Checking the instrumental performance of LALINET: quality assurance during the period 2014-2015

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Abstract: The recently published study of Guerrero-Rascado et al. (2016) reporting a diagnosis on the LALINET network instrumentation initiated the analysis of the instrumental status of LALINET. The current study presents the instrumental activities performed on LALINET with the aim of improving the monitoring capabilities of this network to characterize the aerosol particle field on continental scale. To guarantee the quality and standardization of products offered by the LALINET network, a robust quality assurance program based on regular instrumental tests (inherited from EARLINET, the European Aerosol Research Lidar Network, Pappalardo et al. [2014]) has been applied. In particular, the quality assurance tests performed were: (i) quadrants telecover and in-out telecover tests to analyze lidar signals in the near range, (ii) Rayleigh fit to analyze lidar signals in the far range, (iii) dark current measurement to evaluate electronic noise and (iv) zero-bin calibration / trigger delay to evaluate time delays. These tests, mandatory for all LALINET systems, were carried out annually. This paper reveals the evolution of the instrumental quality in the network, highlighting the improvements/degradations which have been taking place under the period of analysis 2014-2015.

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