

Reflections

Triannual Inhouse Newsletter



Shri Ram Nath Kovind, Hon'ble President of India launched the Project Monitoring Portal developed by NESAC on 4th May, 2022 during the valedictory ceremony of North East Festival organized as part of Azadi Ka Amrit Mahotsav at Guwahati

From the Director's desk



The space based remote sensing technology has been widely used to monitor natural resources, infrastructure, identify changes as they happen, etc. The exponential growth of drone based remote sensing systems has now enabled monitoring at finer space and time scale. NESAC has integrated the strength of both space based and drone based remote sensing systems in a Geographic Information System platform and developed

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Launching of Project Monitoring Portal by Shri Ram Nath Kovind, Hon'ble President of India

Shri Ram Nath Kovind, Hon'ble President of India has launched the Project Monitoring Portal on 4th May, 2022 during the valedictory ceremony of North East Festival organized as part of Azadi Ka Amrit Mahotsav at Sankaradeva Kalakshetra, Guwahati in the gracious presence of Prof. Jagdish Mukhi, Hon'ble Governor of Assam and Nagaland, Dr Himanta Biswa Sarma, Hon'ble Chief Minister of Assam, Shri Sarbananda Sonowal, Hon'ble

Tools" is one of the unique applications developed by the North Eastern Space Applications Centre (NESAC) with the support of North Eastern Council (NEC) and Ministry of DoNER (MDoNER) using IT-enabled Geospatial Technology with a lot of innovations towards enhancing the Governance process. Currently, total 588 projects spreading in more than 1664 locations are being mapped and monitored using the above platform. This also includes 37 major projects of MDoNER



Hon'ble President of India launching the Project Monitoring Portal

Minister of Ports, Shipping & Waterways & AYUSH, Shri Kiren Rijju, Hon'ble Minister of Law and Justice, Shri G. Krishan Reddy, Minister of DoNER and Shri B.L. Verma, Hon'ble Minister of State DoNER. The Hon'ble Chief Ministers of NE states, Hon'ble Ministers of Assam State Cabinet, Hon'ble Members of Parliament of NE states, Chief Secretary of Assam and other senior dignitaries from various State and Central Departments have attended the event.

Project Monitoring Portal developed under the project "GeoTagging and Monitoring of NEC/MDoNER funded Projects/schemes in NE region using Geospatial Technology and

distributed in 90 sites across NE region. State Remote Sensing Applications Centres (SRSAC) of NER have been engaged in geotagging of the project sites on ground.

PROJECT MONITORING PORTAL
Project Platform for geotagging/monitoring of NEC/MDoNER funded projects

PROJECT LOCATIONS | SECTOR | LATEST EVENTS | WORKS | FEEDBACK | (Language)

SPATIAL SEARCH AND MULTI QUERYING FILTERING MECHANISM
SMART SEARCHING OVER THE MAPS | MULTIPLE QUERY IN SPATIAL DOMAIN

580 Total Projects | 1667 Project Sites | 93% Geotagged | 10 States Covered

Shri. Sarbananda Sonowal
Hon'ble Prime Minister

GeoTagging and Monitoring of NEC/MDoNER funded Projects/schemes in NE region using Geospatial Technology and Tools is one of the unique initiatives of NESAC sponsored by NEC/MDoNER. Total 588 projects spreading in 1664 project sites are being mapped and monitored using the smart Mobile App with higher positional accuracy which enables the visualization of the project sites over time-series satellite images for evaluation of the implementation progress. The entire evaluation and monitoring mechanism process has been automated with a lot of innovative tools and services to bring more transparency into the monitoring and evaluation system. With the launch of the NEC/MDoNER project monitoring application, it has been observed the speedy implementation of the projects including the removal of the region, proper utilization of funds, and timely submission of utilization certificate (UC) for the overall growth of the region.

Smart App for Geotagging and Analytics
Smart Mobile Application integrated with GPS aided ODO augmented navigation (SARANS) with Indian Constellation (NAVIC) Technology in getting the project sites with higher positional accuracy. The App has multi-developed based analytics overlaid on top of the high-resolution satellite imagery for better visualization and monitoring of project sites.

Home page of the Project Monitoring Portal

A brief report on 17th Meeting of NESAC Governing Council

The 17th meeting of the NESAC Governing Council (GC) was held on 5th May, 2022 under the chairmanship of Shri S Somanath, Secretary, Department of Space & Chairman, NESAC GC on virtual mode. The meeting was attended by the Secretaries of Science & Technology from all 8 states of NE, Scientific Secretary, ISRO, Directors of Space Applications Centre, Ahmedabad; National Remote Sensing Centre, Hyderabad and Physical Research Laboratory, Ahmedabad; Director, IIT Guwahati; Vice Chancellor, North Eastern Hill University, in addition to officials from ISRO/DOS and other organizations from NE.

Dr S P Aggarwal, Director, NESAC & Member Secretary, NESAC GC, extended a warm welcome to the Chairman and members of NESAC GC as well as the invitees attending the meeting. Shri S Somanath, Chairman, NESAC GC, in his opening remarks, welcomed the members of GC and invitees and told that he was happy to be part of NESAC GC and to Chair the meeting. He informed that he has gone through the earlier activities and different reports published from NESAC and understood how the NESAC GC has been directing and instrumental for completing different activities by NESAC and some of ISRO centres in collaboration with other Institutes to produce excellent outputs for the benefit of the NE region of India. He also expressed happiness for the fact that Govt. of India has been putting special efforts for the development of NE region and ISRO has been playing a very active role towards realization of this goal.

He was happy for the number and diversity of work being done by NESAC and the wonderful outputs generated through such projects. He told that he is looking forward to hear from the Members of NE-

SAC GC, about the real benefits of the outputs that NESAC has been generating and whether the work done by NESAC is helping the people on the ground.

