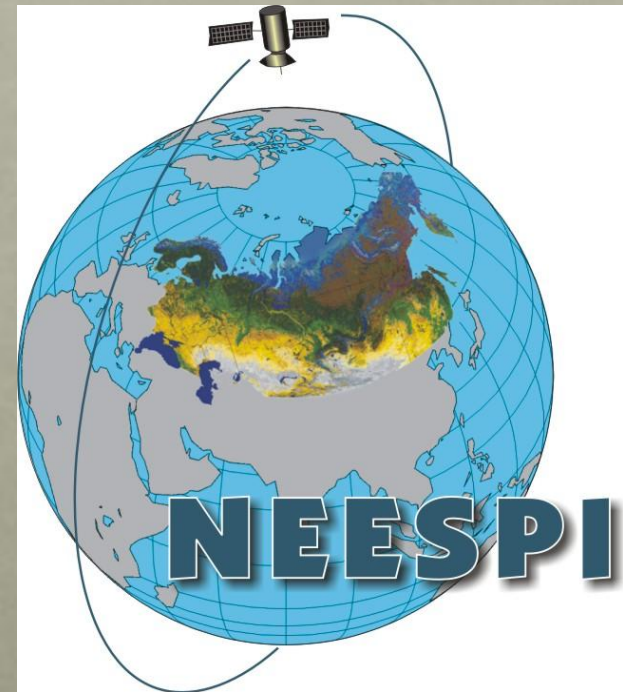


THE NASA LCLUC SUPPORT OF SCERIN

Garik Gutman,
LCLUC Program Manager
NASA Headquarters
Washington, DC

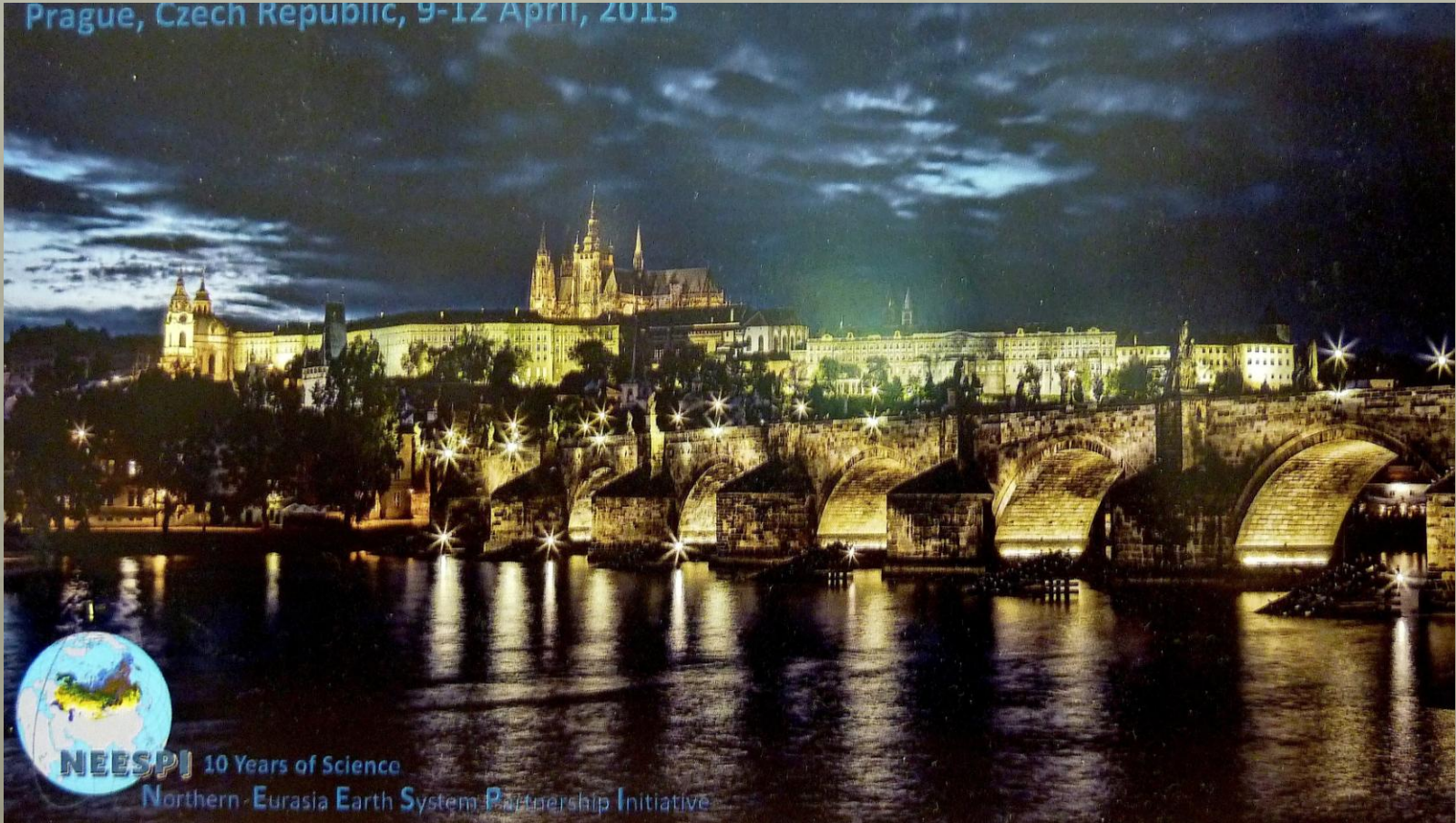
Northern Eurasia Earth Science Partnership Initiative (NEESPI)

