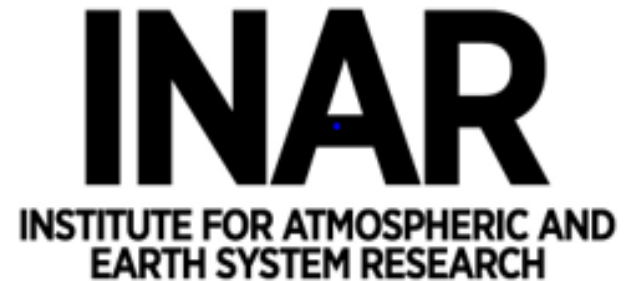
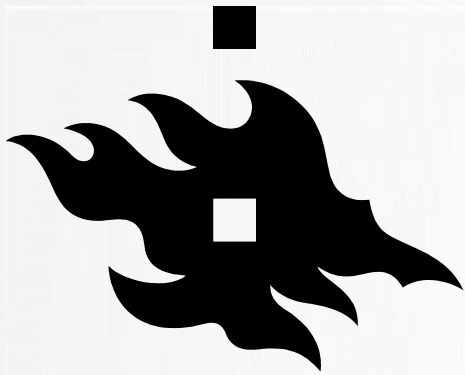


**The Pan-Eurasian Experiment (PEEX)
e-Conference
(<https://www.atm.helsinki.fi/peex>)
a series of 4 separate seminars in April 2026**

**You are welcome to attend all events !
on 1, 9, 14, and 15 April 2026**



The Pan-Eurasian Experiment (PEEX) e-Conference

Focus

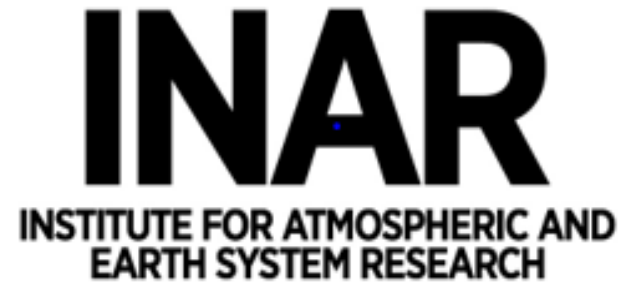
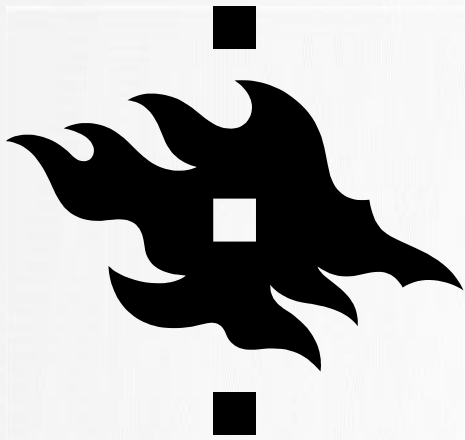
1 April – New PEEX network members

9 April – Research updates by current PEEX network members

14 April – Presentations on:

- World Academy of Sciences and UNEP
- Showcases of large-scale EU projects and their results
- PEEX collaboration – Way forward

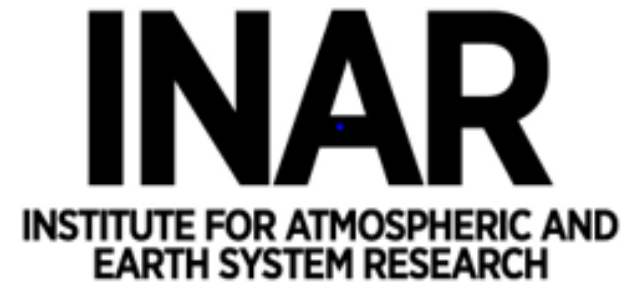
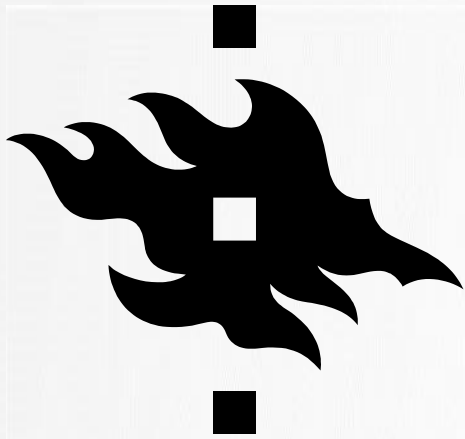
15 April – Plenary talk by Academician Markku Kulmala



The Pan-Eurasian Experiment (PEEX) e-Conference

Aims of online seminars

- To share results of research and educational activities at PEEX partner universities/organizations
- To discuss future collaboration in the context of climate change, air quality, environmental research, and research infrastructures
- To discuss the PEEX COST Action proposal
- ACP PEEX special issue: <https://peexhq.home.blog/2026/01/07/peex-special-issue-in-acp>



The Pan-Eurasian Experiment (PEEX) e-Conference

Zoom link

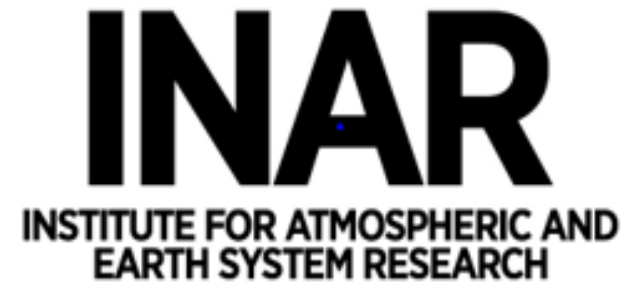
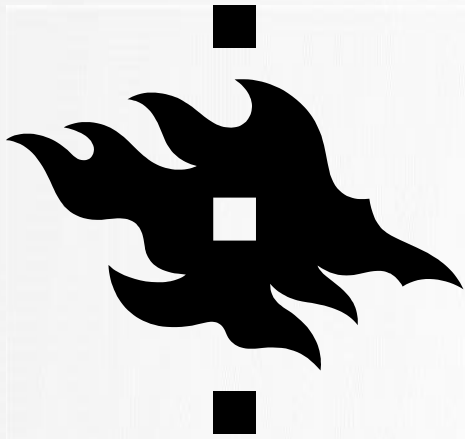
- for 1, 9, and 14 April:
<https://helsinki.zoom.us/j/69870865201?pwd=ThdKAadX14AhC2lJFZGZj9l1uscblk.1>
- for 15 April: Plenary talk by Acad. Markku Kulmala (link will be send separately, closer to the event)

Practical instructions:

Each presentation: maximum 15 minutes including question(s)

Pls upload your presentation (converted to pdf-format file) in advance to

https://drive.google.com/drive/folders/1JfF7g93ngKydcqTmjM6_M_NH7KiFISFs



1 April 2026 (11:00–15:30 EET / 10:00–14:30 CET)

“New PEEEX network partners”

Schedule (all in EET/ Helsinki time):

11:00 –11:15 Welcome and short introduction to PEEEX

11:15–12:30 – Session I: Introduction of newly joined partners/organizations

12:30–12:45 – Coffee/tea break (15 minutes)

12:45–14:15 – Session II: Introduction of newly joined partners/organizations

14:15–14:30 – Coffee/tea break (15 minutes)

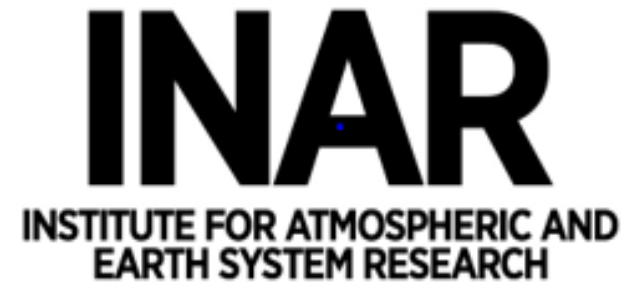
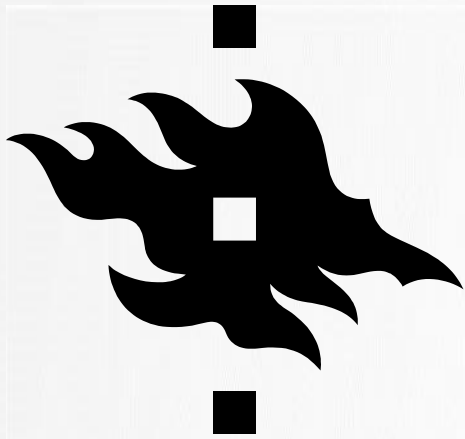
14:30–15:00 – Session III: Introduction of newly joined partners/organizations

(continued)

15:00–15:30 – Wrap-up, discussion & next steps

Detailed agenda:

<https://docs.google.com/document/d/1d8Y6W5gimbDeqcUWKGRc88gpWGbOGajW/e/dit>



9 April 2026 (10:50–17:00 EET / 09:50–16:00 CET)

“Research updates from PEEEX network current partners”

Schedule: (all in EET/ Helsinki time):

10:50–11:00 – Welcome and short introduction to PEEEX

11:00–12:30 – Session I: Invited talks from PEEEX partners/organizations

12:30–12:45 – Coffee/tea break (15 minutes)

12:45–14:15 – Session II: Invited talks from PEEEX partners/organizations

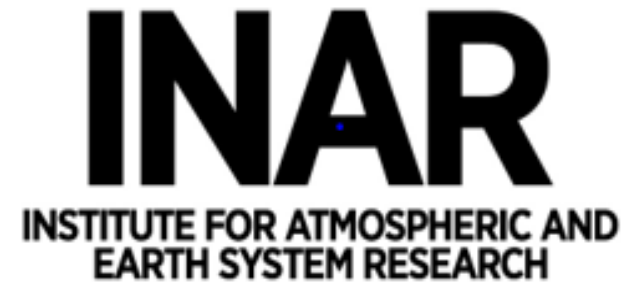
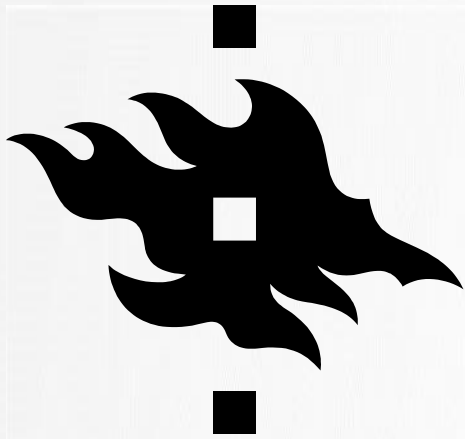
14:15–14:30 – Coffee/tea break (15 minutes)

