

Socio-economic transformations and land use change

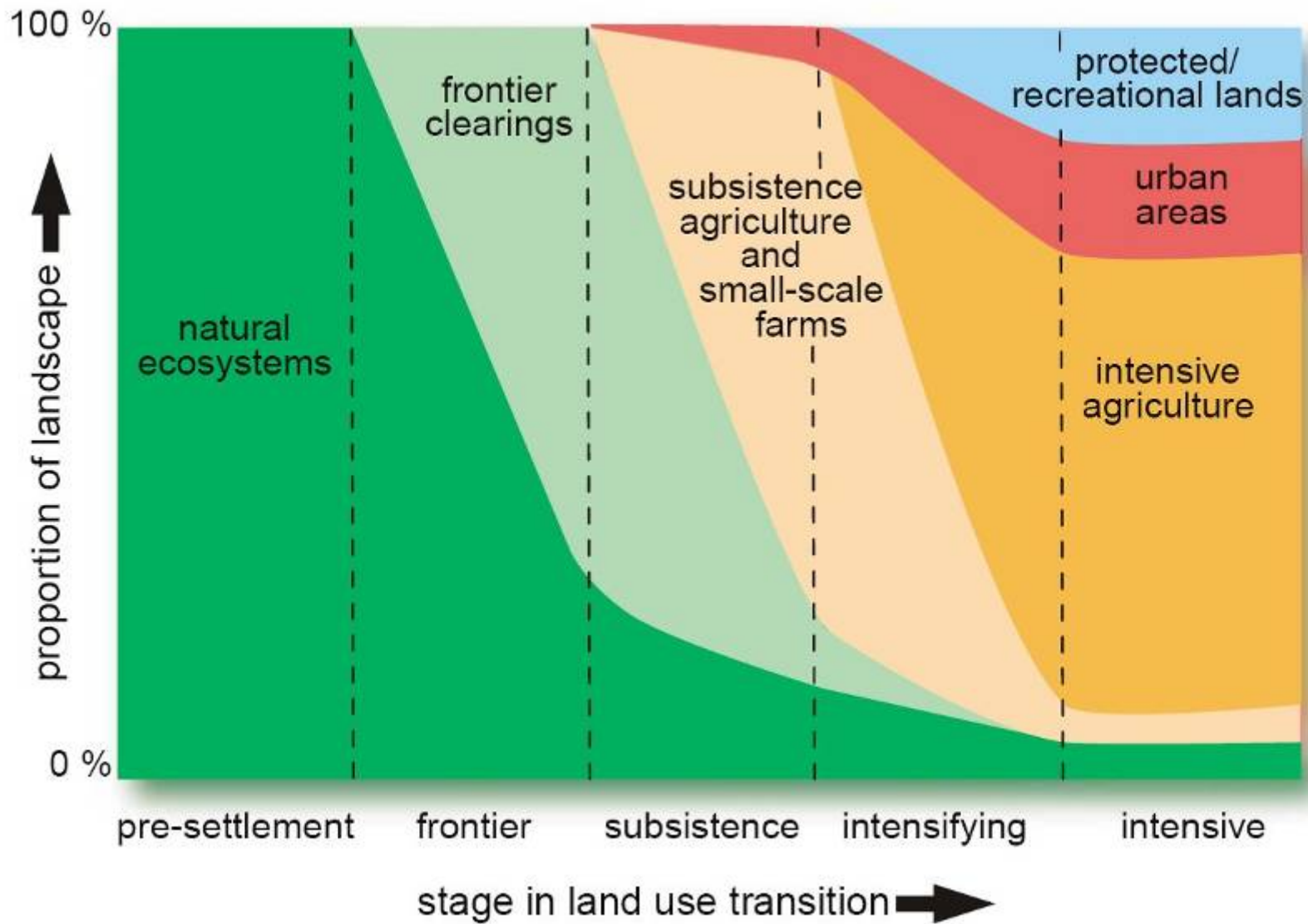
Patterns and processes of land use change
in Central and Eastern Europe

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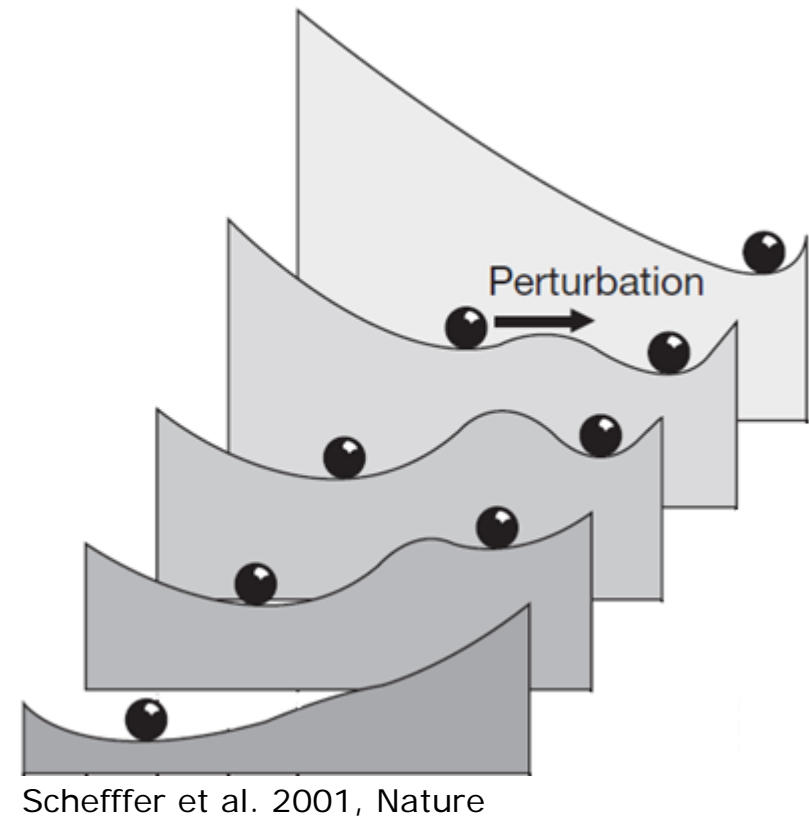
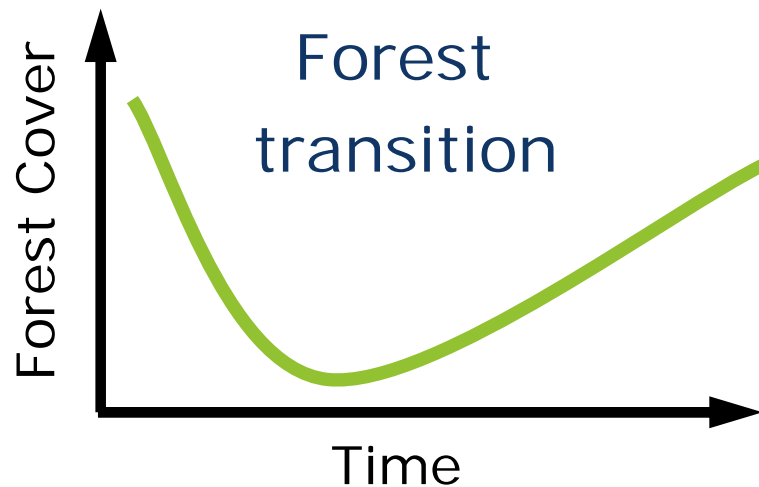
Photo: A. Prishchepov

Land use transitions



New paradigms for land use change

- Change is not always gradual
 - non-linearity
 - periods of stability & catastrophic shifts



