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On the instrumental characterization of a 3-λ scanning lidar to monitor industrial flames and its application for retrieving optical and microphysical properties

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The emission of pollutants in megacities and industrial areas can have strong impact, not only from an environmental point of view, but also for human health. Cubatão (23° 53′ S, 46° 26′ W, 10 m asl) has been one of the most industrialized city in Brazil (located at São Paulo state coast) during the last decades. This work deals with the recent advances made on a 3-λ scanning lidar placed at this industrial region. Special attention has been paid to the characterization of the electronic performance of this lidar system. For this goal, the quality assurance tests, regularly applied in well-established lidar networks such as LALINET [Guerrero-Rascado et al., 2014] and EARLINET [Pappalardo et al. 2014], were applied to the Cubatão scanning lidar in order to improve the knowledge of its performing itself and to design protocols for correcting lidar signal for undesirable instrumental effects. The application of the results derived from these quality assurance tests together with the state-of-the-art methodologies to map the particle optical and microphysical properties inside industrial flares demonstrate the potential of this lidar for the study and measurement of industrial emissions.

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