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and the SMEAR Measurement Concept

ARCTIC DATASETS: part of PEEX International Collaboration

ERA-PLANET

Integrative and Comprehensive Understanding on Polar Environments
www.atm.helsinki.fi/icupe

Example:

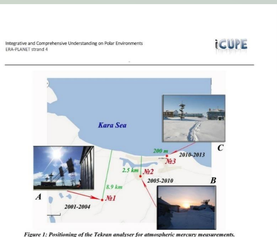
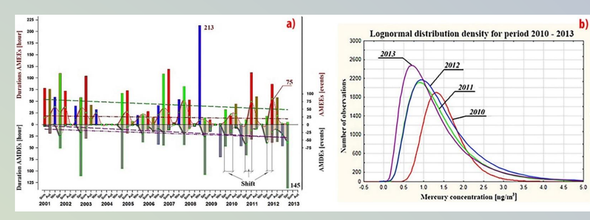


Figure 1: Positioning of the Tekran analyser for atmospheric mercury measurements.

https://www.atm.helsinki.fi/icupe/images/Datasets/DS_Hg-Amderma_20200125.zip

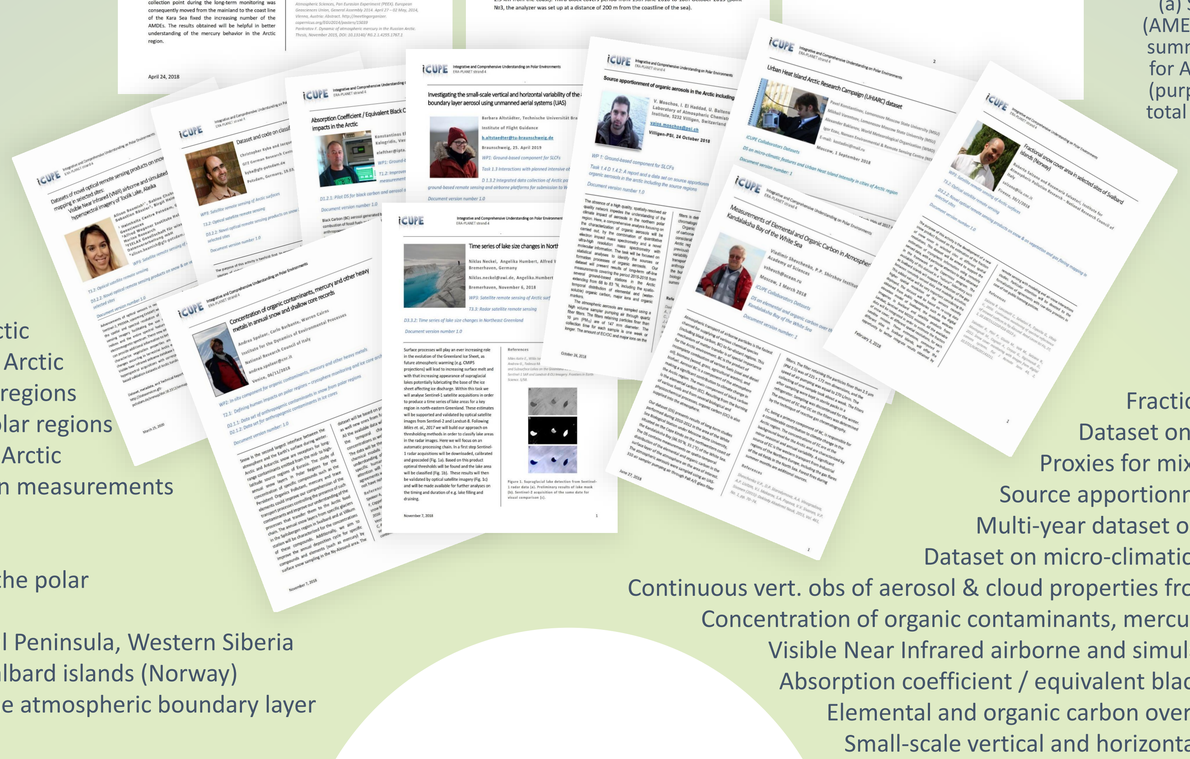
Data teaser



(a) Seasonal dynamics of atmospheric mercury depletion (AMDEs) and elevated (AMEEs) events during 2001-2013 2013 /duration of AMDEs and AMEEs (red color - summer, green - spring, dark yellow - autumn, blue - winter); linear approximation for AMEEs duration for spring (green dashed line), and AMDEs duration for winter (purple dashed line); for total AMEEs duration (brown dash with two dots) and for total AMDEs duration (purple dash with two dots)/ & (b) Lognormal distribution of mercury concentration during June 2010 - October 2013.

