

The first ALINE measurements and intercomparison exercise on lidar inversion algorithms

H.M.J. Barbosa¹, D. A. Gouveia¹, E. Landulfo², F. J. S. Lopes³, P. Ristori⁴, R. Forno⁵, E. Montilla⁶, A. Silva⁶, C. Jimenez⁶, R.E. Arredondo⁷, and G.L. Mariano⁸

¹*Instituto de Física, Universidade de São Paulo, São Paulo, Brazil*

²*Instituto de Pesquisas Energéticas e Nucleares, Av Prof Lineu Prestes 2242, São Paulo - SP - Brazil*

³*Instituto de Astronomia, Geofísica e Ciências Atmosféricas, Universidade de São Paulo, Rua do Matão, 1226 - Cidade Universitária, 05508-090, São Paulo-SP - Brazil*

⁴*Division Lidar, CEILAP-UNIDEF, Jun B. de La Salle 4397, B1603ALO VILLA MARTELLI, Argentina*

⁵*Lab. de Física de la Atmósfera, Universidad Mayor de San Andrés, Calle 27 de Cota-Cota, La Paz, Bolivia*

⁶*Center for Optics and Photonics, Departamento de Física, Universidad de Concepción, Concepción, Chile*

⁷*Grupo de Óptica Atmosférica de Camagüey, Ave. Finlay Km 7 1/2, Camagüey, Cuba*

⁸*Faculdade de Meteorologia, Universidade Federal de Pelotas, Campus Universitário s/n, Capão do Leão, RS, Brasil
hbarbosa@if.usp.br*

Abstract:

Before the Latin American Lidar Network (ALINE) has been officially recognized by the World Meteorological Organization (WMO) and become a contributing network to the the Global Atmospheric Watch (GAW) programme, a pilot campaign was carried out between 10 and 14 September 2012. This was the first coordinated effort to perform simultaneous lidar measurements in the region. From the total of eight stations[1] that are now contributing to the GAW Aerosol Lidar Observation Network (GALION), five were able to take measurements: Manaus, São Paulo, Buenos Aires, Concepcion and La Paz. Data acquisition period was between 8am to 8pm, only during clear sky conditions, as most systems can not be automatically operated. Integration time was 1-minute and unprocessed raw data was shared via the network ftp site (<ftp.lalinet.org>) in either ascii or binary format. During the campaign, the group from Pelotas was in charge of the daily air quality forecasts, that included a synoptic analysis integrated with aerosol optical depth from MODIS and forecasts of biomass burning transport from CATT-BRAMS model. Six months latter, data from all five contributing stations were manually screened and a 1-h average cloud-free profile was selected from each one. These five elastic profiles were analyzed by some of the groups involved in the measurements using the standard Klett method[2] to obtain the backscatter coefficients. The results from these groups will be compared and discussed. Moreover, the difficulties involved in the coordination of such simultaneous measurements will be assessed and the necessity of measurement protocols and data quality assurance will be highlighted.

References

- [1] E. Landulfo, et al., *ALINE Network Status*, VII WLMLA, Pucon - Chile, (2013).
- [2] J. D. Klett, *Stable analytical inversion solution for processing lidar returns*, *Atmos. Opt.* **20**, 211-220 (1981).

Keywords: ALINE; First Campaign; Intercomparison;