14:30–16:30 – Session III: Invited talks from PEEEX partners/organizations

16:30–17:00 – Wrap-up, discussion & next steps

Detailed agenda:

<https://docs.google.com/document/d/1hUZce4R3eGUJHofFB0XuvpibVinhBeVL/edit>



14 April 2026 (10:30–14:00 EET / 09:30–14:00 CET)

“Research and education activities at PEEEX & collaboration framework”

Schedule: (all in EET/ Helsinki time):

10:30 – Session I: Welcome & opening words, PEEEX program overview

10:50 – Session II-A: Invited presentations (**TWAS, UNEP**)

11:20 – Coffee/tea break (5 minutes)

11:25 – Session II-A: Invited presentations (**RI-URBANS, CRiceS, FOCI**)

12:10 – Lunch (for onsite participants)

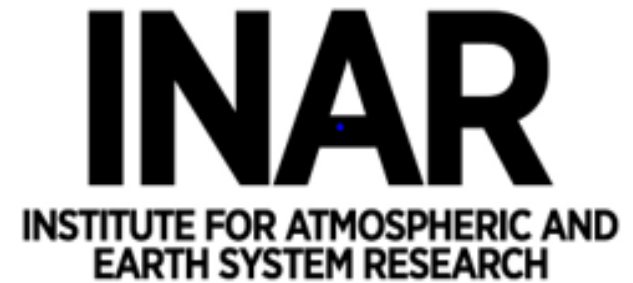
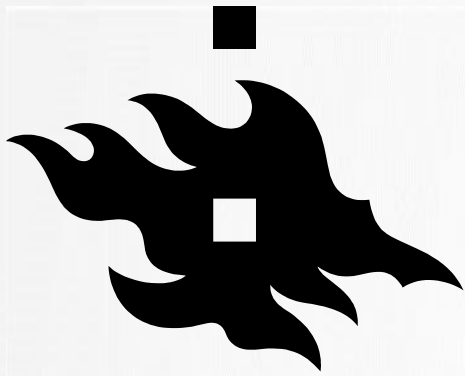
13:00 – Session II-B: Invited presentations (**China collaboration, Erasmus+, educational projects, PEEEX COST Action proposal**)

13:45 – Wrap-up, discussion & next steps

14:00 – End of the seminar

Detailed agenda:

<https://docs.google.com/document/d/1qif9HwArzoLDprSGu2U2nwfCCDag3wMz/edit>



15 April 2026 (09:15–10:10 EET/ 08:15-09:10 CET)
“Plenary talk by Academician Markku Kulmala”

Academician Kulmala will discuss global environmental grand challenges (EGCs) and the need for comprehensive open data, proper metadata, and open science to address these challenges.

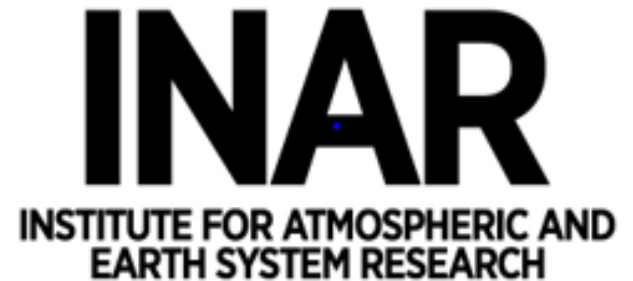
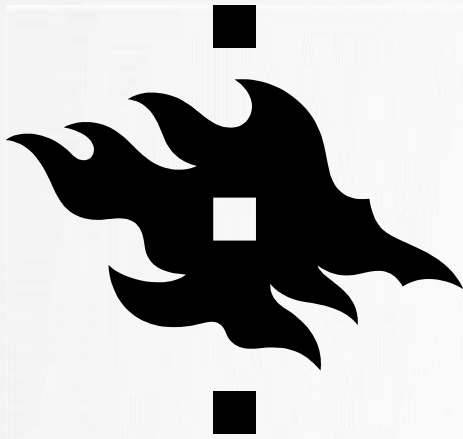
Zoom link:

<https://helsinki.zoom.us/j/66491691593?pwd=OsUOArrEo8XltvosOEUIbAjQUkebag.1>

Meeting ID: 664 9169 1593

Passcode: sofia2026



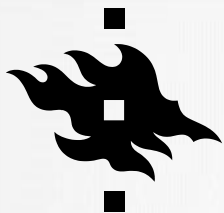


PAN-EURASIAN EXPERIMENT (PEEX) PROGRAM OVERVIEW

For contact: Dr. Hanna K. Lappalainen
hanna.k.lappalainen@helsinki.fi

PEEX / GlobalSMEAR Secretary General
Institute for Atmospheric and Earth System Research (INAR)
University of Helsinki, FINLAND

PEEX Programme overview, Hanna Lappalainen
Session I ((11:00–15:30 EET / 10:00–14:30 CET)): Welcome new Partners
01 April 2026



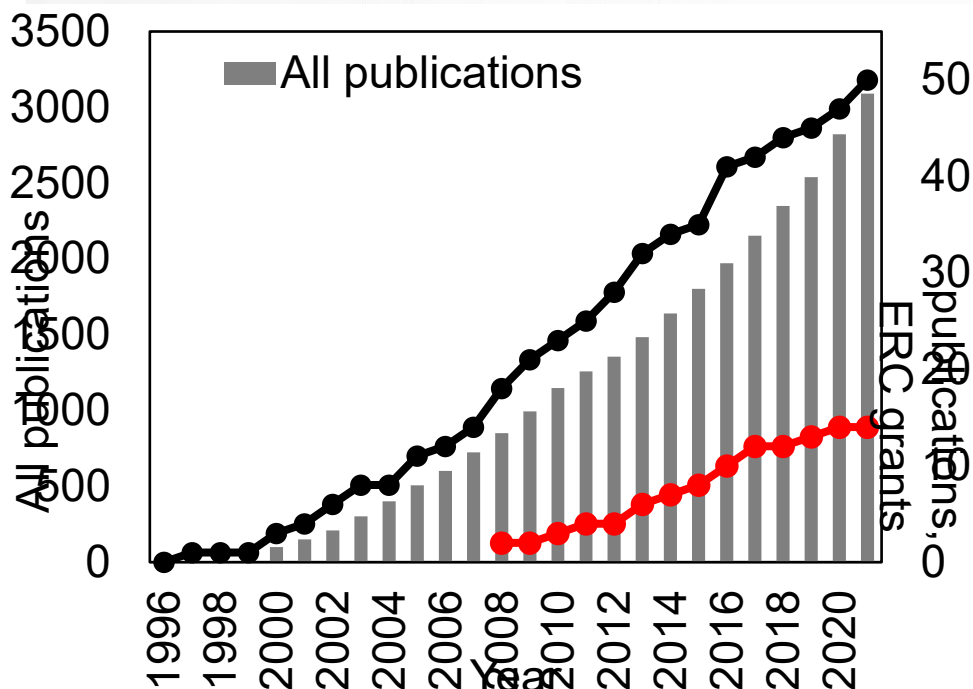
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Academician
Markku Kulmala
Director of INAR Institute,
University of Helsinki, FI
Citation over 40000
H-index >100
ISI No. 1 Citation in Geoscience (2011-2018)

INAR - WORLD CLASS RESEARCH in numbers

Number of published peer reviewed papers & European Research Council (ERC) funding



	1990	2018	2026	2035
ISI Highly cited	0	8	15	25
Disciplines covered	2	4+9	19	30
Professors educated	1	40	70	120

Ten University of Helsinki researchers rank in top 1% for citations in their respective fields

The Highly Cited Researchers 2024 list highlights scholars whose publications have received the most citations from other researchers over the past decade.

atmospheric sciences
[Markku Kulmala](#)
[Tuukka Petäjä](#)
[Douglas Worsnop](#) (primary affiliation: Aerodyne Research)

19.11.2024
University of Helsinki News

Global grand challenges



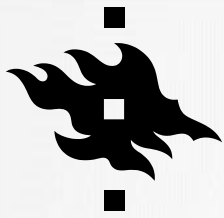
KEY QUESTION : Why understanding of Atmosphere – Earth Surface – Biosphere is important for Climate Change ?