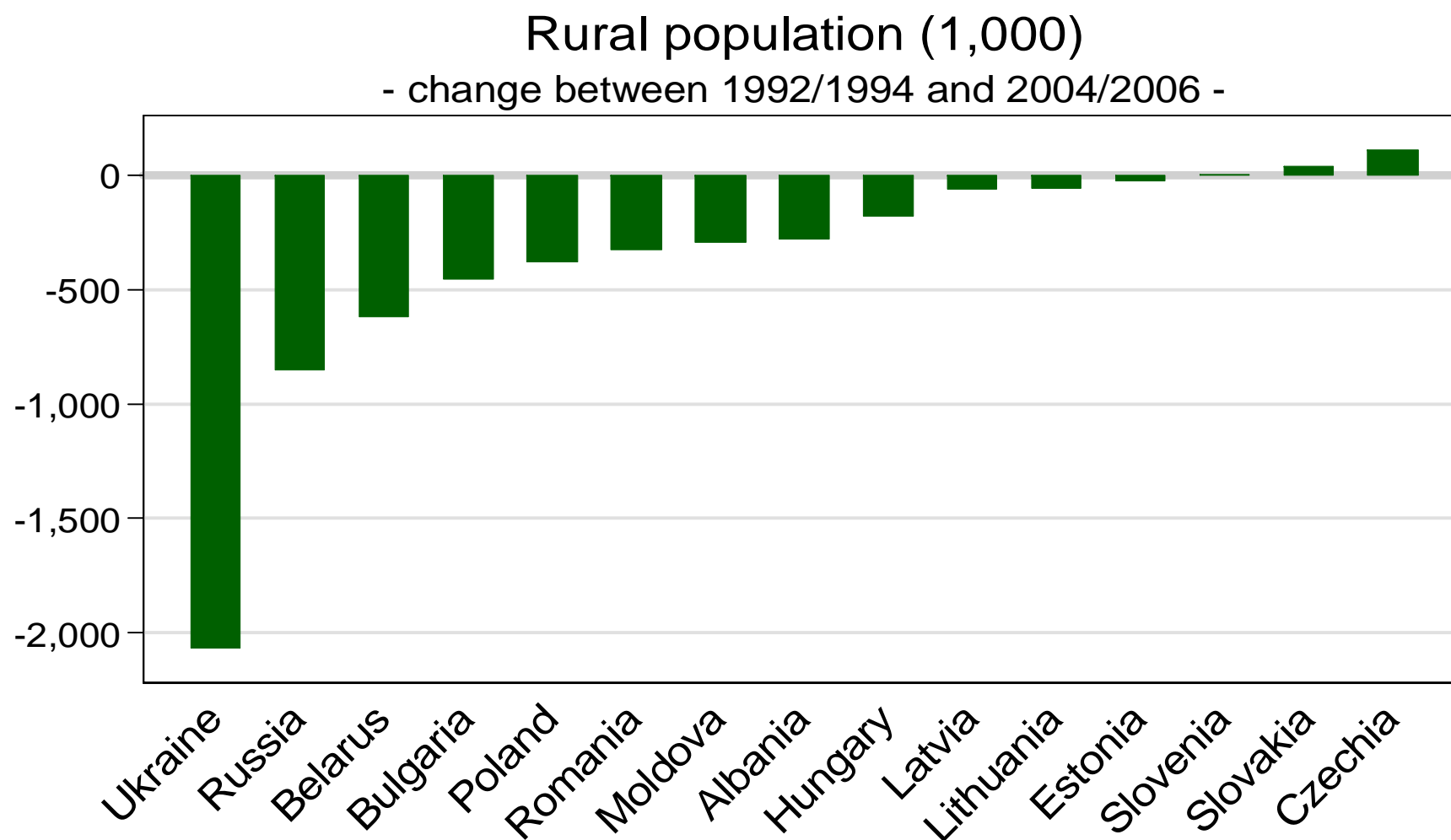
Collapse of socialism

- Rapid and drastic changes in Eastern Europe's institutional, societal, and economic conditions after 1989



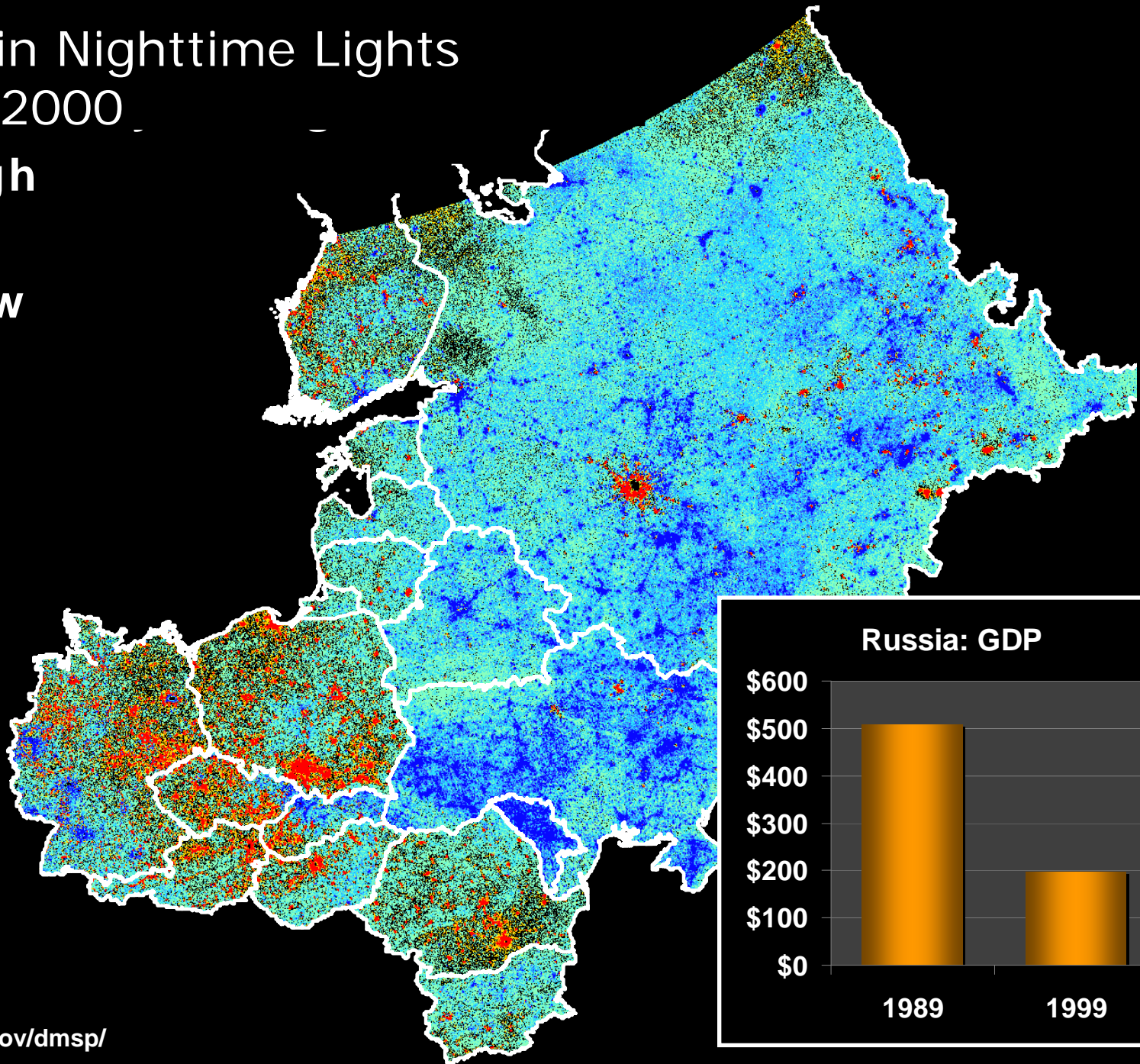
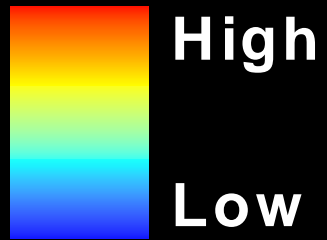
- Restructuring of agricultural sectors
 - Disappearance of former markets
 - Price liberalization (of inputs and outputs)

