

**PAN-EURASIAN EXPERIMENT (PEEX) PROGRAM -  
FUTURE PROSPECTS**

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Pan-Eurasian Experiment (PEEX) Program (<https://www.atm.helsinki.fi/peex/>) is an international, multi disciplinary, multiscale bottom up initiative established in 2012 (Lappalainen et al. 2014). The main focus of the initiative is to solve interlinked global environmental challenges influencing societies in the Northern Eurasian region and in China (Kulmala et al. 2016). PEEX also aims to deliver to novel ground based land-atmosphere data for constructing reliable early warning systems, for predicting extreme weather events and for estimating environmental contamination of industrial accidents across Northern Eurasian region. The program is involving research communities from 20 different countries from Europe, Russian and China. Altogether 80 institutes have contributed to the PEEX Science Plan. PEEX is coordinated by the University of Helsinki and the Finnish Meteorological Institute together with the Moscow State University (MSU) and AEROCOSMOS from Russia and Institute of Remote Sensing and Digital Earth (RADI) and University of Nanjing from China.

In years 2012-2016 PEEX has released conceptual descriptions of the program structure (Kulmala, et al. 2015), the research agenda (Lappalainen et al. 2016) and the in situ observation network (Hari et al. 2016). In

implementing the PEEEX research approach we have opened the PEEEX Special issue in the Journal of Atmospheric Chemistry and Physics ([http://www.atmos-chem-phys-discuss.net/special\\_issue265.html](http://www.atmos-chem-phys-discuss.net/special_issue265.html)). The special issue is continuing the Science Plan process and is serving as a primary platform collecting PEEEX relevant scientific results for the periodic PEEEX science assessment.

Starting from 2012 PEEEX has made preparatory work with the Russian station networks and collected the preliminary information on the in situ station measurements over 170 stations (Alekseychik et al. 2016). In 2017 PEEEX will focus on more detailed metadata inventory of the Russian in situ stations as a part of the EU Horizon 2020 Arctic infrastructure INTAROS project. The metadata overview will be the first step connecting the Russian RI to international research infrastructure frameworks. In addition to the upgrading plans of the existing station infrastructure, PEEEX is actively promoting the establishment of new in situ stations in Russia and in China, which would be based on the so called SMEAR (Stations measuring the Earth surface Atmosphere Relations) measurement concept (Kaukolehto et al. 2016). As a part of the PEEEX station network approach we have published the “PEEX view tool” ([http://www.atm.helsinki.fi/aapon\\_demo\\_php/test15\\_demo.html](http://www.atm.helsinki.fi/aapon_demo_php/test15_demo.html)). PEEEX View Tool enables the comparison between the in situ data and the modelled data. In the future, the PEEEX-View is envisioned to be part of the PEEEX Modelling Platform and combining multidisciplinary datasets of varying temporal and spatial scales. The PEEEX modelling platform concept, the descriptions of the model software together with a specific technological platform and data formats will be released in 2017.

The upcoming Finland’s chairmanship of the Arctic Council starting from 2017 sets the PEEEX focus on circumpolar collaboration. In 2017 PEEEX will expand its collaboration across polar areas and, as a first activity, will organize the circumpolar Arctic Flux workshop together with USA and Canadian research groups. The circumpolar Arctic Flux WS will take place in Hyytiälä, Finland on 6-9.Feb.2017. The workshop will be arranged in parallel with the CRUCIAL “Critical steps in understanding land surface – atmosphere interactions: from improved knowledge to socioeconomic solutions” meeting, which would also foster communication on future Arctic observation systems between USA, Canada, Nordic and Russian research communities. CRUCIAL is a new Nordic-Russia collaboration project coordinated by University of Helsinki – Atmospheric Sciences, funded by Nordforsk, starting in autumn 2016.

PEEX organized the second Science Conference in Beijing in May 2016 (Lappalainen et al. 2016b). The conference gathered several new Chinese research contributors representing several branches of the environmental sciences. In 2017 PEEEX will continue deepening the collaboration with these Chinese research groups and release a specific PEEEX-China research agenda. PEEEX recognizes here the unique opportunity to explore cooperation in the sustainable development of environments along the Silk Road Economic Belt and Road. Thus the focus of the PEEEX-China research agenda will be on the detailed identification of the environmental challenge of the Belt and Road region.

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