

Reflections

Triannual Inhouse Newsletter



Chairman, NESAC Governing Council

Shri S. Somanath assumed the charge of Secretary, Department of Space (DoS) and Chairman of Space Commission and Indian Space Research Organisation on 14th January 2022. As Secretary, DoS, he is also the Chairman of NESAC Governing Council and Vice-President of NESAC Society. He has served as the Director of Vikram Sarabhai Space Centre (VSSC), Director of Liquid Propulsion Systems Centre (LPSC), Project Director of GSLV Mk-III Launch vehicle, and several other key positions before joining as Secretary, DoS. A Fellow of several Societies and Professional bodies, Shri Somanath is an expert in the area of system engineering of launch vehicles.



From the Director's Desk

I am very happy to welcome the new Secretary of the Department of Space (DoS) and Chairman of Space Commission and Indian Space Research Organisation, Shri S Somanath, who will also be the new Chairman of NESAC Governing council (GC) and Vice-President of NESAC Society. His experience, wisdom, and vision shall be of immense help for the growth of NESAC. I am looking forward to work under his able guidance and contribute for the development of the NE region of India with renewed commitment and vigor.



The 16th meeting of NESAC GC was held on 12th January, 2022 under the Chairmanship of Secretary, DoS. The council expressed satisfaction over the quality and quantity of work carried out by NESAC and at the same time gave several new assignments. I express my sincere gratitude to the Chairman and members of the GC for their continual support and suggestions. It gives us a sense of joy that we could deliver as per the expectations of the council.

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Dr K K Sarma

Background

North Eastern Space Applications Centre (NESAC) since its establishment in the year 2000 has taken a catalytic role in holistic development of NER by providing space technology support on natural resource management, infrastructure planning, healthcare, education, emergency communication, disaster management support, atmospheric science research and capacity building. In this 20 year of services, NESAC has generated a large volume of geospatial data covering entire north east region in addition to site specific detailed databases.

During the 9th meeting of NESAC Society which was held on 23rd January, 2021 at Shillong, Shri Amit Shah, Hon'ble Union Home Minister & President, NESAC Society has emphasized that NESAC has considerable repository of data on various aspects/ sectors which can be used for planning and implementation purposes like degraded unutilized lands, management of forest, restoration of water resources like lakes, check dams and ponds in appropriate locations as means for flood control, irrigation and development of tourism etc. He has also directed the state governments of NE states come up with developmental Plan of Action (PoA) using Space Technology to have targets to be attained within 2024.

Preparation of Plan of Action by NE states

As per the suggestions of President, NESAC Society, assessments were made by concerned user departments of all the northeastern states on use of space technology in various sectors. After a series of discussion and thorough assessment of the ongoing activities where space technology support is already in place and the future needs proposed by various user departments where space based inputs can be effectively utilized, a detailed plan of actions for utilization of space technology in the form of project proposals for each state has been drafted by the Nodal departments identified by respective state governments of NER. A total of 140 project proposals from 8 NER states received at NESAC for final evaluation and recommendation before submitting to the Hon'ble Union Home Minister during next NESAC Society meeting.

Accordingly, the 140 projects proposed by all 8 states

of NER were reviewed by an expert team at NESAC and suitable modifications were suggested in terms of technical feasibility, budget, timeline etc. The project proposals were placed for review by Inter-Centre Expert Committee comprising of the members from National Remote Sensing Centre (NRSC), Hyderabad, Space Applications Centre (SAC), Ahmedabad, Indian Institute of Remote Sensing (IIRS), Dehradun, ISRO Head Quarters, Bengaluru and NESAC, Shillong. The Committee made valuable suggestions on technical content, feasibility, timeline etc. for all the proposed projects. The committee has also recommended to exclude two project proposal considering the objectives are beyond the scope of using space technology in specific decision making.

Formulation of Regional projects

Considering the projects proposals with similar objectives proposed by different NE states, it was decided to formulate a few projects at regional scale clubbing similar nature project proposals. In this exercise, a total of 9 regional level projects have been formulated, which will cover all the 8 states of NER in areas of agriculture and allied sectors, forest, ecology & environment and disaster management. One project in the areas of water management (River Atlas) is proposed for 7 NER states barring Assam. The Flood Early Warning System (FLEWS) proposal under disaster management area from 6 states (barring Assam and Manipur) combined to regional project. Similarly, the project on preparation of Hydro-Geomorphological Maps (HGM) proposed by the states of Arunachal Pradesh, Manipur and Tripura are also clubbed to form one regional project. List of regional projects are given below :

- Applications of space techniques for agricultural assessment in NER (for 8 states of NER)
- Space-based support for the integrated development of horticulture in NER (for 8 states of NER)
- Identification of forest gap areas in the reserved forests of NER. (8 states of NER)
- Assessment of bamboo resources in North Eastern Region using geospatial technology (8 states of NER)
- Site suitability analysis for mulberry and non-mulberry silkworm food plants in NER (8 states of NER)