- New feedback mechanism / interactions / processes
- More time to act: Mitigate & Adapt



Tools for understanding of Atmosphere – Earth Surface – Biosphere interaction, feedbacks

- **Pan-Eurasian Experiment (PEEX) Program:** for understanding the Atmosphere – Earth Surface – Biosphere in the Arctic – boreal context / Northern Eurasia / Silk Road Region (2012 ->) www.atm.helsinki.fi/peex
- **GlobalSMEAR:** (Stations Measuring Earth Surface Atmosphere Relations) Initiative for Global Earth Observatory for filling the observational gap of the atmospheric – ecosystem in situ data (2015 - >) www.atm.helsinki.fi/globalsmear
- **Climate University** free online courses for universities and everyone who wants to make the sustainability transition in the society real (2018 - >) climateuniversity.fi



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Pan-Eurasian Experiment

PEEX

STATION FOR MEASURING
EARTH SURFACE -
ATMOSPHERE RELATIONS



GLOBAL
CHALLENGES
NEED GLOBAL
MEASURES

PEEX Program HQ / GlobalSMEAR Initiative at UH



Prof. **Tuukka Petäjä**,
Vice-Director INAR,
University of Helsinki, FI



Academician
Markku Kulmala
Director of INAR Institute,
University of Helsinki, FI

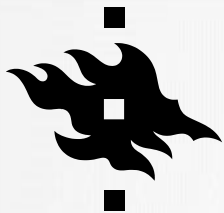


Dr. **Hanna Lappalainen**
PEEX /GlobalSMEAR
Secretary general
INAR
University of Helsinki, FI



Dr. **Alexander Mahura**
PEEX-Modelling-Platform
INAR
University of Helsinki, FI

Administrative matters Mrs. **Alla Borisova**



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Proposal COST Action PEEX- EU-NEN-ReN “*Pan-Eurasian EXperiment – Europe – Near Europe Neighbourhood countries Earth System Research Network*”

17 countries; 35 partners incl. 9 from
Ukraine; 4 yr; 600 Keu

Coordinated by Univ Helsinki

Based on Science Plans of
PEEX (<https://www.atm.helsinki.fi/peex>)
ACCC (<https://www.acccflagship.fi>)

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System Research

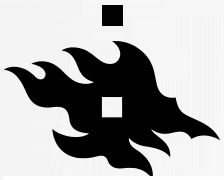


Hanna K. Lappalainen
Markku Kulmala
Sergej Zilitinkevich
Editors

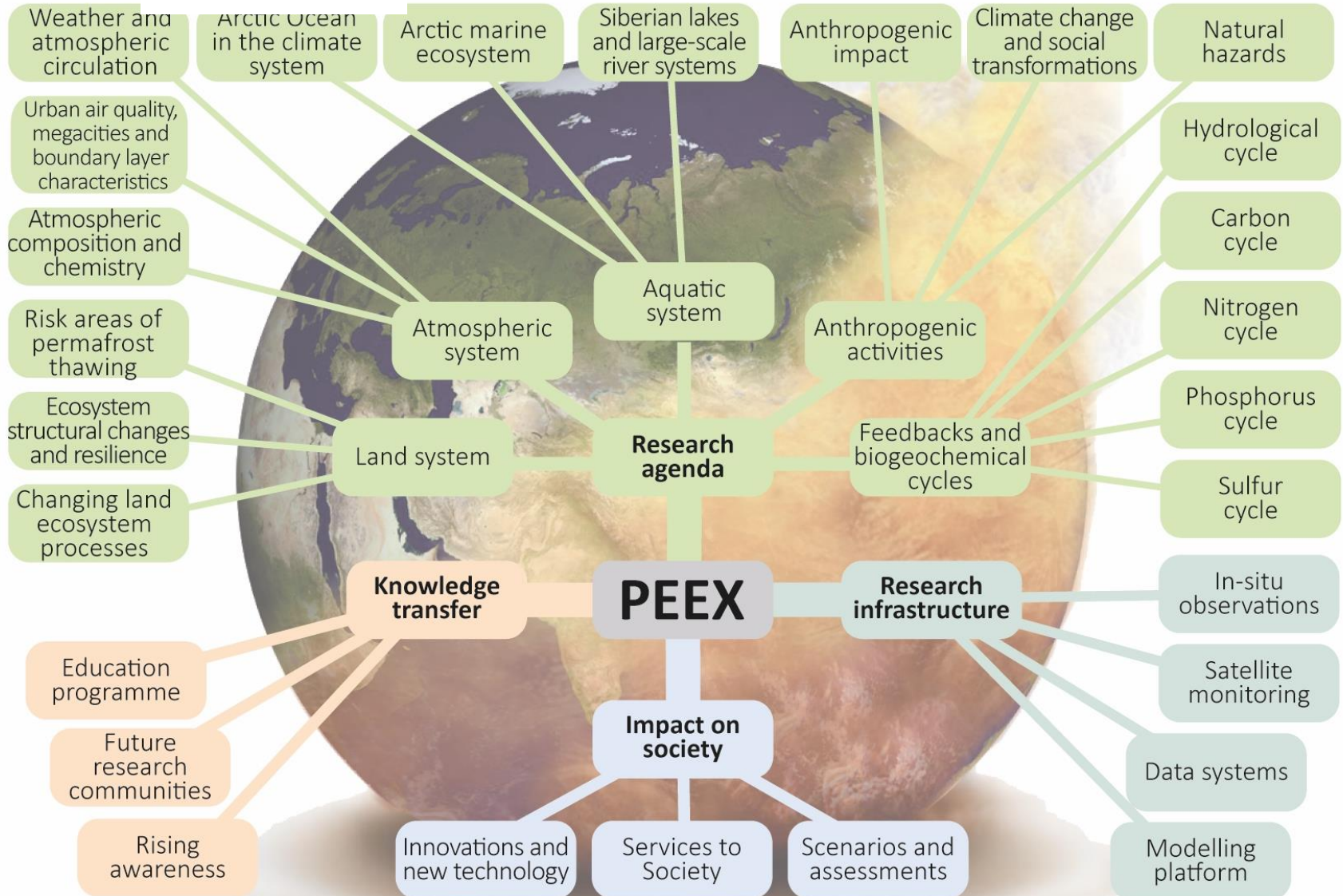


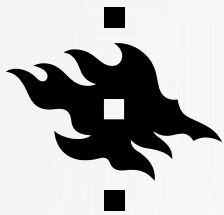
**PAN-EURASIAN
EXPERIMENT
PEEX
SCIENCE PLAN**

[https://www.atm.helsinki.fi/peex/images/
PEEX_Science_Plan.pdf](https://www.atm.helsinki.fi/peex/images/PEEX_Science_Plan.pdf)



PEEX PROGRAM STRUCTURE





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PEEX PROGRAM WEBSITE

<https://www.atm.helsinki.fi/peex>



Latest news

Infra Education NewsLetter & Materials Contact us



PEEX collaboration: Research training visit from TSNUK to INAR

From 19 March 2026 to 1 April 2026, Bachelor's students Daria Hrama & Maryna Rudas from the Taras Shevchenko National University of Kyiv (TSNUK, Kyiv, Ukraine) visited the Institute for Atmospheric and Earth System Research [\[Read more\]](#)



International Summer School Program on Climate Change and Related Risks

The International Summer School Program on Climate Change and Related Risks (ISSP on CC & RR) will be held at Fudan University's jiangwan campus during 6-24 July 2026, focusing on Climate Change, Cities and Anthropogenic [\[Read more\]](#)



ClimEd Partners Gather in Tarragona for Strategic Foresight and Sustainability Workshop

The ClimEd project is coming to an end this



Summer School 2026 - Formation and Growth of Atmospheric Aerosols

The Summer School 2026 on "Formation and Growth of Atmospheric Aerosols" will be held during 17-27 August 2026 at the Hyttialä (Finland) forest station. The researchers are the Institute



Arctic Boreal Hub #PEEX in 2025 Year Review

Arctic Boreal Hub # PEEX Year 2025 - In Review is available now:

Year In Review at UArctic: <https://www.uarctic.org/activities/thematic-networks-and-institutes/year-in-review/>

Year In Review PDF

News: <https://www.uarctic.org/news/2026/2/arctic-boreal-hub-year-in-review/>

More about UArctic Thematic Network Arctic Boreal Hub: <https://www.uarctic.org/activities/thematic-networks/arctic-boreal-hub/>

[\[Read more\]](#)



Summer School on First Steps in Biosphere-Atmosphere Modelling

Are you interested to learn how to create a biosphere-atmosphere model? Tired of running existing models without a detailed understanding what is going on inside the code? If yes, you should consider participating in 2-weeks Summer School on "First Steps in Biosphere-Atmosphere Modelling" in the city of Lahti, Finland, 10-21 August 2026.



PEEX-e-Conference in April 2026

The PEEX HeadQuarters in Helsinki, Finland is organizing the Pan-Eurasian Experiment programme e-conference in April 2026. It will consist of 3 online seminars/sessions which will take place on 1st, 9th and 14th April 2026. The PEEX e-conference will include a series of invited keynote talks; presentations about research and educational projects/ activities from [\[Read more\]](#)



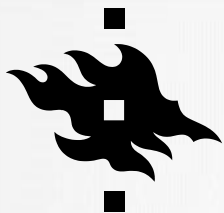
PEEX signed new MoU with NERSC

The new Memorandum of Understanding was signed with the Nansen Environmental and Remote Sensing Centre, Norway. The MoU is a bilateral document to encourage the development of the PEEX program in Pan-Eurasia and China regions.



PEEX signed new MoU with Organic Agriculture FIBL

The new Memorandum of Understanding was signed with the Research Institute of Organic Agriculture FIBL, Switzerland. The MoU is a bilateral document to encourage the development of the PEEX program in Pan-Eurasia and China regions.



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[https://www.atm.helsinki.fi/peex/index.php/
portfolio-items/peex-newsletter-blog/](https://www.atm.helsinki.fi/peex/index.php/portfolio-items/peex-newsletter-blog/)

- 4 issues per year
- a forum to advertise your work, activities, etc.
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alla.borisova@helsinki.fi
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cd44df10dd7d5&id=34b12ce65d](https://helsinki.us11.list-manage.com/subscribe?u=9193f2d7d1d2cd44df10dd7d5&id=34b12ce65d)

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PEEX Newsletters

PEEX Arctic-Boreal Hub Newsletter Issue #34 - December 2025

Arctic Boreal HUB
UArctic
futurøarth

PEEX
NEWSLETTER

PEEX HQ
wishes you Happy Holidays &
HAPPY NEW YEAR
2026

photo by J. J. Aalto

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[Upcoming conferences](#)

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PEEX News

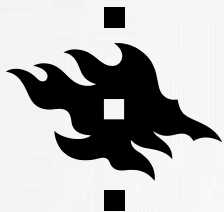

Sergei Zilitinkevich
1948-2025

CALL FOR NOMINATIONS the 5th
Sergej Zilitinkevich Memorial Award
The Call was opened on 1 December 2025.
Nomination letters with other accomplishing
documents should be sent to by 28th
February 2026. [Read more.](#)


ACCC
CLEAN AIR SAFETY

ACCC event at COP30
Atmosphere and Climate Competence Center
(ACCC) organized the session "How can we
accelerate worldwide carbon capture and
storage efforts?" in frame of COP30 program
with focus on "World as Data - Global Climate
Observations and Corporate Footprints and
Handprints". [Read more.](#)