- The premise
 - Sensitive and rapidly changing area with the signal of climate change effects observed in many components of the Earth's system.
 - Additionally, experienced a shock impact of the abrupt institutional and economic changes due to the breakup of the Soviet Union.
 - Space-based remote sensing provides unique information over this vast region; long-term datasets provide insight into changes
- The goal
 - Study climate-ecosystem interactions and assess societal impacts in boreal and non-boreal zones of N. Eurasia



Northern Eurasia Earth Science Partnership: 10 Years of Science

Prague, Czech Republic, 9-12 April, 2015



NEESP 10 Years of Science
Northern-Eurasia Earth System Partnership Initiative

NEESPI EXPANSION



NEESPI

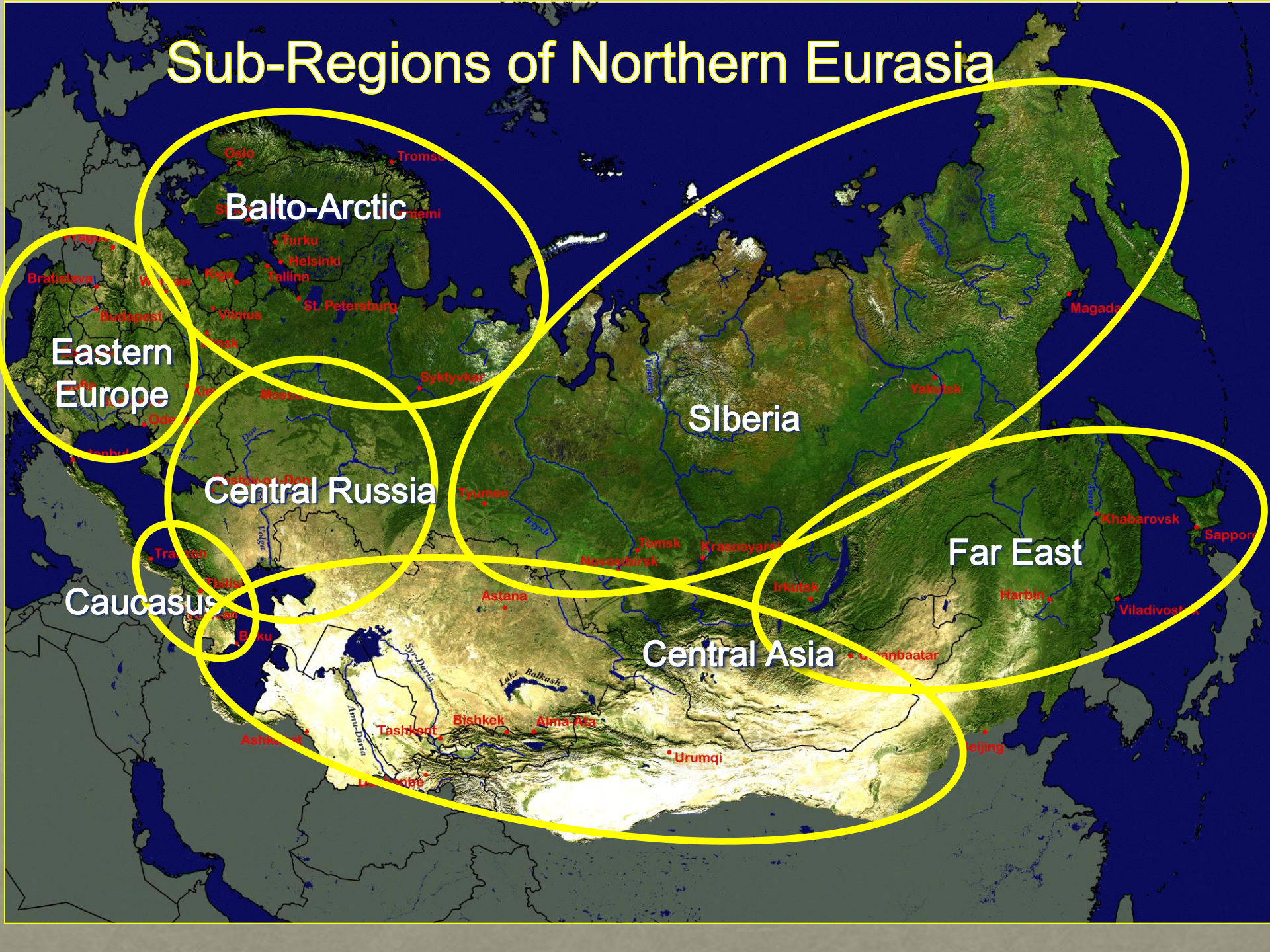
10 Years of Science

Northern Eurasia Earth System Partnership Initiative



Windows is shutting down...

