European Commission

FP7 projects relating to Atmospheric Observation

Project description, December 2012

Directorate-General for Research and Innovation

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1. RI: PREPARATORY PHASE PROJECTS

1.1. ICOS

http://icos-infrastructure.ipsl.jussieu.fr/

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4	UNIVERSITY OF HEIDELBERG	GERMANY
5	VRIJE UNIVERSITY AMSTERDAM	THE NETHERLANDS
6	UNIVERSITY OF HELSINKI	FINLAND
7	UNIVERSITY OF EDINBURGH	UNITED KINGDOM
8	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE-INSTITUT NATIONAL DES SCIENCES DE L'UNIVERS	FRANCE
9	LUNDS UNIVERSITET	SWEDEN
10	FORSKNINGSCENTER RISØ, DANMARKS TEKNISKE UNIVERSITET	DENMARK
11	SJ BERWIN LLP	BELGIUM
12	UNIVERSITEIT ANTWERPEN	BELGIUM
13	FUNDACIÓN CENTRO DE ESTUDIOS AMBIENTALES DEL MEDITERRANEO	SPAIN
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16	Institut Scientifique de Recherche Agronomique	France

The goal of the ICOS Preparatory Phase is to initiate across Europe and adjacent regions a network for standardized long-term high precision monitoring of atmospheric greenhouse gas concentrations and ecosystem fluxes and essential carbon cycling variables. These measurements will allow daily determination of sources and sinks at scales down to about 100 km^2, and will be a basis for understanding the carbon exchange processes between the atmosphere, the terrestrial surface and the ocean. The ICOS Research Infrastructure relies on the following facilities:

- A Project Co-ordination Office which co-ordinates all activities, and which is responsible for data management, data diffusion and outreach. Associated with the co-ordination office will be the established a data centre, the Carbon Portal, providing free access to the ICOS data,
- A Central Analytical Laboratory for calibration, quality control and atmospheric analyses for the entire network,
- An Atmospheric Thematic Centre responsible for continuous and discontinuous air sampling, instrument development/servicing and data processing,
- An Ecosystem Thematic Centre responsible for total ecosystem flux measurements and component fluxes and carbon pools, including data processing and instrument development,
- Main Observation Sites which are connected in a distributed network of about 30 atmospheric and 30 ecosystem sites located across Europe, and are expected to be operated for 20 years.

1.2. IAGOS

http://www.iagos.org

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5	THE UNIVERSITY OF MANCHESTER	UNITED KINGDOM
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10	DEUTSCHE LUFTHANSA AG	GERMANY
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12	LEIBNIZ INSTITUT FUER TROPOSPHAERENFORSCHUNG E.V.	GERMANY
13	ORGANISATION METEOROLOGIQUE MONDIALE	WMO
14	NATURAL ENVIRONMENT RESEARCH COUNCIL	UNITED KINGDOM
15	CENTRE NATIONAL D'ETUDES SPATIALES - CNES	FRANCE

IAGOS-ERI establishes a sustainable distributed infrastructure for global observations of atmospheric composition from a large fleet of in-service aircraft. This will be achieved by installing autonomous instrument packages aboard initially 10-20 long-range aircraft of internationally operating airlines. IAGOS-ERI will provide high quality in-situ observations of greenhouse gases and reactive gases, aerosol, and cloud particles in the tropopause region, which is not adequately resolved by remote sensing from space and, on the other hand is one of the most sensitive regions for climate change. At the same time, IAGOS-ERI will provide detailed vertical profiles in the troposphere, which are of paramount importance for predicting changes in local and regional air quality and its causes. The main goals of the preparatory phase are to prepare the legal and organisational structure and funding scheme for the new RI, to obtain the necessary legal preconditions for sustainable deployment of scientific instrumentation and near-real-time data transmission on in-service aircraft, insofar not yet achieved during the design study (IAGOS-DS), the coordination with the scientific and operational user community, such as WMO, AMDAR, ECMWF, and the implementation of IAGOS-ERI into the global observing system established by WMO-GAW within GEOSS. Technical work is required for bringing CARIBIC into routine operation, the deployment of very small instrument packages on a wider fleet of aircraft, and for cooperation with WMO-AMDAR for routine water vapour measurements.

1.3. COPAL

www.copal.net

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4	NATURAL ENVIRONMENT RESEARCH COUNCIL	UNITED KINGDOM
5	FUNDAÇÃO PARA A CIÊNCIA E A TECNOLOGIA	PORTUGAL
6	CONSIGLIO NAZIONALE DELLE RICERCHE	ITALY
7	GENERAL SECRETARIAT FOR RESEARCH AND TECHNOLOGY	GREECE
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9	ENVISCOPE GMBH	GERMANY
10	THE METEOROLOGICAL OFFICE	UNITED KINGDOM
11	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	FRANCE
12	SJ BERWIN LLP	UNITED KINGDOM
13	DEUTSCHES ZENTRUM FUER LUFT-UND RAUMFAHRT E.V.	GERMANY

COPAL has the objective of providing the European scientific community with an unique research aircraft platform, capable of reaching and operating in any remote area in the world and offering a heavy-payload for integration of large panoply of instruments for research in environmental and Geo-sciences. It will offer an unprecedented opportunity to countries that are not yet operating research aircraft to develop expertise in airborne measurements and participate to international multidisciplinary experiments. The Consortium includes 10 national research funding institutions, a SME and, a pan-European law firm. Among the national institutions, 6 are research councils, 3 are meteorological services supporting research, and one is a national aerospace research institution. 7 participants are members of the EUFAR network of European aircraft operators for research in Geo-sciences. User requirements will be refined and translated into specifications for aircraft performance and modifications for research. The acquisition, modification, and maintenance costs will be precisely quoted. Procedures will be defined for the selection of the aircraft and data management operators. A network of academic centres of excellence and SMEs will be constituted for the development and airborne certification of innovative instruments for the community aircraft. New governance schemes will be elaborated for evaluation of access proposals and allocation of time slots, which reconcile the Pan-European use of the aircraft, with national authority in term of scientific programming. These activities will be coordinated with EUFAR, with the operator of community research aircraft in the USA, and with the other Preparatory Phase studies, especially those with points of similarity with COPAL, such as the research vessels. They will supply with technical and logistic solutions the research institutions which will develop a new organizational model for the COPAL European distributed infrastructure.

1.4. EISCAT_3D

http://www.eiscat.se/

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4	INSTITUTET FOR RYMDFYSIK	Sweden
5	UNIVERSITETET I TROMSOE	Norway
6	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	United Kingdom
7	VETENSKAPSRADET - SWEDICH RESEARCH COUNCIL	Sweden
8	NATIONAL INSTRUMENTS BELGIUM NV	Belgium

EISCAT_3D is a next generation incoherent scatter radar system for high-latitude atmosphere and geospace studies that will be built in northern Fenno-Scandinavia. The facility will consist of multiple large phased-array antenna transmitters/receivers in three countries, comprising tens of thousands of individual antenna elements.

The new radars will collect data from the upper stratosphere to the magnetosphere and beyond, contributing to the basic, environmental and applied science that underpins the use of space by contemporary society.
EISCAT_3D's capabilities go beyond anything currently available to the international research community and will constitute a valuable scientific resource for the European Research Area. Located in the auroral zone at the edge of the northern polar vortex, EISCAT_3D will provide long-term continuous data for scientists studying global change, measuring the effects of man-made and natural variability on the middle and upper atmosphere. Its observations will underpin space weather prediction and monitoring, essential for the operation and the improved service of European space assets. In addition EISCAT_3D will facilitate studies of solar system influences on the terrestrial environment, such as solar wind, meteors, dust, energetic particles and cosmic rays, in collaboration with other research infrastructures.

The Preparatory Phase will resolve the remaining legal, financial and technical questions which must be addressed before the construction of EISCAT_3D.

1.5 SIOS

http://www.sios-svalbard.org/prognett-sios/Home_page/1234130481072

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4	ALFRED WEGENER INSTITUTE FOR POLAR AND MARINE RESEARCH	GERMANY
5	INSTITUTE OF GEOPHYSICS - POLISH ACADEMY OF SCIENCES	POLAND
6	NATIONAL RESEARCH COUNCIL OF ITALY	ITALY
7	NATURAL ENVIRONMENT RESEARCH COUNCIL	UNITED KINGDOM
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11	FINNISH METEOROLOGICAL INSTITUTE	FINLAND
12	UNIVERSITY OF GRONINGEN	THE NETHERLANDS
13	POLAR RESEARCH INSTITUTE OF CHINA	CHINA
14	FRENCH POLAR RESEARCH INSTITUTE	FRANCE
15	KOREA OCEAN RESEARCH & DEVELOPMENT INSTITUTE - KOREA POLAR RESEARCH INSTITUTE	KOREA
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17	INSTITUTE OF OCEANOLOGY - POLISH ACADEMY OF SCIENCES	POLAND

18	STOCKHOLM UNIVERSITY	SWEDEN
19	UNIVERSITY OF BERGEN	NORWAY
20	UNIVERSITY OF TROMSØ	NORWAY
21	NORWEGIAN METEOROLOGICAL INSTITUTE	NORWAY
22	NANSEN ENVIRONMENTAL AND REMOTE SENSING CENTER	NORWAY
23	INSTITUTE OF MARINE RESEARCH	NORWAY
24	NORWEGIAN INSTITUTE FOR AIR RESEARCH	NORWAY
25	ANDØYA ROCKET RANGE	NORWAY
26	THE NATIONAL INSTITUTE OF POLAR RESEARCH - RESEARCH ORGANISATION OF INFORMATION AND SYSTEMS	JAPAN

The goal of SIOS

Understanding ongoing and future environmental and climate related changes requires an integrated - Earth System - approach, in particular in the Polar Regions. While Earth System Models already have reached far in the integration process, observation systems have not been developed with the same systematic approach so far. SIOS envisages filling this gap at a regional scale by:

- Establishing an Arctic Earth Observing System in and around Svalbard that integrates and complements existing research and monitoring platforms for geophysical, biological and chemical studies with the aim to match integrated models;
- Utilizing satellite remote sensing data that are available via the Svalbard receiving stations and the space agency's using this station;
- Building up close cooperation with other ESFRI projects that plan activities in the European Arctic, existing regional research networks in the European Arctic and to pan-Arctic initiatives such as the Sustained Arctic Observing Network (SAON).

