Agricultural land-change in Slovakia in the post-socialism and EU-accession period

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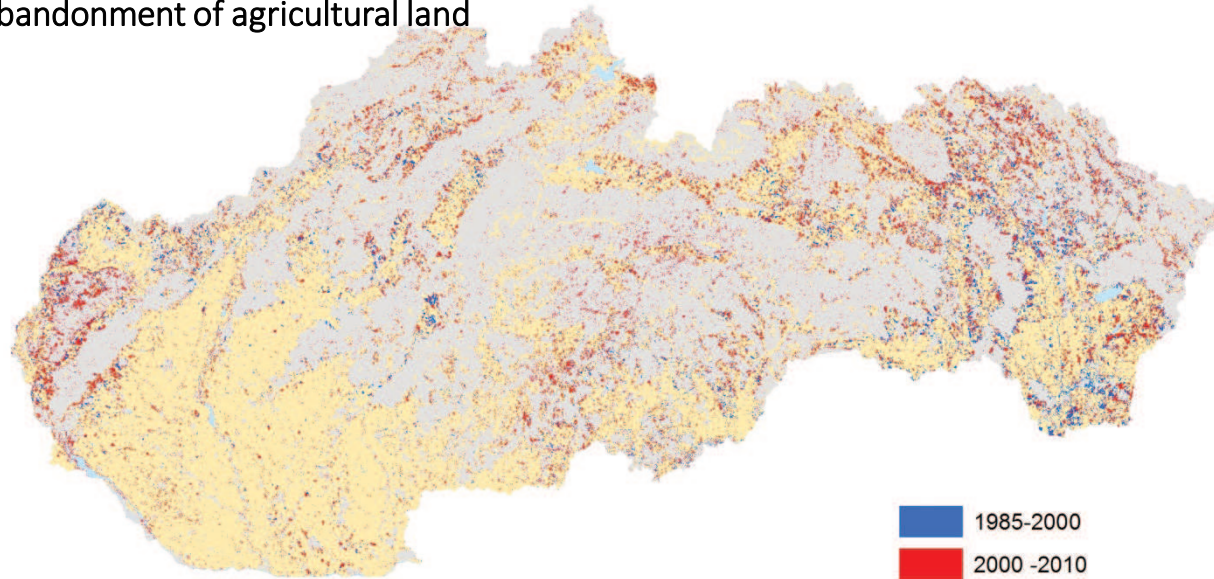[5]Geography Department, Humboldt-Universität zu Berlin
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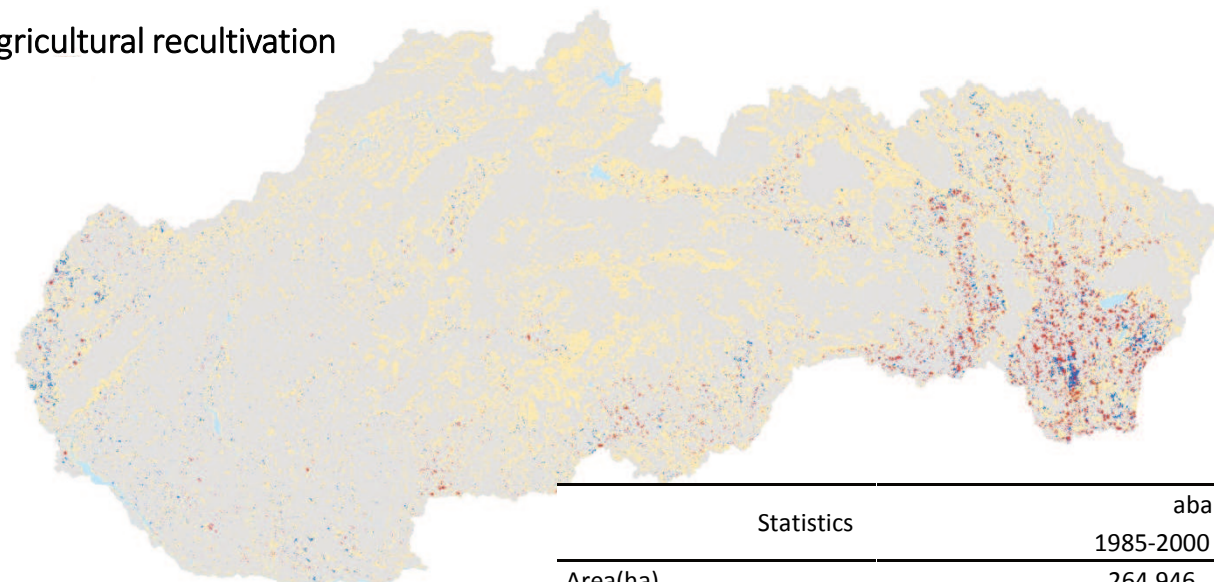[7] Institute of Environmental Sciences, Kazan Federal University
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Abandonment of agricultural land

