

Reflections

TRIANNUAL NEWSLETTER



Shri A S Kiran Kumar, Secretary, Dept. of Space, Govt. of India & Chairman, ISRO/NESAC GC inaugurating the NESAC Guest House

From the Director's Desk



North Eastern Space Applications Centre (NESAC) has made very significant progress in taking the benefits of Space Science and Technology to the development support activities for different key areas like infrastructure planning, natural resources management, disaster management support, etc. in NE region of India. The centre is giving equal focus in outreach and capacity building activities as well, to create trained human resource in geo-information science. Short courses are regularly conducted at NESAC covering various themes in addition to encouraging students from both science and engineering background to take up projects at the centre. More than 1000 students visit NESAC every year to get familiarized with the space technology and the activities of the centre.

The world space week was celebrated at NESAC for the first time during 4-10 October, 2017 with great enthusiasm and active participation from most of the NE states of India with support from the State Remote Sensing Centers of respective states and coordination from the National Remote Sensing Center, Hyderabad. It is a matter of proud that students from this region could bag three awards in drawing competition and one award in quiz competition at national level competitions having space as theme. This shows the growing awareness and popularity about the space science and technology in this part of India.

NESAC is committed to take this mission of outreach and capacity building initiatives forward in the months to come.

.....continued to page 5

IN THIS ISSUE

o World Space Week 2017 celebrated at NESAC	2	o Workshop on effective use of Geospatial Technology in Agriculture and allied sectors in NER	10
o ISRO-ONERA-CNES joint Ka-band radio wave propagation experiment at NESAC	4	o Inauguration of NESAC guest house and foundation stone laying for CISF barrack	11
o Thunderstorm nowcasting services for NER of India	6	o News and Events	12
o Assessment & management of area under Mulberry in major sericultural districts of West Bengal	8	o Upcoming Seminar at NESAC	16

World Space Week 2017 celebrated at NESAC

Arup Borgohain & H Suchitra Devi

World Space Week (WSW) is an international annual celebration of the achievements of space science and technology and their contributions for the betterment of humankind, observed during 4-10 October every year through World Space Week Association undertaken by United Nations. It focuses to strengthen the link between space

WSW-2017 was celebrated by Indian Space Research Organization (ISRO) and Department of Space across the country at various Centers of ISRO during October 4-10, 2017. The North Eastern Space Applications Centre (NESAC) in collaboration with National Remote Sensing Centre (NRSC), Hyderabad also celebrated the



Students from NE states for the final round of quiz and drawing competition at NESAC

technology and society through public outreach and public education. The commencing and concluding dates of world space week recalls two important dates in space history i.e. on October 4, 1957, journey to space started with the launch of the first human-made Earth satellite, Sputnik 1 and on October 10, 1967 the Outer Space Treaty was signed on principles governing the activities of states in the exploration and peaceful uses of outer space, including Moon and other celestial bodies. The theme of WSW-2017 was “Exploring New Worlds in Space”.

WSW-2017 with active participation of State Remote Sensing Applications Centre (SRSAC) of north eastern states. On this occasion, NESAC and SRSAC arranged space exhibitions, popular talks, space quiz competition, and painting competition for all the north eastern states. The quiz competition (on the subject of space history, space technology development, space applications, etc) was conducted for the students of 9th and 10th standard for each state with the help of SRSAC of that state. The winning team from each state was selected for national level quiz

World Space Week 2017 celebrated at NESAC

competition. Out of seven winning teams from north eastern states, three teams participated at the national level quiz competition organized at NRSC through video conferencing from NESAC. The topic of the painting competition was “Exploring the new worlds in Space” and three best painting from each state were sent to NRSC for national competition.



The students visiting different facilities at NESAC

About 500 students from 59 schools participated in the events like space exhibitions, popular talks, space quiz competition and painting competition across the NE states. The participants from the NE



The final round of quiz competition at NESAC

region performed very well at the national level competition and could win three prizes in painting completion and one prize in the quiz competition.

Shri Ruopfuzhazo from North Field School, Nagaland won the first prize in painting



The students participating in drawing competition

competition while Shri Telen Khaidem from DAV Public School, Sangakpham, Manipur won the second prize and Shri Lukram Amo from Manipur Public School, Wangkhei, Thambalkhong, Manipur won the consolation prize in painting competition. The team from Maharishi Vidya Mandir, Silpukhuri, Guwahati comprising Shri Madhurnil Das, Shri Rajdeep Dey and Shri Sarthak Nayak won the third prize in the quiz competition.



The painting that won the first prize at national level competition

ISRO-ONERA-CNES joint Ka-band radio wave propagation experiment at NESAC

Anjan Debnath & Ramani K. Das

Applicability of higher frequency microwave radio signals for Earth-Satellite communication link, especially for broadcasting of HD video and audio has been an area of interest during last few decades. With the advancement of Very Large Scale Integration (VLSI), Digital Signal Processing (DSP), Digital Coding, etc., system level design of ground stations has

than lower frequency signals by rain and other climatic factors. The comparability of the signal wavelength with the size of hydrometeors, coupled with the molecular structure of various gases of the atmosphere lead to absorption and scattering of these signals. To have an idea of how the Ka-band signal (26-40 GHz frequency) based satellite communication would perform



Two beacon receiver, parabolic antennas and receiver processor (20.2 GHz and 30.5 GHz), and 7-channel Ka-band humidity profiler radiometer installed at NESAC.

