

Reflections

BIANNUAL NEWSLETTER

From the Director's Desk



I am very glad to share a significant milestone achieved by NESAC through successful certification for ISO 9001:2008. The Quality Management System (QMS) has been implemented at NESAC as per ISO 9001:2008 standards since 1 July, 2016. This will ensure continual improvement with greater focus on user satisfaction and quality of outputs. A series of internal auditing and external auditing have already made visible impact on improving quality and management practices across different sectors of activities within NESAC. We have also started the process to migrate to the updated standard for QMS, the ISO 9001:2015. This shows the commitment of the centre to meet the expectations of our users and serve the people of the region.

The NESAC residential campus has been made functional with full occupancy of its quarters. The guest house is also nearing completion and is expected to be operational by August end. Other infrastructural requirements like construction of quarters for CISF personnels, construction of CISF barracks, etc have been initiated. Four new Scientists, 14 Research Scientists, and 12 Junior Research Fellows joined NESAC during last six months. Efforts are also being made to complete the recruitment of all personnel as approved by NESAC Society. With adequate human resource and infrastructural support, NESAC will soon emerge as a major centre within our country.

The scientific activities of the centre have been running very successfully with several new projects initiated

.....continued to page 6

Tribute to a Legend

A versatile space scientist and technologist and one of the greatest Institution builders of global repute, Prof U R Rao, left for heavenly abode on 24 July, 2017. It was his vision and unstinted commitment that laid the foundation of India's successful space programme. He has enormously contributed in building self reliance in satellite technology, which has earned him the name of Father of Indian Satellite Programme.

Prof U R Rao paid a brief visit to NESAC during 2007 and addressed NESAC scientists. During his short speech, he fascinated all with his vision of future of space science and technology and its applications. Prof Rao will be remembered for working tirelessly till his last day in harnessing the benefits of space technology applications for national development, his innovative ideas and speedy actions. He will remain a role model for the young of this generation and many generations to come.

We all at NESAC pray for his soul to rest in peace.



IN THIS ISSUE

o NESAC achieved ISO 9001:2008 certification	2	o Workshop on Recalling the Great Shillong Earthquake of 12 June, 1897	8
o Weather observations using open source data	3	o NESAC Participated in joint Mock Drill on HADR	9
o CISF activities at North Eastern Space Applications Centre	5	o News and Events	10
o Workshop on Space Technology Inputs for DRR with special emphasis on early Warning, Preparedness & Mitigation	7	o Awards and Recognitions	15
		o Upcoming training programme at NESAC	16

NESAC achieved ISO 9001:2008 certification

Dr K K Sarma & Shri Shyam S Kundu

The Quality Management System (QMS) as per the ISO 9001:2008 standards has been implemented at North Eastern Space Applications Centre (NESAC). The centre was awarded the certificate on 5 April, 2017 by Indian Register Quality Systems (IRQS), Mumbai. The process to achieve the certificate was long and tedious. QMS 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. QMS will be progressively implemented for the other core activities of the centre.

NESAC Quality Policy

NESAC is committed to provide high quality, cost effective and time bound services using space sciences and technology for management of natural resources and disaster management support, ensuring continual improvement.

The quality management system has been implemented at NESAC with an objective to improve the overall user satisfaction through better planning and striving to meet user requirements, improve process integration while executing projects, improving evidence based decision making, better involvement of the employees of the centre, and create a culture of continual improvement within NESAC. ISO 9001:2008 certification shall improve the image of the centre and ensure that the organization remain committed for quality. While implementing the QMS, certain quality objectives have been identified and those are to be achieved within a stipulated time frame. This will form the basis of a long process of achieving

perfection through continual improvement.

Scope of the QMS at NESAC

Providing value added services for Natural Resource Management and Disaster Management Support using Space Technology

Several familiarization programs were organized to acquaint the concerned persons with the ISO 9001 standards and to develop roadmap for implementation of the standards. Two rounds of internal audit were conducted by the qualified internal auditors to set all core process and support processes as per the standard. The certification body also conducted two rounds of external audit and a thorough check of all documents before certifying NESAC.

The ISO 9001:2008 shall remain valid only till September, 2018. At NESAC, efforts to switch to the new QMS standard of ISO 9001:2015 have already been initiated. The process is expected to be completed before the next external audit.



