

2. 树木年轮与全球变化

Interpreting *Larix principis-rupprechtii* radial growth in northern China based on the Vaganov-Shashkin model

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摘要: Changes in annual radial growth is an important indication of climate change. Dendroclimatology studies in northern China have focused on linear statistical analysis, but lacking studies based on the process of ring formation to clarify the radial growth of trees. Tree-ring width standard chronology (STD) was established using samples of *Larix principis-rupprechtii* collected at 2303 m altitude on Luya Mountain. Using the Vaganov-Shashkin (VS) model to simulate growth and development, the internal physiological mechanism of radial growth is identified. It was concluded that: (1) the growing season of *L. principis-rupprechtii* was May to September; (2) soil moisture was a significant factor in the early and late growing seasons, and temperature was the dominant factor in its main growth period; and (3) formation of narrow ring widths was closely related to drought stress, the development of wide ring widths will be restricted by increasing future temperatures. The VS model is applicable for radial growth simulation of subalpine coniferous forests and for guiding the cultivation of local tree species in the future.

关键词: Vaganov-Shashkin model · *Larix principis-rupprechtii* · Tree-ring width · Annual growth