BULGARIAN ACADEMY OF SCIENCES
INSTITUTE OF ELECTRONICS
"Acad. Emil Djakov"

BULGARIAN ACADEMY OF SCIENCES
INSTITUTE OF ELECTRONICS - LABORATORY LASER RADAR

EARLINET PROJECT

EARLINET-ASOS

European Aerosol Research LIdar NETwork - Advanced Sustainable Observation System


RIVM-Bilthoven, NL

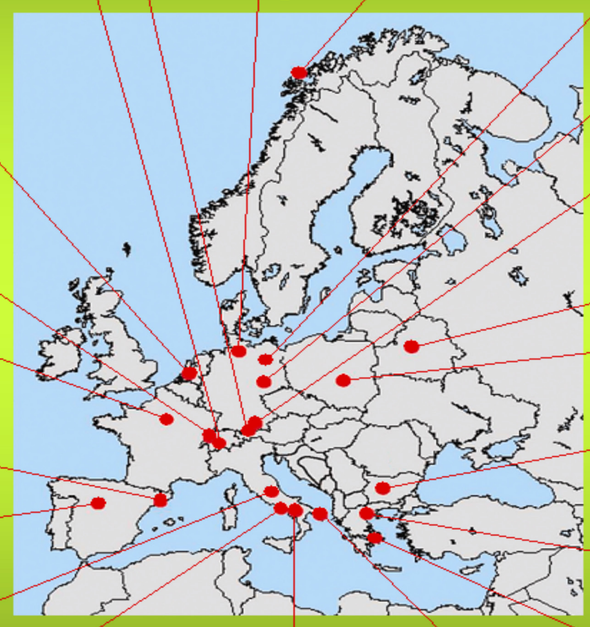

ON-Neuchâtel, CH


FZK-Garmisch Partenkirchen, DE


NILU-Andøya, NO

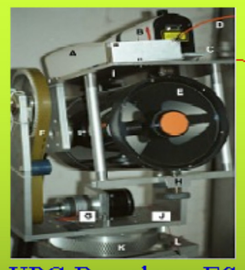

UP-Potsdam, DE


IFT-Leipzig, DE

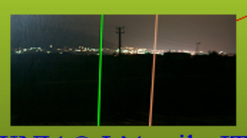


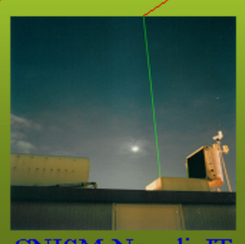

EPFL-Lausanne, CH


CNRS-Paliseau, FR

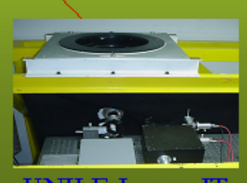

UPC-Barcelona, ES


CIEMAT-Madrid, ES


UNIAQ-L'Aquila, IT


CNISM-Napoli, IT


CNR.IMAA Potenza, IT


UNILE-Lecce, IT


LMU-München, DE


BISIP.SMO-Minsk, BY


IE.BAS-Sofia, BG


IGPAS-Belsk, PL


AUTH-Thessaloniki, EL

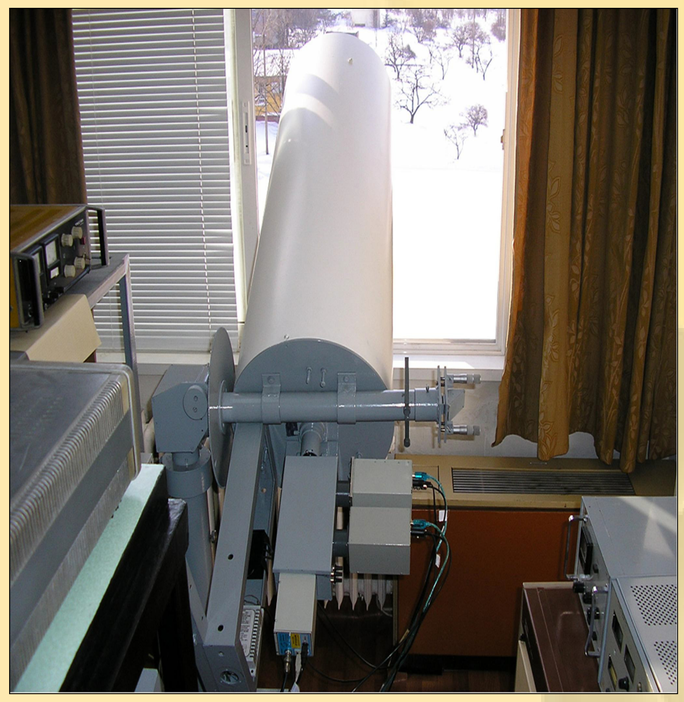

NTUA-Athens, EL

Duration: 60 months
Start date: 1 March 2006
Completion date: 28 February 2011
Project webpage: www.earlinetasos.org

Sixth Framework Programme

This Coordination Action (CA) is building on the European Aerosol Research Lidar Network's (EARLINET) infra structure, consisting of 20 lidar stations distributed over Europe. EU funding of €2.76 million over five years helps it to improve observations and methodologies urgently needed to feed to a multi-year, continental-scale dataset to assess the impact of aerosols on the environment and to support future satellite missions. Improving 4-dimensional spatial and temporal coverage of aerosol observations contributes to almost all areas of societal benefits listed in the Group on Earth Observation System of System's (GEOSS) 10-year implementation plan adopted in 2005. The EARLINET-ASOS project that kicked off in March 2006 plays a leading role in developing global observation network for vertical distribution of aerosols as a major innovative element of GEOSS, by setting the standards for instruments, methodology, and organization in this area. More specifically, it enhances the capacity of existing lidar infrastructure to foster aerosol-related process studies, validation of sensors, model development and validation, assimilation of aerosol data into operational models and to build a comprehensive climatology of aerosol distribution. Continuous quality control at all 20 lidar stations and fast availability of standardized data are also key objectives for the 21 partner institutions. They are cooperating closely through Networking Activities covering exchange of expertise and best practice; a quality assurance program for both algorithms and instruments; optimization of instruments and data processing and retrieval of optical, microphysical, and other derived parameters; a database provided with an user interface providing fast and easy access to well structured data for both Internal and external users, e.g., atmospheric researchers, global and regional climate modelers, satellite community and environmental agencies. All this feeds into a platform for cooperation and coordination with the relevant observation and user communities, and serves as a nucleus for a world-wide aerosol lidar network.

