

Reflections

TRIENNIAL NEWSLETTER



Dr. K. Sivan, Secretary, Department of Space & Chairman, ISRO/NESAC Governing Council addressing NESAC staff at NESAC auditorium

From the Director's Desk



I take this opportunity to welcome and congratulate our new Chairman of the NESAC Governing Council and Vice-President of NESAC Society, Dr K Sivan, Secretary, Department of Space and Chairman, ISRO and also wish ISRO, DoS to reach new heights under his able leadership. We are extremely thankful to him for his visit to NESAC within two months of taking charge of ISRO, inspite of his busy schedule. He visited all major facilities at NESAC, interacted with the Scientists of NESAC, and gave new directions for all round development of the centre. He also inaugurated NESAC Park and play ground within NESAC residential campus. I am sure we will be able to deliver better and faster services with his guidance and leadership.

The New Year 2018 started with a very good note for the NESAC. It gives me immense pleasure to share the information of the centre winning prestigious national award on e-governance for the year 2017-18 for the project "GeoPortal on North Eastern District Resources Plan to support effective Governance applications", for outstanding contribution using spatial technology and GIS in e-Governance. The centre has taken innovative initiatives to take the benefits of space science and technology at all levels of development planning in the NE region of India through these flagship projects. The award will encourage the centre to perform better and provide more ground-breaking services in this region. The centre also received another very prestigious award in the form of being declared the First in implementing the Official

.....continued to page 9

IN THIS ISSUE

- | | | | |
|---|---|--|----|
| o Chairman, ISRO visited NESAC | 2 | o Aerosol Land Campaign along the Sub-Himalayan region of NE | 8 |
| o State meet for Manipur on Promoting Space Tech based Tools & Applications in Governance & Development | 4 | o Awards and achievements | 10 |
| o Application of UAV for Shillong Airport extension survey | 5 | o Training cum Workshop on Development of CRM tools | 11 |
| o Preparation of river atlas for Assam | 6 | o News and events | 12 |
| | | o Upcoming trainings at NESAC | 16 |

Chairman, ISRO visited NESAC

Dr. K. Sivan, Chairman, NESAC Governing Council and Vice-President, NESAC Society visited the centre during 6-7 March, 2018. Dr K Sivan took the charge of Chairman, ISRO on 15th January, 2018. NESAC was very fortunate and happy to receive new Chairman within two months from taking charge as Secretary, Department of Space and Chairman, ISRO. He was given Guard of Honour by the CISF unit at NESAC.



Chairman, ISRO was felicitated by Director, NESAC in a traditional Assamese way.

He addressed NESAC staff and interacted with Scientists and other staff of NESAC. Director, NESAC made a presentation of NESAC activities covering the major projects and achievements, and problems faced by the region. Chairman, ISRO asked NESAC scientists to list out the major challenges that this region of India faces and find probable solutions for each of them. He assured

Excerpts from Chairman's message

NESAC is an excellent and cute centre. It has delivered high output with centre employee's age less than 30 years. I am sure NESAC will do wonders for the upliftment of NE states.

that ISRO will provide all necessary support in addressing the challenges.



Chairman, ISRO with Hon'ble Member, NEC and Secretary, NEC while interacting with the senior bureaucrats and the officials.

A demonstration of the capability of UAV was given to him by NESAC Scientists. He visited UAV lab and Satcom Studio where a special interaction session was arranged for him with Tele-Education networks of Assam and Sikkim. He visited Atmospheric Science Lab and encouraged the scientists from this group to participate in Science missions of ISRO. He also visited the NER-DRR facility where a brief demonstration of all recent UAV and IT based applications developed by NESAC were showcased. He took keen interest on UAV remote sensing and asked NESAC to expand its horizon in this area. He was taken to the ISTRAC NaVIC facility, library, and other major facilities at NESAC.



Chairman, ISRO at UAV lab as part of his facility visit

Another meeting was organized to facilitate interaction of Chairman, ISRO with senior bureaucrats and officials from central and state

Chairman, ISRO visited NESAC

government establishments from this region. Shri C K Das, Hon'ble Member, NEC; Shri Ram Muivah, IAS, Secretary, NEC also attended the meeting and welcomed Chairman, ISRO. The meeting was attended by VC, NEHU; Regional Director, Atomic Mineral Division, Shillong; Director, North East Police Academy, representatives from GSI, Meghalaya state government, Survey of India, ICAR, etc. Chairman, ISRO appreciated NESAC for organizing such meeting and welcomed the suggestions that came out during the discussion.

He assured that ISRO, through NESAC will do its best to ensure maximum use of Space Science and Technology for the overall development of NE region of India.

Chairman, ISRO also inaugurated NESAC park area and the play ground. NESAC park covers 5700 sqm area with a concrete paver block length of 500 m. The park has a beautiful Gazebo at the centre with one valley ball court.



Chairman, ISRO with NESAC staff

NESAC received ISO 9001:2015 certification

The Quality Management System (QMS) at NESAC has been upgraded to make this complied as per the ISO 9001:2015 standards. The centre was certified for ISO 9001:2015 with effect from 18th April, 2018 by Indian Register Quality Systems (IRQS), Mumbai.

