

**Northern Eurasia Earth Science
Partnership Initiative:
Implementation (currently funded projects)**

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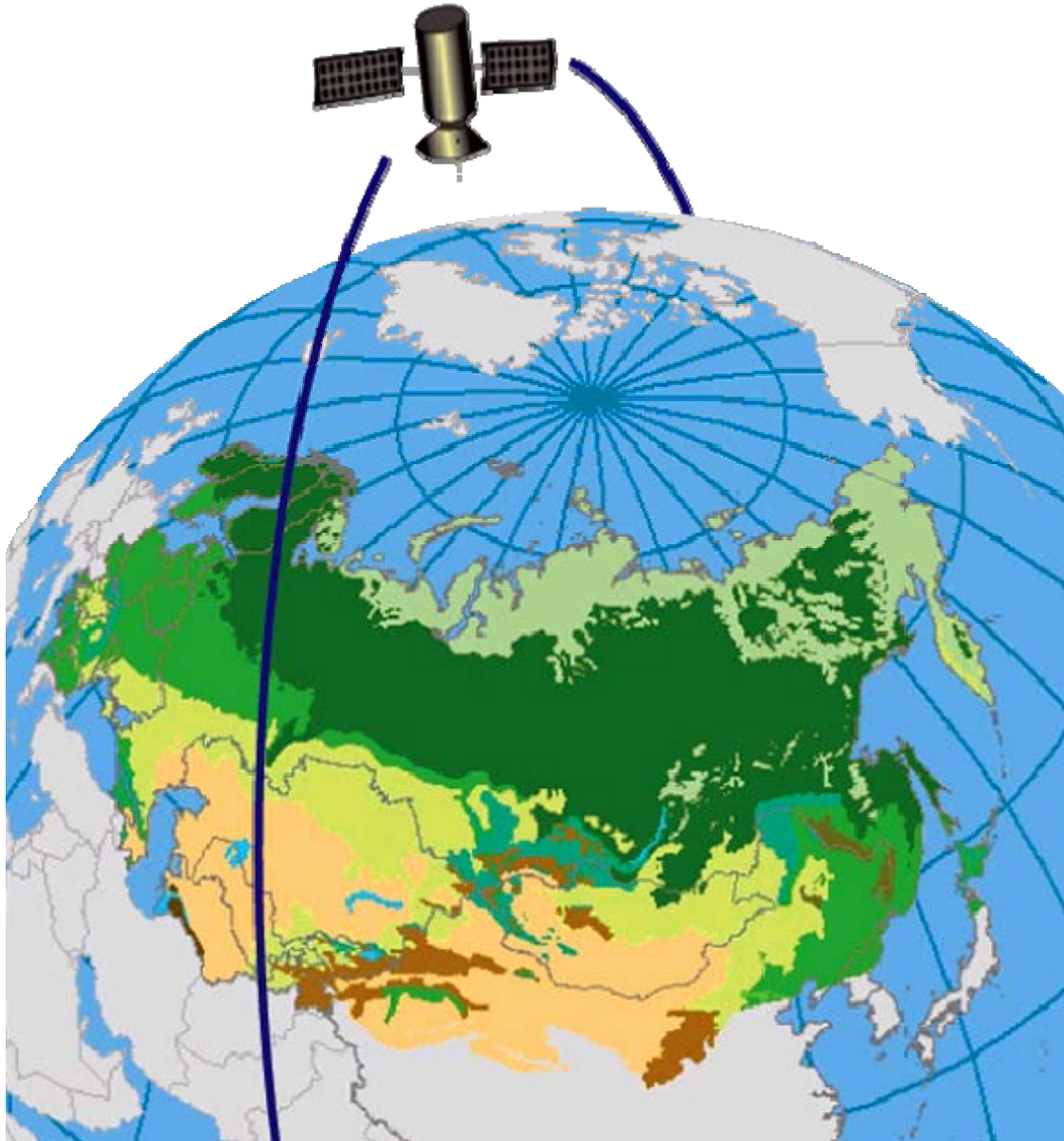
NEESPI Project Scientist

UCAR Project Scientist at National Climatic
Data Center, Asheville, NC, USA

1st NEESPI Science Team Meeting

Laxenburg, Austria, 22-24 January, 2006

The NEESPI Study Area



**NEESPI Study Area includes:
Former Soviet Union, Northern China, Mongolia, Fennoscandia, & Eastern Europe**

Areas of global concern



Major objective: Strengthen our capability to predict changes in the region and, thus, over the Globe.

