

EARLINET: Future plans

Gelsomina Pappalardo

*Consiglio Nazionale delle Ricerche-Istituto di Metodologie per l'Analisi Ambientale
CNR-IMAA, Potenza, Italy
pappalardo@imaa.cnr.it*

- ❑ *Strong need for integrated long term aerosol observations*
- ❑ *4-dimensional space-time distribution of aerosols*
- ❑ *Cooperation and coordination with the relevant observation and user communities*
- ❑ *Support to current and future satellite missions*
- ❑ *GALION at global scale*

EARLINET: European Aerosol Research Lidar Network

First tool for 4D aerosol measurements on continental scale

- Quality assurance program
 - Instruments
 - Data analysis
- Predefined measurement schedule (3 per week) → unbiased
- Coordinated network observations for special events (e.g., Saharan dust, forest fires, photochemical smog, diurnal cycle, volcanic aerosols)
- Standardized data format
- Access to data via centralized data base

The EUSAAR Project



Funded by EU under the infrastructure program (March 2006- Feb. 2011)

Coordination CNRS

Overall objective : Integration of atmospheric aerosol measurements performed in a distributed network of 20 high quality European ground-based stations. This integration contributes to a sustainable and reliable operational service in support of policy issues on air quality, long-range transport of pollutants and climate change.



The EUSAAR network



ACTRIS

Aerosols, Clouds, and Trace gases Research Infrastructure Network

Type of funding scheme: Combination of Collaborative Projects and Coordination and Support Actions for Integrating Activities

Work programme topics addressed: FP7-INFRASTRUCTURES-2010-1

Support to existing research infrastructures

Integrating Activities

INFRA-2010-1-1.1.16: Research Infrastructures for Atmospheric Research

Integrating the key ground-based facilities for long-term observation of aerosols, cloud-aerosol interactions, and trace gases in Europe

ACTRIS aims at integrating European ground-based stations equipped with advanced atmospheric probing instrumentation for **aerosols, clouds and short-lived gas-phase species**.

ACTRIS will have the essential role to support building of new knowledge as well as policy issues on climate change, air quality and long-range transport of pollutants.

The main objectives of ACTRIS are:

- To provide long-term **observational data relevant to climate and air quality research** on the regional scale produced with standardized or comparable procedures throughout the network
- To provide a coordinated framework to support trans-national **access to large infrastructures** strengthening high-quality collaboration in and outside the EU and access to **high-quality information and services** for the user communities (research, Environmental protection agencies, etc.)
- To develop **new integration tools** to fully exploit the use of multiple atmospheric techniques at ground-based stations, in particular for the calibration/validation/integration of satellite sensors and for the improvement of the parameterizations used in global and regional-scale climate and air quality models
- To enhance training of new scientists and new users in particular students, young scientists, and scientists from eastern European and non-EU developing countries in the field of atmospheric observation
- To promote development of new technologies for atmospheric observation of aerosols, clouds and trace gases through close partnership with EU SMEs

ACTRIS builds a new research infrastructure on the basis of a consortium joining existing networks/observatories that are already providing consistent datasets of observations and that are performed using state-of-the-art measurement technology and data processing.

In particular the ACTRIS consortium merges two existing research infrastructures funded by the European Commission under FP6: **EUSAAR** (European Supersites for Atmospheric Aerosol Research) and **EARLINET** (European Aerosol Research Lidar Network).

ACTRIS also includes the distributed infrastructure on aerosol – cloud interaction existing from a previous EU Research project **CLOUDNET** and by grouping the existing EU ground-based monitoring capacity for short-lived trace gases which is, at present, not coordinated at any level, besides **EMEP** (European Monitoring and Evaluation Programme) and **GAW** (Global Atmosphere Watch) caring for a few specific compounds.

ACTRIS represents an unprecedented effort towards **integration of a distributed network of ground-based stations**, covering most climatic regions of Europe, and responding to a strong demand from the atmospheric research community.

ACTRIS will be a step towards better integration of aerosol, cloud and trace gases communities in Europe necessary to match the integration of high-quality long-term observations of aerosol, clouds and short-lived gas-phase species and for assessing their impact on climate and environment.

