

# **ELECTRONIC SCIENTISTS & ENGINEERS SOCIETY (ESES)**



*Report and activities of the Electronic Scientists and Engineers Society (ESES)*

*– 2023*

## **Academic cum interactive Sessions :**

### **1.An interactive Academic Session between the members of ESES (Electronic Scientist & Engineers Society)**

**and**

### **Prof. K. Oyama of Japan, a Scientist of International Acclaim**

*Venue Km9 nest, Amsing Jorabat*

*Guwahati -27*

*February 22 - 2023*

On February 20, 2023, the ESES secretary Prof. M. Devi received Prof. Oyama at the Guwahati airport and drove him to the hotel, and on the way from the airport, Prof. Devi enriched him with a background of the present and past history of Guwahati and the region. Dr. Subrat Das, an EC member of ESES met us at the hotel and we had an introductory discussion about our future plans for the days of his stay with us.

#### **Day 21: Around Guwahti and the university**

Prof M.Devi and Dr.S. Das enlightened Prof. Oyama on the pre-historic monuments and culture of this region while taking him around the Jalukbari area. They also interchanged mutual interest in research disciplines mainly focused on Earthquake prediction, a serious hazard over this Sub Himalayan region.

Prof. Oyama was impressed by the architecture of Kamakhya Temple and the history behind it and offered due pranam to Devi Kamakhya.

In the evening we took him around to the Gauhati University campus and had a nice Assamese dinner at the university guesthouse, which he appreciated.

#### **Day 22 Interactive academic session between ESES members & Prof. Oyama**

This is a special day arranged for a special Academic session between ESES members with Prof. K. Oyama.

The session was arranged at a resort not far from the city but in a quiet environment, much-needed peace and tranquility from the city noise, especially for Prof. Oyama. The route to the resort is so directed that Professor can have an overall view of the entire city from the West near Jalukbari to the east of Khanapara and beyond. He enjoyed the beautiful scenario of the river Brahmaputra. But the pollution has disturbed him. Being Japanese, he is very much concerned with pollution all around ( a view of pollution over Guwahati Fig. 1a with  $107 \mu\text{gm}/\text{m}^3$  labeled: Unhealthy ) along with that over Tokyo ( $1\mu\text{gm}/\text{m}^3$  labeled: good) on the same day shows the reason of concern of Prof.Oyama on the pollution over Guwahati. He said that he had a different impression of a very clean pollution-free Guwahati. As a scientist, he wanted to know the sources whether anthropogenic or natural pollutants have made the city look so gloomy. We had a long discussion bringing into view both natural ( dust from dry riverbed) as well as anthropogenic pollutants caused by demolishing of massive buildings, the felling of trees, construction of flyovers, huge footbridges, high-rise buildings, conversion of low-lying areas & lakes to built-up land, and many similar issues. He looked at the surroundings which shows barren and with low visibility. We discussed the consequences of these absorbing types of aerosols contributing to the greenhouse effect as well as health-related issues. It was a good academic discussion throughout the journey, and Prof. Oyama suggests that we carry out some worthwhile studies on these issues. We agreed.

The ESES members gathered at the Resort, the proud owner is Mr. Naba Kishore a very bright student of Prof. Devi in Electronic Science disciplines. He was a topmost corporate executive in the IT sector and offered services in many places around the world and now settled in Assam with a business of his own.

On arrival at his resort, we were all welcome by him, and made us comfortable in a very calm, serene, and rich natural environment. The entire complex is designed by him keeping the harmony of Nature, which is why ESES arranges this meeting here with the Japanese scientist.

After the cup of tea and homemade cookies, the ESES members and Prof. Oyama took positions at the conference -cum hall to start the Session.

**Welcome :**

Prof. Devi offered her welcome to Prof. Oyama and highlighted his contributions to ESES in general and to the IJEAR (the ESES journal) in particular, by his learned contributions which have gone a long way to the success of the Journal.