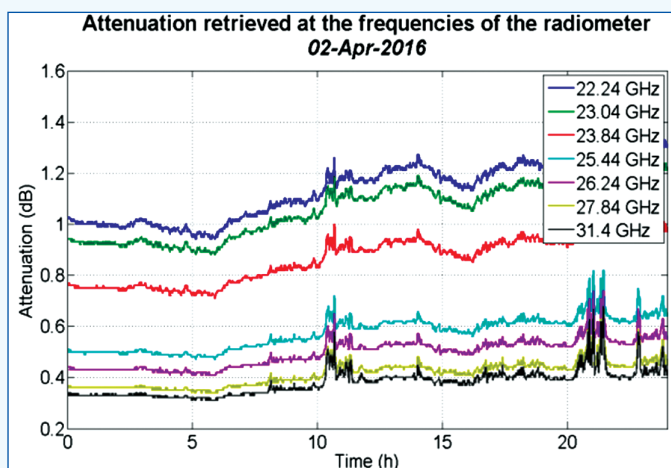
become a reality. The only remaining question in front of researchers and engineers of satellite communication technology is, knowing the propagation characteristic of higher frequency signals; especially the nature of their interaction with natural climatic factors like hydrometeors (rain, hail, ice, etc.). It is known that generally higher frequency signals are affected more

in high rainfall regions like that of tropics, CNES (Centre National d'Etudes Spatiales, the French government space agency), ONERA (Office National d'Etudes et de Recherches Aérospatiales, is the French national aerospace research centre) and ISRO (Indian Space Research Organisation) has jointly collaborated to do a Ka-band propagation experiment in tropical regions of India. Beacon signals of 20.2 GHz and 30.5 GHz transmitted from GSAT-14 satellite are received at ground stations at various parts of India. The Ka-band experiment facility at NESAC is a ground station with a set up for measuring the attenuation of the above mentioned signals due to rain. The equipments include two high gain parabolic receiving antennas receiving the beacon signals at 20.2 GHz and 30.5 GHz, a



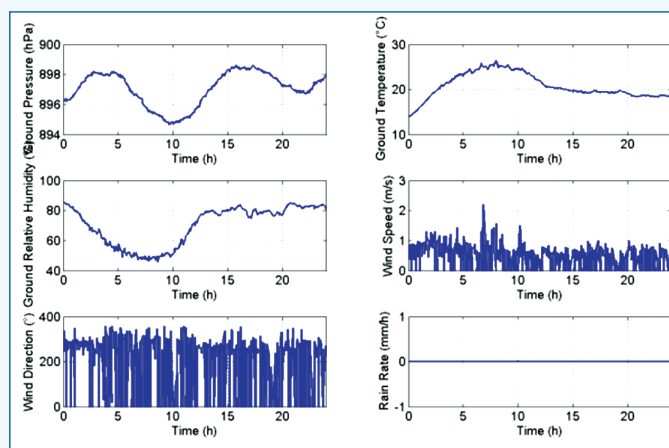
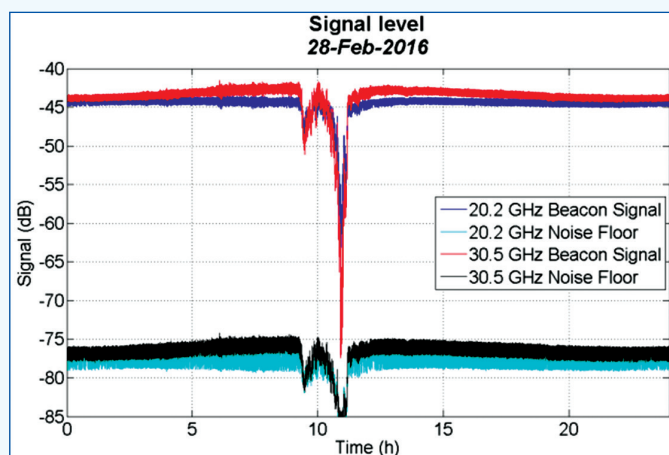
Meeting with scientists from ONERA, France at NESAC during their installation visit

ISRO-ONERA-CNES joint Ka-band radio wave propagation experiment at NESAC



tipping bucket rain gauge and a laser precipitation monitor. To get atmospheric humidity profile for validating satellite data, a Humidity Profiling Radiometer is also installed.

The data collected by the receivers, rain gauge and humidity profiler are being analysed to find the Ka-band signal attenuation by the rainfall and generate the signal attenuation statistics at Umiam since February, 2016. Various parameters like rain drop size distribution, cumulative rain, instantaneous rain rate, etc. can be deduced using the data collected by the equipments. Ultimately, the different rain rates are to be correlated to the attenuation values observed at 20.2 GHz



Various meteorological parameters derived from the radiometer

and 30.5 GHz. Some of the analysis and results generated till now are shown above.

.....continued from page 1

An entirely new academic facility has been set up at NESAC with adequate number of hostel facility separately for male and female. State of the art Remote Sensing & GIS computer facility and digital and smart class rooms shall be put in place. Formal academic courses at certificate level, PG diploma level and even at M. Sc. / M. Tech. level are expected to start from the academic session of 2018 with courses affiliated to the North Eastern Hill University and under the guidance of Indian Institute of Remote Sensing, Dehradun. The courses will be designed with module based curriculum having options to enter and exit the course at different modules leading to different stages of certificate / diploma / degree. This will open up new opportunities for the students and professionals of this region to take up such courses without moving out of this region and with minimum financial resources. I invite dear students, officials from various state and central government departments, NGOs, professionals from industries, etc. to avail this facility and enroll for the courses offered by NESAC. In addition, we are also planning to establish studio facility for e-learning content development and expand the outreach activity so as to enable reaching the unreached in skill development and capacity building.

Many activities have been lined up for 2018 such as assessment of crop acreage and monitoring on regular basis, extending flood early warning services to remaining states of NER, lighting research and operational early warning, and providing dash board based and online geospatial services for decision makers and user departments, etc.