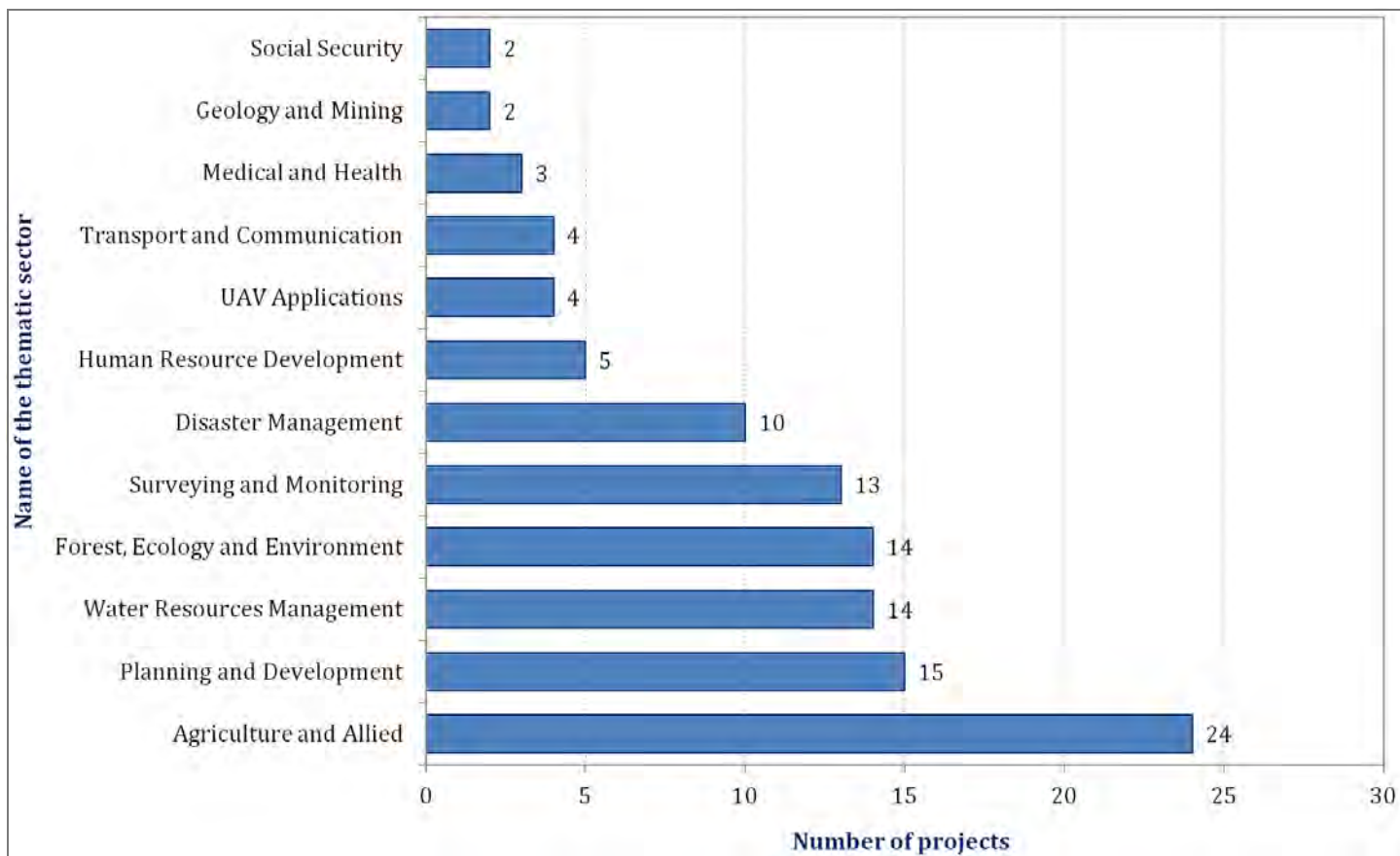


Figure 1: Number of PoA projects under different thematic sectors

NER)

- Development of location based lightning nowcasting system for NE region of India (8 states of NER)
- Development of automated system for monitoring of deforestation (8 states of NER)
- Mapping of shifting cultivation area at 1:10,000 scale (8 states of NER)
- Development of methodology for delineation of bamboo growing areas (8 states of NER)
- River atlas for NER (7 states of NER except Assam)
- Flood early warning system for NER (6 states of NER other than Assam and Manipur)
- Preparation of Hydro-geomorphological (HGM) map at 10K scale for ground water prospecting in NER using space technology with limited ground survey (covering Arunachal Pradesh, Manipur & Tripura)

Finally, 110 projects were finalized which includes 12 regional and 98 state specific projects and presented

to the NESAC Special Society Meeting chaired by Hon'ble Union Home Minister Shri Amit Shah, President, NESAC Society on 24th July, 2021 held at NESAC Umiam premises

Projects under thematic sectors

Based on the thematic areas to be covered under the projects, all 110 projects can be categorized under 12 sectors and it is noted that Agriculture & Allied sector had the highest number of projects (24), followed by Planning & Development (15) and Forestry, Ecology & Environment (14), Water Resources Management (14) etc. There are 4 projects in the areas of UAV (Unmanned Aerial Vehicle) applications. Details of sector-wise distribution of projects are shown in figure 1.

State specific projects under PoA

After excluding the regional projects, when we consider the state specific projects, it is observed that state of Arunachal Pradesh has proposed the highest number of projects, 26, followed by Assam (23)

