

Software tools in specific programming languages

A key issue for full integration of the project coordinator as an atmospheric data. In order to have optical and microphysical profiles of lidar data is required advanced mathematical algorithms.

So far, at European level, were established several important networks in order to study optical and microphysical profiles of lidar data: EARLINET, AERONET, MWRNET, EUSAAR, CLOUDNET.

To meet all EARLINET requirements (part ACTRIS) the project coordinator has developed specific software packages for testing, processing, analysis and data conversion as defined network protocols. These programs were developed in LabVIEW programming language and can be used by other atmospheric data users, thus facilitating easier access to integration in international networks.

Software package for pre-processing, processing and conversion of lidar signals (internally developed software)

Lidar data processing program is built on the following modules:

- a) Module to read preprocessed file data from the database;
- b) Module to read profiles of temperature, pressure and density standard atmospheric model or atmospheric model based on data from the weather station WM2000;
- c) Module of backscatter and extinction coefficients molecular calculus, based on molecular scattering theory ;
- d) Module to determine the calibration range;
- e) Module to determine the Lidar constant and Rayleigh fitting;
- f) Module for lidar signal processing based on Fernald - Klett inversion method (detection elastic) and combined (detection Raman + elastic).