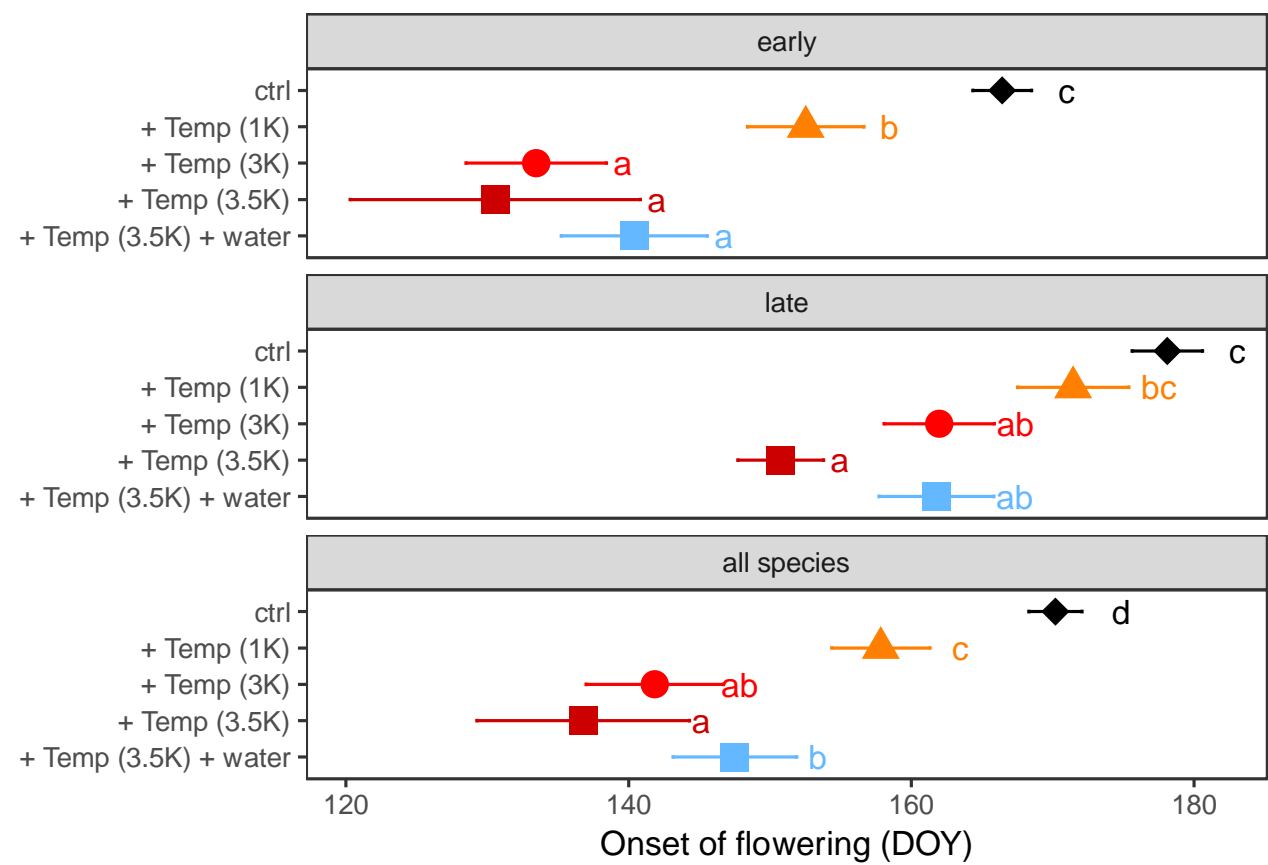


Shifts in onset of flowering



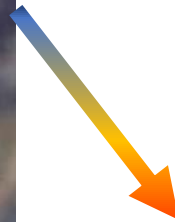
Take-home:

- Species track climate change
- Onset of flowering among species prolongs along the climatic gradient
- Water addition removes stress, thus later onset

phenological sensitivity

$$S_{phen} = \frac{\text{Onset}_{warm} - \text{Onset}_{cont}}{T_{warm} - T_{cont}}$$