ACTRIS outcomes will be used for supporting decisions in a wide range of policy areas, including air quality but also health, international protocols and research requirements.

ACTRIS partners



No	Name	Short name	Country
1	CONSIGLIO NAZIONALE DELLE RICERCHE	CNR	Italy
2	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	CNRS	France
3	NORSK INSTITUTT FOR LUFTFORSKNING	NILU	Norway
4	HELSINGIN YLIOPISTO	UHEL	Finland
5	TECHNISCHE UNIVERSITEIT DELFT	TUD	Netherlands
6	PAUL SCHERRER INSTITUT	PSI	Switzerland
7	LEIBNIZ INSTITUT FUER TROPOSPHAERENFORSCHUNG e.V.	IFT	Germany
8	EIDGENOESSISCHE MATERIALPRUEFUNGS- UND FORSCHUNGSANSTALT	EMPA	Switzerland
9	THE UNIVERSITY OF READING	UREAD	United Kingdom
10	UNIVERSITAT POLITECNICA DE CATALUNYA	UPC	Spain
11	MAX PLANCK GESELLSCHAFT ZUR FOERDERUNG DER WISSENSCHAFTEN E.V.	MPG	Germany
12	LUNDS UNIVERSITET	ULUND	Sweden
13	AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS	CSIC	Spain
14	NATIONAL UNIVERSITY OF IRELAND, GALWAY	NUIG	Ireland
15	NATURAL ENVIRONMENT RESEARCH COUNCIL	NERC	United Kingdom
16	FOUNDATION FOR RESEARCH AND TECHNOLOGY HELLAS	FORTH	Greece
17	JRC -JOINT RESEARCH CENTRE- EUROPEAN COMMISSION	JRC	Belgium
18	DEUTSCHER WETTERDIENST	DWD	Germany
19	B.I. Stepanov Institute of Physics of the National Academy of Sciences of Belarus	IPNASB	Belarus
20	INSTITUTE OF NUCLEAR RESEARCH AND NUCLEAR ENERGY - BULGARIAN ACADEMY OF SCIENCES	BEO	Bulgaria
21	UNIwersytet Warszawski	UWAR	Poland
22	CONSORZIO NAZIONALE INTERUNIVERSITARIO PER LE SCIENZE FISICHE DELLA MATERIA	CNISM	Italy
23	NATIONAL INSTITUTE OF RESEARCH AND DEVELOPMENT FOR OPTOELECTRONICS	INOE	Romania
24	LUDWIG-MAXIMILIANS-UNIVERSITAET MUENCHEN	LMU	Germany
25	CESSKY HYDROMETEOROLOGICKY USTAV	CHMI	Czech Republic
26	Pannon Egyetem	UPAC	Hungary
27	INSTITUT D'AERONOMIE SPATIALE DE BELGIQUE.	BIRA-IASB	Belgium
28	UNIVERSIDAD DE VALLADOLID	GOA-UVA	Spain



ACTRIS associated partners



Partner no.	Partner organisation name	Country
1	Institute of Electronics – Bulgarian Academy of Science (IE-BAS)	Bulgaria
2	Institute of Chemical Process Fundamentals AS CR, v.v.i. (ICPF)	Czech Republic
3	Tartu Ülikool (UT)	Estonia
4	Finnish Meteorological Institute (FMI)	Finland
5	Georgian National Astrophysical Observatory, Ilia Chavchavadze State University	Georgia
6	Forschungszentrum Karlsruhe GMBH, Institut für Meteorologie und Klimaforschung (FZK)	Germany
7	Universität zu Köln	Germany
8	National Technical University of Athens (NTUA)	Greece
9	Aristotle University of Thessaloniki – Laboratory of Atmospheric Physics (AUTH)	Greece
10	National Centre for Scientific Research “Demokritos” (NCSR-D)	Greece
11	National Observatory of Athens – Institute for Space Applications and Remote Sensing (NOA)	Greece
12	Meteorologisk Institutt (MET.NO)	Norway
13	Institute of Geophysics, Polish Academy of Sciences (IGFPAS)	Poland
14	Centro de Geofísica de Évora	Portugal
15	Swedish Defence Research Agency	Sweden
16	Stockholms Universitet (SU)	Sweden
17	Centre Suisse d'Electronique et de Microtechnique SA (CSEM)	Switzerland
18	Ecole Polytechnique Federale de Lausanne (EPFL)	Switzerland
19	University of Birmingham (UNI BHAM)	United Kingdom