To achieve this we will:

- Assess the present infrastructure and activities to identify gaps and weaknesses in the system. Invest in additional infrastructure and activities to close these gaps;
- Organize all infrastructure and all research and monitoring activities into an optimized set of observation platforms promoting international approaches;

- Establish a Knowledge Centre in Longyearbyen for data assessment, integration, storage and delivery, education and outreach, cooperative efforts, and input to Earth System modeling;
- Common facilities together with other environmental ESFRI initiatives as well as other Earth Observation Systems and related modelling efforts;
- Search to establish SIOS as a central ground validation node for satellite observations in the Arctic.

2. RI: INTEGRATING ACTIVITY PROJECTS

2.1. ACTRIS

http://www.actris.net/

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5	TECHNISCHE UNIVERSITEIT DELFT	THE NETHERLANDS
6	PAUL SCHERRER INSTITUT	SWITZERLAND
7	LEIBNIZ INSTITUT FUER TROPOSPHAERENFORSCHUNG e.V.	GERMANY
8	EIDGENOESSISCHE MATERIALPRUEFUNGS- UND FORSCHUNGSANSTALT	SWITZERLAND
9	THE UNIVERSITY OF READING	UNITED KINGDOM
10	UNIVERSITAT POLITECNICA DE CATALUNYA	SPAIN
11	MAX PLANCK GESELLSCHAFT ZUR FOERDERUNG DER WISSENSCHAFTEN E.V.	GERMANY
12	LUNDS UNIVERSITET	SWEDEN
13	AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS	SPAIN
14	NATIONAL UNIVERSITY OF IRELAND, GALWAY	IRELAND
15	NATURAL ENVIRONMENT RESEARCH COUNCIL	UNITED KINGDOM

16	FOUNDATION FOR RESEARCH AND TECHNOLOGY HELLAS	GREECE
17	COMMISSION OF THE EUROPEAN COMMUNITIES - DIRECTORATE GENERAL JOINT RESEARCH CENTRE - JRC	BELGIUM
18	DEUTSCHER WETTERDIENST	GERMANY
19	THE STATE SCIENTIFIC INSTITUTION "B.I. STEPANOV INSTITUTE OF PHYSICS OF THE NATIONAL ACADEMY OF SCIENCES OF BELARUS"	BELARUS
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21	UNIWERSYTET WARSZAWSKI	POLAND
22	CONSORZIO NAZIONALE INTERUNIVERSITARIO PER LE SCIENZE FISICHE DELLA MATERIA	ITALY
23	NATIONAL INSTITUTE OF RESEARCH AND DEVELOPMENT FOR OPTOELECTRONICS	ROMANIA
24	LUDWIG-MAXIMILIANS-UNIVERSITAET MUENCHEN	GERMANY
25	CESKY HYDROMETEOROLOGICKY USTAV	CZECH REPUBLIC
26	PANNON EGYETEM	HUNGARY
27	INSTITUT D'AERONOMIE SPATIALE DE BELGIQUE.	BELGIUM
28	UNIVERSIDAD DE VALLADOLID	SPAIN
29	METEOROLOGISK INSTITUTT	NORWAY

Climate change is for a large part governed by atmospheric processes, in particular the interaction between radiation and atmospheric components (e.g. aerosols, clouds, greenhouse and trace gases). Some of these components are also those with adverse health effects influencing air quality. Strengthening the ground-based component of the Earth Observing System for these key atmospheric variables has unambiguously been asserted in the IPCC Fourth Assessment Report and Thematic Strategy on air pollution of the EU. However, a coordinated research infrastructure for these observations is presently lacking.

ACTRIS (Aerosols, Clouds and Trace gases Research Infrastructure Network) aims to fill this observational gap through the coordination of European ground-based network of stations equipped with advanced atmospheric probing instrumentation for aerosols, clouds and short-lived trace gases.

ACTRIS is a coordinated network that contributes to: providing long-term observational data relevant to climate and air quality research produced with standardized or comparable procedures; supporting transnational access to large infrastructures strengthening collaboration in and outside the EU and access to high quality information and services to the user communities; developing new integration tools to fully exploit the use of atmospheric techniques at ground-based stations, in particular for the calibration/validation/integration of satellite sensors and for the improvement of global and regional-scale climate and air quality models. ACTRIS supports training of new users in particular young scientists in the field of atmospheric observations and promotes the development of new technologies for atmospheric observation of aerosols, clouds and trace gases through close partnership with SMEs. ACTRIS will have the essential role to support integrated research actions in Europe for building the scientific knowledge required to support policy issues on air quality and climate change.

2.2. INGOS

http://www.ingos-infrastructure.eu/

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10	UNIVERSITAET BREMEN	GERMANY
11	HELSINGIN YLIOPISTO	FINLAND
12	DANMARKS TEKNISKE UNIVERSITET	DENMARK
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19	NORSK INSTITUTT FOR LUFTFORSKNING	NORWAY
20	KARLSRUHER INSTITUT FUER TECHNOLOGIE	GERMANY
21	LUNDS UNIVERSITEIT	SWEDEN
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24	AKADEMIA GORNICZO-HUTNICZA IM. STANISLAWA W KRAKOWIE	POLAND
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26	VERENIGING VOOR CHRISTELIJK HOGER ONDERWIJS WETENSCHAPPELLIJK ONDERZOEK EN PATIENTENZORG	THE NETHERLANDS
27	ORSZAGOS METEOROLOGIAI SZOLGALAT	HUNGARY
28	RIJKSUNIVERSITEIT GRONINGEN	THE NETHERLANDS
29	UNIWERSYTET PRZYRODNICZY W POZNANIU	POLAND
30	LEIBNIZ-INSTITUT FUER MEERESWISSENSCHAFTEN AN DER UNIVERSITAET KIEL	GERMANY
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34	FUNDACION CENTRO DE ESTUDIOS AMBIENTALES DEL MEDITERRANEO	SPAIN

InGOS is an Integrating Activity with the overall objective to integrate existing European facilities for monitoring NCGHGs (=CH_4, N_2O, SF_6, H_2 and halocarbons) in the atmosphere, at ecosystem flux measurement sites and over the ocean, by developing common quality control and quality assurance procedures. New measurement techniques and instrumentation will be explored for preparing the integration of NCGHG measurements into ICOS, thus giving these observatories an operational, long-term monitoring perspective.

Specific objectives of InGOS are:

- Quality check and harmonise the "historical" NCGHG observations in Europe,
- Standardised measurements by developing common QC/QA procedures and prepare for integration with the ICOS infrastructure,
- Provide near real-time access to the atmospheric CH4, N2O, SF6 and H2 data, also preparing for integration with the ICOS infrastructure,
- Provide access to key field stations an installations such as calibration facilities and aircraft sampling of flux heterogeneity,
- Prepare expansion of the current network with new stations in under-sample regions,
- Improve analysis methods using innovative techniques and strategies,
- Attribute CH4 source categories by advanced isotope techniques,
- Apply sophisticated, high resolution inverse models to analyse the measurements mad in InGOS and to support further development of the European NCGHG network,
- Link remote sensing data to the in situ network including FTIR X CH4 observations,
- Improve NCGHG flux measurements and link European flux towers to the atmospheric observational network,
- Stimulate atmospheric science knowledge transfer between experts and between experts and young scientists,
- Generate a European nonCO2 GHG observation database, which will be made available to the scientific community and general public via the InGOS Data Centre, in close connection with the ICOS infrastructure methodology and databases.