He outlined about the various services, databases, portals, etc. developed by NESAC using data from different platforms including satellite, aerial, and drones and using the state-of-the-art technologies like Artificial Intelligence, IOTs, etc. He told that ISRO not only collects images, but also adds a lot of value to such data through scientific analysis for different thematic applications including communication, navigation, remote sensing, etc. He concluded his opening remarks by inviting all the members to inform what they expect from NESAC and ISRO towards overall development of the NE region of India and assured that all possible technical expertise of NESAC and ISRO shall be at the disposal of the users and ISRO will be happy to expand such support further as per need.

Members of the GC approved the minutes of the



The NESAC Governing Council meeting in progress at NESAC

16th Meeting of the NESAC GC held on 12th January, 2022 and reviewed the status of action identified during the 16th GC meeting. The Governing Council reviewed the different technical activities of the centre and given necessary direction towards better services from NESAC to the NE states with space based inputs. The Governing Council also approved the Annual Report for FY 2020-21 along with audited annual accounts and budget for 2020-2021.

Continued from page 1

one of the most innovative applications to monitor the progress of different infrastructure projects in remote corners of NE region of India. NESAC is currently implementing one such project to monitor the infrastructure projects funded by the North Eastern Council (NEC). A monitoring portal has been developed to visualize the progress of each project along with all relevant statistics. The portal was launched by the Hon'ble President of India, Shri Ram Nath Kovind Ji on 4th May, 2022 during the valedictory ceremony of North East Festival organized as part of Azadi Ka Amrit Mahotsav at Guwahati, Assam. This was a proud moment for us at NESAC and will inspire us to develop more innovative applications of space technology. The portal hosts details of 556 projects spanning across 1553 project sites covering all eight NE states of India.

We completed another flagship project on "Geo-tagging of assets created under NERTPS programme of Central Silk Board (CSB) in North Eastern Region" by geotagging a massive 40,000 assets of CSB in different parts of NER of India. The project was completed in a record time amidst movement restrictions during the COVID pandemic. This project is another example of integration of space technology along with information and communication technology. The concluding workshop of the project was jointly organized by NESAC and CSB and the atlas was also released. CSB has remained one of our major users and we have made best use of the space technology to serve them by identifying suitable sites for expansion of sericulture activity in the country, providing solutions for host plant disease management to mapping their field level assets. I am hopeful that this collaboration will continue further and NESAC will play a major role in the upcoming missions of the CSB.

The Election eAtlas System and dashboard developed by NESAC for better planning, monitoring and tracking of electoral process and assets before and during Poll days has proven very

useful for the Manipur State Assembly Election 2022. The application was developed based on the requirement defined by the office of Chief Electoral Officer, Manipur. The system with eAtlas planning Dashboard, eAtlas Live Dashboard, Citizen Centric Voter Facilitator App, eAtlas e-Tracker, and many other features is a unique initiative from NESAC towards better governance. This has helped in better management of the election process and facilitates more effective and early action in case of any exigency.

We are continuing to give the highest priority to execute the 110 projects identified under the Plan of Actions (PoA) prepared for each state in NER. There is significant progress towards implementing the projects on time with support from the state remote sensing applications centres. All twelve regional projects have been progressing well and we will leave no stone unturned to meet the objectives on time. We have already completed six projects and several are in final stage of completion.

As the pre-monsoon season has already set in and monsoon season is knocking the door, NESAC is faced with a lot of challenges in terms of providing the space based disaster management support through the North Eastern Regional node for Disaster Risk Reduction (NER-DRR). NESAC has been providing early warning for lightning and severe storm, forest fire alerts for all states in the NE region. Additionally, the landslide inventory information, earthquake information, weather forecasting, etc are provided in near real time. The Flood Early Warning System (FLEWS) project has recently been extended to cover most flood prone parts of NE states and the required preparatory are going on in full swing, which will be made operational from 15th May, 2022, as has been done in previous years. A lot of emphasis has been given on the disaster management support program required for the NE states and the NER-DRR web portal has been revived with more data and information to make it more useful and user friendly.

Workshop on Geo-tagging of assets created under NERTPS programme of CSB in NER

Bijoy K Handique, Jonali Goswami, Pratibha T Das, Chandan Goswami, Nilay Nishant, Avinash Chauhan, Pradesh Jena and Francis Dutta

The concluding workshop of the project “Geo-tagging of assets created under NERTPS programme of CSB in North Eastern Region” was jointly organized by NESAC and Central Silk Board at Assam Administrative Staff College, Guwahati on 19th April, 2022. About 60 Scientists and officials from CSB, State Directorates of Sericulture, State Remote Sensing Applications Centre and NESAC participated in the workshop.



Release of atlas by Shri R.R. Okhandiar, Member Secretary, CSB

The workshop started with the welcome note by Dr. Jonali Goswami, Scientist, SF, NESAC. She coordinated the felicitation of the guests with Smt. Pratibha T. Das, Scientist-SF, NESAC. Shri R.R. Okhandiar, IFS, Member Secretary, CSB was the Chief Guest of the inaugural session, while, Shri H. Singson, Commissioner & Secretary (Sericulture), Nagaland was the Guest of Honour and Shri B.P Pradhan, IFS, Secretary (Science & Technology), Sikkim and Shri D.K. Bora, Secretary (Handloom & Textiles), Govt. of Assam were the Special Guests. Dr. V.K Rahmathulla, Scientist-SD, CSB gave an overview on the NERTPS programme of CSB, which was followed by the overview of the geo-tagging project by Dr. B.K Handique, Scientist-SF & Project coordinator.

The Project Atlas was released by Member Secretary, CSB and the ‘SeriGeoTag’ dashboard was released by Secretary (Science & Technology), Govt. of Sikkim. Dr. S.P Aggarwal, Director, NESAC and Project Director, in his address highlighted the applications of geospatial technology in sericulture development in NE states and gave an overview of the activities of NESAC in various domains for the holistic development of NER.

