FACULTY OF
BIOSCIENCE ENGINEERING

DEPARTMENT OF ENVIRONMENT
FOREST & NATURE LAB

EFFECTS OF PHENOLOGY ON COMMUNITY TURNOVER IN TEMPERATE FOREST UNDERSTOREYS

Dries Landuyt, Eline Lorer, Haben Blondeel, Pieter De Frenne & Kris Verheyen

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ForNa Lab

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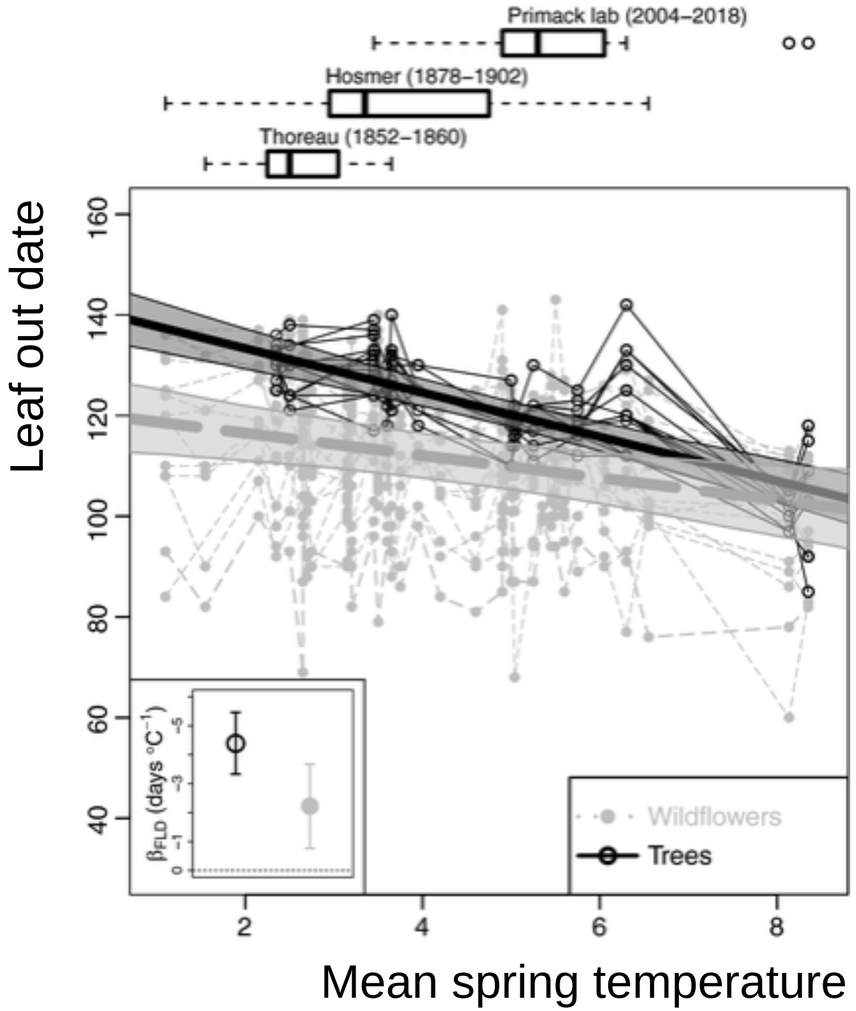
PHENO 2022



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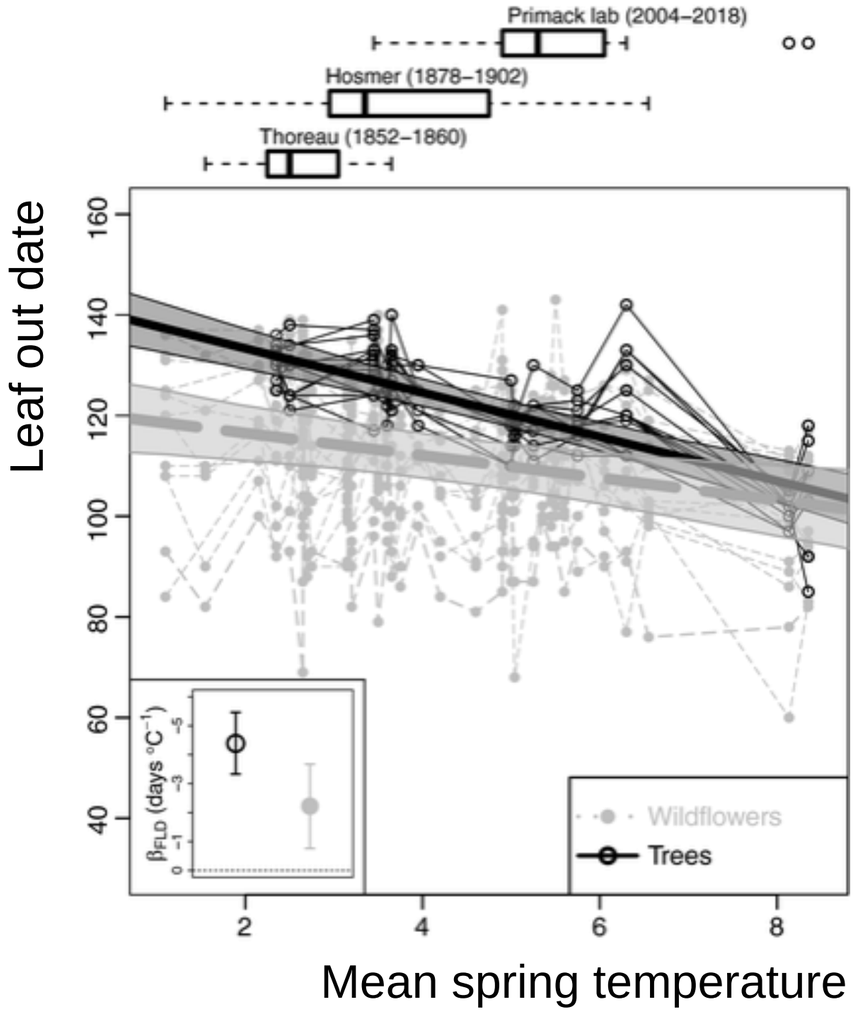
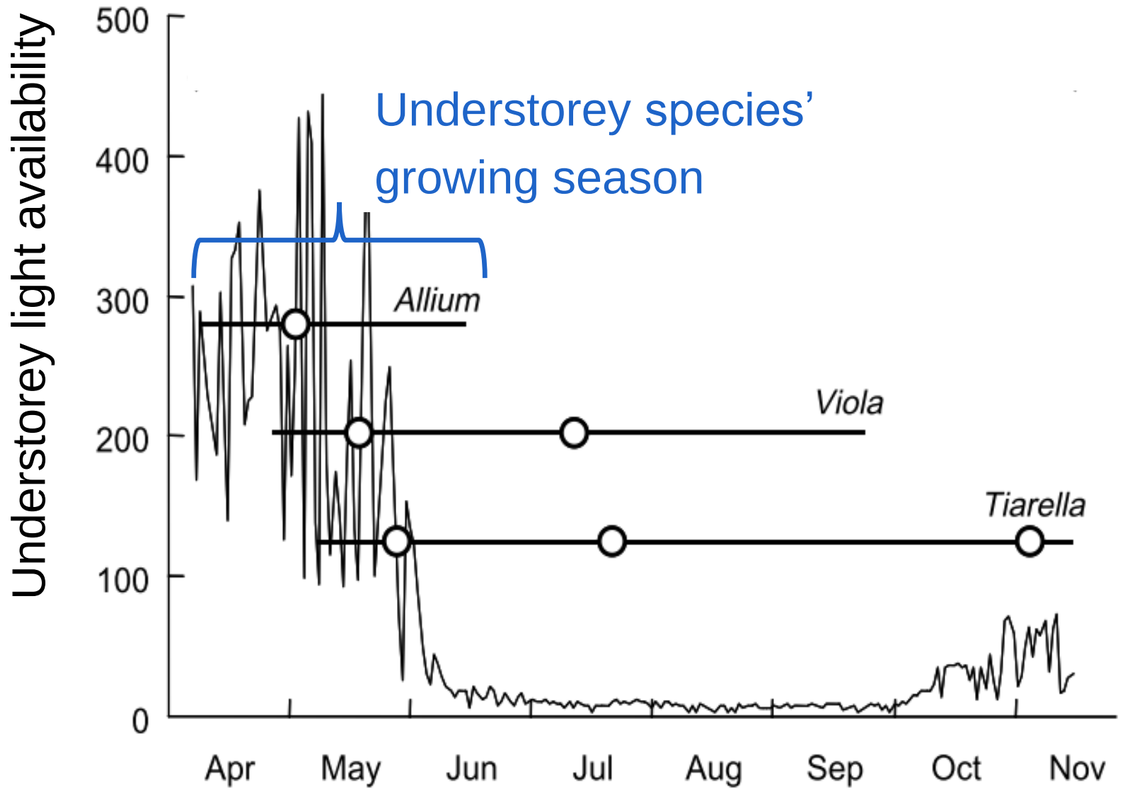
Heberling et al. (2019) Ecology Letters