2.3. EUFAAR

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7	SCIENCE AND TECHNOLOGY FACILITIES COUNCIL	UNITED KINGDOM
8	STICHTING NATIONAAL LUCHT- EN RUIMTEVAARTLABORATORIUM	THE NETHERLANDS
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13	GEOLOGIAN TUTKIMUSKESKUS	FINLAND
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15	FORSCHUNGSZENTRUM KARLSRUHE GMBH	GERMANY

16	ALFRED WEGENER INSTITUTE FÜR POLAR UND MEERESFORSCHUNG	GERMANY
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18	UNIVERSITY OF SZEGED	HUNGARY
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21	UNIVERSITY OF WARSAW	POLAND
22	COSINE RESEARCH B.V.	THE NETHERLANDS
23	INSTITUT DE RADIOPROTECTION ET DE SURETE NUCLEAIRE	FRANCE
24	COMAT	COMAT
25	THE UNIVERSITY OF MANCHESTER	UNITED KINGDOM
26	VON KARMAN INSTITUTE FOR FLUID DYNAMICS	BELGIUM
27	UNIVERSITÄT ZÜRICH	SWITZERLAND
28	WAGENINGEN UNIVERSITEIT	THE NETHERLANDS
29	USTAV SYSTEMOVE BIOLOGIE A EKOLOGIE	CHECK REPUBLIC
30	TEL AVIV UNIVERSITY	ISRAEL
31	THE UNIVERSITY OF EDINBURGH	UNITED KINGDOM
32	GEOFORSCHUNGSZENTRUM POTSDAM	GERMANY
33	PLYMOUTH MARINE LABORATORY	UNITED KINGDOM

EUFAR is the Integrating Activity for airborne research in Geo-science. It will integrate the airborne community, to ensure that researchers may have access to the most suited infrastructure they need, irrespective of the location of the infrastructure. The EUFAR consortium comprises 35 legal entities, out of which 15 are operators of airborne facilities, and 20 experts in airborne research. They contribute to 9 Networking Activities, Trans-national Access to 26 installations, and 4 Joint Research Activities. A Scientific Advisory Committee constituted of eminent scientists contributes to a better integration of the users with the operators to tackle new user driven developments. Transnational Access coordination aims at providing a wider and more efficient access to the infrastructures. The working group for the Future of the Fleet fosters the joint development of airborne infrastructures in terms of capacity and performance. The Expert Working Groups facilitate a wider sharing of knowledge and technologies across fields. The activity for Education and Training provides training courses to new users. The working group on Standards and Protocols contributes to better structure the way research infrastructures operate. The development of a central data base for airborne activities improves the access to the data collected by the aircraft. All these activities rely on an unique web portal to airborne research in Europe. The working group on the Sustainable Structure aims at promoting solutions for the long term sustainability of EUFAR. Among the JRA, one will develop and characterize airborne hygrometers, the second one will manufacture a modular turbulence probe system that will cover the whole range of speed of the diverse aircraft, the third one will develop an airborne drop spectrometer based on a new principle, and the fourth one will develop and implement quality layers in the processing chains of hyper-spectral imagery.

2.4. IS-ENES

https://is.enes.org/

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7	ACADEMY OF ATHENS	GREECE
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9	CENTRO EURO-MEDITERRANEO PER I CAMBIAMENTI CLIMATICI	ITALY
10	THE MET OFFICE, FOR AND ON BEHALF OF THE SECRETARY OF STATE FOR THE DEFENCE OF THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND	UNITED KINGDOM
11	KONINKLIJK NEDERLANDS METEOROLOGISCH INSTITUUT	THE NETHERLANDS
12	METEO FRANCE - CENTRE NATIONAL DE RECHERCHES METEOROLOGIQUES	FRANCE
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14	LINKÖPINGS UNIVERSITET	SWEDEN
15	BARCELONA SUPERCOMPUTING CENTER	SPAIN
16	WAGENINGEN UNIVERSITEIT	THE NETHERLANDS

17	INSTITUTUL NATIONAL DE HIDROLIGIE SI GOSPODARIRE A APELOR	ROMANIA
18	DEUTSCHES ZENTRUM FÜR LUFT UND RAUMFAHRT IN DER HELMHOLTZ GEMEINSCHAFT	GERMANY

IS-ENES will develop a common climate and Earth system modelling distributed research infrastructure in Europe, following the general strategy of the World Climate Modelling Program (see B1.2), to facilitate the development and exploitation of climate models and better fulfil the societal needs with regards to climate change issues.

IS-ENES will follow four main general objectives:

Foster the integration of the European climate and Earth system modelling community

Further integrate the European ESM community, through networking activities focusing on the development of the future ENES strategy, the exchange of expertise and the development of training activities (NA1 and NA3)

Develop a virtual Earth System Modelling Resource Centre (V.E.R.C.), using ICT technologies to integrate the different distributed facilities currently existing or developed during this project (NA2)

Foster the development of Earth System Models for the understanding of climate change

Increase the services around ESMs, by enhancing model documentation and developing a service on common tools and model components (NA3 and SA1)

Foster the joint development and common evaluation of the European ESMs through networking activities and joint research activities on ESM software environment (i.e. the tools to prepare, run, store, evaluate and exploit model simulations) and ESM components (NA2, JRA1 and JRA3)

Foster high-end simulations enabling to better understand and predict future climate change

Ensure an efficient access and execution of ESMs on high-performance computing facilities, by developing a common strategy, by enhancing the interface with and access to the EU large infrastructures DEISA2 and PRACE, by improving model performance on different computer architectures (NA1 and JRA2)

Foster the application of Earth system model simulations to better predict and understand future climate change impacts

Enhance the dissemination of model results, by enhancing the service around model results following the INSPIRE EU directive and developing more efficient tools to access data (SA2 and JRA4)

Enhance the interaction with decision makers and user communities, mainly concerned by climate change impact studies, through service activity and joint research development on data access as well as more adapted indicators. This will help Europe prepare for adaptation as recommended by the 2007 EU Green paper “Adapting to climate change in Europe” (NA1 and JRA5)

2.5. EUROCHAMP

Coordinator:

Prof. Dr. Peter WIESEN - wiesen@uni-wuppertal.de

List of participants:

Participant No	Organisation	Country
1	FORSCHUNGSZENTRUM JUELICH GMBH FZJ	GERMANY
2	FUNDACION CENTRO DE ESTUDIOS AMBIENTALES DEL MEDITERRANEO	ITALY
3	UNIVERSITAET BAYREUT	GERMANY
4	UNIVERSITY COLLEGE CORK, NATIONAL UNIVERSITY OF IRELAND, CORK	IRELAND
5	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	FRANCE
6	PAUL SCHERRER INSTITUT	SWITZERLAND
7	FORSCHUNGSZENTRUM KARLSRUHE GESELLSCHAFT MIT BESCHRAENKTER HAFTUNG	GERMANY
8	UNIVERSITY OF LEEDS	UNITED KINGDOM
9	SP SVERIGES TEKNISKA FORSKNINGINSTITUT AB	SWEDEN
10	UNIVERSITE PARIS XII VAL DE MARNE	FRANCE
11	LEIBNIZ INSTITUT FUER TROPOSPHAERENFORSCHUNG E. V	GERMANY
12	IT UNIVERSITY OF COPENHAGEN	DENMARK
13	THE UNIVERSITY OF MANCHESTER	UNITED KINGDOM

The fundamental objective of the project is the further integration of existing European research facilities to a grid of reaction chambers in a continuation of the EUROCHAMP project. These facilities were created to study the impact of atmospheric processes e.g. on regional photochemistry, global change, as well as cultural heritage and human health effects under as realistic conditions as possible. Although initial advances in the application of large chambers occurred in the United States and Japan, Europe now leads the world in the use of large, highly instrumented chambers for atmospheric model development and evaluation. Smaller chambers that were designed for specific purposes and are operated by experts in their fields excellently supplement the larger chambers. The integration of all these environmental chamber facilities within the framework of the EUROCHAMP-2 project promotes the retention of Europe's international position of excellence in this area and is unique in its kind worldwide. The mobilisation of a large number of stakeholders dealing with environmental chamber techniques provides an infrastructure to the research community at an European level that offers maximum support for a broad community of researchers from different disciplines. The EUROCHAMP-2 project will foster the structuring effect of atmospheric chemistry activities performed in European environmental chambers within EUROCHAMP, since it offers the full availability of corresponding facilities for the whole European scientific community. With respect to the project objectives mentioned above, three network activities, two joint research activities and a transnational access activity are formulated and cross-linked in the EUROCHAMP-2 project.

2.6 INTERACT

http://www.eu-interact.org/

Coordinator:

Terry CALLAGHAN - terry_callaghan@btinternet.com

List of participants:

PARTICIPANT No	ORGANISATION	COUNTRY
1	KUNGLIGA VETENSKAPSAKADEMIEN	SWEDEN
2	AARHUS UNIVERSITET	DENMARK
3	OULUN YLIOPISTO	FINLAND
4	SVERIGES LANTBRUKSUNIVERSITET	SWEDEN
5	LUNDS UNIVERSITET	SWEDEN
6	IT UNIVERSITY Of COPENHAGEN	DENMARK
7	JARDFEINGI FINI	ISLANDS
8	CLU SRL	ITALY
9	STOCKHOLMS UNIVERSITET	SWEDEN
10	TURUN YLIOPISTO UTURKU	FINLAND
11	HELSINGIN YLIOPISTO	FINLAND
12	METSANTUTKIMUSLAITOS	FINLAND
13	KØBENHAVNS UNIVERSITET	DENMARK
14	GRONLANDS NATURINSTITUT	GREENLAND
15	UNIVERSITETET I OSLO	NORWAY
16	NORWEGIAN INSTITUTE FOR AGRICULTURAL AND ENVIRONMENTAL RESEARCH	NORWAY
17	NORSK POLARINSTITUTT	NORWAY

