时空三极环境大数据平台

**An earlier start of the thermal growing season enhances tree growth in cold humid areas but not in dry areas**

英文标题：An earlier start of the thermal growing season enhances tree growth in cold humid areas but not in dry areas

1、摘要

Climatic warming alters the onset, duration and cessation of the vegetative season. While prior studies have shown a tight link between thermal conditions and leaf phenology, less is known about the impacts of phenological changes on tree growth. Here, we assessed the relationships between the start of the thermal growing season (TSOS) and tree growth across the extratropical Northern Hemisphere using 3451 tree-ring chronologies and daily climatic data for 1948-2014. An earlier TSOS promoted growth in regions with high ratios of precipitation to temperature but limited growth in cold dry regions. Path analyses indicated that an earlier TSOS enhanced growth primarily by alleviating thermal limitations on wood formation in boreal forests and by lengthening the period of growth in temperate and Mediterranean forests. Semi-arid and dry subalpine forests, however, did not benefit from an earlier onset of growth and a longer growing season, presumably due to associated water loss and/or more frequent early spring frosts. These broadly relevant patterns of how climatic impacts on wood phenology affect tree growth at regional to hemispheric scales, enhance our understanding of how future phenological changes may affect the carbon sequestration capacity of extra-tropical forest ecosystems.

2、关键词

主题关键词：地表过程,森林,物候,树木年轮  
学科关键词：陆地表层  
地点关键词：北半球非热带地区  
时间关键词：热生长季开始时间

3、数据细节

1.比例尺：None

2.投影：

3.文件大小：23.0MB

4.数据格式：None

4、空间范围

|  |  |  |
| --- | --- | --- |
| - | 北：70.0 | - |
| 西：-180.0 | - | 东：180.0 |
| - | 南：20.0 | - |

5、时间范围1947-12-31 16:00:00+00:00--2013-12-31 16:00:00+00:00

6、引用方式

数据的引用:

梁尔源, 高姗. An earlier start of the thermal growing season enhances tree growth in cold humid areas but not in dry areas. 时空三极环境大数据平台, DOI:10.11888/Terre.tpdc.271925, CSTR:18406.11.Terre.tpdc.271925, 2021.[LIANG Eryuan, GAO Shan. An earlier start of the thermal growing season enhances tree growth in cold humid areas but not in dry areas. A Big Earth Data Platform for Three Poles, DOI:10.11888/Terre.tpdc.271925, CSTR:18406.11.Terre.tpdc.271925, 2021]

文章的引用:

Gao, S., Liang, E. Y., Liu, R.S., Babst, F., Camarero, J. J., Fu, Y.S., Piao, S.L., Rossi, S., Shen, M.G., Wang, T., Peñuelas, J. (2022). An earlier start of the thermal growing season enhances tree growth in cold humid areas but not in dry areas, Nature Ecology & Evolution, 6(4): 397–404.  
  
Gao, S., Zhou, T., Yi, C., Shi, P., Fang, W., Liu, R., Liang, E., & Julio Camarero, J. (2020). Asymmetric impacts of dryness and wetness on tree growth and forest coverage. Agricultural and Forest Meteorology, 288-289, 107980. doi:10.1016/j.agrformet.2020.107980

7、资助项目信息

第二次青藏高原综合科学考察研究

8、数据资源提供者

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