

# Supplements for: Changes and trends in budburst and leaf flush across Europe and North America

## A meta-analysis of local adaptation in spring phenology studies

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### Methods

Table for all studies

Mapped locations for all studies

### Results

Corrected DOY results

Fitting each species & common garden instead of just species

MAT difference

Might want to include how the model looked when we included studies with disagreeing provenance & gardens

Similar results across provenance latitude, absolute value of difference between provenance and garden latitude, and spherical distance

Placeholder text (Fig. 1).

change caption later

Strong relationship between provenance latitude, MAT, and GDDs

Flagged for Lizzie: I am unsure about how to comment on what we are seeing in this plot. There is a strong relationship between GDDs of each event day recorded and the latitude and MAT, but isn't that self-apparent?

Placeholder text (Fig. 2).

1 Don't have a specific sections for these ones yet

Spring Lat VS. Fall Lat

Table 1: Model summary for the relationship between event day of year (DOY) and provenance latitude, fitted by species, in spring (left) and fall (right).

i'm not sure how to word this

	$DOY_{Spring} (Latitude Species)$	$DOY_{Fall} (Latitude Species)$
Intercept	114.219 [100.511, 127.680]	316.736 [272.545, 415.373]
Sigma[Species $\times$ Intercept, Intercept]	1148.104 [435.227, 2825.532]	12 381.073 [6176.075, 24 554.731]
Sigma[Species $\times$ Latitude, Intercept]	-13.454 [-41.733, -1.069]	-307.256 [-621.049, -122.796]
Sigma[Species $\times$ Latitude, Latitude]	0.374 [0.111, 1.030]	10.159 [5.266, 33.131]
Num.Obs.	671	349
R2	0.903	0.961
R2 Adj.	0.902	0.960
R2 Marg.	0.000	0.000
Log.Lik.	-2340.362	-1217.949
ELPD	-2358.2	-1231.9
ELPD s.e.	27.8	22.1
LOOIC	4716.4	2463.8
LOOIC s.e.	55.6	44.2
WAIC	4716.2	2463.3
RMSE	7.87	8.44
r2.adjusted.marginal	0.902	0.960

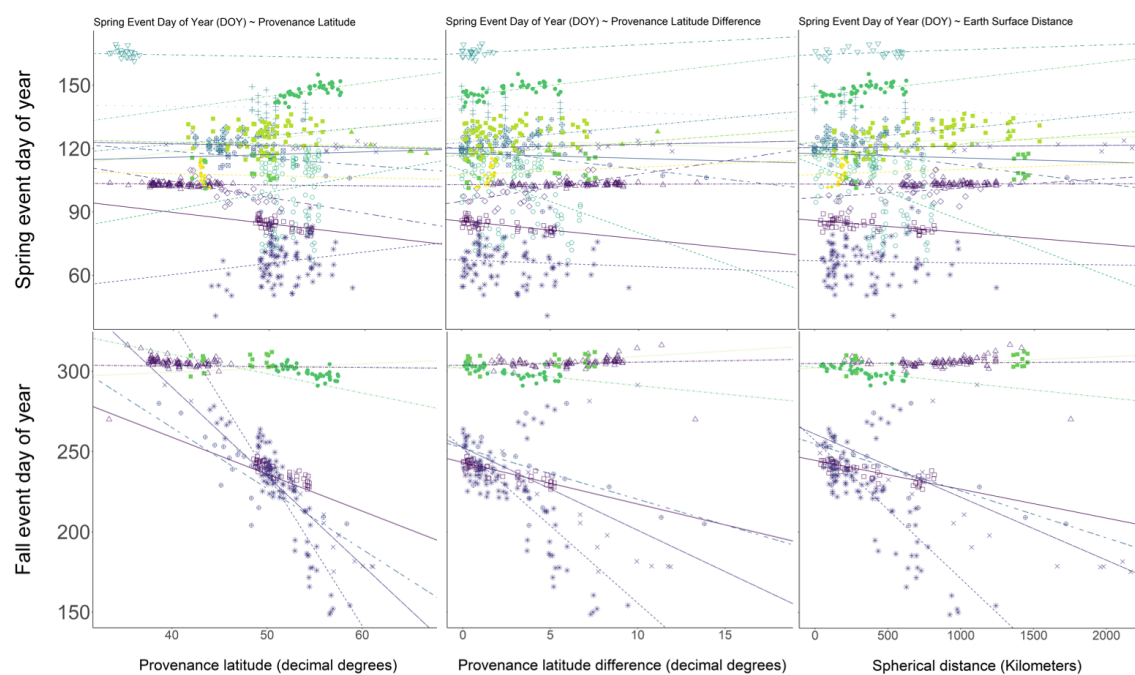


Figure 1: Similar results across provenance latitude, absolute value of difference between provenance and garden latitude, and spherical distance