18	NATURAL ENVIRONMENT RESEARCH COUNCIL	UNITED KINGDOM
19	LANDBUNADARHASKOLI ISLANDS	ICELAND
20	YUGRA STATE UNIVERSITY	RUSSIAN FEDERATION
21	INSITUTE FOR BIOLOGICAL PROBLEMS OF CRYOLITHOZONE SIBERIAN BRANCH RUSSIAN ACADEMY OF SCIENCES	RUSSIAN FEDERATION
22	STATE EDUCATION AND SCIENTIFIC INSTITUTION FACULTY OF GEOGRAPHY OF M.V. LOMONOSOV MOSCOW STATE UNIVERSITY	RUSSIAN FEDERATION
23	ALFRED-WEGENER-INSTITUT FUER POLAR- UND MEERESFORSCHUNG	GERMANY
24	UNIVERSITY OF ALASKA	UNITED STATES
25	UPPSALA UNIVERSITET	SWEDEN
26	ATHENA RESEARCH AND INNOVATION CENTER IN INFORMATION COMMUNICATION & KNOWLEDGE TECHNOLOGIES	GREECE
27	UNIVERSITE LAVAL CEN	CANADA
28	THE ARTIC INSTITUTE OF NORTH AMERICA	CANADA
29	POLARFORSKNINGSSEKRETARIETET	SWEDEN
30	BARROW ARCTIC SCIENCE CONSORTIUM INC	UNITED STATES
31	WORLD WILDLIFE FUND CANADA CORPORATION	CANADA
32	ARCTIC MONITORING AND ASSESSMENT PROGRAMME SECRETARIAT	NORWAY

Environmental change and particularly amplified global climate change are accelerating in the Arctic. These changes already affect local residents and feedback from the Arctic's land surface to the climate system, will have global implications. However, climate change and its impacts are variable throughout the wide environmental and land use envelopes of the Arctic. Unfortunately, the Arctic is generally remote, sparsely populated and research and monitoring activities are more restricted in time and space than elsewhere. This limitation comes when there is a rapidly expanding need for knowledge as well as increasing technological opportunities to make data collection in the field and accessibility more efficient. INTERACT is a network under the auspices of SCANNET, a circumarctic network of terrestrial field bases. INTERACT specifically seeks to build capacity for research and monitoring in the European Arctic and beyond. Partnerships will be established between Station Managers and researchers within Joint Research Activities that will develop more efficient networks of sensors to measure changing environmental conditions and make data storage and accessibility more efficient through a single portal. New communities of researchers will be offered access to Arctic terrestrial infrastructures while local stakeholders as well as major international organisations will be involved in interactions with the infrastructures. This will lead to increased public awareness of environmental change and methods to adapt to them, increased access to information for education at all levels, and input to major international research and assessment programmes. The whole consortium will form a coherent and integrated unit working within a concept of a wide environmental and land use envelopes in which local conditions determine the directions and magnitudes of environmental change whereas the balance and synergies of processes integrated across the whole region have global impacts.

2.7 DRIHS

http://www.drihms.eu/

List of participants:

PARTICIPANT No	ORGANISATION	COUNTRY
1	CENTRO INTERNAZIONALE IN MONITORAGGIO AMBIENTALE - FONDAZIONE CIMA	ITALIA
2	LUDWIG-MAXIMILIANS-UNIVERSITAET MUENCHEN	DEUTSCHLAND
3	UNIVERSIDAD POLITECNICA DE MADRID	ESPAÑA
4	CONSIGLIO NAZIONALE DELLE RICERCHE	ITALIA
5	DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV	DEUTSCHLAND
6	CENTRE EUROPEEN DE RECHERCHE ET DE FORMATION AVANCEE EN CALCUL SCIENTIFIQUE	FRANCE
7	REPUBLICKI HIDROMETEOROLOSKI ZAVODSRBIJE	SERBIA
8	CONSORTIUM OF UNIVERSITIES FOR THE ADVANCEMENT OF HYDROLOGIC SCIENCE INC CORPORATION	UNITED STATES
9	HR WALLINGFORD LTD	UNITED KINGDOM
10	STICHTING DELTARES	NEDERLAND
11	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	FRANCE

Predicting weather and climate and its impacts on the environment, including hazards such as floods and landslides, is still one of the main challenges of the 21st century with significant societal and economic implications. At the heart of this challenge, as also suggested by the Distributed Research Infrastructure for Hydro-Meteorology Study (DRIHMS) project, lies the ability to have easy access to hydro meteorological data and models, and facilitate the collaboration between meteorologists, hydrologists, and Earth science experts for accelerated scientific advances in hydro meteorological research (HMR).

The Distributed Research Infrastructure for Hydro-Meteorology (DRIHM) project intends to develop a prototype e-Science environment to facilitate this collaboration and provide end-to-end HMR services (models, datasets and post-processing tools) at the European level, with the ability to expand to global scale. The objectives of DRIHM are to lead the definition of a common long-term strategy, to foster the development of new HMR models and observational archives for the study of severe hydro meteorological events, to promote the execution and analysis of high-end simulations, and to support the dissemination of predictive models as decision analysis tools.

DRIHM combines the European expertise in HMR, in Grid and High Performance Computing (HPC). Joint research activities will improve the efficient use of the European e-Infrastructures, notably Grid and HPC, for HMR modelling and observational databases, model evaluation tool sets and access to HMR model results. Networking activities will disseminate DRIHM results at the European and global levels in order to increase the cohesion of European and possibly worldwide HMR communities and increase the awareness of ICT potential for HMR. Service activities will deploy the end-to-end DRIHM services and tools in support of HMR networks and virtual organizations on top of the existing European e-Infrastructures.

3. RI: DESIGN STUDY PROJECTS

3.1 ARISE

Coordinator:

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List of participants:

PARTICIPANT No	ORGANISATION	COUNTRY
1	COMMISSARIAT A L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	FRANCE
2	DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV	DEUTSCHLAND
3	STIFTELSEN NORSAR	NORGE
4	ECOLE CENTRALE DE LYON	FRANCE
5	INSTITUT D'AERONOMIE SPATIALE DE BELGIQUE	BELGIQUE-BELGIË
6	UNIVERSITA DEGLI STUDI DI FIRENZE	ITALIA
7	THE UNIVERSITY OF READING	UNITED KINGDOM
8	USTAV FYZIKY ATMOSFERY AV CR, V.V.I.	CESKA REPUBLIKA
9	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	FRANCE
10	KONINKLIJK NEDERLANDS METEOROLOGISCH INSTITUUT (KNMI)	NEDERLAND
11	INSTITUTET FOR RYMDFYSIK	SVERIGE
12	BUNDESANSTALT FUER GEOWISSENSCHAFTEN UND ROHSTOFFE	DEUTSCHLAND

Objectives:

ARISE proposes to design a new infrastructure that integrates different station networks in order to provide a new 3D image of the atmosphere from the ground to the mesosphere with unprecedented spatio-temporal resolution. Three existing networks are involved: 1) the International infrasound network developed for the verification of the Comprehensive nuclear Test Ban Treaty (CTBT), 2) the Network for the Detection of Atmospheric Composition Changes (NDACC) which uses Lidar to measure stratospheric dynamics and 3) the Network for the Detection of Mesopause Changes (NDMC), dedicated to airglow layer measurements in the mesosphere. In addition the network will incorporate complementary infrasound station and satellite data.

The infrastructure extends across Europe and outlying regions, including polar and equatorial regions. The network will play a particularly important role in improving atmospheric measurement in the stratosphere. A great deal of recent work has shown that stratospheric variability, primarily caused by large, planetary-scale waves, is important for prediction of tropospheric weather and climate. Additionally, the network will provide important new measurements of atmospheric gravity waves. Parameterization of gravity waves is needed for accurate simulation of mean climate and variability, but parameters are uncertain due to lack of long-term high-resolution observations. The expected benefits of ARISE are two-fold. First, the measurements will allow a better description of the atmosphere state, leading to an improved accuracy in short and medium range weather forecasts. Second, the measurements will be used to improve the simulation of middle atmosphere climate and its tropospheric impact. In the long term, data will be used for monitoring changes in the occurrence of extreme events and trends in the middle atmosphere climate. The benefits also include civil applications related to monitoring of natural hazards as volcanoes.

4. RESEARCH PROJECTS and COORDINATION ACTIONS

4.1. EUCLIPSE

Coordinator:

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List of participants:

PARTICIPANT No	ORGANISATION	COUNTRY
1	KNMI Weather Research	THE NETHERLANDS
2	Max Planck Institute for Meteorology	GERMANY
3	Met Office	UNITED KINGDOM
4	CNRS	FRANCE
5	Academy of Athens	GREECE
6	European Centre of Medium Range Weather Forecasts	UNITED KINGDOM
7	Delft University of Technology	THE NETHERLANDS
8	Meteo-France	FRANCE
9	University of Stockholm	SWEDEN
10	ETH Zürich	ZWITSERLAND
11	University of Warsaw	POLAND
12	DKRZ	GERMANY

Objectives:

The central objective of EUCLIPSE is to reduce the uncertainty in the representation of cloud processes and feedbacks in the new generation of Earth System Models (ESMs), in support of the IPCC's fifth assessment report. Novel, process-oriented evaluations of clouds in present-day and future climate simulations made by the leading European ESMs will identify the cloud types and processes responsible for the spread in climate sensitivity and future precipitation changes across the models, and for deficiencies in the simulation of the present-day climate. The new diagnostics and metrics developed in EUCLIPSE will inform targeted sensitivity experiments to isolate the processes responsible for cloud feedback uncertainty.