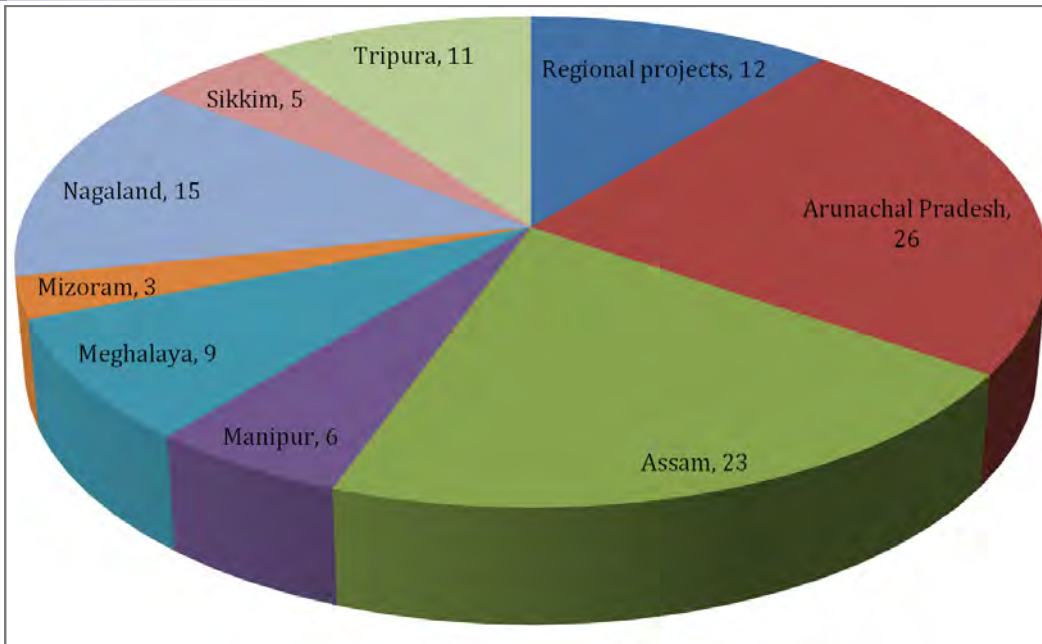


Figure 2: Distribution of PoA projects in different states of NER. The name of the state and the number of state specific project are shown

whereas Mizoram has the least number of state specific projects (3) proposed under PoA. Distribution of PoA projects in different thematic sector and states are shown in figure 2.

Projected funding sources

The 110 projects are proposed to be taken up with funding support from North Eastern Council (NEC), Department of Space (DOS), respective state governments of NER for selected projects and few other organizations. As per the sponsorship sharing, it is noted that NEC has the highest share for 48 projects followed by the State Governments of the concerned states for 44 projects and ISRO, Dept. of Space for 15 projects. Few theme specific projects have been submitted for funding by organizations like Central Silk Board (CSB), Ministry of Textiles, North Eastern Electric Power Corporation Ltd (NEEPCO), and North Eastern Development Finance Corporation Ltd. (NEDFi).

Expected output and outcome from PoA projects

During the preparation of PoA projects, all 8 NE states had actively participated in conceptualizing, formulating, and finalizing the project focusing on use of space technology in their developmental plans. The projects mainly focuses space technology interventions on preparing the baseline natural

resources database which is the primary requirement for all developmental plans, develop early warnings for selected disasters for effective use by the concerned departments (like SDMA, etc) to save live and property of 4.5 Crore population living in NER of India, disseminate the generated information through web based portals accessible by concerned line departments and general public (as per the prevailing rules and regulations of the concerned department). Most of the databases/information to be generated will also be made available

for academic institutions for further research.

It is expected that after completion of all 110 projects, detailed natural resource information on bamboo resources, river atlas, water bodies, etc. will open up many opportunities for new entrepreneurs to initiate business on bamboo products, fisheries, etc. Information intended to be generated on suitable sites for expansion of agriculture and horticulture crops will support the region for food security through enhanced food production once the recommendations are implemented on the ground in letter and spirit. The projects on disaster mitigation like flood early warning, landslide mapping and monitoring, lightning nowcasting, forest fire prone areas, etc will ensure the people of NER to live with better security and peace of mind provided the local authority implements the recommendations or outputs as per requirements.

Therefore, it can be assumed that there will be considerable changes in quality of baseline database on natural resources, agricultural potentials, disaster management support, dissemination of database through web services in the region, once the projects are implemented. This will significantly impact not only the local governments in implementing plans or programs on the ground but also will improve the quality of life of peoples of NER to some extent with the support of space technology interventions through 110 PoA projects

Preparation of Model Village Project Plan for Kaho, Kibithoo & Meshai

Santanu Das, Sumanth BC, Jayasmita Bhattacharjee, and JM Nongkynrih

Nestled amidst the foothills of mountain ranges, the villages of Kaho, Kibithoo and Meshai are the eastern most villages of the country by the banks of Lohit River. Lohit River flows to India from China and eventually joins River Brahmaputra in the state of Assam.



Location of village clusters in Arunachal Pradesh

The journey to these villages is extreme as the last rail connectivity is till Tinsukia, Assam. It's a long road journey from Dibrugarh or Tinsukia and the journey cannot be completed in one day. Kaho, Meshai and Kibithoo are one of the seven villages of the Kibithoo block which are divided into the east and west banks by the Lohit River. The banks are connected by several suspension and bailey bridges.

Walong is the closest town to Kibithoo and is also the easternmost town of India. This town provides as the base to visit the villages of Kibithoo and Kaho as there are no hotels or any kind of lodgings there. There are a handful of households and one can only find basic services like a little shop, a primary school, a few houses, and a monastery in Kaho, etc. There is nothing more to do there and tourism infrastructure is very poor. The inherent scenic beauty is the greatest resource of the region and can be harnessed to increase the productivity of the region.