The upgradation process required preparation of new documents as per the new standard with emphasis on risk assessment for each and every project and process the upgradation process was taken up along with the first renewal surveillance audit. QMS, as per the new standard has been implemented for the two major core processes of NESAC, i.e. natural resources management and disaster management services. QMS has also been implemented in other support processes like, Administration, Purchase and Stores, Accounts, Library, IT support, Operation and Maintenance, Security, etc.

The QMS shall be implemented in other core process of NESAC in phases.



State meet for Manipur on Promoting Space Technology based Tools and Applications in Governance & Development

Mutum Somorjit Singh

The state level meet on “Promoting Space Technology based Tools and Applications in Governance & Development” for the state of Manipur was organized jointly by Manipur Remote Sensing Applications Centre (MARSAC) and NESAC/ISRO on 23rd March, 2018 at Imperial Hall, Classic Grande, Imphal, Manipur. Ms. Nidhi Kesarwani, IAS, Secretary, Sc. & Tech., Govt. of Manipur inaugurated the State Meet as a Chief Guest. She delivered the inaugural address and highlighted the importance and efficiency of remote sensing technology in planning, development, as well as in various phases of programme implementation. The inaugural session was followed by technical session represented by 87 officers from 17 departments of the state who made presentations on the key areas where space technology can be incorporated in their future plan of actions.

The meet concluded with a special session where Shri N. Biren Singh, Hon’ble Chief Minister of Manipur, was the Chief Guest and Shri Y. Joykumar Singh, Retd. IPS, Hon’ble Dy. Chief Minister was the President. Chief Guest and the President released the Meetei script translated ISRO flyers on ‘Effective Use of Space Technology’ and distributed the prizes to the winners of

painting competition conducted during World Space Week 2017. Subsequently, the salient outcome of the technical session–I and II were presented to the Chief Guest and President in brief by the respective session’s chairperson. A total of 38 projects were identified. Shri P L N Raju Director, NESAC delivered a talk on ‘Strategies and Way Forward’ highlighting the role of space technology in disaster mitigation, natural resources management, tele-education & medicine and also on applications of UAV. Deputy Chief Minister Shri Y Joykumar emphasized the need of exchanging thoughts and ideas between government officials and scientists. During the closing remarks, Hon’ble Chief Minister gave a message to all the participants about the importance and way of utilization of scientific data/information provided by the scientific community for the benefit of the society.



Chief Minister & Dy CM releasing the ISRO flyer



Scientists from MARSAC, Imphal; NESAC, Shillong; NRSC, Hyderabad; and ISRO HQ, Bangalore along with the Hon’ble Chief Minister, Shri N Biren Singh and Hon’ble Deputy CM Shri. Y. Joykumar Singh

Victor Saikhom, Chirag Gupta & Sanjay Pandit

Earth work estimation for a large area may be more expensive than expected and time consuming processes in absence of thorough investigation and proper scientific approaches. The process becomes more complex if the area is in rugged hilly terrain. However, in the last two decades with the advent of space technology and GIS, earth work estimation in any area has become easier. Moreover, due to the advancement of Unmanned Aerial Vehicle (UAV) to capture cloud free Image at low altitude and using photogrammetry technique, high accurate digital surface model (DSM) with less than 20 cm posting can be reconstructed. Also the use of UAV in airborne surveys has many advantages such as risk reduction, better overview, survey of inaccessible locations, improved data density, faster data acquisition, higher data resolution and lower costs. The present work to estimate the earth work for expansion of Shillong airport was carried out for Public Works Department (Roads), Ri-Bhoi District, Meghalaya. The work was completed through the following processes

Data acquisition using Unmanned Aerial Vehicle (UAV)

To complete this task, a multi-rotor UAV (M600) was used. This enables vertical takeoff and landing, which are often needed in mountain sites, where there are few open wide spaces without obstacles. It is also more reliable to perform an irregular, linear, and low flight with Zenmuse X3 RGB camera. The data acquisition has been done with 100 m flying height and with total area coverage of 6.6 sq.km for three different sites. During the acquisition, about 4077 images were recorded.

Ground Control Points collection

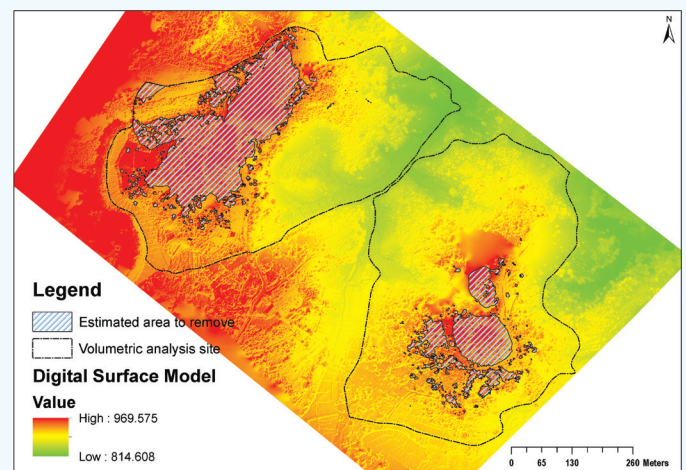
Uniformly well distributed Ground control points (GCPs) for the study areas were provided by the user department and these GCPs were collected

using differential GPS and total station surveys.

Generation of Point Cloud, Digital Surface Model (DSM) and Ortho rectified image.

