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Global Observation of Forest and Land Cover Dynamics

GOFC-GOLD Regional Networks and Central Asia

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GOFC-GOLD Regional Networks Coordinator

with contributions from members of GOFC-GOLD Regional Networks and ExCom.

What is GOFC-GOLD

- A coordinated international effort to ensure a systematic and continuous space-based and on-the-ground observations of forest and land cover

- A network of participants implementing coordinated research, demonstration and operational projects

- A vision to share data, information and knowledge to inform decision making and address social needs
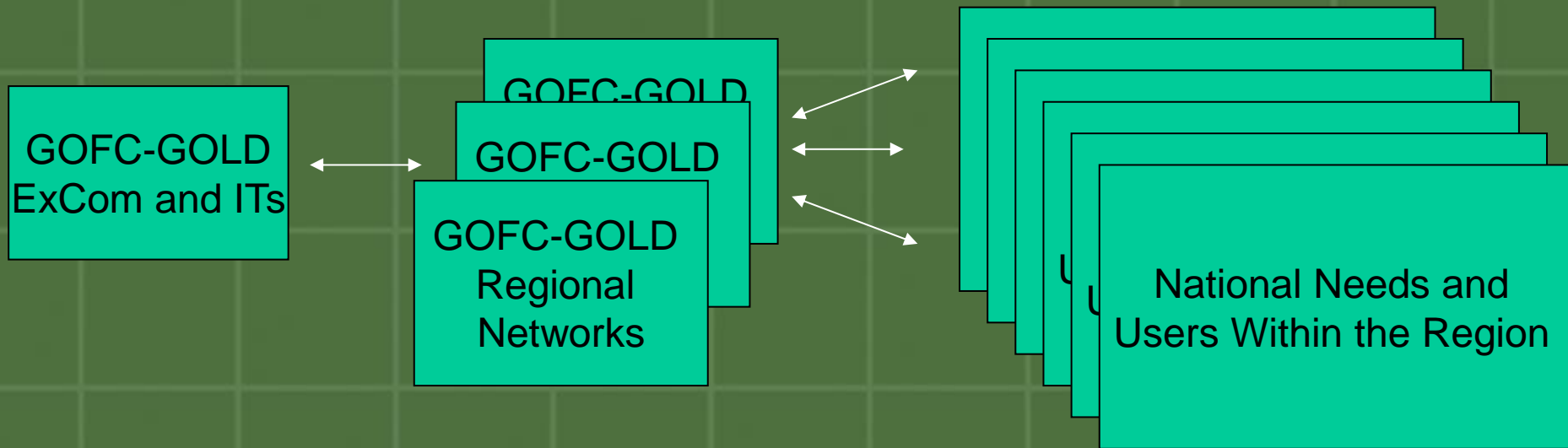
Organizational Structure

- Executive committee
  - Tony Janetos, Chair (John Townshend, former Chair)

- Two implementation teams
  - Land Cover Characteristics and Change (M. Herold and C. Woodcock)
  - Fire Monitoring and Mapping (J. Goldhammer and C. Justice)

- Working groups
  - Biomass Monitoring
  - Reducing Emissions from Deforestation and Forest Degradation (REDD)
  - Other

