

The Northern Eurasia Earth System Partnership Initiative (NEESPI) as an Emerging Global Environmental Programme

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NEESPI is an interdisciplinary program of internationally-supported Earth systems and science research that addresses large-scale and long-term manifestations of climate and environmental change.



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

NEESPI duration:

~ 2005-2015

Purposes of international programmes

(or why would NEESPI wish to be an international programme):

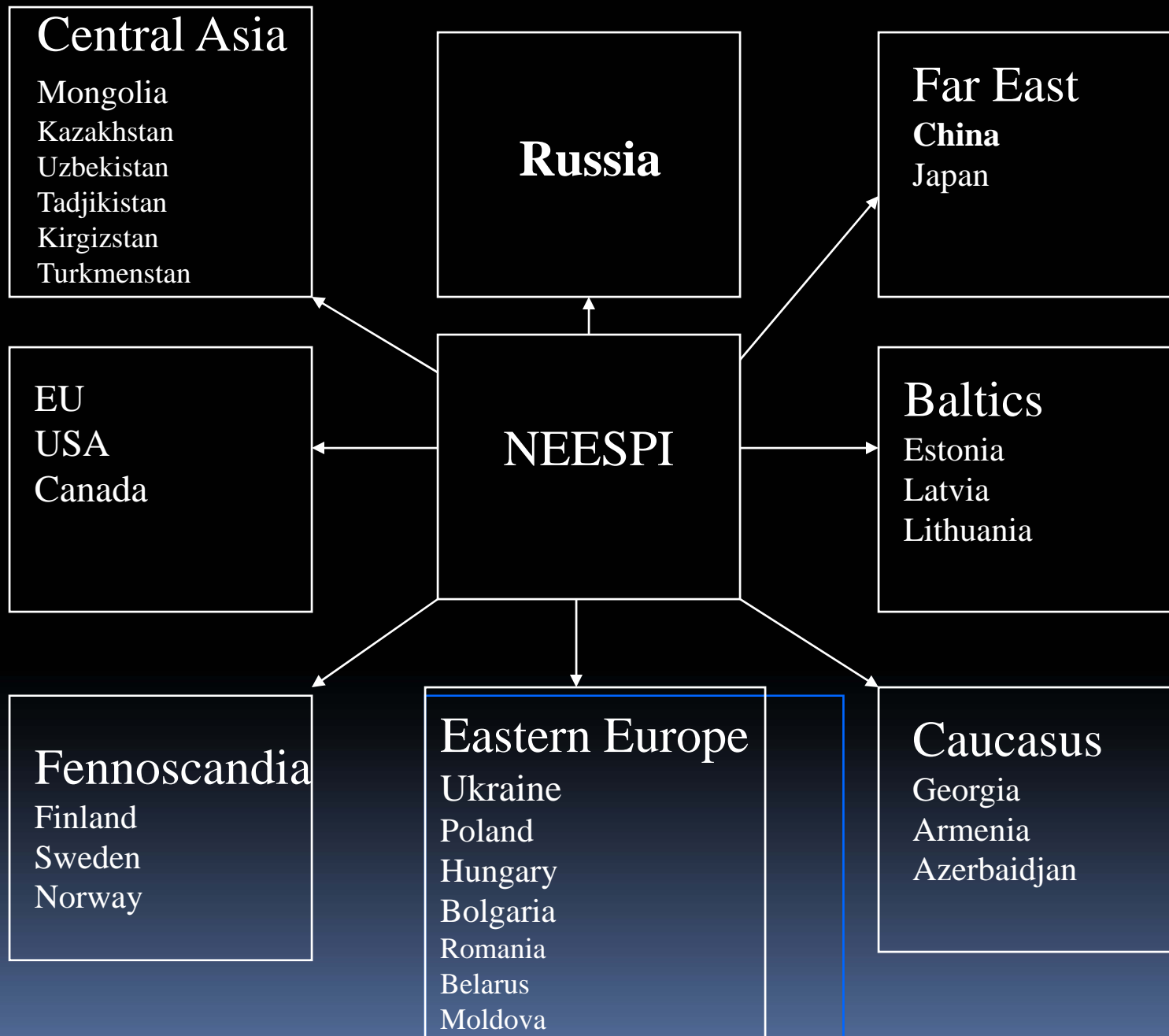
- 1) Provide a stronger basis for influence by bringing scientific results to the policy and operational communities.
- 2) Provide the data bases and infrastructure that facilitate science.
- 3) Develop scientific interdisciplinary syntheses that transcend what individual investigators could produce.
- 4) Enable rapid advances in science for critical societal and environmental problems because they allow the science community to mobilize resources to address the problem.
- 5) Provide a coordination function and provide individual scientists with access to models, data, information and field sites they may not otherwise be aware of .

