

**INFLUENCE OF GLOBAL WARMING ON THE GROWTH OF KOREAN FIR
TREES: SIMULATION MODEL USING INTRA ANNUAL VARIATIONS OF CELL
DIMENSIONS**

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A simulation model was used to examine the effects of climate warming on the radial growth of Korean fir (*Abies koreana* W.) trees growing in the southern Korea. Korean fir is an endemic species and listed in the endangered plants in Korea. The model describes the radial diameters of tracheid cells in annual rings as a function of temperature, soil moisture and day length. For period from 1971 to 1996 (26 years), 4 trees were selected for the measurement of radial diameters of tracheids in each year, producing 'tracheidograms', intra-annual variations in tracheid size.

The results indicate that seasonal growth is mostly limited by soil moisture during April, May and June. As increasing temperatures in the spring-summer period the growth is decreased by 12% but the annual dynamic in ring-width pattern is not changed. More sensitive changes due to warming take place in the shape of tracheidograms. Warmer temperature shifts the onset of season to earlier date, however, the growth rate during the early period decrease because the precipitation is low and soil moisture becomes more strong limiting factor. The model calculation indicates that the warming results in decreasing of earlywood and more significant fluctuation of cell sizes in the latewood.