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Thesis Title	<i>Ozone vertical distribution measurements in the lower troposphere using laser remote sensing technique (Lidar technique)</i>
Supervisor	E. Giannakaki, Lecturer
Summary	<p>The object of this Master Thesis was to study the vertical distribution of the ozone concentration in the lower troposphere by using a laser remote sensing system (lidar technique) based on the differential absorption technique (<i>DIAL</i>). To this aim a <i>DIAL</i> system was implemented at the Laser Remote Sensing Unit (LRSU) of the National Technical University of Athens (<i>NTUA</i>), capable to obtain the vertical profile of tropospheric ozone in the Planetary Boundary Layer (<i>PBL</i>) and the adjacent free troposphere up to 4,5 km height (daytime and nighttime measurements). In this Thesis we described the experimental setup and the principle of operation of the <i>NTUA DIAL</i> system along with the experimental data processing procedure. Our results confirm the diurnal and seasonal variations of tropospheric ozone, while the obtained near surface ozone data are compared to those taken from a nearby ground-based station, finding a very strong positive correlation ($r=0,97$). Finally we studied different cases of ozone measurements, obtained under various meteorological conditions such as stratosphere-to-troposphere transport (<i>STT</i>), which led to an increase by ~50% of the background ozone values, as well as intensive photochemical pollution events where the mean daytime ozone concentration was increased by 10 ppbv (~20%).</p>
Key words	Ozone, DIAL, LIDAR, Troposphere, PBL
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