ACCC
ATMOSPHERE AND CLIMATE COMPETENCE CENTRE

National Flagship
Atmosphere & Climate Competence Center (ACCC)

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University of Helsinki (UH)
Finnish Meteorological Institute (FMI)
University of Eastern Finland (UEF)
Tampere University (TAU)

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Funded by: ACADEMY OF FINLAND

ACCC Flagship — from deep scientific understanding to practical solutions

OBJECTIVES FOR THE FLAGSHIP TERM 2020-2024

1. To provide beyond state-of-the-art scientific knowledge on two of the most urgent global Grand Challenges, **climate change** and **deteriorating air quality**
2. To establish a platform (ACCC Service Portal) to collect big data from comprehensive observations and multiscale models to be delivered to various stakeholders
3. To co-create science-based solutions for guiding the world toward climate neutrality

From 2020 to 2024, the Atmosphere and Climate Competence Center (ACCC) is working towards a new national and international business ecosystem for atmospheric and environmental sciences by transforming excellent science into solutions.

UNIVERSITY OF HELSINKI
UNIVERSITY OF EASTERN FINLAND
Tampereen yliopisto Tampere University
ILMATIETEEN LAITOS METEOROLOGISKA INSTITUTET FINNISH METEOROLOGICAL INSTITUTE

The 13 Impact Tasks of ACCC

Task 1: ***Carbon sequestration of agricultural land*** - to develop methodology to estimate carbon sinks and other climate impacts of agricultural land for greenhouse gas inventories, carbon markets and carbon footprint assessments.

Task 2: ***Verification of forest stocks and soil as carbon sink and storage***, and climate effects of reforestation and afforestation.

Task 3: ***Verification of carbon neutrality and compensation of emissions for private companies*** - to build concrete compensation projects with scientific impact verification.

Task 4: ***Climate neutral cities and a healthy atmosphere*** - to support the Finnish cities with their preparedness to climate change impacts and achieving climate neutrality.

Task 5: ***Novel eddy covariance technology to observe Carbon sink*** - to develop an operative eddy covariance station that is inexpensive, low-powered, easy-to-use and virtually maintenance free.

Task 6: ***Novel technology for comprehensive atmospheric observations*** - to develop new robust, easy to use and cost effective instruments/technologies/methods for atmospheric observations and to co-create new technologies with the participating companies.

Task 7: ***Solving the air pollution cocktail*** - to co-design sustainable pathways from deep understanding to practical solutions to mitigate air pollution.

Task 8: ***Climate Analytics Finland*** - to define and develop a successful business services for impartial climate impact verification for emissions, sinks and air quality, in Finland and internationally.

Task 9: ***Climate – Air Quality Society Forum*** - to facilitate new partnerships and open dialogue between business collaborators, researchers and the general public on climate neutrality and sustainability.

Task 10: ***Operational phase of PEEX*** - PEEX is a multidisciplinary climate change, air quality, environment and research infrastructure program focused on the boreal North-Eurasia and Arctic regions.

Task 11: ***Global Observatory*** - to build an observatory network with well-equipped ground stations around the world linked to satellite-based remote sensing, laboratory experiments and computer models, to track Earth surface–atmosphere interactions and energy flows.

Task 12: ***Science Diplomacy*** - to contribute to science-in-diplomacy; To co-design solutions to the Grand Challenges like climate change and air quality, through the education of young scientist and by providing a platform for international dialogue between scholars and society.

Task 13: ***Climate University*** - is a network of 12 universities and 6 universities of applied sciences in Finland that develops climate change and sustainability teaching in higher education.

Fig. 1:
Research Programs serve as framework for Impact Program.
Impact Program: 13 Task projects and forums with 40 public & private sector collaborators

The Impact of ACCC will be to increase competitiveness and solve sustainability challenges through proactive research, development and innovation collaboration and partnership with policy and business sectors

ACCC Research and Impact

The ACCC consortium brings together the scientific knowledge of the ACCC partners (UH, FMI, UEF, TAU) and the needs and expertise of 40 stakeholders.

As a national Flagship, ACCC will support Finland to become an internationally leading expert and provider of technological solutions and data services relevant to climate change.

In practise

The ACCC coordinates its work via its Research and Impact Programs.

The three ***Research Programs*** consist of:

1. Quantifying and activating the potential of land-based climate change mitigation
2. Quantifying the air quality-climate interactions and their impacts
3. Climate change impact and adaptation

The Research Programs serve as the framework for ACCC collaborations with multistakeholder partners to deliver knoweldge-based actions and solutions through its ***Impact Programe.***

The Impact Program is divided into ***13 Impact Tasks and Forums*** (Fig. 1) that will maximize the interaction between research community, businesses, policy and societal sectors.

ACCC Flagship — profile

50 International top science on Atmosphere – Earth surface interactions
Nature/Science publications

16 ERC projects
Center of excellence in 2002-2019

800 Multidisciplinary and wide global collaboration network
institutes in 55 countries
Global initiatives like Global SMEAR and Pan-Eurasian Experiment

Leading role in developing European environmental
research infrastructures: ICOS, ACTRIS, eLTER

Increasing business collaboration and new spinn-offs

Science diplomacy
e.g. in China, Russia and the arctic region

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