Sub-Regions of Northern Eurasia



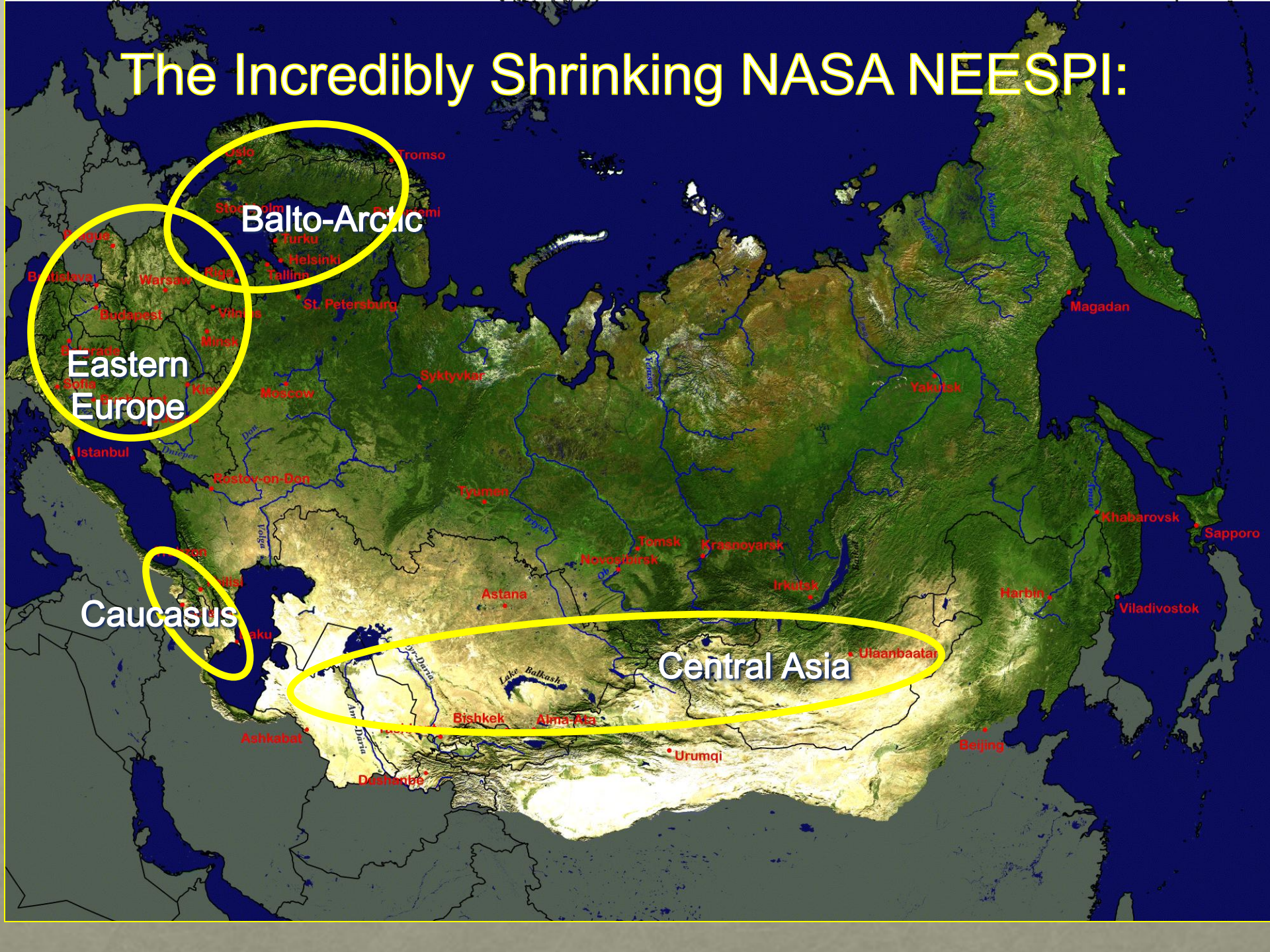
The Incredibly Shrinking NASA NEESPI:

