



FINNISH METEOROLOGICAL INSTITUTE



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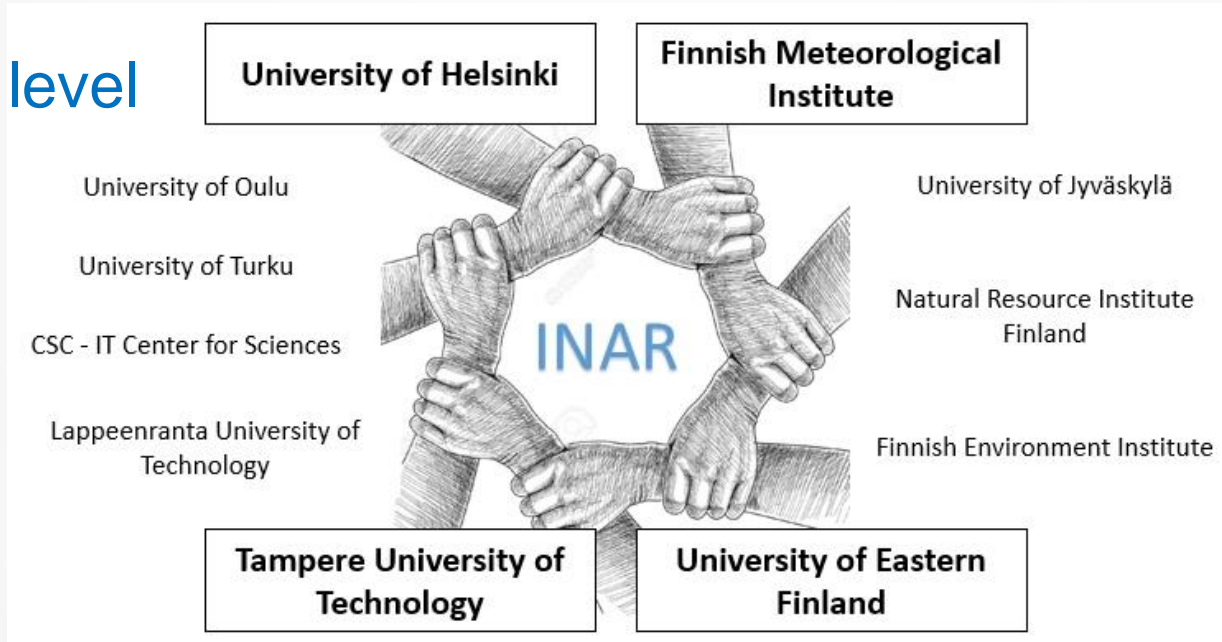
ATMOSPHERIC RESEARCH IN HELSINKI – LINKS TO IAGOS

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University of Helsinki
Finnish Meteorological Institute

INSTITUTE FOR ATMOSPHERIC AND EARTH SYSTEM RESEARCH

INAR at
national level





INSTITUTE FOR ATMOSPHERIC AND EARTH SYSTEM RESEARCH

INAR at
University of
Helsinki

- Joint research unit in Faculty of Science and Faculty of Agriculture and Forestry
- Led by Academician Markku Kulmala
- Combining research in aerosol physics and chemistry, biogeochemical cycles, meteorology, hydrology and ecosystem processes
- Started 1.1.2018, ca. 200 people

Long-term measurements at SMEAR stations

I Värriö (since 1991)

II Hyytiälä (since 1995)

III Kumpula (since 2004)

IV Kuopio, Puijo (since 2009)