In the technical session, Focal Scientists from State Remote Sensing Application Centres presented the outcome of the geo-tagging exercise their respective states followed by the remarks from the State Sericulture Departments. This was followed by a demonstration of the ‘SeriGeotag’ dashboard by Shri Nilay Nishant, Scientist-SD, NESAC. As a part of the workshop, training on GAGAN based Seri Geo-tagging mobile app and dashboard system for officials from CSB and State Sericulture Departments was conducted by Shri Avinash Chouhan,

Dr Pradesh Jena and Dr. Francis Dutta, with the support of Project Assistants from NESAC. The program ended with the Vote of thanks offered by Dr. Chandan Goswami, Scientist-SE, NESAC.



Participants of the workshop

Election eAtlas System: Towards effective planning, monitoring, and tracking of electoral process using geo intelligence

Puyam S Singh, Nilay Nishant, Avinash Chauhan, Siddarth Bhuyan and Dibyajyoti Chutia

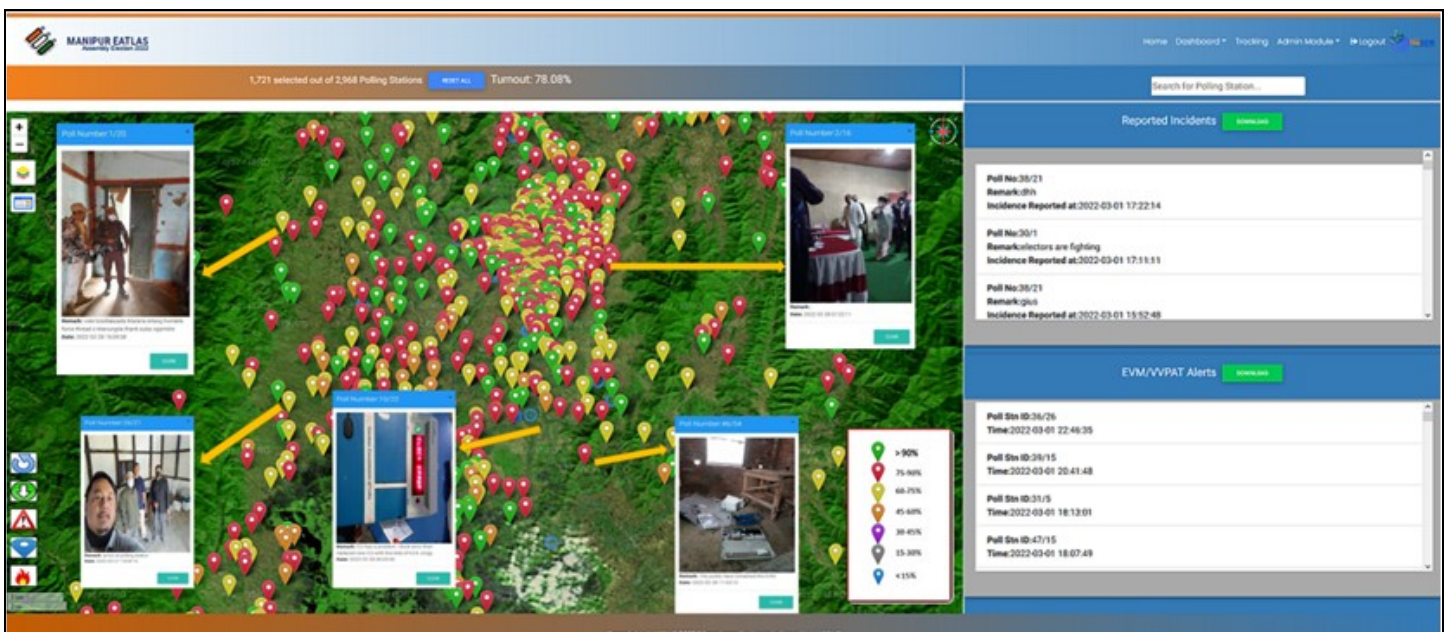
The Election eAtlas System is developed for better planning, monitoring and tracking of electoral process and assets before and during Poll days. The application was developed based on the requirement defined by the Office of Chief Electoral Officer, Manipur. The system was successfully utilized during Manipur State Assembly Election 2022. The Election eAtlas System comprises of four main modules.

eAtlas planning Dashboard: The dashboard is integrated with precise geolocations of entire Polling Stations of the state and linked with detail information on Voters and Polling Station facilities along with all important Infrastructure Layers such as Police Setups, Health Centres, detail road network and other important locations. Various electoral administrative boundary layers along with different satellite base maps has been made available for effective pre-planning election management. All these large information could be easily managed via multi-level filter based querying to locate and assess detail information for a single or group of polling stations. The heat maps on the existing mobile connectivity were also generated to perform gap analysis necessary for communication plan before and during election.



Home Page of eAtlas System for Manipur SAE 2022

eAtlas Live Dashboard: This dashboard is used to capture all data being sent by each Presiding Officers upon their Safe Arrivals. Further, it can display real time information on Persons in Queue, Close Polls Status and most importantly, for alerting issues on EVM/VVPATs or any major incidents happened during the Poll. To get all these data, a specialized eAtlas Mobile App with precise positioning was



Few events/incidents captured via Live Tracking and Alerting for 2968 Polling Stations during SAE-2022

Election eAtlas System: Towards effective planning, monitoring, and tracking of electoral process using geo intelligence

developed and was given to all the Presiding officers after imparting necessary training. All these real time data are then alerted with detail geo-tagged photos and description at the monitoring dashboard stationed at the office of Chief Electoral Office and District Electoral Offices.

eAtlas e-Tracker: Tracking election officials for their safe passage towards designated Polling stations were important. Further election officials carrying spare EVMs/VVPATs needed to be tracked. In this regards, a cost effective open source based GPS tracking solution were developed and utilized to track 2000+ election officers carrying spare EVM/VVPATs machines during the Poll. Issues with EVM/VVPAT at the affected Polling Stations were immediately rectified or replaced with the help of nearby Sector Officers located nearby the PS

Citizen Centric Voter Facilitator App: This is a citizen-centric App which was used extensively to book Wheel Chairs and Postal Ballots by 80+ and PwD voters. Bookings were made for Wheel Chairs and Postal Ballots through the App. An administrative dashboard was also made and managed by the office of CEO for the purpose.