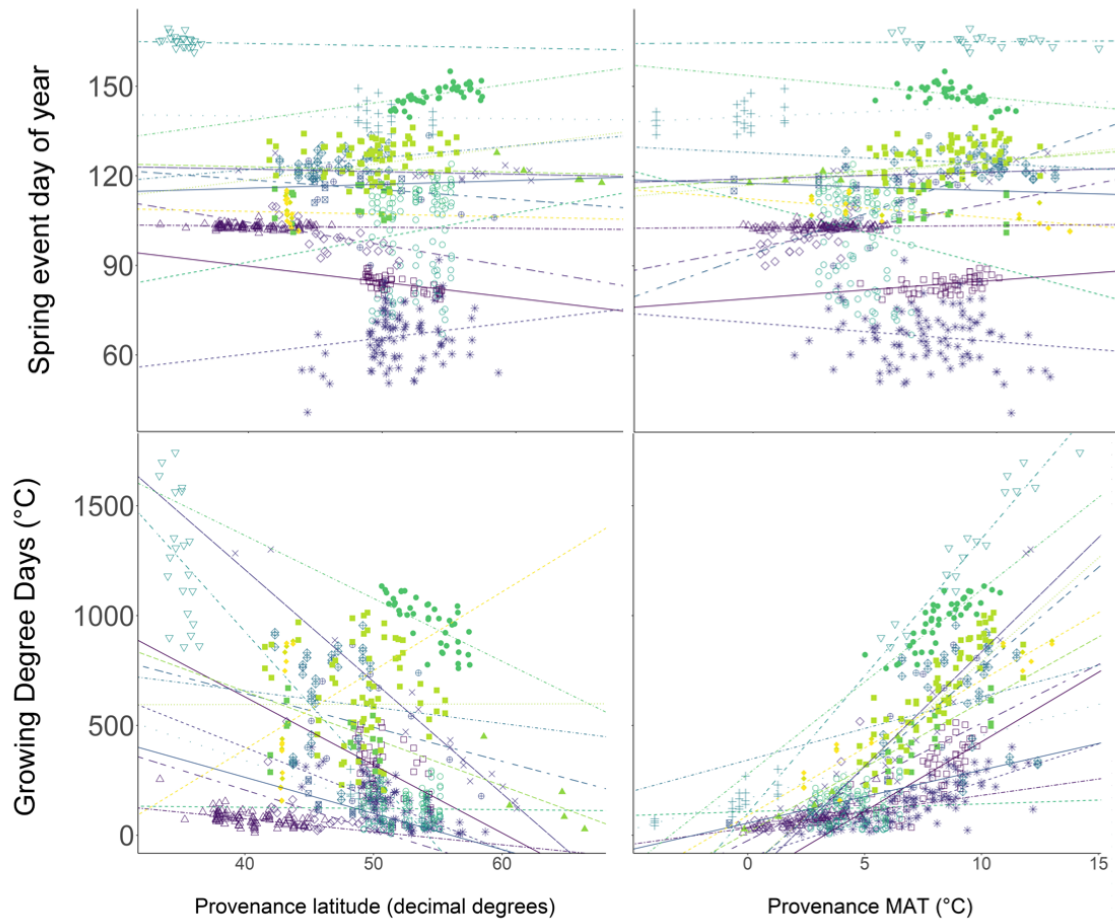


Figure 2: Growing Degree Days (GDD) on each day of spring event in relation to provenance latitude and MAT, coded by symbol for species and color for garden with linear fits from hierarchical Bayesian models.

