



LIDAR: a significant tool for regional 3D air pollutants and PBL dynamics measurements – synthesis of a series of field results obtained on the last decade

I. Balin (1), G. Larchèvêque (1), P. Quaglia (1,4), R. Nessler (2), B. Lazzarotto (5), P. Ristori (6,1), F. Jeanneret (7, 1), V. Simeonov (6), B. Calpini (8), O. Couach (1,9), F. Kirchner (1), M. Parlange (9) and H. van den Bergh (6)

(1) EnviroScopY SA (start-up project), PSE - EPFL, CH-1015 Lausanne, Switzerland

(2) NOAA/ESRL Global Monitoring Division 325 Broadway, Boulder, CO, USA

(4) Geneva International Airport, Case Postale 100, CH-1215 Genève 15, Switzerland

(5) ROPAG- Air Protection Cantonal Service, 23 Ste Clotilde, 1211 Geneva 8, Switzerland

(6) Swiss Federal Institute of Technology, LPAS, CH 1015 Lausanne, Switzerland

(7) School of Chemistry & Physics, University of Adelaide, 5005 AUSTRALIA

(8) MeteoSwiss, Aerological Station, Les Invuardes, CH-1530 Payerne, Switzerland

(9) EFLUM- EPFL, CH 1015 Lausanne, Switzerland

Contact: ioan.balin@a3.epfl.ch , Phone: +41 21 625 89 62

During the last decade the lidar instruments started to be more and more often used in various configurations as complementary tools for air pollution measurements. This work demonstrates the significance of these LIDAR measurements based on synthesis of case applications from worldwide spread real field locations where representative 3D atmospheric parameters were measured during the last decade. Noteworthy results, by operating various lidar setups (i.e. PBL- aerosols elastic backscatter, O₃ DIAL, H₂O Raman, OH Pump - Probe), will be illustrated. Comparisons and validation both with instruments measuring similar atmospheric parameters as well as with modeling (MAP3D) outputs will be underlined. Finally the considerable role of the LIDAR as complementary 3D tool in the assessment of regional air pollution related items as photochemical ozone, OH radical, aerosols load and planetary boundary layers (PBL)

dynamics will be clearly demonstrated.