In EUCLIPSE, four distinct communities will work together across a set of integrated work packages

over a four-year period: the observational community will provide state-of-the-art measurements from ground- and space-based active and passive remote sensing; the numerical weather prediction community will provide analyses of short timescale model biases induced by cloud processes; the cloud modelling community will provide fine-scale models as an additional tool for understanding cloud behaviour in a changing climate; finally, the climate modelling community will synthesize the physical understanding and observational constraints identified by the other communities to improve the representation and assessment of cloud processes in ESMs and so improve the predictive skill of ESMs.

The strength of the EUCLIPSE project is the combination of detailed modelling and observation at the level of individual clouds and the evaluation and analysis of clouds in the climate system in global climate models using the latest diagnostic techniques and satellite products.

4.2. RECONCILE

https://www.fp7-reconcile.eu/

Coordinator:

Marc VON HOBE - m.von.hobe@fz-juelich.de

List of participants:

PARTICIPANT No	ORGANISATION	COUNTRY
1	FORSCHUNGSZENTRUM JÜLICH	GERMANY
2	UNIVERSITY OF CAMBRIDGE	UNITED KINGDOM
3	DEUTSCHES ZENTRUM FÜR LUFT- UND RAUMFAHRT	GERMANY
4	ALFRED-WEGENER-INSTITUT	GERMANY
5	SWISS FEDERAL INSTITUTE OF TECHNOLOGY	SWITZERLAND
6	NORWEGIAN INSTITUTE FOR AIR RESEARCH	NORWAY
7	CNRS, SERVICE D'AERONOMIE	FRANCE
8	UNIVERSITY OF WUPPERTAL	GERMANY
9	MAX-PLANCK-INSTITUTE MAX PLANCK SOCIETY	GERMANY
10	CENTRE SUISSE D'ELECTRONIQUE ET DE MICROTECHNIQUE	SWITZERLAND
11	CONSIGLIO NAZIONALE DELLE RICERCHE	ITALY
12	CENTRAL AEROLOGICAL OBERVATORY	RUSSIAN FEDERATION
13	UNIVERSITY OF HEIDELBERG	GERMANY
14	KARLSRUHE INSTITUTE OF TECHNOLOGY	GERMANY
15	EÖTVÖS UNIVERSITY BUDAPEST	HUNGARY
16	UNITED KINGDOM METEOROLOGICAL OFFICE	UNITED KINGDOM

The effects of the Montreal Protocol will very likely result in ozone recovery during the next few decades. In the long run, climate change and possible geoengineering ventures to mitigate climate change may radically alter the temperature, circulation patterns and chemical composition in the stratosphere. To realistically predict the response of the ozone layer to these changes and the future evolution of Arctic ozone, a complete and correct representation of all relevant processes is necessary. RECONCILE sets out to reach full quantitative understanding of Arctic stratospheric ozone loss.

The issues where the lack of understanding is most palpable are (a) the catalytic ClOx/BrOx chemistry, (b) chlorine activation on cold stratospheric aerosol, (c) NAT nucleation mechanisms, and (d) mixing and transport of processed air to lower latitudes. A catalogue of open questions in all these areas has been defined including:

- Are there unknown additional mechanisms for O_3 destruction in polar winter?
- Does the cold binary aerosol suffice to activate chlorine or are PSCs required?
- How does NAT nucleation leading to large denitrifying particles work?
- How intense is the transport through the vortex edge in both directions and how does it influence estimates of ozone depletion?

These and other important questions will be addressed in RECONCILE with the aim to develop parameterisations that can be used in computer models simulating stratospheric chemistry and transport.

In the first project phase, a comprehensive approach of laboratory experiments, two field missions in the Arctic winter 2009/10 employing the high altitude aircraft M55-Geophysica and an extensive Match ozone sonde campaign, microphysical and chemical transport modelling as well as data assimilation is used to address the open questions defined in the objectives and produce reliable parameterisations of the key processes in Arctic stratospheric ozone depletion.

In the second phase, these will be bridged to the large scale chemistry climate model (CCM) LMDZ repro. CCMs provide the prognostic tools to simulate the coupling between climate change and atmospheric chemistry. To assess the success of the CCM in simulating observed time series of total ozone, RECONCILE will adopt an innovative approach called detrended fluctuation analysis (DFA).

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4.3. SHIVA

http://shiva.iup.uni-heidelberg.de/

Coordinator:

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List of participants:

PARTICIPANT No	ORGANISATION	COUNTRY
1	RUPRECHT-KARLS-UNIVERSITÄT HEIDELBERG	GERMANY
2	UNIVERSITY OF EAST ANGLIA	UNITED KINGDOM
3	JOHANN WOLFGANG GOETHE UNIVERSITÄT FRANKFURT	GERMANY
4	ALFRED-WEGNER-INSTITUTE FOR POLAR AND MARINE RESEARCH POTSDAM AND BREMERHAVEN	GERMANY
5	BELGIAN INSTITUTE FOR SPACE AERONOMY	BELGIUM
6	UNIVERSITY OF CAMBRIDGE	UNITED KINGDOM
7	LEIBNIZ-INSTITUT FÜR MEERESWISSENSCHAFTEN AN DER UNIVERSITÄT KIEL	GERMANY
8	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	FRANCE
9	UNIVERSITY OF LEEDS	UNITED KINGDOM
10	THE NORWEGIAN INSTITUTE FOR AIR RESEARCH	NORWAY
11	UNIVERSITÄT BREMEN	GERMANY
12	DEUTSCHES ZENTRUM FÜR LUFT- UND RAUMFAHRT	GERMANY
13	UNIVERSITY OF MALAYA	MALAYA

It is now well known that certain “ozone depleting substances” (ODSs) are broken down by the solar radiation in the stratosphere releasing the “halogen” elements: chlorine, bromine and iodine. The halogens are highly efficient at destroying ozone in the stratosphere, and rising concentrations from human activities has led to depletion of global stratospheric ozone over the last three decades, and formation of the Antarctic “ozone hole”. It is also known that ODSs enter the stratosphere principally in the topics, where ascending warm air carries them aloft. Climate feed-backs between the emissions and transport of ODSs exist, particularly in the tropics where even very short-lived (VSL) ODSs of natural origin (e.g. emitted by the oceans, and by marine and terrestrial organisms) can enter the stratosphere in powerful thundercloud systems.

SHIVA aims to reduce uncertainties in the amount of halogen-containing ODSs reaching the stratosphere, and the resulting ozone depletion, in a climate that is changing now, and which will change in the future.

Many short-lived ODSs are produced naturally in the world's oceans, the primary sources being coastal macroalgae (seaweeds), open ocean phytoplankton and aqueous photochemical reactions. There is strong evidence that the major VSL ODS emission regions are in the warmer waters found in the tropics, although very few measurements have been made to date. The Western Pacific region could be a highly significant location for two reasons: (i) it is an area where production rates of VSL ODS are likely to be high, and (ii) it is the most important region globally for efficient transport of low altitude (marine boundary layer) air to the stratosphere.

By combining measurements from land, ship, aircraft, and space-based platforms, with sophisticated numerical models, SHIVA aims to better predict the rate, timing and climate-sensitivity of ozone-layer recovery, and identify potential risks to that recovery.

Long term measurements will take place across the tropics. In late 2011 a core field campaign will take place in the South China Sea, and along the coastline of Peninsula Malaysia and Borneo using the *Sonne* Research Vessel, the DLR Falcon aircraft, satellites, and land-based investigation teams.

SHIVA will study the chemical transformation of ODSs during transport from the surface to the tropical tropopause layer (TTL), and in the stratosphere, using a combination of field observations together with process-oriented meso-scale modelling. These investigations will be corroborated by space-based remote sensing of marine phytoplankton biomass as a possible proxy for the ocean-atmosphere flux of ODSs. From this a systematic emission inventory of VSL ODSs will be established to allow construction of future-climate scenarios. The impact of climate-sensitive feedbacks between transport and the delivery of ODSs to the stratosphere, and their lifetime within it, will be studied using tracer observations and modelling.

Global modeling will assess the contribution of all ODSs to past, present and future ozone loss. The sensitivity of natural ODSs emissions to climate change parameters will be used in combination with standard IPCC climate model scenarios in order to drive measurement-calibrated chemical transport model (CTM) simulations for present and future stratospheric ozone; to better predict the rate, timing and climate-sensitivity of ozone-layer recovery.

SHIVA brings together experts from different fields, ranging from marine biologists to atmospheric scientists. The improvement of the knowledge on how VSL ODSs are produced and emitted by the oceans and the factors influencing this (e.g. sea surface temperature, nutrient content and phytoplankton specification) is imperative in predicting how biosphere emissions of VSL ODSs will react to climate change and, further, which fraction of the emitted VSL ODSs will eventually reach the stratosphere.

SHIVA will contribute to the scientific underpinning of the United Nations Montreal Protocol on Substances that Deplete the Ozone Layer, to the United Nations Framework Convention on Climate Change, and to global climate change research.