Balto-Arctic

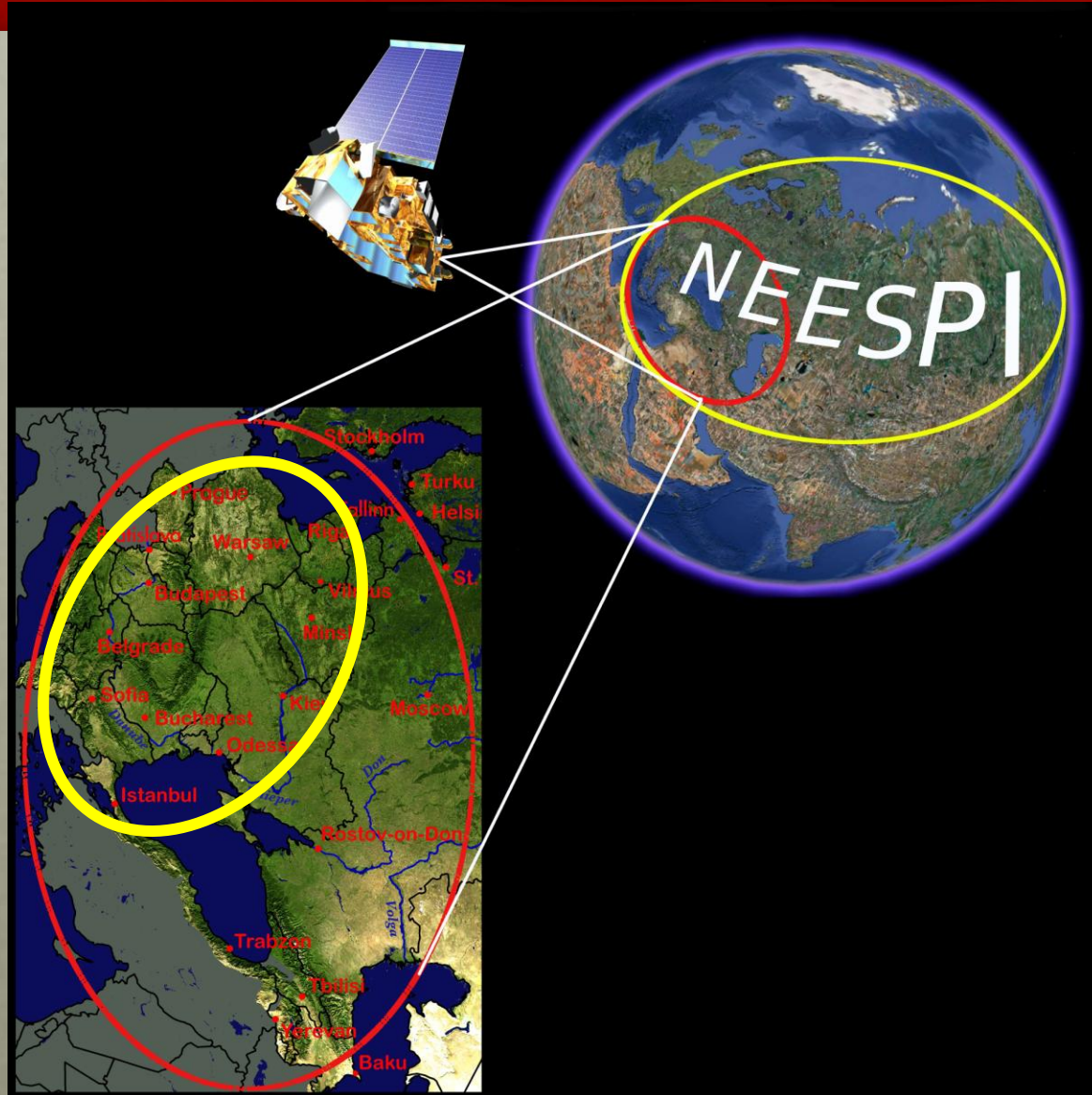
Eastern Europe

Caucasus

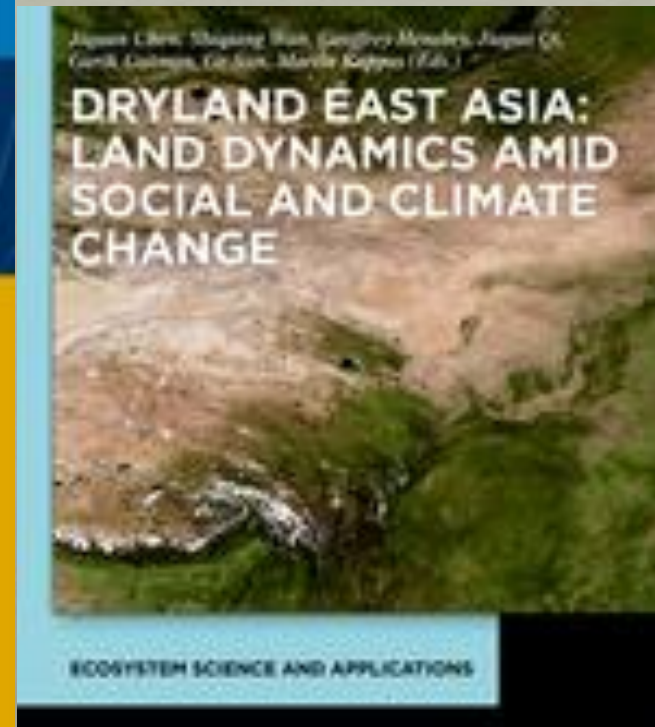
Central Asia



NEESPI-Europe



NEESPI-LCLUC Books



LCLUC in Eastern Europe - to be published in 2015 (?)
LCLUC in Central Asia – planned for 2016

Global Observation of Forest and Land Cover Dynamics

- **Coordinated international effort to provide ongoing space-based and *in-situ* observations of forests and other vegetation cover.**
- **Regional networks are an integral part of GOFC-GOLD**

GOFC-GOLD Networks

- **South/Central America**
 - Red Latinoamericana de Teledetección e Incendios Forestales (RedLaTIF)
- **Africa**
 - Southern Africa Networks (Miombo, SAFNet)
 - West Africa Regional Network (WARN)
 - Central Africa (OSFAC)
- **Asia**
 - South East Asia (SEARRIN)
 - Central Asia Regional Information Network (CARIN)
 - *South Asia Regional Information Network (SARIN)??*
- **Europe**
 - South Central and Eastern European Regional Information Network (SCERIN)
 - *Balto-Arctic (BARIN)??*
 - *Caucasus ??*
 - *Mediterranean*

South/Central Eastern Europe Regional Information Network (SCERIN)

SCERIN
Kickoff
Sofia 2012

SCERIN-1
Prague 2013

SCERIN-2
Krakow 2014

SCERIN-3
Brasov
2015

SCERIN-4
TBD
2016

Exploring the Hapsburgs Empire



Petya Campbel (NASA)



Jana Albrechtova (Karlovy Vary U.)