|	1985-2000
	2000 -2010

Agricultural recultivation

Statistics	abandonment		recultivation	
	1985-2000	2000-2010	1985-2000	2000-2010
Area(ha)	264,946	129,690	40,654	41,067
Number of patches	101,116	55,926	12,894	23,082
Proportion of agricultural land (%)	10.88	5.45	1.84	1.79
Part in mountains (%)	36.63	25.51	6.21	11.25

Source of data: Griffiths, P., Müller, D., Kuemmerle, T., Hostert, P., 2013. Agricultural land change in the Carpathian ecoregion after the breakdown of socialism and expansion of the European Union. Environmental Research Letters 8, 12pp

A Abandonment of agricultural land
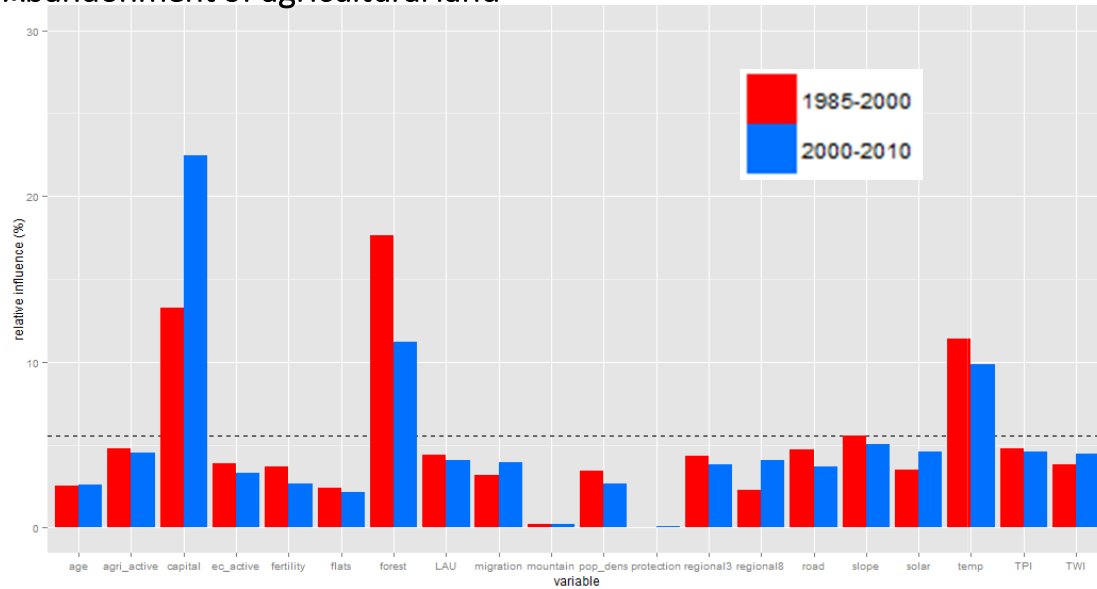
B Agricultural recultivation
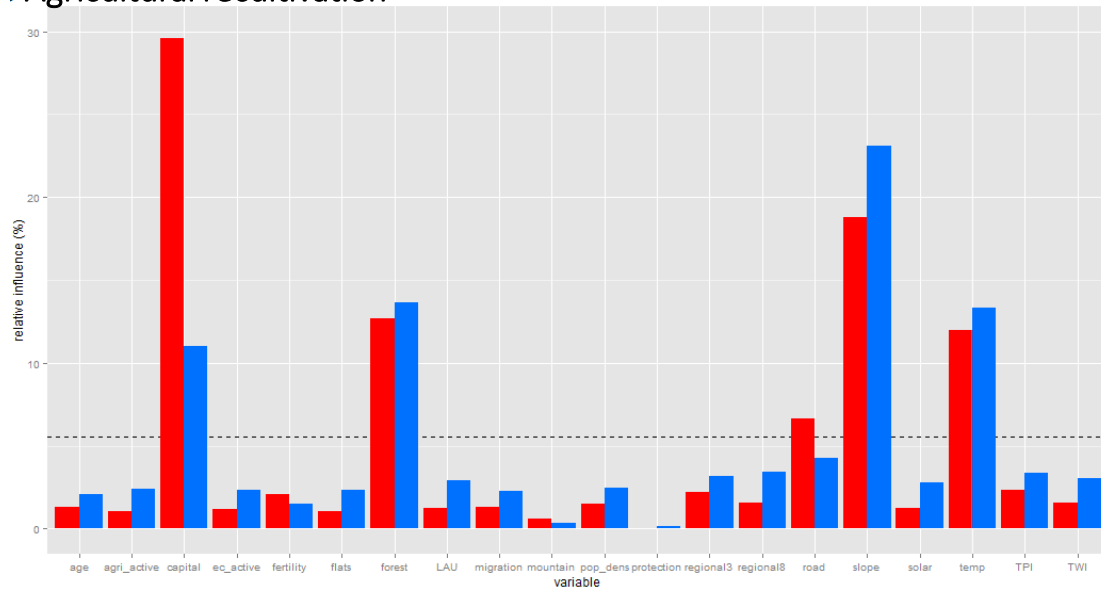
| Variables	
Biophysical	
Slope(slope)	Derived from DEM (15 meters resolution)
Sun radiation (solar)	Global solar radiation model (kWh)
Topographic position index (TPI)	Derived from DEM
Topographic Wetness Index (TWI)	Compound Topographic Index (CTI)
Relief subgroup (mountain)	Areas that belongs to the flat or basin ge
Soil fertility(fertility)	Function of grain size distribution and soil type
Protected areas (protection)	All protected areas except large national parks
Climatic	
Temperature (temp)	Average temperature in 1990-2006 interpolated 89 stations
Accessibility &Isolation	
Distance to forested area *(forest)*	Euclidian distance to the closest forest or shrubland
Distance to regional capitals (capital)	Path distance using the friction of different LU classes and DEM
Distance to regional capitals (regional 3 and 8)	Path distance using the friction of different LU classes and DEM
Distance to LAU 1 centres (LAU)	Path distance using the friction of different LU classes and DEM
Distance to roads (road)	Least accumulative cost to specific roads using DEM
Demographic	
Population density (pop_dens)	Population/km2
Age index (age)	Population over 65 y./population under 15y.
Migration (migration)	Total migration/population
Economic activity (ec_active)	Proportions of economic active people
Agriculture activity (agri_active)	Proportions of people working in agriculture
Flats (flats)	Number of flats build in previous decade/hectares