I take this opportunity to invite all concerned to attend ISRS-ISG regional seminar on “Advances in Remote Sensing & GIS Applications” to be organizing during May 10-11, 2018 at NESAC, Umiam in collaboration with NEHU.

Thunderstorm nowcasting services for NE region of India

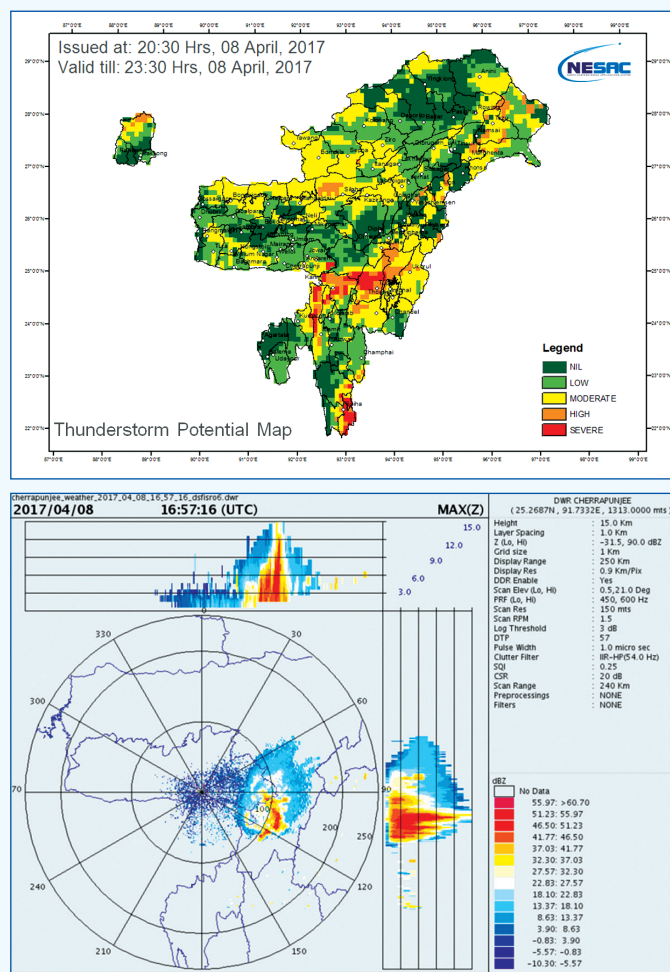
Avishek Chhari, Shyam S Kundu, Pragya Viswakarma, Rekha B Gogoi

Thunderstorm is a form of weather characterized by the presence of lightning and thunder and is usually accompanied by strong winds, heavy rain, and sometimes hail. The north eastern region (NER) of India in general and the Brahmaputra valley in particular is one of the most thunderstorm prone areas in the world. More than 50 severe thunderstorms affect the region during the pre-monsoon months (March-April-May) every year causing severe damage to life and property. As per the World Meteorological Organization estimates, hail alone causes damage worth over \$200 million annually to agriculture worldwide. The National Crime Record Bureau of India registers death of more than 2000 people every year caused by lightning associated with thunderstorm, which is much higher than the deaths associated with any other natural calamities. According to the National Oceanic and Atmospheric Administration (NOAA), approximately 1800 thunderstorms occur at any given time in the planet earth, resulting in about 45,000 thunderstorms each day in the world. Although thunderstorms occur in different part of the world, their intensity and frequency are much higher in tropics and sub-tropics area like the NER of India.

Thunderstorms are generally caused either by convective air lift, resulting from instability in the atmosphere or mechanical air lift which could result from frontal or orographical lift. Evolution of thunderstorms can be categorized into three stages, namely, cumulus (only updraft), mature (both updraft and downdraft) and dissipating (only downdraft). A single cell thunderstorm could have a life span of 30 to 60 min, however a multi cell thunderstorms can last up to several hours due to its organized intense convection and could very well travel over a few hundreds of kilometers. With the advent of space

technology and numerical modeling, there have been significant improvements in predicting these thunderstorms with reasonable accuracy.

North Eastern Space Applications Centre (NESAC) has a vibrant disaster management support program which is executed through



The thunderstorm potential map for April 8, 2018 (top) and the thunderstorm actually happening over the region as seen in a DWR image.

the North Eastern Regional node for Disaster Risk Reduction (NER-DRR). The Space and Atmospheric Sciences group in NESAC took the initiative to provide thunderstorm nowcasting services for entire north eastern region of India during pre-monsoon season. The activity was initiated with pilot experiments during 2014 covering four states (Meghalaya, Tripura, Mizoram and western part of Assam),

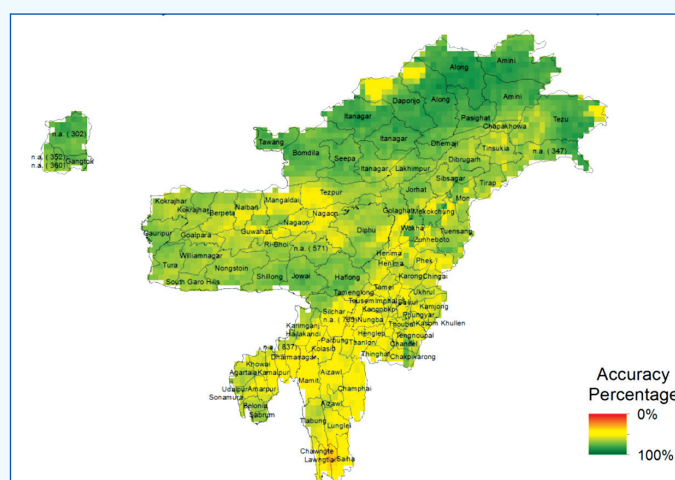
Thunderstorm nowcasting services for NE region of India

which was extended to all 8 states of NER during 2017. This nowcast was shared with all concerned officials of all the NE states directly through e-mail. Additionally, the nowcast was uploaded to the NER-DRR website. (<http://www.nerdr.gov.in>). During the pilot phase, only the thunderstorm nowcasting bulletin was issued which was prepared with the help of weather satellite data and Doppler Weather Radar (DWR) products. Additionally, since 2017, thunderstorm potential maps are being generated for better representation of the spatial distribution of thunderstorm potential areas which is entirely based on atmospheric instability indices and moisture in air, derived from numerical weather prediction models like Weather Research and Forecasting (WRF) model, INSAT 3D/3DR satellite data, and DWR data and products.