Braşov

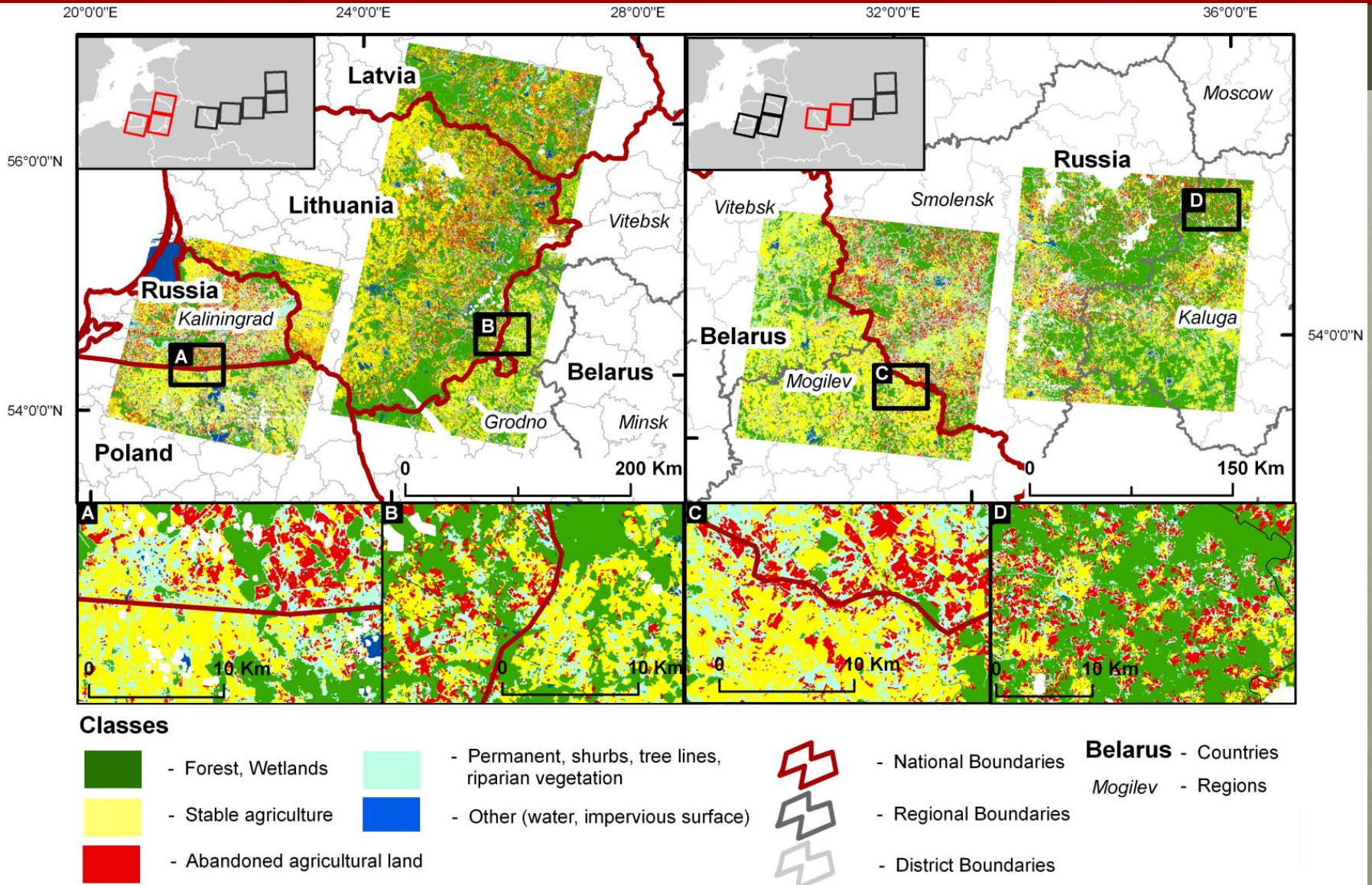


- Braşov – Crown City
 - Hung. *Brassó*
 - Ger. *Kronstadt*
- Founded in the 13th cent. by the Teutonic Knights
- A major center of trade and industry in the Middle Ages.
- Considerable autonomy under the Hapsburg empire
- Sizable German and Hungarian minorities.



- After World War I the city, along with Transylvania, was ceded by Hungary to Romania.
- 1950-1960 was called Stalin or Oraşul-Stalin (city of Stalin).

SCERIN LCLUC: Field Abandonment



ROMANIA

- In Romania (Arges County), farmland abandonment reached the rate of 21.1% between 1990 and 2005 (Kuemmerle et al. 2009)
- In the decade leading up to the end of Socialism, agriculture constituted roughly 40 percent of Romania's gross domestic product
- In 2007, agriculture's share of GDP has dropped to 4-6 percent



Bushes encroachment

- **Lack of major investments in agriculture due to**
 - difficulty in accessing available funds
 - fragmentation and erosion of soil
 - property-related lawsuits
 - obsolete technology

CONSEQUENCES

Fields abandonment in mid-latitudes affect surface processes =>Carbon Cycle, Radiation Budget, Hydrology, Soil =>Climate



Lost in transition: determinants of post-socialist cropland abandonment in Romania
- Mueller, Kummerle, Rusu and Griffiths

