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# Climate change and forest ecosystems – present and forecasted impacts in Hungary

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Stability problems of the forest cover surfaced first in Europe in the eighties, following so-called forest decline symptoms. The issue is especially serious in countries like Hungary, which are situated on the border of the closed temperate forest belt. Research carried out since than has shown that there is a direct link between climate anomalies and health status. The changes in extremes of the hydrological cycle basically determine the resilience of ecosystems. Especially repetitive extreme dry events have a strong impact on forests.

The relative dry and hot weather events have a very high probability in this country. Precipitation is the climate parameter with largest variability in Hungary. According to results of climate models, the frequency of dry events can substantially increase in Hungary, every second summer can be a dry one. Modelling predicts the return of the large-scale forest decline observed in the eighties, if climatic conditions worsen in the future. Therefore climate change provides an important actuality to researching forest health status and climate relations.

Research efforts concentrate on following problems:

- Analysing the potential changes in forest zonation in Hungary based on climate scenarios and climate maps.
- Determination of drought sensitivity and tolerance of dominant zonal tree species: beech (*Fagus sylvatica*) and sessile oak (*Quercus petraea*).
- Analysis of correlation of the health status decay and the climatic fluctuations.

- Analysis of genetic/physiological limitations of adaptive response of selected tree species.

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