PAN-EURASIAN EXPERIMENT (PEEX) ESTABLISHING A PROCESS TOWARDS HIGH LEVEL PAN-EURASIAN ATMOSPHERE-ECOSYSTEM OBSERVATION NETWORKS

H.K. LAPPALAINEN[1,2], T. PETÄJÄ[1] ,N. ZAYTSEVA[3], T.LAURILA[2], G. DE LEEUW[2] ,Y. VIISANEN[2], V. KOTLYAKOV[5], N. KASIMOV[6], V. BONDUR[7] , G. MATVIENKO[8], ALEXANDER BAKLANOV[9], GUO HUADONG [10,] P. HARI[11,] S. ZILITINKEVICH[1,2,12] and M. KULMALA[1]

[1]Dept. of Physics, University of Helsinki, Finland.
[2]Finnish Meteorological Institute, P.O. Box 503, FI-00101 Helsinki, Finland
[3] Department of Earth Sciences, RAS, Moscow, Russia
[5] The Institute of Geography RAS, 119017, Staromonetniy pereulok 29, Moscow, Russia
[6] Moscow State University, M.V. Lomonosova, Moscow, Russia
[7]AEROCOSMOS, 4, Moscow, Russia
[8] Inst. of Atmospheric Optics SB RAS, Russia
[9]World Meteorological Organization, Genève, Switzerland
[10] Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences, Beijing, China
[1]Dept. of Forest Ecology, University of Helsinki, Finland.
[12] Dept. of Radiophysics, Nizhny Novgorod State University, Russia

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Pan-Eurasian Experiment **(**PEEX) is a new multidisciplinary research approach aiming at resolving the major uncertainties in the Earth system science and global sustainability questions in the Arctic and boreal Pan-Eurasian regions and in China (http://www.atm.helsinki.fi/peex/, Kulmala et al. 2011). PEEX initiative is built on a bottom-up initiative by several European, Russian and Chinese research organizations and institutes. The research program is aimed to solve the scientific questions that are specifically important for the Northern Pan-Eurasian region in particular the global climate change, its consequences to nature and Northern societies. Pan-Eurasian region represents one the Earth most extensive areas of boreal forest and the largest natural wetlands, thus being a significant source area of trace gas emissions, biogenic aerosol particles, and source and sink area for the greenhouse gas (GHG) exchange in a global scale (Guenther et al. 1995, Timkovsky et al. 2010, Tunved et al. 2006, Glagolev et al. 2010). Furthermore, PEEX is focused and the strategic and practical solutions for the improved air quality in China megacities, the important sources of anthropogenic emissions in a global scale.

The first implementation activities of the PEEX RI initiative is to establish a process towards high level Pan-Eurasian Observation Networks. Siberian region is currently lacking a coordinated, coherent ground based atmosphere-ecosystem measurement network, which would be crucial component for observing and predicting the effects of climate change in the Northern Pan-Eurasian region. The first set of stations have been selected for the PEEX Observation network: the SMEAR-type stations in Finland (SMEAR-I-II-II-IV stations), Estonia (SMEAR-Järviselja) and China (SMEAR-Nanjing), 6-10 stations in Russia and four ecosystem stations in China. The concept of the Pan-Eurasian network is based on a hierarchical SMEAR-type (*Stations Measuring Atmosphere-Ecosystem Interactions*) integrated land-atmosphere observation system (Hari et al. 2009). The ground stations will have a minimum instrument setup and data processing for atmospheric /forest / peat land/ aquatic / urban monitoring while the flag ship stations will cover the full setup of instruments and data systems for monitoring the energy flows in the land –atmosphere continuum. The ground based observation setup would be completed by the remote sensing observations.

PEEX will bring the observation setup into international context with the standardized or comparable procedures. Procedures for improved data quality will be developed in coherence to "The European Strategy Forum on Research Infrastructures" (ESFRI) process and in collaboration with the "Integrated Carbon Observation System" research infrastructure (ICOS-RI), "**A**erosols, **C**louds, and **T**race gases **R**esearch **I**nfra**S**tructure Network" (EU-FP7-ACTRIS-I3 project), "Analysis and Experimentation on Ecosystems" (EU-FP7- Preparatory Phase of AnaEE), Life Watch (European research infrastructure on biodiversity) and Svalbard Integrated Earth Observing System (SIOS).

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