

우리나라 참나무림에서 기온상승에 따른 개엽시기 단축

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Earlier leafing of oaks by warmer spring temperature in Korea.

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Recently global warming became an emerging issue and abnormal meteorological events and seasonal patterns have been occurred frequently. To see the annual changes of leafing time and its relationship with air temperature for the two oak forests, *Quercus serrata* at Gwangneung site from 1998 and *Q. mongolica* in Mt. Gyebangsan from 1996, we measured the degree of leaf expansion and bud breaking on the same Julian day in every year. And then the degree of leaf growth were compared with thermal condition of the year, i.e. growing-degree days (5°C base) until the observation date. Meteorological data were gathered from Korea Meteorological Administration (KMA) stations, Automatic Weather System (AWS) stations of KMA, and field air-temperature loggers. To estimate the local climatic condition, we used the relationships between the observation locations. And we found that species-specific unique thermal thresholds are existing, and fitted leaf length with warmth index using sigmoidal nonlinear model. These parameters would be useful for the modeling of larger-scale forest ecosystem functions and prediction of their changes according to global warming, including growing season, primary production, and providing information of adequate planting period of trees. Phenological characteristic of leaf in temperate forest is an important factor of forest functions including net primary productivity, micro-climatic control, and interactions with herbivores and under-story vegetation.