Voter Facilitator App for booking of Wheel-Chair/ Postal Ballot and Queue Status on PS

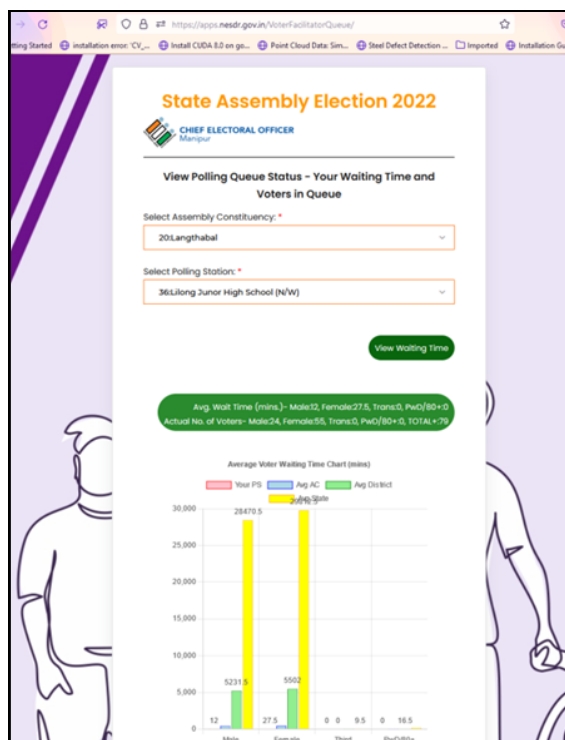
Additionally, this App allows the voters to see average waiting times at every Polling Stations which were updated every 30 minutes. To enable wide accessibility of the Average Waiting Time Queue by all the citizen, a companion web page was also made and linked on CEO's main website.

The eAtlas System therefore was successfully utilized during State Assembly Elections. Many issues with malfunctioned EVM/VVPATs were



eAtlas Control and Monitoring Station

captured in real time by eAtlas Live Dashboard and were resolved by officials within minutes. Major incidents occurred at few Polling Stations were also captured with detailed photographs and immediate action could be taken by the office of CEO. The application also helped tracking of all important election officials including Presiding Officers, Sector Officers and their Safe Arrivals etc. The Application therefore helped senior election officials by taking instant decision and action through live alert monitoring.



A Web Page showing Average waiting time of 20/36 at 10:30AM on 28th Feb, 2022

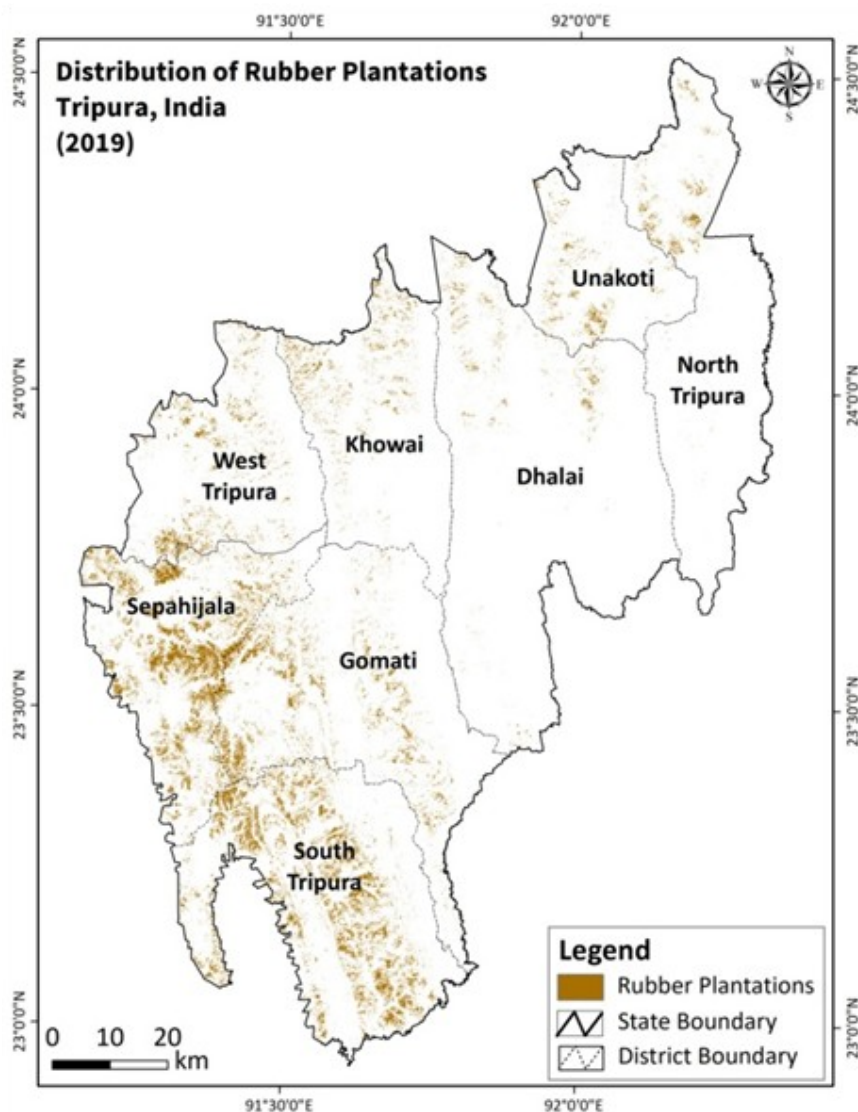
Spatial distribution of Rubber plantations in Tripura