- Regional networks
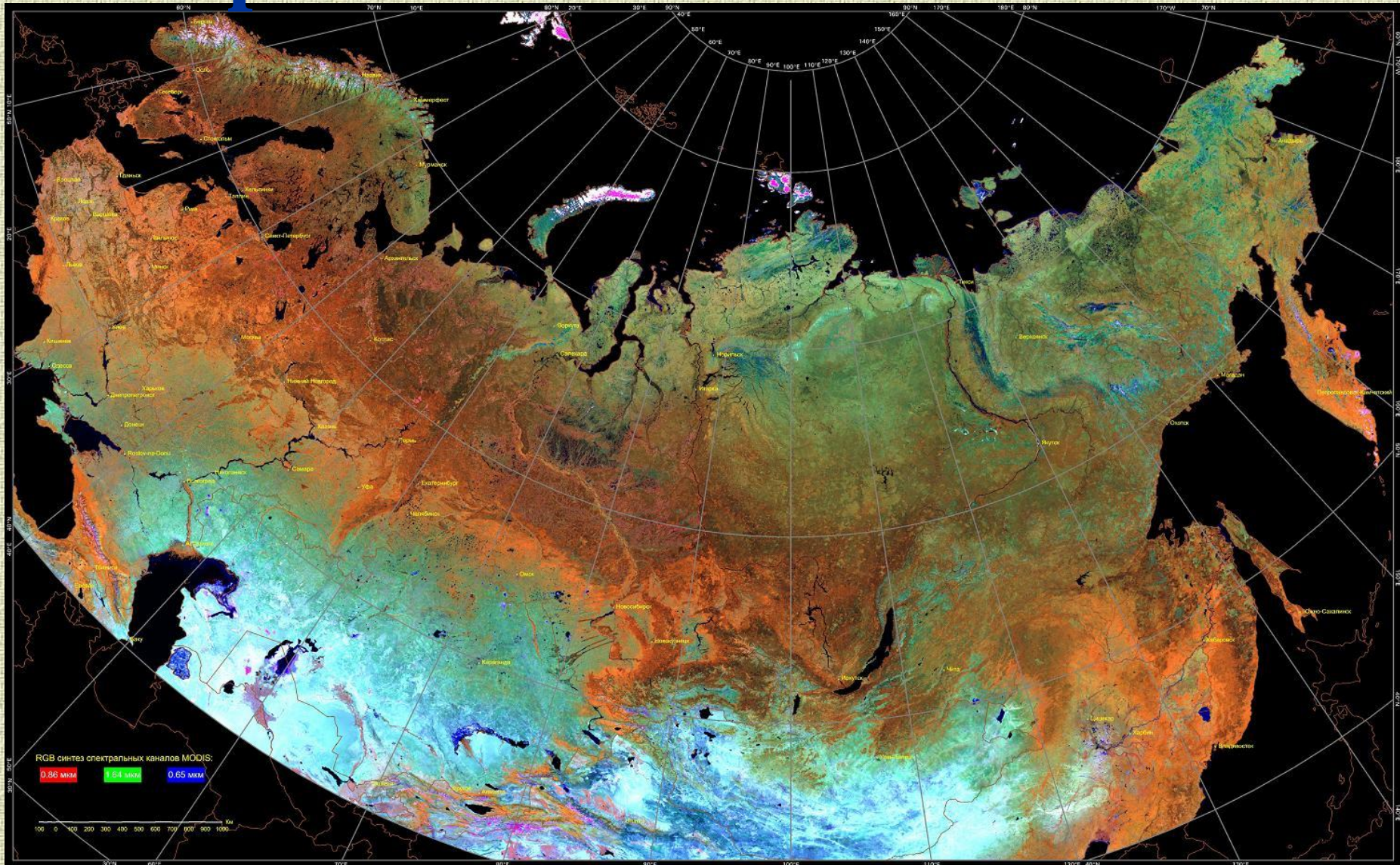 - Coordinators: Olga Krankina and Anja Hoffman (fire)

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Regional Networks

a critical component of GOFC-GOLD
connecting ExCom, Implementation Teams, and Working Groups with data users in the regions

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ExCom and ITs

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Regional
Networks

National Needs and
Users Within the Region

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# Cloud-free summer MODIS composite over Northern Eurasia

Spatial resolution – 250 м; June-August 2005

Remote Sensing

- **Uniform data from which consistent information can be extracted**
  - **Quantitative**
  - **Multidimentional**
  - **Repeated measurements**
  - **Spatial**
  - **Available**

- **The extraction of thematic results is neither quick nor easy**

- **Specific challenges for mapping different types of land cover**

The world's forests

|	
■ (dark green)	Forest
■ (olive green)	Other wooded land
■ (tan)	Other land
■ (light blue)	Water
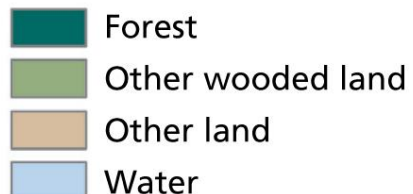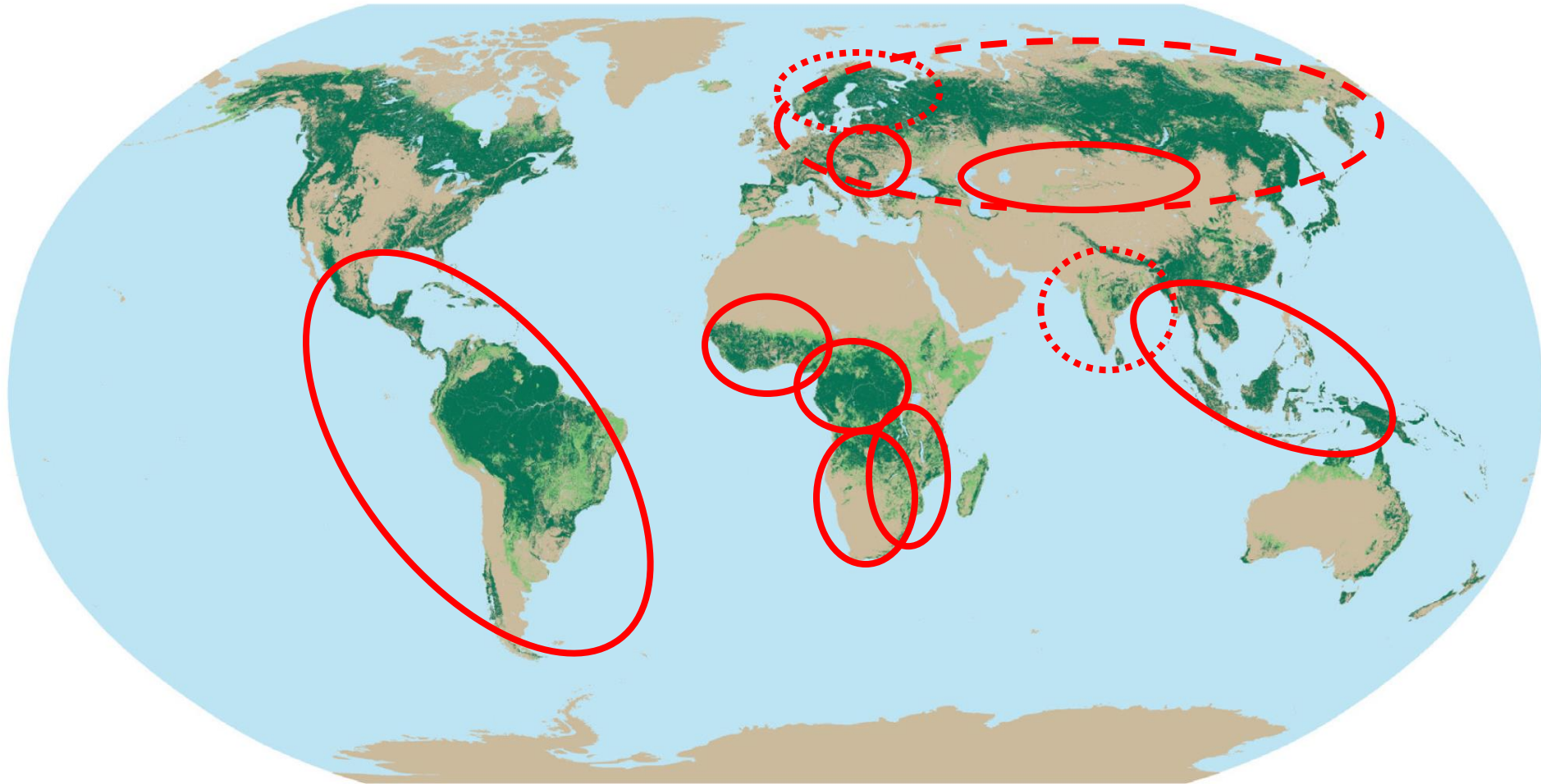
Regional Networks