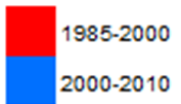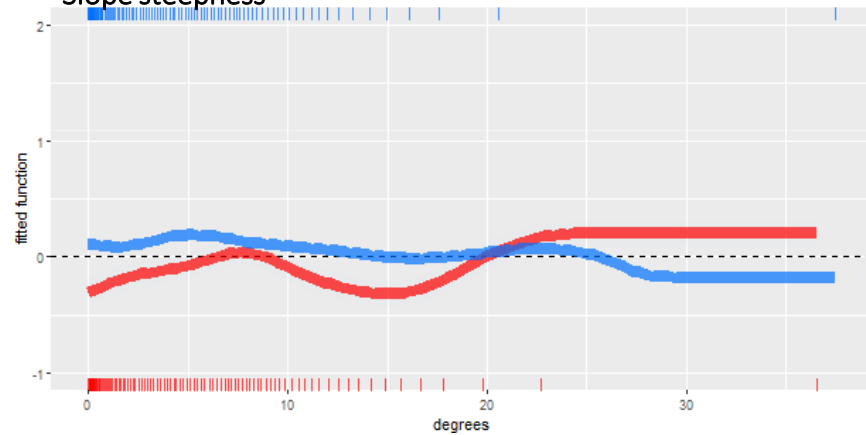# Abandonment of agricultural land