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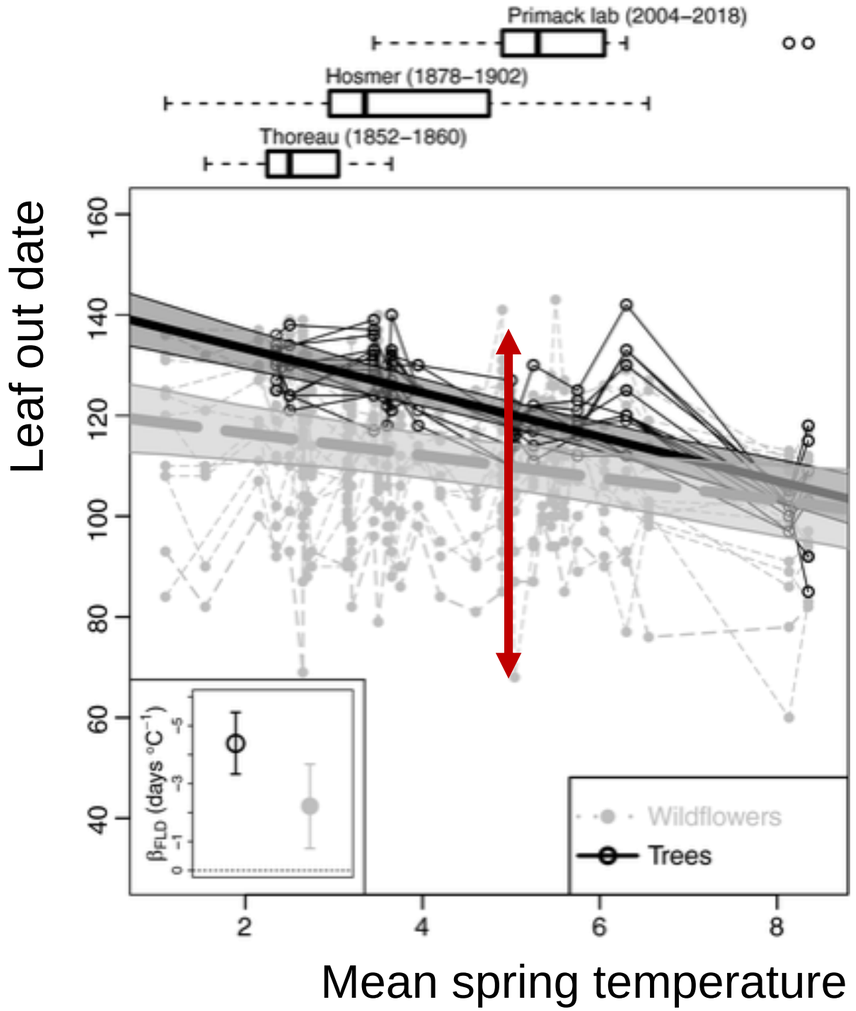
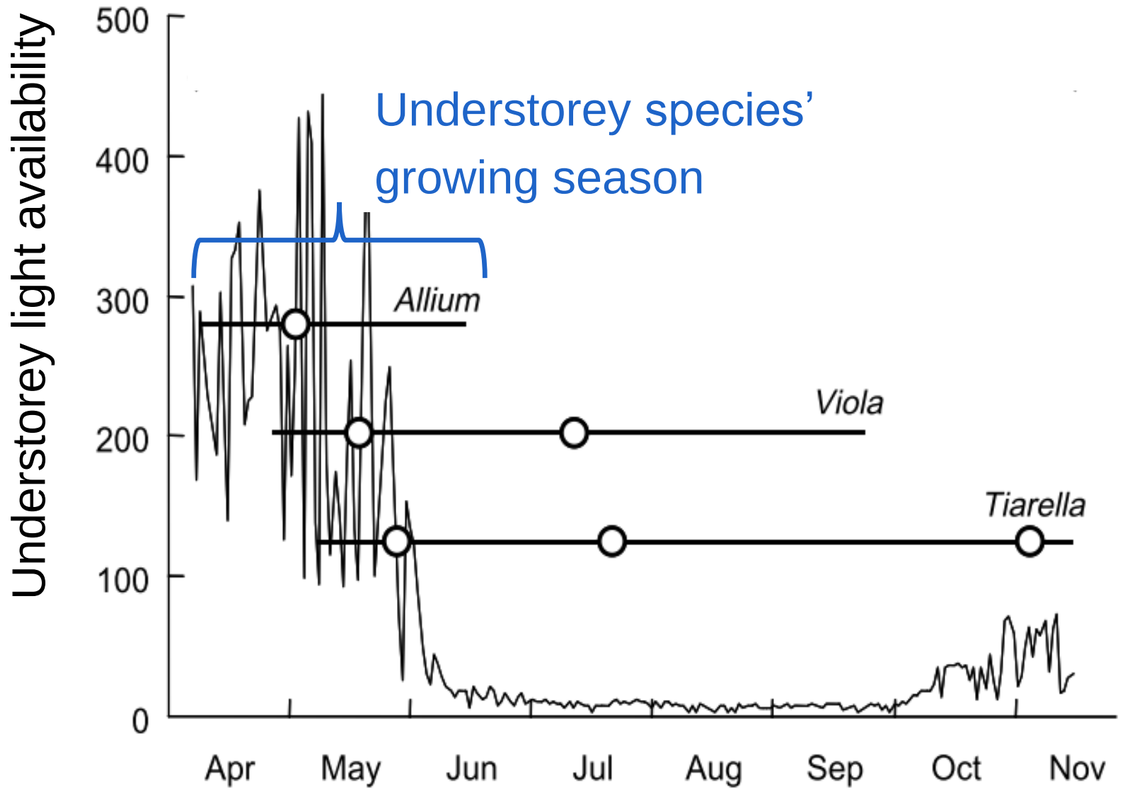
Heberling et al. (2019) Ecology Letters