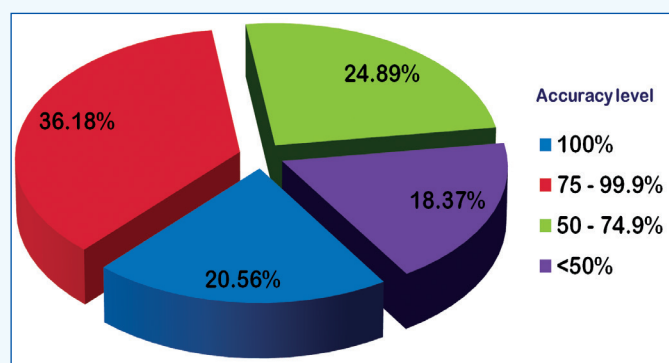
Thunderstorm nowcasting bulletin was issued three times (10 hours, 14 hours and 18 hours) in a day, each with a latency time of 4 hours, providing the information of rainfall and wind speed along with the thunderstorm warning. Warnings in this bulletin are categorized into 5 categories (Nil, Low, Moderate, High, and Severe) based on their thunderstorm potential, which is decided by looking into the real time weather condition using Satellites. A network of 193 Automatic Weather Stations (AWS) scattered across NE region provides ground based information of wind speed, wind direction temperature and humidity, which help us to monitor the actual situation in the field. Additionally, the data from Cherrapunjee dual polarimetric DWR was extensively used for preparation of the bulletins.

The thunderstorm potential map was prepared with forecasted products obtained by running the WRF model which shows the probable location where thunderstorm activities are likely to occur. The atmospheric instability indices

like CAPE (Convective Available Potential Energy), CINE (Convective Inhibition Energy), K-Index and Lifted Index were used along with relative humidity to prepare the potential maps. Thunderstorm potential indicated by these map also have 5 categories (Nil, Low, Moderate, High, and Severe) based on the value of the indices mentioned above. Daily three maps (14:30, 17:30 & 20:30 hrs) covering entire NER, with validation upto next three hours were generated.



Accuracy assessment of thunderstorm potential map



Accuracy assessment for the thunderstorm bulletin

The thunderstorm accuracy are assessed using satellite data and ground based report from Indian Meteorological Department (IMD) and other media. The bulletin accuracy was better than 75% for almost 57% of the forecast while the accuracy was below 50% for almost 18% of the forecast.

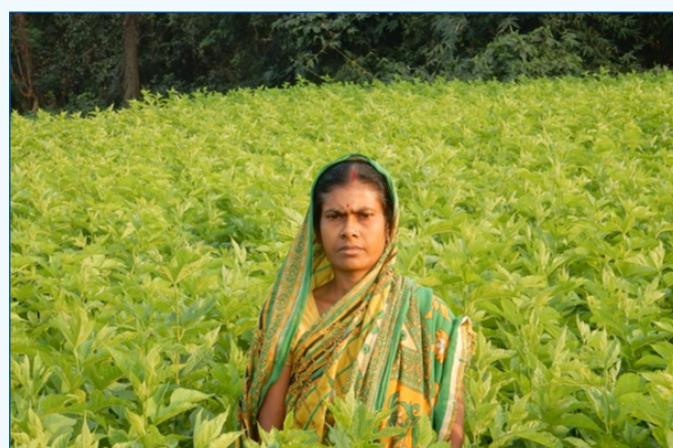
Assessment and management of area under Mulberry in major sericultural districts of West Bengal using geospatial techniques.

B. K. Handique, M. Chaudhari, J. Goswami, P. T. Das, C. Goswami, A. Q. Khan, and P. S. Singh

Sericulture has traditionally been practiced in West Bengal that makes significant contribution to the rural economy. Presently, Malda, Murshidabad, Birbhum, and Nadia districts are the major contributors of mulberry cocoons and silk in West Bengal. Traditional sericulture farmers uproot and replenish old plantation since the economic life of mulberry extends up to 20 years. Many a time, farmers do uproot the existing plantation of less yielding varieties and adopt new high yielding variety. Sometimes new farmers take up sericulture activity which might not have been reported by the concerned department. In such situations, timely and accurate estimation of acreage under mulberry plays a critical role for the planners, decision makers and other stakeholders.

Traditional surveys take a long period of time for acreage estimation with higher employment of human and financial resources. On the other hand, geospatial technology, comprising of Remote Sensing (RS), Geographic Information System (GIS), and Global Positioning System (GPS) has emerged as an effective tool for acreage and production estimation of crops. There is also scope of using hyper-spectral data in estimation of leaf moisture and leaf protein. Integration of all the information along with other required data for farm level planning using open source based platform will greatly support the sericulture stakeholders. Considering these, the project was formulated with the objectives - i) To estimate the current spatial extent of mulberry cultivation in selected blocks of 4 major mulberry growing districts of West Bengal using RS, GIS, and GPS, ii) Make an attempt to estimate leaf protein and moisture contents using hyper-spectral data with limited laboratory based analysis and iii) To develop block specific Mulberry Information System (MIS) which can be integrated with SILKS portal for dynamic visualization.