Järvselja, Estonia

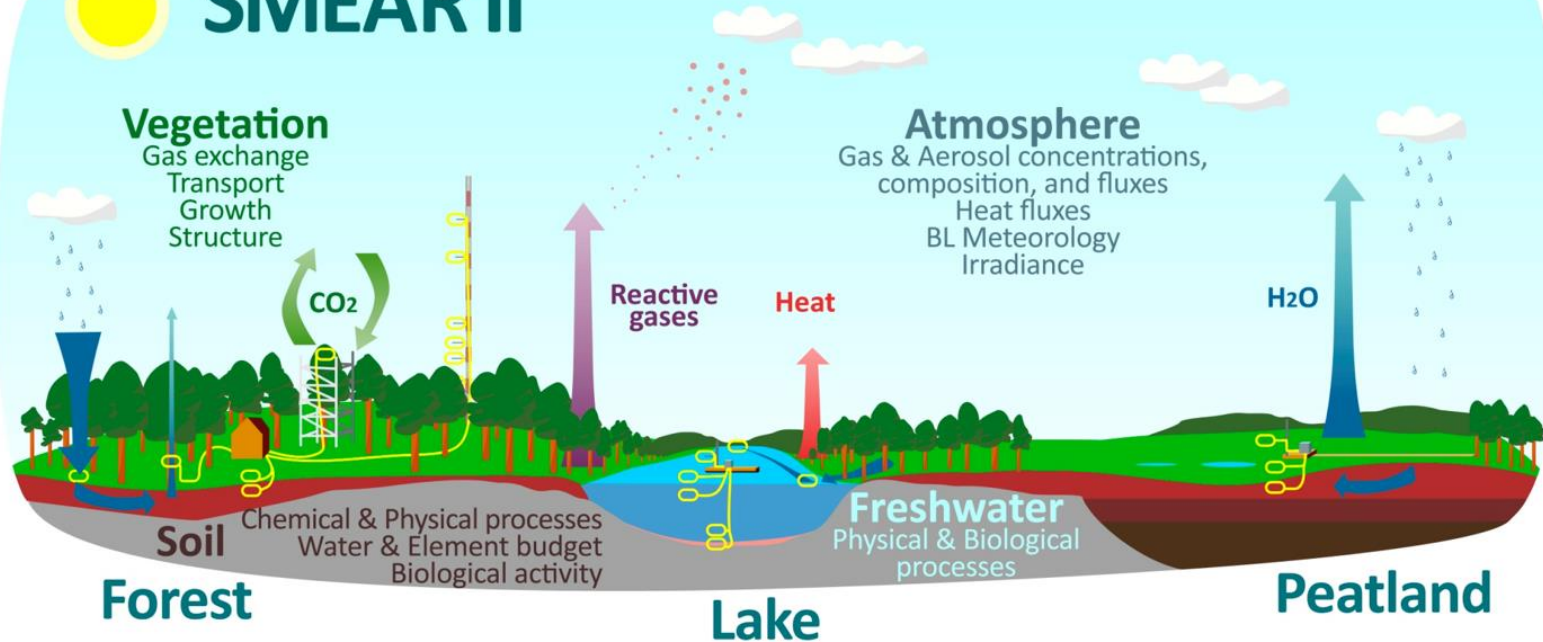
Nanjing SORPES, China

Beijing, BUCT, China



Continuous comprehensive observations
Station for Measuring Ecosystem - Atmosphere Relations

SMEAR II



Over **1200** different variables

Flagship site for integration: combines all IPCC components. **Contributes to :**



ICOS

INTEGRATED
CARBON
OBSERVATION
SYSTEM





EXPERIENCE IN INSTRUMENT DEVELOPMENT AND COMMERCIALIZATION

- From custom-made instruments and measurement set-ups to in-situ observation systems and stations
- Instrument development especially related to aerosol particle detection and mass spectrometry

Spin-offs from UHEL:

AIRMODUS

KÄRSA

Collaboration also with: Vaisala, Dekati, Aerodyne, Airel etc.