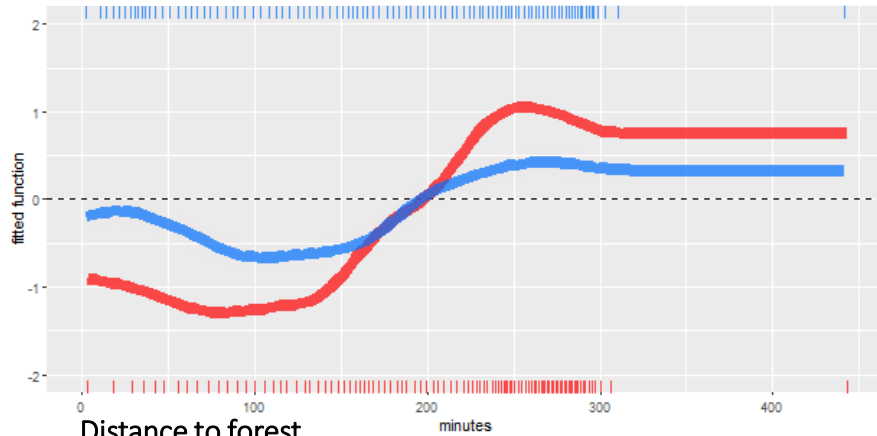### Distance to capital city

Average temperature
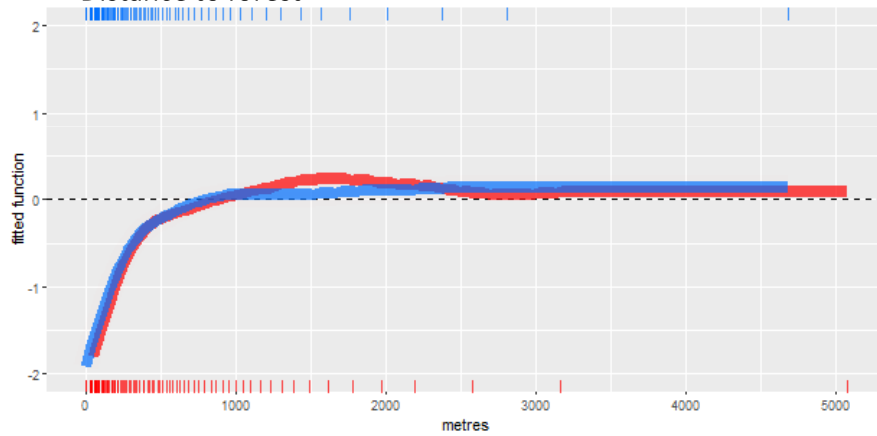

Distance to forest

Slope steepness

1985-2000

2000-2010
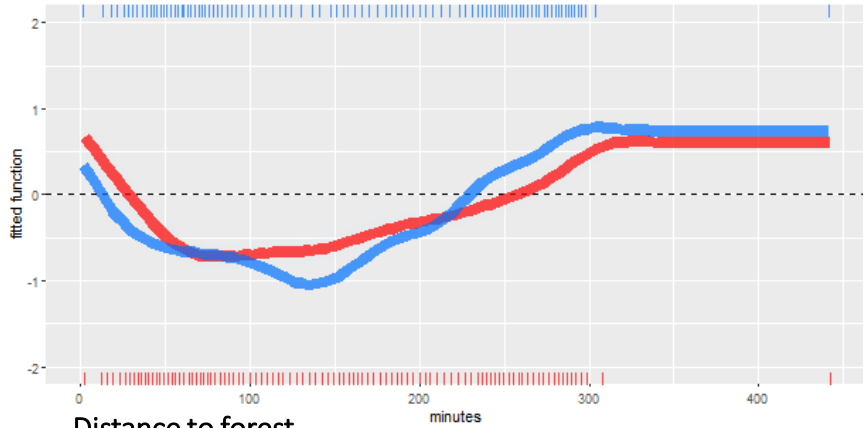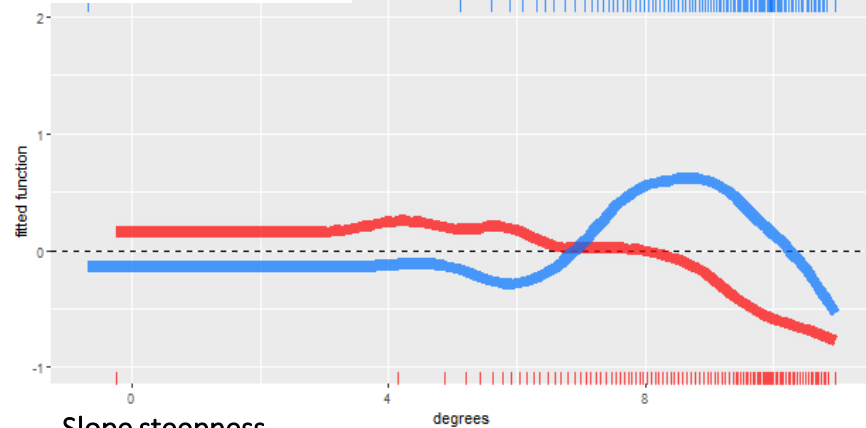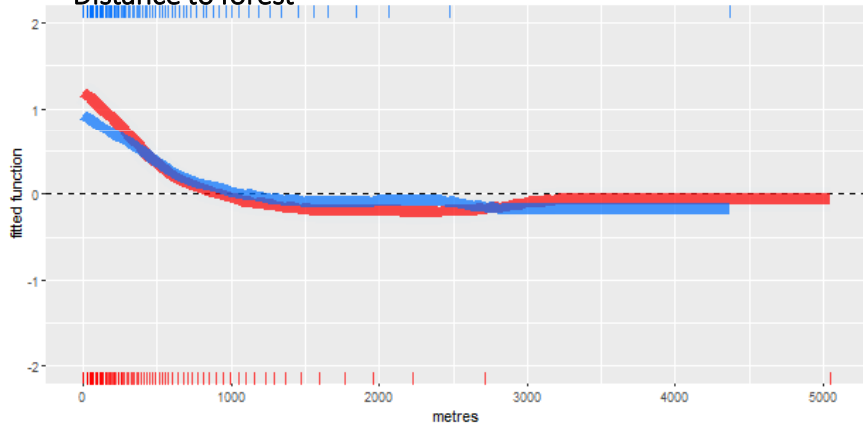
Agricultural recultivation