Prof. Devi then introduced the activities of Prof. Oyama to the house, which is briefly summed as follows:

Prof. Koichiro Oyama devoted his whole life to ionosphere study at the same space Research organizations (the Institute of Space and Astronautical Science (ISAS), University of Tokyo (UTK), then separated from UTK, then later merged with Japan Space Exploration Agency (JAXA) until he retired in March 2006. Then he was invited by National Central University, Taiwan, and then by National Cheng Kung University. Before he retired from ISAS, he engaged in the measurement of electron temperature in the ionosphere by using sounding rockets not only inside Japan but also outside Japan such as India, the USA, Brazil, and West Germany. The probe was accommodated in the following earth-orbiting satellites; 1975 Taiyo, 1978 Kyokko, 1981 Hinotori, and 1985 Ohzora. The energy distribution of thermal electrons up to 8000 km was measured by Akebono which was launched in 1989. In 1986 He was engaged in solar wind measurement and accommodated 1<sup>st</sup> Japanese interplanetary spacecraft Sakigake during the Halley Comet International campaign. He was a contact point of Japan for the Dynamics Adapted Network (DYANA) proposed by Prof. Offermann in 1988-1989. Until 1989 he worked as a test conductor of many sounding rockets as well as balloon experiments.

His final task at ISAS was to propose the Venus orbiter (named AKATSUKI after the launch) mission as Working Group Chair. In parallel with his academic work, he spent time on space Education. He was a co-chair of the space education working group under the umbrella of the Asia-Pacific Space Agency Forum and started Water boosted Rocket Competition among Asian countries. Since 2019 he is the president of the Satellite Design Contest in Japan organized by 5 academic societies. Currently, he is doing research on the abnormal behavior of the ionosphere before large earthquakes.

#### **Offer of gratitude:**

As an offer of our gratitude for his visit to ESES, Prof. Oyama was formally welcomed by a traditional Gamosa and a wooden Rhino, the symbol of the state Animal of Assam. The presentation of Gamosa also has a traditional mode which Dr. Subrat Das accomplished to perfection.

The Session then starts on the basic topic taken for discussion i.e., on

#### **Earthquake and prediction:**

The discussion started with the Turkey earthquake on 6 February 2023, of magnitude  $M_w$  7.8 with the epicenter  $37.166^\circ\text{N}$ ,  $37.032^\circ\text{E}$  that caused more than 56,000 deaths and property damage worth \$11TCr.

The focus was on short-term precursor-related issues. Among such precursors study, our group along with Prof. Oyama are adopting EM approaches by monitoring atmospheric and ionospheric parameters and then extracting features prior to an EQ, for which we have received recognition through many published papers.

But we were concerned about not registering any such signatures during this Turkey event. One of the causes we identified as that the epicenter is far from the anomaly zone ( Figure 2a) when Earthquake time Equatorial Anomaly (EEA ) may not be well-developed to come as a prelude to an EQ as the group has been observed in many cases.

Mr. Naba presented a striking scene of the bizarre behavior of crows around the epicenter, before this event. This led to further discussion on the sensitivity of animals, birds, insects, and ants to offer signals before such natural hazards.





Picture 1: The beautiful wooden enclosure with matching furniture brings the Natural environment to the inhouse ( from left Prof. K. Oyama, Mr. Prafula Kalita, Prof M Devi, Mr. Naba Kishore, Dr. Hrishesh Chrkabaty, just on arrival)



Picture 2: Members at the ongoing Session and discussion: From left Dr.Subrat Das, Dr. Arup J Deba Sarma, Prof. Minakshi Devi, Prof. Koichiro Oyama, Mr. Profulla Kalita, Dr. Dhritikesh Chkrabarty and Dr. Samiran Patgiri.



Picture 3: During Lunch

There were questions from ESES members at the different courses of interactions which are :

Why there were so many EQs at present?

Why there was so much devastation in Turkey event compared to what we see in Japan?

What would be the final mode for such a prediction?