Delivered Datasets

Dec 2018 - Emerging organic contaminants in air from the Arctic
May 2019 - Emerging organic contaminants in snow from the Arctic
June 2019 - Anthropogenic contaminants in snow from polar regions
June 2019 - Anthropogenic contaminants in ice cores from polar regions
Sep 2019 - Emerging organic contaminants in water from the Arctic
Sep 2019 - Pilot dataset on Near-Real Time aerosol absorption measurements from Zeppelin Station, Ny Ålesund, Svalbard
Dec 2019 - Arctic atmospheric Hg(II) observations
Jan 2020 - Long-term monitoring of atmospheric mercury at the polar station Amderma, Russian Arctic
Mar 2020 - Classification of artificial light sources in the Yamal Peninsula, Western Siberia
Mar 2020 - Fractional snow cover area in selected sites of Svalbard islands (Norway)
Mar 2020 - Small-scale vertical and horizontal variability of the atmospheric boundary layer aerosol using unmanned aerial systems



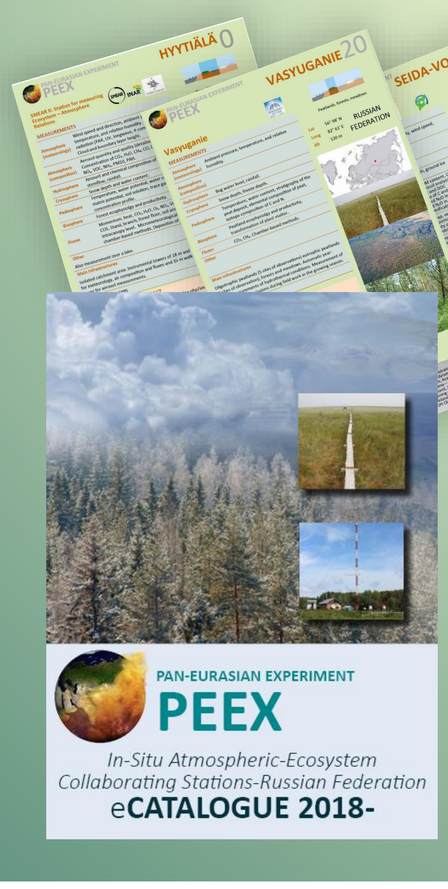
Available Teasers

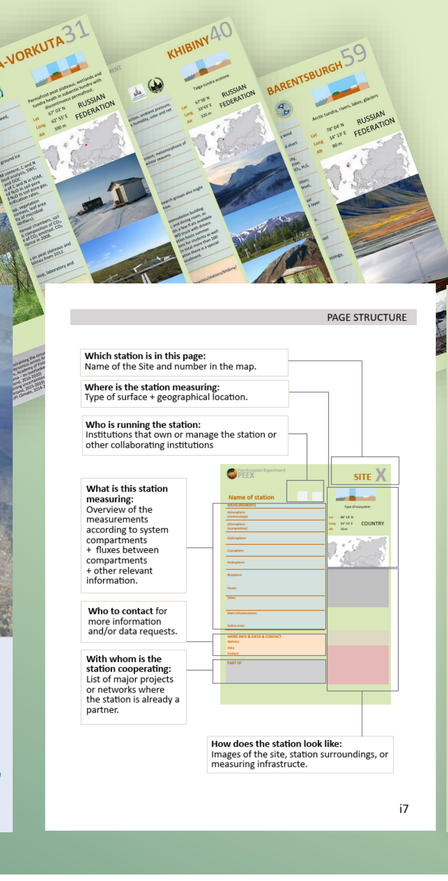
Time series of lake size changes in Northeast Greenland
Dataset and code on classification of artificial light sources
Arctic atmospheric Hg speciation and isotope observations
Fractional snow cover area in selected sites of Svalbard islands, Norway
Dataset on atmospheric composition at Fonovaya Observatory, West Siberia
Proxies for mixing layer height, condensation sink and gross primary production
Source apportionment of organic aerosols in the Arctic including the source regions
Multi-year dataset on mercury measurements at the Amderma station, Russian Arctic
Dataset on micro-climatic features and Urban Heat Island Intensity in cities of Arctic region
Continuous vert. obs of aerosol & cloud properties from the Polarstern cruises PS 106.1/106.2 using CLOUDNET station
Concentration of organic contaminants, mercury and other heavy metals in annual snow & shallow core records
Visible Near Infrared airborne and simulated EnMAP satellite hyperspectral imagery of Toolik Lake, Alaska
Absorption coefficient / equivalent black carbon standardized dataset for long term impacts in the Arctic
Elemental and organic carbon over the northwestern coast of the Kandalaksha Bay of the White Sea
Small-scale vertical and horizontal variability of the atmospheric boundary layer aerosol using UAS
Dataset for ground-validation of precipitation measurements in high-latitudes and Arctic region
Occurrence, transport and exchange fluxes of emerging organic contaminants in the Arctic

