Ant Climate Project

Estimation of phylogenetic signal in climatic variables using R2

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September 5, 2023

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1 Overview of the document

This document contains PGLS models on climatic variables on all available data (474 species). We calculate phylogenetic signal for each climatic variable (using R2 of the random effect of phylogeny), for each regional scale (global, tropical, temperate and 'both')

Summary

- Tropical: almost no variance explained by phylogeny for any of the climatic variables
- Both: variance explained by phylogeny is much greater for precipitation than any other of the climatic variables. This might explain the model selection results for colony size as the response variable, where temperature and DTR do no improve models much, but precipitation only slightly improves each model compared to the phylogeny-only model.

Table 1: Transformation of climatic variables.

TMPavg	PREavg	DTRavg
No	sqrt	log (ln)

2 PGLS for full dataset (474 species, no special ants)

2.1 Partial R2

2.1.1 Global

Table 2: Partial R2 for the random effect of phylogeny.

Climatic variable	**Mean R2**	**R2 SD**
Temperature	0.364	0.014
Precipitation	0.273	0.013
DTR	0.107	0.01

2.1.2 Tropical

Table 3: Partial R2 for the random effect of phylogeny.

Climatic variable	**Mean R2**	**R2 SD**
Temperature	0.009	0.004
Precipitation	0	0
DTR	0.005	0.003

2.1.3 Temperate

Table 4: Partial R2 for the random effect of phylogeny.

Climatic variable	Mean R2	R2 SD
Temperature	0.189	0.014
Precipitation	0.183	0.018
DTR	0.142	0.011

2.1.4 Both

Table 5: Partial R2 for the random effect of phylogeny.

Climatic variable	Mean R2	R2 SD
Temperature	0.099	0.012
Precipitation	0.302	0.017
DTR	0.105	0.019