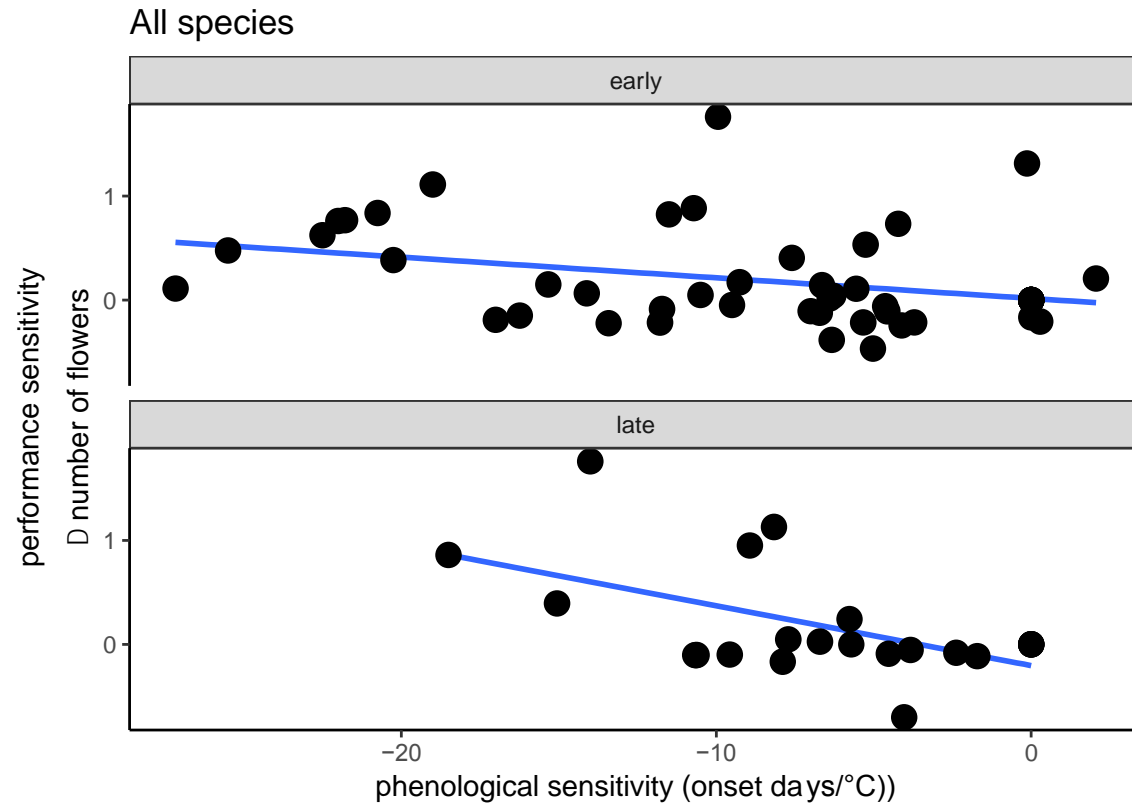
In other words:



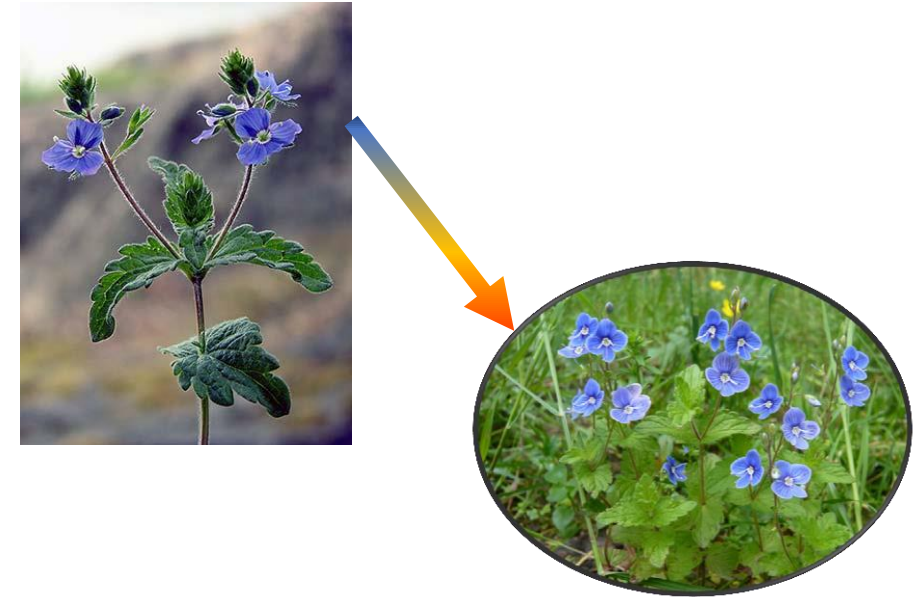
performance sensitivity

$$S_{perf} = \frac{(\#Flowers_{warm} - \#Flowers_{cont}) / \#Flowers_{cont}}{T_{warm} - T_{cont}}$$