Distance to capital city

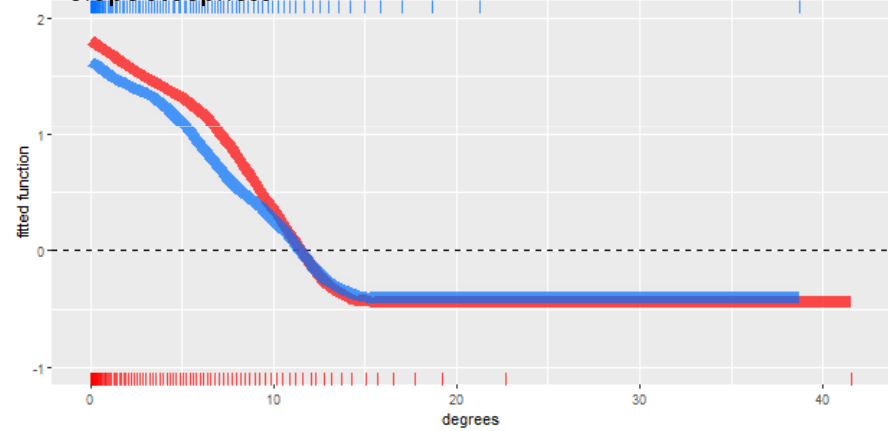### Average temperature

Distance to forest

Slope steepness

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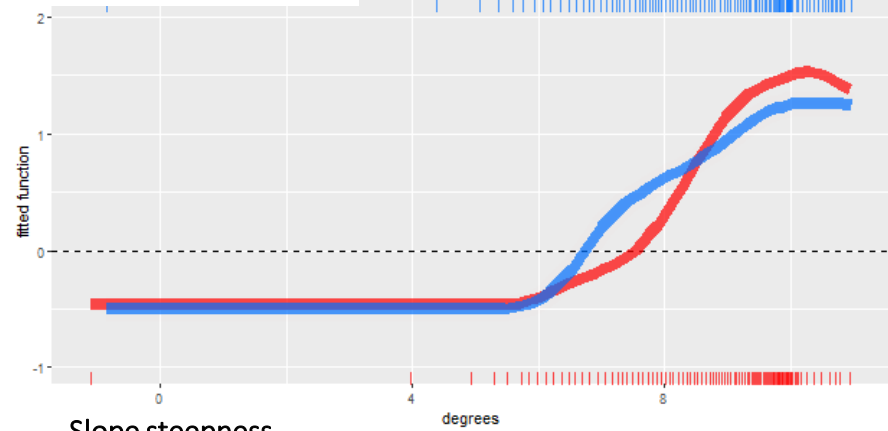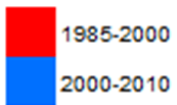
Implication of the results

Support scheme for less-favored areas in Slovakia considers altitude, slope, average yield, population density, the proportion of people working in agriculture and soil properties. Except for the average yield and altitude (altitude was partly represented by average temperature) which we do not consider directly in our analyses, we found the slope steepness is the only reliable factor from this list. Distance to the capital city and detailed climatic characteristics were relevant indicators that are not considered in the support schemes. Including such spatially precise indicators would considerably raise the effectivity of the support schemes.