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Applications of Space Technology in Flood Risk Mapping in Parts of Haryana State, India

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Abstract : The severity and frequencies of different disasters on the globe is increasing in recent years. India is also facing the disasters in the form of drought, cyclone, earthquake, landslides, and floods. One of the major causes of disasters in northern India is flood. There are great losses and extensive damage to the agricultural crops, property, human, and animal life. This is causing environmental imbalances at places. The annual global figures for losses due to floods run into over 2 billion dollar. India is a vast country with wide variations in climate and topography. Due to widespread and heavy rainfall during the monsoon months, floods of varying magnitude occur all over the country during June to September. The magnitude depends upon the intensity of rainfall, its duration and also the ground conditions at the time of rainfall. Haryana, one of the agriculturally dominated northern states is also suffering from a number of disasters such as floods, desertification, soil erosion, land degradation etc. Earthquakes are also frequently occurring but of small magnitude so are not causing much concern and damage. Most of the damage in Haryana is due to floods. Floods in Haryana have occurred in 1978, 1988, 1993, 1995, 1998, and 2010 to mention a few. The present paper deals with the Remote Sensing and GIS applications in preparing flood risk maps in parts of Haryana State India. The satellite data of various years have been used for mapping of flood affected areas. The Flooded areas have been interpreted both visually and digitally and two classes-flooded and receded water/ wet areas have been identified for each year. These have been analyzed in GIS environment to prepare the risk maps. This shows the areas of high, moderate and low risk depending on the frequency of flood witness. The floods leave a trail of suffering in the form of unhygienic conditions due to improper sanitation, water logging, filth littered in the area, degradation of materials and unsafe drinking water making the people prone to many type diseases in short and long run. Attempts have also been made to enumerate the causes of floods. The suggestions are given for mitigating the fury of floods and proper management issues related to evacuation and safe places nearby.

Keywords : flood mapping, GIS, Haryana, India, remote sensing, space technology
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