Weather data is an indispensable part for many research and application projects/activities. Although an incredible volume of meteorological data is generated every hour at both national and global scale, many find it difficult to get them when

and also for research. The possible meteorological data sources are satellite observations, in situ measurements and forecasts from Numerical Weather Prediction (NWP) models. One can get the weather parameters viz. Precipitation, Temperature,

Table 1: Meteorological parameters and availability

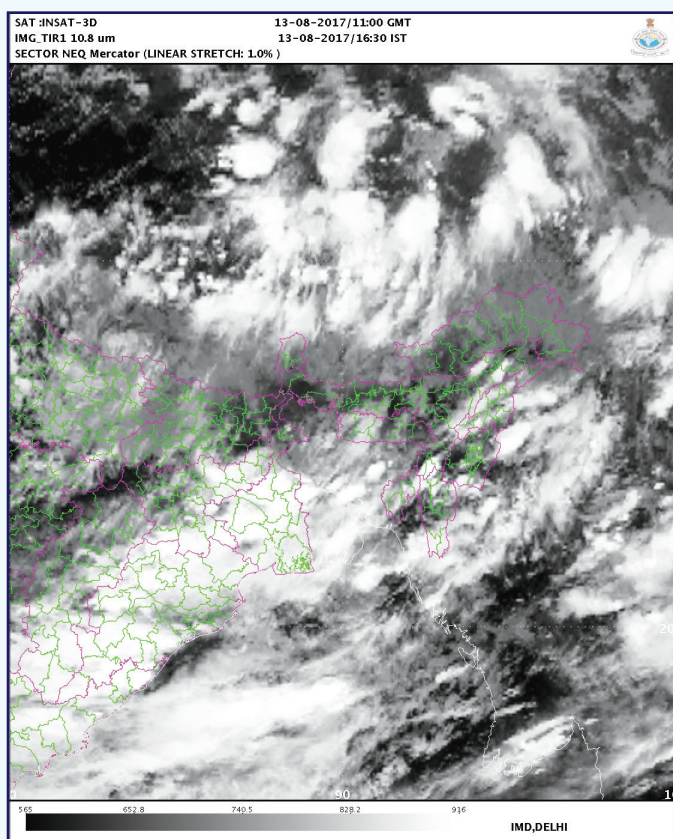
SN	Data/Products name	Source	Time resolution	Available
1	Rainfall, Pressure, Temperature, RH, WS, WD, Sunshine duration	AWS networks (ISRO and IMD)	1 hour	www.mosdac.gov.in www.imdaws.com
2	Satellite images	ISRO and IMD	Half hourly	www.mosdac.gov.in
3	Products derived from satellite imageries and sounders	IMD, MOSDAC	Half hourly/ daily / monthly	www.mosdac.gov.in, www.imd.gov.in
4	DWR products; PPI (Z), PPI (V), Max Z, SRI and PAC	IMD	Near real time	www.imd.gov.in www.mosdac.gov.in
5	NWP forecast: Rainfall, Snow fall wind speed & direction, atmospheric pressure etc.	ISRO, NESAC, IMD, NCMRWF, IITM etc.	6 hours to months	www.mosdac.gov.in, www.imd.gov.in, www.ncmrwf.gov.in www.nesac.gov.in,

they needed. Open source meteorological data can address this gap and can be used for near real-time weather observations, several applications,

Atmospheric Pressure, Relative Humidity (RH), Wind Speed (WS), Wind Direction (WD), satellite imagery [in different channels like Visible, Thermal Infrared (TIR), Water Vapor (WV), etc], products from satellite observations, and other forecasted products from NWP models. The details about the websites where the above mentioned data can be found are mentioned in table 1.

Satellite imagery and products

The payloads of meteorological satellite scan the Earth's surface and atmosphere at different wave lengths (channels). Meteorological data from the Indian advanced meteorological satellite INSAT-3D and INSAT 3DR with an Imaging System and an Atmospheric Sounder can be used for effective weather observations. Both these satellites provide 6 channel multi-spectral Images at VIS (0.55-0.75µm), SWIR (1.55-1.70 µm), MIR (3.80-4.00 µm), WV (6.50-7.10 µm), TIR 1 (10.2-11.3 µm), TIR 2 (11.5-12.5 µm) channels at every half an hour interval, which helps us in identifying clouds types and their intensity. Several other geophysical parameters (products) are derived (like AMV/CMV, QPE, UTH, WI, etc.) using both the satellite. Table 2 shows the list of the products that are available from these two



An INSAT 3D TIR1 Channel Image

Weather observations using open source data

Table 2: INSAT 3D / INSAT 3DR products from Imager and Sounder

Payload	Imager	Sounder
Geo-Physical Parameters and Derived Products	Outgoing long wave radiation (OLR)	Temperature, Humidity profiles and Integrated Ozone
	Quantitative Precipitation Estimate (QPE)	Geo-Potential Height (GH)
	Atmospheric Motion Vector (AMV)	Layer Precipitable Water
	Upper Troposphere Humidity (UTH)	Lifted Index(LI)
	Sea Surface Temperature (SST)	Wind Index (WI)
	Land Surface Temperature (LST)	Dry Microburst Index(DMI)
	Water Vapor Wind Vector	Potential Temperature Differential
	Snow Cover	Ozone estimate
	Fog, Forest Fire, Smoke and Aerosol Identification	
	Tropical Cyclone Position and Intensity Estimation	

satellites. These products are available at www.mosdac.gov.in and also at www.imd.gov.in.