These were discussed bringing up the issue of the availability of more reliable data at present, the role of solar geomagnetic factors and devastation in Turkey EQ is likely because of the shallowness of the epicenter depth and the basic geological fault structures comprised of Dead Sea Transform, East Anatolian Fault, Çardak–Sürgü Fault, besides associated with construction modes of buildings. It was also suggested by Prof. Devi that perhaps the anomaly is inhibited by reverse E-field as reflected by the absence of strong anomaly in TEC at the crest or in the Equator before the event ( Figure 2b) which was relatively strong on the day ( Figure 2c ) and after the event ( Figure 2d), but unlike the powerful Anomalous anomaly that appeared before Japan EQ of March 2011 (Figure 3a) and Nepal event of April 2015 ( Figure 3b).

Prof. Oyama finally suggested that more reliable predictions could be possible through monitoring of EQ time ground motion. He has explained in detail how they have identified the epicenter through such observation on the question from Naba Sinha, Dr. Arup J D Sarms, and Dr. Samiran Patgiri.

However such data with reliable accuracy are difficult to obtain as pointed out by Prof. Devi but offered sincere thanks to Prof. Oyama for his valued presentation and suggestions for taking up such modes for precursor study. Dr. Dhriksh Chakrabarty, Mr.Prafulla .C Kalia . and Dr. Subrat Das also joined in the discussions with many related issues not only on EQ but on Technology in the Future and to the benefit (?) of Mankind.

Finally, Prof . Devi offered thanks to all, especially to Prof. K. Oyama for his learned presentation and academic suggestions to young colleagues for future modes of study on EQ prediction. and also for offering academic solutions to many issues raised by ESES members.

The meeting came to a close after the Jatyo Sangeet of Assam “oh mor Opener desh.....”





Picture 4 : At the end of the Session with Oh Mor Aponer Desh

We all thank Naba and his staff members who were extremely polite, helpful and also for the superb lunch prepared by them and we took leave with the wish and great expectation that :

*We will meet again*

また会いましょう

Mata aimashō

Prof. Koichiro Oyama

on behalf of ESES

## SESSION PRESENTATION:

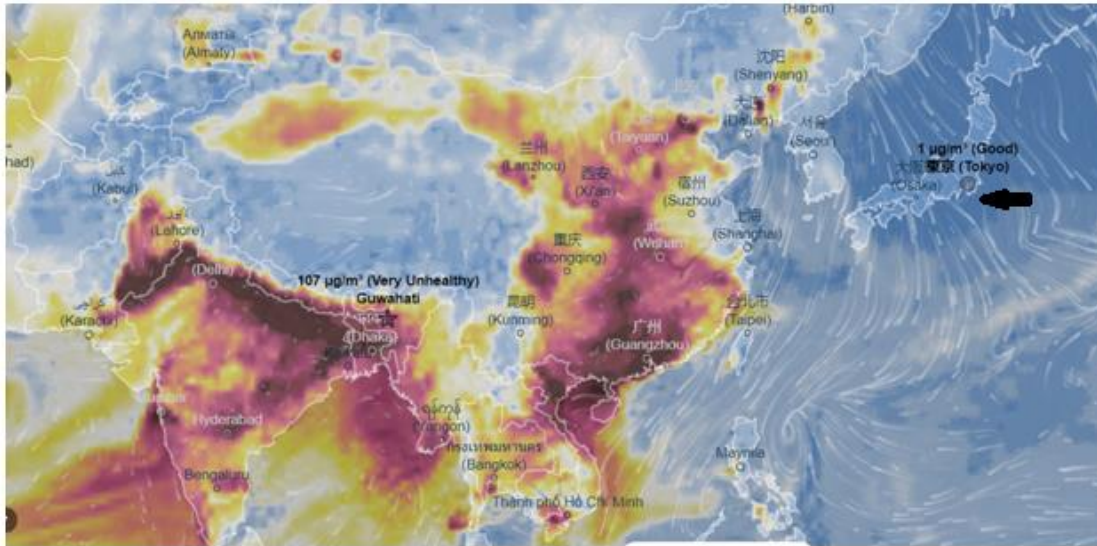
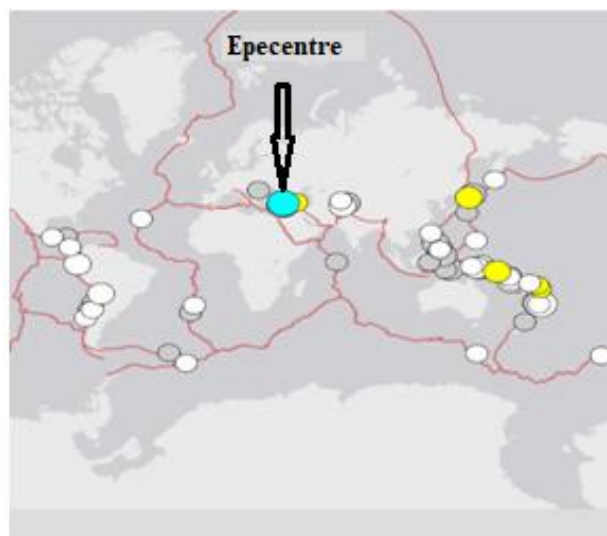