4.4. IMPLICC

http://implicc.zmaw.de

Coordinator:

Hauke SCHMIDT- hauke.schmidt@zmaw.de

List of participants:

PARTICIPANT No	ORGANISATION	COUNTRY
1	MAX-PLANCK-GESELLSCHAFT ZUR FÖRDERUNG DER WISSENSCHAFTEN E.V., MAX-PLANCK-INSTITUT FÜR METEOROLOGIE	GERMANY
2	COMMISSARIAT A L'ENERGIE ATOMIQUE, LABORATOIRE DES SCIENCES DU CLIMAT ET L'ENVIRONNEMENT	FRANCE
3	UNIVERSITETET I OSLO	NORWAY
4	CENTER FOR INTERNATIONAL AND ENVIRONMENTAL RESEARCH - OSLO	NORWAY

Anthropogenic emissions of greenhouse gases (GHG) are widely considered to have a significant impact on Earth's climate. The projected temperature increase until 2100 lies in the range of 1.8 to 4.0 K. In order to prepare for possible failure of emission reduction attempts, recently, the public and scientific communities have intensified the discussion of "geoengineering", meaning the deliberate, large scale manipulation of climate. "Solar radiation management", i.e. methods to limit the solar radiation that reaches the surface may allow a counterbalancing of the effects of GHG emissions on global temperature, but may also result in undesirable side effects for crucial parts of the Earth system.

Among the so-called solar radiation management methods, two have received particular attention, so far: a) the injection of large amounts of sulphur dioxide in the Earth's stratosphere that would build sulphate aerosols that are expected to reflect solar radiation analogous to effects observed after large volcanic eruptions, and b) the brightening of low level marine clouds via the injection of additional condensation nuclei. So far it is unclear, if the methods have the desired cooling potential and which side effects would have to be expected. The overall goal of this project is to significantly increase the level of knowledge about the feasibility and implications of these suggested geoengineering options. This concerns in particular the climatic consequences – even if a global temperature reduction could be reached, local climate may change significantly under geoengineering-, but also economic implications.

Three complex climate models are used to quantify the effectiveness and side effects of such geoengineering concepts aiming at a reduction of the incoming solar radiation. Simulations of a climate modified through geoengineering will be performed based on IPCC type future emission scenarios. The performance of the same type of numerical experiments with several different complex climate models is necessary to assess uncertainties of the simulated geoengineered climate. Besides these transient simulations of the 21st century, sensitivity studies will be performed to study effects of different implementation strategies of geoengineering on specific, vulnerable parts of the Earth system like the ozone layer. Economic modelling will be used to link benefits and side effects of the studied geoengineering concepts.

An eventual application of any geoengineering technique will have to be decided by some political body. But a decision to apply or not to apply geoengineering should not be taken before considering as carefully as possible its potential benefits and side effects. Our project is a part of the international scientific efforts to provide to policy makers in general and to the European Commission in particular the necessary information for future decisions. Because of the project's limited scope, we do not expect to provide some final conclusion on the issue of geoengineering. However, we expect being able to provide a recommendation to policy makers on the usefulness of future studies concerning the geoengineering options studied in our project.

Early results of the project are an assessment of the suitability of different oceanic regions for the technique of cloud manipulation, and the estimation that cooling effects of stratospheric sulphur emission depend crucially on the emission strategy and may be overestimated from the volcanic analogy.

4.5. ICEPURE

Coordinator:

Antony YOUNG - antony.r.young@kcl.ac.uk

List of participants:

PARTICIPANT No	ORGANISATION	COUNTRY
1	KINGS COLLEGE LONDON	UNITED KINGDOM
2	BISPEBJERG HOSPITAL	DENMARK
3	MEDICAL UNIVERSITY OF LODZ	POLAND
4	KAROLINSKA INSTITUTET	SWEDEN
5	CENTRE FOR RESEARCH IN ENVIRONMENTAL EPIDEMIOLOGY	SPAIN
6	UNIVERSITY OF VETERINARY MEDICINE (UVM)	AUSTRIA
7	HEALTH PROTECTION AGENCY	UNITED KINGDOM
8	DANISH METEOROLOGICAL INSTITUTE	DENMARK

We will determine the adverse and beneficial health effects of personal UVR exposure and their relationships with climatic and environmental factors that modify the solar UVR spectrum. Date and time stamped personal electronic wristwatch dosimeters will be worn to measure individual UVR exposure over extended periods. Satellite and ground station data will be gathered to establish terrestrial UVR spectral irradiance, cloud, albedo, ozone and aerosol data, at the locations and times of exposure. These dosimeters will be used in field studies in working, water, beach and snow situations in four different countries, including studies with children. The personal dosimetric data combined with diary, ground station and satellite data will show the influence of behaviour, meteorological, environmental and cultural factors on individual UVR exposure doses. The interaction between the personal exposure parameters and the satellite and ground station data will enable the development of a humanized radiative transfer model to assess the future impact of climate change on UVR exposure. This is in contrast to previous models that assume exposure to a given fraction of ambient UVR. We will also determine the effect of UVR exposure on DNA damage and immunity in field conditions. Furthermore, the relationship between UVR exposure and vitamin D status will be determined, thus enabling a direct correlation between important risk and benefit biomarkers. We will also determine the spectral relationship between erythema, UVR-induced immunosuppression and vitamin D status. These studies will determine the value of erythema as a biological weighing function for UVR related health outcomes. Finally, we will perform a systematic review of a wide range of health outcomes from UVR exposure, and integrate our personal UVR exposure and modelling data into existing epidemiological data to estimate measurement error and any effects on current UVR dose response relationships and health outcome

4.6 ACCENT PLUS

Coordinator:

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List of participants:

PARTICIPANT No	ORGANISATION	COUNTRY
1	CONSIGLIO NAZIONALE DELLE RICERCHE	ITALY
2	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	FRANCE
3	HELMHOLTZ-ZENTRUM GEESTHACHT ZENTRUM FUR MATERIAL- UND KUSTENFORSCHUNG GMBH	GERMANY
4	UNIVERSITAET BREMEN	GERMANY
5	WEIZMANN INSTITUTE OF SCIENCE	ISRAEL
6	UNIVERSITA' DEGLI STUDI DI URBINO CARLO BO	ITALY
7	PAUL SCHERRER INSTITUT	SWITZERLAND
8	NATURAL ENVIRONMENT RESEARCH COUNCIL	UNITED KINGDOM
9	UNIVERSITY OF LEICESTER	UNITED KINGDOM

Fragmentation of research efforts, lack of a shared scientific vision and insufficient availability of research tools, shared databases, etc., is a major limitation for the understanding of atmospheric composition change over Europe under a changing climate, and the consequent inadequate transfer of prospects to the decision makers for future policies. The ACCENT-Plus project builds on the successful efforts of the Network of Excellence ACCENT which, over the past six years, has brought together the atmospheric science community engaged in global change and air pollution studies. The integration efforts within the ACCENT Network have produced a stronger cohesion of the community, including research groups from the new EU Member States and have facilitated the engagement of a new generation of scientists who have started their career in the collaborative environment promoted by ACCENT. ACCENT-Plus aims at extending the breath of the previous ACCENT phase to reach out to the policy community, facilitating the transfer of research results into policy/decision making. A prerequisite to reach this goal is to continue fostering the coordination and integration of the European science community, associating with this new effort all partners and associates of the previous ACCENT phase. Joint research programming, contribution to the international research agenda, access to information, training/mobility activities and facilitation in the use of research infrastructures will be key elements of ACCENT-Plus to preserve and enhance the excellence of European research in an ERA context, to produce integrated assessment and synthesis of scientific results and to connect science and policy making by transferring to the decision makers the important links between air quality and climate change and the prospects and benefits of co-control policies.

4.7 PEGASOS

http://pegasos.iceht.forth.gr/

Coordinator:

List of participants:

PARTICIPANT No	ORGANISATION	COUNTRY
1	FOUNDATION FOR RESEARCH AND TECHNOLOGY, HELLAS	GREECE
2	FORSCHUNGZENTRUM JÜLICH GMBH	GERMANY
3	HELSINGIN YLIOPISTO	FINLAND
4	UNIVERSITY OF LEICESTER	UNITED KINGDOM
5	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	FRANCE
6	CONSIGLIO NAZIONALE DELLE RICHERIE	ITALY
7	EIDGENÖSSISCHE TECHNISCHE HOCHSCHULE ZÜRICH	SWITZERLAND
8	LUNDS UNIVERSITET	SWEEDEN
9	WAGENINGEN UNIVERSITEIT	THE NETHERLANDS
10	NATIONAL UNIVERSITY OF IRELAND, GALWAY	IRELAND
11	KOBENHAVNS UNIVERSITET	DENMARK
12	WEIZMANN INSTITUTE OF SCIENCE	ISRAËL
13	METEOROLOGISK INSTITUTT	NORWAY
14	JOINT RESEARCH CENTER OF THE EU COMMISSION	BELGIUM
15	MAX PLANCK GESELLSHAFT ZUR FOERDERUNG DER WISSENSCHAFTEN E. V.	GERMANY
16	ILMATIETEEN LAITOS	FINLAND
17	NATURAL ENVIRONMENT RESEARCH COUNCIL	UNITED KINGDOM
18	PAUL SCHERRER INSTITUTE	SWITZERLAND
19	STOCKHOLMS UNIVERSITET	SWEDEN
20	UNIVERSITY OF LEEDS	UNITED KINGDOM

21	LEIBNIZ INSTITUT FUR TROPOSPHAERENFORSHUNG E.V.	GERMANY
22	GKSS - FORSCHUNGZENTRUM GEESTHACHT GMBH	GERMANY
23	AS AIREL	ESTONIA
24	INTERNATIONALES INSTITUT FUER ANGEWAND SYSTEMANALYSE	AUSTRIA
25	MINISTERIE VAN VOLKSHUISVESTING, RUIMTELIJKE ORDENING EN MILIEUBEHEER	THE NETHERLANDS
26	UNIVERSITY JOSEPH FOURIER GRENOBLE 1	FRANCE