Pebam Rocky, Aatreyee Nath and K K Sarma

Rubber (*Hevea brasiliensis*) is a fast growing medium to tall deciduous tree and is the major source of natural rubber. It was introduced in Tripura as a soil conservation project in 1963 by the Forest Department and now Tripura is the second largest producer of natural rubber in India. The economic benefits of rubber are diverse and of paramount importance for development and therefore, a database on rubber plantation is not only importance for management but also for minimizing any apparent impacts on the environment. The effects of rubber plantations have been long debated and it necessitates updated research on the same. Extensive work has been carried out over the world for mapping rubber plantations and Remote Sensing techniques have proved to be incredibly helpful. Studies have shown that the spectral signatures of rubber may vary with region and season and It may also show similar signatures with natural forests in a single date image. However, the fact that rubber undergoes distinct defoliation and refoliation phases can be utilized to differentiate them from other land use land cover types. Many studies have found the convenience of incorporating this phenological information to map rubber plants. The present study was undertaken to map the distribution of rubber plantations in Tripura by incorporating phenology based approach.

Multispectral and multi-temporal images from European Space Agency's (ESA) Copernicus Sentinel-2 Mission were freely downloaded from USGS Earth Explorer (<https://earthexplorer.usgs.gov/>). The images were chosen in a way that it represents the defoliation (January, 2019) and refoliation period (March 2019) of rubber trees and are normally cloud free. Three vegetation indices were considered

to investigate the utility of phenology based approach for mapping rubber. For the selected images, 'NDVI' or Normalized Difference Vegetation Index, 'RVI' or Ratio Vegetation Index



Distribution of Rubber Plantations in Tripura

and 'NDMI' or Normalized Difference Moisture Index was generated.

In order to utilize the marked difference in the reflectance of rubber plants in the two seasons, differencing of the indices were performed by subtracting the values of the indices in January 2019 from those of March 2019. The three outputs were

layer stacked and a composite image was generated which was subjected to supervised classification.

The classification showed an overall accuracy of 89.8% of with kappa co-efficient 0.85. It could distinguish rubber plantations from forests and other land use land covers with a user's accuracy of 94.71% and a producer's accuracy of 93.06% which is indicative of the fact that it exhibits low commission and omission errors. The classification could avoid misclassification of forests as rubber to a great extent. This study demonstrated that phenology based information from the Sentinel-2 images can be successfully utilized to map rubber plantations with better accuracies. The area under rubber plantations (3+ years old) was found to be 57,028 ha and the district-wise distribution is shown in the Table. The spatial distribution of rubber in Tripura is shown in the map. Further study to

explore better classification to capture the young plantations is suggested

District	Area (ha)
Gomati	9184
Dhalai	2054
Khowai	3292
North Tripura	1834
Sepahijala	16077
South Tripura	18295
Unakoti	1929
West Tripura	4363
Total	57028

Area under rubber plantations (ha)

विश्व हिंदी सप्ताह समारोह

उत्तर पूर्वी अंतरिक्ष उपयोग केंद्र (एन.ई-सैक) में राजभाषा हिंदी को बढ़ावा देने के लिए इस वर्ष विश्व हिंदी दिवस के उपलक्ष्य में दिनांक – 10 से 17 जनवरी, 2022 तक विश्व हिंदी दिवस सप्ताह मनाया गया। इस कार्यक्रम का उद्घाटन डॉ. शिव प्रसाद अग्रवाल, निदेशक, एन.ई-सैक के कर-कमलों से दीप पज्वलन के द्वारा किया गया। इसी क्रम में श्री कुमार आनंद, प्रशासनिक अधिकारी ने समारोह के संबंध में प्रकाश डालते हुए माननीय प्रधानमंत्री जी के संदेश का पठन किया। इसके पश्चात श्रीमती नमिता रानी पाल मित्रा, कनिष्ठ अनुवाद अधिकारी ने विश्व हिंदी सप्ताह के विषय में विवरण देते हुए आयोजित होनेवाली कार्यक्रमों और प्रतियोगिताओं के विषय में जानकारी प्रदान की।

दिनांक – 11 से 14 जनवरी 2022 के दौरान विभिन्न प्रतियोगिताओं का आयोजन ऑनलाइन मोड में किया गया जैसे – चित्रकला प्रतियोगिता, हिंदी कविता पाठ प्रतियोगिता और रचनात्मक लेखन प्रतियोगिता। जिसमें एन.ई-सैक के सभी अधिकारियों और कर्मचारियों ने पूरे उत्साह के साथ भाग लिया। समारोह के दौरान आयोजित विभिन्न

प्रतियोगिताएँ भारत सरकार के द्वारा जारी कोविड दिशा निर्देशों का पालन करते हुए और सामाजिक दूरत्व को कायम रखते हुए किया गया।

17 जनवरी, 2021 को ऑनलाइन मोड में समापन समारोह का आयोजन किया गया जिसमें माननीय डॉ. शिव प्रसाद अग्रवाल, निदेशक, एन.ई-सैक ने विश्व हिंदी दिवस सप्ताह समारोह के सफल आयोजन के लिए सभी को धन्यवाद देते हुए अपने प्रेरणास्पद संबोधन से सभी का मार्ग दर्शन किया और राजभाषा हिंदी का अधिक से अधिक प्रयोग करने हेतु सभीको प्रोत्साहित किया। इसके बाद उन्होंने सभी विजेताओं को बधाई देते हुए प्रतिभागियों को भी उत्साह प्रदान किया। अंत में श्रीमती नमिता रानी पाल मित्रा, क. अनुवाद अधिकारी, एन.ई-सैक ने सभी विजेताओं को यह सूचित किया कि वर्तमान परिस्थिती को ध्यान में रखते हुए सामाजिक दूरत्व को कायम रखने के उद्देश्य से सभी विजेताओं के प्रमाणपत्र और पुरस्कार राशि उनतक पहुँचा दी जाएगी और धन्यवाद ज्ञापन करते हुए कार्यक्रम समापन की घोषणा की।