UArctic Thematic Networks Meeting
and UArctic Institute Leadership
team meeting
The University of Arctic Thematic Networks
meeting was held on October 14-15 at
University of Akureyrir Iceland. PEEX / Arctic -
boreal Hub thematic network presented the
AASCO event in Monaco organized in
February. [Read more.](#)



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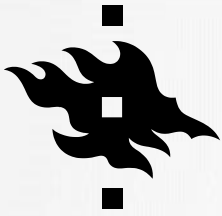


Pan-Eurasian Experiment

PEEX

NEW PARTNERS PEEX MoUs signing

- **Aims:** strengthening the PEEX activities in the Arctic-boreal context and with China & expanding and renewing network with the Near Europe Neighborhood and Newly Independent States countries
- PEEX – collaboration frozen since **Spring 2022** with **41** Universities/ Res.Organisations from RU & BY
- PEEX – **currently** active **38** with signed MoUs
- **Since Apr 2024:** signed **12** new PPEX MoUs:
 - ✓ UHMS (11 Apr 2024) - Ukrainian Meteorological and Hydrological Society, Ukraine
 - ✓ UoB (5 Apr 2024) - University of Belgrad, Serbia
 - ✓ EULS (19 Aug 2024) - Estonian University of Life Sciences, Estonia
 - ✓ FDU (12 Jun 2024) - Fudan University, China
 - ✓ OPNU (18 Jun 2024) - Odesa Polytechnic National University, Ukraine
 - ✓ DUT (19 Aug 2024) - Dalian University of Technology, China
 - ✓ KazNU (19 Aug 2024) - Al-Faradi Kazakh National University, Kazakhstan
 - ✓ AUI (11 Oct 2024) - Agricultural University of Iceland, Iceland
 - ✓ ITU (4 Dec 2024) - Istanbul Technical University, Turkey
 - ✓ ONU (21 Mar 2025) - Odesa I.I.Melnikov National University, Ukraine
 - ✓ DBAR (16 May 2025) - Digital Belt and Road Program, Chinese Academy of Sciences
 - ✓ Iol KAS (26 May 2025) - Institute of Ionosphere, Kazakhstan Academy of Sciences
 - ✓ 2025 - O.M. Beketov National University of Urban Economy, Ukraine
 - ✓ 2026 - Jinan University, China
 - ✓ 2026 - Nansen Environmental and Remote Sensing Centre, Norway
 - ✓ 2026 - Research Institute of Organic Agriculture FiBL, Switzerland
 - ✓ 2026 - Beijing Normal University, School of System Science, China



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Pan-Eurasian Experiment

PEEX

NEW PARTNERS PEEX MoU in progress

- **in progress/ discussing/ signing - 16 Universities/ Research institutions:**
 - ✓ Spanish National Research Council, Spain
 - ✓ University of Rovira i Virgili, Spain
 - ✓ University of Copenhagen, Denmark
 - ✓ Max-Planck Institute for BioGeoChemistry, Germany
 - ✓ Max-Planck Institute for Chemistry, Germany
 - ✓ ARIANET srl, Italy
 - ✓ University of Tartu, Estonia
 - ✓ Lviv Polytechnic National University, Ukraine
 - ✓ Odessa National Medical University, Ukraine
 - ✓ Aristotle Univ Thessaloniki, Greece
 - ✓ Brunel University London, UK
 - ✓ University of Hertfordshire, UK
 - ✓ Scott Polar Research Institute, UK
 - ✓ Charles University in Prague, Czech Republic
 - ✓ Sautbayev University, Kazakhstan
 - ✓ University of Jordan, Jordan



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PEEX RESEARCH



Atmospheric Chemistry and Physics

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Special issue

Articles / Special issues

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Pan-Eurasian Experiment (PEEX) – Part II

Editor(s): ACP co-editors | Coordinators: Dominick Spracklen and Paul Zieger | Co-organizers: Veli-Matti Kerminen, Martin Heimann, and Tuomas Laurila

[More information](#) [Overview paper](#)

Download citations of all papers

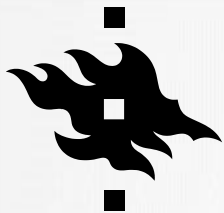
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Part II: https://acp.copernicus.org/articles/special_issue1103.html

Part I: https://acp.copernicus.org/articles/special_issue395.html

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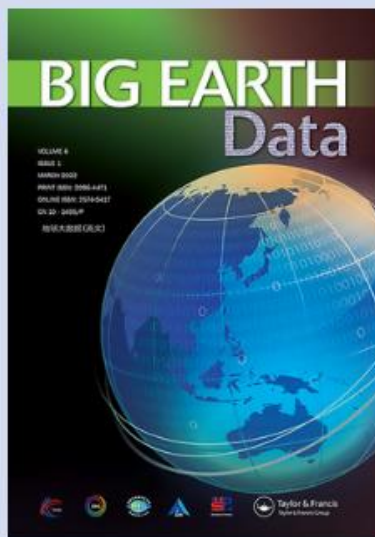
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PEEX RESEARCH

Submit a Manuscript to the Journal
Big Earth Data

For a Special Issue on
High-quality environmental information and analysis for the Arctic boreal
region and High Mountain Asia

Manuscript deadline
28 February 2023



Special Issue Editor(s)

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hanna.k.lappalainen@helsinki.fi

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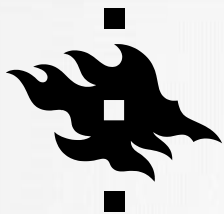
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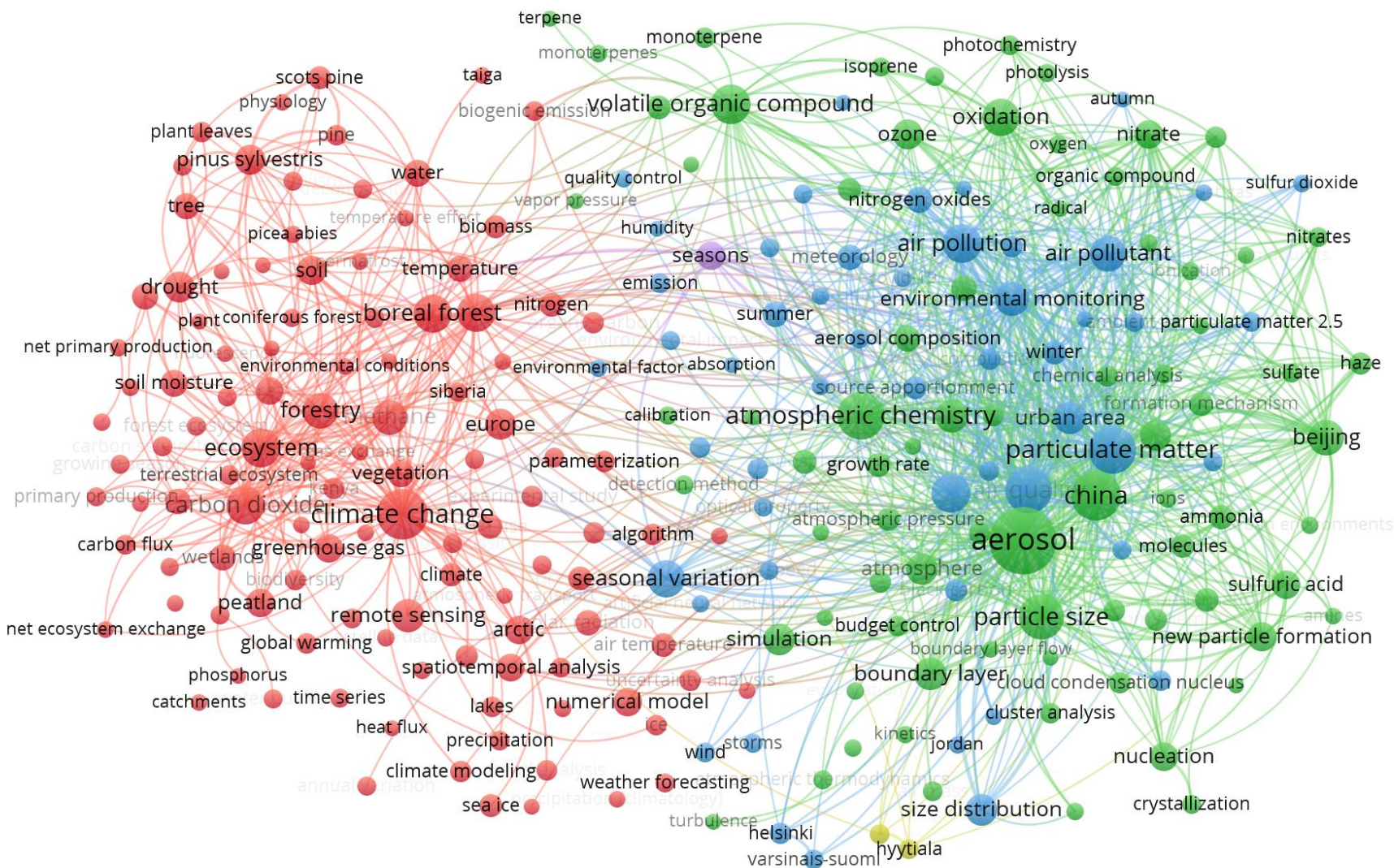
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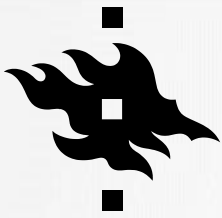
Institute for
Atmospheric and Earth
System Research