Rothstein et al. (2001) Functional Ecology





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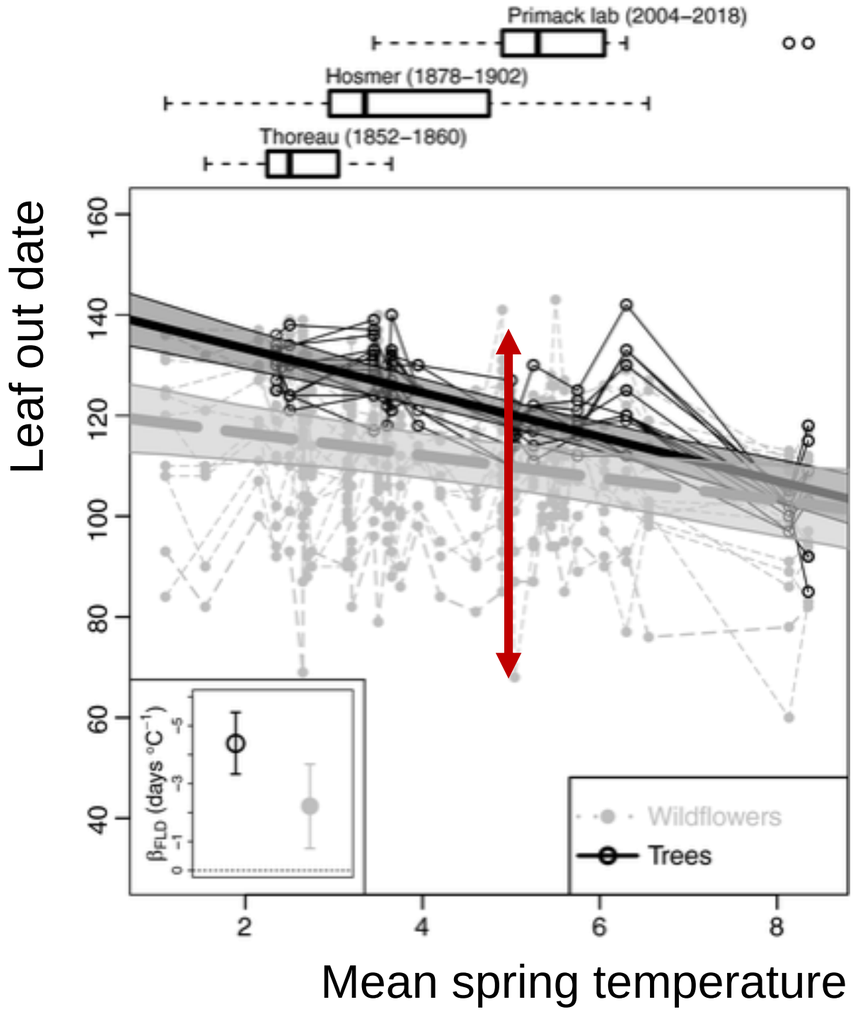

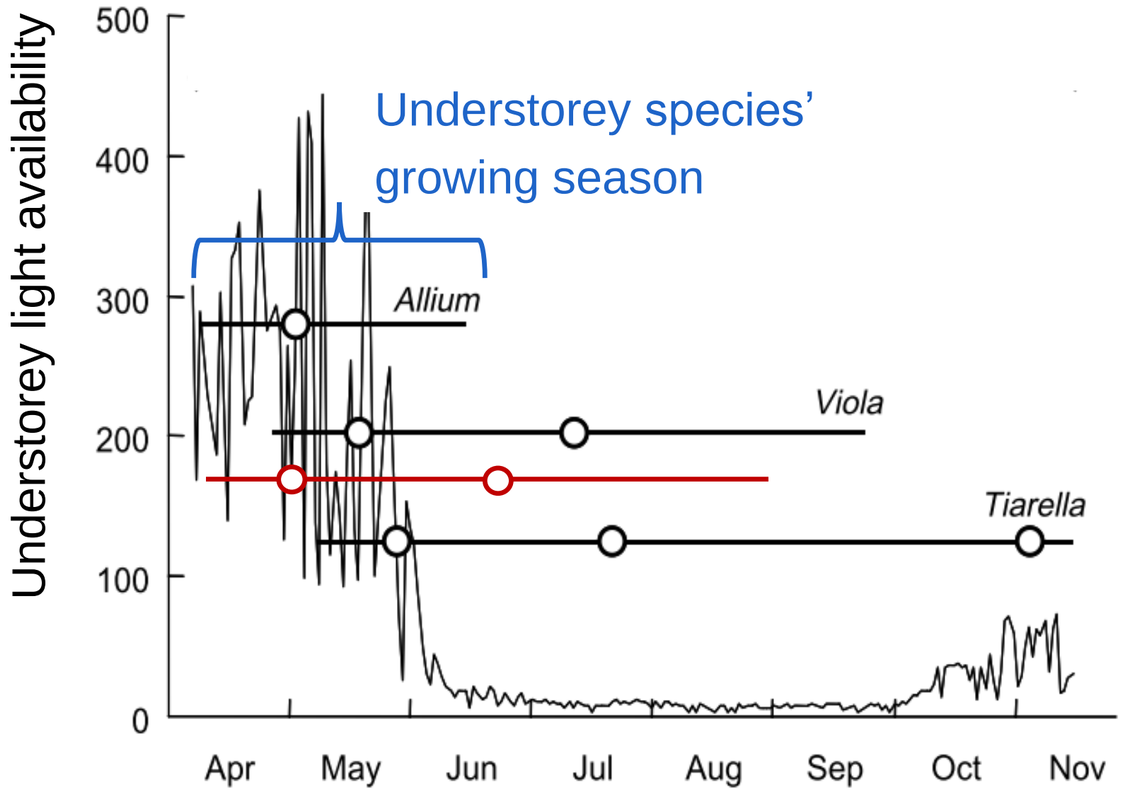

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1. PHENOLOGICAL OBSERVATIONS