एनईसैक में आयोजित स्वच्छता पखवाड़ा समारोह

सीईपीओ, इसरो मुख्यालय के दिशानिर्देशों के अनुसरण में 01 से 15 फरवरी 2022 के दौरान एनईसैक में स्वच्छता पखवाड़ा मनाया गया। पूरे पखवाड़े में विभिन्न गतिविधियों के अवलोकन के लिए एक कार्य योजना तैयार करने हेतु एनईसैक में एक स्वच्छता पखवाड़ा कार्यान्वयन प्रकोष्ठ (एसपीआईसी) का गठन किया गया था। कार्य योजना को अंतिम रूप दिया गया और एनईसैक में कार्यान्वयन के लिए परिचालित किया गया।

कार्ययोजना के लिए समन्वयकों की पहचान की गई जिसमें शामिल है: एनईसैक में और उसके आसपास पोस्टर और



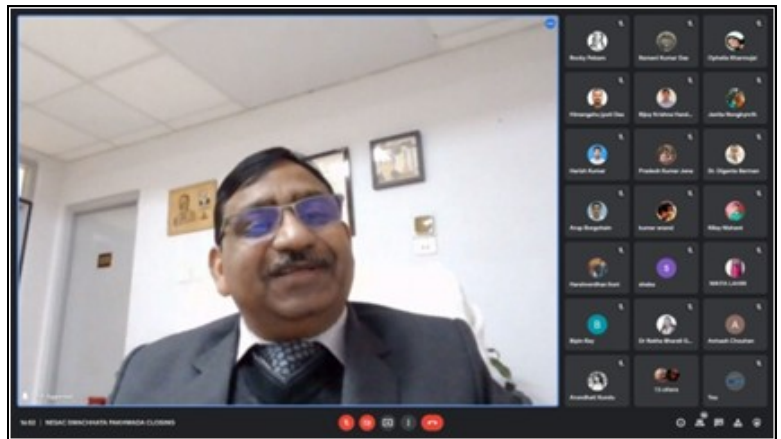
बैनर का प्रदर्शन, हैंड सैनिटाइज़र की स्थापना, जलाशयों की सफाई, प्लांटिंग रन, ई-कचरा संग्रह, खाद का वितरण, एनईसैक के आसपास जागरूकता रैली, स्कूली छात्रों के लिए पोस्टर बनाना और चित्रकला प्रतियोगिता, एनईसैक और उसके आसपास मास्क का वितरण और प्रख्यात स्वास्थ्य अधिकारियों के द्वारा वार्ता।

एनईसैक क आसपास के स्कूलों से संपर्क किया गया और ऐसे चार स्कूलों के छात्रों ने चित्रकला और पोस्टर बनाने की प्रतियोगिता में भाग लिया। प्रतियोगिता में लगभग 100 विद्यार्थियों ने भाग लिया। इन प्रतियोगिताओं के पुरस्कारों की घोषणा 15 फरवरी को समापन समारोह के दौरान की गई।

उपर्युक्त वर्णित गतिविधियों के माध्यम से चलनेवाली दीर्घ पखवाड़ा समारोह के पश्चात, 15 फरवरी, 2022

को वर्चुअल मोड पर स्वच्छता पखवाड़ा समापन समारोह आयोजन किया गया। डॉ. स्टार पाला, सहायक प्रवक्ता और श्रीमती ओफैलिया खारमुजाई, नीग्रिम्स के सामुदायिक चिकित्सा प्रभाग के जन स्वास्थ्य नर्सिंग अधिकारी को अतिथि प्रवक्ता के रूप में आमंत्रित किया गया था। उन्होंने एनईसैक के कर्मचारियों को "स्वस्थ रहना चुने" और "स्वच्छता और सफाई" पर दो वार्ताएं दी गईं। सभी दर्शक इन व्याख्यानों से बहुत लाभान्वित हुए।

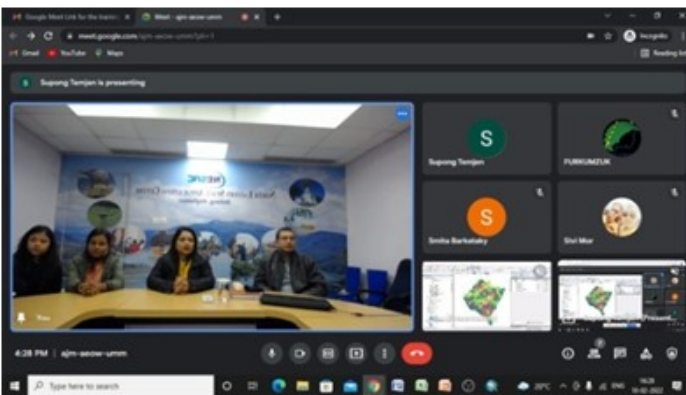
समापन समारोह के दौरान पखवाड़ा में आयोजित विभिन्न प्रतियोगिताओं के पुरस्कारों की भी घोषणा की गई। निदेशक, एनईसैक ने अपने समापन संभाषण में पखवाड़े के दौरान की गई विभिन्न गतिविधियों की सराहना की और कर्मचारियों को स्वच्छता और सफाई के अभ्यास को आगे भी जारी रखने के लिए प्रोत्साहित किया।



Trainings and Workshops

Training for officers of SoCRAN, Nagaland under FOCUS

Two days virtual training on “Use of Agro-climatic Atlas in Land Suitability Studies and Land Use Planning” under FOstering Climate resilient Upland farming Systems in the northeast (FOCUS)- Nagaland Project with financial assistance from Food and Agriculture Organization (FAO)- India was organized for the officers of Society of Climate Resilient Agriculture in Nagaland (SoCRAN) during February 09-10, 2022 (Hybrid mode).



One week training program on UAV Remote Sensing and its Applications for ASSTC, Assam

A one week training program on “Unmanned Aerial Vehicle (UAV) Remote Sensing and its Applications” was carried out at NESAC during 21-25 Feb, 2022.