The residents of the three villages suffer due to the lack of basic amenities. The village's health centers remain shut most of the time and the students from Kaho and Meshai

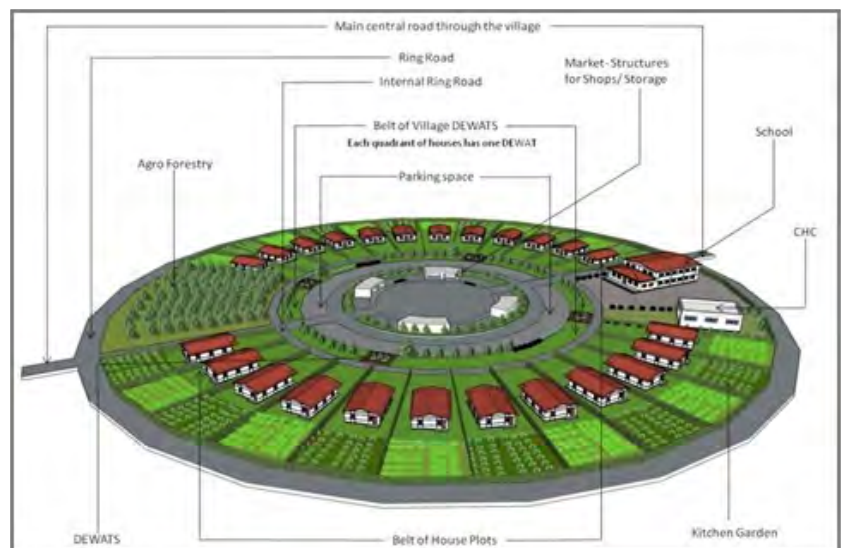
attend high school in Kibithoo, which is the nearest High School or go further away from home in search of a better education. There is no landline or cellular connections in the region and the locals use the Indian Army's satellite connections to talk to their family and friends (Bhattacharyya, 2020)

Vision and Objectives for the Project

The vision of the project is to build Kaho, Kibithoo and Meshai into sustainable and self-sufficient model villages that can be set as an example for the development of other model villages throughout the country. The said region has a lot of challenges of accessibility and connectivity being the remotest corner of the country. However, the region also has a warehouse of potentials that needs to be tapped correctly and sustainably to uplift the region economically and socially.

Objectives of the plan are

- Socio-economic development of the region by providing the scope of varied economic opportunities which will mostly focus on self-employment.
- Improving the physical and social infrastructure of the villages by providing smart and modern solutions.
- To develop Kaho, Kibithoo, Meshai and the surrounding areas as adventure sports & eco-retreat tourism destination.



Plan for the Kaho & Meshai villages

Preparation of Model Village Project Plan for Kaho, Kibithoo & Meshai

- Enhancing the human capital development of the region and capacity building so that the locals do not have to leave the region in search of better jobs and education.

It is essential to retain the population of the area by providing a platform to the locals to create their own employment opportunities. The model villages can also provide employment, education and healthcare services to the nearby villages. However, it is also important to make sure that the region does not become too commercialized and lose its essence of calm, peace and its pristine qualities



Plan for the Kibithoo village

From the Director's Desk

Continued from page 1.....

We could began the year 2022 with a happy note through signing of two Memorandum of Understanding (MoU) with the Department of Science & Technology and Climate Change, Govt. of Assam and the Department of Planning, Government of Meghalaya to promote the space technology applications by various user departments in the state of Assam and Meghalaya. Prior to this, we signed another MoU with the Department of Science and Technology, Government of Arunachal Pradesh on December 20, 2021 at Pasighat for utilization of space technology for development of the state. This will certainly enhance the activities requiring space technology interventions through collaborative efforts and help in timely and efficient implementation of the projects included in the Plan of Actions (PoA) of the respective states. We are overwhelmed by the commitment from the topmost authority of the states in improving the use of space science and technology to address the issues and challenges faced by the states in governance and development.

We have been giving the highest priority to execute the 110 projects from the PoA prepared for each of the states. Detailed project reports have been prepared for all projects in active consultation with the state space applications centres from NE region and submitted to the respective funding agencies. We have already completed seven projects from the PoA and submitted reports to the concerned. We also have made significant progress in several other projects and did preparatory work for the remaining projects. Some of the completed projects include Mapping of shifting cultivation area at 1:10,000 scale in entire NER of India, Rural development plan for model villages (Kaho, Kibithoo & Mosai) in Arunachal Pradesh, Submergence study in the upstream of Siang Integrated Multipurpose Project, Site suitability analysis using geospatial technique for air traffic control, etc.

NESAC has been very proactive in implementation of Official Language Policy of Government of India. As recognition to that, NESAC was awarded the first prize for implementing Official Language Policy of the Union for the year 2017-18 in the category of offices of 11 to 50 personnel located in the NER of India during the Official language conference for East and Northeast region, held on 18 December 2021, at Dibrugarh, Assam. It will encourage us to further enhance the use of Official Language in office activities.

During the year 2021, we took up and completed several new and innovative projects cutting across different thematic areas. Our collaboration with different institutes and the user base has increased while the number of ongoing projects also increased to more than 70 projects, excluding the 110 projects being taken up as part of the PoAs. Timely execution of the PoA projects shall be our major agenda in the current year. Capacity building and outreach activities have remained one of our priority areas and we continued to conduct short duration certificate courses in both online and offline modes. We are working hard to make more robust disaster early warning services from NESAC with higher accuracy. State of the art techniques like machine learning, deep learning, UAV remote sensing, 3D printing technology, etc are increasingly used along with the space technology to support the developmental process in the NE region of our country.