2. MECHANISTIC MODELLING

3. COMMUNITY DYNAMICS

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Open top chamber

TMS-4

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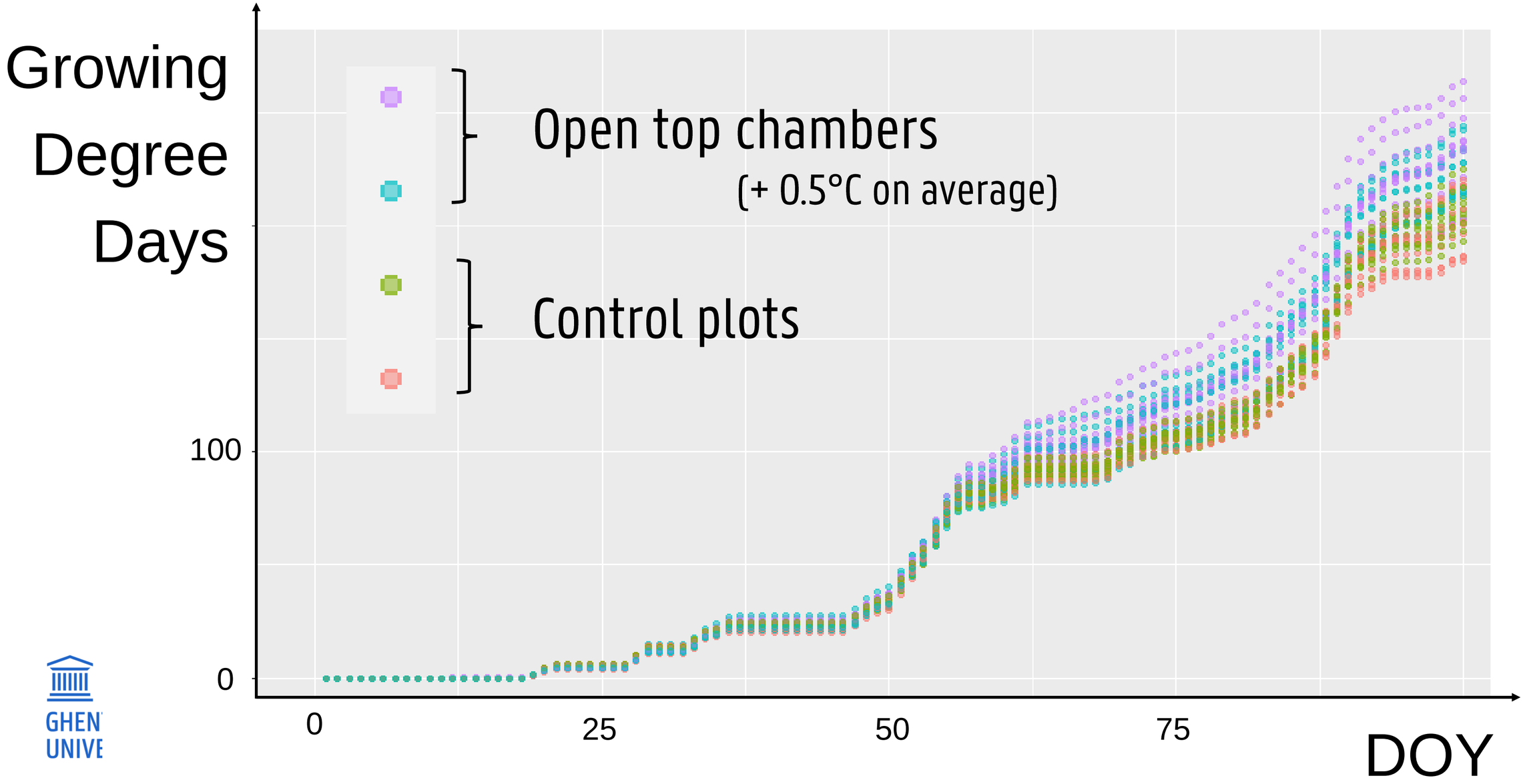
Growing Degree Days
Open top chambers
(+ 0.5°C on average)
Control plots
100
0
0
25
50
75
DOY

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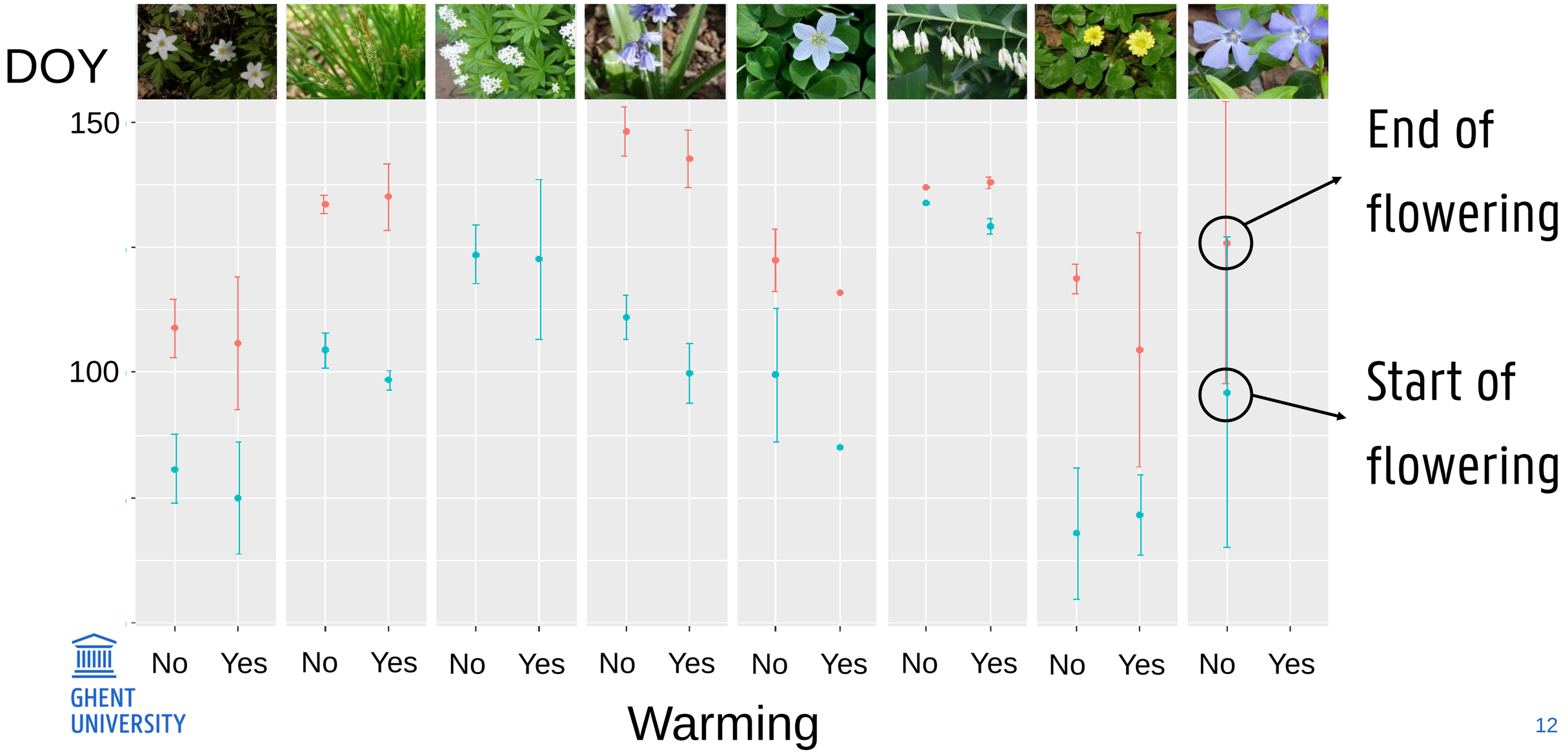