1. SEARRIN - South East Asia

2. SAFNET – Southern Africa – Navashni / Philip Frost

3. Miombo - Southern Africa – Natasha Ribeiro/Dominick Kwesha

4. OSFAC - Central Africa – Landing Mane

5. RedLatiF – Latin America - Alberto Setzer

6. NERIN – Northern Eurasia – Olga Krankina

7. WARN – West Africa – Vincent von Vordzogbe

8. CARIN – Central Asia - Nadija Muratova

9. SCERIN – South-Central Europe - Jana Albrechtova, Petya Campbell et al

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GOFC-GOLD Networks
in Northern Eurasia

BARIN

SCERIN

VolRIN

SibRIN

FERIN

CauRIN

CARIN
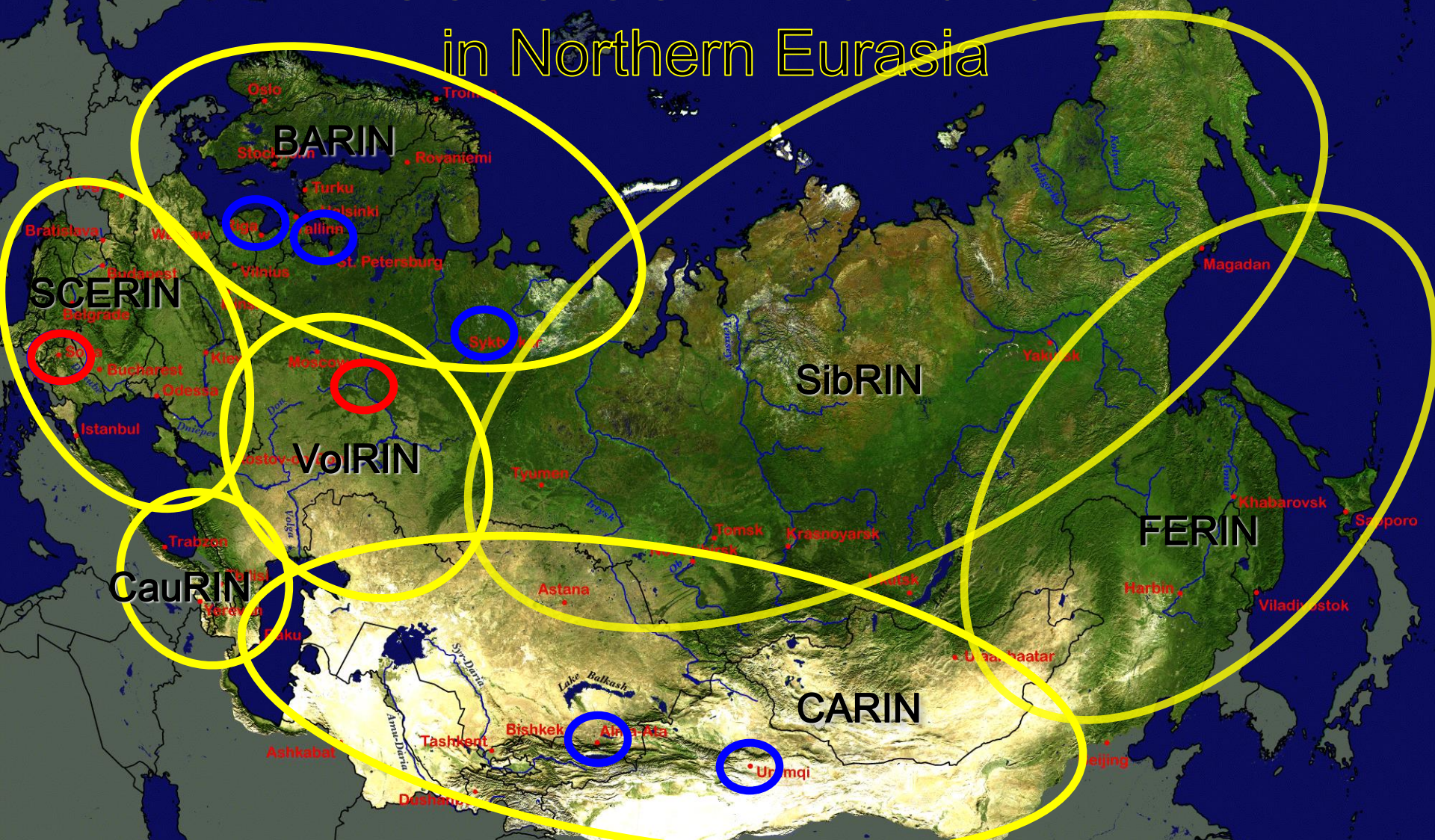
MODIS 1-km true color composite: August 20-28 2004.
Shaded relief adjustment using SRTM GTOPO30 elevation data.
Produced by Mutlu Ozdogan, NASA GSFC