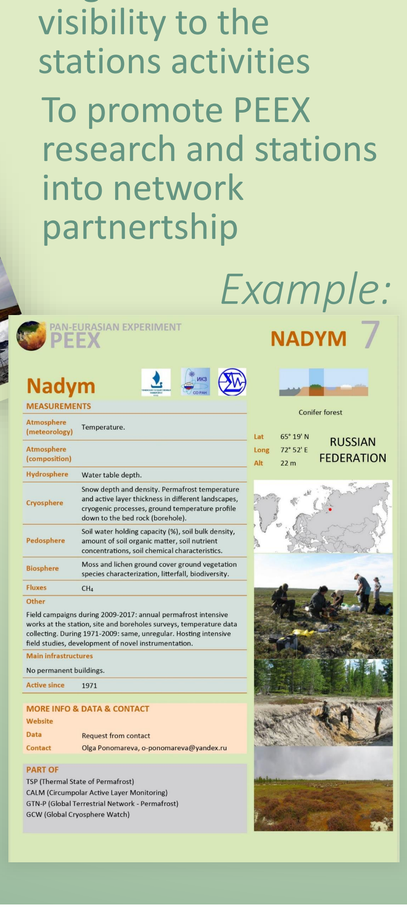
In-Situ Stations: e-Catalogue

www.atm.helsinki.fi/peex/index.php/peex-russia-in-situ-stations-e-catalogue

Although more than 200 stations are presented in PEEX domain, only about 60 Russian stations have metadata information available. The metadata enables to categorize stations in a systematic manner and to connect them to international observation Networks as well as to standardize data formats following guidelines of WMO, GAW, etc.
PEEX provides e-catalogue (as a living document) introducing measurements and contact information of the Russian stations.







Pan-Eurasian Experiment
PEEX

PEEX MetaData collection
peexdata.atm.helsinki.fi

To give wider visibility to the stations activities

To promote PEEX research and stations into network partnertship

DATASETS in

PEEX SMEAR I data **direct link** to database

Request from the stations' owners

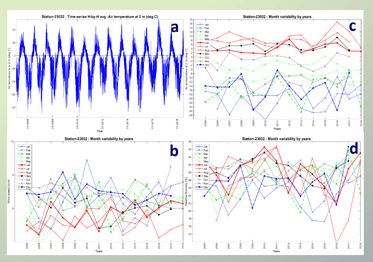
Example: Time series and trends at the Marre-Sale station (2005-2018)

Month	T2m (deg C)
Jan	-0.186
Feb	**0.376**
Mar	0.314
Apr	0.316
May	-0.007
Jun	0.157
Jul	0.100
Aug	0.043
Sep	-0.031
Oct	-0.022
Nov	-0.005
Dec	-0.078

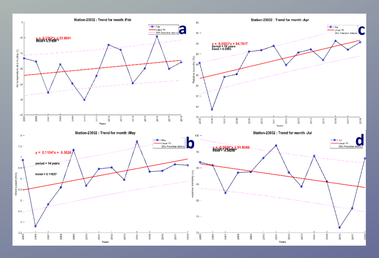
Month	RH2m (%)
Jan	0.138
Feb	0.265
Mar	0.358
Apr	**0.558**
May	0.407
Jun	-0.121
Jul	**-0.563**
Aug	-0.347
Sep	-0.056
Oct	-0.037
Nov	0.117
Dec	0.253

Month	WU10m (m/s)
Jan	0.031
Feb	0.029
Mar	-0.009
Apr	0.032
May	0.110
Jun	0.099
Jul	0.009
Aug	**0.111**
Sep	-0.105
Oct	**-0.132**
Nov	0.066
Dec	-0.045

positive (> +0.1)
negative (< -0.1)
negligible



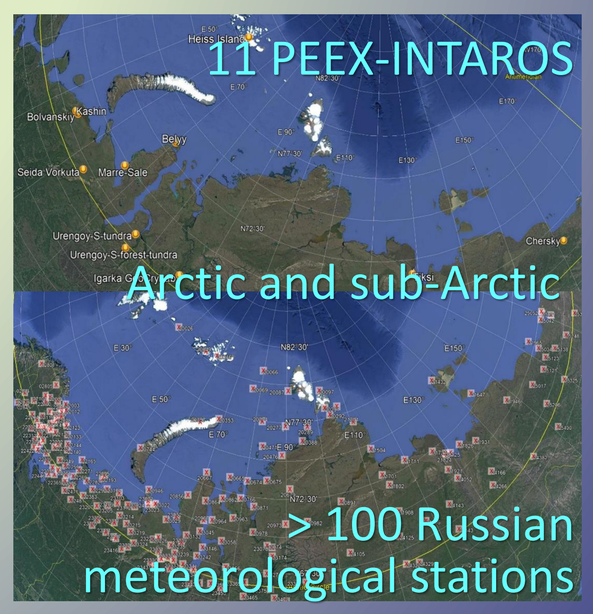
(a) Air temperature at 2m & (b,c,d) Monthly variability by years for the air temperature at 2m, wind speed at 10m, relative humidity at 2 m



Trends (value and sign for months of January-December; and for selected months for the (a) air temperature at 2m, T2m (b) wind speed at 10m, WU10m, and (c-d) relative humidity at 2 m, RH2m

Catalog-intaros.nersc.no

From 200+ stations (in total) 11 Russian stations in Arctic were selected for the Atmospheric, Terrestrial & Cryospheric parts



Integrated Arctic Observation System

INTAROS

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