MIRSAC Newsletter

Mizoram Remote Sensing Application Centre
(An Autonomous Govt. Institution under Science & Technology, Planning Department, Govt. of Mizoram)

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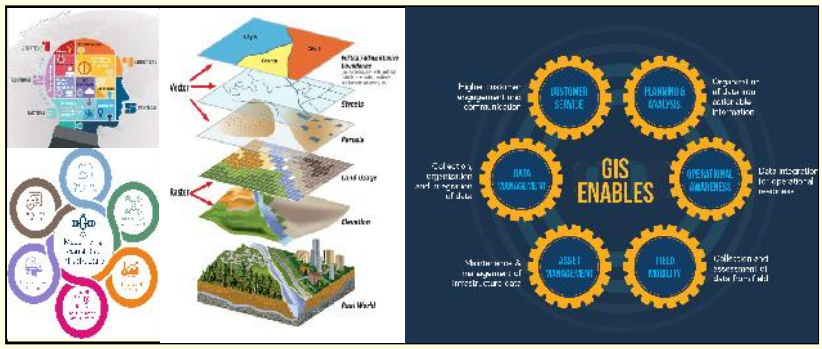
SPATIAL DATA- BUILDING RESILIENT GOVERNANCE

(Way forward to Decisive-Informed-Sustained future)

Governments of today are facing the challenges of protecting the country/ states from extreme economic, social and environmental disruptions caused by post-pandemic events. The past years has brought in a sense of urgency: the urgency to rebuild our well-being & economy; to be on track with informed decisions; to bridge the digital divide and ensure sustainable developments. As we stand on the cusp of a new year, there are expectations for unfurling of new policies that would address our challenges and take us to stellar heights in the actualization of emerging geospatial data potential. The geo-spatial data aspect in this 4th Industrial revolution has not only catalyzed the speed and scope of technology developments but also brought paradigm shift in the outlook of technology and its use in society. Geospatial data and technologies are quietly but steadily facilitating this transition and will assume even more significant role in the future.



Data in any form becomes useful only when we know how to interpret it and apply those interpretations to our contextual activities. Spatial data enables these facet of interpretation and brings out a clear picture through its technology platform for its users. The level of insights provided by geospatially generated data becomes a host of valuable information for its users as they are location enabled, attribute-rich and robust in its application for a wide spectrum of development activities. Geospatial data can play a critical role in supporting Governments to be more resilient and help them prepare for worst-case scenarios with solutions that are data-driven and reliable. Also, accurate and timely geospatial data with necessary tools to convert it into meaningful information for decision making can be transformative for Governments during emergent planning process.

Spatial data and the policies governing its creation and use requires a liberalized framework as it is inextricably linked to the growth and expansion in the Governance sector as well as mainstream public sector. This is beginning to be seen when disruptive technologies like the upcoming UAV sector enters the market scene. Policymakers are compelled to take actions in framing of policies which brings a transformational change in the technology sector. An example could be the landmark guidelines for Geospatial data and Drone rules by the Indian Government to liberalize geospatial data acquisition and simplify the cumbersome certification and license processes. Today, geospatial data and technologies are increasingly recognised in overall national development and governance. The recent initiatives of the central government in the Geospatial Energy map of India, and the PM Gati Shakti - National Master plan for multi-modal connectivity, amongst others are a testament to this recognition.

Editor's desk

Management of resources -be it natural or man-made has always been a pre-requisite regime when one has to consider its sustained use for generations to come. Our complex environment made and evolved from its human intervention has brought a gamut of changes ranging from region-centric developments to globally-impacting issues like climate change. We have drafted and enacted a number of policies and acts to correct our past doings, and somehow managed to strategically implement a few of such policies. Yet the integral part of these exigencies require reliable measurements and quantification to ascertain how much impact these policies have at ground-zero. Monitoring & measuring the impact of such developments be it locally or globally induced requires preparedness and investments in platforms like GIS and Remote sensing technologies. As the adage goes- "if you can't measure it, you cant't improve it", the role, scope and necessity of monitoring through these technology based platforms will continue to increase in leaps and bounds. The ability to address new challenges in a complex world we have created clearly solicits the inclusive embodiment of technology that would bring us closer to narrowing the gap - Our modern fabric of life.