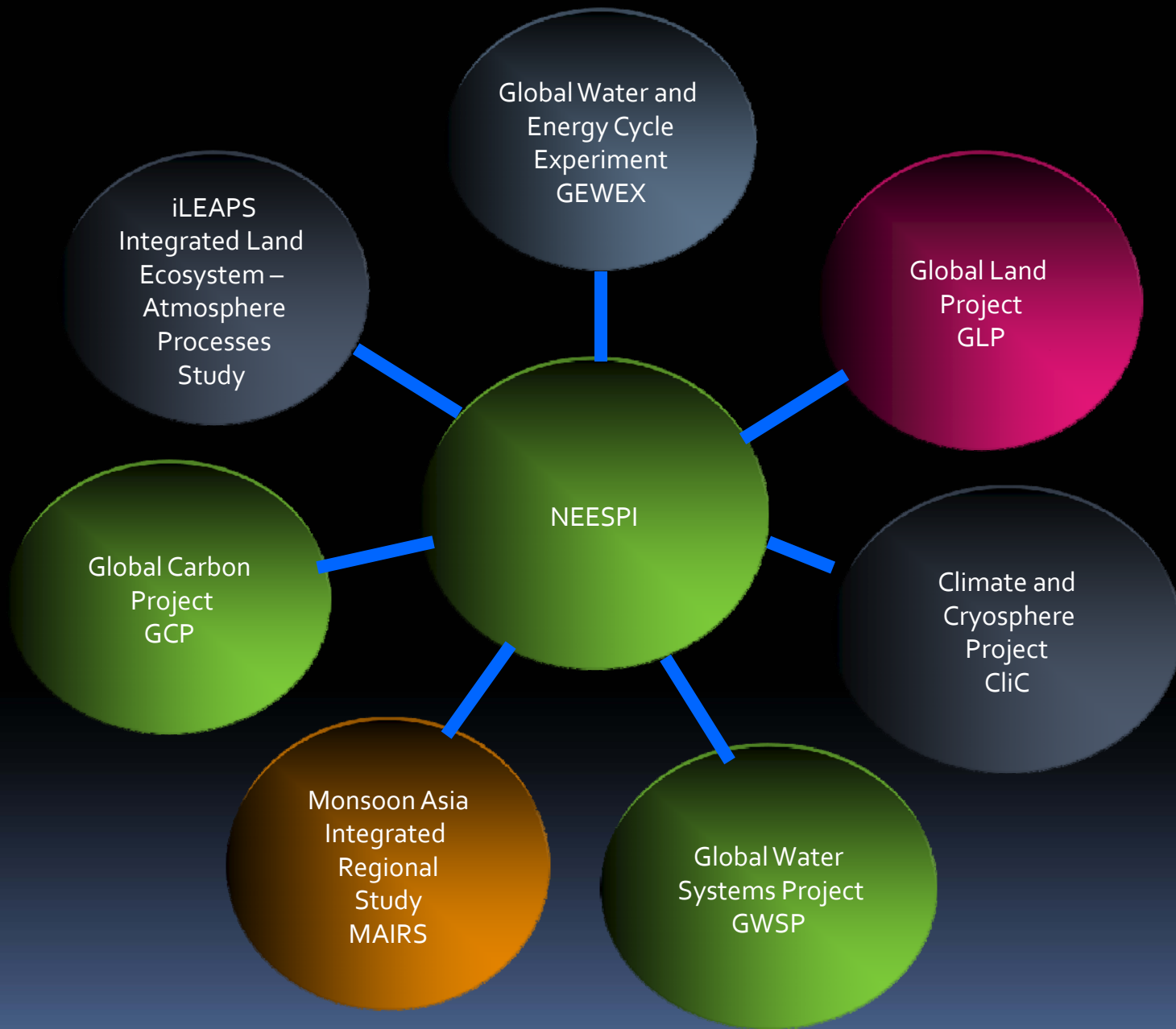
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- A clear target or niche for its research that includes both national objectives and global programme objectives (sometimes related to a UN Commission or Agreement).
- Broad based multinational financial support (with one or two “champions”). This can be assured by meeting the objectives of the agencies and nations that fund the activity. (NASA – increased base of users for satellite data, Russia – access to new techniques and scientific infrastructure, etc.)
- Have a strong and sustained outreach program (This means clear messages, timely releases of findings, active and regular engagement of policy level officials, a well developed program structure and adequate programmatic infrastructure).

