

PEEX collaboration virtual-zoom-meeting



**INEP KSC RAS (Institute of Industrial Ecology Problems in the North,
Kola Science Center, Russian Academy of Sciences) &
UHEL INAR (University of Helsinki, Institute for Atmospheric and Earth System Research)**

12 November 2020, Thursday

Summary and Discussions

PEEX virtual meetings on research collaboration took place on 12 November 2020 (Helsinki/ Apatity) with 26 researchers from Finland and Russia, whom jointly attended the meeting.

INEP colleagues delivered a series of presentations on INEP structure and main activities as part of the Kola Science Center; terrestrial ecosystems studies and freshwater studies in the Euro-Arctic and their new challenges and solutions; ecology of microorganisms – directions for research collaboration; decrease the environmental hazard of mining waste and ecofriendly technology development; INEP socio-economic studies as well as modelling approaches; INEP educational approaches and science promotion. UHEL – talks on main directions and activities of the PEEX Programme, its science plan and collaboration activities; SMEAR (Station for Measuring Ecosystem - Atmosphere Relation) concept and measurements; INAR approaches and studies realized as part of the INAR modelling activities on the Earth system and climate modeling, online/ seamless integrated meteorology-chemistry-aerosols regional/subregional/urban scale modelling and process-based fine scale modelling for meteorology-chemistry-aerosol system; science-oriented university education at INAR.

Discussion topics included discussions on topics related to the PEEX science plan research and educational activities.

in English - https://www.atm.helsinki.fi/peex/images/PEEX_Science_Plan.pdf

in Russian: https://www.atm.helsinki.fi/peex/images/PEEX_Science_Plan_rus.pdf

Research (*moderated by Evgene/ Maria/ Vladimir/ Risto/ Michael/ Alexander*)

In particular, INEP colleagues showed their interest in collaboration on answering the PEEX large-scale science questions for the land system (changing processes, structural changes and resilience, risk areas of permafrost thawing) and anthropogenic activities (anthropogenic impact, natural hazards, social transformations and climate change) with focus on the Kola & Scandinavian Peninsulas and Fennoscandia areas with possibilities of joint proposals/ projects, sharing laboratories infrastructure (INEP labs, SMEAR-I&II stations), joint publications using expertise of leading scientists for editing and revisions.

UHEL experience with Calls for research proposals (with INEP – NordForsk TRAKT, Kolarctic PIKOTRAP, Enviro-PEEX(Plus) on ECMWF, H2020 iARCDEV, etc.; see below other opportunities for Calls “**Joining efforts on Calls for research proposals**”). INEP experience with Calls for ArcticHubs proposal, EU-RU cooperation with Calls. Jointly to monitor opening suitable Calls.

TechnoPark (Apatity) with goal to promote research, work and innovations of KSC; active with young researchers; creation small companies / startups/ etc. (*contact Vladimir Masloboev, INEP-KSC*).

SMEAR-I is the closest to the Kola Peninsula research station – apply with individual grants as part of ACTRIS Calls (<http://actris.net/opencall>), and similar for SMEAR-II, for trans-national access facilities with good potential for joint terrestrial ecosystem and biology related research (*contact Tuukka Petaja and Janna Back, UHEL-INAR*).

Promotion and more visibility to research data (a lot of such datasets are generated through international research repositories (for example, ZENODO; <https://zenodo.org>) for datasets with assigning unique DOI to data & H2020 iCUPE project experience - <https://www.atm.helsinki.fi/icupe/index.php/datasets/delivered-datasets> (*contact Fidel Pankratov, INEP-KSC, Alexander Mahura, UHEL-INAR*).

Studies on climate change impact on socio-economical system vs. climate simulation results usage for such studies. Experience in TRAKT project (climate data, observations, modelling results, new products, etc. - <https://www.atm.helsinki.fi/peex/index.php/trakt-2018>). Focus is not only on physical/ natural science, but also to deliver info relevant to society. From climate modeling – process understanding of the Earth system behavior in past/ present/ future, but data delivered (incl. IPCC reports, data repositories) valuable for different sectors of economics, assessments. Downscaling to Kola Peninsula and Northern Fennoscandia. Good potential for joint research and proposals for impact studies with socio-economic impacts. More and more recently published Calls stress/ include and underline socio-economic aspects (+ to arrange separate discussion/ seminar; Feb 2021) (*contact Elena Klyuchnikova, INEP-KSC, Alexander Mahura, Risto Makkonen, UHEL-INAR*).

