NEESPI Focus Research Center for Nonboreal Eastern Europe
Institute of Environment and Earth Sciences, Faculty of Forestry,
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MAGYARORSZÁG MEGÚJUL
A projekt az Európai Unió támogatásával, az Európai Szociális Alap társfinanszírozásával valósul meg.

SZÉCHENYI TERV

Service Center for Climate Change Adaptation in Forestry and Agriculture
– an initiative of the University of West Hungary

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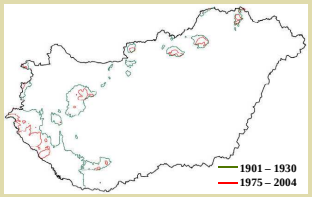
Motivation

In whole Central Europe agricultural production will be negatively influenced by projected climate change. The low-elevation regions of the Carpathian Basin are especially exposed to extreme events, such as droughts. Hence, distribution of precipitation is the limiting factor of production and ecosystem stability.

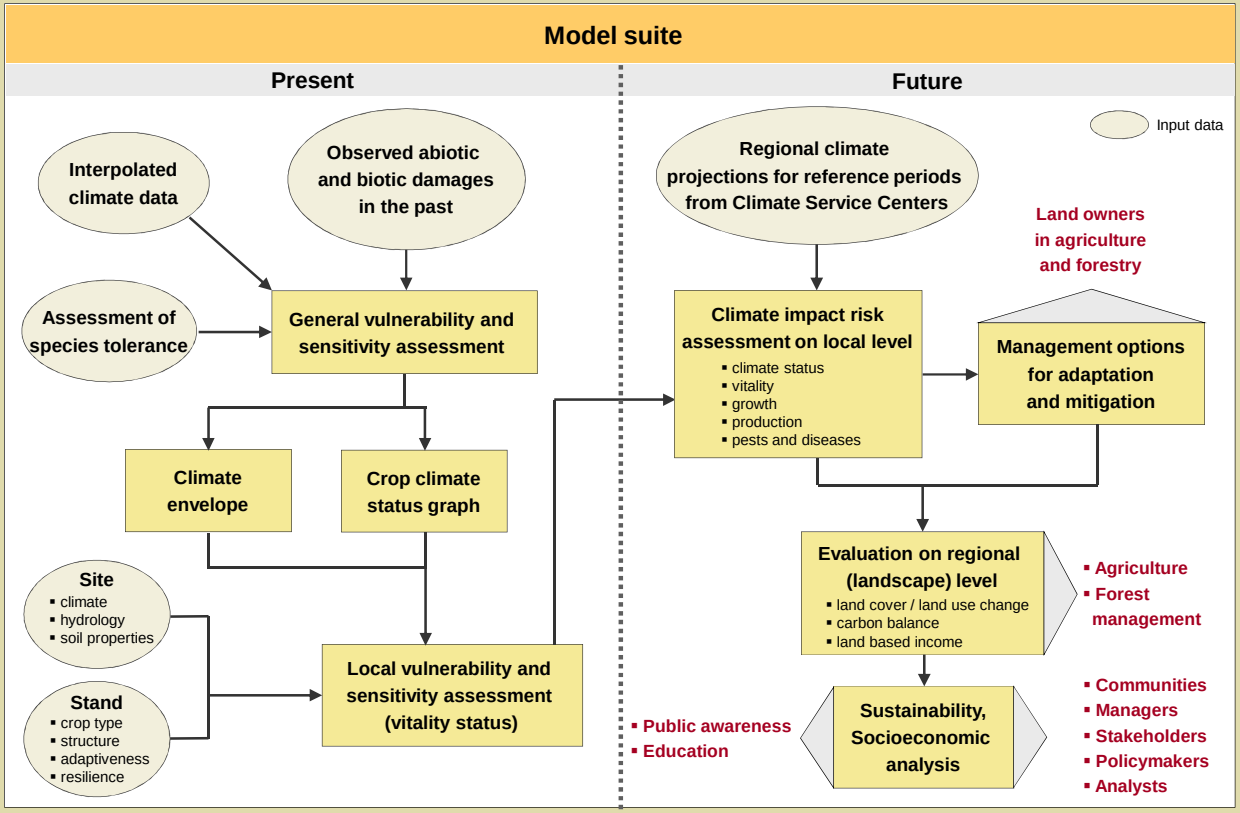
The **aim of the initiative** is to set up a ***Service Center*** providing a fine-scale, GIS-based, complex, integrated ***Decision Support System*** to inform about the most important regional and local risks and mitigation options regarding climate change impacts, projected for reference periods until 2100. The intention is to raise awareness and intiate preparation for frequency increase of extreme events, disasters and economic losses in the sectors:

- nature-close forestry
- rainfed agriculture
- animal husbandry on nature-close pastures

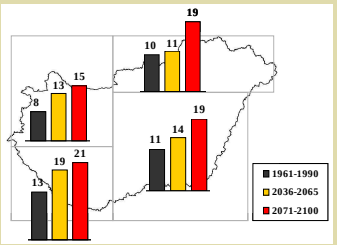


Shrinking of climate niche of beech in a county (data by E. Rasztovits and N. Móricz)

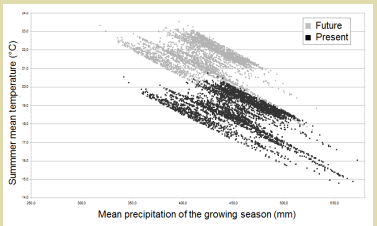
Model suite



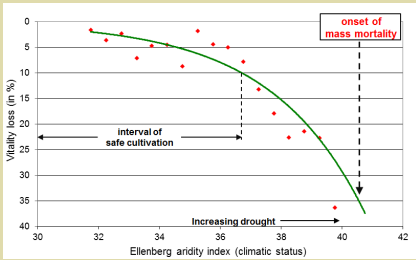
Concept of the Decision Support System



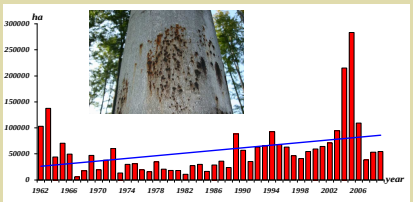
Projected number of summer droughts (Gálos et al. 2007)



Change of the climate envelope of beech (data by E. Rasztovits)

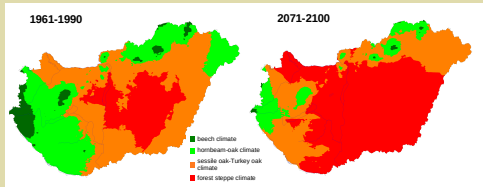


Vitality and productivity decline of beech stands with increasing drought stress (data by E. Rasztovits)



Trend of past insect damages in forestry (1962-2006; Csóka 2010)

Climate impacts in beech and oak forests



Distribution of the area of Hungary according to forest climate classification (Borovics et al. 2011)

References: Berki, I., E. Rasztovits, N. Móricz, Cs. Mátyás 2009. Determination of the drought tolerance limit of beech forests and forecasting their future distribution in Hungary. Cereal Research Communations vol. 37. ◆ Czúcz B., L. Gálhidy, Cs. Mátyás 2011. Present and forecasted xeric climatic limits of beech and sessile oak distribution at low altitudes in Central Europe Annals of Forest Science, 68(1): 99-108 ◆ Gálos B., P. Lorenz, D. Jacob 2007. Will dry events occur more often in Hungary in the future? *Environ. Res. Lett.* 2 034006 9pp ◆ Jacob, D, U. Andrae, G. Elgered, C. Fortelius, L. P. Graham, S.D. Jackson, U. Karstens, Chr. Koepken, R. Lindau, R. Podzun, B. Rockel, F. Rubel, H.B. Sass, R. N. D. Smith, B.J.J.M Van den Hurk, X. Yang 2001. A Comprehensive Model Intercomparison Study Investigating the Water Budget during the BALTEX-PIDCAP Period. Meteorol. Atmos. Phys. Vol. 77, Issue 1-4, 19-43 ◆ Mátyás, Cs, B. Fady G.G. Vendramin 2009. Forests at the limit: evolutionary – genetic consequences of environmental changes at the receding (xeric) edge of distribution. Report from a researcher workshop. Acta Silv. Lign. Hung. 5: 201-204 ◆ Mátyás, C. 2010. Forecasts needed for retreating forests. *Nature*, *464*(7293), 1271. doi:10.1038/4641271a ◆ Mátyás Cs., I. Berki, B. Czúcz, B. Gálos, N. Móricz, E. Rasztovits 2010. Future of beech in Southeast Europe from the perspective of evolutionary ecology. Acta Silv. Lign. Hung., 6: 91-110