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A review of the mobile LIDAR system developed at the CSIR and a proposed improvement of the system

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Abstract content
   (Max 300 words)

The Earth's atmosphere is composed primarily of nitrogen and oxygen along with other minor gases such as carbon dioxide, argon, water vapour, and tiny solid and liquid particles suspended in the air, called aerosols. Water vapour absorbs infrared radiation emitted from earth's surface at lower atmosphere more than any other constituent, thereby trapping heat best. This makes water vapour the worst candidate contributing to global warming. For these reasons the Council for Scientific and Industrial Research (CSIR)-National Laser centre (NLC) developed the first ever mobile LIDAR in South Africa to study the atmosphere and aerosol/pollutant dispersion. The LIDAR system has three many sections: a laser transmitter, an optical receiver and a data acquisition system. At present, the 2-channel system is installed and test measurements were made. The LIDAR results were validated against SAGE measurements, optical depths derived from a sun photometer employed under AERONET, and model-simulated backscatter coefficients based on relative humidity measurements from radiosonde. The agreements were found to be reasonable and indicated the accuracy of the LIDAR measurements. It was also found from comparison that LIDAR measurements provided a high vertical resolution data which makes it a better technique to use to study the atmosphere structure. Future plans include 3D characterization and 2D mapping of the atmosphere using an XY-plane (horizontal) scanner and water vapour measurements.

Apply to be
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Yes

Level for award
 (Hons, MSc,
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PhD

Main supervisor (name and email)
and his / her institution

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Would you like to <br> submit a short paper <br> for the Conference
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no

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