(Cleland et al., 2012 Ecology)

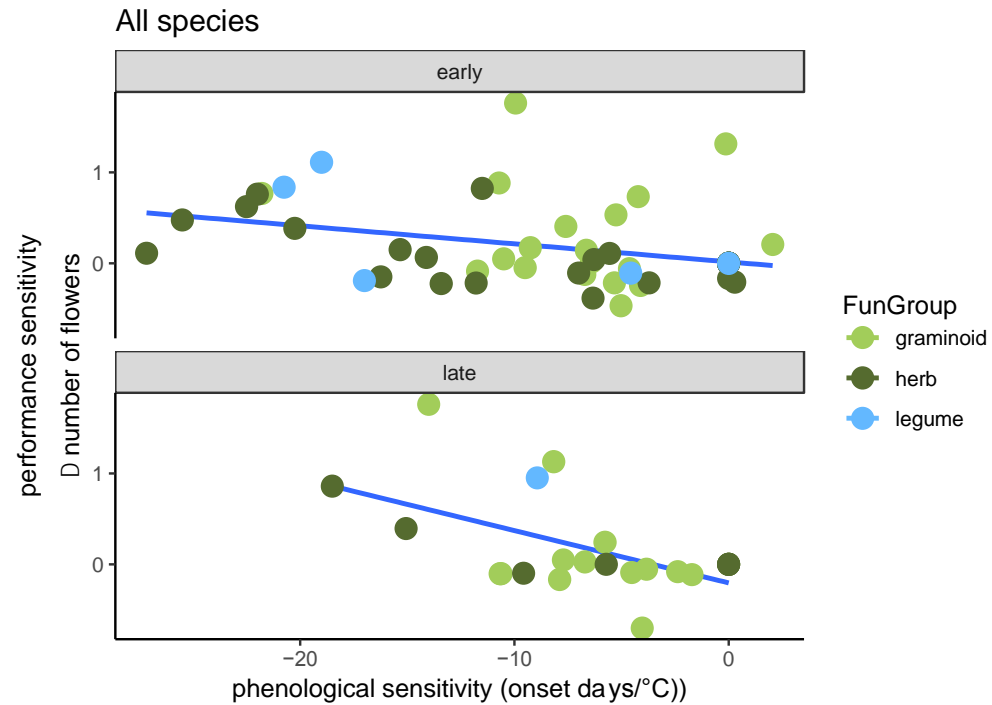


Phenological sensitivity: $p < 0.001$
Early / Late: $p = 0.681$
Interaction: $p = 0.106$



Take-home:

