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mESY LIDAR - a new cost-effective, versatile and powerful lidar configuration for tropospheric aerosols, clouds and water vapor investigations

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In the context of remote sensing tools development for the monitoring of relevant atmospheric parameters triggering crucial processes in troposphere this work is presenting a new mini lidar system i.e mESY LIDAR. The basic configuration of this lidar is dedicated for tropospheric (100m to 12-15 Km ASL) aerosols and clouds high temporal (minutes) and spatial resolution (meters) investigation. Based on powerful Nd:YAG 30 Hz pulsed laser (35 mJ at 355 nm, 100 mJ at 532 nm, 200 mJ at 1064 nm), a 16" Newtonian telescope and a new easy up-gradable opto-mechanics the mESY LIDAR is a cost-effective and powerful equipment useful both for atmospherically researches and didactic – educational – lidar training activities also. The basic configuration (two detection channels) may be used either for depolarization studies (at 532, 355 or 1064nm) or the choice of two elastic and is ideal for continuous monitoring of planetary boundary layer dynamic i.e. PBL. The Raman Nitrogen at 387 nm and water vapor channels at 408 nm may be upgraded easily. The design of this lidar, developed within the research partnership between Switzerland and Romanian academic – private partnership institutions, is the standard lidar proposed for ROLINET (ROmanian LIdar NETwork) project with the final aim to be integrated in the EARLINET (European Aerosol Research LIdar NETwork) in 2010.