STRONG RESEARCH INTERESTS IN THE **ARCTIC/BOREAL REGION (PEEX)** AS WELL AS **CHINESE AIR QUALITY**



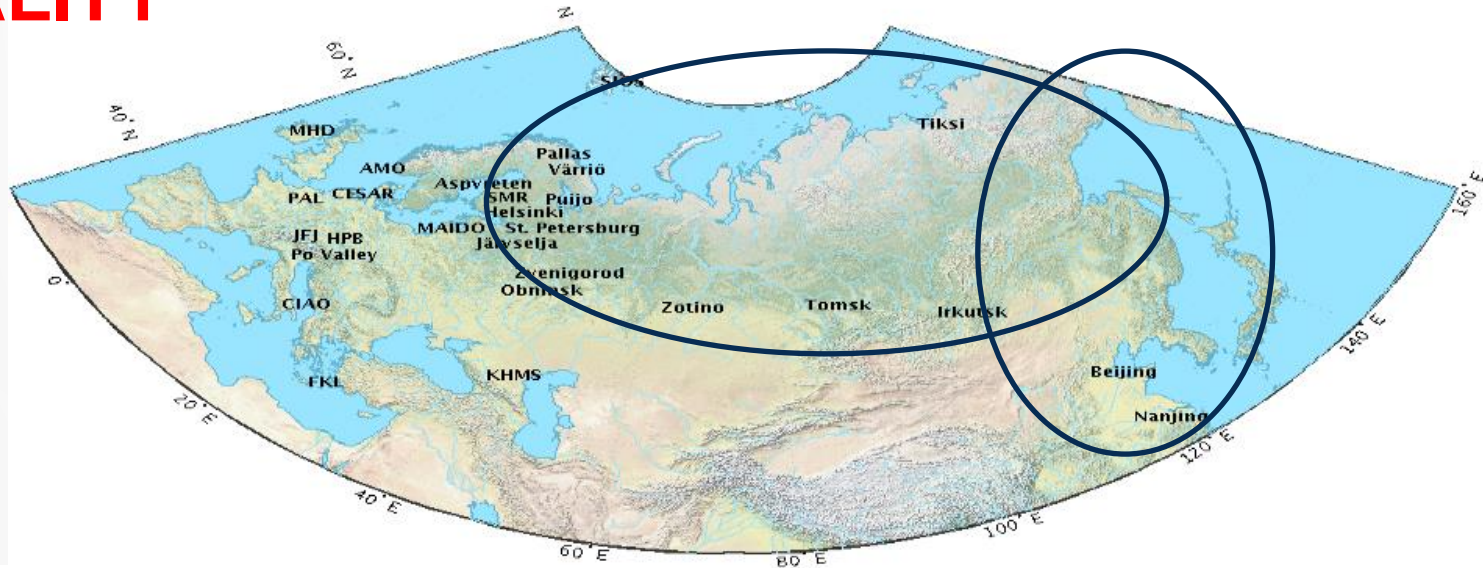
PAN EURASIAN EXPERIMENT (PEEX)

– TOWARDS A NEW MULTINATIONAL, MULTIDISCIPLINE

CLIMATE, AIR QUALITY AND ENVIRONMENT

RESEARCH EFFORT IN ARCTIC AND BOREAL

PAN-EURASIA REGIONS



HELSINGIN YLIOPISTO
HELSINGFORS UNIVERSITET
UNIVERSITY OF HELSINKI

Institute for
Atmospheric and Earth
System Research



Focus on the arctic area

Climate change has strong impact on the Arctic area

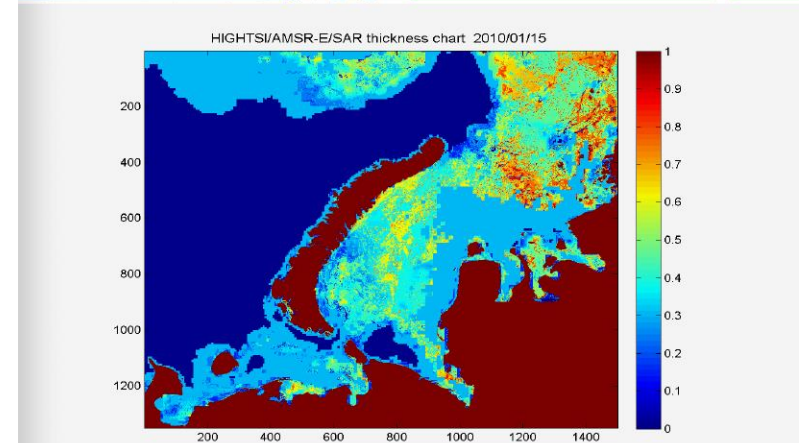
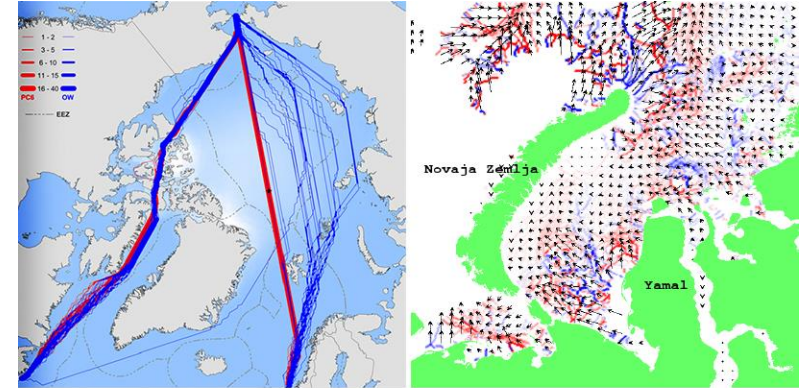
Ice winter still exists in the Arctic area