Four major sericulture practicing districts in West Bengal mentioned above were selected



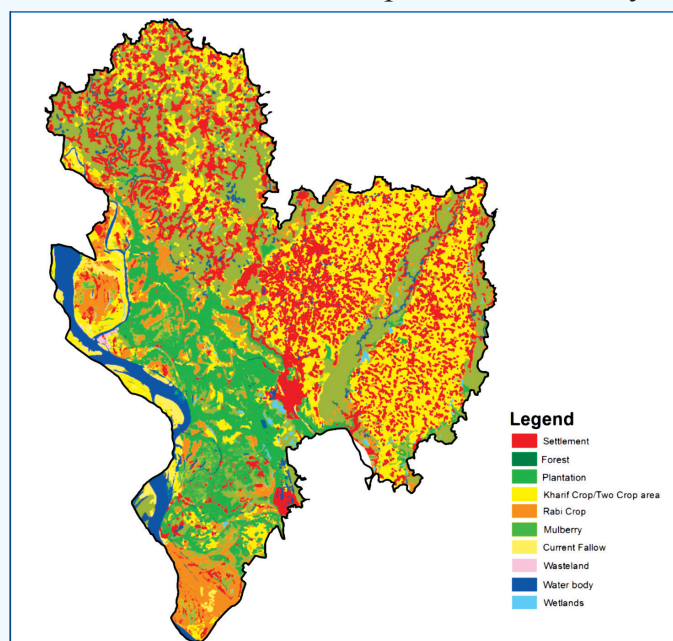
Mulberry plantation as seen in satellite image (area marked by yellow box on the top image) and the same area as seen during field visit.

for the exercise. Malda and Murshidabad are the traditional sericulture practicing districts whereas in Birbhum and Nadia, mulberry were introduced with the government efforts.

The methodology involves an integrated approach of combining RS, GIS, and GPS-based ground survey. Multi temporal LISS-III/LISS-IV images of IRS P6 (Resourcesat-2) satellite have been used in this study. RISAT-1 SAR imagery was also acquired to understand the mulberry cropping pattern during the monsoon period as cloud free optical data was not available. Under this approach, the area under mulberry is obtained by supervised classification method. As the patches of mulberry were too small at many places and mixed with other crops, an intensive

Assessment and management of area under Mulberry in major sericultural districts of West Bengal using geospatial techniques.

field work was also undertaken to minimize the classification errors and improve the accuracy.



Mulberry plantations with other land use classes in Malda district

Estimation of area under mulberry in Malda district reveals that Kaliachak-2 block have the maximum acreage under mulberry among total 15 blocks whereas, Habibpur block is found to have the least. A total of 7512.5 ha of area under mulberry was estimated for the entire district. In Birbhum district, a total of 1918.8 ha of area under mulberry was estimated for the entire district, while a total of 2256.6 ha area under mulberry was estimated in the district of Murshidabad followed by a total of 559.9 ha of area under mulberry in Nadia district.

Hyper-spectral data could be a valid option for detection of varietal performance, water content and other biochemical parameter like leaf protein of the crop. Two bands, 1901 nm and 1945 nm were found to be sensitive to protein and moisture content of mulberry leaf respectively. Apart from specific band, indices like NDVI, MSI, NPQ, MCARI₁₅₁₀ were able to discriminate mulberry leaf moisture and NDVI, MCARI, NDWI, MCARI₁₅₁₀, NRI₁₅₁₀ were able

to discriminate leaf protein. It was observed that indices derived using information from band 1510 nm are good to discriminate leaf protein. Study also demonstrated that the red edge positioning information performed best for separating variety with different leaf moisture and protein.

MIS is an information system for which different spatial layers related to mulberry sericulture are developed by using GPS and field survey in ArcGIS environment. One point layer is prepared in ArcMap platform by using latitude and longitude information collected with GPS. Each point in the layer represents location of mulberry plantation fields. Farmer's names are entered in the attribute table of the point layer. The field photographs are also linked to the point layer. Information related to variety of mulberry plants grown, different schemes of government, marketing places of cocoons, earning from selling of cocoon, etc. are collected from farmers. These information are linked to the point layer and developed four layers namely variety, govt. scheme, marketing, and GT layer. All these layers were used to develop MIS portal for Chandrghat, Barbakpur, Tailpara, and Khanpara villages representing Murshidabad, Nadia, Birbhum, and Malda districts respectively. High resolution satellite data viz., GF2 and Cartosat-1 were used as background for displaying different information at farmer's level.

From the study it is observed that high resolution satellite image and GPS is very useful in generating high resolution spatial information at village level which are put in a single window web portal. The MIS will help both farmers and planners in collecting different information about those villages which are practicing mulberry sericulture.

This article is prepared with inputs from a NESAC collaborative project with CSR & TI, Berhampore and contributions of the project team from CSR & TI are duly acknowledged.