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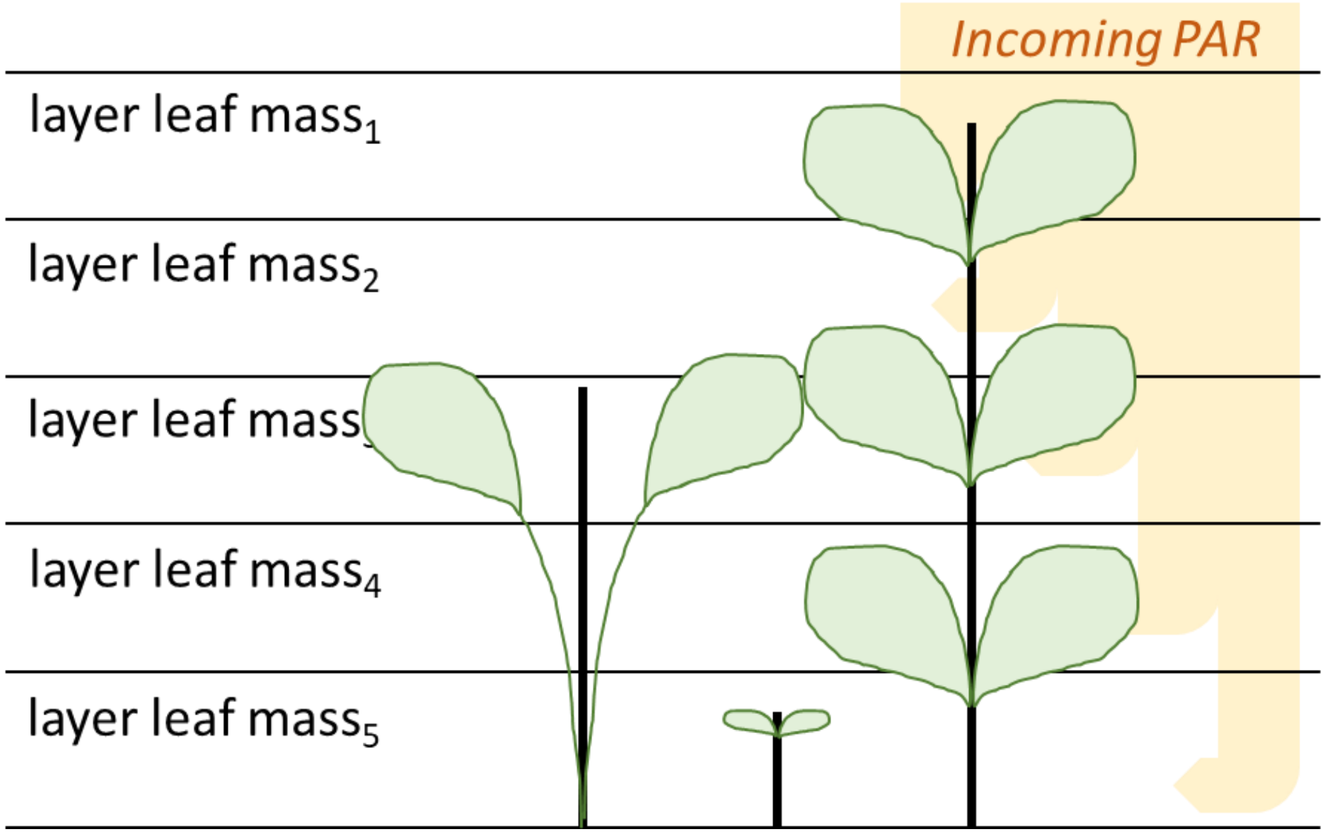

Modellig carbon assimilation based on species-specific ‘light harvesting traits’:

- *Specific leaf area*
- *Leaf fraction*
- *Shoot-root ratio*
- *Phenology*
- *…*

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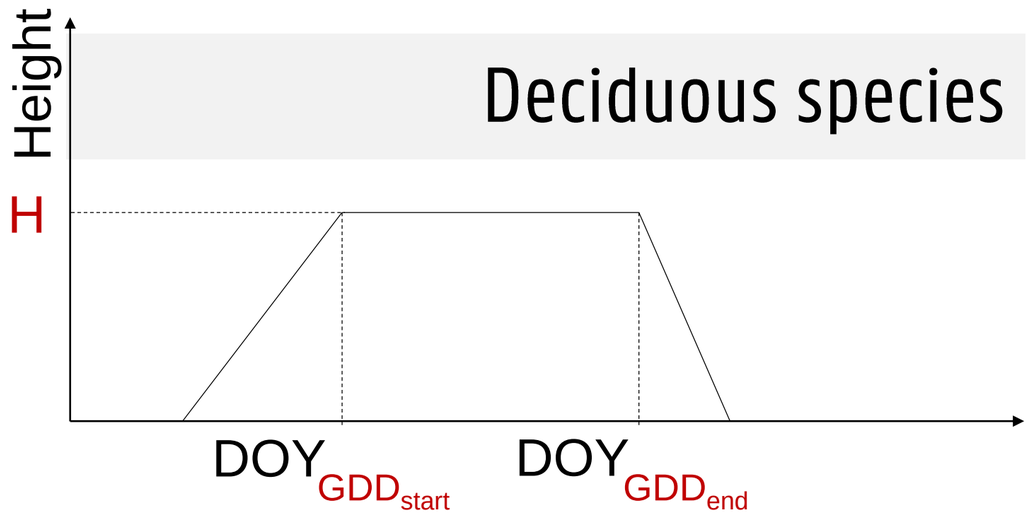
Parameterization of leaf phenology:



- Maximum plant height (H)
- Growing Degree Days (GDD) at start and end of flowering

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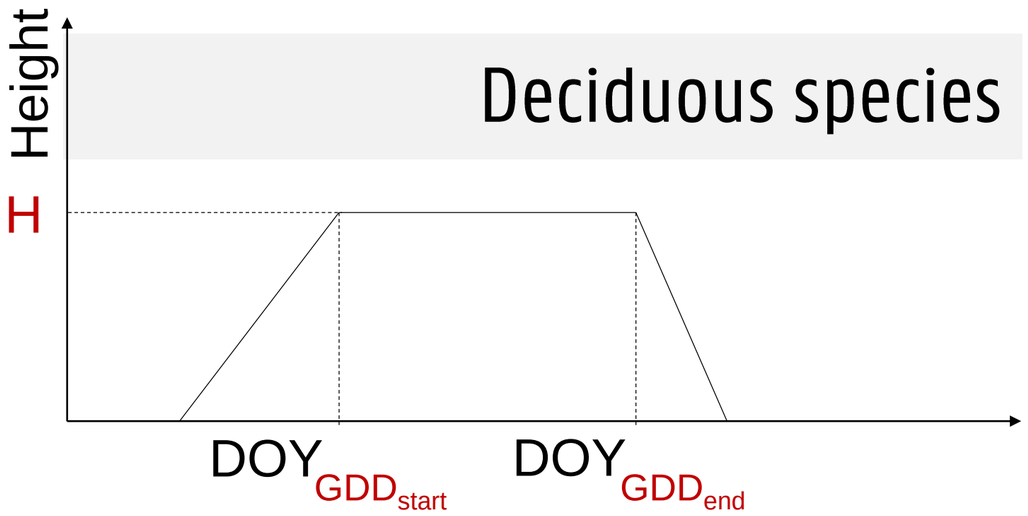
Parameterization of leaf phenology:



- Maximum plant height (H)
- Growing Degree Days (GDD) at start and end of flowering

- Maximum plant height (H)