Signing of MoUs with the State Governments of NER

During the 9th meeting of the NESAC Society, the President of the Society and Hon'ble Union Minister of Home and Cooperation, Shri Amit Shah Ji instructed all the states of NER to prepare a Plan of Action (PoA) utilizing space technology for developmental planning. Accordingly eight PoAs have been prepared for each state of NER., that includes 110 projects to be completed within three years. The projects are envisaged to be executed by NESAC and the respective state remote sensing application centres. To improve the coordination and cooperation between NESAC and the state governments, three Memorandum of Understanding (MoU) were signed by NESAC with the states of Arunachal Pradesh, Assam, and Meghalaya recently. The MoUs focuses towards taking up joint activities in the field of space application with emphasis on timely implementation of the projects prepared under the PoA. The MoUs will also facilitate capacity building in space applications.

MoU with the state of Arunachal Pradesh

The MoU with the Government of Arunachal Pradesh was signed on 20th December, 2021 at Pasighat, Arunachal Pradesh. The event was witnessed by Hon'ble Chief Minister of Arunachal Pradesh, Shri Pema Khandu, Hon'ble Deputy Chief Minister, few of the Hon'ble Cabinet Ministers, and senior officials of the state. The MoU was signed by Dr. S. P Aggarwal, Director, NESAC and Shri Ajay Chagti, IAS, Secretary, Department of S & T, Govt. of Arunachal Pradesh. The MoU will specifically address the 38 projects under PoA on space technology applications in important developmental sectors.



Director, NESAC presenting a memento to Hon'ble Chief Minister of Arunachal Pradesh during the program

MoU with the state of Assam

Another MoU was signed between the Department of

Science & Technology and Climate Change, Govt. of Assam and NESAC at Guwahati, Assam on 1st January, 2022 in presence of Hon'ble Chief Minister of Assam Dr. Himanta Biswa Sarma and Hon'ble Minister of S & T and Climate Change, Govt. of Assam Shri Keshab Mahanta. Shri Gyanendra Dev Tripathi, Commissioner & Secretary, Department of S & T and Climate Change, Govt. of Assam and Dr. S.P. Aggarwal, Director, NESAC.



Director, NESAC signing MoU in presence of Hon'ble Chief Minister of Assam and Hon'ble Minister of S & T and Climate Change, Govt. of Assam

Department of S & T and Climate Change, Govt. of Assam as the nodal department from Government of Assam will coordinate with all relevant departments, institutions, agencies and organisations in the state of to assess the requirement of space technology support for development planning and support them to formulate and propose projects requiring inputs with space science and technology and forward these to NESAC for suitable assessment and execution.

MoU with the state of Meghalaya

The MoU with the Government of Meghalaya was signed on 4th January, 2022. The signatories of the MoU were Secretary, Department of Planning, Govt. of Meghalaya and Director, NESAC. The MoU will enhance space technology applications by various user departments in the state of Meghalaya and enable long-term collaboration for promotion of space sciences and technology in the state of Meghalaya. This will also promote coordination among all relevant departments, institutions, agencies and organisations in the state of Meghalaya to assess the requirement of space technology support for development planning and take up projects relevant for the state. .

हिंदी पखवाड़ा समारोह (14-29 सितम्बर 2021)

एन.ई-सैक में 14 से 29 सितंबर, 2021 तक हिंदी दिवस के उपलक्ष्य में हिन्दी पखवाड़ा का आयोजन किया गया। पखवाड़े का उद्घाटन 14 सितम्बर 2021 को एन.ई-सैक सभाकक्ष में डॉ. के. के. शर्मा, वरिष्ठ वैज्ञानिक, एन.ई-सैक द्वारा दीप प्रज्वलित कर किया गया फिर उनके द्वारा सभी अधिकारियों व कर्मचारियों को प्रतिज्ञा दिलाई गई। तत्पश्चात माननीय गृहमंत्री श्री अमित शाह जी का हिंदी दिवस के उपलक्ष्य में दिए गए संदेश का पाठ किया गया।

इस दौरान सभी कई प्रतियोगिताओं जैसे – रचनात्मक लेखन, हिंदी कविता पाठ, हिंदी कहानी पठन, आशुभाषण, श्रुतलेख और सुलेख प्रतियोगिता का आयोजन किया गया। हिंदी दिवस के दौरान अन्य गतिविधियों के अतिरिक्त सभी मंत्रालय/विभागों द्वारा प्रदर्शन हेतु, हिंदी भाषा में प्रमुख सुक्तियों को डिसप्ले किया गया। दिनांक 24.09.2021 को केंद्रीय हिंदी प्रशिक्षण संस्थान, गुवाहाटी से डॉ. शर्मिला ताई, हिंदी प्राध्यापक द्वारा सभी स्थायी अधिकारियों/कर्मचारियों के लिए विषय – “टिप्पणी और मसौदा लेखन” पर हिंदी कार्यशाला का आयोजन किया गया।

समापन समारोह डॉ. एस.पी.अग्रवाल, निदेशक, एन.ई-सैक ने सभी को संबोधन करते हुए हिंदी पखवाड़े के सफल आयोजन हेतु सभी को बधाई दी और साथ ही सभी प्रतियोगिताओं के विजेताओं को पुरस्कार राशि और प्रमाण पत्र प्रदान किया गया। अंत में श्री अवनीश शुक्ला, वरिष्ठ प्रशासनिक अधिकारी द्वारा धन्यवाद ज्ञापन के साथ हिंदी पखवाड़े के समापन की घोषणा की गयी।