Doppler Weather Radar (DWR) data and products

Doppler Weather Radar (DWR) is one of the key tools for weather monitoring and nowcasting. Indian Meteorological Department operates 24 DWR (21 in S band, 2 in C band and 1 in X band) across different parts of India. Indigenously developed polarimetric DWR by ISRO has also been set up at several locations including one at Cherrapunjee, Meghalaya. The basic parameters available from Doppler Weather Radars are Reflectivity (Z), radial velocity (V) and spectral width (ω). Various products of practical utility for issuing forecasts and warnings are generated from these base parameters. The polarimetric DWR installed in Cherrapunjee gives some additional basic parameters viz. differential reflectivity, differential phase, specific differential phase and correlation coefficient, from which we can derive rainfall more accurately. Additionally, one can extract information about rain drop size & shape, type of clouds, ice density of cloud, hail, snow, etc using DWR data.

Automatic Weather Station measurements

An automatic weather station (AWS) typically consist of Precipitation, Relative Humidity, Temperature, Pressure, Wind speed and Wind direction sensors. The system sends data in near real time using satellite based telecommunications system or GSM services.

There are two separate network of AWSs in India, one operated by ISRO and the other being operated by IMD. There are 118 AWSs installed by ISRO and more than 60 AWSs installed by IMD in North East India. The data are available at IMD and MOSDAC websites as mentioned in table-1.

Numerical Weather Prediction model

Weather forecast in India using numerical weather prediction (NWP) models are done by several organizations like IMD, ISRO, IITM, NCMRWF etc. running different models (WRF, GFS, GEFS, NEPS, etc). The forecast is provided for short range, medium range and long range. The mandate for operational forecast lies with IMD, who regularly forecasts the parameters like rainfall, WS, WD, RH, Temperature etc. at different vertical levels at 3 km to 9 km spatial and 6 hours to 15 days time resolutions. NESAC also provides weather forecast on a research mode for the NE region of India. All forecast are available at the departmental website of the issuing organization/institution.

In addition, there are several global source of data from NOAA of USA, ECMWF of Europe, World Meteorological Organization, etc. who provides long time series data on all major atmospheric parameters. One can also get data on the vertical profile of atmospheric parameters collected using atmospheric sondes, from the University of Wyoming. Some of them provide data of more than 100 years old and all of the data is freely available in their official websites.

CISF activities at North Eastern Space Applications Centre

The Central Industrial Security Force (CISF) came into existence in 1969 with modest beginning to provide integrated security cover to the Public Sector Undertakings (PSUs), which, in those years, occupied the “commanding heights” of the economy. In a span of four decades, the Force has grown several folds to reach one lakh forty one thousand seven hundred and thirty five personnel today. With globalization and liberalization of the economy, CISF is no longer a PSU-centric organization. Instead, it has become a premier multi-skilled security agency of the country, mandated to provide security to major critical infrastructure installations of the country in diverse areas. CISF is currently providing security cover to nuclear installations, space establishments, airports, seaports, power plants, sensitive Government buildings and even heritage monuments. Among the important responsibilities recently entrusted to the CISF are the Delhi Metro Rail Corporation, VIP Security, Disaster Management and establishment of a Formed Police Unit (FPU) of the UN at Haiti.

It is a testimony to the level of professional competence and standing acquired by the Force over the decades that its services are being sought for consultancy by the private sector also. Over the years, the CISF has provided Consultancy Services to more than 140 different organizations, including those in the private sector. After the Mumbai terrorist attack on November 2008, the mandate of the force has been broadened to provide direct security cover to private sector also. The CISF Act has been amended, heralding a new chapter in the glorious history of the Force. The CISF is being continuously modernized, both in terms of equipment and training. Having set very high professional standards with an impressive track record, the Force looks forward to a brighter tomorrow with pride and confidence.

CISF was inducted at North Eastern Space Application Centre (NESAC) on 03 October, 2013 with a strength of 21 personnel. Presently the CISF contingent at NESAC lead by Asstt. Commandant Randhir Kumar has the total strength of 40 personnel. Since CISF has been inducted at

NESAC, no unwanted incident has been reported. To establish proper pass & access control, the following measures have been taken for proper security cover of NESAC being a DOS installation in North Eastern Region of India.

- ❖ Armed sentry is deployed 24 x 7 hrs at Main Gate, Morcha, and Admn. Building.
- ❖ Entry of employees, visitors, casual labours is restricted to bonafide personnel holding valid ID.
- ❖ Checking & frisking in & out gate by security personnel properly.
- ❖ Only authorized vehicles are being allowed into NESAC campus after proper checking & frisking.



Chairman, ISRO paid Guard of Honour, During his visit to NESAC.

- ❖ Proper checking of bag & baggage of the employees, visitors, casual labours through XBIS.
- ❖ No personnel is allowed with their technical gadgets such as mobile phones, camera, binocular etc. except with the prior permission in writing of the Admn. Officer.
- ❖ Mock drill on different contingencies and Joint Mock Drill are being imparted on different contingencies & SOP which have been approved by the District Administration.
- ❖ Presently this installation is under CCTV Surveillance.