Figure 1: The pollution level ( PM 2.5) on February 22, 2023, over Guwahati & surroundings, marked by a Star ( $107\mu\text{g}/\text{m}^3$  **unhealthy**). See also in Tokyo, marked by an arrowhead ( $1\mu\text{g}/\text{m}^3$  **good** ).

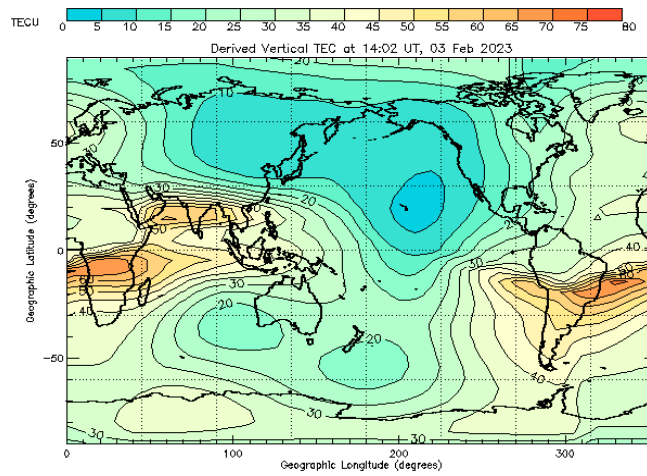
## Earthquake and TEC Anomaly:

### Turkey EQ of February 2023 :

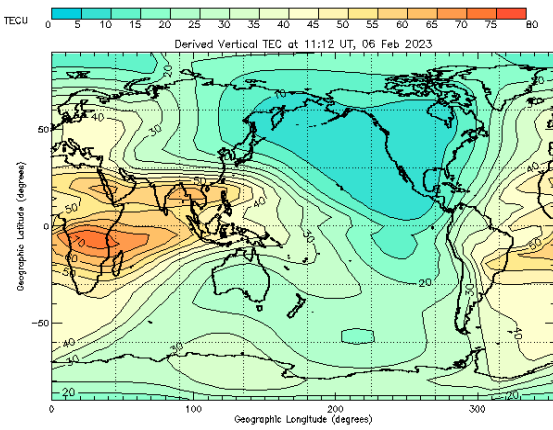


(a)

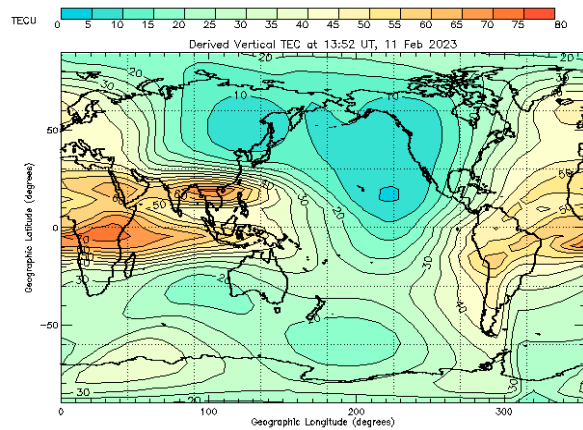
### Did anomaly get inhibited?