Workshop on effective use of Geospatial Technology in Agriculture and allied sectors in North Eastern Region

Bijoy K. Handique

Two days Workshop on “Effective use of Geospatial Technology in Agriculture and Allied Sectors in North Eastern Region” was organized at North Eastern Space Applications Centre (NESAC) during November 21-22, 2017. Dr. P. V. N. Rao, Dy Director, RSAA, National Remote Sensing Centre (NRSC), Hyderabad graced the inaugural session as the Chief Guest and Dr. Narendra Prakash, Director, ICAR Research Complex (RC) for North Eastern Hill (NEH) Region, Umiam, Meghalaya was the Guest of Honour. Around 60 delegates from NRSC, Space Applications Centre, Mahanalobis National Crop Forecast Centre, ICAR, Assam Agricultural University, College of Veterinary Sciences, College of Post Graduate Studies, National Horticulture Board, Rubber Board, Spices Board, Coir Board, State Remote Sensing Application Centres (SRSAC) of NE Region, State Department of Agriculture & other allied sectors of NE Region, Meghalaya Cooperative



A delegate asking questions during interaction session are required in agriculture in NEH Region. Dr. P. V. N. Rao reiterated the need for organizing a workshop on this subject to sensitize the user departments on scope of space technology applications in agriculture and allied sectors. He also highlighted the areas where space technology is widely used in agriculture in the country.

There were four technical sessions viz. space technology applications in agriculture and allied sectors in NER, space technology: challenges & requirements for hill agriculture, challenges of space technology applications in agriculture and allied industries in NER, and emerging trends in space technology applications in agriculture & allied sectors in NER.

All the deliberations were of immense help to take stock of the space technology applications in agriculture and allied sectors in NER and this will help to frame out the future requirements of space technology applications, possible operational services and research. The concluding session of the workshop was graced by Shri D. L. Wangkhar, IES, Director, Economics & Statistics, Govt. of Meghalaya as Chief Guest. It was decided that NESAC will be coordinating with all the stakeholders in agriculture and allied sectors in NE region towards preparing a comprehensive work plan for the priority areas identified during the workshop.



The inaugural session in progress

Apex Bank Ltd, etc. attended the workshop and made presentations.

Shri P. L. N. Raju, Director, NESAC during his opening remarks highlighted the objectives of the workshop and the role played by NESAC in improving the agriculture and allied sector in NER of India. Dr Narendra Prakash highlighted the areas where space technology interventions

Inauguration of NESAC guest house and foundation stone laying for CISF barrack

Shri A. S. Kiran Kumar, Secretary, Dept. of Space and Chairman, NESAC GC/ISRO inaugurated the newly constructed NESAC guest house on 5th October, 2017. The new guest house is situated inside the residential complex of NESAC at Umiam. The guest house has 3 deluxe rooms, 10 standard double bed rooms, 2 nos of 3 bedded dormitory rooms in addition to 2 nos of dining halls, a conference hall, kitchen, caretaker rooms, etc.



Chairman, NESAC GC inaugurating the NESAC guest house

Chairman, NESAC GC also laid the foundation stone for construction of residential quarters, barrack & quarter guard for CISF at NESAC, Umiam on the same day. The CISF barrack shall have accommodation for 24 constables, 4 sub officers, a canteen and other essential facilities. The quarter guard is constructed for armory room, ammunition room, weapons store, guard room, & office of quarter master with all allied facilities. The CISF residential quarters includes



Chairman, NESAC GC laying the foundation stone for CISF quarters

19 nos of B type, 2 nos of C type, and 1 no of D type family quarters.

Chairman, ISRO also reviewed the progress of construction work for the upcoming outreach facility and addressed NESAC staff on this occasion.



Chairman, NESAC GC reviewing the progress of construction of NESAC outreach facility

Awards and Achievements



Smt Rekha B Gogoi, Sci/Engr – SE from the Space and Atmospheric Science area in NESAC was selected for the ISRO **Young Scientist Merit Award** for the year 2016. The young Scientist Merit Awards are conferred on annual basis, to the individual young scientists of ISRO/DoS, who exhibit outstanding initiatives with innovative approach and service delivery.

Congratulation Smt Rekha B Gogoi!

13th meeting of NESAC GC conducted

The 13th meeting of NESAC Governing Council (GC) was held at NESAC on 5th October, 2017. The meeting was chaired by Shri A S Kiran Kumar, Secretary, DOS and Chairman, NESAC GC and ISRO. Shri C H Kharshiing, Adviser, Planning, NEC; Dr. Y V N Krishnamurthy, Director, NRSC; Shri B D R Tiwari, Secretary, S&T, Govt. of Meghalaya; Dr P G Diwakar, Scientific Secretary, ISRO; Prof. Gautam Biswas, Director, IIT-Guwahati; Shri Shantanu Bhatedekar, Director, EOS, ISRO; and several members from state and central government departments were also present during the meeting.

Chairman, NESAC GC extended a warm welcome to all members of GC and appreciated the efforts made by NESAC in overall developmental process in the NE region of India. Shri P L N Raju,



Chairman, ISRO interacting with Meghalaya Edusat Hub

transmission. Several queries were raised by Chairman and members of the GC, which were answered by director and scientists of NESAC. The council in-principle approved filling up of all vacant posts. Five additional members were suggested to be included in NESAC GC after completion of due process. The meeting ended with thanks to the Chair and other members.

Chairman and members of NESAC GC also visited different facilities and interacted with the scientists.

Independence Day Celebration at NESAC



71st Independence Day of India was celebrated at NESAC on 15th August, 2017 through a colorful program. Apart from hoisting of National Flag by Director, NESAC in presence of staff of NESAC and NESAC CISF Unit, the program had events for elders as well as for children who



13th NESAC GC meeting in progress

Director, NESAC and member secretary, NESAC GC briefed about NESAC activities with emphasis on new activities related to UAV applications and capacity building initiatives to the Chairman and the members of GC. Chairman reviewed several projects thoroughly and gave many constructive suggestions to improve the effectiveness of the projects. He expressed satisfaction over the operationalisation of the Doppler Weather Radar installed at Cherrapunjee and advised NESAC to ensure its uninterrupted operation and data

participated merrily. Prizes were distributed to winners of various events.