A total of 44 trainees from the Recorders Certificate Class Course Training, 2021-22 (Batch-1 Group-B) of Assam Survey and Settlement Centre (ASSTC), Government of Assam attended the training program. The participants were also given hands-on experience on end-to-end work flow: UAV operations,

mission planning, data acquisition, data processing and data analysis.

Training programme on “Remote sensing & GIS applications in Forestry & Ecology”

A short training programme on “Remote Sensing &



GIS applications in Forestry & Ecology” for research scholars from Tezpur University, Assam, was organised during March 22 – March 26, 2022 at the NESAC Outreach Facility. The participants were sponsored under DST’s Centre of Excellence project on ‘Climate Change Impacts and Adaptation for a Climate Resilient North East India’

Workshop on Forest Fire for officials from Forest Department, Meghalaya

A workshop on Forest Fire was organised at NESAC on 07th April 2022 for the officials from Forest and Environment Department, Government of Meghalaya. The workshop was aimed at providing training to the field level forest staffs on the effective use of the forest fire incident reporting App developed by NESAC.



Trainings and Workshops

Capacity Building under AMRUT Sub-scheme on Formulation of GIS based Master Plans for Decision Maker Level Officers

A three-day training program on “Formulation of GIS based plans for AMRUT cities” for decision makers (Tier-I participants) was organized during 06th – 08th April, 2022 at NESAC. A total of 21 state government officers representing four states of India viz., Uttar Pradesh, Kerala, Karnataka & Chhattisgarh attended the training.



Training on mobile applications for planning and monitoring of CCE in Meghalaya

One day training on “Applications of Geospatial technology for acreage estimation of selected crops and development of a mobile app for planning and monitoring of Crop Cutting Experiment (CCE) in Meghalaya” was jointly organized by NESAC and Directorate of Economics and Statistics (DES), Govt. of Meghalaya at NESAC on 26th April, 2022. About 40 Scientists and officials from Directorates of Economics and Statistics, Meghalaya, Directorate of Agriculture, Meghalaya and NESAC participated in the training programme.



Capacity Building under AMRUT Sub-scheme on Formulation of GIS based Master Plans for Middle Level Officers



NESAC, in collaboration with the Town and Country Planning Organisation, Ministry of Housing and Urban Affairs, Govt. of India, successfully conducted a two-week training program on “Formulation of GIS Based Master Plans (Tier-II) under AMRUT Capacity Building sub-scheme Initiation” for Middle Level Officials at the NESAC Outreach Facility during 18th – 29th April, 2022.

Three days training program on UAV Remote Sensing for ASSTC, Assam



A three days’ training program on “Unmanned Aerial Vehicle (UAV) Remote Sensing and its Applications” was carried out at NESAC during May 1 –3, 2022. A total of 47 trainees from the Recorders Certificate Class Course Training, 2021-22 (Batch-1 Group-A) of Assam Survey and Settlement Training Centre (ASSTC), Government of Assam attended the training program. The program has been conducted following the MoU executed between NESAC and ASSTC, Government of Assam.

Celebration of World Hindi Day & World Hindi Week

World Hindi Day & World Hindi week were celebrated on 10th January 2022 and during 10th – 17th January, 2022 at NESAC to promote Official Language Hindi in official work among the staff of NESAC. The inauguration of the week-long celebration was marked by lighting of lamp by Dr. S.P. Aggarwal, Director, NESAC. Various competitions were organized in online mode during 11th – 14th January 2022, such as- Hindi poetry recitation competition and creative writing competition. Staff of NESAC participated in these competitions with full enthusiasm.



Celebration of 73rd Republic Day at NESAC

73rd Republic Day of the nation was celebrated at NESAC on 26th January 2022 with a colorful programme. Dr. S.P. Aggarwal, Director, NESAC hoisted the Tricolor amidst singing of National Anthem by the staff of NESAC at 09:00 AM. The CISF unit of NESAC offered a guard of honour to



Director, NESAC and performed Republic Day parade. Director, NESAC addressed the staff of the Centre with an informative speech, where he highlighted the significance of Republic Day celebration and briefed about the activities and achievements of ISRO and NESAC in recent times. This was followed by distribution of sweets to all the staff, who attended the program.

Forest Fire Mobile App launched

NESAC developed a forest fire incident reporting App for Forest and Environment Department, Meghalaya. The App was launched by Meghalaya Forest and Environment Minister, Shri James P K Sangma on 24th February 2022 at Shillong. The purpose of the App development is to support the forest field officials engaged in forest fire mitigation activities in the state. During the launching of the App Dr. S P Aggarwal, Director, NESAC informed the role and functions of the fire App developed by NESAC for the benefit of forest fire fighting authorities in the State.



NESAC participated in 'Vigyan Sarvatra Pujyate' Program

NESAC actively participated in the “Vigyan Sarvatre Pujyate” program as part of the Science Week Festival under the Azadi Ka Amrit Mahotsav, during 22-28 February, 2022, organized across the nation and coordinated by Vigyan Prasara. The Space on Wheels vehicle was taken to six schools / venues covering Meghalaya (Shillong and Nongpoh) and Assam (Guwahati, Nagaon, and Jorhat) during the same time. More than 1000 students and teachers visited the Space on Wheels in each of the venue and the students were very happy and enthusiastic to witness the exhibition. The Space on Wheels vehicle

was also visited by Secretary, Department of Science, Technology and Environment, Government of Assam and by the Director & Regional Officer, CBSE, Guwahati.



National Science Day Celebration at NESAC

NESAC celebrated National Science Day on February 28, 2022, organized under the aegis of Indian Society of Geomatics (ISG)-Shillong Chapter and Indian Society of Remote Sensing-Shillong Chapter. Quiz and painting competitions for high school and higher secondary students were organised as part of the event. Around 80 students accompanied by 15 teachers from KV-NEPA, MeECL Schools, Sumer & Barapani; K.V Umroi Cantonment, and Christ School (International), Nongsder attended the talk delivered by Dr. S.P Aggarwal, Director NESAC on the topic ‘Indian Space Program and the Societal Benefits’. An exhibition on different aspects of Space technology and its applications was also organized to mark the occasion. The students were awarded for best performance in painting and quiz competitions. Director, NESAC gave away the prizes and certificates.