➤ Population changes and migration



Source: World Development Indicators 2008

Change in Nighttime Lights 1992 to 2000



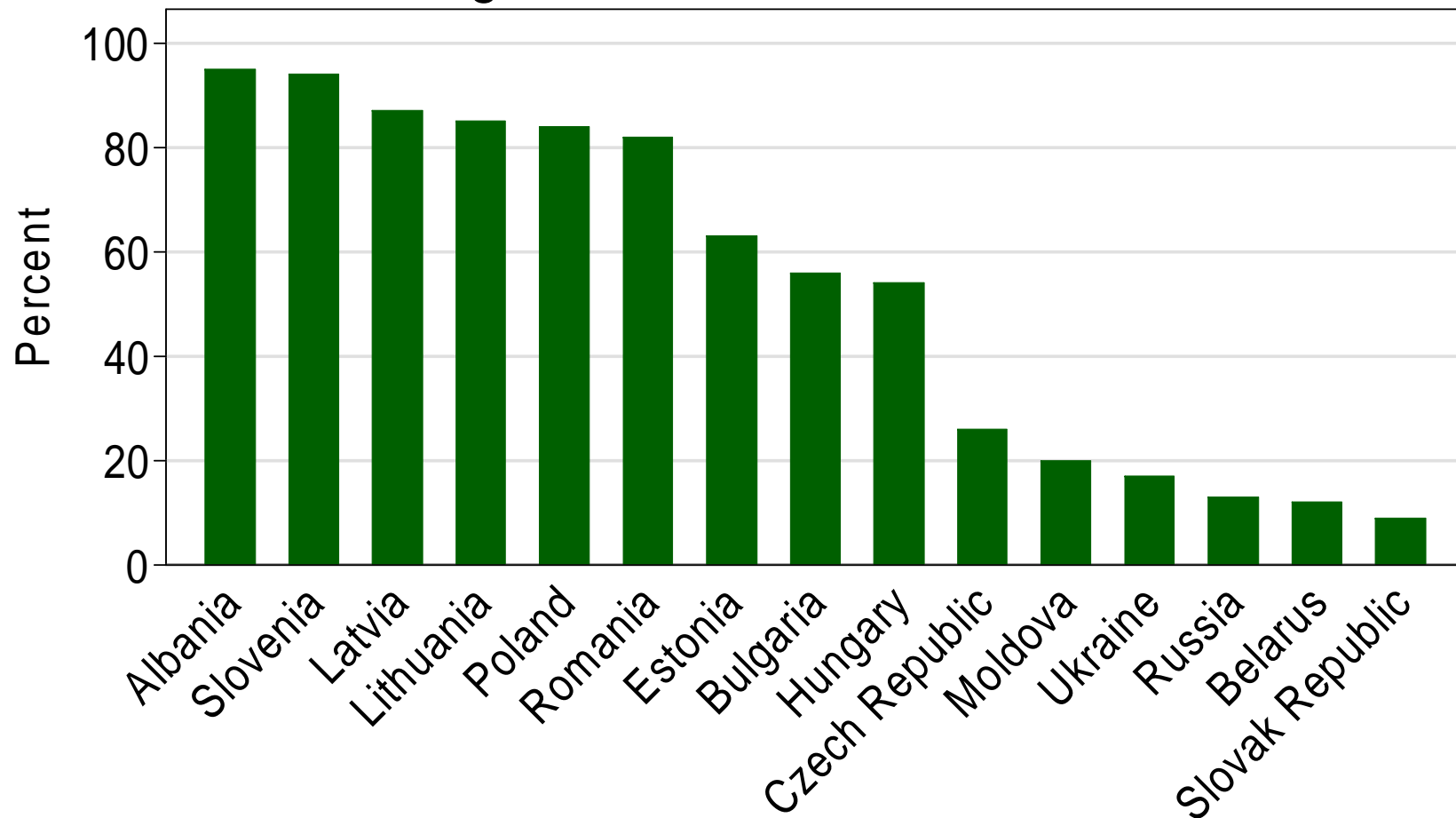
- Privatization of land - different land reform strategies
 - Restitution (e.g., Baltic States, Slovakia)
 - Distribution (e.g., Russia, Ukraine)
 - Auctioning (e.g., Poland)




Photo: A. Prishchepov

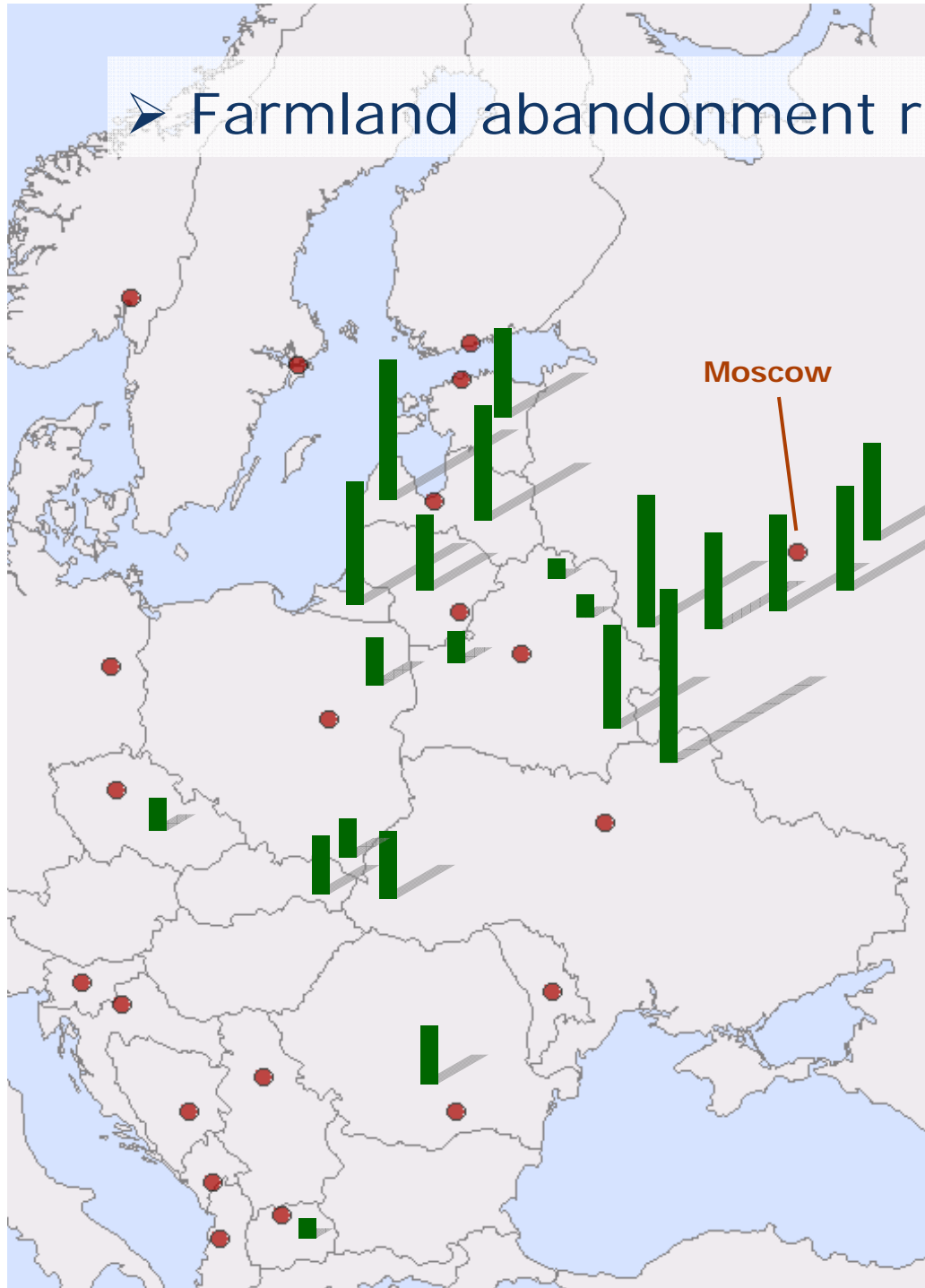
➤ Individualization of land use

Share of agricultural land in individual use, 2000



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- A landscape photograph showing a green field with scattered trees and a dense forest in the background. The field is filled with various types of trees, including several prominent evergreens in the foreground. The background features a dense forest of taller trees, possibly conifers, under a clear sky.
- How has all of that affected land use/cover patterns in Central and Eastern Europe?
 1. Farmland abandonment
 2. Logging

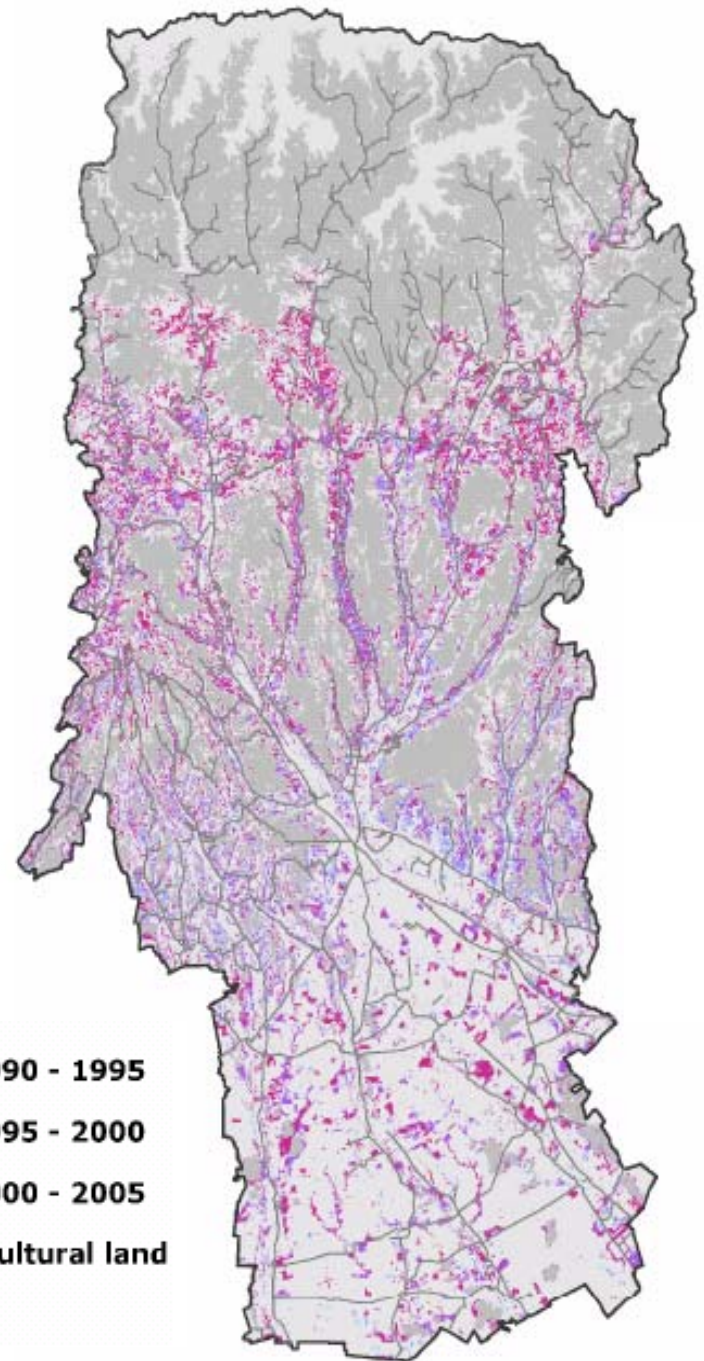
➤ Farmland abandonment rates from RS mapping