हिंदी में विशिष्ट कार्य निष्पादन हेतु एन.ई-सैक सम्मानित

उत्तर पूर्वी अंतरिक्ष उपयोग केंद्र (एन.ई-सैक), भारत सरकार की राजभाषा नीति को लागू करने में सक्रिय रहा है। एन.ई-सैक में हिंदी पखवाड़ा सहित विभिन्न हिंदी कार्यक्रम नियमित रूप से आयोजित किए जाते हैं। इस केंद्र के अधिकांश अधिकारियों ने हिंदी प्रवीण पाठ्यक्रम पूरा कर लिया है और हिंदी में बोलने, पढ़ने और लिखने में सक्षम हैं। हिंदी में विशिष्ट कार्य निष्पादन हेतु, पिछले 18 दिसंबर 2021 को डिब्रुगढ़ में आयोजित पूर्व और पूर्वोत्तर क्षेत्र के लिए राजभाषा सम्मेलन के दौरान एन.ई-सैक को पुरस्कृत किया गया। सम्मेलन की अध्यक्षता राजभाषा विभाग की सचिव श्रीमती अंशुली आर्या जी ने किया।



पूर्वोत्तर क्षेत्र स्थित 11 से 50 तक के कार्मिकों वाले कार्यालयों में वर्ष 2017-18 के दौरान संघ की राजभाषा नीति के श्रेष्ठ निष्पादन के आधार पर उत्तर पूर्वी अंतरिक्ष उपयोग केंद्र (एन.ई-सैक), उमियम को प्रथम पुरस्कार प्रदान किया गया। राजभाषा के इस प्रतिष्ठित पुरस्कार को प्राप्त करने के लिए एन.ई-सैक के वरिष्ठ वैज्ञानिक डॉ. के.के.शर्मा, वैज्ञानिक/अभि. 'एसजी' और कनिष्ठ अनुवाद अधिकारी श्रीमती नमिता रानी पाल मित्रा को आमंत्रित किया गया था। राजभाषा विभाग की सचिव श्रीमती अंशुली आर्या जी के करकमलो से राजभाषा शील्ड और प्रशस्ति पत्र ग्रहण किया। कार्यालय के लिए यह एक स्वर्णिम उपलब्धि है। इस अवसर पर डॉ. शिवप्रसाद अग्रवाल, निदेशक एन.ई-सैक ने सभी एन.ई-सैक सदस्यों का धन्यवाद दिया और भविष्य में भी ऐसे ही उत्कृष्ट कार्य करने का आह्वान किया।

16th Meeting of the NESAC Governing Council conducted

The 16th meeting of the NESAC Governing Council (GC) was held on 12th January, 2022 through video conference mode. Dr. K. Sivan, Secretary, Department of Space (DoS) & Chairman, NESAC-GC, Chaired the meeting. The meeting was attended by Additional Secretary, DoS; Secretaries of Dept. of Science and Technology from the NE states; Scientific Secretary, ISRO; Directors of SAC, PRL, and NRSC, Directors of ICAR-NEH, IIT-Guwahati, NEIGRIHMS, and IIM-Shillong; VC, NEHU; Secretary, S & T, NEC; program



directors from the ISRO HQ program offices; and other members of NESAC GC. Director, NESAC who is the member Secretary of NESAC GC, made a detailed presentation on the action taken for the actions identified during the 15th meeting of NESAC GC, activities carried out at NESAC since 15th meeting of NESAC GC, plan for next year, audited statement of accounts, and budget for the next year.

The Chairman and members of NESAC GC expressed satisfaction on the diverse and voluminous work



carried out by NESAC in last one year and gave a few critical assignments. Chairman, NESAC GC asked to make detailed plan for timely implementation of 110 projects under the Plan of Actions prepared for each state on utilization of space science and technology for

development and governance related activities. The members also asked NESAC to give more focus on capacity building and training programs. NESAC was also asked to conduct more interaction meetings with the users and line departments and organize brainstorming sessions.

The meeting ended with vote of thanks by Director, NESAC.

NESAC celebrated Vigilance Awareness Week & National Unity Day

Vigilance Awareness Week was celebrated nationwide from 26th October to 1st November, 2021 coinciding with the birthday of Sardar Ballabhbhai Patel on 31st October, which is celebrated as National Unity Day. This year, Vigilance Awareness Week was celebrated with the theme "Independent India @75: Self Reliance with Integrity".



NESAC celebrated the Vigilance Awareness Week and National Unity Day with a week-long program. An essay writing competition for NESAC staff was organized on 25th October followed by Patriotic Singing Competition on 27th October, Slogan Writing competition on 26th October and Quiz Competition on 29th October. Director NESAC administered the Vigilance Awareness Pledge to the staff of NESAC on 26th October and National Unity Pledge on 29th October. A lecture on the life and activities of Sardar Ballabhbhai Patel was delivered by Shri Sishir Tiwari, Asst. Professor, Dept of Law, NEHU, Shillong via online mode on 28th October. NESAC staff took out a Padayatra to mark the conclusion of the week-long celebration on 31st October. An open quiz competition was also organized during Vigilance Awareness Week at NESAC

Director, NESAC attends validation meeting as a Guest of Honor organized by FAO India at Aizawl

Dr S. P. Aggarwal, Director, NESAC attended the validation meeting of Technical Assistance for review of the socio-economic risk of diseases, database development and planning for a decision Support System (DSS) to manage Transboundary Animal Diseases (TAD) on 9th November, 2021, as the Guest of Honor (in virtual mode). The meeting was attended by the Senior FAO (Food and Agriculture Organisation) representatives in India, Team of FOCUS including the senior veterinary officers of Mizoram government. Dr Aggarwal mentioned the contribution of NESAC towards development of various important Governance applications for various Govt agencies in the region. During his speech, he further added that



its components, flight planning for data acquisitions for various remote sensing applications with focus on forestry applications, 3D printing & its application in UAV along with different data processing techniques. The data processing includes generation of Orthomosaic, digital surface model (DEM), digital terrain model (DTM), contour maps, volumetric analysis etc using Pix4D Mapper Pro ArcGIS and QGIS softwares. The participants were also given hands-on experience of total end to end work flow starting from UAV operations, mission planning, data processing and data analysis.