INEP (COMSOL CFD, INEP's METEO+TRANS, SELECTOR, and examples) vs. INAR (EC-Earth, Enviro-HIRLAM, ADCHEM, etc. and examples; <https://www.helsinki.fi/en/researchgroups/multi-scale-modelling/research-and-models>) used models/modelling approaches as research tools. INAR's models such as ADCHAM (open source code, beg 2021), SOSAA with FLEXPART models (*contact for models - Michael Boy, UHEL-INAR*) – potential for fine-scale high resolution studies; Enviro-HIRLAM – potential for black carbon, mercury, industrial dust, emissions from volcanic eruptions and metallurgy (*contact Alexander Mahura, UHEL-INAR*); EC-Earth (*contact Risto Makkonen, UHEL-INAR*) – potential for socio-economic studies in the Nordic and Arctic domains. INEP's examples and possibilities with models/ observations/ development technologies: studying artificial dust pollution, development of approaches to reduce dust emission, linking mercury deposition in sediments with long-term atmospheric transport and deposition modelling.

Science Education & Wrap-UP

(moderated by Katja/ Elena/ Vladimir/ Alexander)

In particular, UHEL and INEP colleagues shared in their presentations (*contact Katja Lauri, Alexander Mahura & Evgene Borovichev, Maria Kornejkova*), and then, in discussions their projects/ activities and approaches in science education.

UHEL-INAR courses, trainings, schools, etc.: <https://www.atm.helsinki.fi/peex/index.php/education>; and all colleagues are welcome with ideas for new courses. Looking for Calls to arrange and carry out such courses.

UHEL experience with Calls for proposals (possibilities to visit SMEAR stations with ACTRIS Calls – research visits for students, EDUFI's Calls, bi-lateral Calls, see below other opportunities for Calls “**Calls for science education**”). Jointly to monitor opening suitable Calls.

Erasmus+ MODEST project activities (valuable for PhD students and young researchers); development of 14 PhD courses as part of the Doctoral Research Training Centers; <https://www.atm.helsinki.fi/peex/index.php/projects/174-modest-project> & materials are available at: <https://www.emodest.eu/index.php/dissemination/presentation-videos>

Possibility to work with UHEL ongoing projects for PhD students (under joint co-supervision); open possibility with joint/ double PhD degree from 2 Universities; announcement through UHEL website (opening position).

Postponed science education events in 2020 – intensive research training event (Apr 2020, St.Petersburg; <https://www.atm.helsinki.fi/peex/index.php/education/16-courses/184-april-2020-peex-ac-research-training-intensive-course>) and young scientist summer school (Jul-Aug 2020, Moscow; <https://www.atm.helsinki.fi/peex/index.php/education/16-courses/185-jul-aug-2020-young-scientist-summer-school-on-multi-scales-and-processes-integrated-modelling-observations-and-assessment-for-environmental-applications>). The INAR's models – EC-Earth, Enviro-HIRLAM and MALTE-Box – are part of these trainings.

INEP is arranging the International Summer Field School “Anthropogenic and Natural Soil Landscapes in European Russia: from Sea to Sea” (Jul-Aug 2021; <http://3mugis.org>); INEP PhD students (in programmes for Earth Sciences and Biology) – possibilities of joint co-supervision.

Within the PEEEX frameworks, the UHEL-INAR and INEP-KSC are interested in possibilities of joint research and proposals, joint publications, join co-supervision of students, etc.