ACTRIS WPs



Networking activities

Transnational access

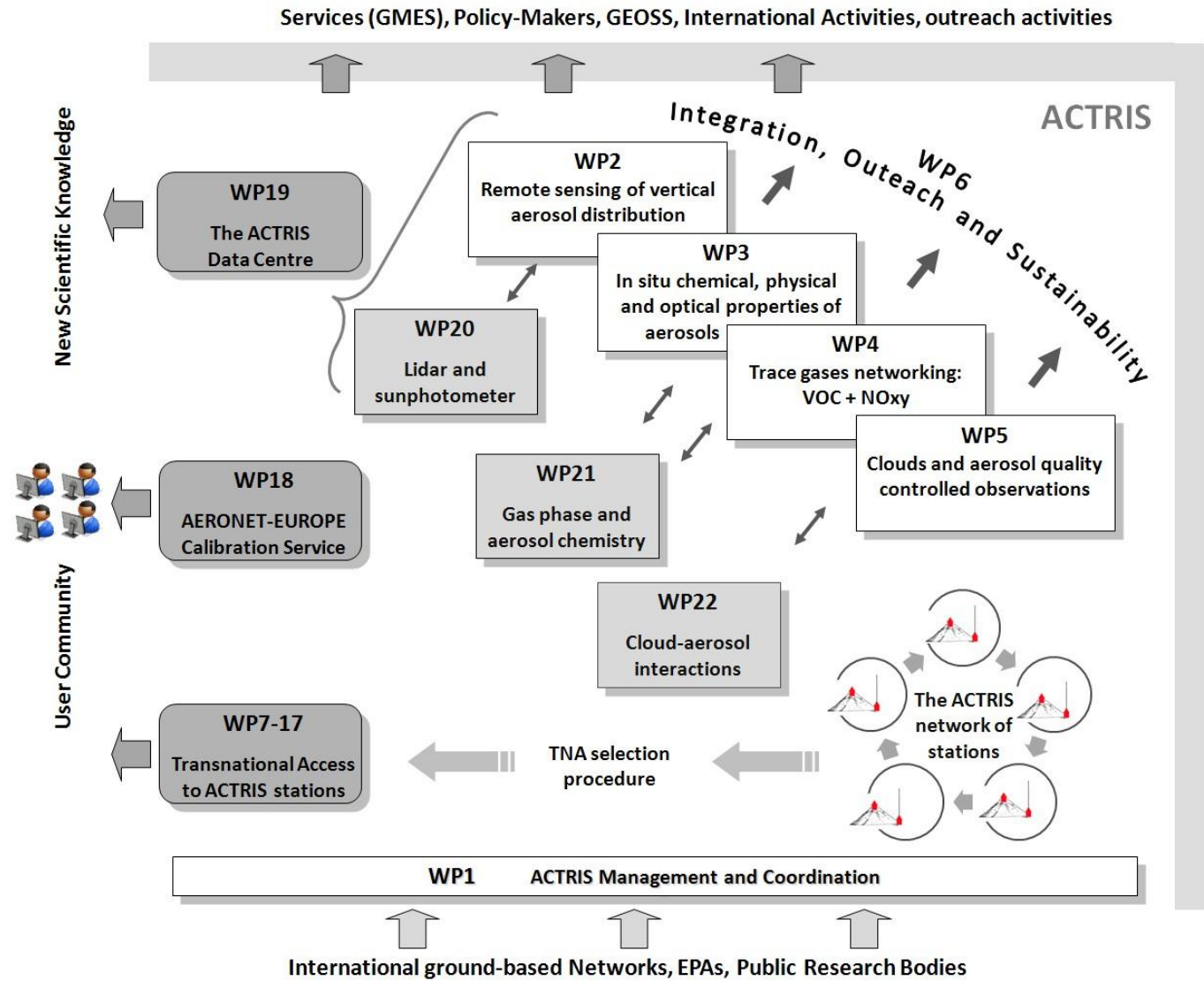
Joint research activities

WP Number ⁶³	WP Title	Type of activity ⁶⁴
WP 1	NA1: ACTRIS Management and coordination	MGT
WP 2	NA2: Remote sensing of vertical aerosol distribution	COORD
WP 3	NA3: In-situ chemical, physical and optical properties of aerosols	COORD
WP 4	NA4: Trace gases networking: Volatile organic carbon and nitrogen oxides	COORD
WP 5	NA5: Clouds and aerosol quality-controlled observations	COORD
WP 6	NA6: Integration, outreach, and sustainability	COORD
WP 7	TNA1: Access to CIAO	SUPP
WP 8	TNA2: Access to PAL	SUPP
WP 9	TNA3: Access to MAIDO	SUPP
WP 10	TNA4: Access to SMR	SUPP
WP 11	TNA5: Access to CESAR	SUPP
WP 12	TNA6: Access to JFJ	SUPP
WP 13	TNA7: Access to MHD	SUPP
WP 14	TNA8: Access to AMO	SUPP
WP 15	TNA9: Access to FKL	SUPP
WP 16	TNA10: Access to HPB	SUPP
WP 17	TNA11: Access to RADO	SUPP
WP 18	TNA12: Access to AERONET-EUROPE Calibration Service	SUPP
WP 19	SA1: The ACTRIS Service Centre: Access to observations and service products of the infrastructure	SUPP
WP 20	JRA1: Lidar and sunphotometer – Improved instruments, integrated observations and combined algorithms	RTD
WP 21	JRA2: Comprehensive gas phase and aerosol chemistry	RTD
WP 22	JRA3: A framework for cloud-aerosol interaction studies	RTD