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NERIN Workshops

Moscow, Russia
- **"Requirements for Observations of Landcover Dynamics in Dryland Regions of Northern Eurasia", September 20, 2007, Urumqi, China**
- **"Land Cover Mapping at High Latitudes", July 9-11, 2008, Syktyvkar, Russia**
- **"Monitoring land cover, land use and fire in agricultural and semi-arid regions of Northern Eurasia", September 15-21, 2009, Almaty, Kazakhstan**
  - **CARIN – Central Asia Regional Information Network**
  - **Data Initiative follow-up workshop, November 2010, Tashkent**
- **Formulation Workshop - April 17, 2012, Sofia, Bulgaria**
- **Volga Workshop, June 17 – 22, 2012, Yoshkar-Ola, Russia**

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RedLatif MEETING
October 29th and 30th, 2012

Carlos Pinto (Bolivia)

Armando Rodriguez (Bolivia)

Federico Gonzalez (Spain)

Gerardo Lopez (Portugal)

† Sergio Opazo (Chile)

Alberto Setzer (Brazil)

Ivan Csiszar (USA)

Hector del Valle (Argentina)

Jesus Anaya (Colombia)

Isabel Cruz (Mexico)

Eva Majias (Cuba)

Lilia Manzo (Mexico)

Paula Blanco (Argentina)

Fabiano Morelli (Brazil)

Isabel Manta (Peru)

Eliana Henriquez (Chile)

Carolina Tapia (Ecuador)

Network Activities

- Regional Workshops are the main activity

- GOFC-GOLD Regional Network Data Initiative
    - Landsat Data Archive at USGS is free!
    - Access is difficult in regions with inadequate internet access
    - Disseminate Landsat data
    - Provide training in use of remotely sensed data
    - 3 Data Intitiative workshops in USA
        - Africa Pilot Workshop (2009)
        - Data Initiative - Asia (2010)
        - Data Initiative-3 (Africa, SE Asia, S. America) – April-May 2012
        - Data Initiative 4 – planned for 2014

- Network Projects

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GOFC-GOLD Regional Network Data Initiative – Asia Workshop