CISF activities at North Eastern Space Applications Centre



Celebrating of the Republic Day 2017 at NESAC Campus

CISF is ensuring total security of the centre without causing any difficulty in the day to day functioning of the centre. Several meetings, workshops, seminars, etc are organized by NESAC every month, which involves participation of large number of people across different sectors. CISF ensures smooth flow of such large gatherings without compromising any security protocol.

CISF has been celebrating every National occasion (Independence day, Republic day, etc)

continued from page 1

during last six months. The most significant among those are, implementing the second phase of the Sericulture development project by the Central Silk Board, Ministry of Textiles covering 70 more districts in 26 states to map the potential areas for expansion of sericulture in the selected districts. The NE spatial data repository project has been approved by Ministry of DONER with budget outlay of more than 400 Lakhs which will enable seamless data dissemination with integration of data from state RS applications centre, NESAC, and other stakeholders.

The construction of the outreach facility at NESAC with 80 bedded hostel and state-of-the art class rooms are progressing as expected and the facility is likely to be operational by the current financial year end. Training, capacity building, and academic courses on different aspects of space applications that are relevant for the region will commence from the facility once it is ready. We are making whole hearted attempts to convert this into a world class facility for training and education.

We have been taking extra initiatives to ensure that

with participation of NESAC staffs. During the visits of any VIP like Chairman, ISRO Secretary, DOS CISF has paid due respect through guard of honour.

CISF at NESAC conducts regular mock drill for fire fighting and other measures for safety precaution. They also conduct security mock drills for different scenarios. Such mock Drills are conducted at regular interval to keep the CISF personnel updated and alert.



Joint Fire Mock Drill at NESAC with Meghalaya Fire Service, Police, Home Guard, and NESAC Employees.

the benefits of our initiatives reach to all concerned, by hosting more meetings, workshops, participating in exhibitions. Two major workshops on space technology inputs for disaster risk reduction and recalling the Shillong Earthquake were held with active support and participation of North Eastern Council. With proactive initiatives of NESAC in different areas of disaster risk reduction leading to successful early warning of several disasters, there is demand to initiate research on earthquake early warning. We have accepted this challenge and have initiated a few studies towards characterizing the earthquake precursors with objective of developing early warning in collaboration with leading R & D institutes and Universities.

As a novel initiative under Corporate Social Responsibilities and with an objective to contribute to the “Swachh Bharat Aviyar” of government of India, the Centre has initiated constructing toilets and other utilities for a few selected schools and public areas of East Khasi Hills District of Meghalaya with financial support from Antrix Corporation, the commercial arm of ISRO. This activity will be extended to other parts of NE region as well soon.

Workshop on Space Technology Inputs for Disaster Risk Reduction with special emphasis on early Warning, Preparedness & Mitigation.

A workshop was organized on “space technology inputs for Disaster Risk Reduction with special emphasis on Early Warning, Preparedness and Mitigation” at North Eastern Space Applications



Release of workshop brochure by the dignitaries Centre (NESAC), Umiam during 16-17 March, 2017. The workshop was organized jointly by North Eastern Council (NEC) and NESAC, Umiam. The workshop deliberated over all the major natural hazards affecting NE region of India, like floods, river bank erosion, landslides, earthquakes, cyclones, thunderstorms, hailstorms, forest fires, disease epidemics, etc. under the umbrella of North Eastern Regional Node for Disaster Risk Reduction (NER-DRR).

The workshop was planned in such a manner that it provides an opportunity for interaction among professionals, researchers and the concerned departments engaged in disaster management and mitigation. More than one hundred delegates across all the eight states of NER of India participated in the workshop and shared different operational and research activities at state and regional level so as to help in framing better disaster preparedness and mitigation plans and policy decisions.

Shri C K Das, Hon’ble Member, NEC was the chief guest and Shri P. P. Shrivastav, Hon’ble Member, Advisory Committee, NDMA was the guest of honour during the workshop. Shri P.L.N. Raju, Director, NESAC offered the

opening remarks and highlighted the activities of NESAC in the area of disaster management support. In his inaugural speech, the Chief Guest emphasized on the need of multidisciplinary research activities covering all the disasters in the region. Shri P.P. Shrivastav appreciated the effort of NESAC in taking up different activities under the umbrella of NER-DRR. He stressed on dissemination of information and alerts in disaster situations. Dr. P. G. Rao, Vice-Chancellor, USTM and the Special Guest at the inaugural function appreciated the initiatives of NESAC and NEC in organizing the workshop which is highly significant for the NE region.

An abstract volume of the Workshop proceedings was released by the dignitaries during the inaugural session. Several eminent Scientists, Technocrats, and Policy makers from different organizations were invited to deliver keynote addresses and also present latest developments in the relevant area of activities. During the two days, 40 research papers were presented covering six technical sessions covering a range



Shri C. K. Das, Hon’ble Member, NEC addressing the gathering

of selected themes. Important resolutions on, how more efficiently space technology can be used for disaster management were passed. It was decided that the resolutions should be forwarded to all users particularly those concerned with disaster management activities.