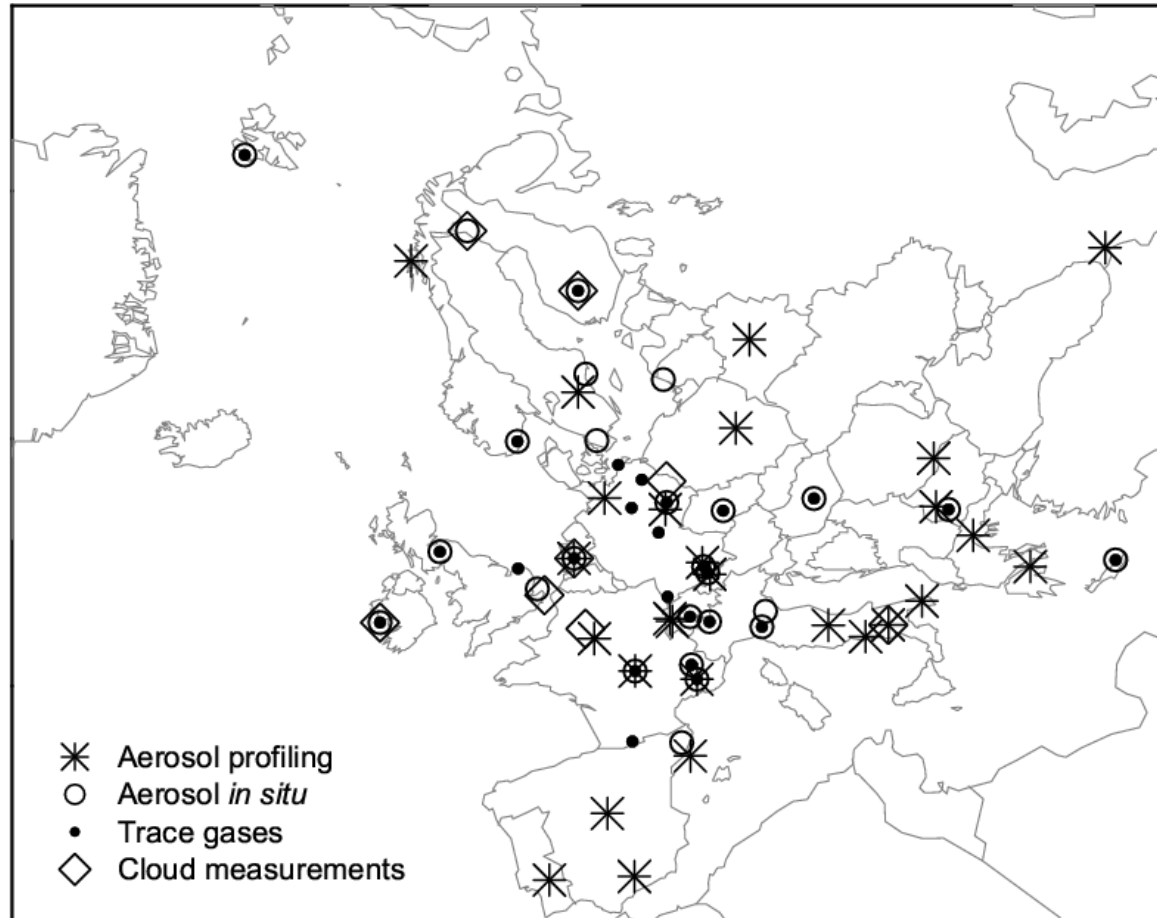
← Management

← Service

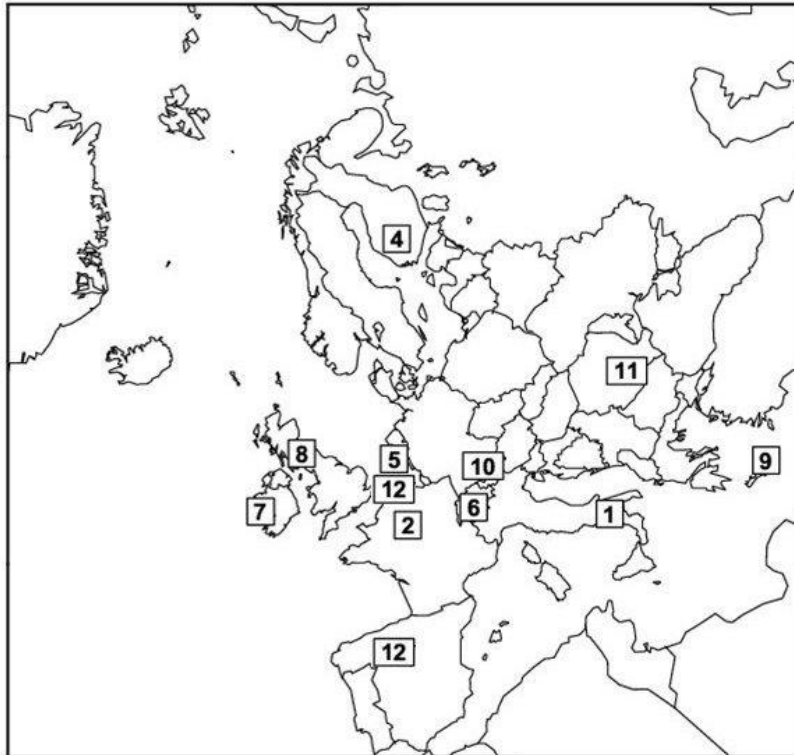




Map of measurement sites contributing to ACTRIS



ACTRIS sites offering transnational access



- 1 CIAO (Potenza)
- 2 SIRTA (Palaiseau)
- 4 SMR (Hyytiälä)
- 5 CESAR (Cabauw)
- 6 JFJ (Junfrauoch)
- 7 MHD (Mace Head)
- 8 AMO (Auchencorth Moss)
- 9 FKL (Finokalia)
- 10 HPB (Hohenpeissenberg)
- 11 RADO (Magurele)
- 12 AERONET-EUROPE
(Lille, Valladolid, and Izaña (Teneriffe) at 28°18'N, 16°29'W)

In addition:

- 2 MAIDO (Reunion Island) at 20°60'S, 55°30'E.

European scale

ACTRIS

We are in the negotiation phase (contract should be signed by the end of the year)

Expected start date 1 April 2011

4 years project: 1 April 2011 – 31 March 2015

Global scale

GALION (lidar)

GAW (in-situ, sun-photometers, lidar)