

Transition from the Northern Eurasia Earth Science Partnership (NEESPI) to the Northern Eurasia Future Initiative (NEFI)

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Since 2004, the Northern Eurasia Earth Science Partnership Initiative (**NEESPI**) –an interdisciplinary program of internationally-supported Earth systems and science research –has addressed large-scale and long-term manifestations of climate and environmental changes over Northern Eurasia and their impact on the Global Earth system. With 40 books and more than 1500 peer-reviewed journal publications to its credit, NEESPI's activities resulted in significant scientific outreach. This created a new research realm through self-organization of NEESPI scientists in a broad research network, accumulation of knowledge while developing new tools (observations, models, and collaborative networks) and producing new, exciting results. These results can now be applied to directly support decision-making for societal needs and it is a right time to develop them. Firstly, during the past decade, the rates of climatic and related to them cryosphere changes increased, especially at high latitudes and in the mountains. Secondly, exponential economic development, urbanization, and anthropogenic pressure on major agriculture and pastoral regions of the interior continental regions of Northern Eurasia overlapped there with spatial and temporal redistribution of water resources that may cause both draughts and excess rainfall. And finally, some large-scale environmental changes (e.g., land abandonment) were caused solely by socio-economic changes that must be not only well understood, monitored, and reported but require a knowledgeable resistance, actions guided by natural **and** risk management sciences. Therefore, two years ago, we decided to shift gradually the foci of regional studies in Northern Eurasia towards applications with the following major Science Question: “What dynamic and interactive change(s) will affect societal well-being, activities, and health, and what might be the mitigation and adaptation strategies that could support sustainable development and decision-making activities in Northern Eurasia?” . To answer this question requires a stronger socio-economic component in the ongoing and future regional studies focused on sustainable societal development under changing climatic and environmental conditions. The NEESPI Research Team has reorganized itself into “Northern Eurasia Future Initiative” (**NEFI**) and to the end of 2016 developed the NEFI Science Plan. It was split between two programmatic papers submitted to *Progress in Earth and Planetary Science* (PEPS) and *Environmental Research Letters* (ERL). These papers describe respectively the Plan rationale (cf., presentation by Groisman *et al.* at the MIS03 Session this morning) and the major modeling approach that will be employed in addressing the “what to do” questions of the NEFI Research (cf., presentation by Monier *et al.* at this Session). In the current presentation, we provide a brief resume of the NEESPI achievements and give the outline of the new NEFI research. Throughout the NEESP Initiative duration, support for its studies has been provided by different national and international Agencies of the United States (in particular, the NASA Land Cover and Land Use Change Program), Russian Federation (in particular, the Ministry of Education and Science, e.g., mega-grant 14.B25.31.0026), and the International Belmont Forum (in particular, the ARCTIC ERA Mega-Grant). We anticipate a further extension of similar kinds of support for NEFI.

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