Two regional networks: CARIN and SEARRIN (6 representatives)
• Training over 3 weeks at USGS EDC and SDSU or OSU in May 2010
• EDC set an all-time record for Landsat downloads in a single day at 8000 scenes
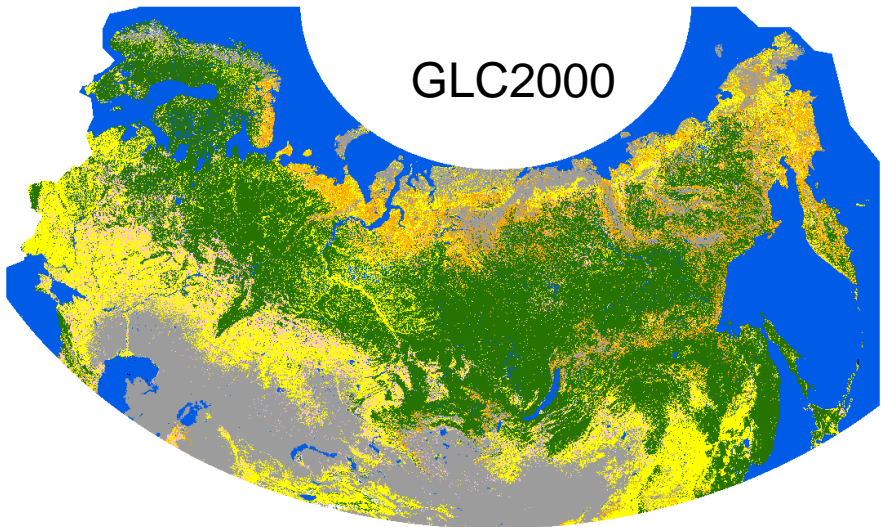• E.g., Kazakhstan archive: >14 thousand images for 483 scene positions (1972-2010)
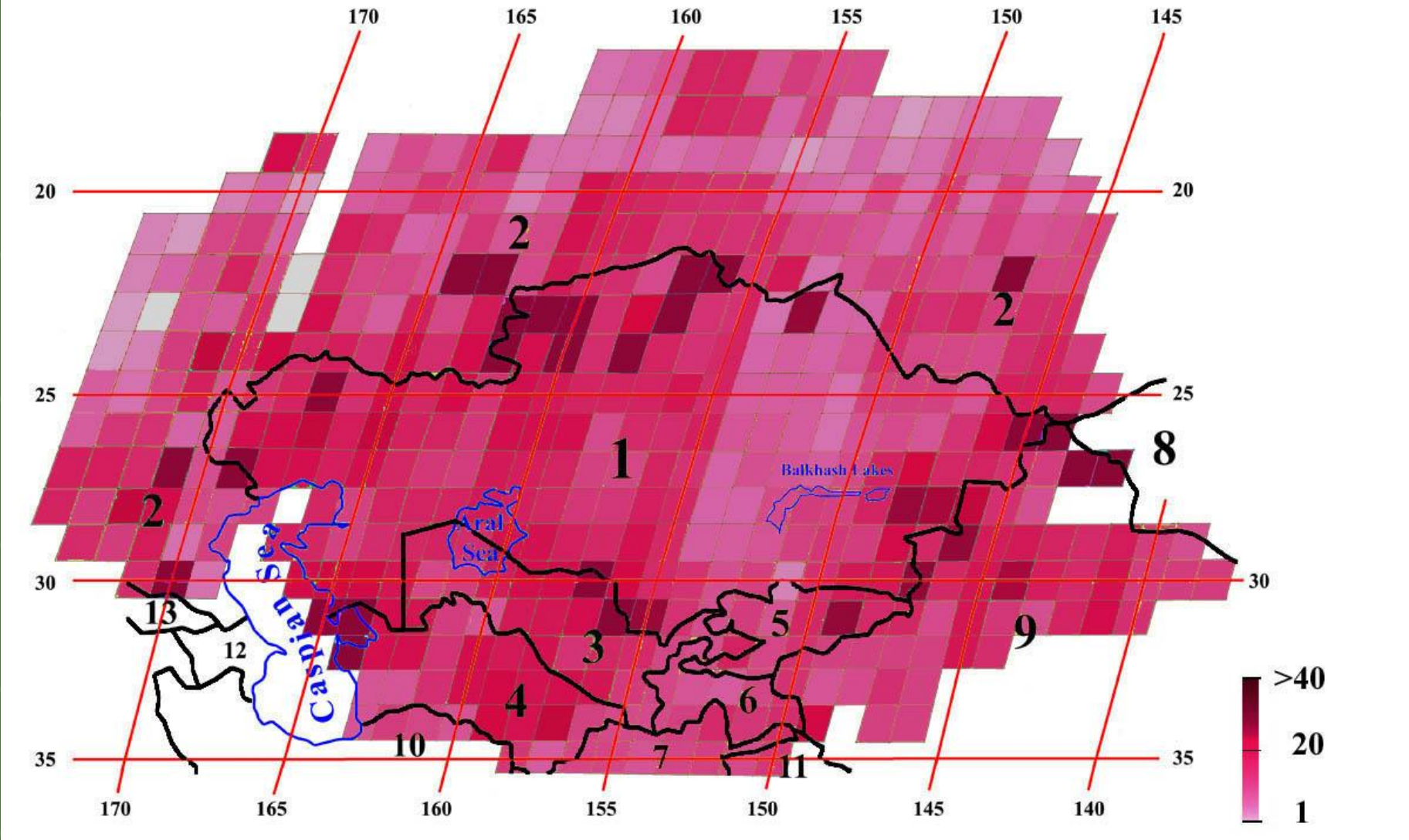
Landsat TM and ETM (1984-2010) coverage for Central Asia in CARIN-Kazakhstan Archive (colors indicate number of scenes for each path/row): 1 Kazakhstan; 2 Russia; 3 Uzbekistan; 4 Turkmenistan; 5 Kyrgyzstan; 6 Tadzhikistan; 7 Afghanistan; 8 Mongolia; 9 China; 10 Iran; 11 Pakistan; 12 Azerbaijan; 13 Georgia. (Image Credit A. Terekhov)
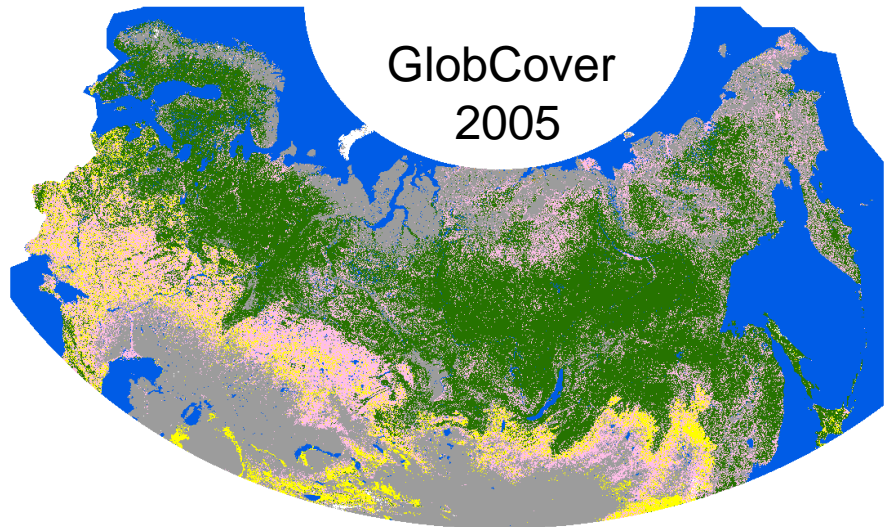
NELDA

