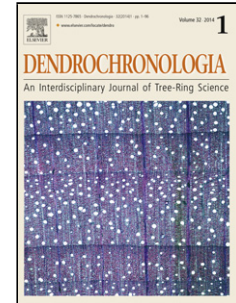


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Increasing Temperature Sensitivity caused by Climate Warming, Evidence from Northeastern China

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Highlights:

- Climate-growth relationships were analyzed in two separate periods (before 1980 and after 1980) along five elevations
- Tree growth has been accelerating with sharply increasing temperature after the time of 1980
- Comparatively, the forest growth at low elevations has increased faster than that at high elevations

Abstract

The “Divergence Problem” in northern forests has been confirmed in a large number of empirical studies, especially in North America and Europe, climate warming having been identified as a cause for reduced sensitivity of recent tree-growth and increased tree mortality. However, according to other studies, tree growth patterns are keeping pace with climate warming. Covariation between rising temperatures and tree growth varies regionally. Therefore, extensive evidence is still needed across more geographic areas around the world. In the present study, we examined the sensitivity of Manchurian ash forest growth, which is one of the dominant species in the mixed coniferous and broad-leaved forests in the area around Changbai Mountain in Northeastern China. Five Manchurian ash tree-ring width chronologies were constructed from sites ranging along the elevational gradients of 750 m, 800 m, 900 m, 1000 m and 1100 m. We analyzed climate-growth relationships using Pearson correlation coefficients between ring-width indices and climate variables in two separate periods (before 1984

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