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EARTH SYSTEM RESEARCH

PEEX RESEARCH

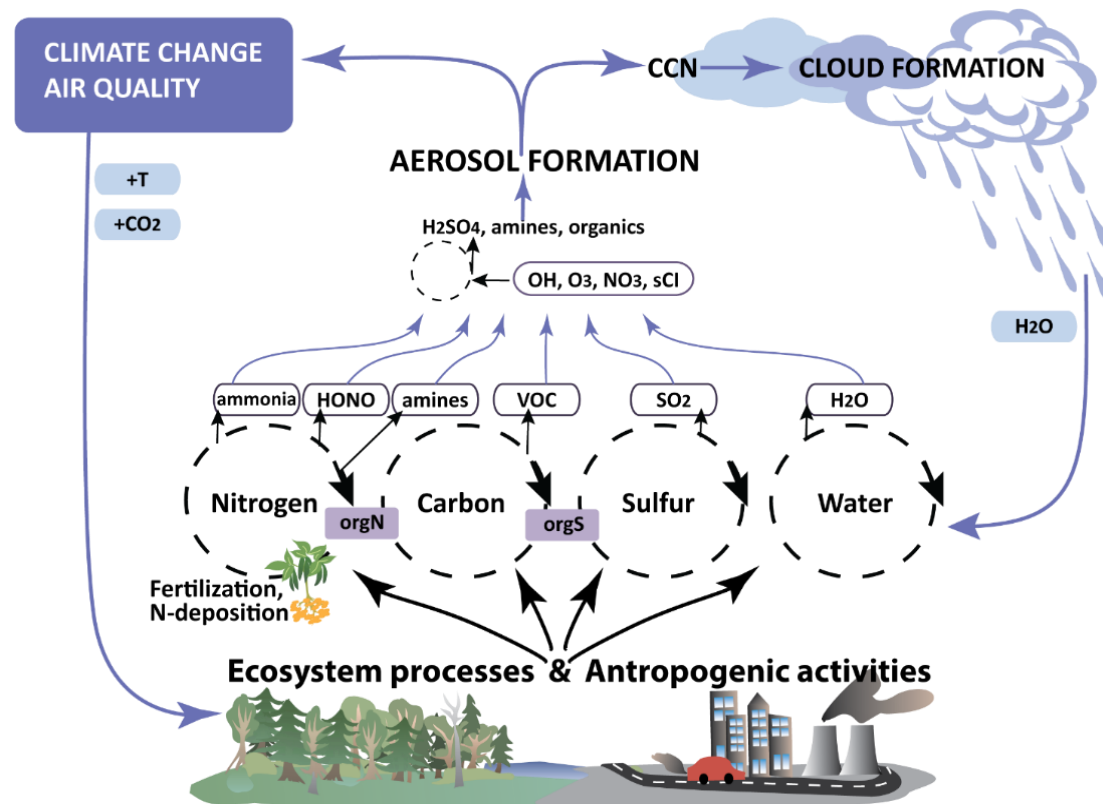


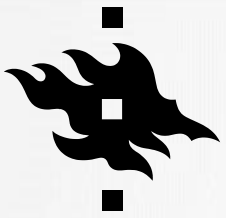


PEEX: TOWARDS SYSTEM UNDERSTANDING OF THE ARCTIC-BOREAL REGIONS

Research approach from process studies towards understanding & quantification of feedbacks

- system specific topics are basically related to **process understanding**
- individual process understanding enables to **quantification of biogeochemical cycles**
- via biogeochemical cycles the energy and matter flows linked to a wider system context enabling us to **analyze the feedback phenomena**
- feedbacks are essential components towards **system (climate) understanding**

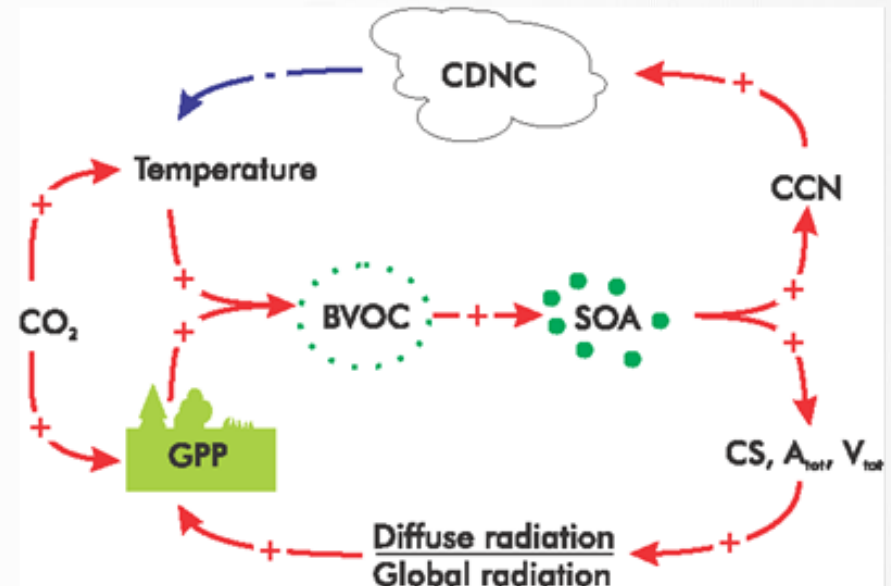




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FEEDBACK LOOP RELEVANT TO ARCTIC- BOREAL REGIONS: **COBACC** (**C**ontinental **B**iosphere-**A**erosol-**C**loud-**C**limate)

- two major overlapping feedback loops. The focal points of these two loops are ambient temperature and plant gross primary production (GPP).
- The loops are closely tied with aerosol-cloud interactions and with the atmospheric carbon sink, and both tend to act toward suppressing global warming



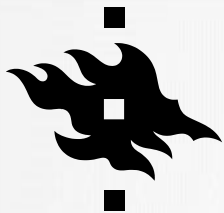
BVOC=biogenic volatile organic compounds
SOA=secondary organic aerosol
CS=the condensation sink
 A_{tot} =total aerosol surface area
 V_{tot} =total aerosol volume
CCN=cloud condensation nuclei
CDNC=cloud droplet number concentration
GPP=Gross Primary Productivity



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PEEX INVOLVEMENT IN PROPOSALS

- EU proposal "*Air Quality – Research, Innovation, policy Support and Equity*" (**AQ-RISE**), subm. in Sep 2025; 30 Partners, 15 countries, 4 yr budget (10 MEu); max score 15, on hold/ waiting list
- EU proposal "*Framework for Advancing integrated policy pathways for climate-neutral and resilient agriculture and forestry*" (**FAIRPATH**), coord. by National Meteorological Administration | MeteoRo, by Prof. Sorin Cheval, to be subm. Apr 2026
- EU proposal "*Climate Resilient Agri-Food Technology with AI*" (**CRAFT-AI**), coord. by Istanbul Technical University (ITU, Turkey), by Prof. Hüseyin Toros“, to be subm. Apr 2026
- EU proposal "*Enhancing Earth System Models: Addressing Key Challenges in Global and Regional Climate Prediction and Variability*" (**ESSENCE2**), coord. by Charles University in Prague (CU, Czech Republic), by Prof. Tomas Halenka, to be subm. Apr 2026
- TFK FI+UA proposal "*FI+UA Earth System Research Network*" (**PEEX-FUESReN**), to be subm. Apr 2026; 9 Partners, 2 countries, 2 yr budget (80 KEu)
- COST Action proposal "*Pan-Eurasian EXperiment – Europe – Near Europe Neighbourhood countries Earth System Research Network*" (**PEEX-EU-NEN-ReN**); to be subm. Oct 2026; 34 Universities/ Research organizations, 20 countries, 4 yr budget (600 KEu)
- Fast-Track-Call for Access for Emergencies and Ukrainian Researchers (2025-2028) – <https://www.iriscc.eu/article/fast-track-call-for-access> - AMITRA project funded (UHMI& TSNUK from UA + UHE from FI)



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PEEX INVOLVEMENT IN RESEARCH & EDUCATIONAL PROJECTS

New projects

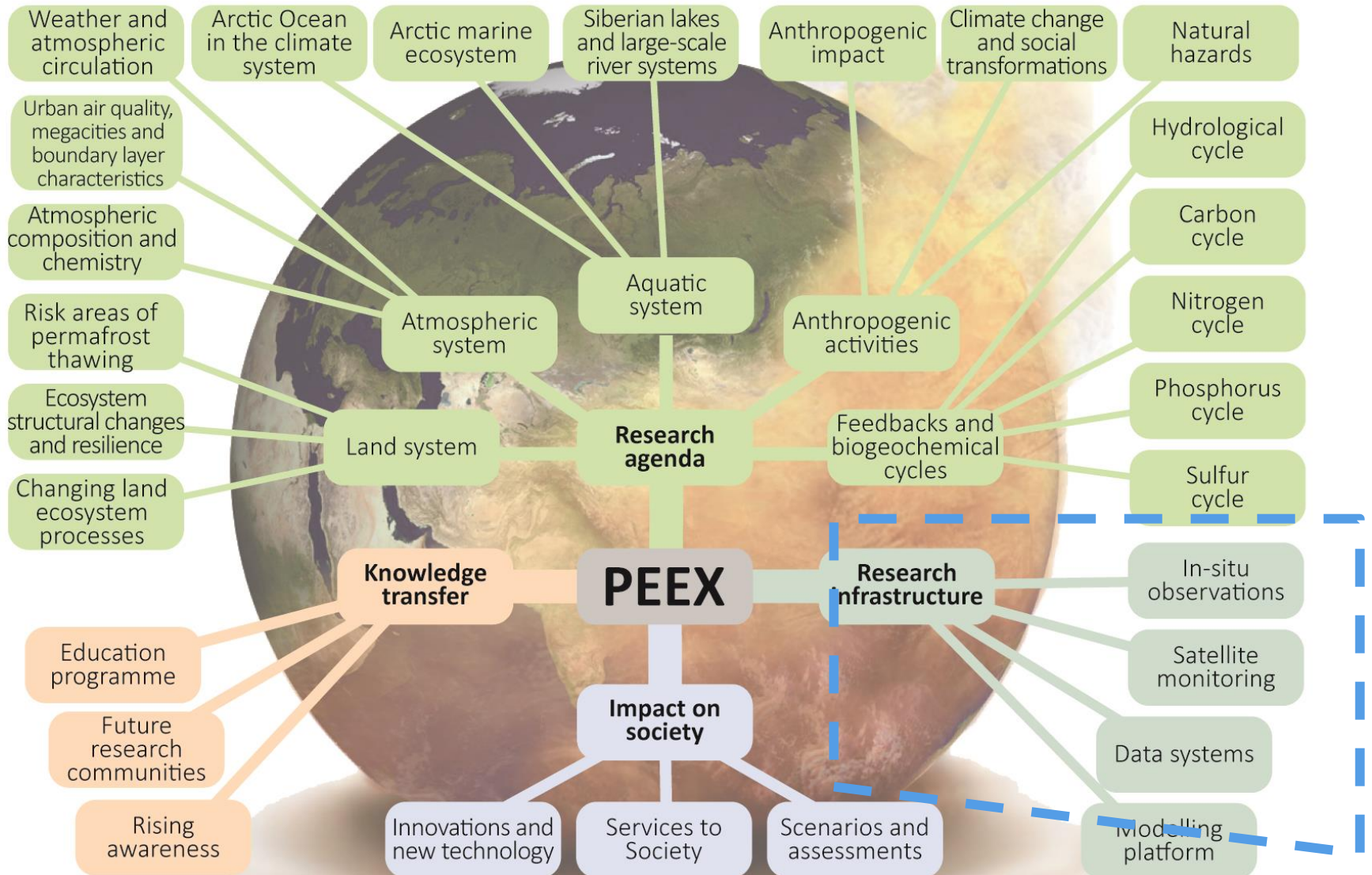
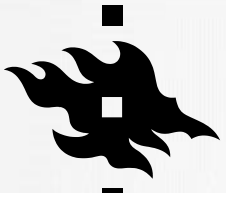
- INTERREG "Next Generation Workforce – Empowering Young People for Improved Employment (**REOPEN**)"; started - Sep 2025; 6 Partners, 3 countries, 2.5 yr (2025-2028) budget (1.2 MEu)
- Erasmus+ "EMPOwer ANDES societies to improve adaptation to climate change through cocreation of climate services capacities" (**EMPOANDES**); started – Jan 2026; 16 Partners, 7 countries, 3 yr (2025-2028) budget (687 KEu)