→ Increased need for weather services

→ Safety of all activities in the Arctic area must be ensured

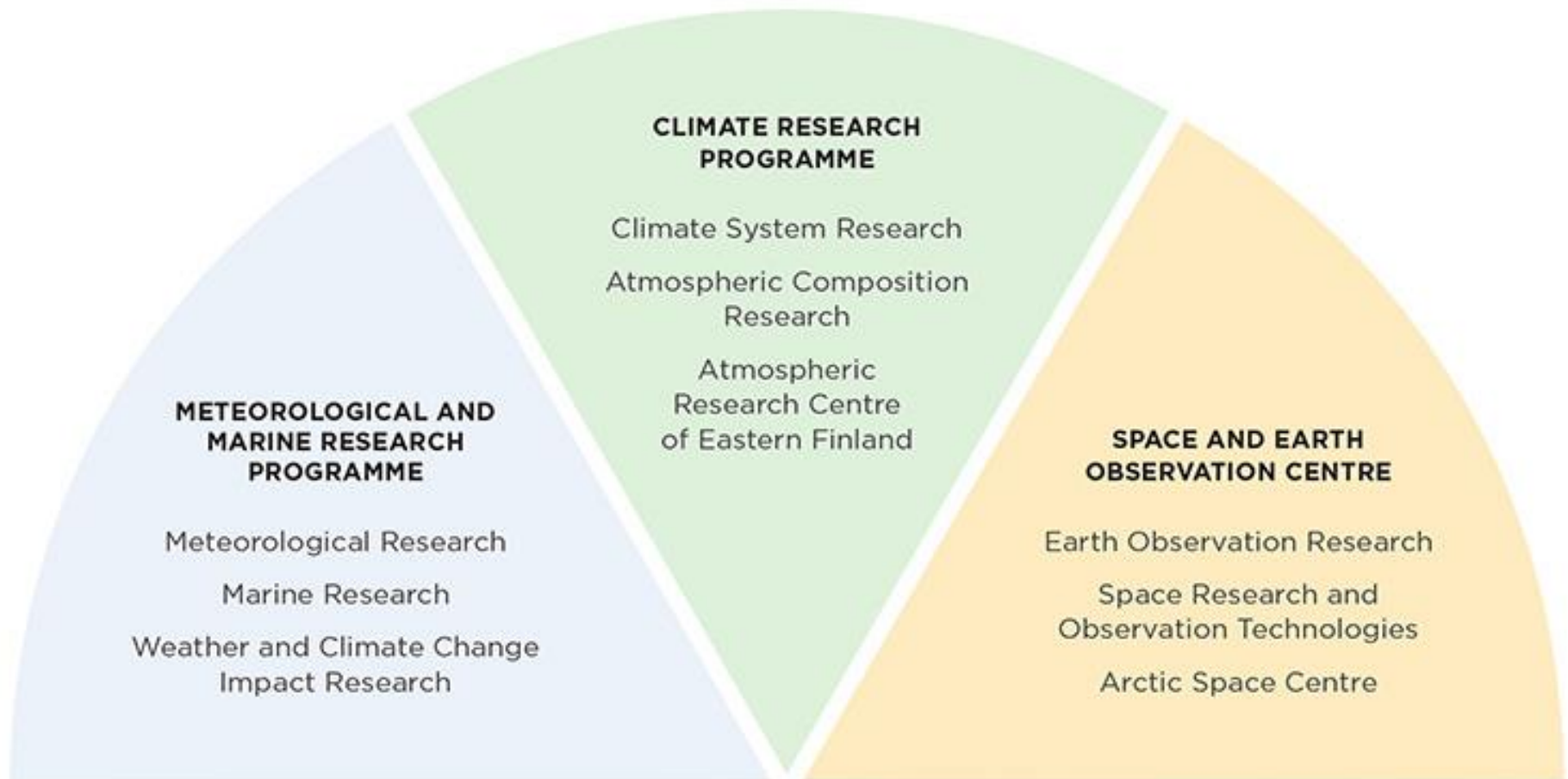
FMI has strong capacity and skills in the Arctic weather and services, e.g. weather and ice services, satellite activities