The data collected using the UAV and GPS are then transformed into the following types of products using Pix4D software.

- **Point clouds:** sets of data points in a 3D coordinate system that represent the external surface of a terrain or object.
- **Orthomosaics/orthophotos/images:** files containing aerial photographs geometrically corrected so that the scale is uniform with 4.5 cm/pixel ground sampling distance.
- **Digital surface models (DSMs):** files containing elevations that include buildings, vegetation, power lines and other above-ground objects. The ground is only seen when there is nothing else on it. The ground sampling distance for DSM generated is 10 cm/pixel.



2D map of cut and fill area

Volumetric analysis using DSM for earth work estimations

To execute the earth work estimations, cut-and-fill operation is performed in GIS environment. The Cut Fill tool summarizes the areas and volumes

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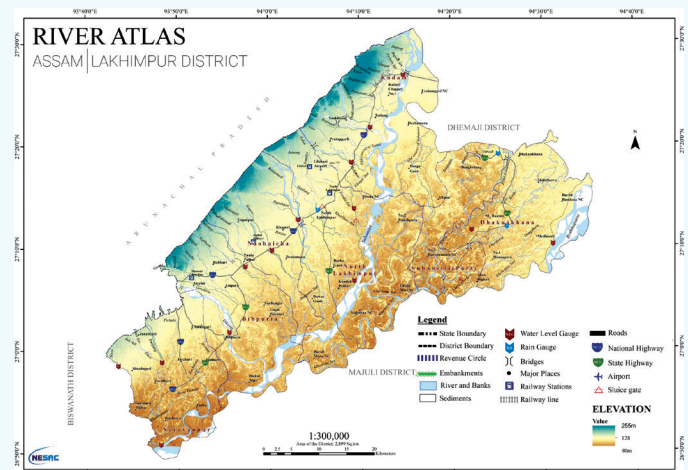
Brahmaputra & the Barak basins regularly face the problems of flooding & riverbank erosion. Better management of the water resources of this region needs detailed data and information about the river systems and also continuous monitoring of the river bank lines. However, the existing river database is of coarser resolution and lacks the bank information only except few major rivers. Also, some of the small non-perennial flashy rivers that cause intense flooding during the peak monsoon are not traced in the present database. Therefore, NESAC, in collaboration with Assam Water Resource Management Institute Society (AWRMIS) has taken up the task of preparation of detailed River Atlas for Assam, consisting of river database at a finer scale funded by Assam State Disaster Management Agency (ASDMA).

The preparation of river atlas for Assam has been initiated during 2017 (presently nearing completion).

As part of this project, different maps are generated. These maps are district level river/stream map, Land use/Land cover maps, and catchment maps.

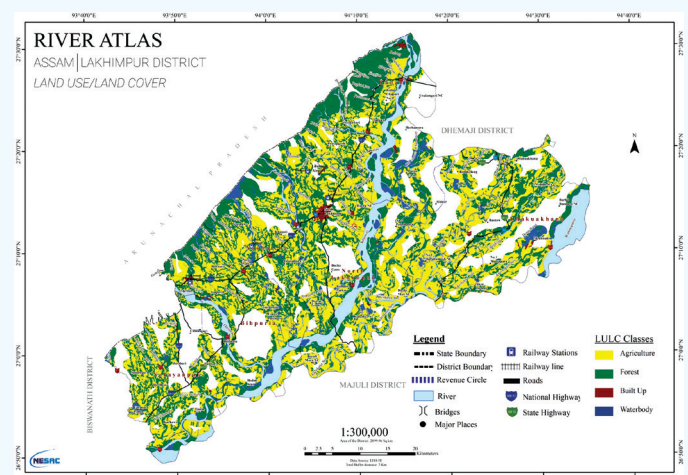
District river map contains all the major and minor rivers at a scale of 1:4,000 in the district. This map contains the details of left bank, right bank, names of rivers, sediment deposits, embankments, sluice gates, locations of hydro-meteorological observatories, major locations, roads, railway networks, railway stations, revenue circle boundaries, bridges, etc. In addition to this, the district map also has the detailed description of the major river flowing in the district and information related to the origin of those rivers. These maps have the details of the length of all the river, length of embankments along the river, river level charts which has the information of river levels showing warning levels and danger levels. The river networks are

generated by carrying out detailed digitization (at a zoom level of 1:2,500) using KOMPSAT imagery (using Bhuvan web services) and Bing hybrid map imageries.



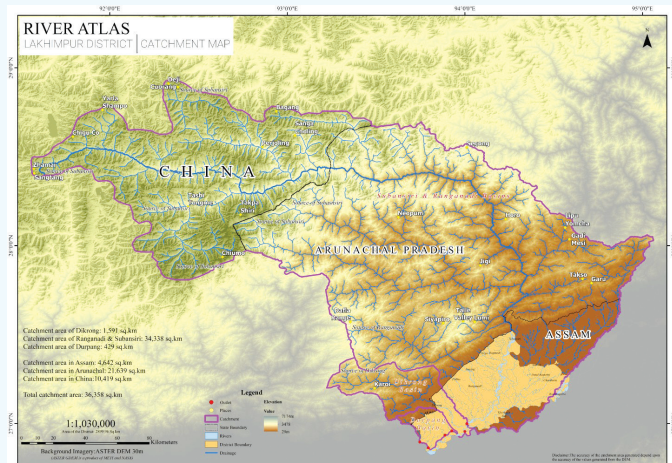
Detailed district map showing all the major and minor rivers

The land use land cover maps are prepared with a defined buffer of one kilometre on either side of major and minor rivers. These maps are prepared using merged satellite products. In this map, the LULC is divided into four different classes such as water, agricultural land, forest and built-up. The area corresponding to different classes in the respective district are attributed. In addition to this, the map also contains the details of revenue circles, bridges, major places, railway stations, railway lines, roads (state and national highways), etc.