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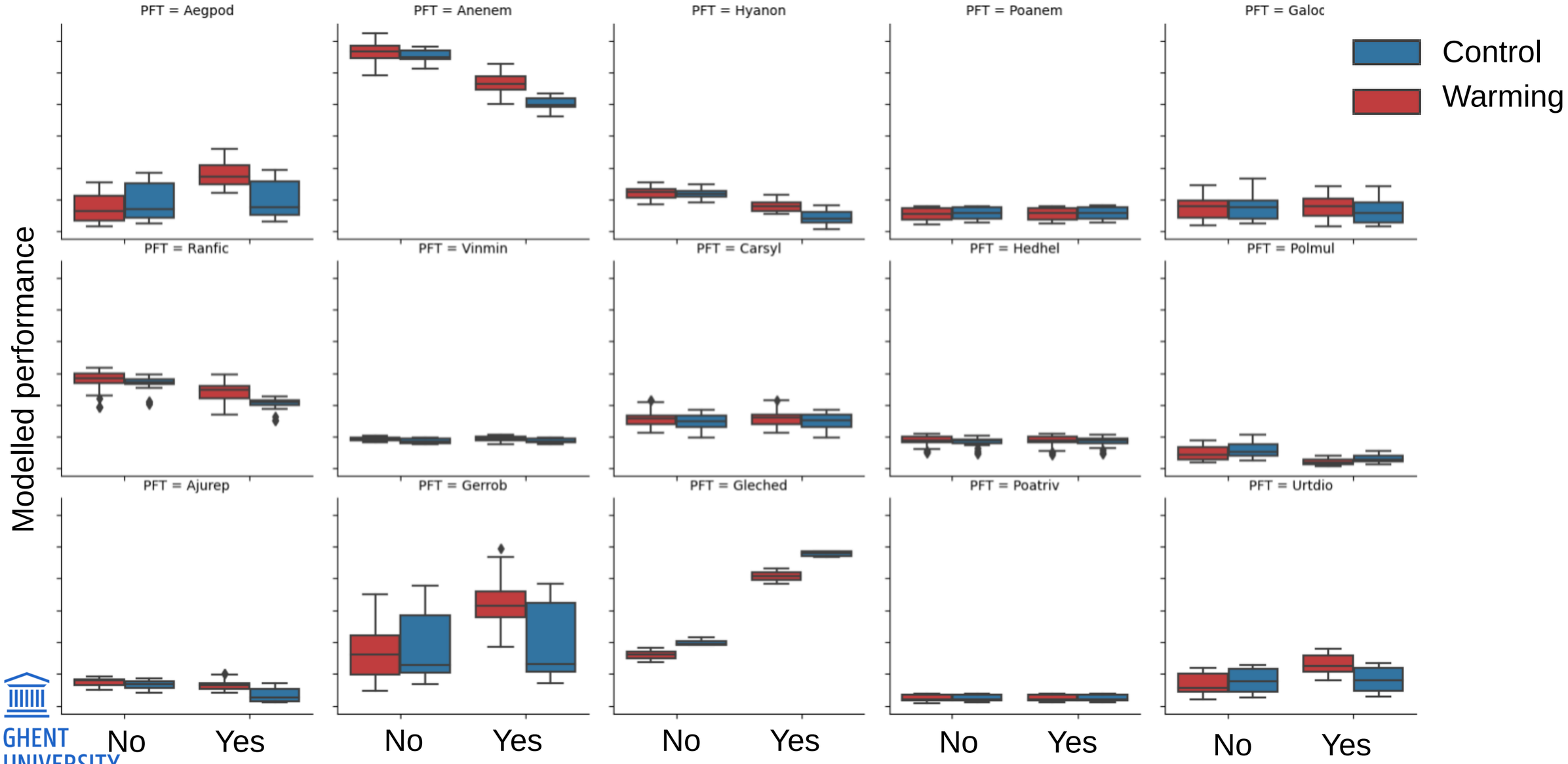

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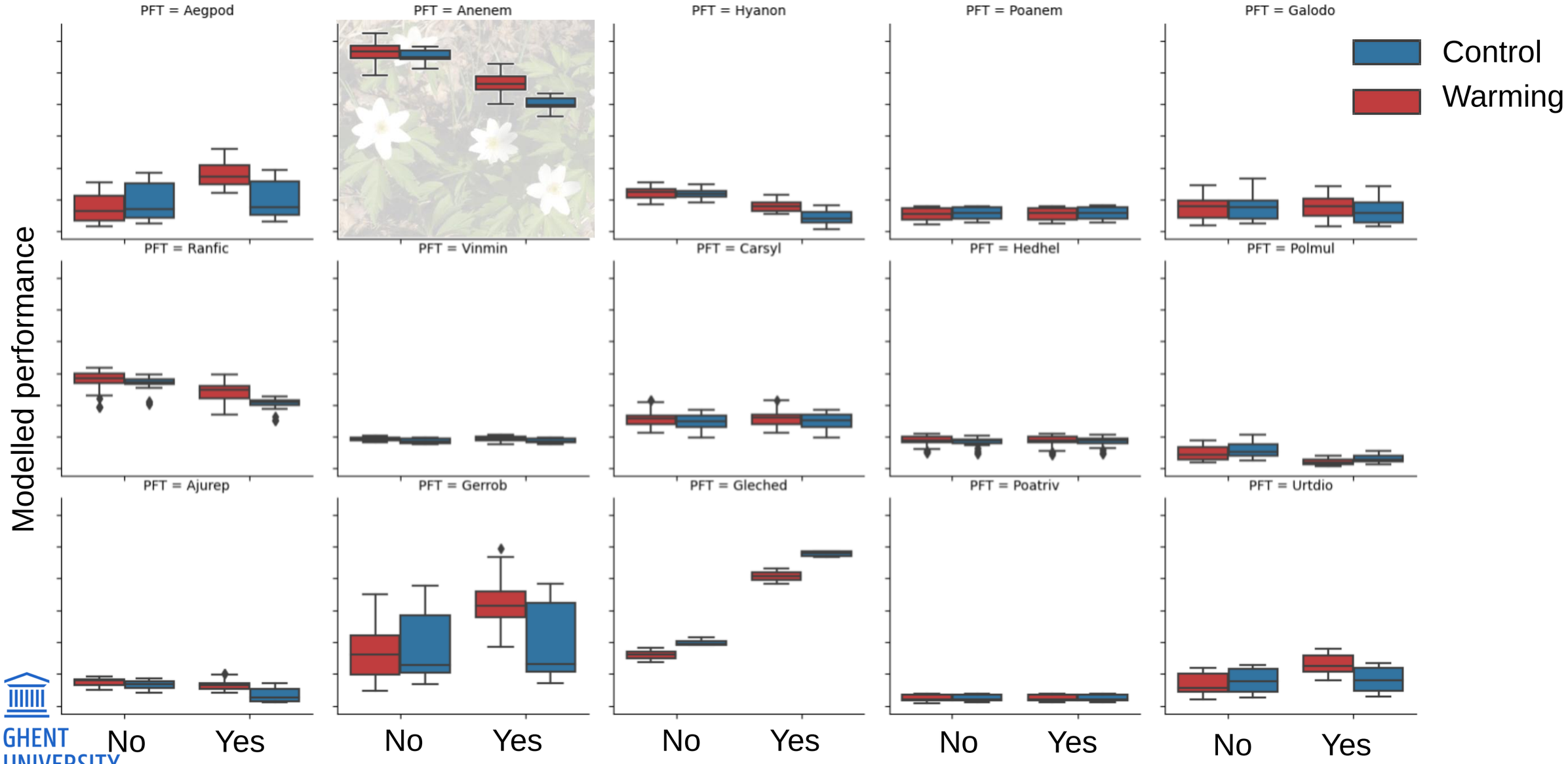