Arctic Research Center in Sodankylä





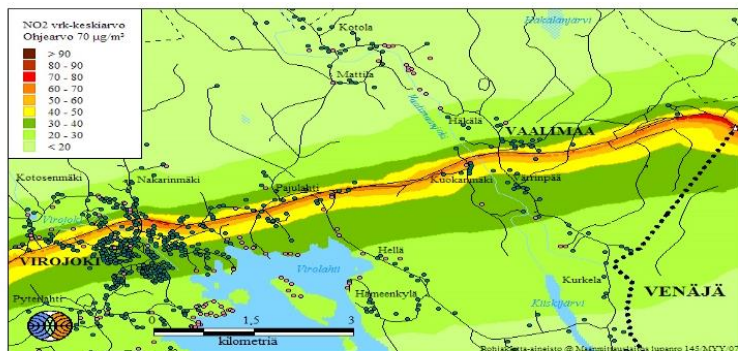
RESEARCH AT FMI



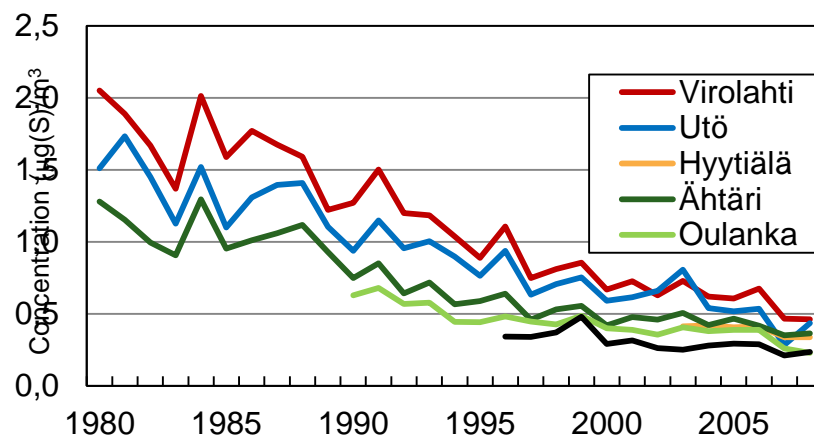


Research on atmospheric composition

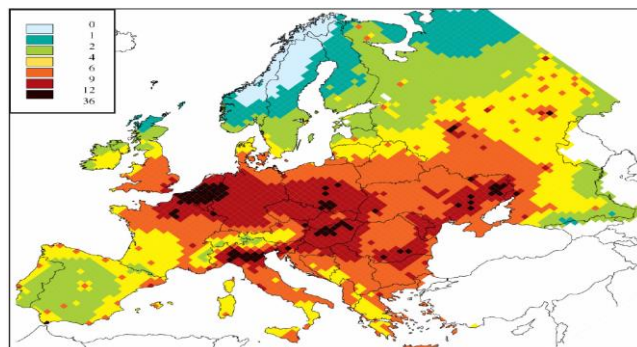
Local air quality



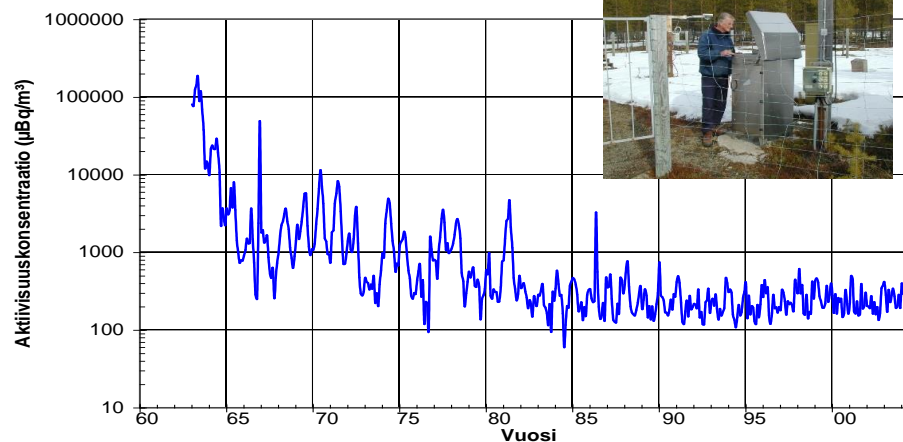
Acidification SO₄- 1978–2010



Atmospheric aerosols: Impact of aerosols on life expectancy (mts)