LULC map for all the rivers with defined buffer

Preparation of River Atlas for Assam



Catchment map showing the source of origin of all the rivers entering the district

Catchments maps are prepared to show the origin of all the rivers entering the respective district of Assam. These maps are prepared using auto-catchment delineation technique. These auto delineated catchments are further verified manually for correctness. For auto-delineation of river networks, CartoDEM v3 is used for those catchments lying inside Indian administrative boundary and for catchments outside the country, ASTER DEM is used. This catchment map has



Interim review by Hon'ble CM, Assam

the information of the area of catchments in different states and countries, the source of origin of all the rivers, the name of rivers, etc. For those rivers outside district whose names are not available, the name of the parent channel is provided.

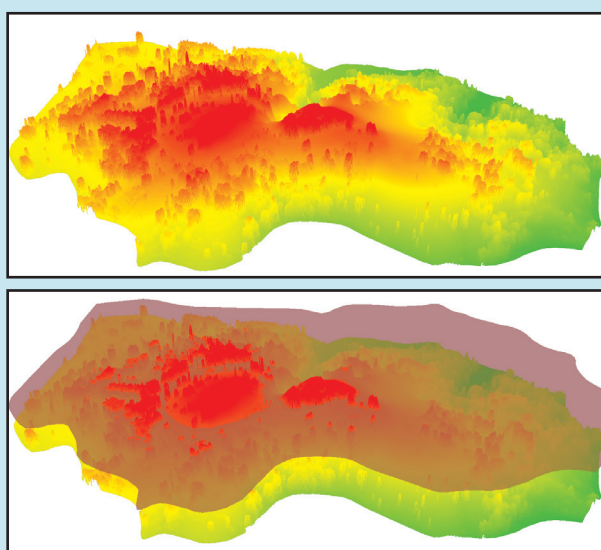
In an interim review of this project during January, 2018, Hon'ble Chief Minister, Assam, expressed satisfaction and optimism on the usefulness of this exercise in river planning & development of Assam in future.

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Application of UAV for Shillong Airport extension survey

of change from a cut-and-fill operation. The estimated volume of cut and fill quantities for the proposed sites were done based on the fixed reference levels (in meter) for the respective sites as provided by the user department. The map and 3D view depicting the estimated excavation (cut) and fill quantities sites are shown in the figures below

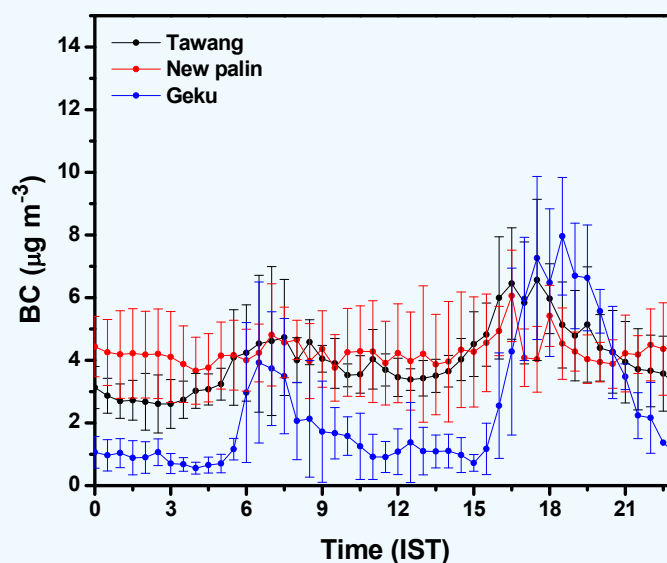
During the process of earth work, it is expected to influence the local environment due to the cutting of trees which may lead to change in local climate. To minimize the local changes, some of the remedial measures, such as afforestation, channel diversion, etc. and proper rehabilitation planning for the displaced settlement are also recommended.