NEESPI:

- maintains a website at neespi.org
- has developed a number of special issues and reports
 - BAMS article
- Holds special sessions at science conferences (AGU, EGU, etc)
- is in the process of establishing a Project Office function in conjunction with the iLEAPS Project Office.
- Training workshops/ summer schools/ field visits have been held for young scientists (and others).

In its early stages NEESPI advanced by:

- Launching a number of environmental projects in the NEESPI region mainly through NASA and RAS support.
- Gaining commitments from a number of countries that would benefit from NEESPI research.
- Establishing links with other global environmental programs. Some of these programmes had specific expectations for NEESPI.



NEESPI was adopted in 2007 as a new Regional Hydroclimate Project in GEWEX.

GEWEX expected:

NEESPI has responded by:

The involvement of a modeling center:

The launch of a major regional climate modeling Activity at the Main Geophysical Observatory.

The collection of regional data sets and the free exchange of those data.

NEESPI data sets are being shared through the NEESPI data portal (accessible through neespi.org)

- National Climatic Data Center, Asheville, North Carolina, USA
- Research Institute For Hydrometeorological Information, Obninsk, Kaluga Area, Russia

NEESPI has established a data policy that is similar to MAHASRI.

Contributions to applications

Undertaking studies that show the benefits of models developed as elements of other programs in the management of water resources in the NEESPI region.

NEESPI RHP Milestones for 2010

- To have in place:
 - a suite of tested land surface and regional climatic models that account for peculiarities of the energy and water cycles in Northern Eurasia
 - major components of the data support system (including near-real time dataflow) for these models
 - first version of the biospheric blocks for these models
- To complete all funded IPY activities in the region
- To organize during the next three-year-long period up to 20 summer schools and/or special courses for training of the Earth Science K-12 teachers and a new generation of the NEESPI domain Earth Science researchers.



Integrated Land Ecosystem – Atmosphere Processes Study

NEESPI activities relate to all of the iLEAPS themes

THEMES:

- 1) Land-atmosphere exchange of reactive and conservative compounds: Key feedbacks in the Earth System

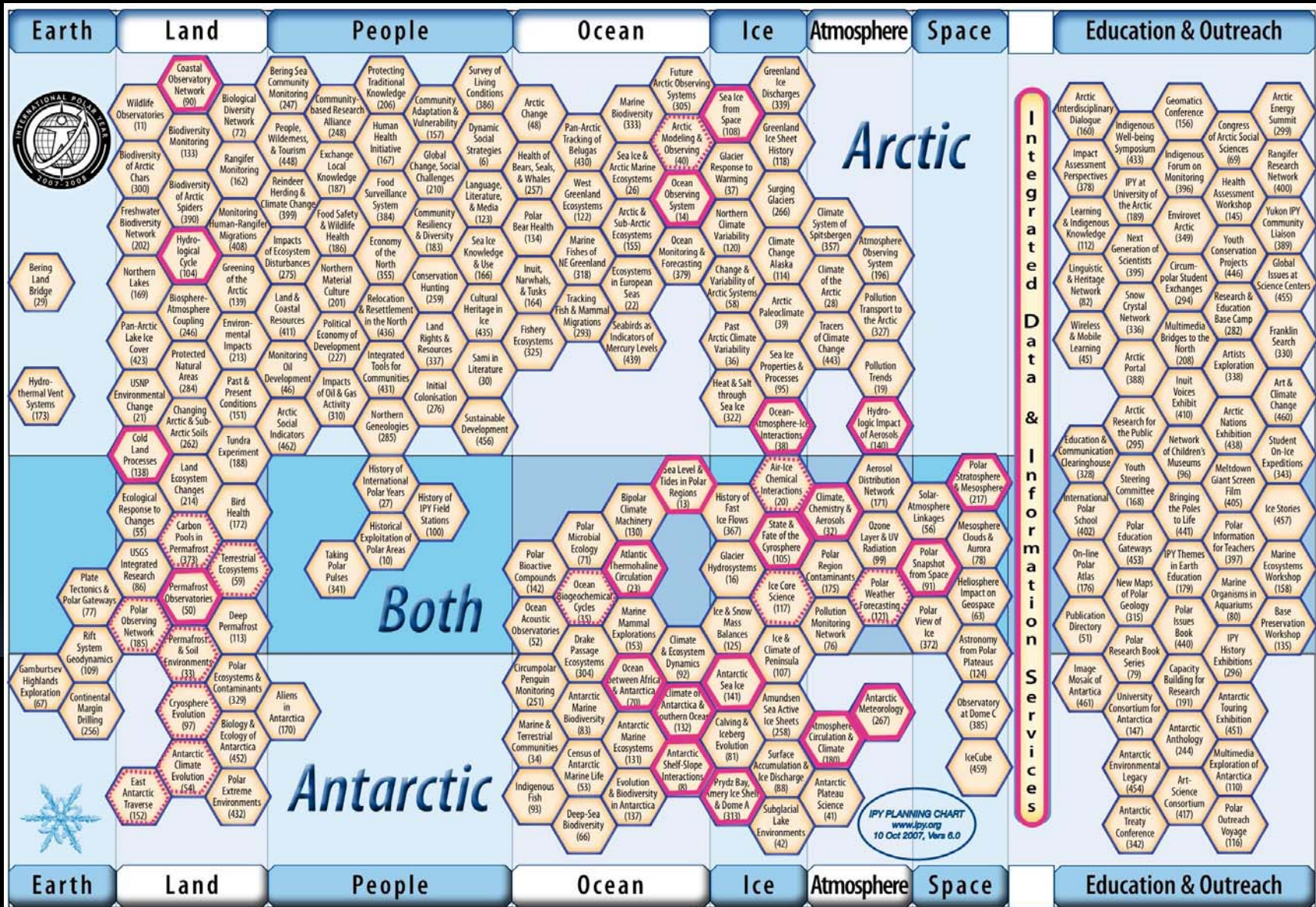
- 2A) Interactions and feedbacks between biogenic/ anthropogenic aerosol production, cloud processes, climate and the water cycle