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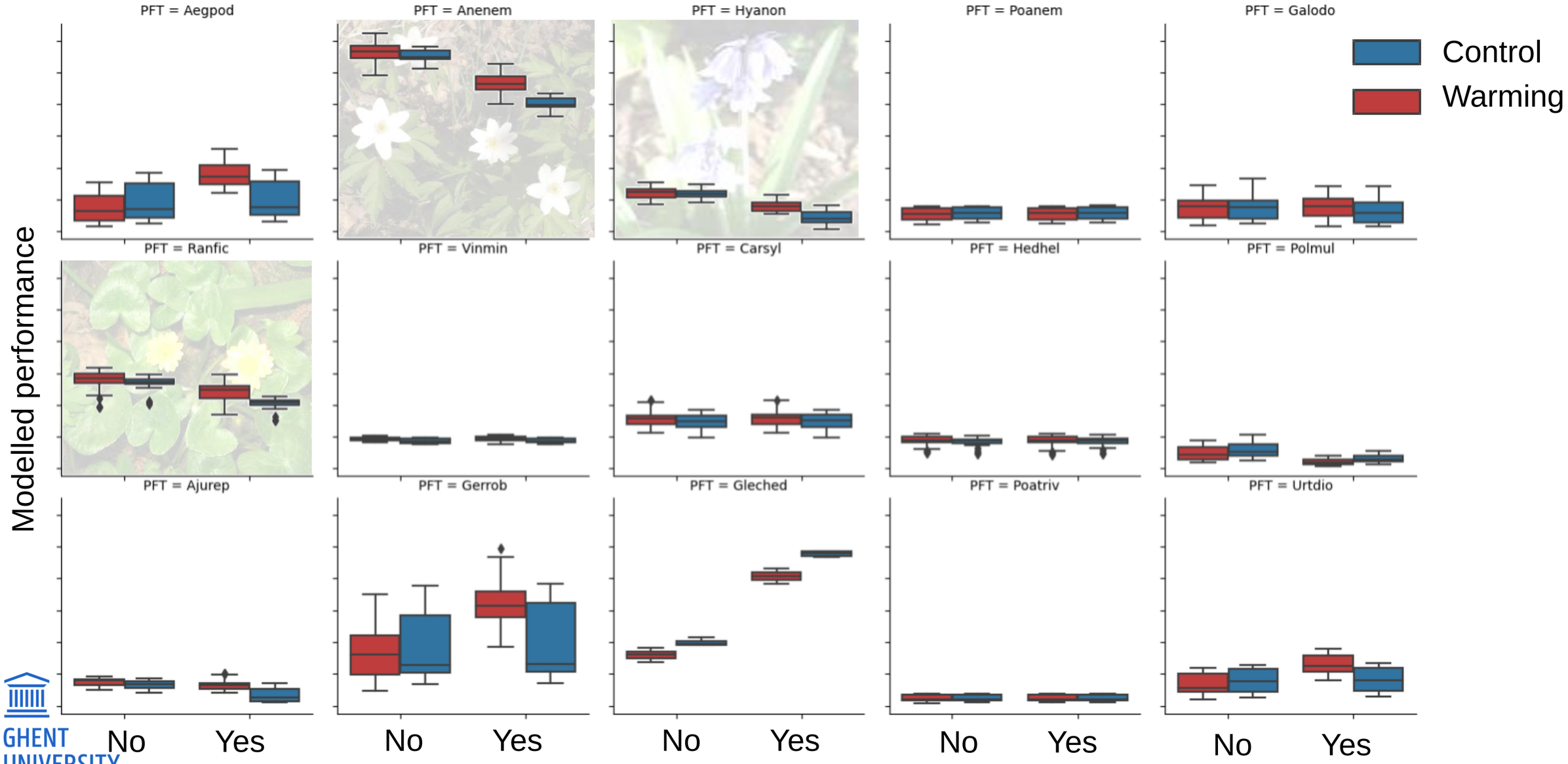

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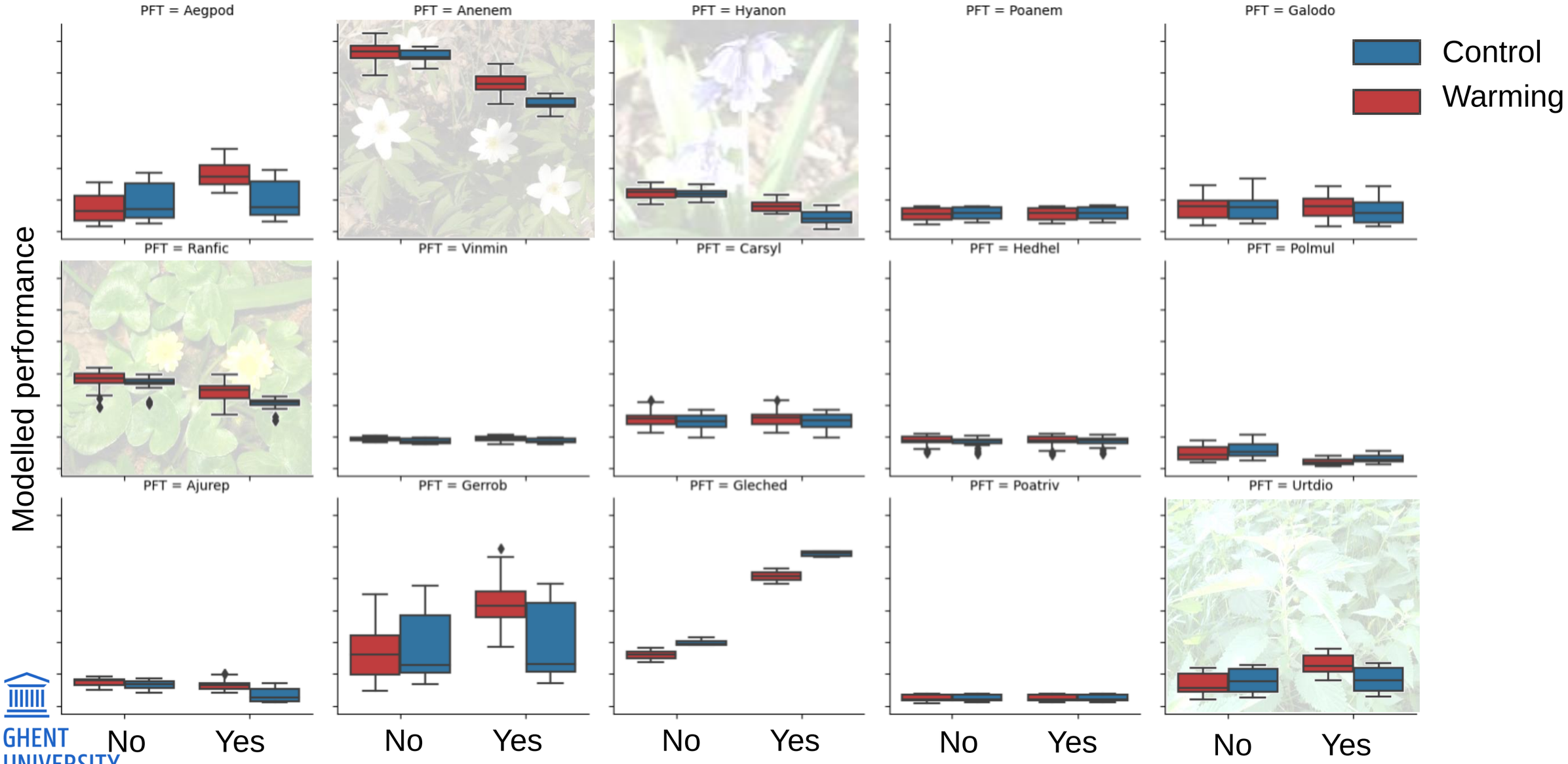