Workshop on Recalling the Great Shillong Earthquake of 12 June, 1897: Quest for a Reliable & Effective Mitigation and post disaster strategies

To commemorate the great 1897 Shillong earthquake, and to discuss on development of a possible early warning system for such disaster, NESAC in collaboration with NEC organized a one day workshop on 12 June, 2017. The date of the workshop was the 120th anniversary of the occurrence of the great Shillong Earthquake. The workshop was also organized with an objective



The inaugural session is in progress

to explore the possibilities of development of a reliable seismic early warning system.

Different forms of earthquake precursors have become an area of research in recent times and workshop also deliberated on the possibility of devising a holistic scheme that integrates all meaningful precursors to develop an effective early warnings system for earthquakes. The workshop was attended by officials from the NEC, NESAC, National Disaster Management Authority (NDMA), representatives from all State Disaster Management Authorities (SDMA) from all eight states of NE region of India.

Shri P L N Raju, Director NESAC welcomed the gathering while explaining the objectives of the workshop. This was followed by addresses by Shri C. K. Das IAS (Retd), Hon'ble Member NEC, Shri Ram Muivah, IAS, Secretary, NEC

and Shri P P Shrivastav, IAS (Retd), Hon'ble Member, Advisory Committee, NDMA. All the speakers stressed on the importance of developing an early warning system for earthquake and taking other earthquake mitigation measures on an war footing, so that there is minimum damage because of any earthquake similar to the one that occurred on 12 June, 1897. Discussions were also held on different aspects of landslide and efforts required to mitigate landslide. The workshop had two technical sessions, themed "Advancement in Earthquake & Landslide Precursors and Early Warnings in NER" and "Experiences, Preparedness and Response for Post Disaster Management" respectively.

Shri P L N Raju Chaired the session-1 where four presentations were made covering both earthquake and landslide. Dr Arun Bapat, Former Head, Earthquake and Engineering Research, Central Water & Power Research Station, Pune gave a detailed presentation on different precursors of earthquake, particularly the outgoing long wave radiation (OLR). Dr. Saurav Baruah, Head, Geoscience, NEIST, Jorhat discussed the use of multi geophysical parameters observation data for earthquake precursor studies.



A section of the participants during the workshop

NESAC Participated in joint Mock Drill on ‘Humanitarian Assistance in Disaster Relief (HADR)’

NESAC participated in the three day mock drill exercise on Humanitarian Assistance and Disaster Relief (HADR) named as ‘Nabhas Rahat’ or ‘helping hands from the sky’ which



AOC-in-C visiting the NESAC Stall

was hosted by HQ Eastern Air Command (EAC), Shillong during 6-8 June, 2017. The aim of the exercise was to synergize the collective efforts from all relevant state and central organisations for successful and seamless execution of HADR operations in disaster-prone region in the NE states.

As part of preparedness of the exercise, Scientists from NESAC took part in several meetings and deliberations held in Shillong. The use of existing and updated digital database for Shillong under north east districts resource plan (NEDRP) project of NESAC containing several thematic datasets on land, water, infrastructure, utility services and disaster specific data for overall planning of the exercise and deployment of UAVs for real time monitoring of the mock drill were suggested for the exercise. Shri P L N Raju, Director, NESAC delivered a talk on ‘Role of Space Technology tools in Future Advancements in Disaster Management’. He highlighted the need of current space technologies such as relevant GIS datasets, web/mobile based alerts, etc, for effective management of disaster.

On 7 June, a mock drill simulating a Level-II disaster was carried out at Advance Landing Ground (ALG), EAC to showcase the capabilities of different participating groups including NESAC along with IAF. NESAC deployed Inspire-1 quadcopter UAV was flown to capture entire sequence of mock drill and relay the real time video to ‘Control Centre’ to further plan sequence of events during the simulated drill. NESAC also put up a stall at ALG to showcase various communication equipments such as VSATs, Satellite Phones and demonstrated its capability. NESAC also displayed digital maps at district level, 3D flythroughs of Shillong city, important standing banners showcasing NESAC activities and projects specific to disaster managements.

During and aftermath of the mock, NESAC stall was visited by number of participating officials from Police, Fire, Traffic, Disaster Management Authority, etc. Among officials from IAFs, Air Marshal Anil Khosla, Air Officer Commanding-in-Chief (AOC-in-C), Eastern Air Command of the Indian Air Force visited NESAC stall and appreciated the activities and programmes undertaken by the Centre. Smti I. Majaw, Addl



The NESAC UAV fly demonstration at EAC

Deputy Commissioner, East Khasi Hills district also lauded the active support of NESAC in successfully carrying out the disaster mock drill and requested us to support in future endeavors too.