- Peterson & Aunap 1998
- Nikodemus 2005
- Prishchepov et al, *in prep.*
- Hostert et al. 2010, *sub.*
- Vaclavik & Rogan 2009
- Baumann et al. 2010, *sub.*
- Kuemmerle et al. 2008
- Kuemmerle et al. 2009
- Müller & Munroe 2008

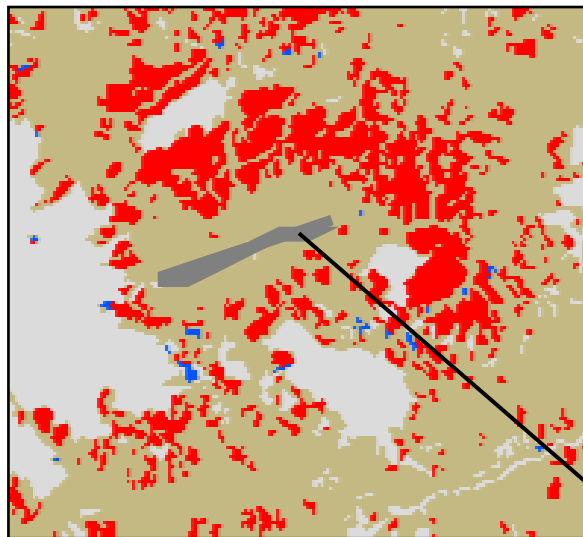
█ = 50% abandonment

- Southern Romania: Most abandonment during the early transition years
- Modeling spatial determinants of LUCC suggests more abandonment on
 - steep and high terrain
 - isolated fields
- Population variables not important...



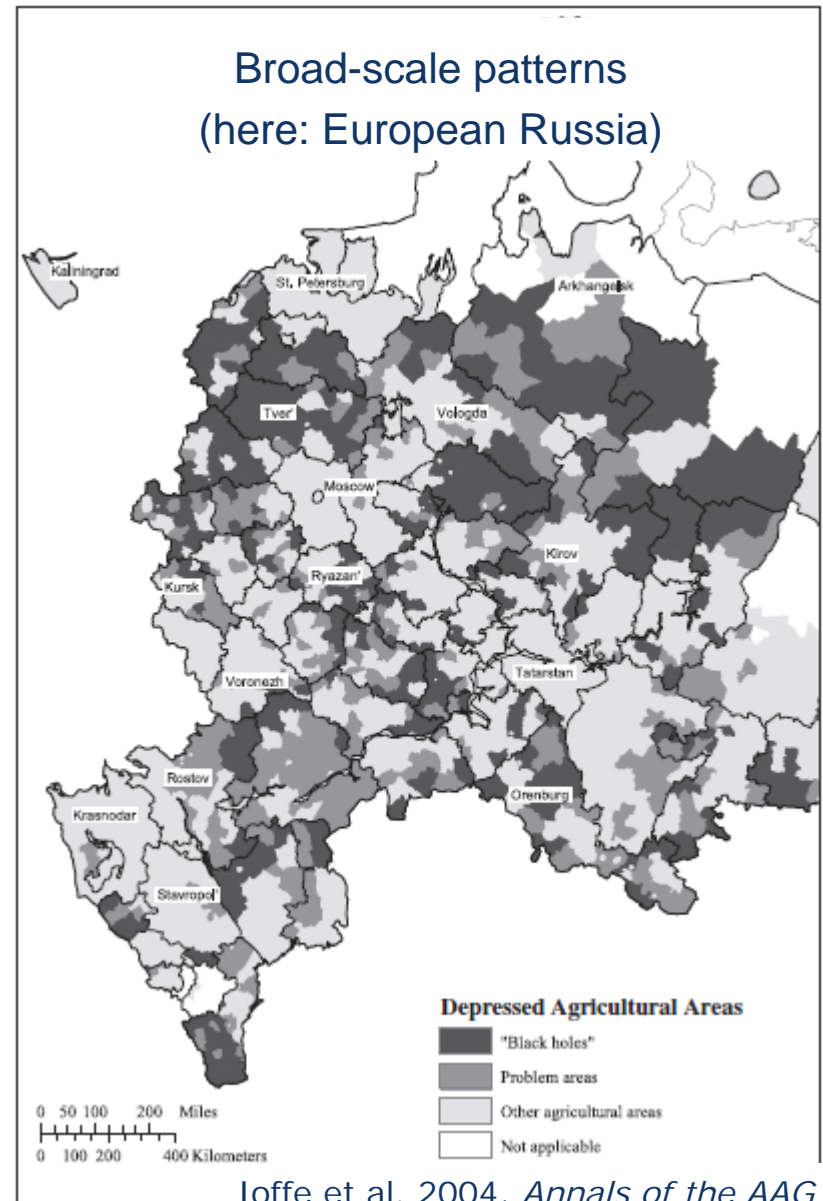
➤ Importance of accessibility & remoteness

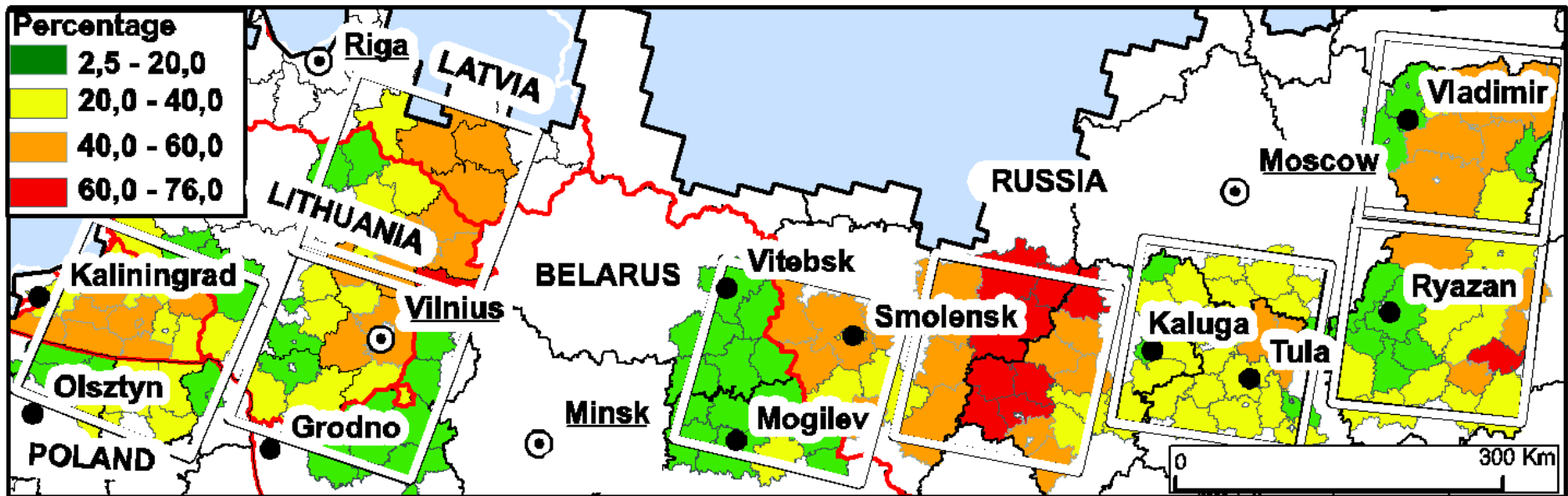
Fine scale patterns
(here: Eastern Carpathians)