Air Marshal Shri Anjan Kumar Gogoi, Hon'ble Member, NEC visited NESAC

Member, North Eastern Council, Air Marshal Shri Anjan Kumar Gogoi, PVSM, AVSM, VSM (Retd.) has visited NESAC on March 03, 2022. Dr. K.K. Sarma, Scientist/Engineer-SG welcomed the Hon'ble Member, NEC and felicitated him on the occasion of his maiden visit to NESAC. Dr. Sarma made a brief presentation to the Hon'ble Member on activities and achievements of NESAC during its last 21 years of existence. Hon'ble Member, NEC appreciated the effort of NESAC in providing space-based support with cutting edge technology for governance and developmental planning in all the eight states.



International Women's Day Celebration

International women's day was observed at NESAC on 8th March to celebrate the social, economic, cultural and political achievements of Women. Dr. Sonali Ghosh, IFS, Chief Conservator of Forests, Assam, Guwahati delivered an online talk on “Role of women in forest conservation”. As part of the celebration, selected outsourced women staffs of NESAC were rewarded for their exemplary services by Director, NESAC.



Visit of Lt General KC Panchanathan, AVSM, GOC 101 Area

Lieutenant General KC Panchanathan, AVSM visited NESAC on 12th April 2022 to get acquainted with the different activities of NESAC. During his visit, Dr. S.P Aggarwal, Director, NESAC had given a brief overview about the centre and also highlighted the space technology based services provided by NESAC to support various developmental activities of NER. Further, he had interacted with the senior Scientists of NESAC and made a visit to different facilities of the Centre.



First Secretary of Embassy of Japan visited NESAC



Mr. Ikko Watanabe, First Secretary (Food & Agriculture) of Embassy of Japan in India, New Delhi visited NESAC on 5th May, 2022 to get acquainted with the space technology applications in agriculture and allied areas carried out at NESAC. During his visit, Dr. S.P. Aggarwal, Director, NESAC briefed about NESAC and activities undertaken under the agriculture and allied areas at

the centre. A detailed presentation on space technology applications in agriculture and allied areas at NESAC was also given. Mr. Ikko Watanabe lauded NESAC for its commendable work on the usage of advanced geospatial technology in Agricultural sector. In the brainstorming session, he expressed his keen desire for collaborative works with Japan Embassy and Japan International Cooperative Agency (JICA)

Students visit and NESAC

Many schools and college students used to visit NESAC during their educational tours and exposure visits organised by their respective institutions. Eighteen B.Sc. 4th Year students from College of Agriculture (Central Agricultural University-Imphal), Pasighat, Arunachal Pradesh along with two faculty members visited NESAC on 25th April 2022 as a part of their educational tour to institutes of importance in North Eastern Region of India. Eleven B.Sc. Mathematics students from Union Christian College, Umiam, Meghalaya along with 2 faculty members visited NESAC on 8th April 2022 as an exposure visit for a day. Seventy five students of class I to VIII from Army Public School, Umroi Cantt. were on an educational tour to NESAC on March 15, 2022. Forty nine students of Class XII from three different Jawahar Navodaya Vidyalaya (JNV) schools of Meghalaya along with 7 faculty members visited NESAC on 29th March 2022 as a part of the Department of Science and Technology's (DST) programme called "Vigyan Jyoti Scheme".



Capacity Building and Outreach Programme Course Calendar (April 2022- March 2023)

Sl. No	Course	Time	Intake	Course Director	Course Officer
1	AMRUT Capacity Building (Course for Decision Makers)	6 th -8 th April 2022	20	Dr. Jenita M. Nongkynrih	Shri Somnath B.C
2	AMRUT Capacity Building (Course for Middle Level Officials)	18 th -29 th April 2022	20	Dr. Jenita M. Nongkynrih	Shri Somnath B.C
3	AMRUT Capacity Building (Course for Junior (Operator) Level Officials)	9 th May-3 rd June 2022	20	Dr. Jenita M. Nongkynrih	Shri Somnath B.C
4	YUVIKA	16 th -27 th May 2022	27	Dr. Shyam S. Kundu	Dr. Jonali Goswami
5	Basic Training course on RS & GIS Technology and Applications	6 th -17 th June 2022	45	Dr. Dibyajyoti Chutia	Ms Ritu Anilkumar
6	RS & GIS applications in IT and Web services	4 th -15 th July 2022	45	Dr. Dibyajyoti Chutia	Shri Nilay Nishant
7	RS & GIS applications in Agriculture and Soil	29 th Aug-9 th Sept 2022	30	Dr. B.K. Handique	Dr.Pradesh Jena
8	Advanced Training course on UAV Re- mote Sensing: Technological Advances & Applications	19 th -30 th Sept 2022	30	Shri Victor Saikhom	Shri Sanjay Pandit
9	RS & GIS applications in Water Re- sources	14 th -25 th Nov 2022	30	Dr. Diganta Barman	
10	RS & GIS applications in Forestry & Ecology	5 th -16 th Dec 2022	30	Dr. Rocky Pe- bam	Dr. Dhruval Bhavsar
11	RS & GIS applications in Urban/ regional planning	9 th -20 th Jan 2023	30	Dr. Jenita M. Nongkynrih	Shri Somnath B.C
12	RS & GIS applications in Geosciences	30 th Jan- 10 th Feb 2023	30	Shri Somorjit Sing	Dr. Gopal Sharma
13	Atmospheric Science	20 th Feb-3 rd March 2023	30	Dr. S.S. Kundu	Shri Abhishek Chhari
14	Satellite communication				

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