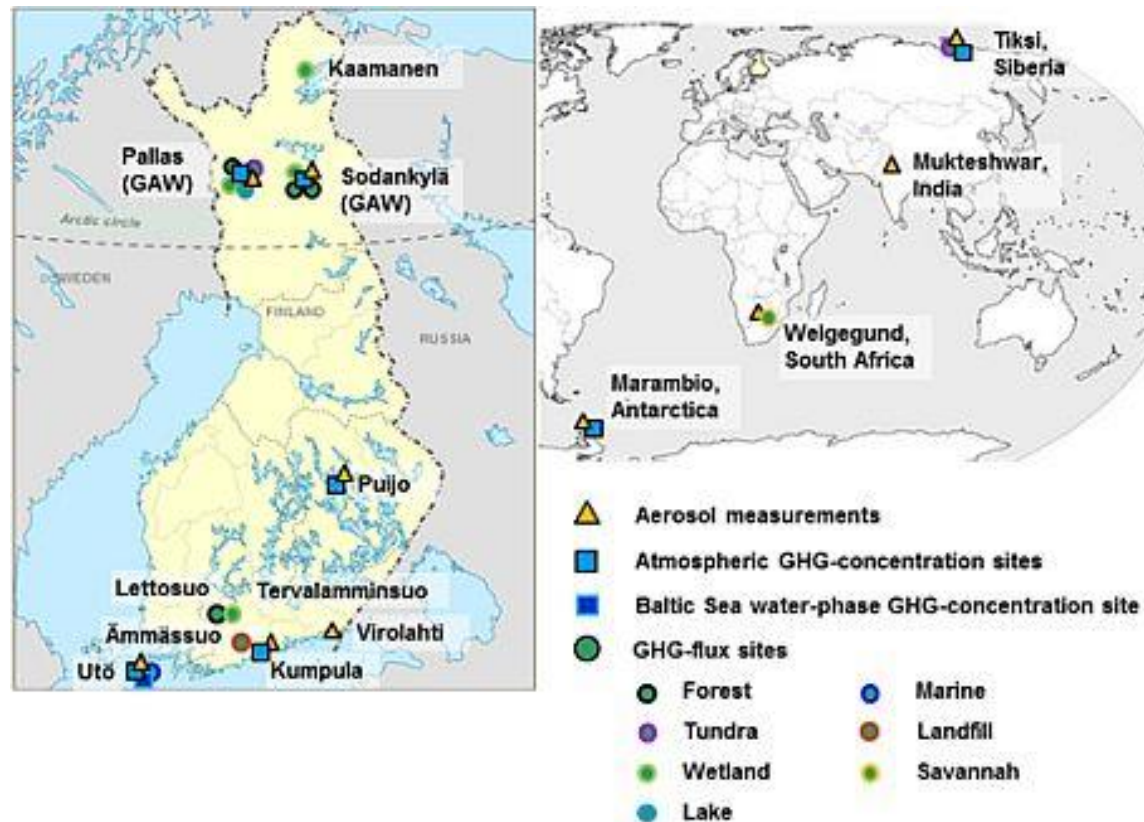


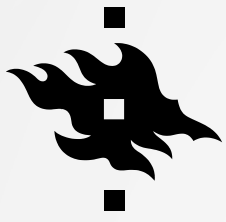
Radioactivity 1960–2010





CONTINUOUS MEASUREMENTS OF AEROSOLS AND GREENHOUSE GASES BY FMI



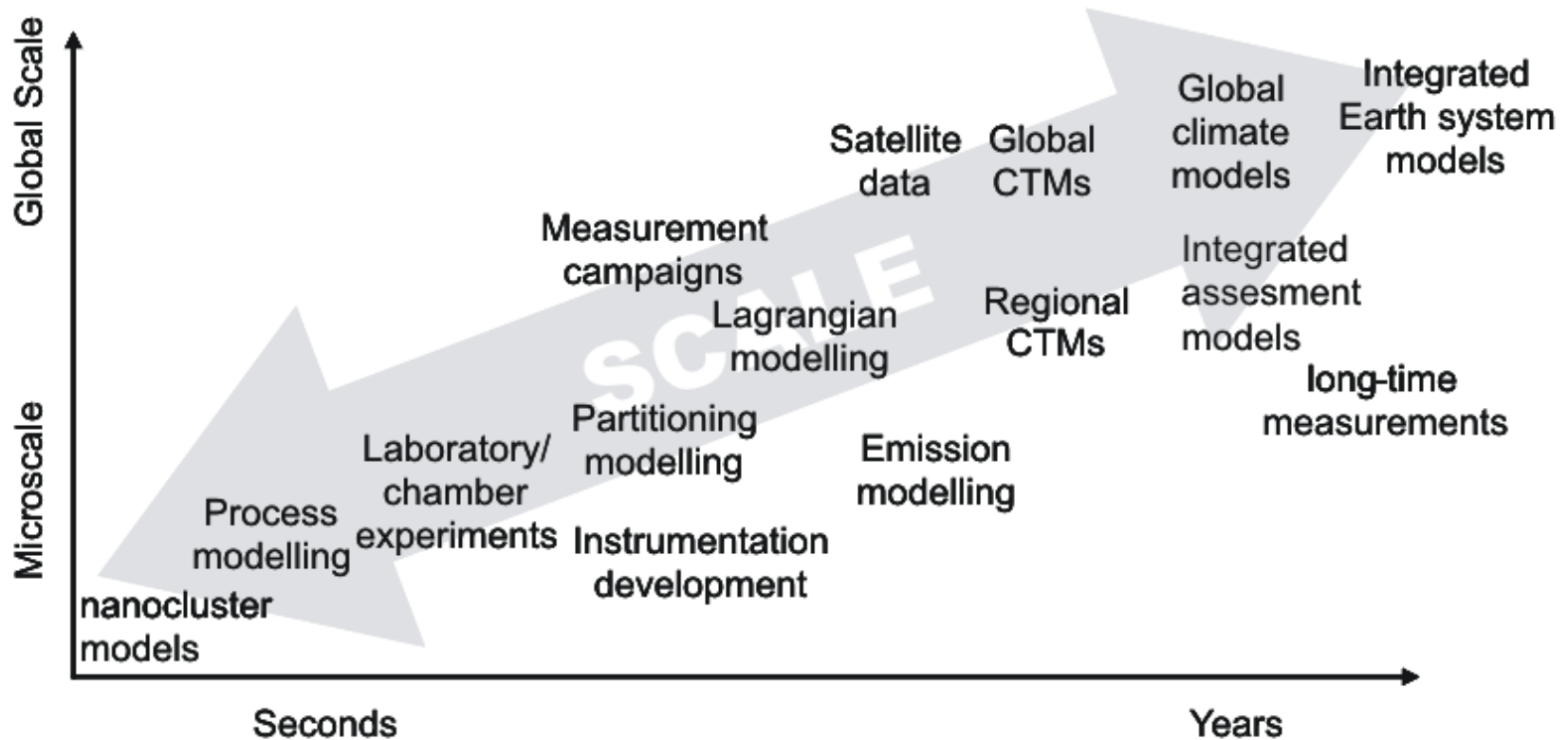


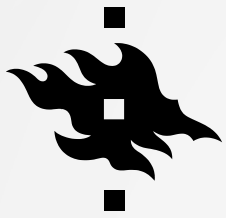
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RESEARCH AT ALL SPATIAL AND TEMPORAL SCALES





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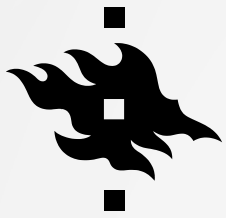
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STRONGLY INVOLVED IN RESEARCH INFRASTRUCTURES

UHEL and FMI are participating actively in several international monitoring and research projects, networks and infrastructures; experience in coordinating national and international research activities