- Fallow land
- Afforestation
- Unchanged area
- Masked area

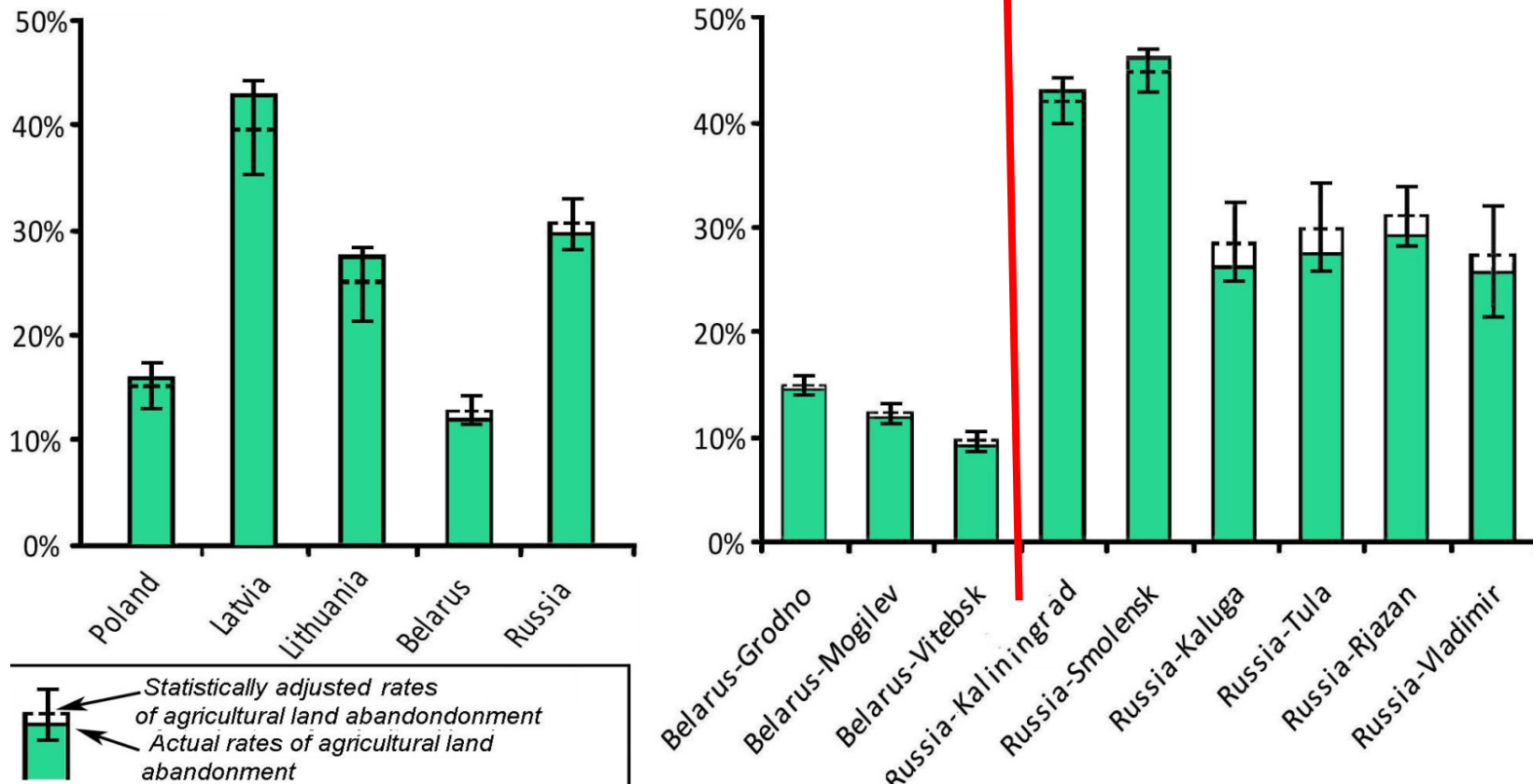
Broad-scale patterns
(here: European Russia)





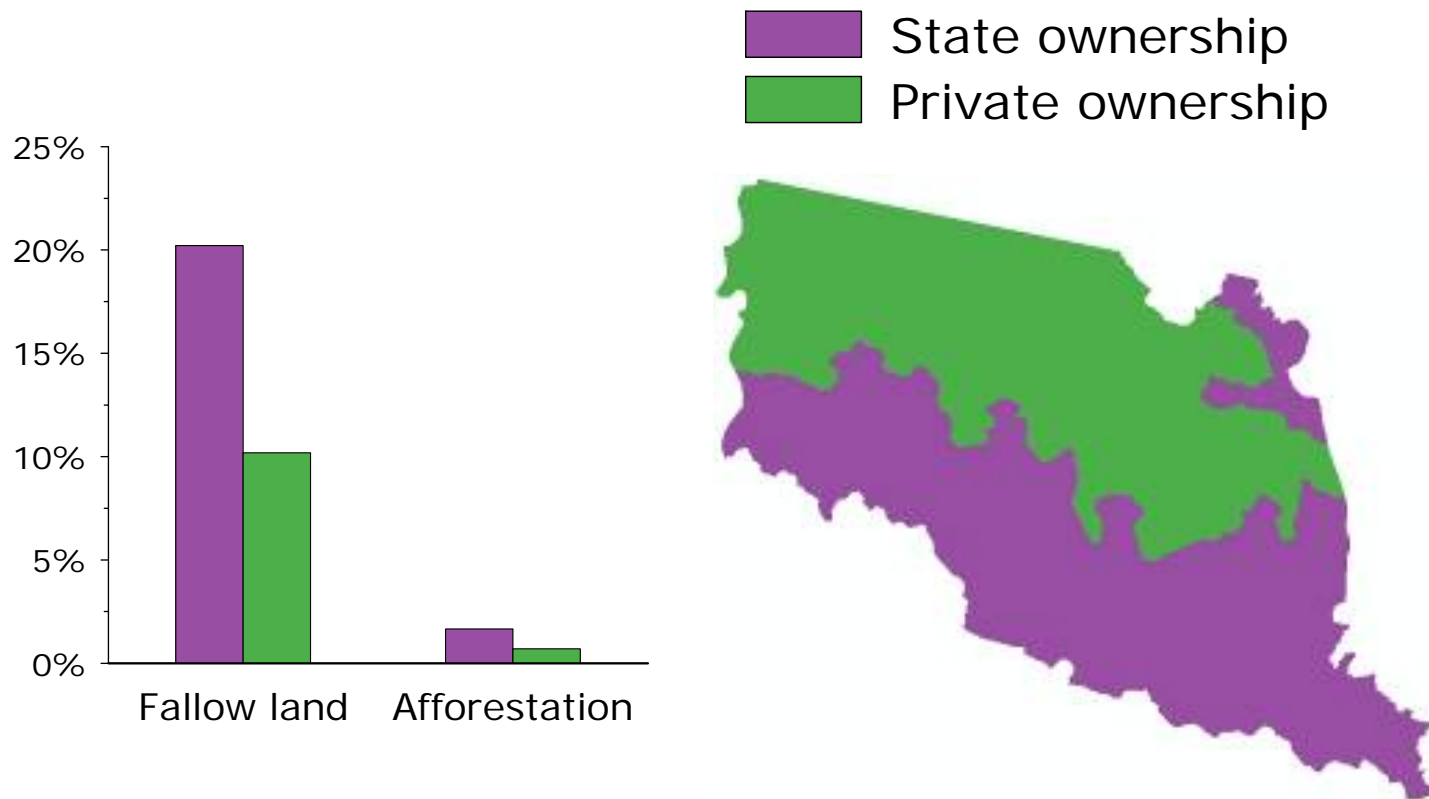
- Multi-scale econometric modeling showed:
 - More abandonment in less productive regions
 - Population decline important
 - But spatial determinants of abandonment differ regionally (e.g., socio-economic factors sometimes outweigh environmental factors)