District Level Workshop cum Training programme on “Empowering Panchayati Raj Institutions Spatially

The district level workshop cum training program on “Empowering Panchayati Raj Institutions Spatially



(EPRIS)” for East Khasi Hills district of Meghalaya was organized jointly by North Eastern Space Applications Centre (NESAC), Umiam, National Remote Sensing Centre (NRSC), Hyderabad and District Council Affairs Department of Meghalaya at conference hall of the office of the Deputy Commissioner, East Khasi Hills district, Shillong on 24 January, 2017

Shri P. N. Syiem, Hon’ble Chief Executive Member (CEM), Khasi Hills Autonomous District Council (KHADC) graced the occasion as chief guest. Commissioner & Secretary of District Council Affairs Dept. Shri T. Dkhar, IAS and Shri P. S. Dkhar, IAS, Deputy Commissioner of East Khasi Hills district also attended the programme. Member of District Council (MDC) from KHADC, Block Development Officers (BDOs), representatives from C & RD Dept., Agriculture, Animal Husbandry & Veterinary Dept., Fisheries Dept., Environment & Forest, Soil & Water Conservation Dept., Sericulture Dept., Public Work Dept. (PWD), Public Health Engineering (PHE), Education Dept., & Boarder Area Development Dept. along with scientists from NESAC attended the program.

Dr. H. Nagesh Prabhu, IFS, Member Secretary, Central Silk Board visited NESAC

Dr. H. Nagesh Prabhu, IFS, Member Secretary, CSB, Ministry of Textiles, Govt. of India, Bengaluru visited NESAC on 28 January, 2017 and discussed about the projects sponsored by Central Silk Board (CSB) to North Eastern Space Applications Centre (NESAC). The discussion was attended by Shri Sarat Deuri, Joint Secretary (Tech.), Regional Centre (CSB), Guwahati, Shri Moncy Issac, Deputy Secretary (Tech.), CSB, Bengaluru, Shri B. Choudhury, Scientist ‘D’, CMERTI, Jorhat along with Director, NESAC and Scientists from NESAC.



Meeting of ISRO/DOS Tele Education Network Coordinators from NER

A meeting was held among ISRO/DOS Tele education network coordinators of NER States, organized by NESAC, Umiam and supported by Development Education and Communication Unit (DECU),



ISRO, Ahmedabad and State Institute of Panchayat and Rural Development (SIPRD), Guwahati on 21 February, 2017 at SIPRD, Kahikuchi, Guwahati to discuss and work out the plan of action for revival and sustenance of the network in NER states and making better utilization plan for future.

Orientation meeting cum appraisal training under Sericulture Development project at NESAC



An orientation meeting & hands on training on implementation of the 2nd phase of the project on Applications of RS and GIS for Sericulture Development for 5 states viz, Bihar, Uttar Pradesh, Madhya Pradesh, Haryana, and Punjab was organized at NESAC during 1-2 March, 2017. Concerned scientists and research fellows from State Remote Sensing Application centres from these five states participated in the training. During the inaugural Session of the program, Shri P L N Raju, Director, NESAC welcomed all the participants in the meeting. He appreciated the effort of State Remote Sensing Application Centres, State Directorates of Sericulture and the CSB institutes for their sincere support to NESAC in implementing the first phase project covering 108 districts in 24 states.

Dr. B. K. Handique, Coordinator of the project gave a detailed presentation on the current status of the project. He informed that all the work pertaining to the first phase of the project has been completed and project outputs are put in the SILKS webportal.

The portal is now made available in 12 languages viz., English, Hindi, Telugu, Kannada, Assamese, Bengali, Mizo, Manipuri, Khasi, Garo, Ao Naga, and Sumi Naga and information are regularly updated. He sought support from the State Directorates of Sericulture in terms of providing up to date district level information in the SILKS portal. Hands on training on site suitability analysis based on soil and climate parameters was conducted by concerned scientists of NESAC Smt. Pratibha T. Das and Smt. Jonali Goswami. A field trip was also organized for the participants on 3 March, 2017.

Training program on Geo-Tagging of Rashtriya Krishi Vikash Yojana (RKVY) Assets using Geospatial Technologies for the NE States.

One day training program on “Geo-Tagging of Rashtriya Krishi Vikash Yojana (RKVY) Assets using Geospatial Technologies” was organized on 11 April, 2017 for the states of Arunachal Pradesh, Sikkim & Tripura and on 13 April, 2017 for the states of Manipur, Meghalaya, Mizoram, & Nagaland at NESAC, Umiam. State nodal officers, nodal officers of RKVY from Dept. of Agriculture and allied sectors of all the north eastern states (except Assam) attended the program. The meeting started with welcome address by Shri Chandan Goswami, Sci/Engr - ‘SD’ of NESAC followed by self introduction of the participants. In his opening remarks Shri P. L.



