



PEEX "PAN-EURASIAN EXPERIMENT" - A multidisciplinary climate change, air quality, environment and research infrastructure program focused on the Northern Eurasian particularly arctic and boreal regions

H. K. Lappalainen (1,2), T Petäjä (1), J Kujansuu (1), T Suni (1), M Kulmala (1), and Z Zilitinkevich (2)

(1) Dept. of Physics, P.O. Box 64, FI-00014 University of Helsinki, Finland (hanna.k.lappalainen@helsinki.fi), (2) Finnish Meteorological Institute, P.O. Box 503, FI-00101 Helsinki, Finland

PEEX is a multidisciplinary research project aiming at resolving the major uncertainties in Earth system science and global sustainability questions in the Arctic and boreal Pan-Eurasian region. The vision of the Pan Eurasian Experiment (PEEX) is to solve interlinked global challenges influencing the human wellbeing and societies in northern Eurasia, such as climate change, air quality, biodiversity loss, chemicalisation, food supply, use of natural resources by mining industry, energy production and transport in an integrative way, recognizing the important role of the arctic and boreal ecosystems in the Earth system. The PEEX vision includes establishing and maintenance of long-term, coherent, and coordinated research activities and research and educational infrastructures in the PEEX domain.

PEEX will use an integrated observational and modeling framework to identify different forcing and feedback mechanisms in the northern parts of the Earth system, and therefore enable more reliable predictions of future regional and global climate. Because of the already observable effects of climate change on society and the specific role of Arctic and boreal regions in this context, PEEX emphasizes the need to establish next-generation research in this area. PEEX will provide fast-track assessments of global environmental change issues for climate policy-making and mitigation and adaptation strategies for the northern Pan-Eurasian region. PEEX is built on collaboration between European, Russian, and Chinese partners and is open for more collaboration in the future. The PEEX community will include scientists from various disciplines, funders, policy-makers, and stakeholders from industry, transport, food production, and trade; it will aim at co-designing research in the region in the spirit of Future Earth.

PEEX aims to be operational starting from 2014. It will start building the long-term, continuous, comprehensive research infrastructures (RI) in northern Pan-Eurasia; the RIs will include ground-based, aircraft, and satellite observations, and multi-scale modeling. The PEEX domain covers the Eurasian boreal zone and Arctic regions of the hemisphere including marine areas such as the Baltic, North Sea and the Arctic Ocean. In addition to socio-economic aspects PEEX research agenda focuses on multidisciplinary process understanding of the Earth system on all relevant spatial and temporal scales, ranging from nano scale. One of the strategic focus is to ensure the long-term continuation of advanced measurements in the land-atmosphere-ocean continuum in northern Eurasian area.

The scientific results of PEEX will be used to develop new climate scenarios, mitigation and adaptation plans at global and regional scales. PEEX aims to contribute to the Earth system science agenda and climate policy for topics important to Pan-Eurasian environment and society to help the Pan-Eurasian region towards a sustainable future.