➤ But: strong differences among countries in border regions

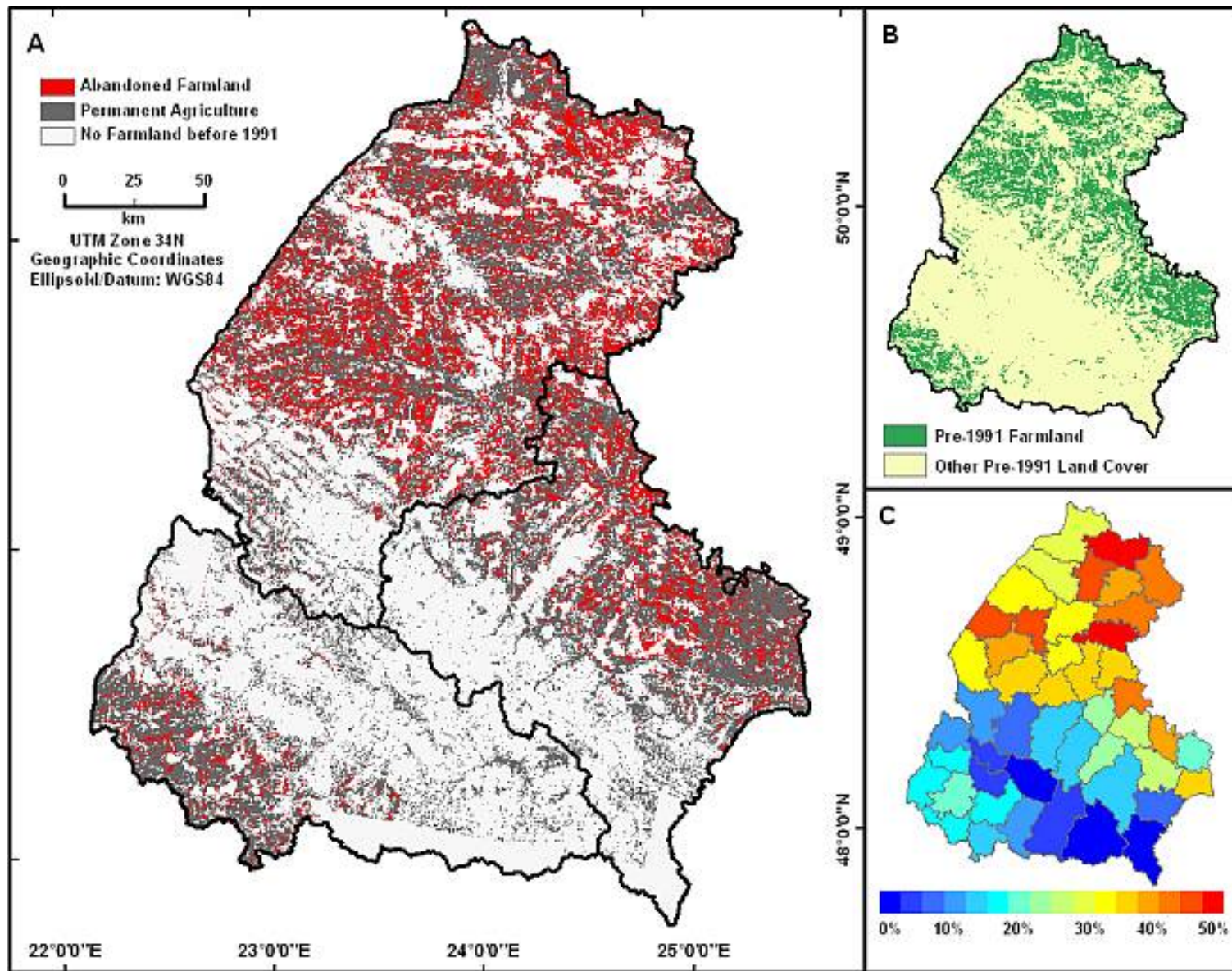


➤ Ownership and land reforms

- Differences among tenure regimes
- More abandonment where farmland was restituted



➤ Western Ukraine





- Explanatory models of abandonment patterns:
 - Soil quality, topography, market access, and migration important
 - But: direction often opposite to expectations



Summary - abandonment

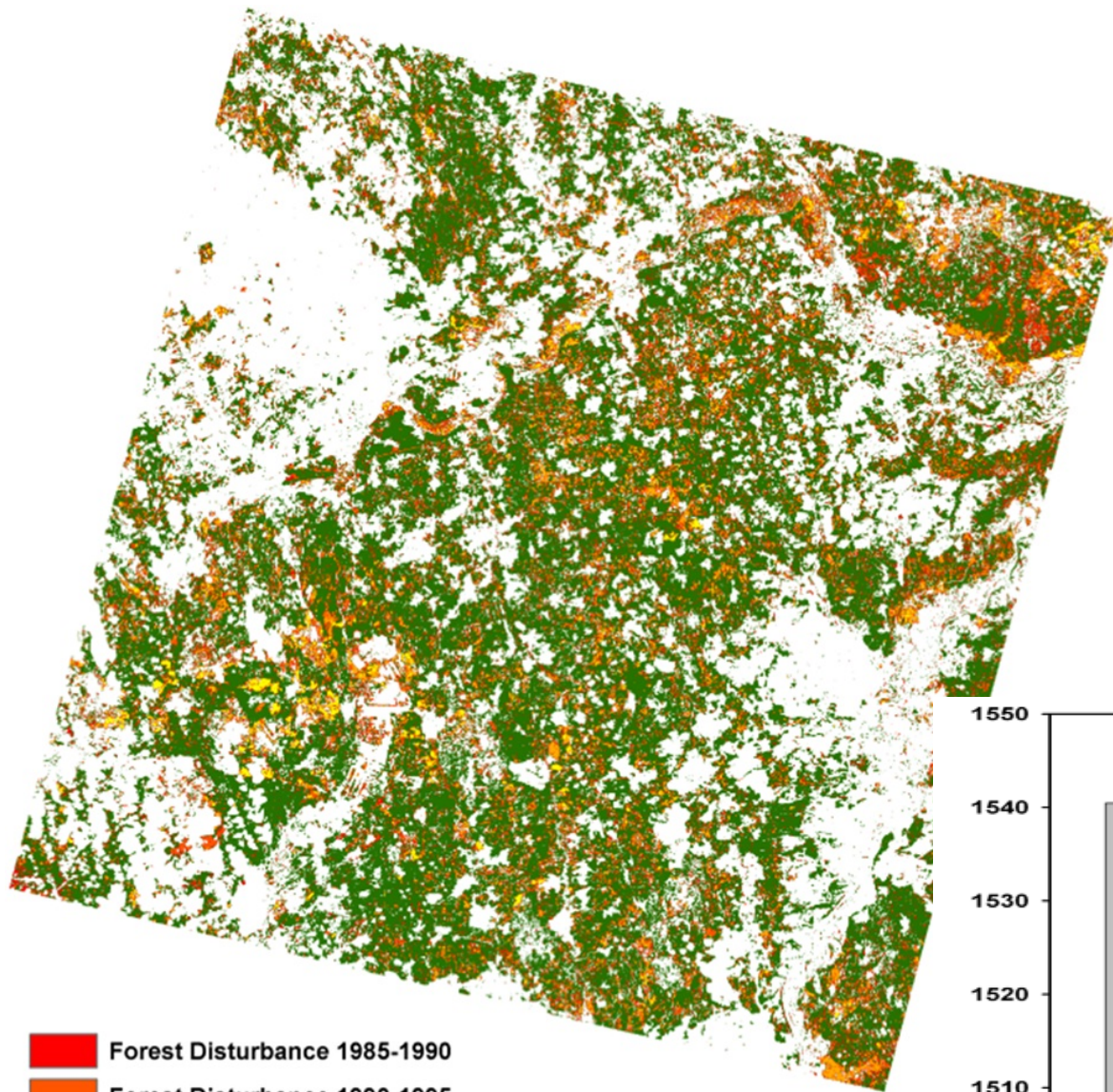
- Marginality of farming very important
- Yet, large variability in farmland abandonment patterns - within and among countries & among spatial scales
- Marginality factors are often mediated by institutional factors (subsidies, land reforms)



➤ How has the post-socialist transition affected land use patterns in Central and Eastern Europe?