PEGASOS brings together most of the leading European research groups, with state-of the-art observational and modelling facilities to:

- Quantify the magnitude of regional to global feedbacks between atmospheric chemistry and a changing climate and to reduce the corresponding uncertainty of the major ones.
- Identify mitigation strategies and policies to improve air quality while limiting their impact on climate change.
- PEGASOS will address five Specific Scientific Questions, bridging the spatial and temporal scales that connect local surface-air pollutant exchanges, air quality and weather with global atmospheric chemistry and climate. PEGASOS major focus for air quality will be Europe including effects of changes in pollutant emissions elsewhere and the time horizon for the study will be the next 50 years.
- PEGASOS will provide improved process understanding in areas of major uncertainty for better quantification of feedbacks between air quality and a changing climate. PEGASOS will conduct, for the first time, a fully integrated analysis of dynamically changing emissions and deposition, their link to tropospheric chemical reactions and interactions with climate, and emerging feedbacks between chemistry-climate and surface processes. PEGASOS will target both local and regional scales, taking into account chemistry and climate feedbacks on the global scale.
- PEGASOS will include development of new climate-sensitive biogenic and anthropogenic emission models, state-of-the-science laboratory and field process studies, development and use of the most advanced models. The outcomes (scenarios, emissions, data sets, models, new knowledge and recommendations) will be disseminated to authorities, policy makers and the research community.

To reach its objectives PEGASOS will address the following scientific questions:

- **Q1** How has past air quality policy inadvertently affected present day climate and, the corollary, how has climate change over the last decades affected Europe's ability to meet its air quality targets for ozone, particulate matter (PM), etc.? How will currently planned air quality regulations affect climate?
- **Q2** How will emissions (including methane, biomass burning emissions, biogenic hydrocarbons, etc.) respond to a changing climate, shifts in biomes, and land cover/land use and what will be the effect of these changes on European air quality (ozone, PM, etc.) and climate.
- **Q3** How wills climate change affect the atmospheric self-cleansing capacity (HOx budget and cycling), atmospheric aerosol concentrations (both number and mass) and how will this in turn feedback to climate? How will climate change affect the regional accumulation of pollutants (including aerosols) and the resulting air quality and its regulation in Europe on both regional and urban scales?
- **Q4** What are the main missing processes in current air quality-climate models and how can these tools be improved for the simulation of multi-scale chemistry-climate interactions including local changes?
- **Q5** Which policy-relevant metrics should be used to facilitate the consideration of short-lived species in international treaties dealing with climate-relevant compound regulations and the assessment of air quality and climate policies co-benefits or other interactions?

4.8 ECLIPSE

http://eclipse.nilu.no/

Coordinator:

Andreas Sthol (NILU) - ast@nilu.no

List of participants:

PARTICIPANT No	ORGANISATION	COUNTRY
1	NORWEGIAN INSTITUTE FOR AIR RESEARCH	NORWAY
2	CENTER FOR INTERNATIONAL CLIMATE AND ENVIRONMENTAL RESEARCH – OSLO	NORWAY
3	NORWEGIAN METEOROLOGICAL INSTITUTE	NORWAY
4	INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS	AUSTRIA
5	MET OFFICE	UNITED KINGDOM
6	DEPARTMENT OF METEOROLOGY, UNIVERSITY OF READING	UNITED KINGDOM
7	UNIVERSITÉ PIERRE ET MARIE CURIE, PARIS	FRANCE
8	INSTITUTE OF CHEMICAL ENGINEERING AND HIGH TEMPERATURE CHEMICAL PROCESSES (ICE-HT) OF THE FOUNDATION FOR RESEARCH AND TECHNOLOGY HELLAS	GREECE
9	INSTITUTE FOR METEOROLOGY, UNIVERSITY OF LEIPZIG	GERMANY
10	COLLEGE OF ENVIRONMENTAL SCIENCES AND ENGINEERING, PEKING UNIVERSITY	CHINA
11	TSINGHUA UNIVERSITY	CHINA

ECLIPSE aims to develop and assess effective emission abatement strategies for short-lived climate agents in order to provide sound scientific advice on how to mitigate climate change while improving the quality of air. Current climate policy does not consider a range of short-lived gases and aerosols, and their precursors (including nitrogen oxides, volatile organic compounds, sulphate, and black carbon). These nevertheless make a significant contribution to climate change and directly influence air quality.

There are fundamental scientific uncertainties in characterizing both the climate and air quality impacts of short-lived species and many aspects (for example, the regional dependence) are quite distinct to those for the longer-lived climate gases already included in the Kyoto Protocol.

ECLIPSE will bring together 11 institutes with established and complementary expertise for a closely co-ordinated 3 year programme, starting on Nov 1, 2011. It will build on existing knowledge and use state-of-the-art chemistry and climate models to:

- improve understanding of key atmospheric processes (including the impact of short-lived species on cloud properties) and characterize existing uncertainties;
- evaluate model simulations of short-lived species and their long-range transport using ground-based and satellite observations;
- perform case studies on key source and receptor regions (focused on South-eastern Europe, China and the Arctic);
- quantify the radiative forcing and climate response due to short-lived species, incorporating the dependence on where the species are emitted;
- refine the calculation of climate metrics, and develop novel metrics which, for example, consider rate of climate warming and go beyond using global-mean quantities;
- clarify possible win-win and trade-off situations between climate policy and air quality policy;
- Identify a set of concrete cost-effective abatement measures of short-lived species with large co-benefits.

4.9 MACC-II

Monitoring Atmospheric Composition and Climate

Coordinator:

Vincent-Henri PEUCH - Vincent-Henri.Peuch@ecmwf.int

List of participants:

PARTICIPANT No	ORGANISATION	COUNTRY
1	EUROPEAN CENTRE FOR MEDIUM-RANGE WEATHER FORECASTS	EUROPEAN INTERGOVERNMENTAL ORGANISATION BASED IN UK
2	ACADEMY OF ATHENS	GREECE
3	AGENCIA ESTATAL DE METEOROLOGIA	SPAIN
4	ASSOCIATION POUR LA RECHERCHE ET LE DEVELOPPEMENT DES METHODES ET PROCESSUS INDUSTRIELS - ARMINES	FRANCE
5	ARISTOTELIO PANEPISTIMIO THESSALONIKIS	GREECE
6	INSTITUT D'AERONOMIE SPATIALE DE BELGIQUE	ELGIUM
7	COMMISSARIAT A L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	FRANCE
8	CAMBRIDGE ENVIRONMENTAL RESEARCH CONSULTANTS LTD	UNITED KINGDOM
9	CENTRE EUROPEEN DE RECHERCHE ET DE FORMATION AVANCEE EN CALCUL SCIENTIFIQUE	FRANCE
10	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	FRANCE
11	DEUTSCHES ZENTRUM FUER LUFT - UND RAUMFAHRT EV	GERMANY
12	DEUTSCHER WETTERDIENST	GERMANY
13	UMWELTBUNDESAMT GMBH	AUSTRIA
14	JRC -JOINT RESEARCH CENTRE- EUROPEAN COMMISSION	BELGIUM
15	ILMATIETEEN LAITOS	FINLAND
16	INSTITUTO DE METEOROLOGIA	PORTUGAL
17	INSTITUT NATIONAL DE L'ENVIRONNEMENT ET DES RISQUES INERIS	FRANCE
18	UNIVERSITAET BREMEN	GERMANY

19	FORSCHUNGSZENTRUM JUELICH GMBH	GERMANY
20	KING'S COLLEGE LONDON	UNITED KINGDOM
21	KONINKLIJK NEDERLANDS METEOROLOGISCH INSTITUUT (KNMI) [Chemistry and Climate, Climate Observations]	THE NETHERLANDS
22	METEOROLOGISK INSTITUTT	NORWAY
23	METEO-FRANCE	FRANCE
24	MAX PLANCK GESELLSCHAFT ZUR FOERDERUNG DER WISSENSCHAFTEN E.V.	GERMANY
25	NORSK INSTITUTT FOR LUFTFORSKNING	NORWAY
26	NATIONAL UNIVERSITY OF IRELAND, GALWAY	IRELAND
27	RHEINISCHES INSTITUT FUER UMWELT-FORSCHUNG AN DER UNIVERSITAET ZU KOELN E.V.	GERMANY
28	SVERIGES METEOROLOGISKA OCH HYDROLOGISKA INSTITUT	SWEDEN
29	WETENSCHAPPELIJK ONDERZOEK EN PATIENTENZORG STICHTING SRON NETHERLANDS INSTITUTE FOR SPACE RESEARCH	THE NETHERLANDS
30	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK - TNO	THE NETHERLANDS
31	MET OFFICE	UNITED KINGDOM
32	UNIVERSITAET LEIPZIG	GERMANY
33	UNIVERSITY OF LEICESTER	UNITED KINGDOM
34	UNIVERSITY OF LEEDS	UNITED KINGDOM
35	UNIVERSITE PIERRE ET MARIE CURIE - PARIS 6	FRANCE
36	VERENIGING VOOR CHRISTELIJK HOGER ONDERWIJS	THE NETHERLANDS

MACC-II - Monitoring Atmospheric Composition and Climate - Interim Implementation - is the project that is establishing the core global and regional atmospheric environmental services delivered as a component of Europe's GMES initiative. It is funded under the Seventh Framework Programme of the European Union and began on 1 November 2011. MACC is undertaken by a consortium drawn largely from the partners in the earlier MACC project, whose core systems and service lines provided the starting point for MACC-II.