(b)



(c)

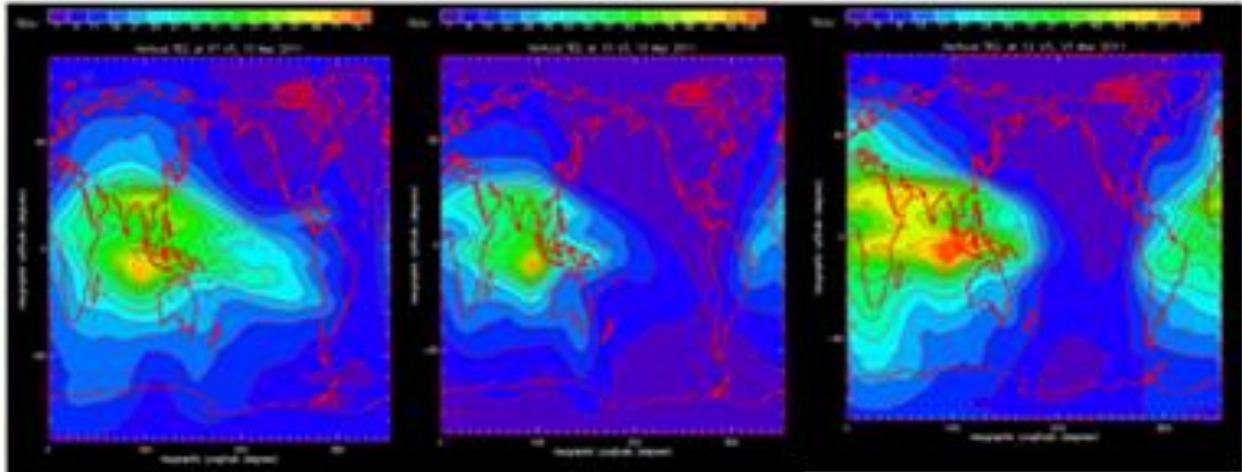


(d)

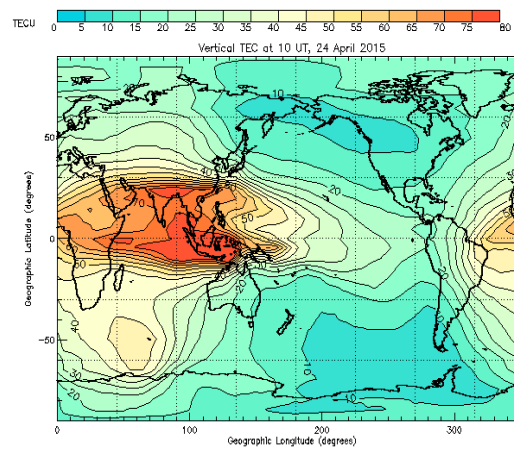
Figure 2 : (a) Epicentre of the Turkey EQ of February 6, 2023, and TEC global profiles : (b) Prior to the EQ,(c) on the day, and (d) after the event. Note Equatorial Anomaly gets weaker before the event .

**Tohoku EQ of March 2011 and Nepal EQ of April 2015**

10.3.2011 Anomaly started appearing both day and night



(a)



(b)

Figure 3: Strong Earthquake time Equatorial Anomaly developed before (a) Japan EQ (TOHOKU) of March 2011 and



