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A new Raman-N2 lidar dedicated to air quality survey

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The Commissariat à l'Energie Atomique (CEA) and the Centre National de la Recherche Scientifique (CNRS) have developed the Lidar Aérosols UltraViolet Aéroporté (LAUVA). The new version of this prototype is now commercialized with success under license by the LEOSPHERE Company with the name EZ LIDAR®. This eye-safe lidar is based on a Nd:YAG laser giving pulses of 16 mJ at 355 nm with a frequency of 20 Hz.
The CEA and LEOSPHERE have recently upgraded this instrument into a three detection channels lidar measuring the two elastic cross-polarizations and the Raman-N2 backscatter signal at 387 nm. It is able to retrieve aerosol optical properties (extinction, backscatter coefficients and depolarization ratio) and atmospheric structures (boundary layer height and clouds) with a resolution of 1.5 m along the line-of-sight in analog mode and 15 m in photon-counting mode. This new lidar is particularly well-adapted to air quality survey thanks to a full overlap reached at $\sim$150 m. This compact (90x50x20 cm) and light (less than50 kg) instrument has been integrated into the Mobile Aerosol Station (MAS) onboard a small truck and enables mobile measurements.
We will here present and analyze some results obtained around Paris area with this Raman-N2 lidar.