

## Abstract

# Comparison of the Responses of Radial Growth to Climate Change for Two Dominant Coniferous Tree Species in the Guancen Mountain, North-Central China <sup>†</sup>

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<sup>†</sup> Presented at the 3rd International Electronic Conference on Forests—Exploring New Discoveries and New Directions in Forests, 15–31 October 2022; Available online: <https://iecf2022.sciforum.net/>.

**Abstract:** The radial growth of coniferous trees in the mid-high latitudes of the Northern Hemisphere has an unstable response to climate warming. We analyzed the differences in the radial growth patterns of the two dominant species (*Larix principis-rupprechtii* Mayr and *Picea meyeri* Rehd. et Wils.) on Guancen Mountain, north-central China, and the differences in the stability of their radial growth in response to climate change. Pearson correlation and sliding analysis were performed to study the correlations and dynamic relationships between radial growth and climatic factors. The main results are as follows: (1) the standard chronologies of *L. principis-rupprechtii* and *P. meyeri* contained rich climate information, and the radial growth of *L. principis-rupprechtii* was more sensitive to climatic factors than that of *P. meyeri*; (2) on a long-term scale, changes in the radial growth of *L. principis-rupprechtii* and *P. meyeri* in response to the monthly mean temperature and standardized precipitation evapotranspiration index (SPEI) were unstable; (3) after the abrupt temperature change, the interannual basal area increments (BAIs) of the two dominant species followed an upward trend, and the radial growth rate of *L. principis-rupprechtii* was much greater than that of *P. meyeri*. The results of this paper can help to understand the response of the radial growth of coniferous forests in north-central China to future climate change, and provide a basis for future forest cultivation in the middle and high latitudes of the northern hemisphere.

**Keywords:** dendroclimatology; tree-ring width; climate response; dominant conifer species



**Citation:** Wang, J.; Li, S.; Guo, Y. Comparison of the Responses of Radial Growth to Climate Change for Two Dominant Coniferous Tree Species in the Guancen Mountain, North-Central China. *Environ. Sci. Proc.* **2022**, *22*, 6. <https://doi.org/10.3390/IECF2022-13065>

Academic Editor: Rodolfo Picchio

Published: 17 October 2022

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**Supplementary Materials:** The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/IECF2022-13065/s1>.

**Author Contributions:** S.L. and J.W. conceived the idea; J.W. and Y.G. performed the experiment; J.W. analyzed data; J.W. wrote the manuscript; S.L. reviewed and approved the final manuscript. All authors have read and agreed to the published version of the manuscript.

**Funding:** The research was funded by a General Program from the Natural Science Foundation of Shaanxi Province (no. 2014JQ5172), the Open Fund Project of the State Key Laboratory of Loess and Quaternary Geology (no. SKLLQG1611), and the National Forestry Public Welfare Industry Scientific Research Project of China (no. 201304309).

**Informed Consent Statement:** Not applicable.

**Data Availability Statement:** The data presented in this study are available on request from the corresponding author.

**Conflicts of Interest:** The authors declare no conflict of interest.