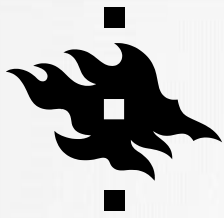
Recently completed

- Horizon-2020 RI-URBANS (<https://riurbans.eu>) & CRiceS (<https://www.crices-h2020.eu>)

Ongoing projects

- Erasmus+ CLUVEX (<https://www.atm.helsinki.fi/cluvex>) & ClimEd (<http://climed.network>)
- Horizon-Europe FOCI (<https://www.project-foci.eu>) & CERTAINTY (<https://certainty-aci.eu>)
- AASCO – Arctic Science Collaboration (<https://www.atm.helsinki.fi/peex/index.php/aasco>)
- Enviro-PEEX(Next) on ECMWF (https://www.atm.helsinki.fi/peex/index.php/enviro-peex_next)
- PEEX-MP-at-CSC HPCs projects (www.atm.helsinki.fi/peex/index.php/mp-at-csc)





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Pan-Eurasian Experiment

PEEX



Vision: Global observation network

THERE IS A NEED FOR ADVANCED IN SITU STATIONS IN

**M. Kulmala: Nature Comment,
Nature 553, 21–23 4 Jan 2018)**

The answer is a global Earth observatory — 1,000 or more well-equipped ground stations around the world that track environments and key ecosystems fully and continuously

- Researchers could find new mechanisms and feedback loops in this coherent data set
- Policymakers could test policies and their impacts
- Companies could develop environmental services



An enclosure for measuring gas exchange between plants and the atmosphere at a station in Finland.

Build a global Earth observatory

Markku Kulmala calls for continuous, comprehensive monitoring of interactions between the planet's surface and atmosphere.

SMEAR II-station in Hyytiälä, FINLAND

GlobalSMEAR Flagship station

Boreal forest country side



Flagship station SMEARII
N 61° 50.845', E 24° 17.686', altitude 180 m a.s.l.

The SMEAR II (Station for Measuring Ecosystem – Atmosphere Relations) in Hyytiälä, Finland, represents the most advanced station of the SMEAR concept. SMEAR II station is carrying out measurements 24/7 on 1200 parameters on different ecosystems: boreal forest, wetland and lakes.

SMEAR II is contributing to several global Earth Observation systems and networks such as WMO GAW, GEO-GEOS, FluxNet, AERONET and SolRad-Net, and to the European Research Infrastructures such as ICOS, ACTRIS, AnaEE and eLTER



Instrument cottage



Instruments on mast and towers to measure at different heights

Eddy Covariance systems



Aerosols



Shoot-level flux chamber



Lake raft housing instruments



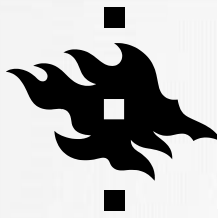
Biosphere

Pedosphere

Hydrosphere

Atmosphere

* WMO GAW World Meteorological Organization - The Global Atmosphere Watch, The Intergovernmental Group on Earth Observations (GEO) - a Global Earth Observation System of Systems (GEOSS), ICOS (Integrated Carbon Observation System), ACTRIS (Aerosols, Clouds, and Trace gases Research Infrastructure), AnaEE (Infrastructure for Analysis and Experimentation on Ecosystems), eLTER (Integrated European Long-term Ecosystem)





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STATIONS MEASURING EARTH SURFACE- ATMOSPHERE RELATIONS (SMEAR)

Research infrastructure -
proof of concept for meeting the UN SDGs

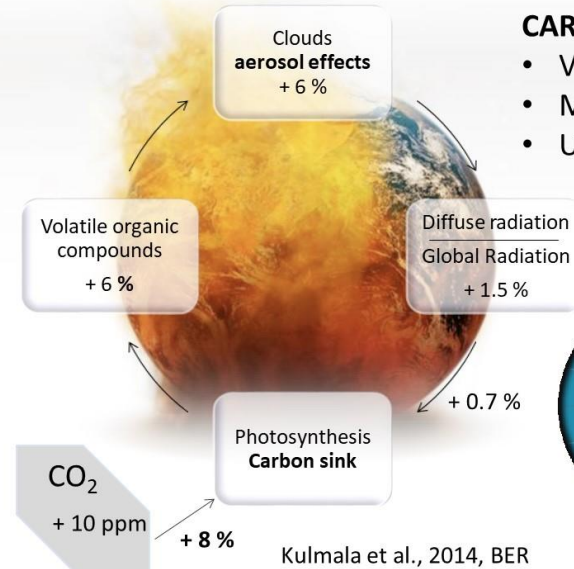
BIG EARTH DATA
2021, VOL. 5, NO. 3, 277-305
<https://doi.org/10.1080/20964471.2021.1936943>

Atmospheric and ecosystem big data providing key contributions in reaching United Nations' Sustainable Development Goals

Markku Kulmala ^{a,b,c,d,e,f}, Anna Lintunen^{a,g}, Ilona Ylivinkka^a, Janne Mikkala^a, Rosa Rantanen^a, Joni Kujansuu^{a,b,c,f}, Tuukka Petäjä ^{a,b,c,e}, and Hanna K. Lappalainen^{a,e,h}



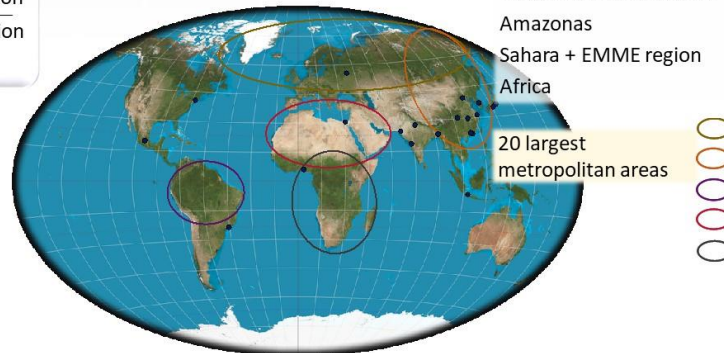
THE POTENTIAL OF SMEAR CONCEPT: GLOBAL COMPREHENSIVE FEEDBACK ANALYSIS

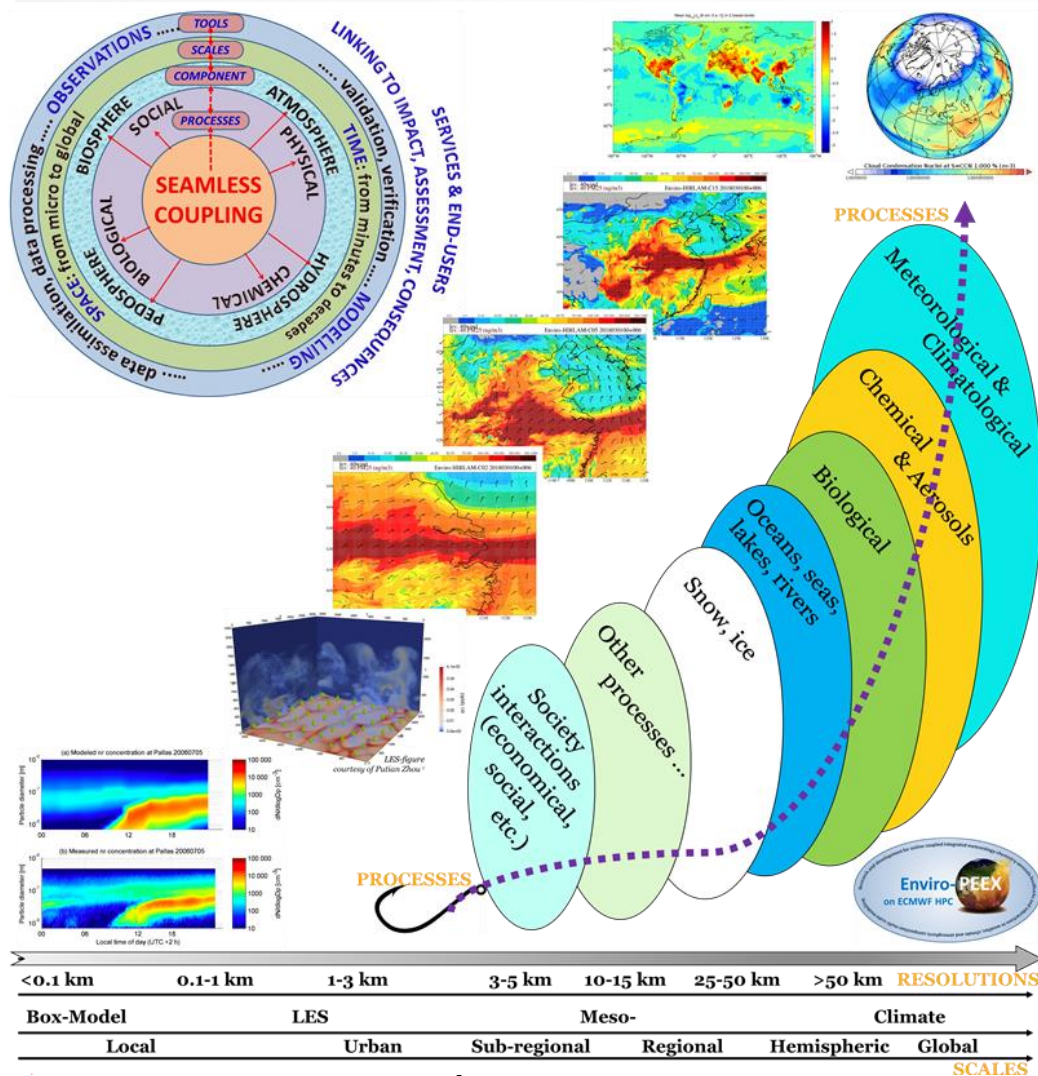


CARBON SINK PLUS

- VOCs, Aerosols, clouds, precipitation
- Max 1.8 x carbon sink (Hyytiälä / SMEAR II results)
- Uncertainties