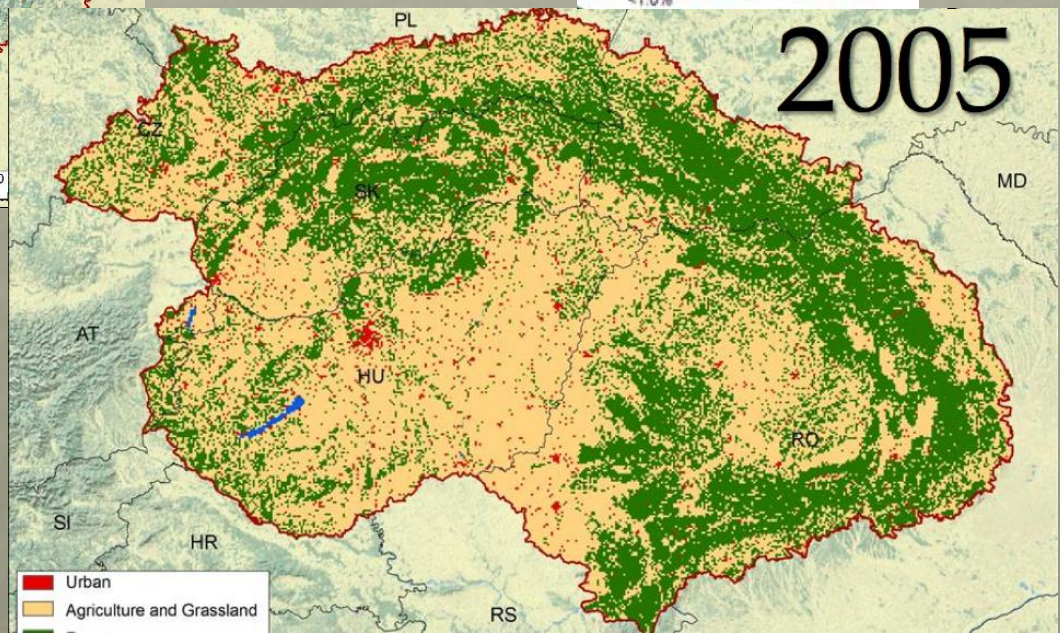
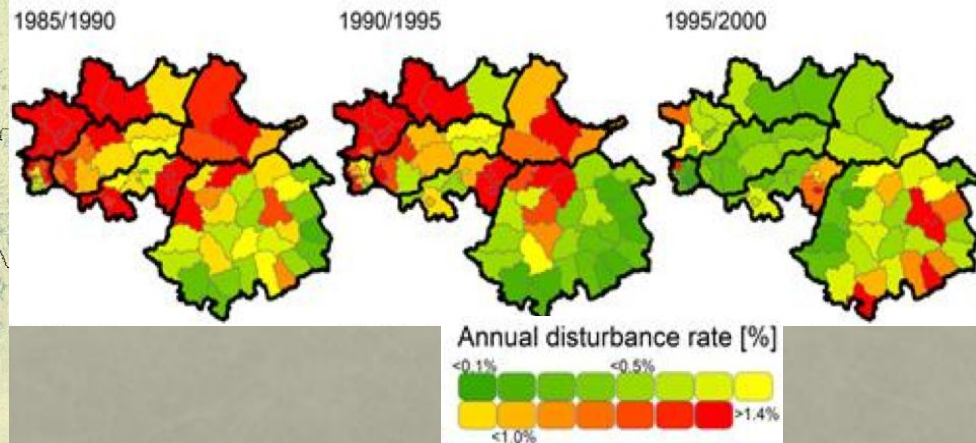
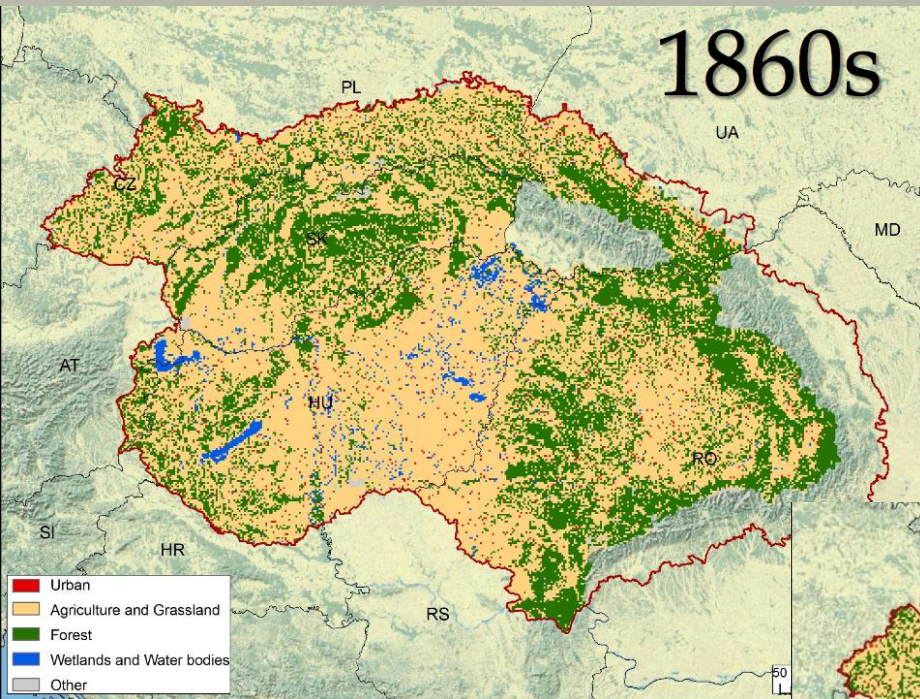
Journal of Land Use Science, 02/2009;
4:109-129.

DOI: 10.1080/17474230802645881

Isolated cropland patches were more likely to become abandoned than more homogenous cropland areas

http://www.researchgate.net/publication/224968771_Lost_in_transition_determinants_of_post-socialist_cropland_abandonment_in_Romania

200 Years of LCLUC Driving Forces in the Carpathian Basin

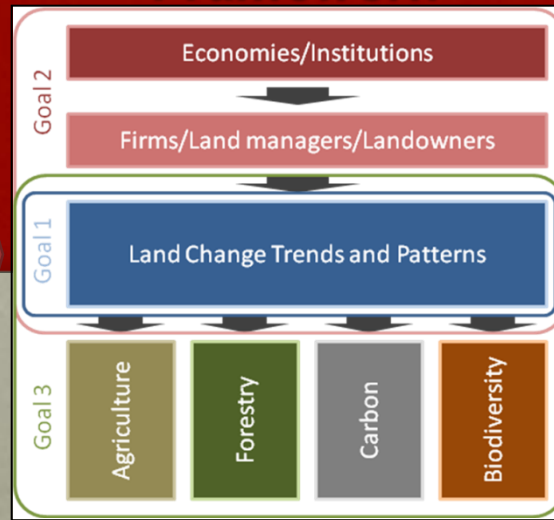


Synthesis of studies on institutional change and LCLUC effects on carbon, biodiversity, and agriculture after the collapse of the Soviet Union