Launching of the Tripura Banadhikar App by Hon'ble Union Minister of Rural Development & Panchayati Raj,

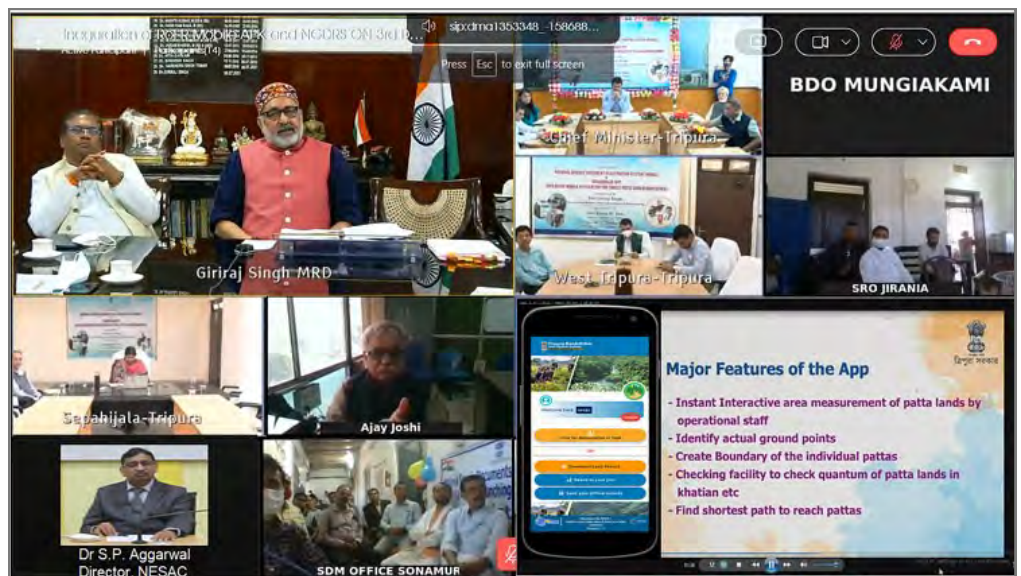
NESAC has successfully developed the Tripura Banadhikar App as per the request of Directorate of Land Records and Settlements, Government of Tripura



the development of DSS on TAD will be a unique experience for the NESAC Scientists to address animal disease outbreak and related disasters. IT & Geo-Informatics Group of NESAC also gave a live demonstration on the prototype DSS developed for one district of Mizoram on TAD.

NESAC conducted one week training on UAV technology

NESAC successfully conducted the one week training program on UAV technology and its applications in the field of Forestry during Nov 08-12, 2021 for the Forest Department officials from the Government of Assam. The course covered all the aspects of understanding the UAVs and



for demarcation of Forest Patta lands. The Government of Tripura was highly appreciated for initiating such an important activity with the support of NESAC towards demarcation of forest patta lands using Mobile App integrated with GAGAN/NaVIC technology. The app is also expected to help in monitoring the movements and changes within the forest land allocated to the beneficiaries. The Tripura Banadhikar App can also be used in offline mode (where there is no internet connectivity), it allows users to carry out the land survey with higher positional accuracy, real-time mapping with area measurement and map visualization on top of high resolution satellite imageries. The App was developed at NESAC using open source software and standards.

Shri Giriraj Singh, Hon'ble Union Minister of Rural Development & Panchayati Raj, Government of India, New Delhi has launched the 'Tripura Banadhikar App' in virtual mode on 3rd December, 2021 in presence of Shri Biplab Kumar Deb, Hon'ble Chief Minister, Government of Tripura and Shri Narendra Chandra Deb Barma, Hon'ble Minister, Revenue & Forest, Government of Tripura, Chief Secretary to the Government of Tripura, Secretary, Revenue Department, Government of Tripura and other dignitaries. The Chief Secretary, Government of Tripura appreciated the dedicated efforts of NESAC team for developing such an important tool for the Directorate of Land Records and Settlements, Government of Tripura. The Secretary, Revenue Department, Government of Tripura has acknowledged the contributions of NESAC in bringing out the 1st version of the Tripura Banadhikar App.

The launch programme was attended by Dr S. P. Aggarwal, Director, NESAC along with the IT & Geo-Informatics team of NESAC.

Celebration of Constitution Day at NESAC

NESAC celebrated Constitution Day of the Nation on 26th November, 2021. NESAC Staff watched live



telecast of a program arranged on this occasion from Central Hall of Parliament, which was led by Hon'ble President of India. Hon'ble Vice President, Hon'ble Prime Minister, Hon'ble Speaker of Lok Sabha, Ministers, MPs etc. also graced the program. Staff of NESAC led by Director, NESAC joined Hon'ble President as he read out the Preamble of The Constitution. Two new portals were also inaugurated to mark the occasion.

NESAC observed "Meghalaya Farmers' Day" jointly with CPGS-AS and RBFU

One day awareness-cum-workshop on the collaborative research project — "Integration and



Application of UAV for Crop Health Assessment and Monitoring with IIDS in Providing Evidence Based Agro-Advisory Services to Farmers of North-East India” funded by Digital India Corporation, MeitY, Government of India was jointly organized by NESAC, CPGS-AS; CAU (I), Umiam; and Ri-Bhoi Farmers' Union (RBFU), HQs Umsning in conjunction with “Meghalaya Farmers' Day” on the 4th December, 2021. More than 83 farmers have participated in the programme.