Major direction: NEESPI should keep growing into an Integrated Regional Study.

Example of topical NEESPI science questions:

Ecosystems and climate interactions. Science question:

- How do we account for the synergy of feedbacks of major processes within the regional terrestrial ecosystems, climate, cryosphere, and hydrosphere of Northern Eurasia and their interactions with society?**

ESSP: IGBP [iLEAPS, GLP, AIMES]; DIVERSITAS;

WCRP [GEWEX, CLiC]; IHDP[GLP]; GWSP; GCP

Two modes of NEESPI expansion

- **Dedicated Calls** (recent NASA and perspective in the NIS, EU, and China)
- **Freely joined projects**
- **Benefits of NEESPI membership**
 - **Improved links** to collaborators in Northern Eurasia and to US and EU scientists working on similar problems
 - **Exchange** of ideas, datasets, and knowledge with other team members working on similar problems
 - **Synergistic approach in working on complex problems**
 - **Priority access** to remote sensing and in situ data collected over Northern Eurasia
 - **Education:** student exchange, doctoral and post-doc positions sharing among the Team Institutions

Current distribution of projects by major research themes. One project could be included in several groups

• Biogeochemical Cycles	25
• Hydrology	21
• Cryosphere	21
• Land Use	18/19
• Atmospheric Aerosols/Pollution	15
• Integrative, Large scale, Modeling	21
• Land cover	10
• Total	47

Example of the NEESPI funded project

Understanding the role of changes in land use/land cover and atmospheric dust loading and their coupling on climate change in the NEESPI study domain drylands

PI: Irina Sokolik (isokolik@eas.gatech.edu)

Georgia Institute of Technology, Atlanta, Georgia, USA

Co-PIs:

Robert Dickinson, Georgia Institute of Technology, Atlanta, Georgia, USA

Yongjiu Dai, Beijing Normal University, Beijing, China

George Golitsyn, Obukhov Institute of Atmospheric Physics, RAS, Moscow, Russia

Collaborators:

R. Bektursunova, Eurasian National University, Akmolla, Kazakhstan;

B. Maricorena and G. Bergametti, LISA, Paris, France;

D. Jugler, Institute Meteorology and Hydrology, Ulaan Baatar, Mongolia;

Y. Shao, City University of Hong Kong, China;

I. Uno, Institute Applied Mechanics, Kyushu University, Japan;

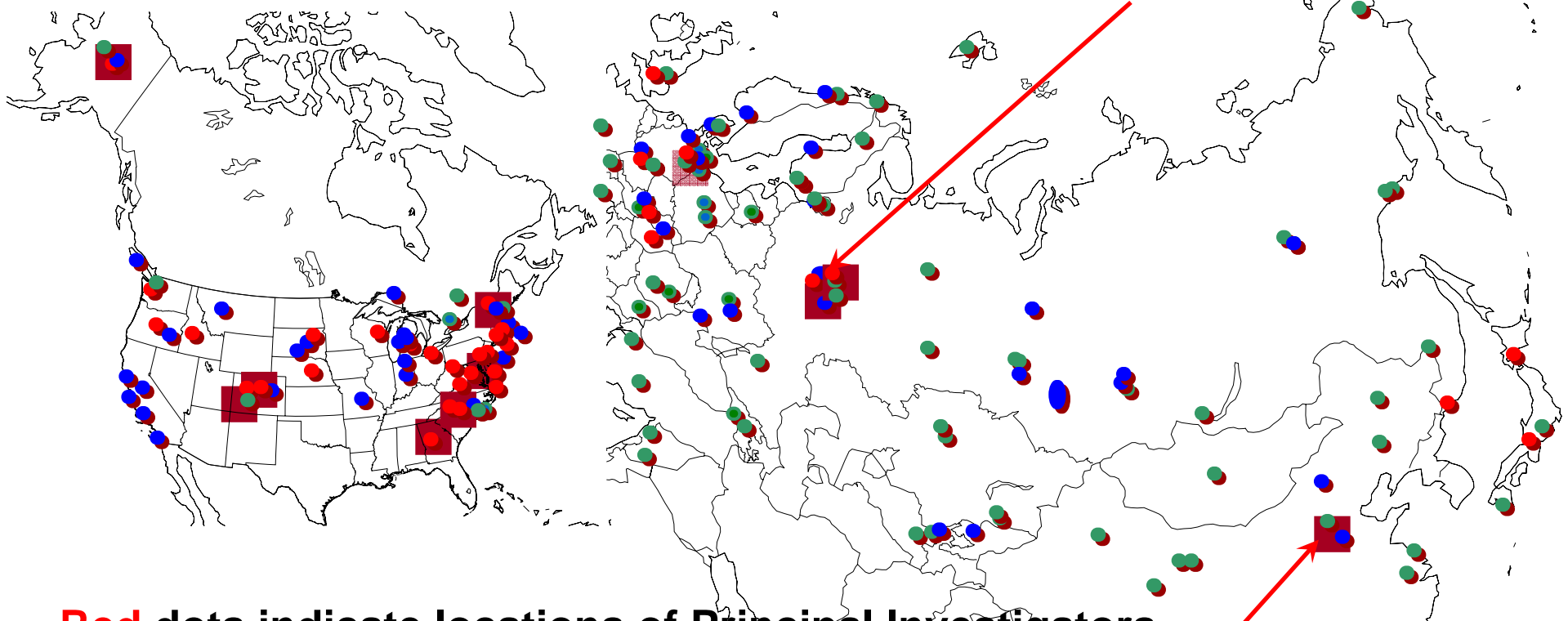
M. Mikami, MRI/JMA, Japan;

