World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:8, No:10, 2014

Integration of GIS with Remote Sensing and GPS for Disaster Mitigation

Authors : Sikander Nawaz Khan

Abstract : Natural disasters like flood, earthquake, cyclone, volcanic eruption and others are causing immense losses to the property and lives every year. Current status and actual loss information of natural hazards can be determined and also prediction for next probable disasters can be made using different remote sensing and mapping technologies. Global Positioning System (GPS) calculates the exact position of damage. It can also communicate with wireless sensor nodes embedded in potentially dangerous places. GPS provide precise and accurate locations and other related information like speed, track, direction and distance of target object to emergency responders. Remote Sensing facilitates to map damages without having physical contact with target area. Now with the addition of more remote sensing satellites and other advancements, early warning system is used very efficiently. Remote sensing is being used both at local and global scale. High Resolution Satellite Imagery (HRSI), airborne remote sensing and space-borne remote sensing is playing vital role in disaster management. Early on Geographic Information System (GIS) was used to collect, arrange, and map the spatial information but now it has capability to analyze spatial data. This analytical ability of GIS is the main cause of its adaption by different emergency services providers like police and ambulance service. Full potential of these so called 3S technologies cannot be used in alone. Integration of GPS and other remote sensing techniques with GIS has pointed new horizons in modeling of earth science activities. Many remote sensing cases including Asian Ocean Tsunami in 2004, Mount Mangart landslides and Pakistan-India earthquake in 2005 are described in this paper.

Keywords : disaster mitigation, GIS, GPS, remote sensing
Conference Title : ICRS 2014 : International Conference on Remote Sensing
Conference Location : Osaka, Japan
Conference Dates : October 12-13, 2014