Head office is/will be located in Helsinki



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FINNISH METEOROLOGICAL INSTITUTE

SUMMARY

INAR has wide expertise in atmospheric research

- Greenhouse gases, aerosols, climate, air quality..
- Theory, modelling, observations, instrument development

Strong connections to European research infrastructures

Links to IAGOS: scientific expertise, interest in data usage

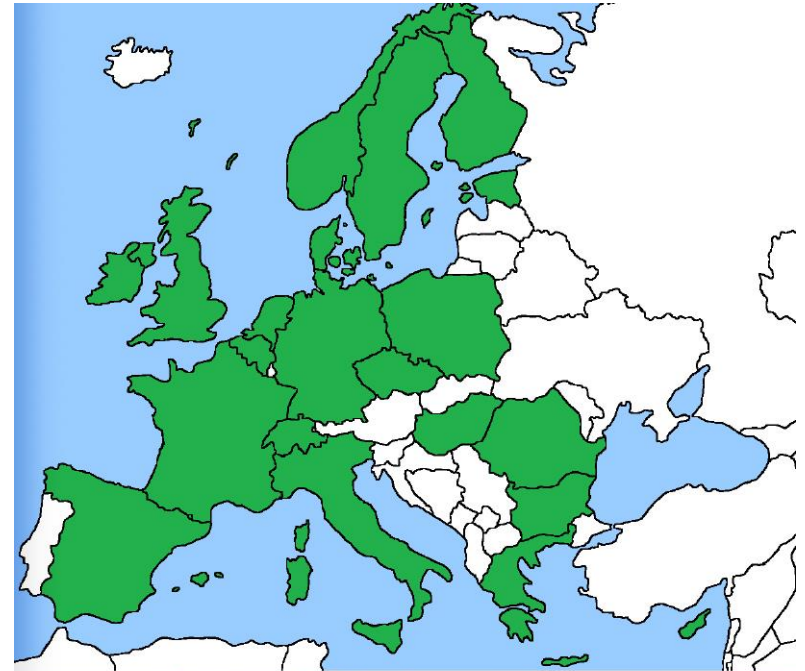






Aerosols, Clouds, and Trace gases Research Infrastructure - a new European ESFRI research infrastructure

- ACTRIS provides data and research, instrument, industry, and training services for the various user groups
- ACTRIS consists of observing stations, exploratory platforms, instrument calibration centres, data centre, and Head Office
- ACTRIS implementation is led by Finland and FMI contributes to ACTRIS Head Office, Data Centre and have several ACTRIS national stations



Integrated Carbon Observation System (ICOS RI)

- ICOS provides harmonized and high precision scientific data on carbon cycle and greenhouse gas budget and perturbations
- ICOS data is openly available at the ICOS Carbon Portal
- Legal entity ICOS ERIC established in November 2015 with the statutory seat in Finland
- ICOS Head Office located in Kumpula campus
- More than 100 measurement stations and VOS lines, expected to have 150 in 5 years