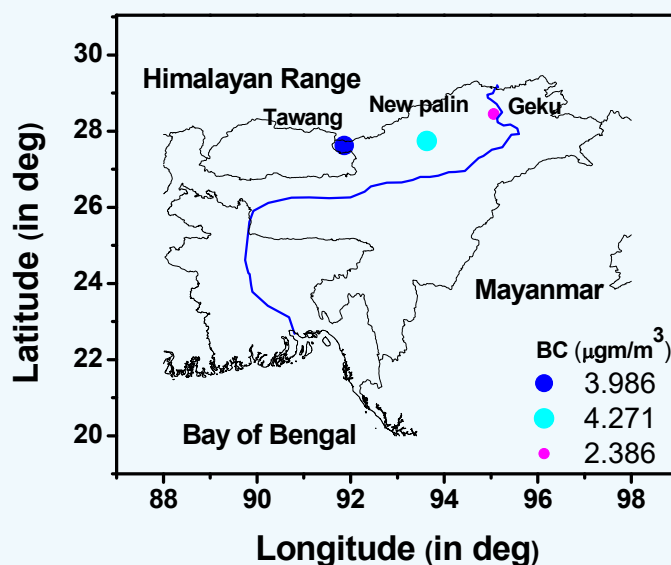
3D visualization of DSM and cut

Arup Borgohain and S.S. Kundu

North Eastern region of India is surrounded by the great Himalayan Mountain and Tibetan plateau to the north, the hills and mountains of Yaman to the east and the Meghalaya Plateau in the south and the west side having the Indo Gangetic plain of India. This creates a conducive environment where the westerly winds can play a dominant role in transporting the aerosols from west Asia, across the Indian landmass towards the NE India. As a whole, the topography of the region acts as an atmospheric sink. The shifting cultivation is the most common form of agricultural practice in the hilly areas of NE region. Fossil fuel combustion, biomass burning and coal burning are common in this region. Also large number of people mainly from rural belt use wood and charcoal for cooking. Faster economic and population growth, industrialization and shifting cultivation, biomass burning activity in rural areas, etc., contributes to BC and aerosol loading of the region and finally to the climate system. Therefore BC and aerosol data from each states and region may be required for accurate spatial mapping which will be good inputs for climate modeling.



Temporal distribution of BC along sub-Himalayan region



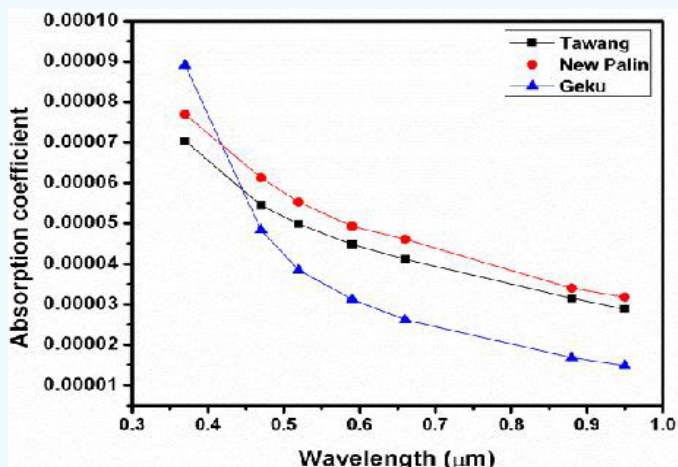
Spatial distribution of BC along sub-Himalayan region



Instrument layout and data collection at Tawang

As part of spatial mapping of aerosol parameters over NEER, an aerosol land campaign has been conducted along the Sub-Himalayan region of northeastern India during the winter months of

2018. Samples of the aerosol were collected at three sites viz. Tawang (~3000 m above msl), New Palin (~1300 m above msl) and Geku (~300 m above msl) with a residence time of 5 days in each station. Instruments viz. Aethalometer, Nephelometer, Sunphotometer and high volume sampler were operated in 24x7 basis. The prime objectives of the campaign were: measurement of the aerosol parameters like aerosol optical depth (AOD), black carbon (BC) concentration, aerosol scattering coefficients and PM_{2.5} loading & chemical compositions over a pristine environments.



Spectral variation of absorption coefficient over sub-Himalayan sites

Diurnal variation of BC shows prominent diurnal patterns with morning and evening peak of BC concentration at all the stations.

The BC concentration over all the sites were found to be higher than a typical concentration in a rural environment. The HYSPLIT air mass back trajectory suggest transport of aerosol from the Bhramaputra valley towards the northern Arunachal Pradesh that could be a leading reason for high BC observed.

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From the Director's Desk

Language (Hindi) Policy of the Indian Union during the year 2016-17 in North Eastern region ('C' region) under 'office' category. The centre will continue to put greater emphasis on implementing Official Language in both technical and administrative communication.

The centre has completed a few projects during last four months while a few new projects have also been started. The Unmanned Aerial Vehicle (UAV) platform has been gradually gaining popularity for several areas of remote sensing applications, particularly when an early action is required. The centre has been able to make its presence felt nationally in UAV remote sensing arena and we are committed to expand this activity further with inclusion of Lidar, Hyper-spectral sensors, atmospheric parameter measuring sensors, etc.

We have taken massive exercise to revive the entire ISRO's Tele-education network in NE region of India. Seven state-of-the art HUBs and 291 satellite interactive terminals have been rectified to provide a new life to the tele-education services in this region. The same facility is also extended to Manipur with 25 SIT nodes for the first time under the same initiative. Several capacity building initiatives has also been taken up to enable the states to make the best use of the facility to improve the education sector in the respective states. 500 numbers of smart phones and GAGAN enabled dongles have also been procured with funding support from Ministry of DoNER to facilitate monitoring of projects under the NLCPR scheme of Ministry of DoNER in NE.

Lightning has been one of the most life threatening disaster in NE of India. We are initiating activities towards developing an effective Lightning early warning system for NE region of India and soon we will augment the lightning information with the existing thunderstorm early warning system. The centre is gearing up for flood early warning system, which has already been extended to most part of the NE region.

