

## **Data quality assurance and characterization of Belgrade Raman lidar station**

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Atmospheric probing and the observations of atmospheric aerosol particles can be performed remotely with high spatial and temporal resolution using LIDAR (Light Detection And Ranging) technique. Aerosol optical characteristics provide extensive information on the existence and development of atmospheric aerosol structures. As an EARLINET (the European Aerosol Research Lidar Network) (Pappalardo et al., 2014) joining lidar station, Belgrade Raman lidar system has provided aerosol profiling data for potential climatological studies as well as assessment of planetary boundary layer evolution (Ilić et al., 2018) and conducting dedicated measurements during potential airborne hazards events (e.g., volcanic ash, desert dust, biomass burning). To provide a quality controlled and homogeneous analysis of raw lidar data across the network, a centralized analysis tool, called the Single Calculus Chain (SCC), has been released within EARLINET (Mattis et al., 2016). In order to assess the performance and the temporal stability of a lidar system a rigorous quality-assurance (QA) program and self-testing check-up tools have been developed. In this paper a description of the Belgrade Raman lidar system capabilities, and its experimental characterization related to zero bin, analog to photon-counting signal delay, the Rayleigh-fit and telecover tests to check the system accuracy (Freudenthaler et al., 2018) will be presented.

### **References**

- Freudenthaler, V., Linné, H., Chaikovski, A., Rabus, D., Groß, S., 2018, Atmos. Meas. Tech. Discuss. preprint, <https://doi.org/10.5194/amt-2017-395>
- Ilić, L., Kuzmanoski, M., Kolarž, P., Nina, A., et al., 2018, Journal of Atmos. Sol.-Terr. Phys. 171, 250
- Mattis, I., D'Amico, G., Baars, H., Amodeo, A., et al., 2016, Atmos. Meas. Tech. 9, 3009
- Pappalardo, G., Amodeo, A., Apituley, A., Comeron, A., et al., 2014, Atmos. Meas. Tech., 7, 2389