Northern Eurasia Earth Science Partnership Initiative:Science Plan, First Steps, and Role of Remote Sensing

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The Northern Eurasia Earth Science Partnership Initiative (NEESPI) is an international large-scale, integrated, regional program of research focusing on the area of Northern Eurasia has been initiated by NASA and Russian Academy of Sciences and is currently unfolding in collaboration with several national and international Agencies and Institutions. A brief introduction of the NEESPI Science Plan (SP) will be presented. While extensive and diverse, Northern Eurasia has common (and unique) features, the studying of which in a collaborated fashion under the NEESPI umbrella will produce synergetic effects. SP specifically addresses the reasons to look on the region as a "single" piece: transitional economies and land use (the legacy of the former USSR), geographical features (largest landmass in the extratropics mostly isolated from humid air masses), one of the world highest sensitivities to climatic and environmental changes with feedbacks of global concern and extensive and fluent transitional zones between ecosystems. The major NEESPI science question is: How do Northern Eurasia's terrestrial ecosystems dynamics interact with and alter the biosphere, atmosphere, and hydrosphere of the Earth? These dynamics have several facets: Biogeochemical Cycles, Surface Energy and Water Cycles, and Interactions with Human Society, each of which have to be studied in their interactions and complexity. Studying of Ecosystem-Climate Interactions mechanisms and Modeling component became a centerpiece of the SP. These studies can be conducted within a suite of models that are considered as a major instrument to assess our predictive capabilities of environmental changes and ecosystem sustainability in Northern Eurasia to support numerous applications and decision making. The creation of such a suite of models and providing it with an appropriate input data stream emerges as a focus of the Initiative. Social aspects of the NEESPI SP include the Education and land use components.Remote sensing has an important role in the NEESPI science program, providing up to date and historical, spatially explicit information to characterize vast territory of the Northern Eurasia in terms of the land cover/land use types, biophysical and physical properties of the land surface and water bodies, its large-scale and long-term dynamics for use in process and modeling studies. Four main areas of the remote sensing use: land cover, cryosphere, inner and coastal water bodies, and energy and water budget will be discussed.At the time of the Symposium, we expect to have more than twenty funded National and International Projects under the NEESPI umbrella. An overview of the areas covered by these Projects as well as the areas that still require attention will be presented. NEESPI is an open partnership of the Projects and, by definition, welcomes all researchers who want collaboration in studying the Northern Eurasian region.