MACC-II takes as its input comprehensive sets of satellite data from many tens of instruments supplying information on atmospheric dynamics, thermodynamics and composition, made available by space agencies and institutions with which the agencies collaborate to produce retrieved data products. The satellite data are supplemented by in-situ data from meteorological networks and a limited amount of data from networks providing in-situ measurements of atmospheric composition. Data are processed to provide a range of products related to climate forcing, air quality, stratospheric ozone, UV radiation at the earth's surface and resources for solar power generation. Additional in-situ data are used for validating the processing systems and the products they supply. MACC operates a value-adding chain which extracts information from as wide a range of observing systems as possible and combines the information in a set of data and graphical products that have more complete spatial and temporal coverage and are more readily applicable than the data provided directly by the observing systems.

The products delivered or under development by MACC are based on the requirements established for the core atmospheric component of GMES. They emanate from:

- Global service lines providing:
    - monitoring of aspects of climate, climate forcing and the sources and sinks of key species;
    - monitoring of stratospheric ozone;
    - forecasts of reactive gases and aerosols;
    - Boundary conditions for regional models.
- European service lines providing:
    - air quality forecasts from high-resolution regional systems;
    - air quality assessments based on retrospective running of the regional systems using validated observational data;
    - UV radiation assessments and forecasts;
    - Solar-energy resource assessments and forecasts.
- Service lines for policy development, including establishment of effective dialogue with the European Environment Agency, national and regional environment agencies and EMEP, so that MACC-II can shape its programme to support their work. Activities include:
    - agreements on data exchanges;
    - preparation of scenarios to be run on demand in unusual or emergency situations;
    - sensitivity studies to take better account of the effects of large cities in such scenarios;
    - development of a new adjoin approach to documenting source-receptor relations;
    - provision of agreed input to the EEA State of the Environment report;
    - Preparations for downstream services.

Although the primary application of boundary conditions from the global system is in support of the regional models run for Europe as part of MACC-II, they may also be used to drive other models for the European region or models for other regions of the world.

The building blocks of MACC-II are a set of components with specific functions that are grouped into four clusters. The input data cluster acquires the satellite and in-situ observations and carries out preparatory processing of them. It also provides improved estimates of surface emissions of key species, with a particular emphasis on the highly variable emissions from fires. The primary global and regional clusters operate and refine processing systems that include not only the data assimilation and modelling elements that provide the basic monitoring and forecasting products, but also the elements that provide estimates of climate forcing, inferred corrections to the modelled sources and sinks, and derived products such as UV radiation and resources for solar power generation. An outreach cluster provides the interface to downstream-service providers and other users runs the service-chain test cases and supports the development of policy for the control of atmospheric pollution.

4.10 PASODOBLE

Coordinator:

Thilo EREBERTSEDER - thilo.erbertseder@dlr.de

The PASODOBLE project seeks to provide information and support for regions and cities that are affected by air pollution. By combining space-based data, in-situ measurements and modelling, the Myair service portfolio is being developed and demonstrated in 4 thematic areas:

- Health community support
- Public forecasting and assessment
- Compliance monitoring support
- Local forecast model evaluation support

User-driven and sustainable downstream services in more than 30 regions and cities throughout Europe are developed. Existing user requirements are analysed and improved service designs proposed. The project links global satellite and modeling capacities down to specific local applications according to user needs. Interacting with over 30 users in 16 countries, multiple cycles of delivery, use and assessment are applied.

PASODOBLE works towards a harmonized European framework for sustainable downstream air quality services. By developing a generic and modular service infrastructure, including quality management, it will increase the sustainability and implementation efficiency for new services.

By raising awareness, reducing health costs and decreasing morbidity, PASODOBLE will contribute to improving quality of life and sustainability of welfare.

4.11 NORS

Coordinator:

BIRA, Martine DE MAZIERE - martine.demaziere@aeronomie.be

List of participants:

PARTICIPANT No	ORGANISATION	COUNTRY
1	BELGISCH INSTITUUT VOOR RUIMTE-AERONOMIE INSTITUT D'AÉRONOMIE SPATIALE DE BELGIQUE	BELGIUM
2	EIDGENÖSSISCHE MATERIALPRÜFUNGS- UND FORSCHUNGSANSTALT	SWITZERLAND
3	INSTITUTO NACIONAL DE TÉCNICA AEROESPACIAL	SPAIN
4	UNIVERSITÄT BERN	SWITZERLAND
5	KARLSRUHER INSTITUT FÜR TECHNOLOGIE	
6	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	FRANCE
7	UNIVERSITÄT BREMEN	GERMANY
8	UNIVERSITÉ DE LIÈGE	BELGIUM
9	MAX PLANCK GESELLSCHAFT ZUR FÖRDERUNG DER WISSENSCHAFTEN E.V.	GERMANY
10	RUPRECHT-KARLS-UNIVERSITÄT HEIDELBERG	GERMANY
11	SCIENCE AND TECHNOLOGY B.V.	THE NETHERLANDS

The principal objective of the NORS project is to improve the quality and validation of the products delivered by the GMES Atmospheric Service (GAS), using independent ground based remote sensing data from the international Network for the Detection of Atmospheric Composition Change (NDACC). NDACC is a cross-border research network with a strong European contribution, providing high-quality reference observational data for understanding the physical / chemical state of the stratosphere and troposphere, and for assessing the impact of atmospheric composition changes on climate. NORS focuses on a selection of NDACC data that have high priority in the different domains of GAS, namely 'ozone and UV', 'air quality' and 'climate'. The research planned in NORS aims at tailoring these NDACC products to the needs of GAS. It includes a full characterisation of the products and an evaluation of the consistency between the ground-based data and the satellite data assimilated in the GAS production chain. As ground-based remote sensing data form the ideal link between in situ surface concentration and satellite column data, NORS will investigate how integrated tropospheric products and integrated ozone products can be developed.

The project will demonstrate operational rapid delivery of NDACC data to GAS, including a comprehensive set of metadata and a user guide. It will also develop and implement a web-based server for providing consistent validation reports of the GAS products using the NORS data products, on an operational basis. In support of the re-analyses planned in GAS, NORS will deliver time-series of ground-based data back to 2003.

The achievements of NORS will be made available to NDACC as a whole and especially to candidate NDACC stations filling gaps outside Western Europe. The project will be performed in close collaboration with relevant projects in the context of GAS, and it will liaise with NDACC, the European Environmental Agency, and major GMES/GEOSS actors.

5 JOINT PROGRAMMING INITIATIVES

5.1 Climate Change

Coordinator:

Evelina SANTA - Evelina.Santa@bmbf.bund.de

At present the JPI Climate has 12 member countries:
Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Norway, Sweden, The Netherlands, and United Kingdom

Europe aspires to be the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic development with more and better jobs and greater social cohesion. Climate change alters the conditions under which these ambitions are to be realized. This generates new challenges, including the need to transform energy systems away from a dependence on fossil fuels and the need to protect European citizens, business and nature from climate risks.

Research, knowledge dissemination and innovation are crucial in helping to confront these challenges and generate new opportunities for sustainable development.

Climate change is a complex reality, which affects European society at large. Understanding and responding to climate change requires coordinated and large-scale European efforts, in research, innovation and governance.

JPI Climate:

- Provides the platform where these objectives can be met, aligning national research priorities according to a jointly agreed Strategic Research Agenda (SRA) with the aim of complementing and supporting initiatives at the European level (ERANETs, FP8, Climate KIC, ESFRI Projects).
- Facilitates the coordination, collaboration and exploitation of synergies while working against fragmentation and duplication of efforts. Coordination of the research base secured through national resources will help underpin European efforts to confront climate change.
- Aims to respond to the needs of policy and decision makers and the European society at large for knowledge-based information and services to address climate change. The main objective of this programme is to provide integrated climate knowledge and decision support services for societal innovation.
- is innovative in its interdisciplinary approach in connecting natural- with socio-economic sciences and it is guided, coordinated and managed through a flexible collaborative governance mechanism.

5.2 JPI Urban Europe - Urban Europe –Global Changes, Local Solutions -
http://www.jpi-urbaneurope.eu/

Coordinator:

Peter Nijkamp - pnijkamp@feweb.vu.nl

Urban Europe aims to rethink and manage the increasing urban orientation and concentration in Europe in order to create and exploit synergy in an urbanised Europe, from an economic, social, environmental and transport-related perspective, leading to a strengthened global position of Europe.

Urban Europe

- represents a forward-thinking and long-term oriented, coordinated research initiative to shape urban development in times of global shift.

- is an integrative, interdisciplinary and horizontal approach across the interfaces of economy, society, transportation, and ecology, serving society by raising public awareness and acceptance, and consequently putting expertise into practice.

- promotes intensive interactions between researchers, policy makers, business and civil society, resulting in an innovative and impact-oriented approach.

- endeavours to become recognisable as the EU entry point open to all relevant stakeholders with an interest in urban development, in order to access, generate and share innovative knowledge, to provide pilot initiatives for innovations and link resources to regional and structural funds."