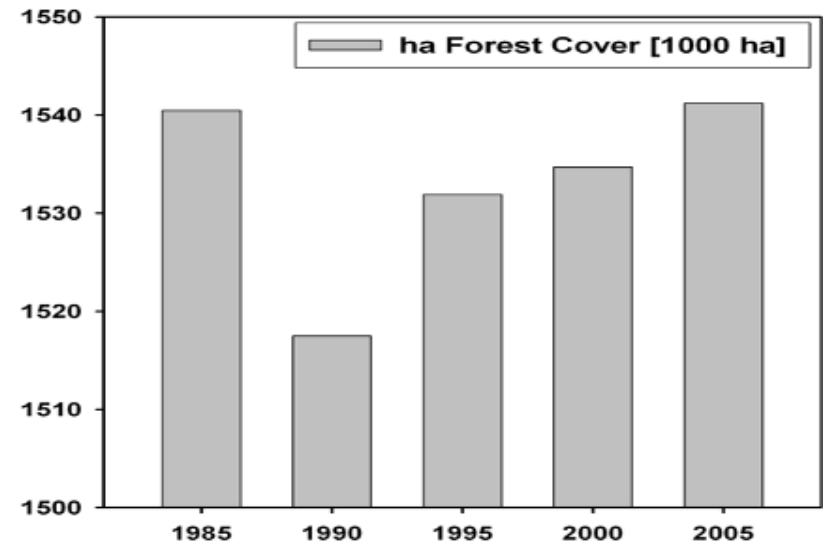
1. Farmland abandonment

2. Logging

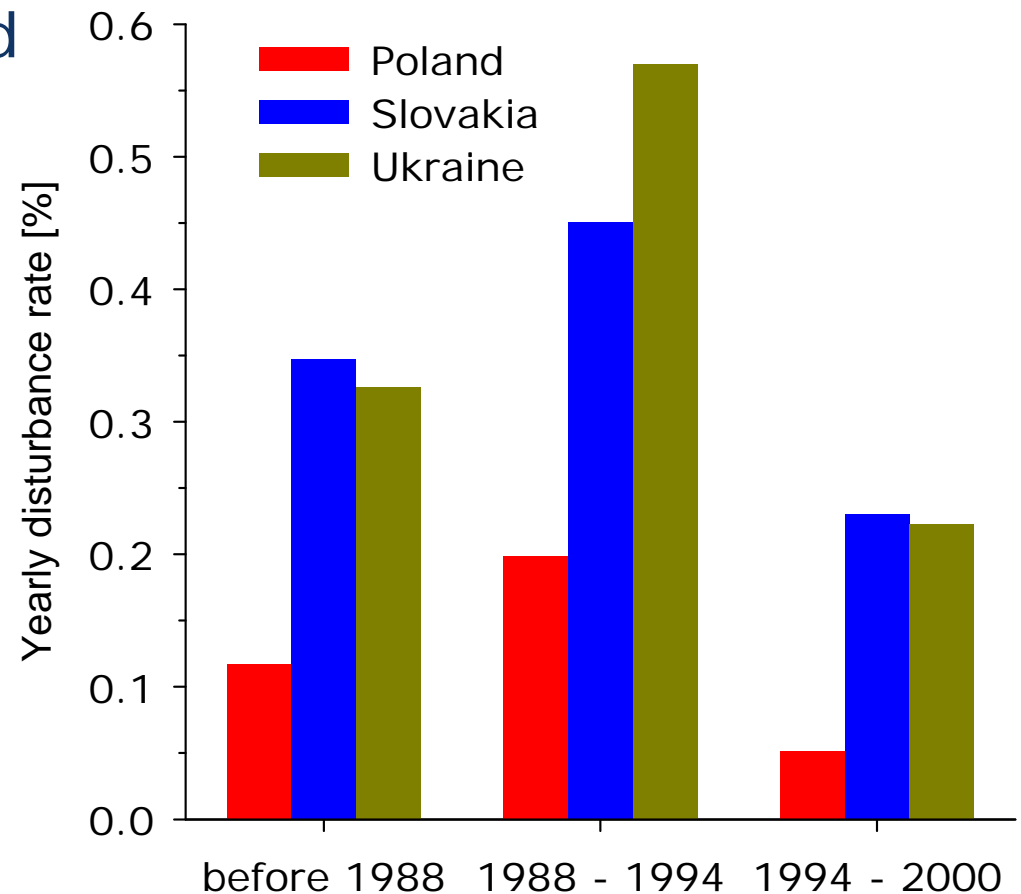


- Forest Disturbance 1985-1990
- Forest Disturbance 1990-1995
- Forest Disturbance 1995-2000
- Forest Disturbance 2000-2005
- Permanent Forest Cover

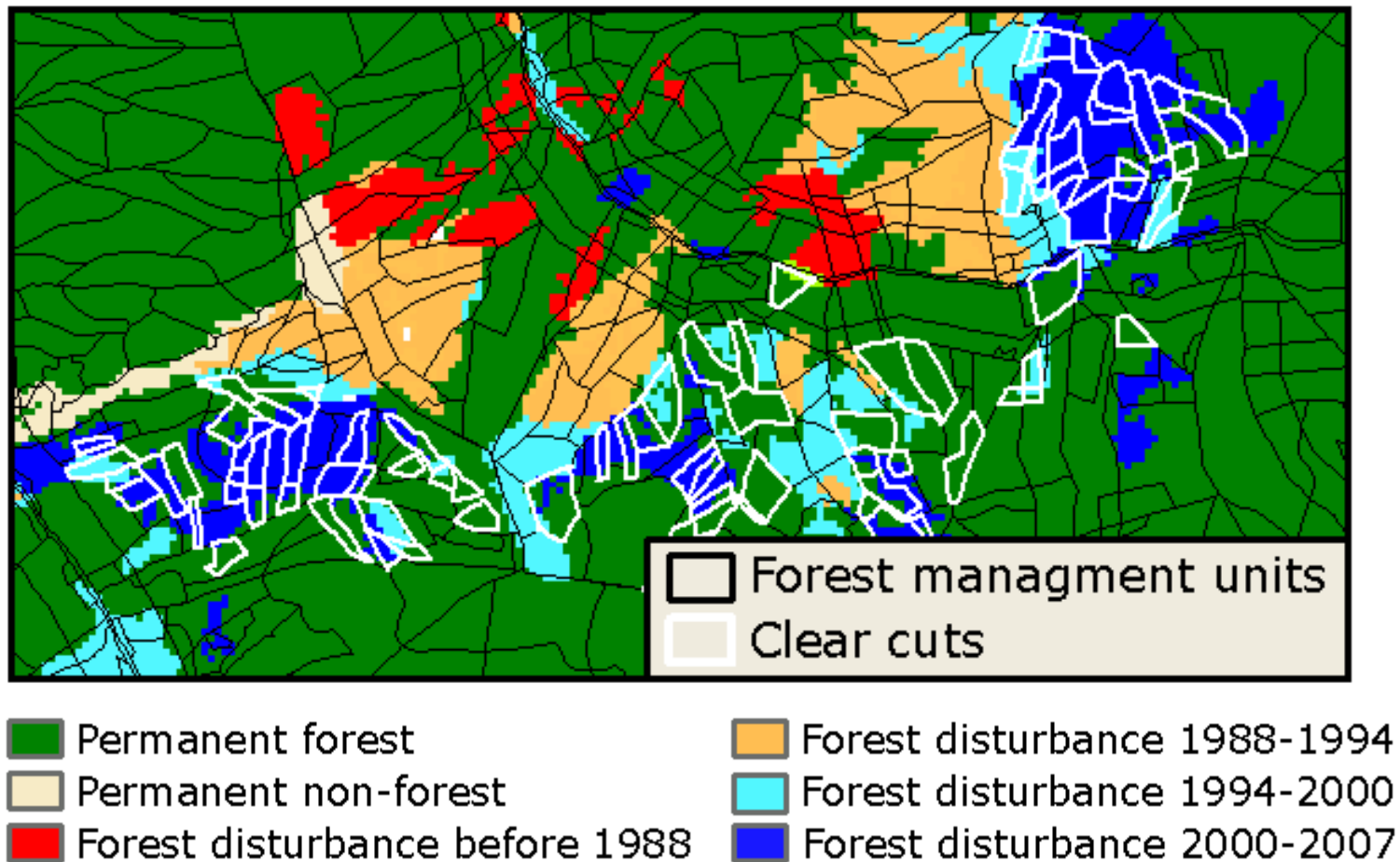
➤ ... and forest regeneration



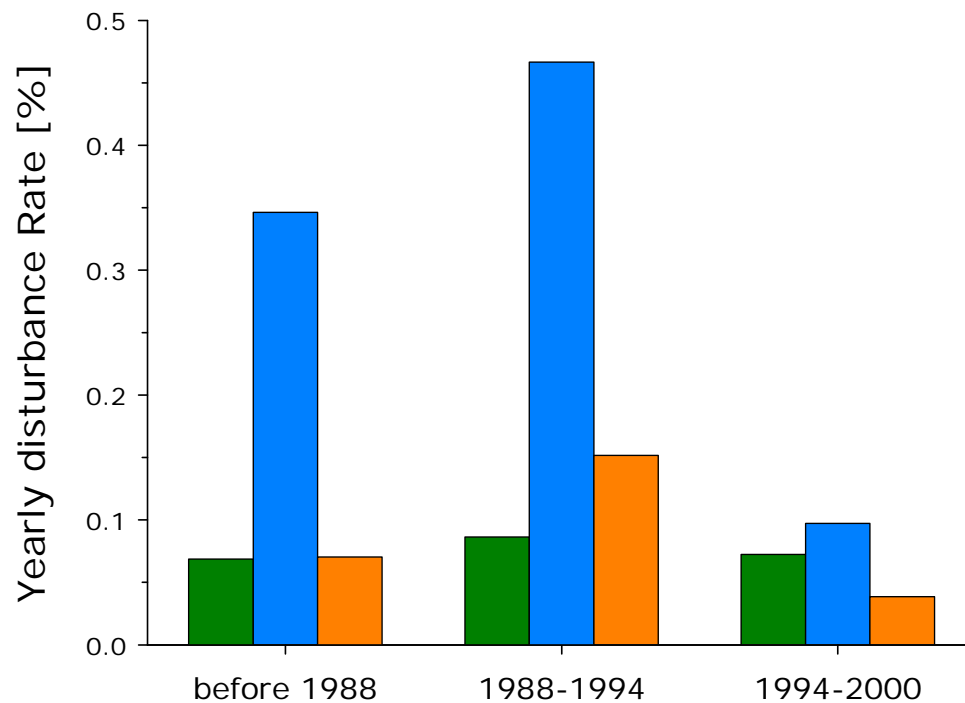
- In other regions increase in logging in the 1990s (here: Eastern Carpathians)
- Similar overall pattern, yet marked differences among countries