Case Studies



Theoretical Framework

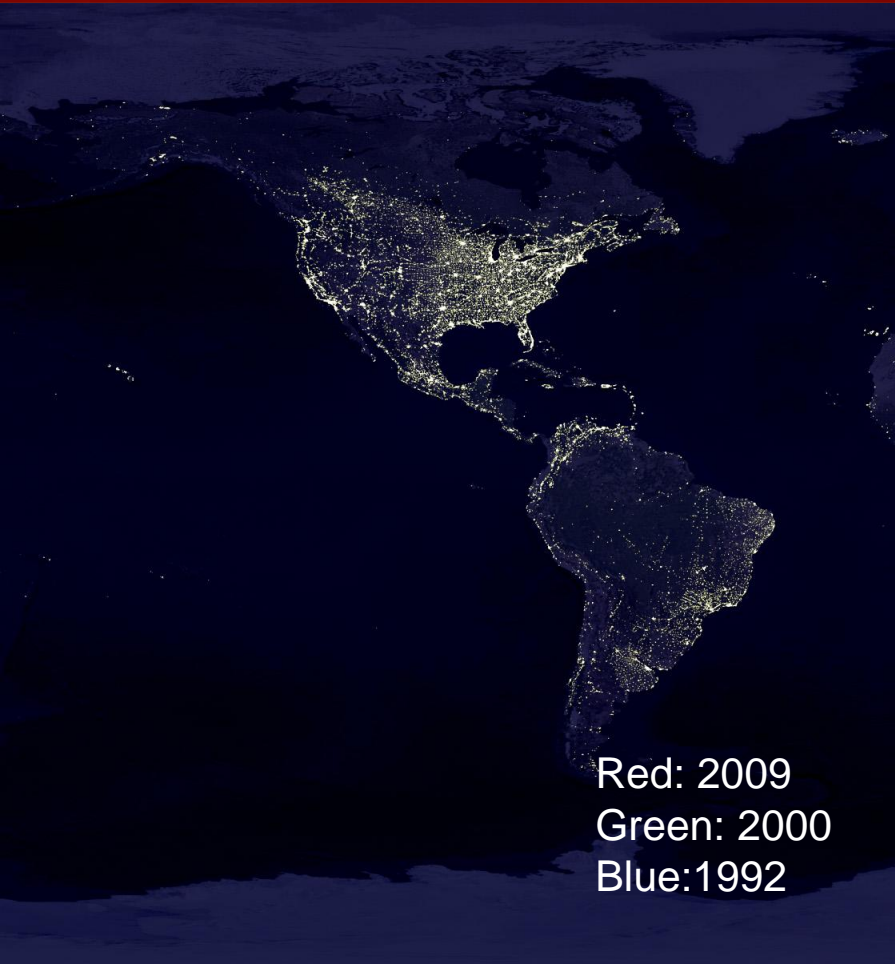


Comprehensive Assessments



A general theory of the effects of socioeconomic shocks on land use and land cover change

Earth Night Lights Observed by DMSP/OLI



Courtesy: Chris Elvidge, NOAA

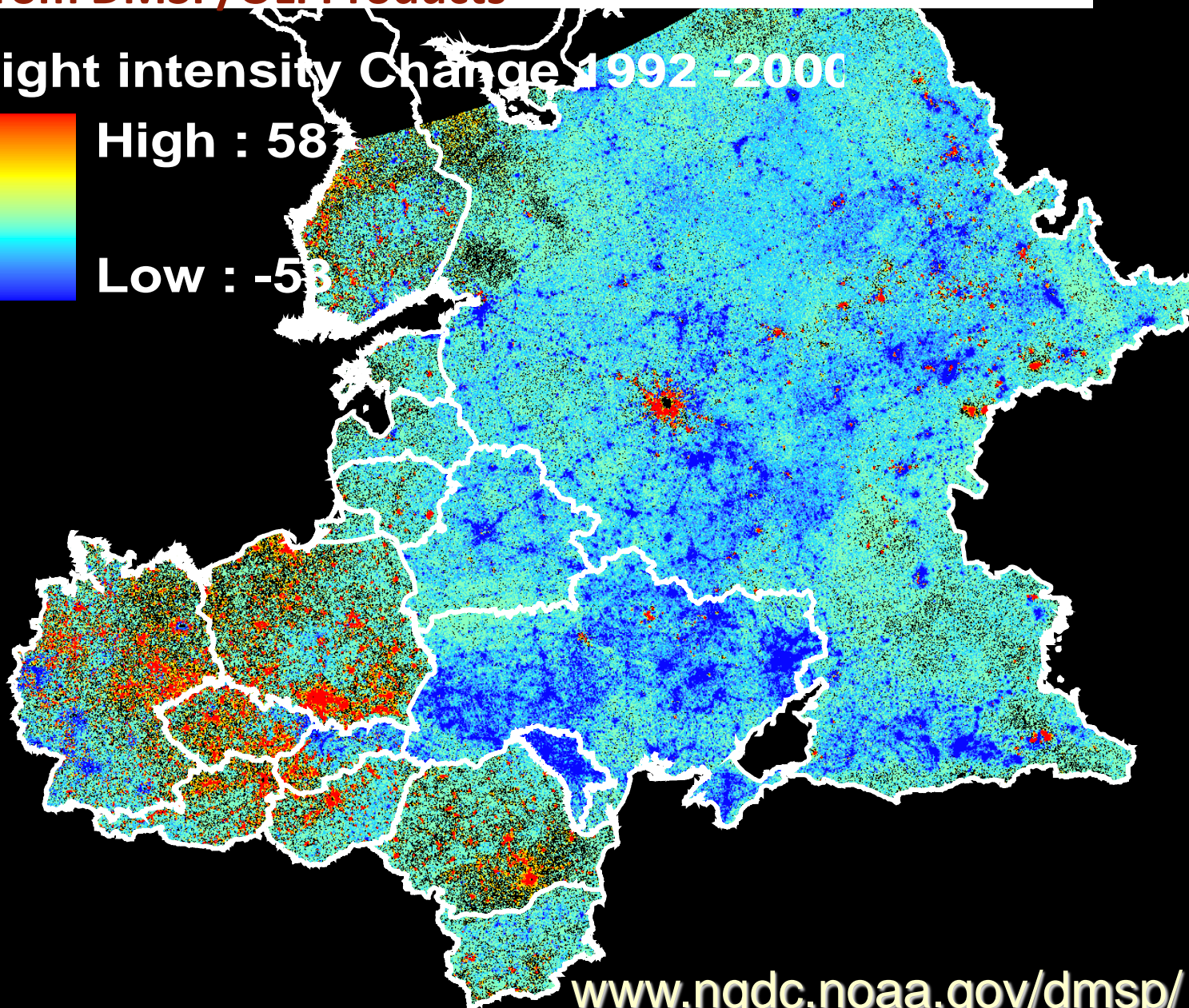
Change in Nighttime Lights 1992 to 2000 From DMSP/OLI Products

