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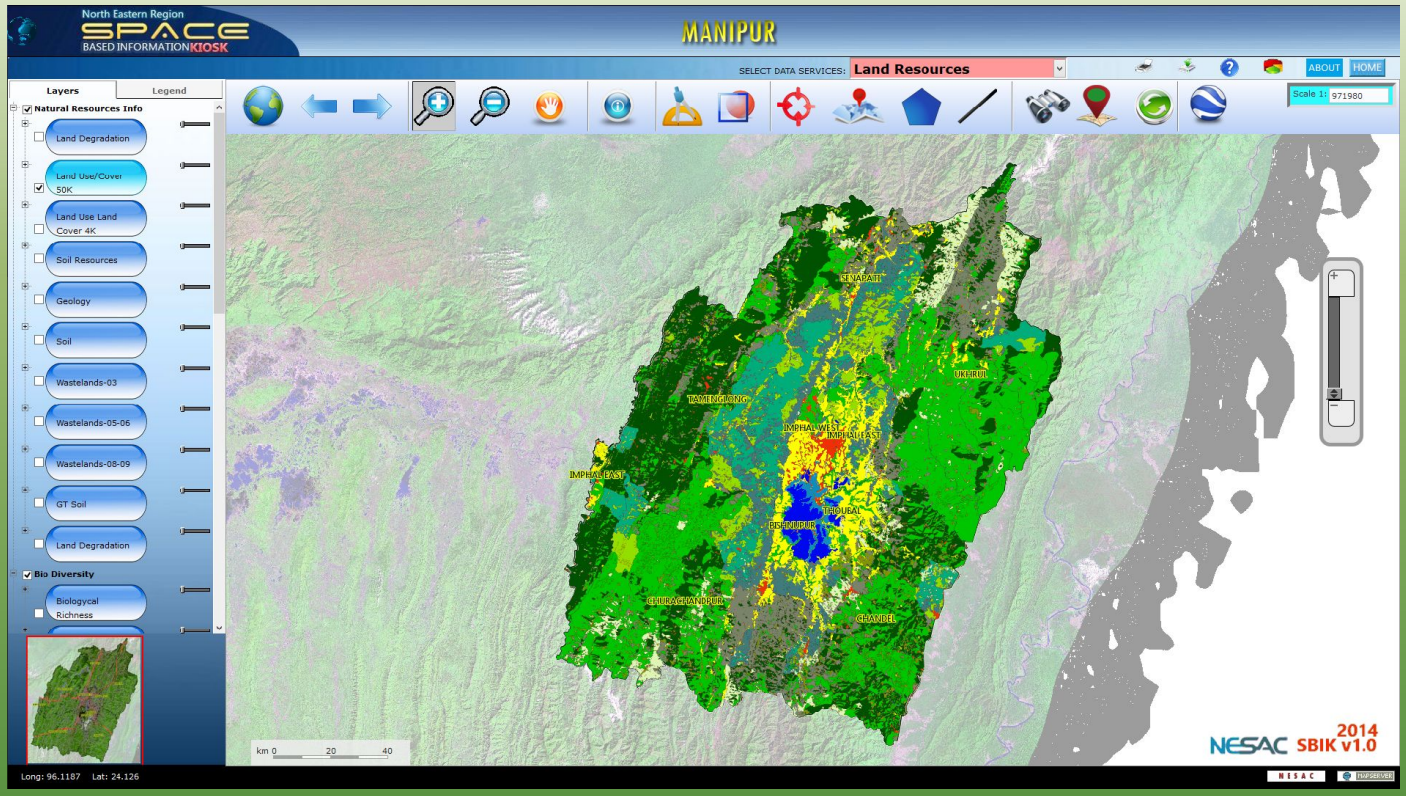
NESAC
NORTH EASTERN SPACE APPLICATIONS CENTRE

SBIK Manipur

Space Based Information KIOSK for Manipur

"Conceptualized by NESAC to showcase the strength of existing geospatial inputs of NER for natural resources management and other developmental and planning activities in the region"



Developed by

North Eastern Space Applications Centre

Department of Space, Government of India

Umiam 793 103, Meghalaya

In collaboration with

Manipur Remote Sensing Applications Centre, Imphal

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Manipur 'the jeweled land' is one of the eight northeast states of India bounded by Nagaland in the north, Mizoram in the south, Assam in the west, and by the borders of the country Myanmar in the east with a total geographical area of 22,347 km². Imphal, the capital with a population of 2,64,986 lies in an oval-shaped valley of approximately 2,000 km² surrounded by blue mountains and is at an elevation of 790 metres above the sea level.

Physiographically, Manipur may be characterised as two distinct physical regions – an outlying area of rugged hills and narrow valleys, and the inner area of flat plain, with all associated land forms. The Loktak lake(286 km²) is an important feature of the central plain. The altitudinal variation of the state ranges from 40 m at Jiribam to 2,994 m at Mt. Iso Peak near Mao Songsong. Four major river basins are in Manipur State: the Barak river basin to the west, the Manipur river basin in central Manipur, the Yu river basin in the east, and a portion of the Lanye river basin in the north.