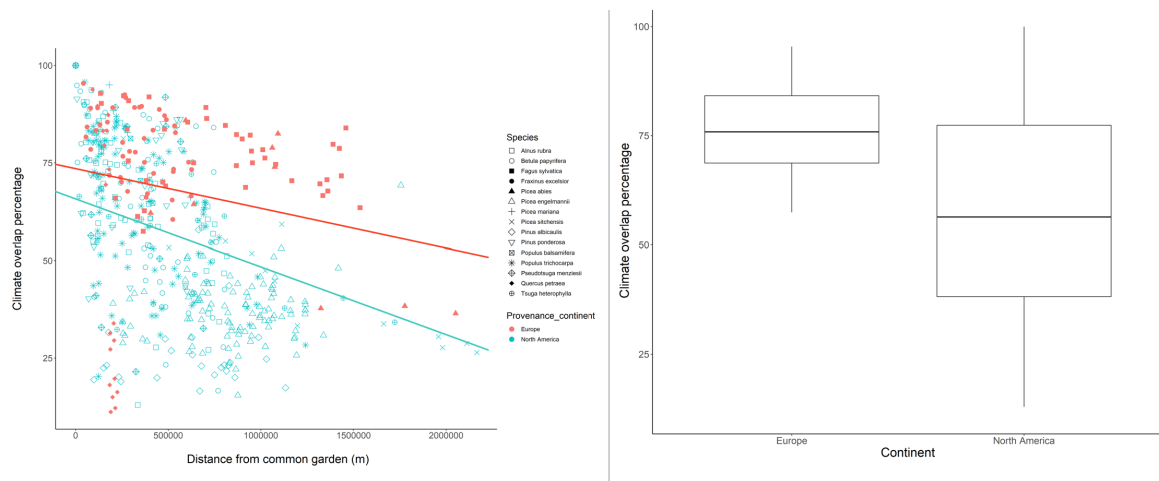


Figure 3: The closer a garden is to a provenance, the more overlap in temperature. Higher extend of climate overlap in European studies.

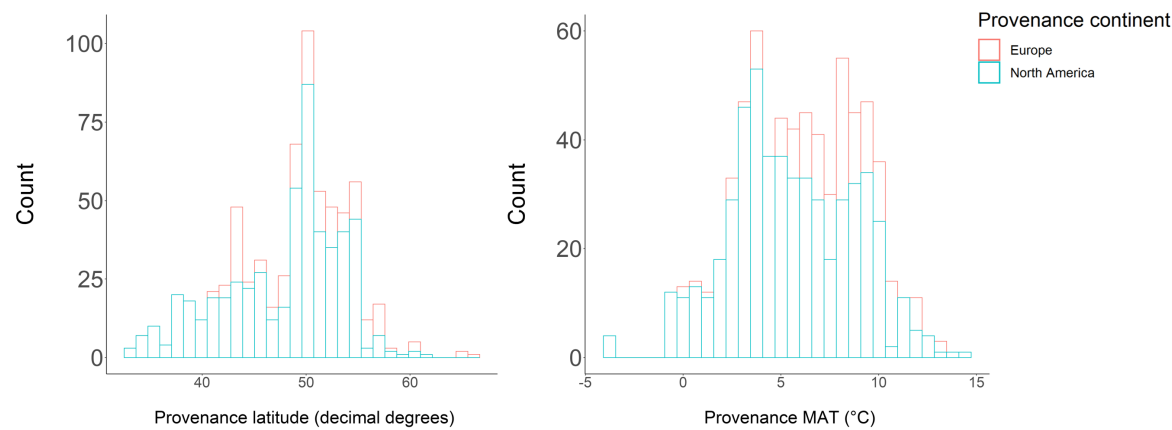


Figure 4: Placeholder.

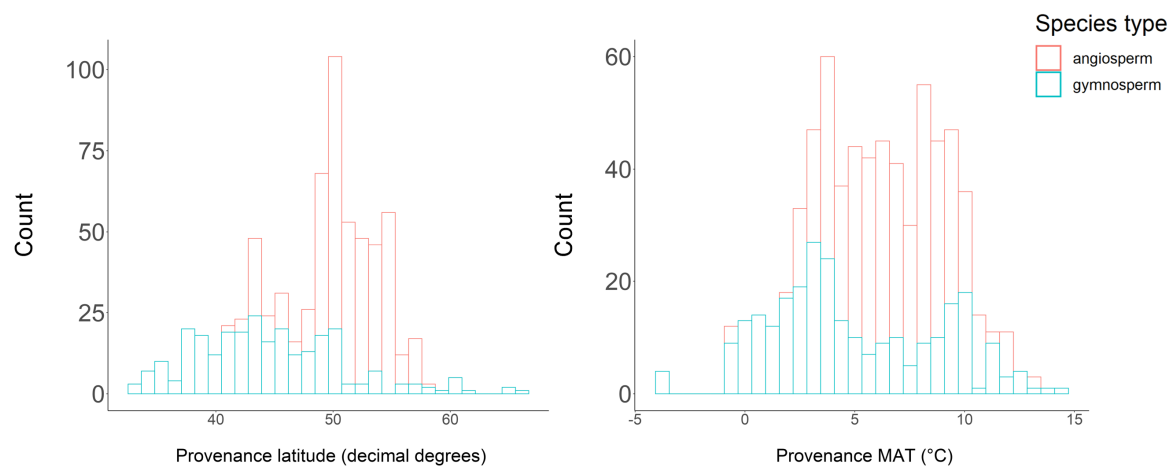


Figure 5: Placeholder