N. Raju, Director, NESAC gave the background of the programme along with a brief note on activities of NESAC.

It was followed by Presentation on Geo-Tagging of Rashtriya Krishi Vikash Yojana (RKVY) Assets using Geospatial Technologies by Shri Chandan Goswami. A demonstration on the Bhuvan RKVY Mobile App and hands on training on Bhuvan RKVY Mobile App were conducted. In the post lunch session Shri Nilay Nishant, Sci/Engr-SC and Shri Siddhartha Bhuyan, Research Scientist demonstrated the user registration in Bhuvan RKVY geo-portal and viewing & moderation of assets in Bhuvan RKVY geo-portal. Dr. P. V. Krishnarao, Sci/Engr - 'SG' of National Remote Sensing Centre (NRSC), Hyderabad attended the interaction session and closing ceremony through video conferencing.

All the states requested for this kind of training in their respective states. However, Dr. P.V. Krishnarao suggested for this kind of training in each state capital of north eastern states through video conferencing. Again, it was requested to provide smart phones along with internet connectivity for asset mapping. Director, NESAC informed that North Eastern Council, Ministry of DONER funded NESAC for purchase of 500 smart phones along with GAGAN dongle to be provided to all the north eastern states. He suggested that these smart phones may be used for Bhuvan RKVY Asset mapping. The meeting ended with vote of thanks by Shri Chandan Goswami.

Basic course on RS & GIS -Technology and Applications.

North Eastern Space Applications Centre conducted a basic course on 'Remote Sensing and Geographical Information System - Technology and Applications' of two weeks duration. The course was conducted to provide sufficient knowledge and training to beginners in the field of geospatial and earth observation applications so that they develop a critical understanding of appropriate tools; exposure to new methods and techniques; gaining competence in developing tools for the acquisition, processing,

analysis, and presentation of spatial data; using geo-information in identifying and responding to development problems and in drafting development policies. It encompassed topics related to Remote Sensing (RS) and digital image analysis, Global Navigation Satellite Systems (GNSS), Geographical Information system (GIS), open source softwares and data standards, ground truth and field validation with hands on training on every topic.

The first week covered basic topics related to RS, GNSS, GIS and Image Processing and second week covered advanced topics. The morning sessions were on lectures and demonstrations while afternoon



sessions primarily had the hands on training with RS and GIS software. The last two days of the course was dedicated towards a mini-project which was executed in groups with different application based topics for each group. The course had 23 hours of lecture and 29 hours of practical work for the participants.

One Week training on UAV data processing for the officials from State Remote Sensing Application Centres.

North Eastern Space Applications Centre has conducted one week training programme on UAV data processing for the officials from State Remote Sensing Centres under the project "Use of Unmanned Aerial Vehicle Remote Sensing (UAV-RS) for the sates of NER region". The officials present were



from all the states of North East along with Andhra Pradesh Space Applications Centre.

The course covered different data processing techniques e.g. generation of orthomosaic, digital surface model (DEM), digital terrain model (DTM), contour maps, volumetric analysis, etc. for high-resolution UAV data using open source softwares and Agisoft photoscan pro software. All the state centres also got one license each of AgiSoft Photoscan Pro for UAV data processing under the project. The last one and half day of the course was dedicated towards a mini-project which was executed in groups with different application based topics for each group. The course had 16 hours of lecture and 22 hours of practical work for the participants.

NESAC observed Swachhata Pakhwada from 16-30 June, 2017



The NESAC fraternity observed 'Cleanliness Fortnight' or 'Swachhata Pakhwada' from 16-30 June, 2017. The fortnight long observance started

with reading a pledge for remembering the values of cleanliness and maintaining cleanliness in surrounding environment and generating awareness among people for maintaining cleanliness. After that, each day, one hour time was devoted by all the staff of NESAC for cleaning various places of NESAC office, its residential campus, Umiam Market, Nongsder Village and Various areas in and around NESAC. Awareness campaign was also undertaken in nearby areas to generate consensus among people in support of cleanliness.

A drawing competition was organized among school children of nearby areas to spread the message among the coming generation. The program concluded on 30 June, 2017 through remembering the efforts made throughout the fortnight and distribution of prizes.

Yoga training programme at NESAC on occasion of 3rd International Yoga day



On the occasion of International Yoga day on 21 June, 2017, a weeklong yoga training programmed was organized at NESAC from 13-16 and again from 19 - 21 June, 2017. Everyday, yoga was conducted by yoga trainers from NESAC and CISF personnel in the mornings. Along with this, yoga faculties from "Art of Living" organization were also invited, to conduct a yoga course at NESAC. This course included some yoga exercises, meditation and "Sudarshan Kriya" a powerful rhythmic breathing technique in yoga. For the convenience of all, the timing of course was kept from 4:00 to 6:00 PM in evening, so that more

people could participate in it. More than 30 people which include Scientist, Research Scientist, SRF, JRF, and CISF personnel participated actively. All the participants were distributed yoga T shirts by NESAC to perform yoga. On the last day of this course which was also the International yoga day a brief yoga session was organized at NESAC along with a lecture on “Yoga for health and Happiness”, by Shri Sujeeth Chakraborty, Faculty from Art Of Living organization. He explained about the benefits of practicing yoga and taught some yogasanas which one can perform during office hours to reduce stress and to avoid disease caused by sitting most of the time. The program was a success and has benefited all the participants.