Y. Chun, Meteorological Research Institute, Seoul, Korea.

NEESPI Scientific Network

(On January 18, 2006: 308 scientists from 173 institutions; 47 projects)

19 institutions in Moscow participate in 22 projects



Red dots indicate locations of Principal Investigators

Blue dots – locations of Co-Investigators, and

Green dots - locations of Collaborators.

Squares show Focus Research and Science Support Centers.

6 institutions in Beijing participate in 5 projects

Currently, we envision seven NEESPI Focus Research Centers

- **Existing:**
- *Center for Cold Land Processes and Arctic Coastal Studies*
- *Center for Water System Studies*
- *Center on Aerosol Studies*
- *Center for Land Use Studies*
- *Center for Biogeochemical Cycle Studies*

Projected:

Center for Land Cover Studies and Center for Integration of the NEESPI Results and Modeling Studies

NEESPI Science and Data Support Centers

- **Within the United States**
- *For hydrometeorological information:*
- *National Climatic Data Center, Asheville, NC*
- *For remote sensing information:*
- *Goddard Space Flight Center, Greenbelt, MD*

Within the Russian Federation

- *For hydrometeorological information:*
- *Research Institute For Hydrometeorological Information, Obninsk, Kaluga Area*
- *For remote sensing information:*
- *SCANEX Corp., Moscow*

Within China

- *Beijing Climate Center*

NEESPI Deliverables:

to have in ~10 years

- **A suite of process –oriented models for each major terrestrial process in all its interactions**
- **A suite of global and regional models that seamlessly incorporate all regionally specific feedbacks associated with terrestrial processes**
- **An integrated observational knowledge data base for environmental studies**
- **A system in place that can serve the emergency needs of the society**

Newly Funded Integrative Projects

- Modeling the carbon dynamics of the Eurasian Boreal Forest
- Current climate changes over Eastern Siberia and their impact on permafrost landscapes, ecosystem dynamics, and hydrological regime
- Diagnosis and Prognosis of Changes in Lake and Wetland Extent on the Regional Carbon Balance of Northern Eurasia
- Quantifying CO₂ fluxes from boreal forests in Northern Eurasia: An integrated analysis of flux tower data, remote sensing data and biogeochemical modeling
- Permafrost dynamics within the Northern Eurasia region and related impacts on surface and sub-surface hydrology
- Understanding the role of changes in land use/land cover and atmospheric dust loading and their coupling on climate change in the NEESPI study domain drylands
- Northern Eurasian C-land use climate interaction in the semi-arid regions
- Contributions of changes in land use/land cover, water use, and climate to the hydrological cycle across the Central Asian States.
- Role of land cover and land use change in hydrology of Eurasian Pan-Arctic
- An integrated understanding of the terrestrial water and energy cycles across the NEESPI domain through observations and modeling

We come here to:

- Establish links
- Secure the fusion of currently funded projects
- To plan future efforts using new opportunities
 - International Polar Year
 - National NEESPI efforts (Russia, China, Ukraine, Kazakhstan, Uzbekistan, Scandinavian and Eastern European countries)
 - NASA Interdisciplinary call
- To better organize ourselves as a Team

Rules of the Ground

- Participate fully and allow others to do the same
- Focus on issues, not people
- Be aware and respectful of different communication styles and perspectives
- Actively seek consensus and win-win situations
- Concentrate on where we are going, rather than where we have been