The maximum temperature in the summer months is 32°C. while in winter it often falls below zero, bringing frost. Coldest month is January, and the warmest July. The state is drenched in rains from May until mid-October with an average annual rainfall of 1468 mm.

Manipur has a population of 27,21,756 as per 2011 census . Of this total, 58.9% live in the valley and the remaining 41.1% in the hilly regions. Its people include the Meetei, different ethnic tribes belonging to Kuki and Naga, and Pangal, who speak different types of Tibeto Burman languages.

Manipur acts as India's 'Gateway to the East' through Moreh and Tamu towns, the land route for trade between India and Myanmar and other Southeast Asian countries.

About SBIK - Manipur

North Eastern Space Applications Centre (NESAC) established jointly by Department of Space (DOS) and North Eastern Council (NEC) is providing developmental support to the North Eastern Region of the country using space science and technology. Particularly, in the field of Remote Sensing and Geographic Information System, NESAC is implementing many space application projects of multistate nature dealing with natural resources census, land degradation assessment, sericulture and horticulture development, infrastructure and disaster management support using geospatial technology inputs which would contribute to the sustainable development of the region over a decade of service.

In recent times NESAC has given thrust to dissemination of data thus generated through information system developed in-house using open source software system and standards. NESAC has already launched successfully several programmes in this direction.

The Space Based Information KIOSK on Manipur (SBIK-Manipur) is an outcome of the SBIK-NER which was conceptualized by NESAC to showcase the strength of existing geospatial inputs of NER for natural resources management and other various development and planning activities in the region.

What it contains

The SBIK Manipur contains seven main modules, namely, i) administrative module, ii) Infrastructure module, iii) land resources module, iv) water resources module, v) Imphal data services module, vi) planning inputs module and vii) disaster services module. Information on district boundaries, sub-divisions, panchayat boundaries and cadastral maps of valley areas, election management information etc., are contained in the administrative module (Fig.1). Road network at different scales, medical facilities, police stations are contained in the infrastructure related module. Land use land cover, wasteland, land degradation, forest cover, forest types, biological richness, disturbance, fragmentation, vegetation type, soil, geology, slope, contour, etc., are included in the land resources module at different scales. Rivers, wetlands and watershed boundaries are contained in the water resources module. Sewage lines, water pipelines, treatment plants, flood prone zones for Imphal district with geo-tagged photographs has also been incorporated in Imphal data services module. A module on disaster is also added to provide data on disaster like fire and floods. SILKS- Sericulture Information Linkages and Knowledge System for sericulture planning and development is also incorporated

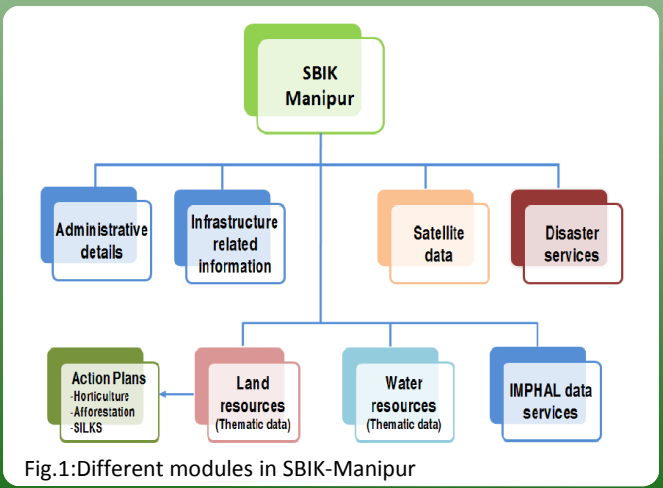


Fig.1:Different modules in SBIK-Manipur

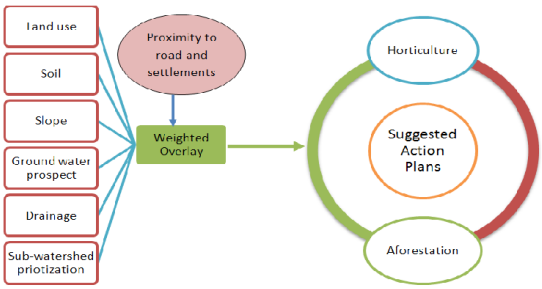


Fig 2: Generation of land resources action plan

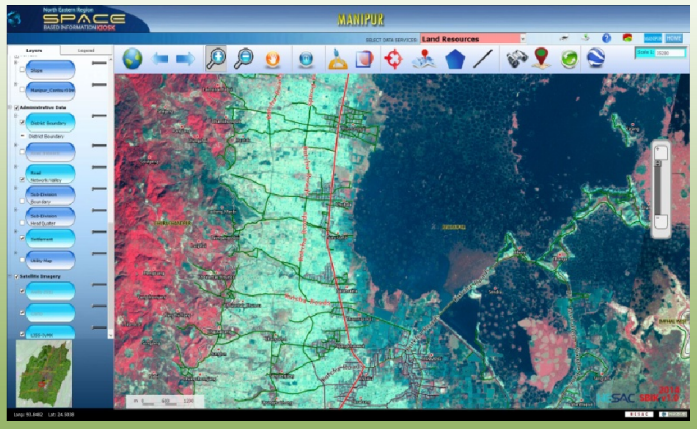
as an add on geo-portal for identification of suitable areas for host plant development and expansion of sericulture activities (www.silks.csb.gov.in).