The Quality Management System (QMS) implemented at NESAC has been upgraded as per the ISO 9001:2015 standards since January, 2018. NESAC received the certification with effect from 18 April, 2018. The implementation of ISO 9001:2015 shall create a more conducive environment for quality service from NESAC with focus on risk assessment and risk management.

The outreach facility of NESAC along with the hostel facility is nearing completion. ISRO, in recent days has been putting greater emphasis on capacity building in the field of Space technology and Space applications. Soon, NESAC will start a series of capacity building and outreach activities for students, researchers, and professionals.

NESAC received National e-Governance Awards 2018

NESAC was awarded the prestigious National Award for e-Governance for the year 2017-18 for the project “GeoPortal on North Eastern District Resources Plan to support effective Governance applications” for outstanding contribution using spatial technology and GIS in e-Governance. The award was given by Department of Administrative Reforms & Public Grievances, Government of India every year to recognize and promote excellence in implementation of e-Governance initiatives.



The award was received by Shri PLN Raju, Director, NESAC, Dr Dibyajyoti Chutia, Project Leader and Dr Jonali Goswami from Dr Jitendra Singh, Hon’ble Minister of State (Independent Charge) for the Ministry of Development of North Eastern Region, Prime Minister Office, Personnel, Public Grievances and Pensions, Department of Atomic Energy and Department of Space during National Conference on e-Governance held in Hyderabad on 27th February, 2018. NEDRP project is sponsored by North Eastern Council, Govt. of India, Shillong.

एनईसैक को राजभाषा में श्रेष्ठ कार्य निष्पादन के लिए प्रथम पुरस्कार की प्राप्ति हुई है

वर्ष 2016-17 के दौरान उत्तर पूर्वी अंतरिक्ष उपयोग केंद्र (एनईसैक) को उत्तर पूर्वी क्षेत्र में (‘ग’ क्षेत्र कार्यालय) राजभाषा में श्रेष्ठ कार्य निष्पादन के लिए प्रथम पुरस्कार की प्राप्ति हुई है। पुरस्कार वितरण समारोह का आयोजन 10 मार्च 2018 को पटना के ज्ञान भवन में आयोजित किया गया जिसकी अध्यक्षता माननीय श्री किरण रिजिजू, केंद्रीय गृह राज्य मंत्री, भारत सरकार द्वारा किया गया। श्री पी.एल.एन राजू, निदेशक, एनईसैक ने माननीय केंद्रीय गृह राज्य मंत्री श्री किरण रिजिजू द्वारा प्रथम पुरस्कार स्वरूप शिल्ड प्राप्त किया और श्री अबनीश शुक्ला, वरिष्ठ प्रशासनिक अधिकारी ने राजभाषा के कार्यान्वयन में अपने योगदान हेतु प्रशस्ति पत्र प्राप्त किया।



Training cum Workshop on “Development of CRM tools in Agriculture and water resources management using Extended Range Forecast”

Jonali Goswami and Diganta Barman

A training program on “Development of Climatic Risk Management tools in Agriculture and water resources management using Extended Range Forecast” was organized by NESAC in collaboration with Indian Institute of Technology, Bhubaneswar and Indian Meteorological Department, New Delhi during 13-20 March 2018. About 25 participants from Arunachal Pradesh, Assam, Manipur, Mizoram, Tripura, Nagaland and Tripura, West Bengal, Bihar and Jharkhand participated in the training programme. Resource persons from IMD, IIT, University of Agriculture and Horticultural sciences, Shimoga, Karnataka, Vasanttrao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra, Assam Engineering College, Assam delivered lectures during this seven days programme.

yield through various models. He briefed about the purpose of conducting this training in order to minimize agricultural losses caused by climatic hazards through development of suitable climatic risk management strategies by using extended range of weather forecast.



The programme was inaugurated by Dr. N B Singh Dean, College of Post-Graduate Studies (CAU), Umiam, Meghalaya. He mentioned about the importance of extended range forecast particularly for the rainfed agriculture of north eastern states. Shri. P L N Raju, Director, NESAC welcomed the dignitaries and participants and briefed about the training programme as well as achievements and importance of Extended Range Forecast for development of climate risk management tools in Agriculture. Dr. Kripan Ghosh, Scientist, IMD New Delhi, explained the activities of IMD towards forecasting of crop

The training on CRM tools with focus on hands-on practice imparted knowledge and skills to the trainees regarding decision making during agro advisory preparation with knowledge of climate risk matrices, risk management options, down scaling of extended weather forecast and linking forecast with crop simulation model, analyzing crop model outputs to arrive at viable management scenarios, to help in deciding resource distribution by planners, etc. It can also be envisaged that extended range forecast at appropriate scale in basin level can be used for judicious water resource allocation for varied purposes from multipurpose water reservoirs, irrigation command, etc.



Capacity Building Training Programs Under AMRUT Sub-Scheme

Government of India has launched Atal Mission for Rejuvenation and Urban Transformation (AMRUT) in 2015. During the Mission period, 11 reforms will be implemented, of which formulation of GIS based master plan for 500 AMRUT cities is one of the most important reforms. One of the most important components of this project is Capacity Building.