- 2B) Surface-atmosphere exchanges and the self-cleansing mechanism of the atmosphere

- 3) Feedbacks and teleconnections in the land surface vegetation - water – atmosphere system

- 4) Transfer of materials and energy in the soil/canopy/ boundary-layer system: Measurements and Modelling

NEESPI Contributions to IPY



Potential Integrating factors for NEESPI include:

- Themes:

Center for Cold Land Processes and Arctic Coastal Zone Studies

Center for Water System Studies

Center for Atmospheric Aerosol and Air Pollution Studies

Center for Land Use Studies

Center for Biogeochemical Cycle Studies

Center for Land Cover Studies

Regional Centers

Regional Center for Dry Land Processes Studies

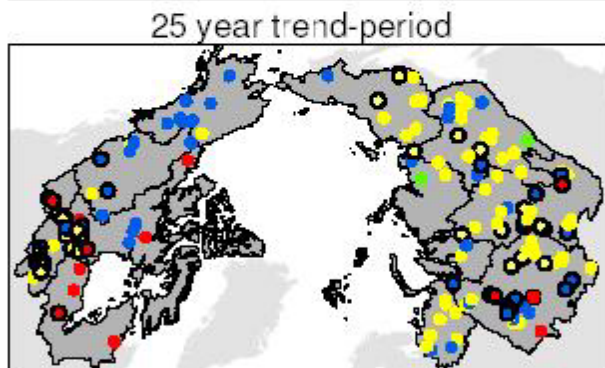
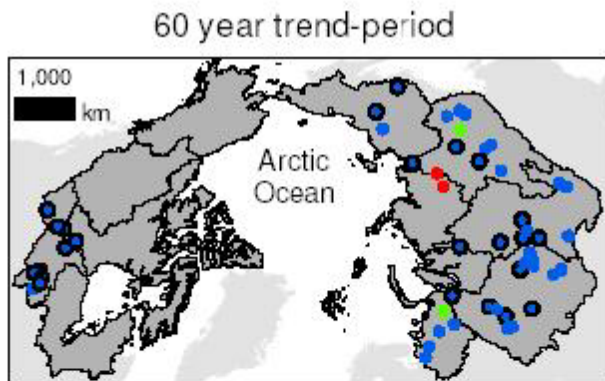
Regional Center for NEESPI Studies in Eastern Europe