=> observations / models





“PEEX-MP research and development for seamless/online integrated meteorology-chemistry-aerosols feedbacks & interactions in weather, climate & atmospheric composition multi-scale modelling”

(2018 2027)

https://www.atm.helsinki.fi/peex/index.php/enviro-peex_next/

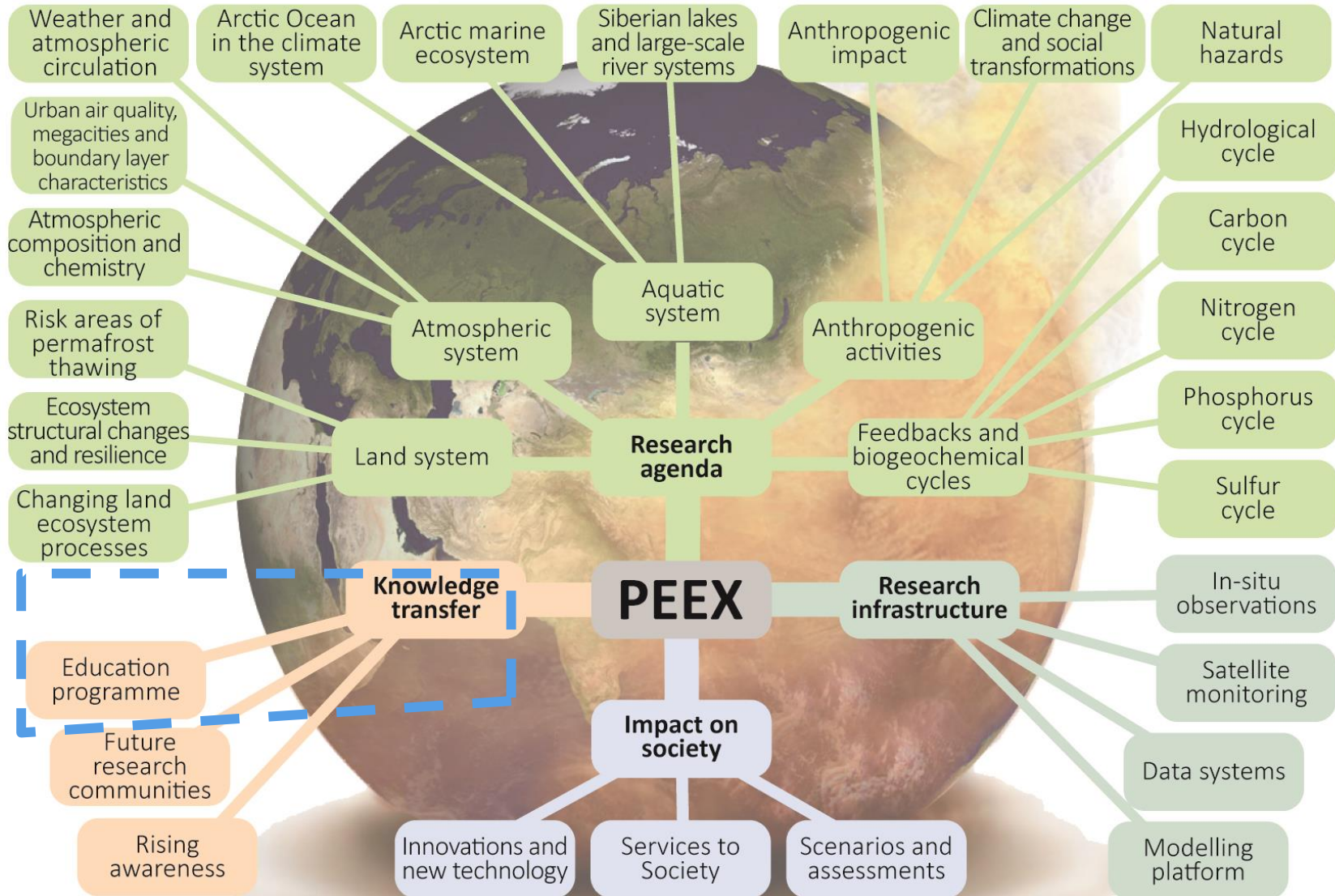
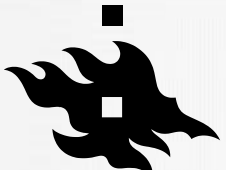
https://www.atm.helsinki.fi/peex/index.php/enviro-peex_plus/

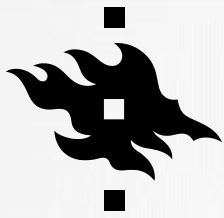
<https://www.atm.helsinki.fi/peex/index.php/peex-mp-europa3/>

<https://www.atm.helsinki.fi/peex/index.php/mp-at-csc>

Objectives:

- to analyze importance of meteorology-chemistry-aerosols interactions & feedbacks;
- to provide a way for development of efficient techniques for online coupling of NWP and ACT via process-oriented parameterizations and feedback algorithms.





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Pan-Eurasian Experiment

PEEX

EDUCATION

EU Erasmus+ Programme

Virtual Exchanges projects in 2023-2027

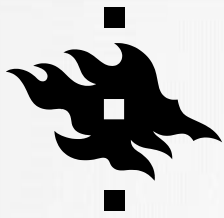
CLimate University for **V**irtual **EX**changes
– **CLUVEX** –
EU Programme Erasmus+

Funded by the European Union

Una Europa - **V**irtual **EX**changes for Sustainability
– **UnaVEx** –
EU Programme Erasmus+

Funded by the European Union

- to engage students with climate competences and green agenda together with interdisciplinary, green and soft skills
- to educate 500 students in 1 Virtual Exchange (VE) Week (2x5 VE Weeks in total)
- to educate altogether 5000 students as Climate Messengers in 3 years period
- These projects are coordinated by INAR, University of Helsinki
- For contact: Dr. Hanna K. Lappalainen (hanna.k.lappalainen@helsinki.fi)



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Pan-Eurasian
PEE



EDUCATION

EU Erasmus+ Programme Virtual Exchanges projects in 2023-2027

The last VE(5) Week in May
2026

https://www.atm.helsinki.fi/cluvex/wp-content/uploads/2026/03/Announcement_Spring_2026_5th_VEW_Week-for-students.pdf

HELSINGIN YLIOPISTO
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ANNOUNCEMENT: VIRTUAL EXCHANGE WEEK (VE Week) FOR STUDENTS

CLUVEX VIRTUAL EXCHANGE (1 ECTS) 20—24 April 2026

Climate University for Virtual Exchanges (CLUVEX;) is an international multidisciplinary online course. CLUVEX introduces and discusses the latest scientific knowledge on climate change from **multidisciplinary perspectives**: natural sciences, social sciences and the arts.



The virtual exchange (VE) is a great opportunity to experiment interacting in an international environment - especially if you have considered applying for a **traditional student exchange**. Participating in the VE Week does not require an advanced knowledge base in natural sciences. More important is to be interested in climate change-related issues and workshoping in an international team. **The VE Week is open to students of all fields coming from Europe and Neighbourhood East countries.**

During the virtual exchange, you will work in small international groups of like-minded students (up to 10 students + 1 moderator). A central part of the virtual exchange is a *Climate Horizon* exercise, framed by interdisciplinary and intercultural discussions on climate change. You will work online on the exercise individually and in your groups. CLUVEX welcomes students from learning institutions in the **Europe and Neighbourhood East countries.**

WHEN: 20—24 April 2026,
from 14:00 to 17:00 (EET, Helsinki time)
PLACE: Online in Zoom

COMPLETION METHOD: online participation on each day (3h per day) and a final report.

AWARD: 1 ECTS credit issued by the University of Helsinki & Climate Messenger Certificate issued by the CLUVEX project.