Proposed activities in the pipeline

1. DPR for Large Scale Mapping of Wet Rice Cultivation with a total estimated cost of Rs.212.36 Lakh was prepared and submitted to NEC, Shillong.

2. Three projects - (1) Hydrogeomorphological mapping & Groundwater resources study in Mizoram; (2) Modernization of MIRSAC; (3) Establishment of Digital GeoSpatial Data Centre for Remote Sensing & GIS Application Networking in Mizoram. Proposal & estimates were documented under the State Government's shelve of projects (2022-23) and submitted to Planning & Programme Implementation Dept., Govt. of Mizoram.

3. A total of 8 project proposals were finalized with NESAC under Mizoram State Plan of Action for executing Remote Sensing & GIS based projects during 2021-2024. .

4. Construction of training room & procurement of LIDAR instrument. Proposal submitted was approved and is due for sanction under the Scheme - "Special Assistance to States for Capital Expenditure, 2021-22".

5. Geospatial analytics & Decision support for Agriculture Development in Mizoram. Project proposal & estimates to assist State Agriculture development under the Digital Agriculture Mission was prepared and submitted to Agriculture Department., Govt. of Mizoram.

Space technology for Inter-State boundary issues

Space technology with special reference to Remote sensing & GIS has been indispensable for solving a number of issues relating to land observations, analysis, quantifications and drawing decisions in limited time and space. Its application is growing with advancements in mainstream science & technology, and assisting as an important tool for solving complex-critical challenges in the tech-driven era. It has also become inevitable to implement such tech-driven approaches when time & situation becomes limited.

Following the unpleasant clash related to inter-state border issue between Mizoram & Assam, a team of Government officials from Mizoram & Assam led by respective Chief Secretaries of the states met and convened at Gujarat Bhavan, New Delhi on 9th July, 2021 to have peaceful talks on way-forward measures to resolve the inter-state border issues. Amongst the supported documents produced by the Mizoram state were several satellite & SOI based maps prepared by MIRSAC- who have been participating at a number of meetings and at various stages of documentation initiatives by the State Government. Infact the information provided by the maps and data respository at MIRSAC were instrumental in bringing out a clear picture & understanding of the underlying issues, concerns and possible solutions to the problems. The Central Government has also realized the potential of space technology in this issue and has further stated that the inter-state boundaries of the northeastern states would be demarcated using satellite imaging as this would rely on a more scientific approach for demarcation of boundaries between the states (Indiatoday.in, 1st August, 2021).

Hostile outbreaks along inter-state borders can be difficult to predict, even when the states involved have a well known and long running history of disputes. The escalation of these disputes at the border often appear to occur with little or no warning. However, there can be indicators for an impending conflict which are often overlooked when a crisis develops. These indicators can in turn rely on various factors produced through space technology inputs that are discernible during initial stages of investigations. Satellite imagery with its ability to reliably document remote areas over a long period of time, provides a way to overcome many of the discernible challenges in border issues. And this is where satellite based imaging and its corresponding applications become a value-addition in the process of solution-driven approaches.

Geoinformatics in Rural road projects under PMGSY

Rural road project under the nationwide Pradhan Mantri Gram Sadak Yojna (PMGSY) initiative has been the focal points of infrastructure development and of much concern when it comes to rural connectivity and economic development. The objective of PMGSY was to provide basic access by way of all-weather roads to all habitations having population "250 or above in desert and tribal areas" and "500 or above for the rest of habitations" by year 2000 in phased manner. Managing this giant project using traditional methods of project management was a challenge as the methods were tedious and time consuming, and retrieving desired information was also difficult. To overcome these difficulties, Geo-Informatics is being used for planning, decision making and monitoring of PMGSY scheme. Consequently, National Rural Road Development Agency (NRRDA) decided to implement GIS in entire country for project monitoring and maintenance management purpose under the umbrella of NIC for GIS based monitoring of rural roads and Linkage with OMMAS.