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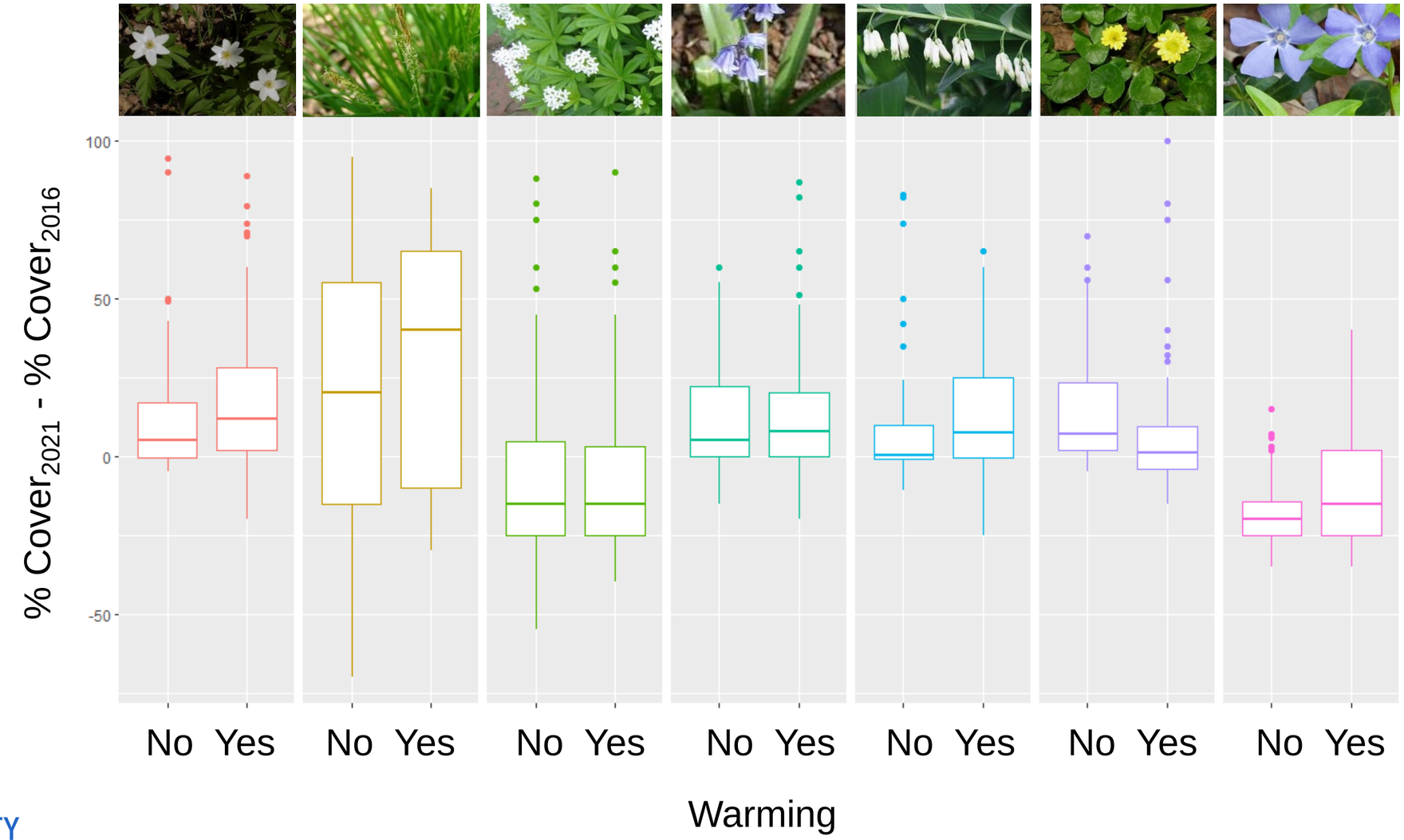

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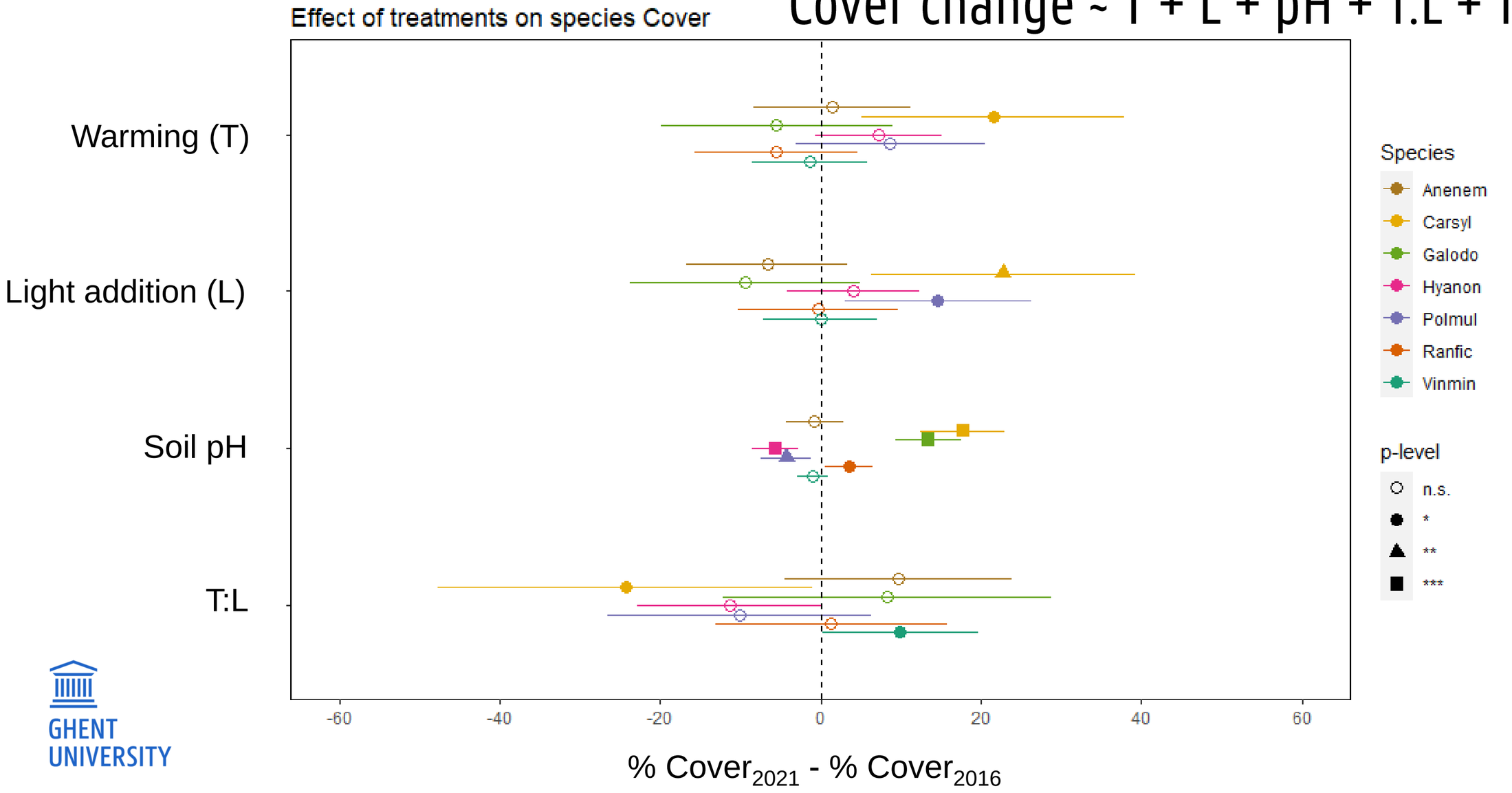
Cover change ~ T + L + pH + T:L + 1|...



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CONCLUSIONS

- Understorey species differ in their phenological response to warming
- We expect that this phenological response increases a species' performance, but does not alter competitive ranks
- Warming treatment does not (yet) favour specific species in the experiment

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Thank you!

Dries Landuyt

Postdoctoral researcher

FOREST & NATURE LAB

E dries.landuyt@ugent.be

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