Register here:
<https://elomake.helsinki.fi/lomakkeet/139461/lomake.html>

REGISTRATION DEADLINE: 10 April 2026

VE WEEK: course code ATM398 at the University of Helsinki

WHO CAN APPLY: BSc, MSc, PhD, PostDoc students

MAX CAPACITY: up to 500 students

LANGUAGE: English

COST: no fee

MORE INFORMATION:

<https://www.atm.helsinki.fi/cluvex>

CONTACT INFORMATION:

University of Helsinki (UH), Finland:

alexander_mahura@helsinki.fi

julia.karhumaa@helsinki.fi

University of Copenhagen (UCPH), Denmark:

maher.sahyoun@nbi.ku.dk

Odessa National University (ONU), Ukraine:

valeriya.ovcharuk@gmail.com

Taras Shevchenko National University of Kyiv

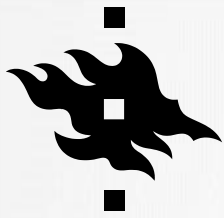
(TSNUK), Ukraine:

olga.s.meteo@gmail.com

Yerevan State University (YSU), Armenia:

a.aproyan@atysu.am





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Pan-Eurasian Experiment
PEEX

EDUCATION

Courses

2-5 ECTS each
35 ECTS in total
CC-BY-SA

www.climateuniversity.fi



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LEADERSHIP FOR
SUSTAINABLE CHANGE



SYSTEMSCHANGE.NOW



STATISTICAL TOOLS



CLIMATECOMMS.NOW

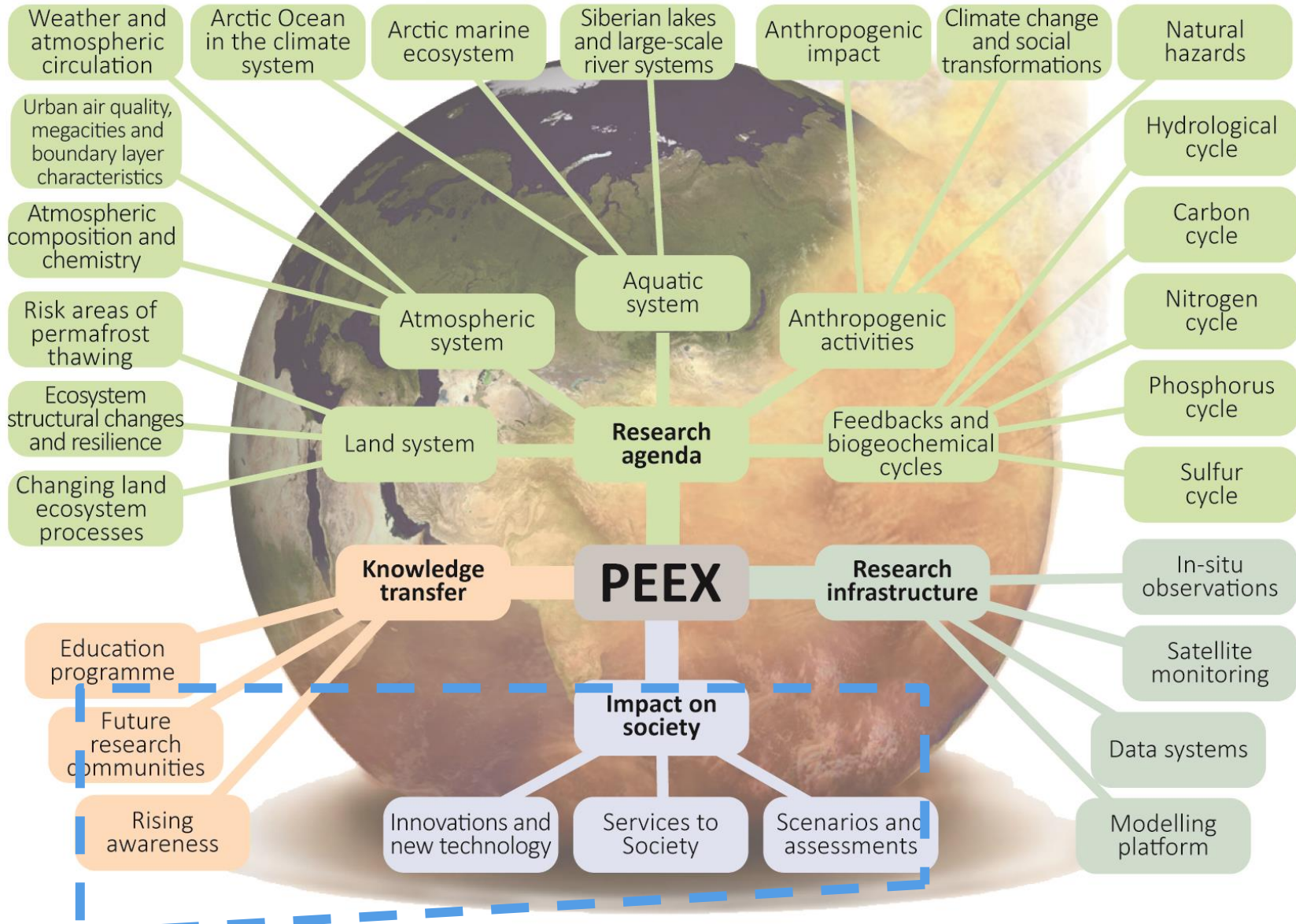
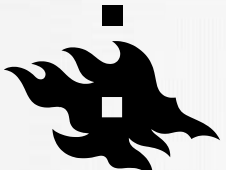


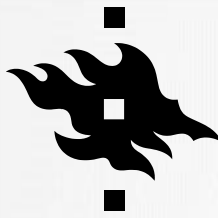
SOLUTIONS.NOW



LUKIOLAISEN ILMASTO.NYT

For contact: Dr. Laura Riuttanen (laura.riuttanen@helsinki.fi)





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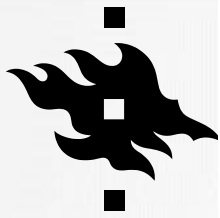
PEEX SCIENCE DIPLOMACY /IMPACT ON SOCIETY

The Arena for the Gap Analysis of Existing Arctic Science Co-Operations (AASCO)

White Paper

Summary of the AASCO event on February 4-5, 2025 in Monaco





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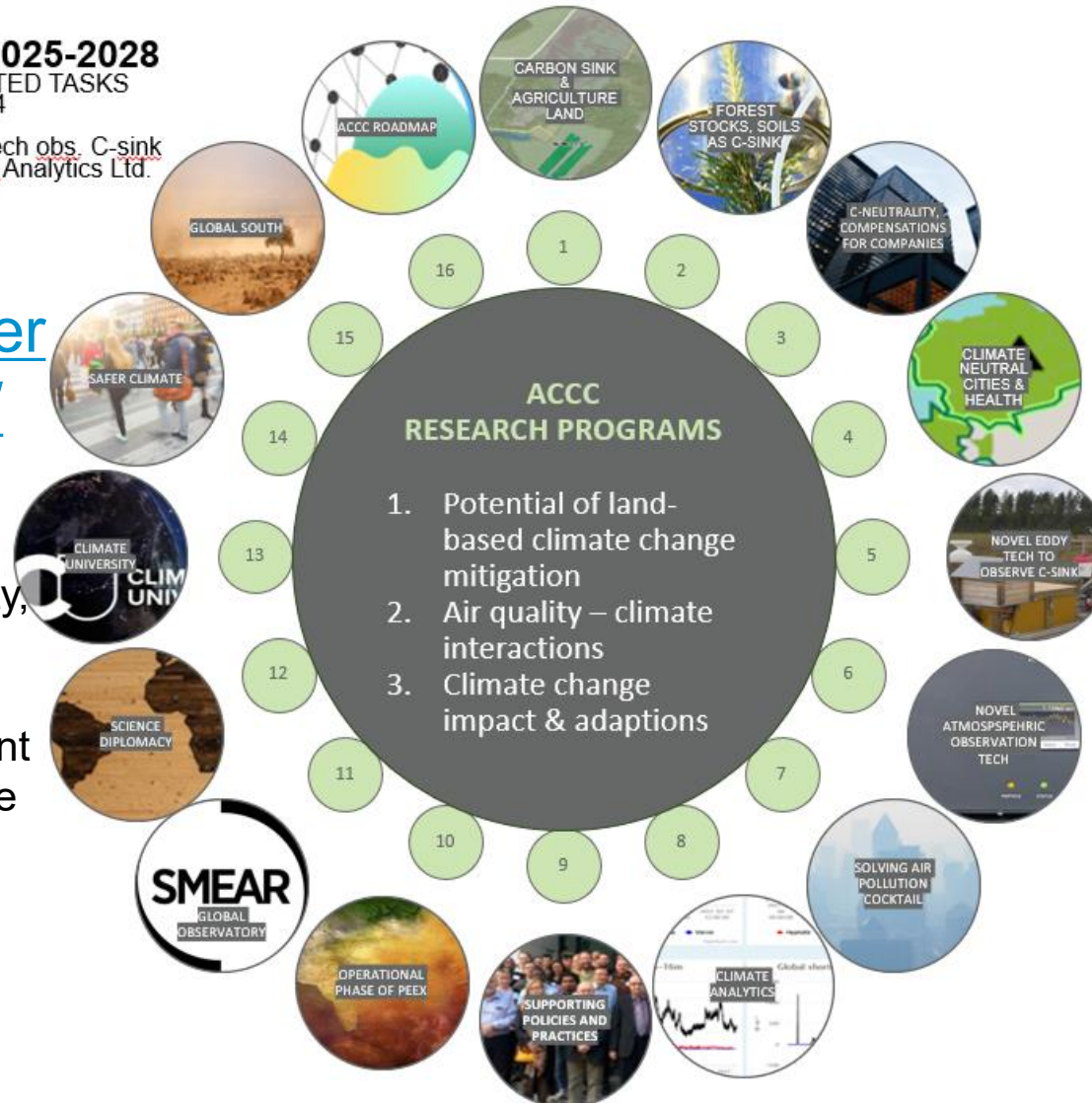
ACCC 2025-2028

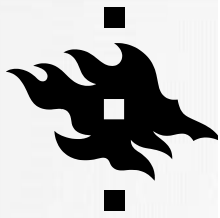
*) COMPLETED TASKS
in 2020-2024

IP5 Eddy Tech obs. C-sink
IP8 Climate Analytics Ltd.

[ACCC – Atmosphere and
Climate Competence Center](https://www.acccflagship.fi/)
<https://www.acccflagship.fi/>

is a Finnish Flagship constituted by the University of Helsinki, Tampere University, University of Eastern Finland and the Finnish Meteorological Institute. We are working to address two of the most urgent global Grand Challenges: climate change and deteriorating air quality. From deep scientific understanding to practical solutions.





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THANK YOU



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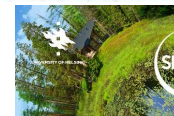
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SMEAR

GLOBAL
CHALLENGES
NEED GLOBAL
MEASURES

16/04/2026

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