NESAC, in association with Town & Country Planning Organisation, Ministry of Housing and Urban Affairs, Govt. of India, conducted the training programme on “Formulation of GIS Based Master Plans for Decision Makers” from 18 to 20 January, 2018 at NESAC. 14 decision makers from different states participated in the training. The inaugural session was chaired by Shri. S. Surendra, Addl. Chief Planner, Town & Country Planning Organization, Ministry of Housing and Urban Affairs, Govt. of India. Shri. S. Surendra in his inaugural address emphasized on the use of space technology for urban applications. In his address, he briefed about the national programmes on AMRUT and emphasized on the role of NESAC for imparting training to the urban planners of different parts of India in general and North East India in particular.

2 weeks training course on “Applications of modern tools and technologies” for State Forest Service officers

NESAC organized a two weeks training course on “Applications of modern tools and technologies” for 29 State Forest Service Officers, Central Academy for State Forest Service, Byrnihat from 29 January to 9 February 2018. The officers are in the rank of Assistant Forest Conservator coming from the states of Chattishgarh (11 nos.) and West Bengal (18 nos.).



The programme was designed based on the syllabus provided by the Academy for the SFS. During the training, lectures on aerial photography were delivered and also demonstrated the practical on aerial photograph using mirror stereoscopes. The basics and principles on remote sensing & GIS, RS & GIS application in forestry, and UAVs were discussed in detail and practical classes were conducted after every theory classes for familiarizing the various image processing and GIS software. Demonstration of UAVs was also made. A one day field visit was also conducted for ground truth verification using hard copy interpreted maps along with GPS. Subsequently, practical and written examinations were conducted in the last part of the training. Overall feedback from the trainees was excellent and the participants agreed that the knowledge gained

during the training course will be useful during their future course of work.

Workshop on CHAMAN & release of project reports for NE states



A workshop on CHAMAN (Coordinated Horticulture Assessment and Management using geo-informatics) project was organised during 11-12 April, 2018 at Assam Administrative Staff College, Guwahati, where final review of the project was done along with release of reports by Secretary, Agriculture Cooperation & Farmer's Welfare, Govt. of India. The remote sensing component of the CHAMAN project has been implemented by Mahalanobis National Crop Forecast Centre (MNCFC) in collaboration with ISRO/DOS Centres (SAC, NRSC & NESAC) and 12 state horticulture departments, 8 North Eastern States, NHRDF, IMD, ICAR centre, and State Remote Sensing Applications Centres (SRSAC). NESAC coordinates the implementation of the project for 8 NE states in collaboration with SRSAC and horticulture departments of the respective states. First day of the programme was on review of the CHAMAN project for the country. The programme was chaired by Smt. Sudha P. Rao, Principal Adviser, Department of Agriculture Cooperation & Farmer's Welfare, Govt. of India. On the second day, project reports for all 8 NE states viz., Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim

and Tripura were released by Shri S.K. Pattanayak, Secretary, Agriculture Cooperation & Farmer's Welfare, Govt. of India, who graced the occasion as the Chief Guest. Dr S. S. Ray, Director, MNCFC presented the overall status of the project while Shri PLN Raju, Director, NESAC presented the current status and future requirements of programme for NE states. Project outcome and results for 8 NE states were presented by concerned Scientists/ Heads of the SRSACs.

Fire Fighting Mock Drill

Ministry of Home Affairs, Government of India has mandated conduction of fire fighting mock drills at Government of India sponsored office buildings to make its staff ready to handle fire events. In pursuance of the directive, a fire fighting mock drill was conducted at NESAC on 16th April, 2018 for generation of awareness and preparedness among its staffs regarding handling of fire events at workplace.



Fire officers from Umiam Fire & Emergency Services Station under Meghalaya Fire & Emergency Services visited NESAC to impart required training and to coordinate the mock drill. Staff of NESAC as well as CISF Unit, NESAC under the command of Assistant Commandant took active part in the mock drill. The Assistant Commandant gave a brief lecture about disasters, their awareness, mitigation techniques and best practices during fire events and other emergencies. Mr. Hafizur Rahaman, Station Officer, Umiam Fire Station stated briefly about



fire fighting techniques. Mr. Muktan, Senior Fire Officer, Umiam Fire & Emergency Services Station gave an elaborate lecture on various aspects of fire fighting. He also talked about best practices during fire event, types of fire extinguishers, transportation technique for evacuating the injured. A hands on demonstration on use of fire extinguishers and fire hydrants was done outside NESAC Office. Staff of NESAC participated actively in the mock drill.

MoU for academic and research collaboration with Dibrugarh University



A Memorandum of Understanding (MoU) was signed between NESAC and Dibrugarh University on 21st Dec 2017 to collaborate in the mutual areas of strengths in teaching and research that will mutually benefit the students and faculty of both the organizations. The MoU detailing the modalities and general conditions regarding academic/research collaboration between DU and NESAC for enhancing, within the country, the availability of highly qualified manpower in the areas of

Remote Sensing, Atmospheric Sciences, Satellite Communications, Disaster Risk Reduction and any other relevant application areas with space technology based inputs was signed between Director, NESAC and Registrar, DU. It was also agreed for mutual academic collaboration in the areas of Unmanned Aerial Vehicles (UAVs), Physics, Life Sciences, Geosciences, Aero Space Engineering, etc.

Students' visit to NESAC

Students from different schools around Shillong and Guwahati and Colleges and Universities from different North Eastern states and other parts of the country visits NESAC as part of their study tour. Following are some of the schools and colleges that visited NESAC during the period from January to April 2018.



