

# From the Northern Eurasia Earth Science Partnership Initiative (NEESPI) towards the Northern Eurasia Future Initiative (NEFI): Introduction

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(held on 9-12 April, 2015; in Charles University in Prague, Czech Republic).

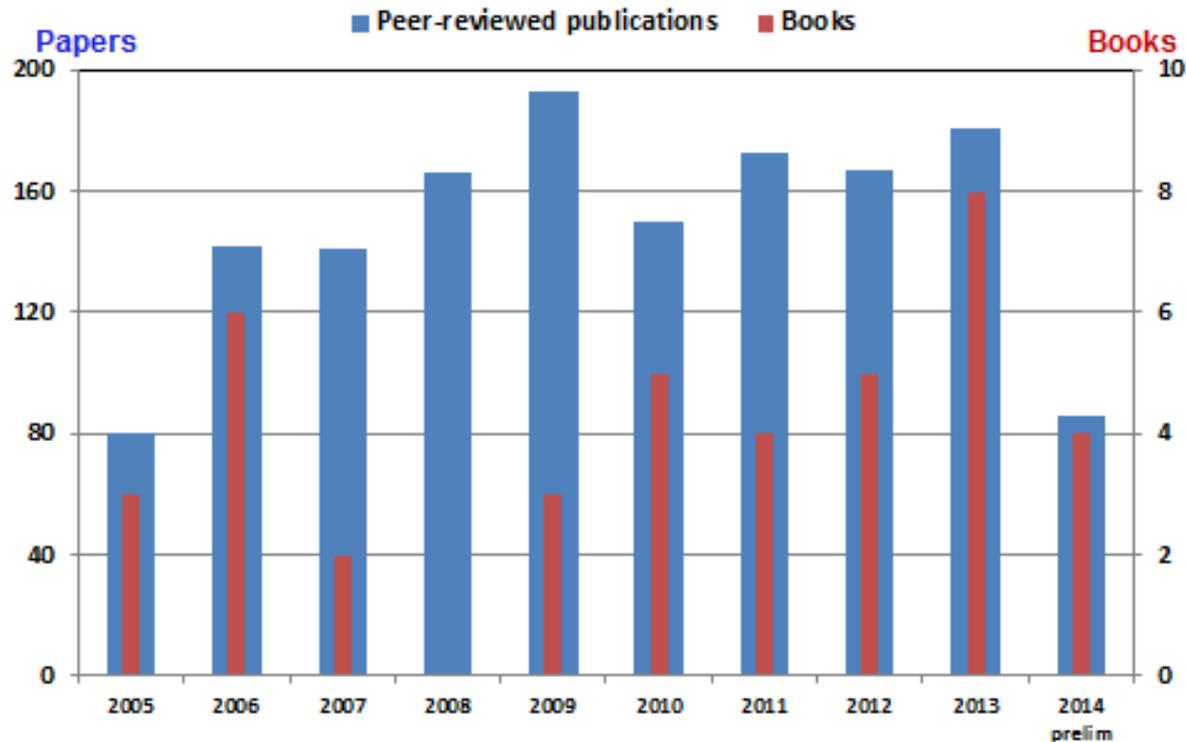


# NEESPI Statistics

- **172 individual research projects (always with international participation)** with an annual budget of ~\$15 million
- More than **750 scientists from more than 200 institutions of 30 countries**
- More than **80 PhD students** defended their theses while working within the NEESPI framework.

# NEESPI Science Community

## NEESPI publications by year



- Annual NEESPI Sessions at AGU, EGU and JpGU Annual Meetings
- Since 2006, > **30** dedicated NEESPI Workshops and **22** NEESPI Open Science Sessions at the International Meetings
- **Two or more** Early Career Scientists Summer Schools per year since 2009.

- More than **1480** papers and **40** books
- Since 2010, **759** peer-reviewed papers and book chapters

[http://neespi.org/science/NEESPI\\_publications.pdf](http://neespi.org/science/NEESPI_publications.pdf)

# NEESPI research realm has changed:

- We have increased knowledge and developed new tools (observations, models, and collaborative networks) to describe our new results
- We can now apply these results to directly support decision-making activities for societal needs.

## Therefore, at the next step:

- NEFI will continue and expand the incorporation of socio-economic studies aiming on linking the achievements of climate and environmental analyses with the requirements for the regional infrastructure and societal well-being.
- NEFI will bridge climate and environmental studies with socio-economic consequences of the observed changes, providing the synergy between them and quantifying *feedbacks* between observed and projected regional climate and environmental changes and their socio-economic impacts on the Earth System.

Need another phase to accomplish the goals?



“Northern Eurasia: Regional tipping points of changing planet”

# Transition from NEESPI to “Northern Eurasia’s Future” Initiative (NEFI)

Historically, NEESPI was developed as a stand-alone Program. After its Science Plan was ready and the first ~20 projects joined to the Initiative, we began looking for endorsements from international science organizations.

NEFI will adopt a similar approach:

- We have 27 ongoing projects in NEESPI which will become pilot NEFI projects.
- We shall keep our past connections and
- We have already envisioned a new Mega-Program for NEFI (this can be *Future Earth*)

# Major NEESPI Science question remains the same:

- How do Northern Eurasia's terrestrial ecosystems dynamics interact with and alter the biosphere, atmosphere, and hydrosphere of the Earth?

But it is the time to expand this academic curiosity **question** “**how?**” to another, more practical:

- What will the changes in this ecosystems dynamics and interactions mean for the societal well-being, activities, health, and strategic planning?

# Ten Research Foci emerged in discussions within the NEESPI community during the past 12 months:

## Group 1

1. Increasing frequency and intensity of **extremes** (intense rains, floods, droughts, and wild fires)
2. Global change and, in particular, **warming of the Arctic**
3. Retreat of the **cryosphere**: snow cover, sea and ground ice
4. Biosphere changes (**ecosystem shifts**; changes in the carbon cycle; land cover, desertification and dust storms)
5. Changes in the terrestrial water cycle; quantity and quality of **water supply** available for societal needs)

# Continuation of the Research Foci list

## Group 2

6. Pressure on agriculture and pastoral production (growing supply demand, changes in land use; food security)
7. Changes in infrastructure (roads; new routes; construction codes; air, water, and soil pollution; strategic planning)
8. Societal actions to mitigate negative and benefit from positive consequences of environmental changes
9. Assessment / Quantification of the role of Northern Eurasia in the global Earth and Socioeconomic systems

## Group 3

10. Development of a new advanced research tool: a suite of models that describes the regional environment dynamics **AND** provides feedback to the Global Earth System.

# NEFI Challenge

How to provide a sustainable societal development (economy well-being, activities, health, and strategic planning) in changing climate, ecosystems, and societies?

Past =>



Present => Future



## NEESPI Synthesis Workshop (April 9-12 2015, Prague)

- **Day 1:** Summarizing what has been done
- **Day 2.** Working in breakout topical and regional groups to formulate what should be done next within NEFI in the Arctic, in the boreal zone, in the dry land latitudinal belt of Northern Eurasia
- **Day 3.** Discussion of the outreach options: xxxxxxxxxxxx

# NEESPI Synthesis Workshop (April 9-12 2015, Prague)

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- **Day 3.** Discussion of the outreach options:
  - Programmatic research paper in a leading high-impact journal
  - White paper for the governmental agencies and International Science bodies (WMO, *Future Earth*)
  - Synthesis Book that summarizes the NEESPI outcome.