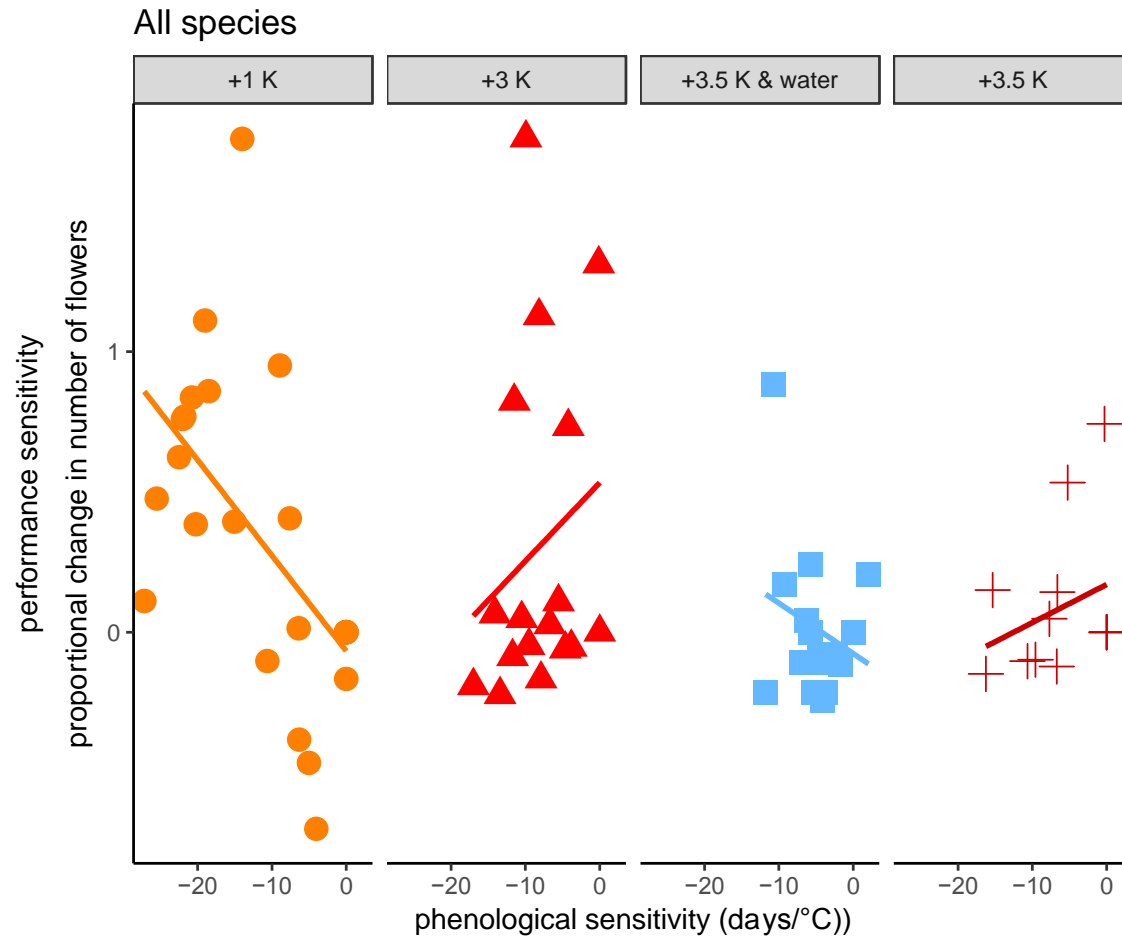
- Accelerated phenology under warmer conditions leads to higher flower performance



Phenological sensitivity: $p < 0.001$

Early / Late: $p = 0.681$

Interaction: $p = 0.106$



→ Only if **sufficient** water is
continuously available

species	community	FunGroup	early_late	Sphen	Sperf
Rumex acetosa	+ Temp (1K)	herb	early	-27,166667	0,11111111
Geum urbanum	+ Temp (1K)	herb	early	-25,5	0,47619048
Veronica chamaedrys	+ Temp (1K)	herb	early	-22,5	0,6239521
Ajuga reptans	+ Temp (1K)	herb	early	-22	0,76
Poa pratensis	+ Temp (1K)	graminoid	early	-21,785714	0,76870748
Vicia sepium	+ Temp (1K)	legume	early	-20,75	0,83685065
Alchemilla vulgaris	+ Temp (1K)	herb	early	-20,25	0,3845399
Trifolium dubium	+ Temp (1K)	legume	early	-19	1,11111111
Leontodon helveticus	+ Temp (1K)	herb	late	-18,5	0,859375
Vicia sepium	+ Temp (3K)	legume	early	-17	-0,1904762
Veronica chamaedrys	+ Temp (3.5K)	herb	early	-16,238095	-0,1488452
Taraxacum officinale	+ Temp (3.5K)	herb	early	-15,333333	0,15028692
Myosotis alpestris	+ Temp (1K)	herb	late	-15,055556	0,39399806
Geum urbanum	+ Temp (3K)	herb	early	-14,111111	0,06507937
Elymus repens	+ Temp (1K)	graminoid	late	-14	1,75892857



Passive warming through translocating downslope: 1350m.a.s.l. - 350m.a.s.l.

Climate treatments:

- +1K
- +3K
- +3.5K
- +3.5K + H₂O