Dr. S. P. Aggarwal, Director, NESAC presided the function as Chief Guest. He explained to the farmers how drone technology can be used to survey the agriculture crops, assess its health and thereafter issues evidence based agro-advisory services for increasing yield of the crops of the individual farmers. This way, drone applications could be used in precision agriculture for sustainable livelihoods among the farmers in the region.

Prof. P. Ranjit Sharma, Director of Extension Education, CAU, Imphal who joined virtually, had



shown his desire and commitment to pursue the evidence based agro-advisory services for land planning, crops stress management, digital market linkages of their farm produce, etc.

An exquisite drone survey and participatory mapping on the vestal agricultural land of the village was also executed by NESAC scientists Shri. Victor Saikhom and Puyam Subhas Singh along with Dr. Rajkumar Josmee Singh, Asstt. Prof., SSS, CPGS-AS, CAU(I), Umiam. The president of RBFU, Mr. Duruth Majaw, General Secretary of RBFU, Mr. Brightstarfield Khongwir and Headman Nongmawlong Village, Mr. Ecolas Wahlang have proactively supported and also shared their valuable advises to the farmers.

Awareness programme on sexual harassment of women at workplace

A one day awareness programme on Sexual harassment of women at workplace (Prevention, Prohibition and Redressal Act. 2013) was conducted at NESAC on 9th December 2021 to commemorate the 8th anniversary of notification of the Act. Dr. S. P. Aggarwal, Director, NESAC made the inaugural speech stating the importance of the said Act and Dr. Umeshwari Dkhar, from Shillong Law College gave an invited talk on Prevention of Sexual Harassment



(POSH) Act.

The programme was attended (offline as well as online) by all the employees and staff of NESAC including temporary and outsourced staff and personnel of the CISF Unit. There were close interaction sessions with the subject experts in local language (Khasi) and English, separately for men and women, for better understanding of the provisions contained in the said Act. for safeguarding women in workplace. Dr. Pebam Rocky, Scientist/Engineer 'SE' and member, Internal Complaint Committee (ICC), made a brief remark about the activities of the ICC, and findings of the survey report on awareness level of the Act among the staff of NESAC. Shri. Subakordor Syiemlieh, Administrative Officer i/c proposed the vote of thanks and concluded the program.

Space Exhibition organized at Army Public School (APS), Umroi

The 'Space on Wheels' Exhibition bus was taken to the Army Public School (APS), Umroi and demonstrated various exhibits on space science and technology to the students, and the families residing in Umroi cantonment on 10th December, 2021 as a part of

Outreach Initiative of NESAC. The bus was accompanied by two scientists and two research scholars from NESAC. The event was attended by around 80 students from APS and many family



members from the army cantonment. The students of APS were very enthusiastic and interacted with the scientists and scholars of NESAC and provided very good feedback on the exhibition.

NESAC participates in Brain Storming Conclave organized by NECTAR

NESAC, participated in “Brain Storming Conclave on Atmanirbhar North East through S & T Interventions” organized by North East Centre for Technology Application & Reach (NECTAR) at Cotton University, Guwahati, during December 21-22, 2021. A team consisting of four scientists from NESAC exhibited activities and achievements of the Center. The exhibition attracted many students and academicians from different scientific institutes and organisations. The scientists interacted with the students and other visitors and explained them about the different projects and activities carried out at the Center.

NESAC conducted 2nd training course jointly with ASSTC, Guwahati

The 2nd training program on Earth observation & applications: fundamentals,

recent trends in technological advancement and services was conducted jointly during December 13-24, 2021. The initial four days of the training courses were conducted at ASSTC and the participants visited NESAC for carrying out remaining part of the course along with hands-on training & mini project implementation. Sri Avinash Joshi, IAS, Principal Secretary to the Govt. of Assam, Revenue and Disaster Management Department inaugurated the program. Dr S. P. Aggarwal, Director, NESAC; Sri P L N Raju, Director, ASSAC & Special Secretary, Science & Technology were present at the inaugural program of



the course. The valedictory program of the course was held at NESAC outreach academic block conference hall. The program was attended by all the participants including the senior faculty members and project mentors of NESAC. Sri Amitabh Rajkhowa, Secretary, Revenue and Disaster Management Department, Government of Assam graced the occasion as Chief Guest. Sri Pankaj Chakravarty, ACS, Principal, ASSTC addressed the program as Guest of Honor.



Introducing new colleagues at NESAC



Shri Kumar Anand

Shri Kumar Anand has assumed the charge of the Administrative Officer of NESAC on 13th December 2021. He is on deputation from NRSC Hyderabad.

Prior to joining NESAC, he was working in the capacity of a Senior Assistant at NRSC, Hyderabad since 2011



Md Abu Sahin

Md. Abu Sahin has joined NESAC on December 2021 as a scientific assistant. He has a Bachelor degree from University of Calcutta with Physics as his honors subject and completed his Master's in Physics from Presidency University, Kolkata in 2019.



Ms Phibakor Annielia Dkhar

Ms Phibakor Annielia Dkhar joined NESAC as an Assistant in the Administrative section on November 2021. She has a Masters degree in Zoology from North Eastern Hill University. She is currently associated with the Purchase section.



Shri Bipin Kumar Ray

Shri Bipin Ray joined NESAC on November 2021 as an assistant in the Administrative section. He is currently associated with the Accounts section

Team Reflections Welcomes and Congratulates all new colleagues!!

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