The National Remote Sensing Centre (NRSC) and National Institute of Rural Development (NIRD) has jointly taken up the geospatial technology part for the country to extract and identify road connectivity in terms of length based on inputs provided by National Rural Road Development Agency (NRRDA), MoRD. This includes generating spatial database on road connectivity with respect to habitations connected under completed roads. This further involved extracting road features from high resolution satellite data for 14 states out of 29 states in India in which Mizoram has been included. The project for Mizoram state was taken up by MIRSAC for which a total road length of 3207.88 km was mapped. Areas that exhibit doubts during extraction of road information from the satellite imagery was subjected to on-site verification. The corrected database has been sent to NRSC for final compilation and report generation.

ON-GOING PROJECTS

1. Monitoring of IWMP activities using Geospatial tools

Land use interpretation within identified watersheds of the state is being carried out. Out of the total 81 watersheds, mapping and report preparation for 45 Watershed areas are completed. Reports and maps for these watersheds will be sent to NRSC for final completion.

2. National Wetland Inventory & Assessment (NWIA) project - Mizoram

Interpretation of wetlands using the new coverage of IRS LISS-IV was carried out for identified locations. Consequently external quality check was done by NESAC Scientist on 19th November, 2021 and required corrections/updation was also incorporated into the checked layers. A few ground truthing for selected locations will be additionally done.

3. Base Map preparation for Kolasib Master Plan

A project initiated by the Town Planning Office, UD&PA Department, Govt. of Mizoram for planning of Kolasib district. The centre is collaborating for mapping & generating required GIS base layers. Ground survey & UAV image capture is done for preparation of the base layers on a large scale. Data pertaining to drone image, contour & buillding footprints have been submitted.

4. Space base Information Support for Decentralized Planning (SIS-DP)-Update

Block-wise Land use / Land cover mapping to detect changes during the two phases of the project is being carried on. External quality checks for Champhai & Kolasib districts has been completed by NESAC and necessary corrections are being incorporated. Internal quality checks for Aibawk and Thingsulthliah block is being done and will be subjected for EQC subsequently. Meanwhile, mapping for other blocks in the state is under progress.

5. Monitoring of NEC Projects (Geo-tagging)

A joint project with NESAC, Dept. of Space and as per directions of NEC, Shillong, this initiative is taken up to monitor on-going NEC funded projects in the state through space based technology. Out of a total of 93 project locations, 41 sites have been geotagged for monitoring. On-site monitoring will be jointly done by MIRSAC and Planning Dept., Govt. of Mizoram.

6. Village level Development plan for six selected villages

The project is an initiative taken up by Planning & Programme Implementation Department for village level socio-economic development using scientific based planning approach. MIRSAC will be collaborating in aspects of required remote sensing & GIS inputs and analysis for the geospatial based planning in the selected six villages. The centre has also participated in the sensitization programmes under this project and will be carrying out spatial planning based on preliminary surveys and data collected by the respective stakeholders/departments involved in the project.

NEWS & ACTIVITIES

**** Pu C.Vanlalengkima, Scientist was detailed to join the Chief Secretary's team on Inter-State Border issues and attend a meeting on "Mizoram & Assam Inter-State Border issues" 9th July, 2021 at Gujarat Bhavan, New Delhi.***

**** Pu Vanlalnghaka, Scientist, Pu C.Lalzawngliana & Pu David Vanlalfela Pachuau, Field Assistants were detailed for UAV ground survey at Kolasib under the Kolasib Master plan preparation activities (Base map preparation) from 13th - 18th September and 28th September - 2nd November, 2021.***

Field work for Kolasib Master plan Preparation

**** Pu C.Vanlalengkima, Scientist was detailed for UAV site inspection under the Community based Environment Conservation & Eco-tourism project taken up by MISTIC, Science & Technology at Ailawng on 9th November, 2021.***

**** External Quality check (EQC) for data prepared under NWIA project was done at MIRSAC on 19th November, 2021 by Dr. Pebam Rocky, Scientist D, NESAC. Dr. Rocky was also visiting the Centre in connection with finalization of proposed projects under Plan of Action activities for Mizoram state.***

**** Pu C.Lalzawngliana, Field Assistant was detailed for UAV ground survey and data collection at Kolasib under the Kolasib Master plan preparation activities (Base map preparation) from 30th November - 3rd December, 2021.***

UAV Site Inspection at Ailawng Eco-tourism spot