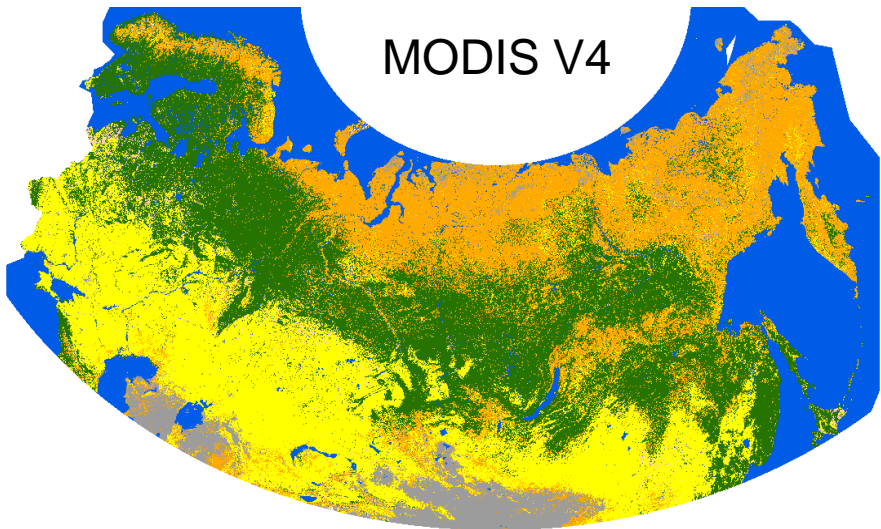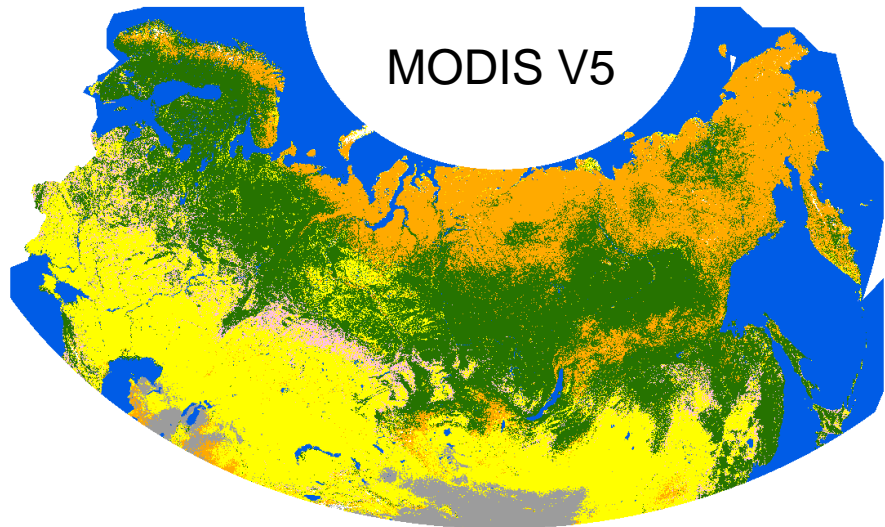**(Northern Eurasia Landcover Dynamics Analysis)**
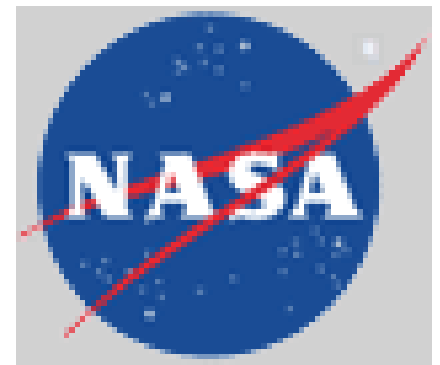
GLC2000 · GlobCover 2005 · MODIS V4 · MODIS V5

Tree · Shrub · Herbaceous · Mosaic · Bare · Ice · Water

NELDA
Northern Eurasia Land Dynamics Analysis

Project Sites **Global Map Analysis** New Continental Map

Overview

St. Petersburg

Carpathians

Komi

Chita

Priangare

Kazakhstan

Amur

Vasyugan

Sikhote-Alin

Mongolia

Yoshkar Ola

Global Land Cover

To identify specific needs and possibilities for improved mapping of land cover across boreal and temperate Northern Eurasia, we compared the performance of recent land-cover products derived from different sensors: MODIS (MODIS IGBP Land Cover Collection 4 and 5), SPOT VEGETATION (GLC-2000) and MERIS (GLOBCOVER).