Regional Center for NEESPI Studies in Siberia

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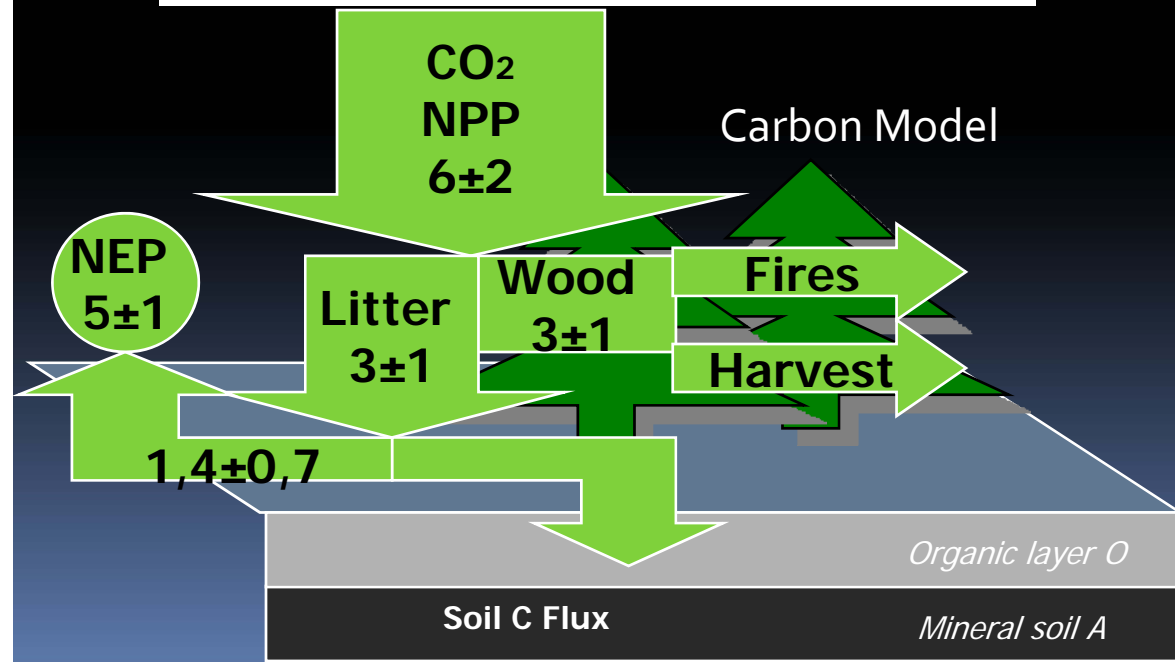
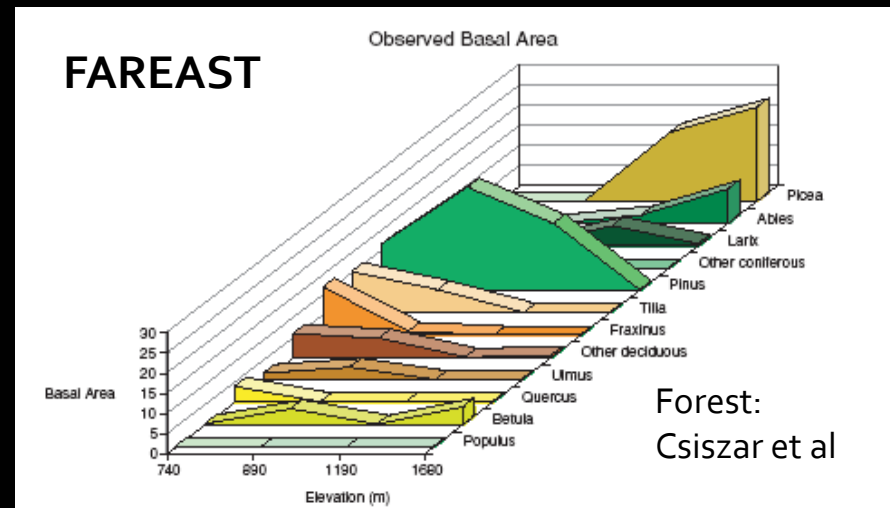
- Developing an integrated Earth System modeling framework (Excellent models for regions exist but how do we bring them together?)

Water: *Rennermalm and Wood*



Trend of cold-season low-flow, 1935-1996

- Decreasing flow ● trend affected by dam
- Unchanged flow ● trend affected by dam
- Increasing flow ● trend affected by dam
- Mixed flow trends ● trend affected by dam



SUMMARY:

NEESPI has a large number of science projects and significant scientific discoveries and developments are occurring. Furthermore, young people are engaging and being trained and new capabilities are being developed in Eurasia.

However, NEESPI could increase its profile and influence as a major international environmental program by:

- Developing a few integrating challenges (e.g. a regional Earth System model).
- Developing documentation and systematic reporting on its successes.
- Updating its programmatic structure and ensuring that major policy developments are aware of its findings.
- Developing its niche as the portal for environmental scientists to acquire data and information about Northern Eurasia.