Tree response to changeable climatic conditions

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The mathematical model has been elaborated for evaluation of tree reaction to changes of climatic factors (CF) such as temperature and precipitation amount. This model das not forecast weather conditions, it is a meteorologist job. Our model reflects the response of trees in the certain climatic situation.

The model is based on multiple linear regression analysis, the argument of which is the active periods (AP) of amount of rainfall, maximum and minimum temperature. The active period (AP) means the decade during which the CF influence on radial growth is statistically significant. Significance of this influence is determined by the Pearson's correlation coefficient between tree ring width and CF values for decades in the range of 30 years. Information about the weather is obtainable at the nearest meteorological station, but data on tree growth - from wood samples using Presler's increment borer. AP indicates the extent to which tree growth has met the physiological requirements of the respective decade. Thus become visible decades during which the CF promotes or hinders the formation of wood. The model integrates the influence of forecasted changes of climatic conditions related to dynamics of forest productivity. In most cases, the AP has a sufficient for several model iterations. It goes without saying that the results are different. The final result is calculated as the weighted average by taking into account the determination coefficients of individual iterations.