Laying of foundation stone and Bhumi Puja for the NESAC outreach facility



Shri A S Kiran Kumar, Chairman, ISRO & NESAC Governing Council laid the foundation stone of the NESAC outreach facility on 2 March, 2017. The outreach facility is being constructed at the newly acquired one acre land at Umiam, Meghalaya close to the NESAC office campus. Prior to the foundation stone laying, the Bhumi Puja for the NESAC outreach facility was done on 28 February, 2017 by Shri P L N Raju, Director, NESAC, in the presence of NESAC employees and the contractors. The outreach facility will have an academic building with digital class

rooms, laboratories, and other facilities; and a hostel building with capacity to accommodate 80 persons. The facility is expected to be operational by March, 2018 which will be used for training and capacity building activities of NESAC.



Inauguration of NESAC Gymnasium

NESAC Sports and Recreation club set up a Gymnasium facility at NESAC residential complex at Umiam. The facility was inaugurated on 2 January, 2017 by Director, NESAC. The Gymnasium is equipped with sophisticated and modern equipments like Treadmill, Elliptical Cross Trainer; Recommend bike, Weight lifting, dumbbell packages, etc. The facility is open to all employees of NESAC at a nominal monthly fee.



Awards & Recognitions

National Geomatics Award : Applications - 2016 to Shri P L N Raju

In recognition of his outstanding contribution in the field of applications of Geomatics in various aspects of education, outreach and capacity building, the Indian Society of Geomatics conferred “National Geomatics Award: Applications” for the year 2016 upon Shri P L N Raju, Director, NESAC. The award was presented during a function organized as part of the National Symposium on Recent



Advances in Remote Sensing and GIS with Special Emphasis on Mountain Ecosystems & Annual Conventions of Indian Society of Remote Sensing & Indian Society of Geomatics during 7-9 December, 2016 at Dehradun.

ISRO - ASI Young Scientist Award to Dr Bijoy K Handique



Dr Bijoy K Handique, Scientist/Engineer – SF, NESAC was awarded the ISRO - ASI Young Scientist Award 2014 for his significant contribution on space applications in the field of Agriculture, Sericulture and Spatial Epidemiology. The Award was conferred during the ASI Award Function organized at ISRO Satellite Centre (ISAC), Bangalore on 28 April, 2017.

Hearty Congratulations to Director, NESAC and Dr B K Handique for their outstanding achievement!

Upcoming Training Programme at NESAC

Second Training Course

UAV Remote Sensing

Technological Advances & Applications

November 06-17, 2017



North Eastern Space Applications Centre
Department of Space, Government of India
Umiam, Meghalaya 793103
www.nesac.gov.in

Who can apply

The course is designed for Government Officials / Academicians/ Researchers/ Students/ NGOs/ Private agencies having desirable experiences in geo-informatics and basic understanding in photogrammetry & remote sensing and have interest in latest developments in high-resolution data acquisition techniques and 3D object modelling. The Candidates are advised to apply early as the seats are limited to 30 only.

Course Fee

The course fee is ₹ 6,000/- which includes registration kit & course materials. The amount should be paid through crossed demand draft drawn on any Nationalized Bank in favour of Director, NESAC and payable at SBI, Barapani Branch (Branch Code 2010).

Accommodation

Accommodation will be arranged within NESAC and at closed vicinity to NESAC. The participants will pay nominal charges towards boarding and lodging.

How to apply

Please register yourself by filling the online application form available at <http://nesac.gov.in>. The confirmation of the shortlisted candidates will be intimated and accordingly payment has to be made on or before 27th Oct, 2017, failing which their candidature will get cancelled and chances will be given to the next candidate as per the waiting list.

Note : The sponsored candidates need to download and fill the application form & upload. The original copy should be sent by post.

For further information please write to:

Course Coordinator

Shri Victor Saikhom
victor.saikhom@nesac.gov.in
Tel: + 91 364 2308722
Fax: + 91 364 2570043

Course Officer

Shri Chirag Gupta
chirag.gupta@nesac.gov.in
Tel.: +91 364 2308752

Application Form

Name:.....

Designation (if any):

Organization:.....

Postal Address:

Details of Fee Payment: (DD no., Bank, Date of Issue)

Phone: Mobile:

E-mail:.....

Educational qualification:

Professional Experience:

Purpose of joining this course:.....

Signature of applicant

CERTIFICATE

Mr./Ms.....working in this organization is nominated and/or sponsored by.....to attend the Course on UAV Remote Sensing – Technological Advances and Applications, to be held at North Eastern Space Applications Centre, Shillong during Nov 06-17, 2017.

Place: Signature:.....

Date:

Name & Seal of
Sponsoring Organization

Welcome New Colleagues



Shri Aniket Chakravorty
Sci/Engr-SC



Shri Gopal Sharma
Sci/Engr-SC



Shri Nilay Nishant
Sci/Engr-SC



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