Development of Web GIS Framework for Natural Resource Management using ERDAS Apollo 2010

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Natural resource management programmes include development of community in which each and every aspect of natural resources is conserved and managed properly to serve a public and industrial demand without affecting ecological system. All the natural factors which directly or indirectly affect the human life are called natural resources. Air, Wind, Plants, Minerals, Forest, Water, Rivers, Soil and Land are the main influencing factors. The minerals contribute a basic part of nation’s core and economic base. India is gifted with major amount of mineral deposits. Modern technologies like Geographic Information System (GIS), Remote Sensing and Global Positioning System (GPS) can be integrated to develop a well organized planning procedure for natural resource management. The Web GIS provides a fast and globally reachable way to represent information about the natural resources through maps and statistics. ERDAS APOLLO 2010 has the capabilities to deals with huge amount of raster as well as vector database. The present study uses the ERDAS APOLLO 2010 capabilities for Web GIS based applications in particular natural resource management. A Graphical User Interface (GUI) has been created using Java Server Pages (JSP) for its customization and making it user interactive. The present study also deals with creation of geodatabase of metallic mineral resources, forest cover, water resources, land use and land cover of the study area and implements of ETL (Extract, Transform and Load) technology using open source software Post GIS.

3D Model of the City using LiDAR and Visualization of Flood in the Model

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This paper presents the technique to create 3D city model using LiDAR and visualization of flood in that model. The city model contains sites (buildings), vegetation and water bodies. Flood is the most destructive natural disasters that many countries are facing today. The city of Chennai, India, has a long history of flooding. In the last 20 years, there have been many floods during North east monsoon. By creating the 3D model of the city, we can visualize the flood and also we can see which part of the city will be inundated during the flood. Since Chennai city is a plain area, we need the most accurate data for marking flood areas. The 3D model of the city can be accurately created using LiDAR data. Then the virtual environment is also created for the model. By using ArcGIS we can visualize the inundation of the city at various flood stages. This model helps in disaster management during flood in the city. This model helps the government to plan the mitigation measures and manage the situation when flood occurs.