# One Day workshop on Science & Technology

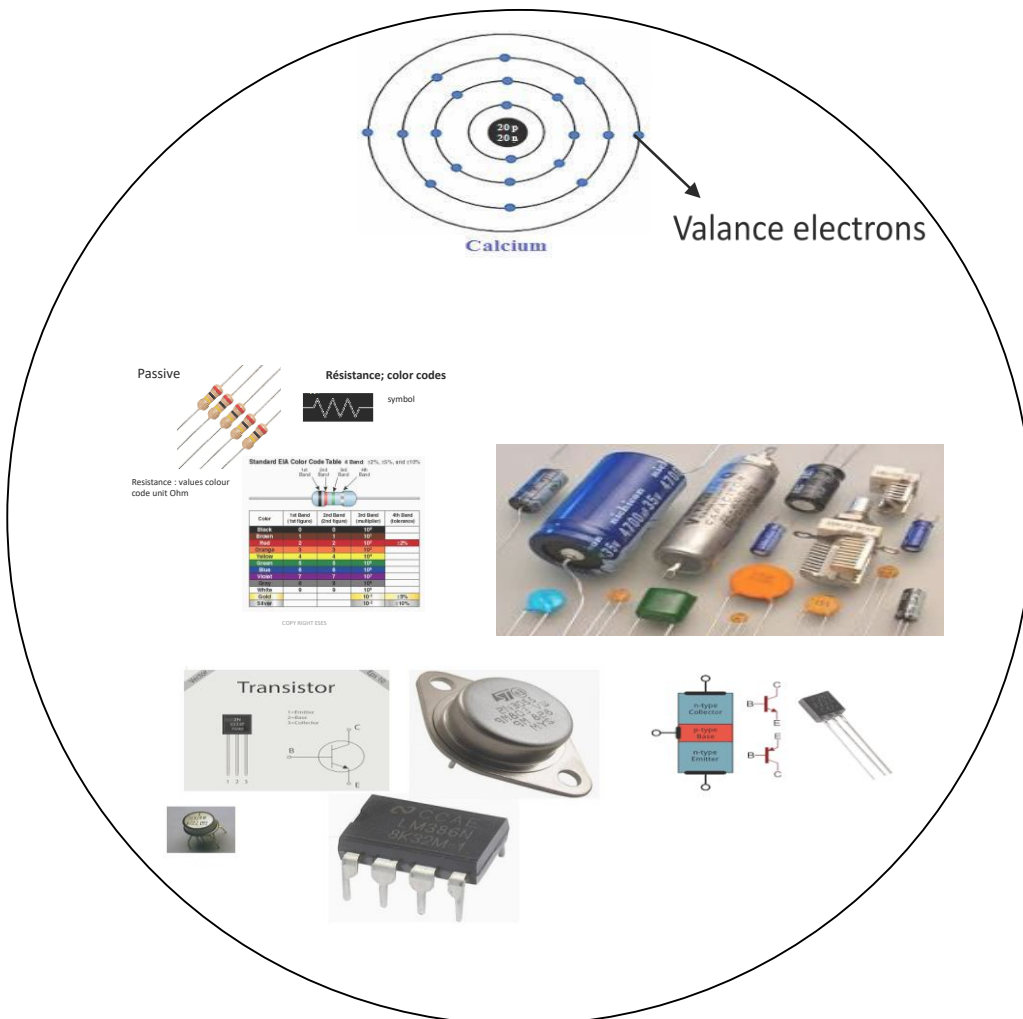
Through

*Demonstration of tools, components, devices, and Verification & Application of Fundamental Laws.*

*Organized by*

***Electronic Scientists & Engineers Society, Assam***

*(May 27, 2023)*



Venue: Chandra Prava Bora high school, Azara

**Adviser**

**Prof. M. Devi**

**Convener**

**Mr .P.C.Kalita**

## **A Brief Report**

### **One Day workshop on Science & Technology**

Period 1000 hrs -1500 hrs

Preliminary preparation period: 0930 to 1000 hrs: Mr.P.C.Kalia convener of the workshop had arranged five groups of students and distributed to each group a chart containing the different symbols of components and rules to identify their values.

The workshop was opened with a welcome address from the Head Master of the school Sri Karuna Nath. Sri Nath on behalf of the School had offered his thanks, to the organizer of the ESES for their initiative in this program ( View graph 1).

