



# Space Technology and GIS for Disaster Monitoring and Mitigation



# **Space Technology and GIS for Disaster Monitoring and Mitigation**

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Published by  
**SCIENTIFIC PUBLISHERS (INDIA)**

Jodhpur –

5 A, New Pali Road

P.O. Box 91

Jodhpur - 342 001 INDIA

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ISBN: 978-93-86102-85-0

eISBN: 978-93-87869-90-5

Visit the Scientific Publishers (India) website at  
<http://www.scientificpub.com>

Printed in India

## **PREFACE**

Natural Disasters are severe hazard to the people, environment, eco-system and ultimately the land where we live and survive. in the context of Rajasthan, the most hazardous are the droughts, which have occurred during forty-six years out of fifty-two years from beginning of the planned development after independence. Another problematic disaster in the sequence of severity are floods during the monsoon. Though there are very few perennial rivers in the state, floods are experienced generally in the rainy drainage systems in view of high intensity of rains in one or other parts of the state.

Third hazardous natural disaster in the chronological order is the locust invasion causing the damage of the crop and vegetation in very huge area. The infested area of such disaster is the western Rajasthan in general and in view of serious gravity, total state experience widespread damage. Fourth disastrous hazard are the sand storms disturbing the cultivated fields, roads, railway tracts, houses and the habitations. Next natural disaster experienced in the state is forest fire and other fire seriously damaging the affected area causing human and capital loss. Desertification is categorized as invisible natural disaster causing very serious impact on the fertility of soil converting the total green and in to waste, barren and uncultivable land. Impact of earthquake disaster had never been experienced so far to the bitter extent but many areas of the state are severely vulnerable.

The present book is an effort to assess the intensity and impact of natural disasters in terms of regular occurrence and vulnerability to moderate level. District-wise analysis has been carried in terms of intensity, magnitude as well as severity to the people and surroundings.

So far as warning or prior indication of occurrence of natural disasters, there are mixed reaction in terms of assessment for occurrence of the natural disasters and its likely area spread. Earthquake occurs with any warning and only relief and rehabilitation measures are possible. in case of locust invasion, occurrence with little warning is possible and inability to control causes very serious impact on the vegetation, i.e., cultivated crops, trees and bushes, forests and nurseries, etc.

The most disastrous hazard is the desertification, completely non visible and unattended by the government. Impact of the desertification is different in areas in view of reason of disasters. Most serious among them are seepage due to charging of the underground water beyond the capacity of soil, alkanity and salinity in view of overdrawal of water, enmass cutting of the trees causing denudation of soil cover, degradation of environment and alarming increase of population.

In a socialistic system of society and democratic system, responsibility of the state government exists for communicating warning to the people, evacuation and rehabilitation and permanent relief to the affected people. For this purpose a Natural Calamity Relief fund has been constituted at the state level to provide relief to the people in distress. In case of severity of the problem, the assistance is possible from the National Natural Calamity Relief fund at the level of the Government of India.

Natural disasters are harmful to the people as well as the government both the state and national. People affected by natural disasters are severely affected with unrepairable loss of life and property of the people. The State Government is affected as the natural disasters are direct loss to state domestic product and the pace of development is seriously affected with recurring financial loss to compensate the losses and rehabilitation. One of the main reasons for unhealthy financial situation is the recurrence of natural disasters.

There are various reasons responsible to natural disasters beyond the geophysical conditions, which can be spelt out as unsystematic developmental approach of the government and the people and uncontrolled growth of human population. Efforts have been made to quantify the impact of such happenings as the government failed utterly to manage the issues to the desired extent.

Undoubtedly, the development process in the state has yielded very significant progress experienced by the people and the government. After all the serious constraints, Rajasthan is the surplus food grain state in the country. But there are various areas as constraints for development, which need immediate addressal for prosperity and well being of the state.

The present book is a sincere and humble effort to learn lessons from the natural disasters and require serious efforts for combating to the legitimate extent to minimize the damage. In this connection, efforts of only state government are not sufficient but require perennial support of the Non-governmental organizations. Voluntary Organizations and Community Based Organizations. Similarly the progress made in the fields of space through satellite, remote sensing, internet and other communication media need to be adequately applied for quick and immediate response.

**T.S. Chouhan**

## **ACKNOWLEDGEMENT**

I am thankful for the support of officers and officials of various Government Departments like, Disaster Management and Relief Department, Census Operations, Directorate of Economics and Statistics, District Collectors, Rajasthan Remote Sensing Station, Forests and Environment Department, Agriculture Department and various Non – governmental Organizations, Voluntary Organizations and Community Based Organizations, Scout and Guides, National Cadet Corps and similar organizations working for the welfare and prosperity of the people with a noble cause without any return and individual interest.

The author are appreciative of the sincere efforts by Mr. Tanay Sharma and his production team, including the reviewers, editors and the graphics designers, of Scientific Publishers, Jodhpur. The author like to extend their thanks to all the team for their commendable efforts, as a result of which the book has been brought out speedily in an excellent published form.

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