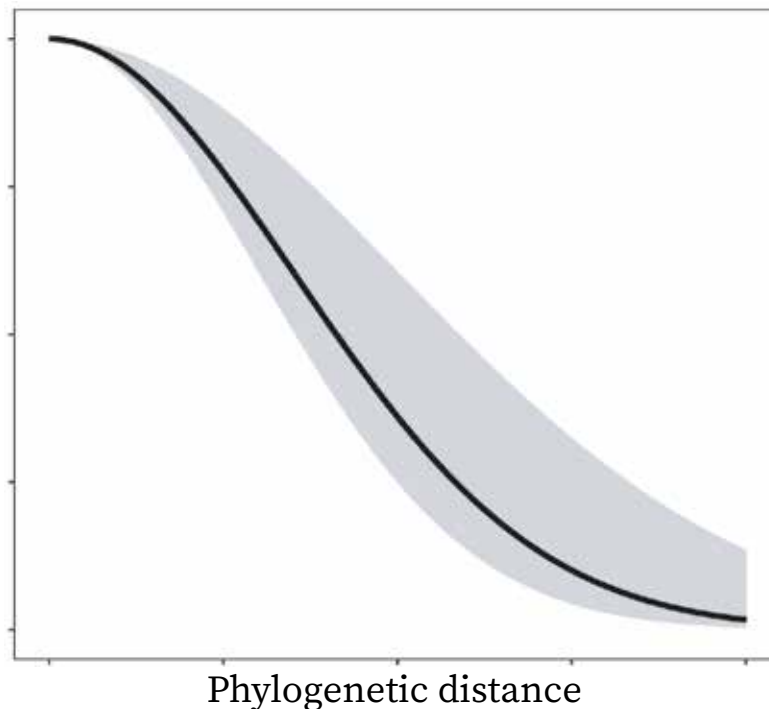
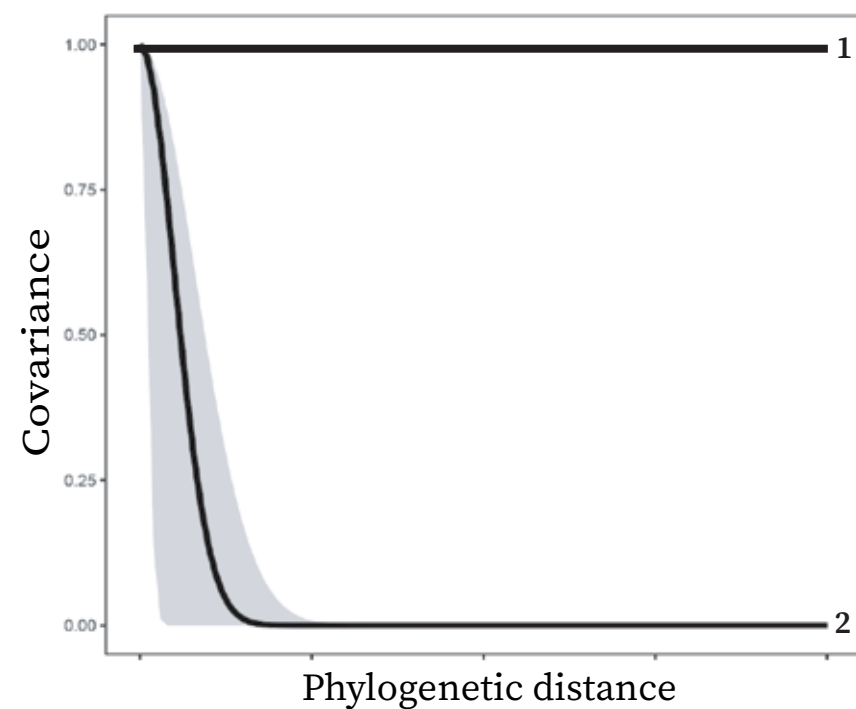


Hot, dry  
Cold, wet

Niche estimation



Niche evolution



$$^1 \Theta_{OU} = (\sigma^2 = \text{high/low}, \alpha = \text{very low})$$

$$\Theta_{OU} = (\sigma^2 = \text{high/low}, \alpha = \text{medium})$$

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$$^2 \Theta_{OU} = (\sigma^2 = \text{high/low}, \alpha = \text{very high})$$