What are the differences and similarities between global datasets?
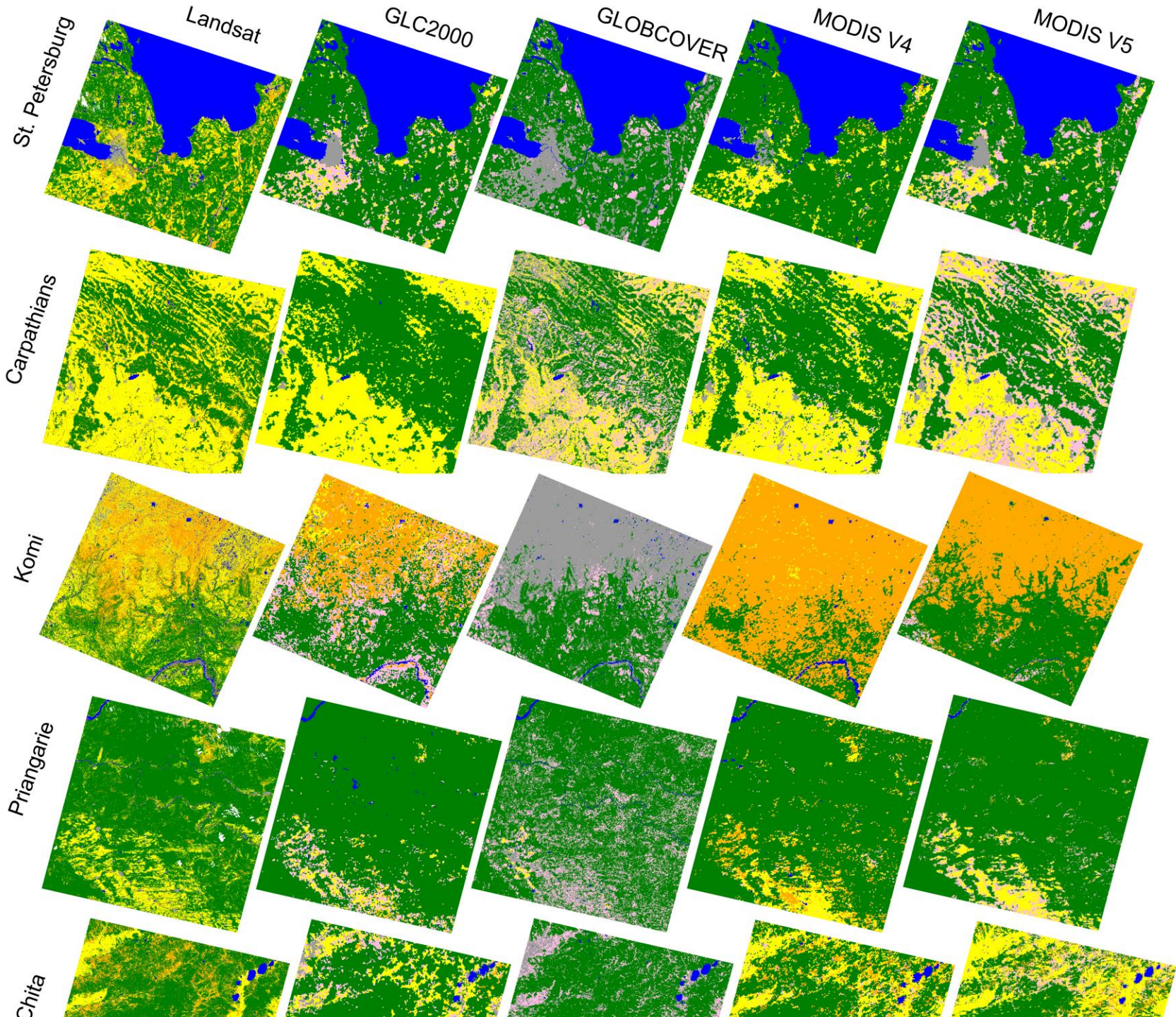
We examined the level of agreement among these data sets across the entire region. On a qualitative level, the assessment of general patterns indicates the highest degree of disagreement in transitional zones at the northern and southern fringes of boreal forest, in mountainous regions, and in areas of extensive wetlands, agricultural development, and urban land use. The quantitative analysis measured the level of disagreement between land-cover classes aggregated according to dominant life form type of vegetation (trees, shrubs, herbaceous, bare land, and permanent snow/ice).
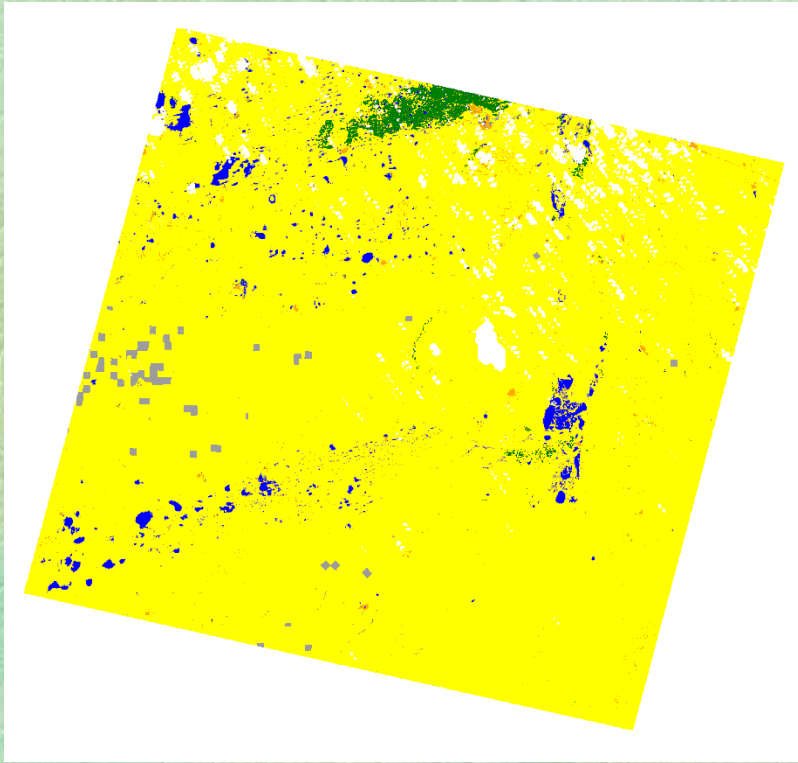
What is the accuracy of global maps at NELDA test sites?