➤ Illegal logging and institutional strength
(here: Western Ukraine)



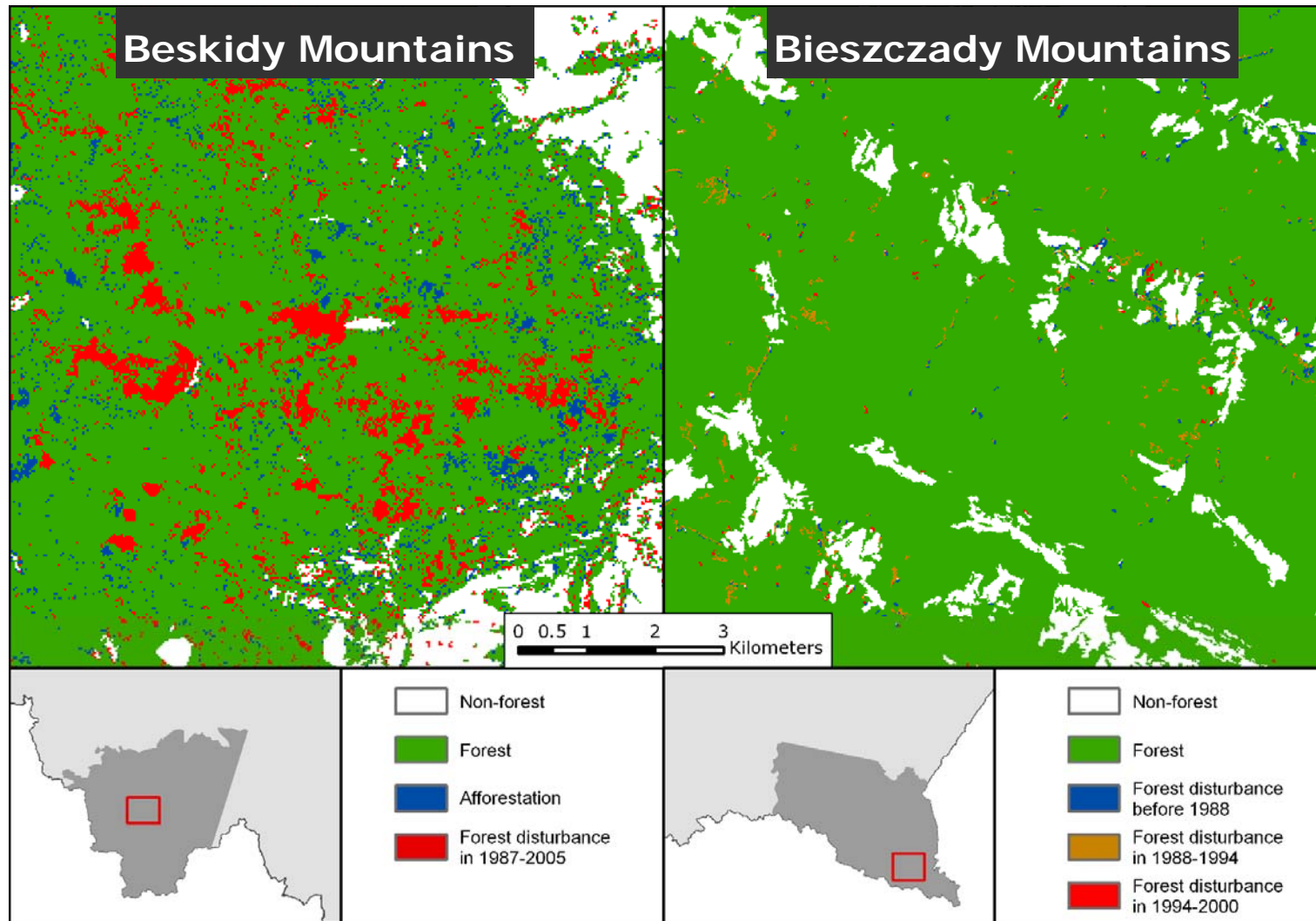
➤ Different logging rates in different ownership regimes (here: Eastern Carpathians)



■ National Park
■ Private Forest
■ State forest



➤ Pollution legacies
(here: Polish Carpathians)





Summary - logging

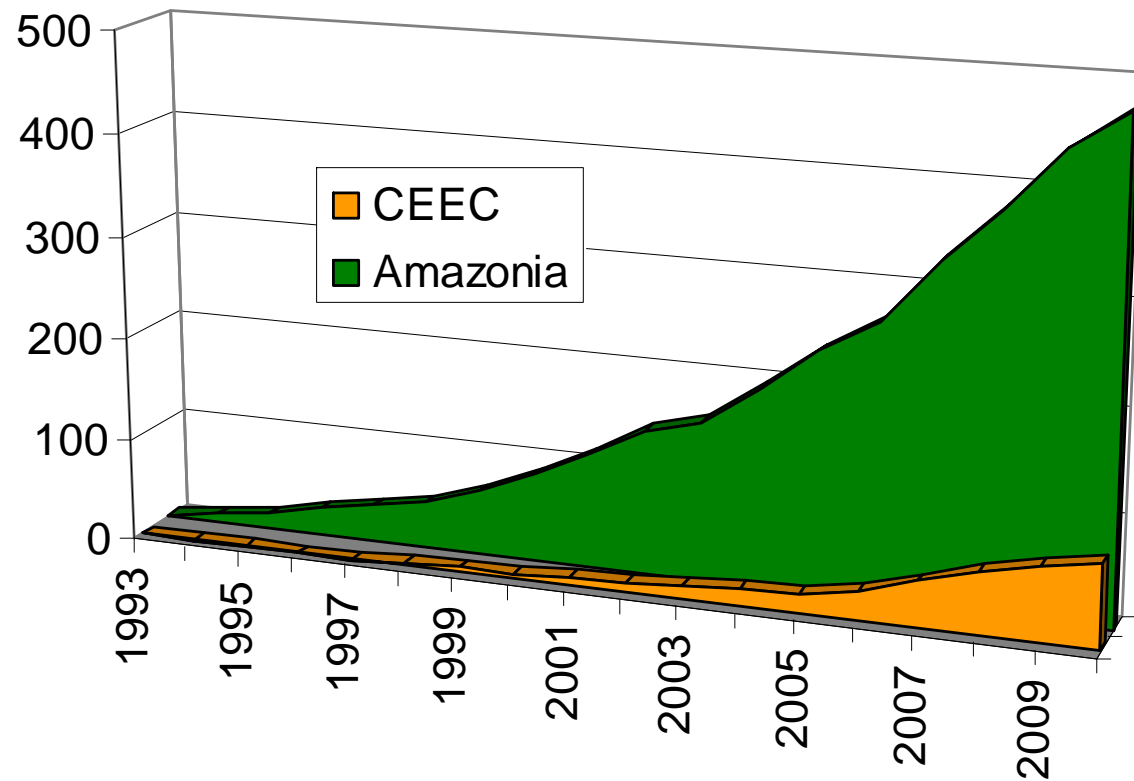
- Large variability in logging trends among countries and regions
- Strength of institutions and ownership changes emerge as important factors

Conclusions

- Eastern Europe provides unique opportunities for studying the effect of 'socio-economic' disturbances on land use change
- Such disturbances may be frequent at a global scale (e.g., wars, revolutions, economic shocks)
- In Eastern Europe, institutional factors, especially at the national scale, were important in mediating socio-economic disturbances

- Post-socialist LUCC one of the most dramatic land change episodes in the 20th century
- Yet, much remains to be learned about the patterns and drivers of land change in Eastern Europe

ISI-referenced papers on land use/cover change in Amazonia and CEEC





Thank you for listening!

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