The introduction to the working modes of ESES was presented by Dr. D Chakrabarty and Dr. A J Deva Sarma the executive members of ESES. In their speech, the aims of ESES which are based on promoting research activities of the NE region, on providing training on working with tools, design and fabrication of electronic circuits, as well as the fundamental aspects of computer hardware & software are briefed also mentioned the services of the Society on humanitarian activities during natural hazards. They highlighted the contributions of Prof . P.C. Mahanta the Head Of the Department of Physics at the time of the formation of the Society in 1985 and of present President Prof. A.K. Barbara in achieving the ESES status as of today. As an invitee to this workshop, Mrs. S Das a retired teacher has appreciated the effort of ESES in organizing such a program and opined that such training based on demonstration will be beneficial to all members of a society.

The workshop program started with a brief introduction by Prof M.Devi on Charge and current, the fundamental parameter relevant to all circuits, and systems, leading to the advancements of science and Technology of today. For the explanations, the basic structure of an atom had been shown, and the importance of valance electrons in contribution to currents was presented.

Mr. Kalita then demonstrated the different components drawn in the chart and how to identify the values of resistances through color codes ( View graph 2), capacitors their different types, and the relevance of working and peak voltages. The other associated passive components that are presented to the students are relays, transformers, and active ones like transistors, and ICs along with their significance and how to test their suitability while designing a circuit. Mr Deepak Sarma, a technical expert also assisted Mr. Kalita in this exercise. The use of multimeters in taking different electrical measurements was also demonstrated and training was given to students in the use of this measuring device.

Finally, one of the fundamental laws of electricity i.e., Ohms law was thoroughly demonstrated by Kalita. Here Prof Devi also introduced in a simple way how resistances whether series or parallel in a circuit contribute to the voltage induced therein by limiting the currents, as per this law.

Dr. Subrat Das, of ST Radar Centre GU, welcomes the students during the training session and suggested students for opting Science as a course explaining its importance, especially Atmospheric Science in the present-day context. He welcomes the students to visit the ST RADAR site of Gauhati University.

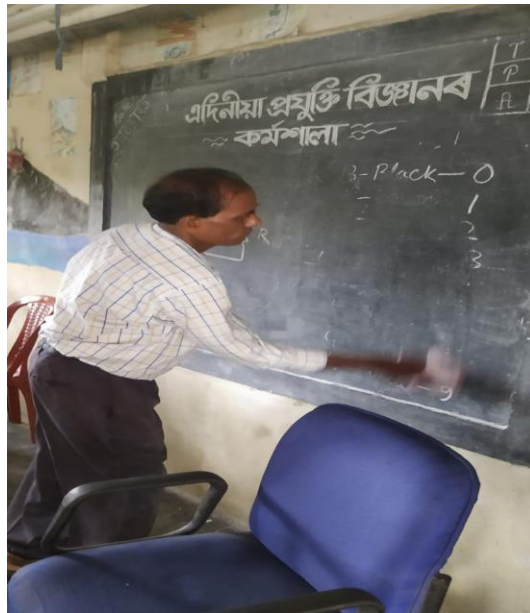
Finally, the workshop came to a close with some instant assessments of the exercise mainly based on fundamental laws of electricity as discussed. The ESES organizers were happy that participants could respond immediately with logical approaches and understanding.

The ESES organizer thank the Headmaster and his colleagues for their cooperation and help in making the program successful,

Prof. A.K. Barbara, the President of ESES has offered his full cooperation and best wishes for the success of the meet, and his long active association has helped the Society to organize workshops of this kind. His support was duly acknowledged



Viewgraph 1: Welcome to all.



View graph 2: Mr.P.C.Kalita with his demonstration.



