



ERU Research Dissemination Program February 2010

Organized by the

Department of Earth Resources Engineering

25th February 2010 at 11.00 am

at the

**Seminar Room,
Department of Earth Resources Engineering**

The speakers and topics covered in this program are as follows

- 1. Assessment of DEM Accuracy Generated From ALOS Prism High Resolution Stereo-Optical Imagery Using LPS**
Presented by S P Chaminda
- 2. Site Suitability Analysis for Water Harvesting Structures in Hambantota District using Remote Sensing and GIS**
Presented by I P Senanayake
- 3. Development of Methodology to assess the Geothermal Energy Potential in Sri Lanka.**
Presented by G D Nanayakkara

For more information please contact Prof. Sisil Kumarawadu
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Note: Abstracts of the presentations are attached herewith

Abstracts

[1]

Title: Assessment Of DEM Accuracy Generated From ALOS Prism High Resolution Stereo-Optical Imagery Using LPS

Presenter: SP Chaminda

Abstract - Major problems of the worldwide topographic data are low resolution and high inconsistency of accuracy in different terrains, especially in past. The new Japanese optical sensor ALOS/PRISM which was launched in January 2006 has stereo capabilities which can be used to generate worldwide Digital Maps in respects of its high resolution and accuracy. In this study, The Leica Photogrammetric Suit (LPS), software package which can be used for the 3D processing of optical Linear Array CCD-based satellite sensor systems, was used to extract different Digital Elevation Models (DEMs) from ALOS PRISM stereo-optical image pairs using different no of Ground Control Points (GCPs) and tested accuracy with different terrains covering an area of about 60Km². Generated DEMs were assessed with different CPs distribution in terrains and computed error statistics. In addition error maps were generated to present spatial correlation of the error distribution over the area. The overall height RMSE and NIMA Absolute Linear Error(LE)90 for study area was 2-3 pixels depending primarily on surface roughness, vegetation and image texture and image quality. The height RMSE and NIMA Absolute LE90 values for the specific areas ranged from less than 2 pixels (lowland) to 4 pixels in a tree-covered mountainous area. In conclusion, the LPS software can be used efficiently to extract accurate DEMs form ALOS PRISM data.

[2]

Title: Site Suitability Analysis for Water Harvesting Structures in Hambantota District using Remote Sensing and GIS

Presenter: I.P. Senanayake

Abstract: Hambantota District appears to be an area which was heavily affected by recent drought conditions in Sri Lanka, on the basis of surface water availability. A proper water management system is essential to overcome this problem in the future. Integration of Remote Sensing and Geographical Information System (GIS) techniques provides an accurate and updated data base, which is essential for a proper water management system. In this project, Suriyawewa was selected as the project area considering the average annual rainfall variations in the Hambantota District. Then, by using the data purchased from the Survey Department and integrating GIS techniques, the most suitable sites to locate rainwater harvesting structures (tanks) are proposed.

[3]

Title: Development of Methodology to assess the Geothermal Energy Potential in Sri Lanka..

Presenter: GD Nanayakkara

The alternative power system can be used to solve electrical power problem in some areas in Sri Lanka. One of the low cost and popular energy systems in many countries over the world is geothermal sources. Many of the western and Asian countries use these resources to generate electricity, USA - 2.8 GW, Mexico - 743 MW, Italy - 742 MW, Philippines - 1.8 GW, Indonesia 589 MW etc. They use different technologies, such as flash steam, dry steam and binary systems. Therefore after assessing the potential geothermal energy resources in Sri Lanka, we will be able to design a suitable electricity generating system. Therefore, we will assess the all geothermal potential in Sri Lanka with the view of generating electricity for the country. Here we are planning to use geophysical techniques along with drilling to estimate capacity of geothermal reservoirs underneath above areas. Finally the suitable locations will be economically assessed for establishment of geothermal electricity generating plants in Sri Lanka.