A team of 12 M.Sc. students along with 2 faculties from the Department of Forestry and Environmental Science, Manipur University, Imphal, visited the Centre on 10th April, 2018.



85 students of class X from Loreto Convent, Shillong along with 3 teachers visited the Centre on 16th April, 2018.



22 students of class X from 10 schools of Aizawl, Mizoram, along with their teachers visited NESAC on 18th April, 2018 under Rashtriya Madhyamik Shiksha Abhiyan (RMSA).



A team of 10 students from Computer Science Department of College of Engineering & Management, Kolaghat, West Bengal visited NESAC on 27th April, 2018 as part of their study tour.

Prize distribution to WSW-2017 winners



Shri. N. Biren Singh, Hon'ble Chief Minister of Manipur, handed over the second prize for painting competition held during the World Space Week (WSW) celebration during 4-10 October at NESAC, to Mr. Telen Khaidem from DAV Public School, Imphal.

विश्व हिंदी दिवस समारोह 2018

दिनांक 10 जनवरी 2018 को उत्तर पूर्वी अंतरिक्ष उपयोग केंद्र (एनईसैक) में विश्व हिंदी दिवस समारोह मनाया गया। कार्यक्रम का शुभारंभ श्री पी एल एन राजू, एनईसैक, निदेशक के कर कमलो से दीप प्रज्वलन के द्वारा किया गया। इसके पश्चात कनिष्ठ हिंदी अनुवादक श्रीमती नमिता रानी ने स्वागत संभाषण में सभी का स्वागत करते हुए विश्व हिंदी दिवस के संबंध में जानकारियां प्रदान की। तदुपरांत इस उपलक्ष्य में निदेशक एनईसैक ने विश्व हिंदी दिवस के संदर्भ में अपने विचार प्रकट किए साथ ही संपूर्ण विश्व में हिंदी के बढ़ते प्रभाव पर भी प्रकाश डाला। उन्होंने एनईसैक के सभी अधिकारियों व कर्मचारियों को भी अपने भाषण द्वारा प्रोत्साहित करते हुए और हिंदी के अधिक प्रयोग पर बल देते हुए सभी को सरकारी कार्यों के दौरान हिंदी का अधिक प्रयोग करने कहा है। इसके पश्चात यह दर्शाते हुए कि हिंदी का प्रयोग न केवल साहित्य सृजन के लिए ही किया जा सकता है बल्कि आज हिंदी इतनी अधिक विकसित हो चुकी है कि हिंदी के द्वारा तकनीकी क्षेत्रों के कार्यों को भी बखूबी प्रस्तुत किया जा सकता है, एनईसैक के दो वैज्ञानिक मो. अब्दुल कादिर खान, वैज्ञा/अभि. 'एसडी' और श्री अभिषेक छारी, वैज्ञा/अभि. 'एसडी' द्वारा हिंदी में पावर पॉइन्ट प्रस्तुति दी गई। जिसे सभी ने सराहा और सभी लाभान्वित भी हुए। कार्यक्रम का समापन श्री अवनीश शुक्ला, वरिष्ठ प्रशासनिक अधिकारी, एनईसैक द्वारा विश्व हिंदी दिवस पर व्याख्यान द्वारा किया गया।

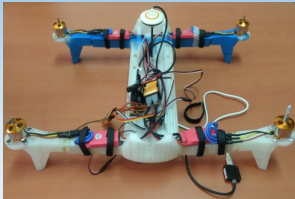


Third Course on

UAV Remote Sensing

Technological Advances & Applications

September 04-14, 2018



North Eastern Space Applications Centre
Department of Space, Government of India
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UAV Remote Sensing

The unmanned aerial vehicle (UAV) or unmanned aircraft system (UAS), popularly known as drone, is an airborne system or an aircraft operated remotely by a human operator or autonomously by an onboard computer. There are basically two types of UAVs - Fixed Wing and Rotary based. The fixed-wing aircraft can carry bigger sensors as payloads for longer distances. It also has high flight times and can even fly during rough windy conditions. The rotary based UAVs has the ability for takeoff and land vertically, hover and perform agile maneuvering to maintain a visual on a single target for extended periods of time.

UAVs combined with remote sensing technology have been intending to make use of available technologies in order to acquire the spatial data about land cover, resources, and the environment for processing and analyzing remote sensing data. The imagery data obtained from UAV/UAS can immensely help in many applications ranging from large scale building modelling to vegetation structure mapping which can immensely benefit for local planning and development specially in the North Eastern region with very limited connectivity and physical infrastructure.

UAV Facilities at NESAC

The Centre has both fixed wing UAV and multirotor based UAVs - quad copter and hex copter and has capability for both manual as well as autonomous flights. The fixed UAV has a flight endurance of about 50-60 mins with a flying range of 4-5 kms. The copter type UAV has 1.5-2.0 kg of payload capability and can be customized to carry sensors such as Thermal, Multispectral, Optical, Hyper spectral or LIDAR etc. It can attain maximum altitude up to 2 Kms with scanning radius of 2 Kms. It can fly for about 20-40 mins. NESAC has also facilitated to all the State Remote Sensing Centers (SRSACs) of North Eastern Region to establish UAV Remote Sensing facilities and providing continuous support to them. 3D printing facility is new edition to UAV Lab at NESAC.

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