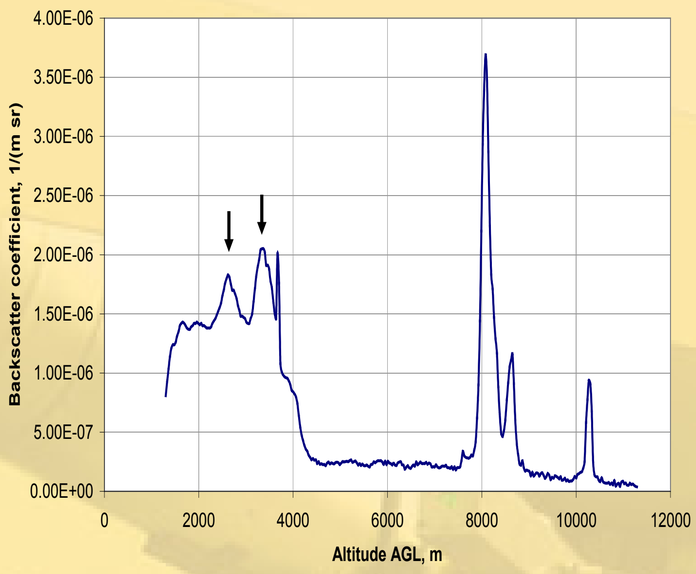
PARTNERS: Consiglio Nazionale delle Ricerche - Istituto di Metodologie per l'Analisi Ambientale **(IT),** Max-Planck-Institüt für Meteorologie **(DE),** Aristotle University of Thessaloniki **(EL),** Unlversitat Politecnica de Catalunya **(ES),** Ludwig-Maximilians-Universität Munich **(DE),** Leibniz Institut für Troposphärenforschung **(DE),** Rijksinstituut voor Volksgezondheid en Milieu **(NL),** Universität Potsdarn **(DE),** B.I.Stepanov Institute of Physics - Minsk **(BY),** Norwegian Institute for Air Research at the Polar Environmental Centre **(NO),** Observatoire Cantonal de Neuchâtel **(CH),** National Technical Ilnivenity of Athens **(EL),** Università degli Studi di Lecce **(IT),** Università degli Studi dell'Aquila **(IT),** Ecole Polytechnique Federale de Lausanne **(CH),** Institute of Geophysics, Polish Academy of Sciences **(PL),** Consorzio Nazionale Interuniversitario per le Scienze Fisiche della Materia **(IT),** Institute of Electronics, Bulgarian Academy of Sciences **(BG),** Institut für Meteorologie und Klimaforschung **(DE),** Centre National de la Recherche Scientifique **(FR),** Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas **(ES)**



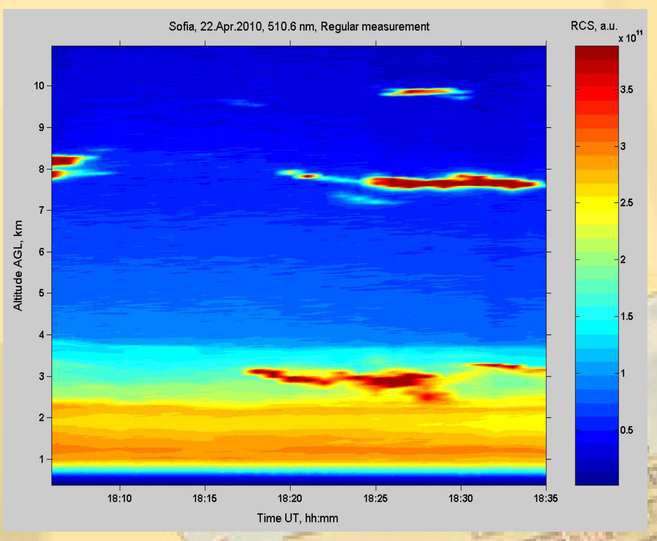
The two lidars of Sofia EARLINET lidar station

Aerosol Lidar with CuBr-laser
Wavelength/Channel: 510.6nm/aerosol, 578.2 nm/aerosol,
Transmitter: CuBr laser (2 Watts mean power, 13 kHz)
Receiver: Cassegrain telescopes (d = 15 cm, f = 225 cm)
Lidar range resolution: 30 m

Three-channel Aerosol-Raman Lidar
Wavelength/Channel: 1064 nm/aerosol, 532 nm/aerosol, 607 nm/Raman
Transmitter: Nd:YAG laser (up to 1 J at 1064 nm, 15 ns, 2 Hz)
Receiver: Cassegrain telescope (d = 35 cm, f = 200 cm)
Lidar range resolution: 15 m



a



b

Lidar measurement on 22.April.2010: a-profile of the calculated aerosol backscatter coefficient; b-plot of the time evolution of aerosol layers (range corrected signal RCS. The two peaks marked with arrows on the plot of the backscatter coefficient are due to the volcanic ash transport over Sofia.