Inauguration of SBI ATM at NESAC



State Bank of India (SBI), Umiam branch installed an ATM at the entrance of NESAC office campus at Umiam. The ATM has been so located that even the outsiders can also access the ATM without entering to NESAC. NESAC shared its land without any cost for installation of the ATM so that not only the NESAC office staff but also the local people get the benefit of accessing the ATM. The ATM was inaugurated on 29th August, 2017 by Director, NESAC.

Celebration of Hindi Fortnight at NESAC



Hindi Fortnight was celebrated at NESAC from 31st August to 14th September, 2017. NESAC staff took part in various events organized throughout the two weeks to encourage the use of Hindi in official work. Various interactive events including orientation classes for teaching Hindi, recitation, debate competitions in Hindi were organized. Prizes were given away to winners of

various competitive events, both at group level as well as individual level.

National RS day celebrated at NESAC

The National Remote Sensing (RS) Day, 2017 was celebrated at NESAC on 11th August, 2017 in collaboration with Indian Society of Remote Sensing – Shillong Chapter. The programme was attended by more than 175 participants from different organisations and institutions from Meghalaya in addition to the NESAC staff.



Shri Tapan Mishra, Director, SAC delivering a talk through video conferencing

The programme started with welcome address by Dr. K K Sarma, Secretary, ISRS-Shillong Chapter. This was followed by the speech from Shri S Hamilton, Chairman, ISRS Shillong Chapter and address by Shri P L N Raju, Vice-President, ISRS. Subsequently, program on the “National Workshop on popularization of Remote Sensing based Maps and Geospatial Information” from ISRS Dehradun was linked and displayed where different eminent persons of ISRO like Chairman, ISRO; Director, SAC; Director, NRSC; Scientific Secretary, ISRO; Director, NESAC delivered talks on different topics.

17th Foundation Day of NESAC celebrated

The 17th foundation day of the North Eastern Space Applications Centre was celebrated on 5th September, 2017 through a day long program.

The inaugural session of the program started with welcome address by Director, NESAC. Dr. P S Roy, former Director, IIRS and NESAC graced the function as the Chief Guest, while Prof B N Goswami, former Director, IITM was the Guest of Honor during the program. Prof A K Mishra, Director, ASTEC was the special invitee. The function was attended by many invitees and NESAC staff and family members.

Four different popular talks were arranged, which started with the foundation day talk by Dr. P S Roy on “Forest and bio-resources of North East: Geospatial perspective for sustainability”, followed by an invited talk by Dr. Subhash Ashutosh, PCCF, Govt. of Meghalaya on “Adaptation to Climate Change in Meghalaya”. Dr. Khargeswar Bhuyan, former Principal, Nowgong College delivered a popular talk on “Superstitions, ill-reforms and scientific



temperament” followed by an invited talk by Prof. B N Goswami, on “How and how much does El Nino control the Indian Summer Monsoon?”

The technical session was followed by cultural program and prize distribution for the sports meet that was arranged at NESAC for its staff.

Students from two schools of Assam visited NESAC

Around 300 students and teachers from Assam Jatiya Vidyalaya, Guwahati and Little Flowers School, Digboi visited NESAC for a one day

education trip on 17th October, 2017. A glimpse of various activities of NESAC were showcased to the students including a demonstration of unmanned aerial vehicle, lecture by scientists of NESAC on space technology applications etc., and visit to various facilities of NESAC. The students were extremely thrilled to get an opportunity to witness different aspects of space science and technology.



Celebration of Vigilance Awareness Week at NESAC

Vigilance Awareness Week was celebrated at NESAC from 30th October to 04th November, 2017. Various programs like reading of vigilance resolution by the staff of NESAC, a special lecture on vigilance awareness at workplace by Mr. J V Raja Reddy, Controller, SDSC, SHAR, ISRO and a quiz competition on the theme of vigilance was organized for the staff of NESAC.



Students from Royal Global School, Guwahati visited NESAC

Around 100 students from various science streams of Royal Global School, accompanied by their teachers visited NESAC on 3rd November, 2017 on one day educational trip. They were given an idea of the various fields of activities of NESAC including Atmospheric Science, Remote Sensing and Satellite Communication by scientists of NESAC. They were taken for a visit to various facilities of NESAC as well.



One day state level workshop on NEDRP organized for Manipur

A one day state level workshop on North Eastern District Resources Plan (NEDRP) for the state of Manipur was conducted jointly by NESAC and Manipur Remote Sensing Application Centre (MARSAC) on 29th Nov, 2017 at Imphal, Manipur. The workshop was inaugurated with keynote address by Dr N Randhir Singh, Director, MARSAC. The objective of the workshop was to demonstrate the usage of the NEDRP geoportal which was developed by NESAC to provide geospatial data, services and tools for preparation of DPR, Master Plan documents and other inputs essential for various district level developmental planning activities. More than 110 participants from various departments and district administration took part in the workshop.

2nd UAV training programme conducted

The second two weeks training course on “Unmanned Aerial Vehicle (UAV) Remote Sensing - Technological Advances & Applications” was conducted by NESAC during 06-17 Nov, 2017. The training course was participated by various students, research scholars, teachers, officials from various public/private sectors across the country. The course covered understanding of the UAVs and its components, flight planning for data acquisitions for various remote sensing applications, data processing techniques e.g. generation of orthomosaic, digital surface model, digital terrain model, contour maps, volumetric analysis, etc. for high-resolution UAV data using open source software like Pix4D mapper pro and Agisoft photoscan pro. The course had 14 hours of lectures and 27 hours of practical work.



