# COMPARISION OF DEM ACCURACY OF LIDAR DATA AND PHOTOGRAMMETRIC DATA WITH FIELD SURVEYED DATA

**G.Y. Lakmali**

Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka

High resolution digital elevation models (DEM) play increasingly important role in Geographic Information Systems (GIS). A widely used method for creating DEMs is based on digital photogrammetry. More recently a new technology, Light Detection and Ranging (LiDAR), has been developed for constructing high resolution DEMs with very high accuracy. It is important to know the expected accuracy of DEM generated from different sources. The objective of this project was a qualitative comparison of high resolution DEMs created from LiDAR data and photogrammetric methods. The test site for this project was the coastal area, part of Moratuwa and Panadura in Colombo and Kalutara districts in Western Province. LiDAR data of the test site were acquired in 2005, with approximately 25 centimeters in accuracy. The digital photogrammetric DEM was produced from 1:10,000 data using ArcGIS 9.3 software.

The comparison between the LiDAR and photogrammetric DEM was carried out through two approaches: (1) comparing selected LiDAR and photogrammetric DEM test points with field surveyed data using Mean Absolute Percentage Error (MAPE) formula, (2) Analysis these test points using MINITAB14 software.

In the process of reaching above mentioned approaches, ArcGIS application software was used for the appropriate functions. The overlay and extract raster value to point operations were performed to get raster points values to compare elevation data. Also, MINITAB14 software was used to analyze these data by using descriptive statistics, Pearson correlation coefficient, regression analysis and residual plots.