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Accumulated Heating and Chilling Are Important Drivers of Forest Phenology and Productivity in the Algonquin-to-Adirondacks Conservation Corridor of Eastern North America

编号	010028303
推送时间	20210322
研究领域	森林生态
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标题	Accumulated Heating and Chilling Are Important Drivers of Forest Phenology and Productivity in the Algonquin-to-Adirondacks Conservation Corridor of Eastern North America
来源期刊	Forest
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关键词	forest; phenology; productivity; temperature; random forest; partial dependence;
摘要	Research Highlights: Forest phenology and productivity were responsive to seasonal heating and chilling accumulation, but responses differed across the temperature range. Background and Objectives: Temperate forests have responded to recent climate change worldwide, but the pattern and magnitude of response have varied, necessitating additional studies at higher spatial and temporal resolutions. We investigated climatic drivers of inter-annual variation in forest phenology and productivity across the Algonquin-to-Adirondacks (A2A) conservation corridor of eastern North America. Methods: We used remotely sensed indices from the AVHRR sensor series and a suite of gridded climate data from the Daymet database spanning from 1989–2014. We used random forest regression to characterize forest–climate relationships between forest growth indices and climatological variables. Results: A large portion of the annual variation in phenology and productivity was explained by climate (pR² > 80%), with variation largely driven by accumulated heating and chilling degree days. Only very minor relationships with precipitation-related variables were evident. Conclusions: Our results indicate that anthropogenic climate change in the A2A has not yet reached the point of triggering widespread changes in forest phenology and productivity, but the sensitivity of forest growth to inter-annual variation in seasonal temperature accumulation suggests that more temperate forest area will be affected by climate change as warming continues. View Full-Text
服务人员	王璐

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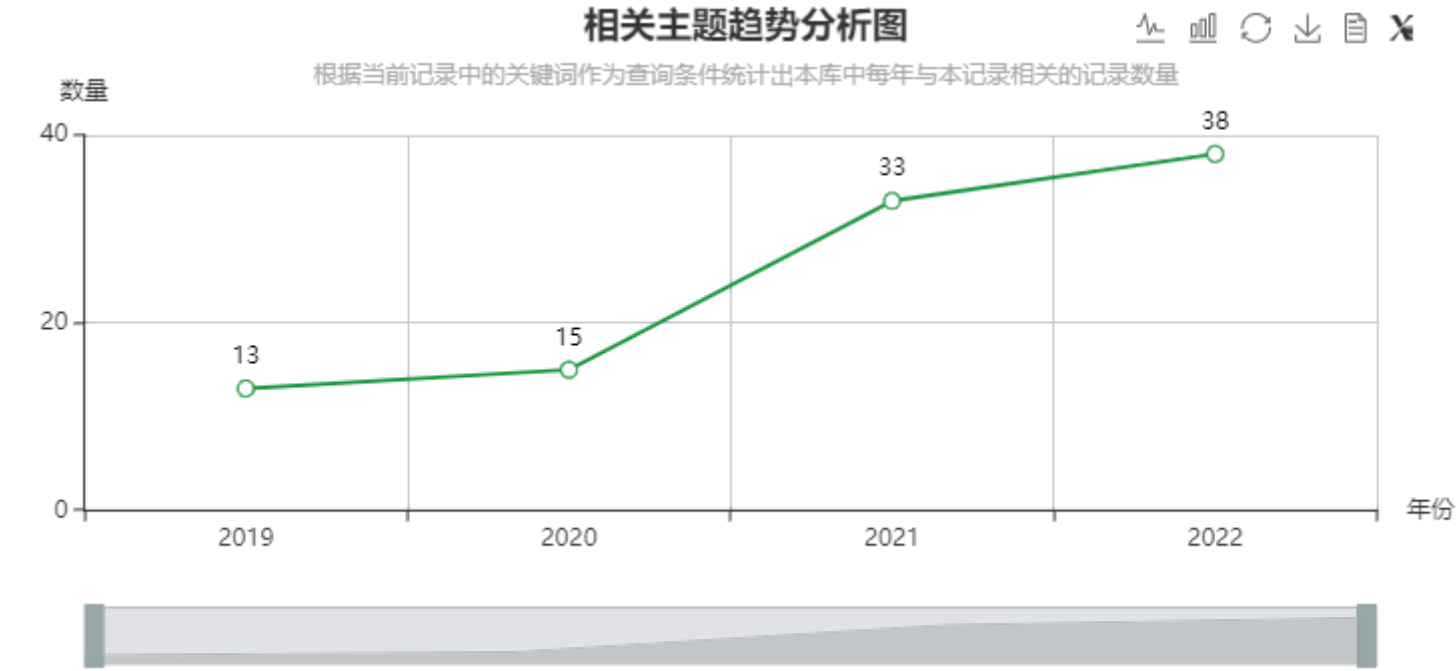
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