Dr. Manzul K Hazarika from AIT, Bangkok visited NESAC

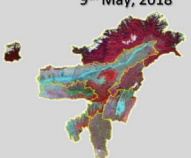
Dr. Manzul Kumar Hazarika from Geoinformatics Center, Asian Institute of Technology (AIT), Bangkok visited NESAC on 28th December, 2017. He delivered a lecture on “Disaster Risk Reduction – an initiatives under Sendai Framework” at Director’s Conference Hall. All scientist, RS, JRF and student trainees attended the lecture. He visited UAV facility of NESAC and appreciated activities of NESAC.

Upcoming Seminar at NESAC





**Seminar on
Advances in Remote Sensing &
GIS Applications**
**May 10 - 11, 2018
&
Pre-Seminar Tutorial
UAV Remote Sensing
9th May, 2018**



Organized jointly by
Indian Society of Remote Sensing (ISRS), Shillong Chapter
Indian Society of Geomatics (ISG), Shillong Chapter
Department of Geography, North-Eastern Hill University
&
North Eastern Space Applications Centre
Department of Space, Govt. of India

Hosted jointly by
North Eastern Space Applications Centre
Umiam, Meghalaya
&
Department of Geography, North-Eastern Hill University,
Shillong



ABOUT THE CONFERENCE

North Eastern Region (NER) of India due to its unique topographic, physiographic and diverse socio-economic characteristics has been a challenging region for developmental activities. Remote Sensing & GIS is rapidly advancing and the technology is put into use for many applications. As such large number of seminars are organized across India but not in this part of NER. The proposed seminar is planned to bring the professionals, researchers and academia, students and others there by expanding the scope of its use in different applications. This Seminar will focus on Optical, Microwave, LIDAR and Hyper spectral remote sensing including high resolution data processing with special emphasis on issues and challenges of North Eastern Region. The outcome of the seminar is expected to bring out recommendations/ resolutions that will help in expediting the developmental planning of the region. The focus areas proposed for the seminar are:

- *Applications of Remote Sensing & GIS in:*
 - *Forestry, Biodiversity, Ecology, Wildlife*
 - *Agriculture, Horticulture and allied areas*
 - *Geology, Hydrology, Urban etc.*
 - *Societal applications*
 - *Disaster Risk Reduction*
- *Advances in Microwave, LIDAR RS, HR data processing, Geospatial Modeling, Mobile apps, field data collection and monitoring*
- *UAV RS Applications*
- *Advances in Atmospheric Remote Sensing*

PRE-SEMINAR TUTORIAL

A one day pre-seminar tutorial on basics of UAV Remote Sensing will be organized on 9th May, 2018 for limited participants purely on first cum-first service basis. Pre-seminar tutorial will be held at Department of Geography, NEHU. For details, please visit www.nesac.gov.in.

INVITATION FOR EXHIBITION/DISPLAY

An exhibition of products/services from various manufactures / organizations will be held at Seminar venue. The exhibition envisaged to provide a forum for interaction between participants and service organizations. Interested participants can book multiple unit (each 3x3m space) @ Rs. 50,000/- per unit. For details, please visit www.nesac.gov.in.

CALL FOR PAPER

Original research papers, covering one or more of the Seminar topics are invited from the scientists, scholars, academicians, industry, private and public institutions. Extended abstracts of the topic, not exceeding 1000 words can be submitted online or through email to organizing secretary to isrs.shillong@gmail.com / sarmakk@gmail.com by 31st March, 2018 along with registration details. Full length manuscript of the paper is to be submitted online by 27th April, 2018 after receiving acceptance intimation of the abstract as per format of the JISRS. For registration & details please visit www.nesac.gov.in

REGISTRATION FEE

	Seminar	Tutorial	Both
For ISRS/ISG members	1000/-	750/-	1600/-
For Non ISRS/ISG members	1200/-	1000/-	2000/-
For students /senior citizens	750/-	500/-	1100/-
For spouse/accompany	750/-	500/-	1100/-
Spot registration for all	1500/-	1200/-	-

PAYMENT

Payments towards the registration fee/ accommodation and sponsorship are to be sent through demand draft drawn in favour of "ISRS Shillong Chapter", payable at Umiam/Shillong, Meghalaya along with duly filled in registration form. Payment can also be made online in A/C 37074734250 State Bank of India, Barapani Branch (IFSC SBIN0002010), Ri Bhoi, Meghalaya.

ACCOMMODATION

Limited Hostel accommodation for students will be made available from nearby institutions on actual rate. Guest House and Hotels for outstation participants can be arranged on advance payment of tariff along with registration fee if requested. For further information please visit NESAC website.

WHO CAN APPLY

State/Central Government officials, Academicians, Scientists, Research Scholars, Students, Industries, NGOs working in the field of RS & GIS related activities.

IMPORTANT DATE

Abstract Submission/Registration : 31 March, 2018

Paper acceptance intimation : 11 April, 2018

Submission of full paper : 27 April, 2018

Pre Seminar tutorial : 9th May, 2018

Seminar dates : 10-11, May, 2018

Welcome New Colleagues



Ms Sheeba S. L.
Sr Accounts Officer
(on deputation from VSSC)



Shri S. Tulasidhar
Accounts Officer
(on deputation from SDSC)



Ms Ritu Anilkumar
Sci/Engr –SC



Shri Sanjay Pandit
Sci/Engr –SC

Editorial Board

Shri Shyam S Kundu

Dr Pebam Rocky

Shri Anjan Debnath

Published by

North Eastern Space Applications Centre
Department of Space, Government of India
Umiam-793103, Shillong, Meghalaya

Ph: +91 364 2570141/2570140, Fax: +91 364 2570139

Web: www.nesac.gov.in

Designed and Printed at

Eastern Panorama Offset, Keating Road Shillong - 793001