Joining efforts on Calls for research proposals:

- NW Russia + Nordic&Baltic countries, NordForsk funding: <https://www.nordforsk.org/en/funding>;
- South-East Finland – Russia CBC Programmes: <https://www.sefrcbc.fi/cbc-2014-2020/programme-cbc-2021-2027>;
- Trans-National Access to ACTRIS facilities: <http://actris.net/opencall>; with possibility of individual proposals for visiting SMEAR stations, Finland (<https://www.atm.helsinki.fi/SMEAR/index.php>);
- Academy of Finland (<http://www.aka.fi/en/funding>) & Russian Foundation for Basic Research (<http://www.rfbr.ru/rffi/eng>) / Russian Science Foundation (<https://grant.rscf.ru>) have also joint Calls on proposals; Belmont Forum: <https://www.belmontforum.org/opportunities>; bi-lateral Calls & individual grants for researchers to visit/ research in Finland;
- Funding for research visits to build international networks in HPC (High Performance Computing with modelling activities): <http://www.hpc-europa.eu>; individual grants, interest for modellers;
- Special projects at ECMWF (HPC): <https://www.ecmwf.int/en/research/special-projects/special-project-application>; interest for modelers and researchers working with meteorology/ climatology/ atmospheric composition data;
- COST Action: <https://www.cost.eu/funding/how-to-get-funding/open-call>;
- Horizon-2020 specific calls when RU partners are possible to include (with Letters of Support from both sides);
- EU Green Deal Call possible proposals (stage of building consortia and looking for specific expertise of possible partners).

Calls for science education

- UHEL-INAR science education courses, trainings, schools, etc.: <https://www.atm.helsinki.fi/peex/index.php/education>;
- Finnish National Agency for Education Calls on students/teachers mobilities and intensive training courses: <https://www.oph.fi/en>;
- EDUFI Winter School for Russian and Ukrainian post-graduate students: <https://www.oph.fi/en/development/edufi-winter-school-russian-and-ukrainian-post-graduate-students>;

- The Finnish Government Scholarship Pool: <https://www.oph.fi/en/development/finnish-government-scholarship-pool> - purpose: work on a doctoral thesis or a research visit in Finland;
- EDUFI Fellowship: <https://www.oph.fi/en/development/edufi-fellowship>;
- Nordic (by NordForsk) and Finnish (by Academy of Finland) Centers of Excellence - atmospheric sciences (topics: aerosols, ecosystems, remote sensing and in-situ observations, Arctic) with a possibility of international collaboration;
- ongoing Erasmus+ projects (MODEST) – <https://www.atm.helsinki.fi/peex/index.php/projects/174-modest-project> - linking to Doctoral Training Centers activities & (ClimED) - <https://www.atm.helsinki.fi/peex/index.php/projects/212-multilevel-local-nation-and-regionwide-education-and-training-in-climate-services-climate-change-adaptation-and-mitigation-climed-2020-2023> - linking to education and training in climate services, climate change adaptation and mitigation;
- ongoing FIRST+ projects - <https://www.atm.helsinki.fi/peex/index.php/projects/183-pan-eurasian-experiment-academic-challenge-peex-ac-network> - with networking and research training courses.

Both INEP-KSC and INAR-UHEL will continue monitor Calls and formulate outcome of this meeting discussions as possible joint proposals for national, bi-lateral and international projects.

- **Suggestion for future meeting** – to arrange virtual-zoom joint seminar/ discussion (Feb 2021, Apatity/ Helsinki) on linking socio-economical and modelling studies with focus on the Northern Fennoscandia and Arctic regions;
- **Possibilities of PEEEX session** at the International Conference “*Environmental challenges of the North and ways to their solution*” (Sep 2021, Apatity, Russia) – to be discussed;
- KSC colleague are welcome to submit abstracts and participate in **online PEEEX Special Session at EGU-2021** (European Geosciences Union, Apr 2021, Vienna, Austria) - <https://www.atm.helsinki.fi/peex/index.php/peex-at-egu-2021>;
- KSC colleagues are also welcome to **promote outcomes** of their **research and science education activities** through the PEEEX network, quarterly NewsLetters (<https://www.atm.helsinki.fi/peex/index.php/newsletters>), Blog (<https://peexhq.home.blog>) & to join PEEEX network, please, register at PEEEX website (<https://www.atm.helsinki.fi/peex>) following link “PEEX e-mailing list – subscribe”.

All delivered oral presentations (slides, videos) for the virtual meeting are available at the PEEEX website, including agenda and summaries of joint UHEL-KSC colleagues’ discussions.

Looking forward for fruitful PEEEX collaboration!

Text by Alexander Mahura, UHEL INAR & Elena Klyuchnikova, INEP KSC RAS