Validation of global datasets was performed with higher resolution, Landsat-based land cover maps from NELDA test sites. Fractional land cover was calculated for coarse resolution pixel and used to construct fractional error matrices. Most errors were associated with "mixed" coarse-resolution pixels (i.e. those having nearly equal percentage of multiple class types), while errors in "pure" (single class) pixels were low. In addition to actual differences in land-cover classifications, other sources of discrepancy among these land cover products include class definitions, map projections, and spatial resolution.
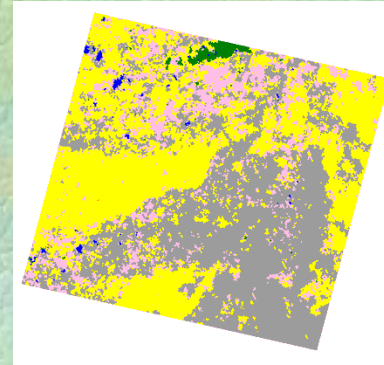
Dominant Live Form Types

Differences in class definitions and legends between maps are a major difficulty for comparing global land

http://www.fsl.orst.edu/nelda/index.html

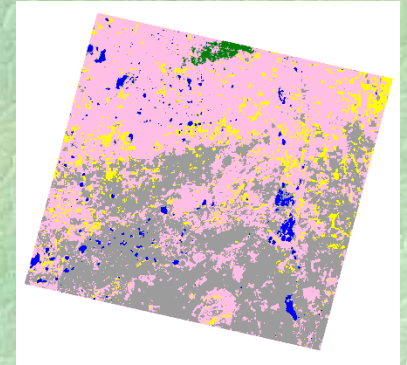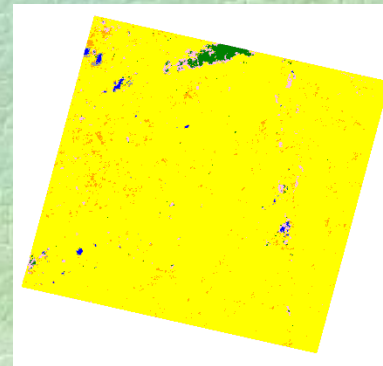|	Landsat	GLC2000	GLOBCOVER	MODIS V4	MODIS V5
St. Petersburg					
Carpathians					
Komi					
Priangarie					
Chita					

Map performance at Kazakhstan Site

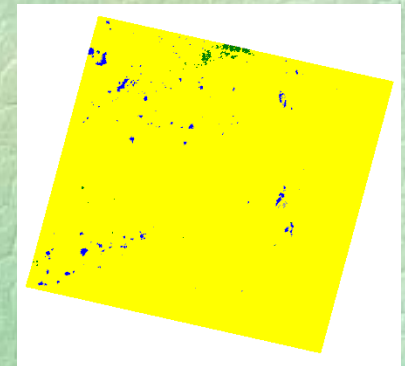Landsat-based map by A. Terekhov

GLC-2000

Globcover

MODIS-5

NELC

What is next?

- Planning the future of CARIN
  - Day 2 – Panel Discussion
    - Brief comments from each panelist on priorities for regional collaboration in research and training, network activities, ideas for future steps
    - Open discussion
- Regional networks need committed individuals and institutions who can lead activities of the regional network
- Strategic plan for future network activities and support

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http://www.fao.org/gtos/gofc-gold/index.html

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