Light intensity Change 1992 - 2000



High : 58

Low : -58



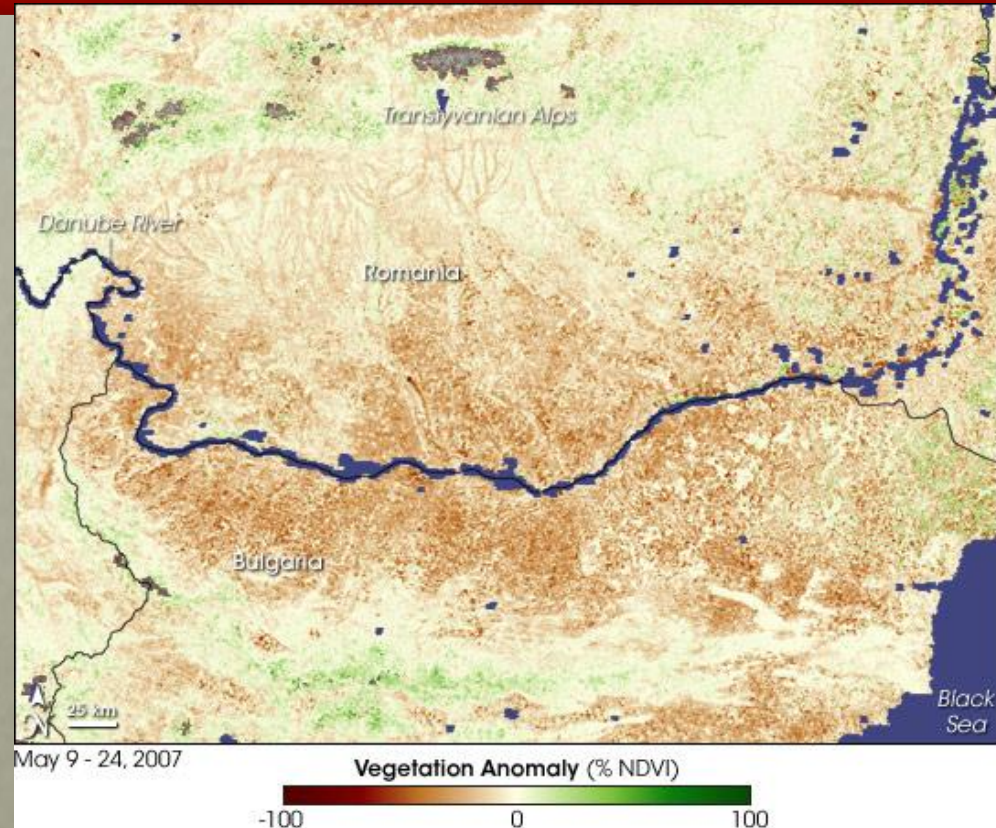
FLOODS AND DROUGHTS FROM MODIS



October 5, 2005



September 12, 2005



May 9 - 24, 2007

Vegetation Anomaly (% NDVI)

-100 0 100

Plagued by extensive flooding along the Danube in 2006, Romania and Bulgaria faced drought in 2007. Poor winter snow and little spring rain left more than half of Romania in drought. As much as 1.7 million hectares of cereal crops have been destroyed because of the drought, said World Vision, quoting a Romanian News Agency. Inbal Reshef, UMD provided data

Next Year Plans

- ◆ LCLUC Science Team (Spring Blossom) meeting – 20th anniversary of the program: April 18-19, Rockville, MD
- ◆ TAT-4 session: Prague, May 2016 parallel to ESA conference “Living Planet”
- ◆ EARSeL symposium, including Young Scientist Days: Bonn, June 2016
- ◆ SCERIN-3: Slovakia? - July, 2016

Prague'13=>Krakow'14=> Braşov'15



SCERIN-2 Krakow, 2014

Muţumesc