Action plan module contains information related to (afforestation/ horticulture) based on weighted overlay of criteria based on landuse land cover, soil, slope, ground water prospects, drainage, watershed prioritization, etc. (Fig.2). It also contains multispectral imagery of Advanced Wide Field Sensor (AWiFS) of IRS-P6 (56 m) satellite. In addition high resolution IRS P5 Cartosat-1 (2.5 m) and IRS-P6 LISSS IV (5.8m) covering the entire state are also integrated into the SBIK-Manipur to enable easy referencing by overlaying different layers over the imagery.

Meteorological data of Manipur can be collected from the six AWS stations established in Manipur by login into the MOSDOC website of SAC Ahmedabad.

Development of portal

The SBIK-Manipur spatial modules has inbuilt webGIS tools for displaying and querying of spatial data. It is developed using open source software packages. The UMN map server is used as a GIS engine, PostgreSQL/PostGIS as an object oriented relational database management system (ORDBMS), GeoServer for creating OGC web services. An open source web application tool built on top of MapScript using the PHP programming language has been used for development of interactive user interface. The SBIK-Manipur will allow for effective dissemination, sharing and user interface. The SBIK-Manipur will allow effective dissemination, sharing and management of spatial information which can be used as an effective decision making tool for

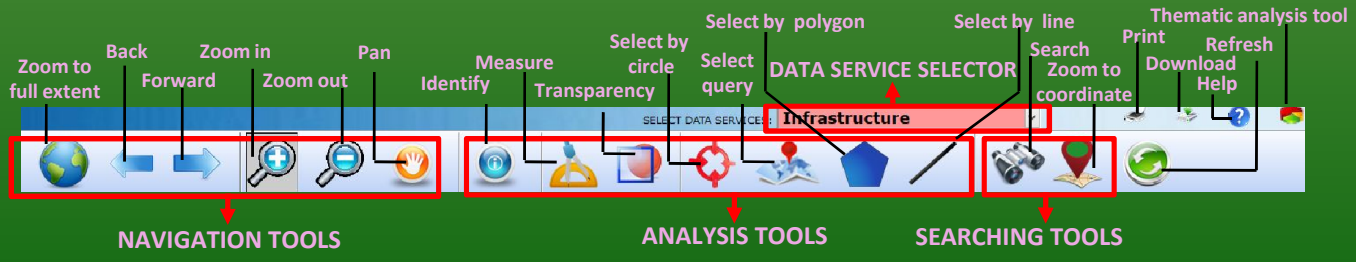


planning and development. The non spatial modules were created using web tools such as HTML, CSS, Javascripts, etc.

How to use

The SBIK-Manipur spatial modules has various GIS tools for easy navigation and simple data querying such as zoom in, zoom out, zoom to full extent, selective zoom, go to previous and next extent, panning, etc. Feature on the map can be identified using Map identity tool. Distance and area measurement have also been included as part of spatial map analysis tool. Thematic analysis toll will enable generation of statistics based on AOI like block boundary, district boundary or watershed boundary. Map can also be downloaded and printed at different dpi and also can be saved in different formats. Help tool contains directions on how to use the gis tools. Data service selector for selecting different themes such as infrastructure, land resources, administrative, etc as well as disaster services data. With the vertical slider zooming tool map can be visualized in different scales according to user input. Scale bar shows the scale of the active extent and the geographic location of the pointer/mouse is displayed as geo-coordinates on the left bottom corner of the portal.

Transparency tool can set the transparency level for each layer. Selection tools can select as circle, polygon or line and generate the statistics from the layer. Results of map query or area of interest can be printed out along with detail legend using Print tool. The map can be produce in various file formats such as PNG, JPEG, GIF or pdf. Location specific zoom is made possible using Zoom to coordinate tool. Searching of attributes in the data can be done using the search tool. Refresh tool can be used to reload or refresh the page.



Sources of Information

Remote sensing data under the various national projects cordinated by National Remote Sensing centre (NRSC), Hyderabad, Space Applications Centre (SAC), Ahmedabad, Indian Institute of Remote Sensing (IIRS) Dehradun etc., in collaboration with Manipur Remote Sensing Applications Centre, Imphal had been used in developing the portal. Spatial information from Forest Survey of India, Dehradun and National Bureau of Soil Survey and Land Use Planning, Nagpur has also been incorporated. Other non-spatial data from Census of India, Central Ground Water Board, Botanical Survey of India, Indian Council of Agricultural Research, etc., are the sources of information incorporated into SBIK-Manipur.

11m IRCRD antenna under IRNSS

AWS at NESAC

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