

Extended Growing Seasons Were Demonstrated for Woody Plants For Warmer Future Climates

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Objective

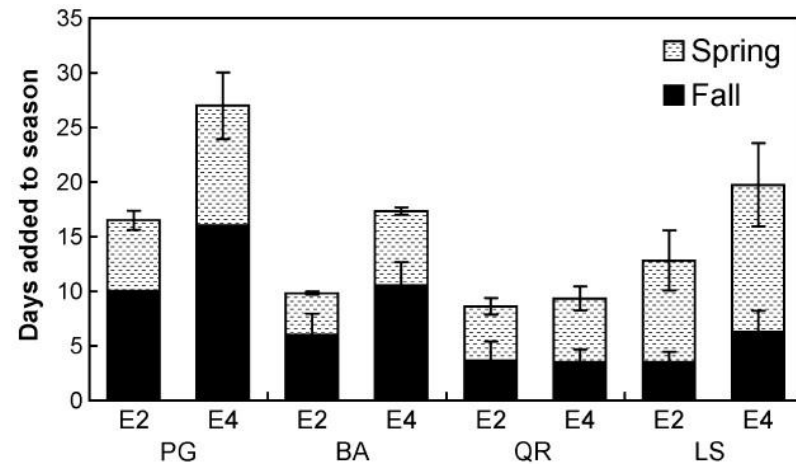
- Evaluate the influence of warming climates on the annual growth cycle of a variety of eastern tree species.

New Science

- A 4-year field experiment exposed four tree species to air temperatures +2 and +4 ° C above ambient controls.
- Impacts of year-round warming on bud burst (BB), stem expansion, senescence, and abscission were evaluated in relation to species and latitude of origin.
- Leaves emerged earlier in all species by an average of 4–9 days at +2 ° C and 6–14 days at +4 ° C. In autumn, chlorophyll was retained an average of 4 and 7 days longer in +2 and +4 ° C
- Growing seasons in the warmer atmospheres averaged 5–18 days (+2° C) and 6–28 days (+4° C) longer, with the least impact in oaks.

Significance

- Warming alone extends the growing season in spring and fall. These results will help us provide quantitative model projects of ecosystem response to warming.



Mean extension of the growing season in E2 (+2 ° C) and E4 (+4 ° C) atmospheric warming based on multiyear observations. Error bars are standard error of the mean. Aspen = PG, Birch = BA, Oak = QR, Sweetgum = LS