## Annexure:

### List of Participants :

27.5.2023

| Sl No        | Name & Address                   | Institute / School | email address / Phone No |
|--------------|----------------------------------|--------------------|--------------------------|
| Participants |                                  |                    |                          |
| 1            | Ayesha yasmin                    | CPB high school    | 7662098261               |
| 2            | Afrin Hussain<br>(Afrin Hussain) | CPB High school    | 7896667341               |
| 3            | Liya Malakar                     | C.P.B.H. School    | 9387262072               |
| 5            | Pampi Biswas                     | C.P.B.H. School    | 9859512458               |
| 6            | Mousumi Sundi                    | C.P.B.H. School    | 7086419751               |
| 7            | Swarni Das                       | C.P.B.H. School    | 986424413 (10)           |
| 8            | Ram Saikia                       | C.P.B.H. School    | 986424413                |
| 19           | Mejeda Khatun                    | C.P.B.H. School    | 6003799099               |
| 10           | Nayan moni Das                   | C.P.B.H. School    |                          |
| 11           | Biswam Das                       | C.P.B.H. School    | 9394935856               |
| 12           | Dibyajati Kalita                 | C.P.B.H. School    |                          |
| 13           | Jyoti Ali                        | C.P.B.H. School    |                          |
| 14           | Sunila Kalita                    | C.P.B.H. School    | 6900606572               |
| 15           | Dalima Thakura                   | G.P.B.H. School    | 8403089027               |

Participate

| SINO  | Name & address     | Institute/School | E mail / Phone no |
|-------|--------------------|------------------|-------------------|
| 27516 | Jyoti Anita Gouda  | C.P.B. School    | 9101315772        |
| 17    | Tulika Baisya      | C.P.B. School    | 9365815017        |
| 1818  | Dhruvika Thakuria  | C.P.B. School    | 9101270412        |
| 1919  | Nisha Sukla Baidya | C.P.B. School    | 8822864769        |
| 20    | Anisha Choudhury   | C.P.B.H. School  | 6003025372        |
| 21    | Jon Mani Bayam     | C.P.B.H. School  | 6901647571        |
| 22    | Sahina Begum       | C.P.B.H. School  | 9957991054        |
| 23    | Manalisa Choudhury | C.P.B.H. School  | 8409007608        |
| 24    | Kushti Paruah      | C.P.B.H. School  | 7896587702        |
| 2625  | Suchitra Das       | C.P.B.N. School  | 9954862916        |

List of members present :

Members.

| SINO | Name & Address         | Institute / School                       | Email / phone |
|------|------------------------|------------------------------------------|---------------|
| 1.   | M. Manikam Devi        | GU / ESES                                | 9864056314    |
| 2.   | Profulla Ch Kalita     | GU / ESES                                | 943586043     |
| 3.   | Moni Devi              | C.P.B. H.S                               | 87230877      |
| 4.   | Sarbeswari Dm.         | Rural Teacher                            | 8822103113    |
| 5.   | Dipak Baruah           | C.P.B. H.S.                              | 6001040975    |
| 5.   | Karuna Kanta Nath.     | 4 <sup>th</sup> H.M.P<br>C.P.B girls H.S | 9854489       |
| 6.   | Arup SD Sarma          | ESES                                     | 81359724      |
| 7.   | Dr. Tikesa Chakrabarty | ESES                                     | 9954725639    |
| 8.   | Deepak Sarma           | GU (ex-employee)                         | -             |
| 9.   | Dr. Subrat Das.        | ST. Radav. GU.                           |               |

## **ESES Publications:**

The following two issues of the ESES journal IJEAR were released this year to date. Besides the research papers on Application-oriented original work involving experimental data (from satellite/ground-based and in situ measurements), there is a discourse highlighting the step-by-step approaches though difficult sometimes, in setting up an experiment and the enjoyment it provides in its success. It is a goodwill welcome to the bright and dedicated young students to involve in the design and .developemnt of state of art systems that will provide good science and lead to the overall progress of science and technology

### **Issues released :**

Vol. 9, issue 1, Jun 2022 Online ([http://eses.net.in/online\\_journal.html](http://eses.net.in/online_journal.html)) ISSN 2395-0064

Vol. 9, issue 2, December 2022 Online ([http://eses.net.in/online\\_journal.html](http://eses.net.in/online_journal.html)) ISSN 2395-0064

**A Brief REPORT :**

***On***

***National Seminar on Advances in Electronics  
and Allied Science & Technology (NaSAEAST-  
23)***

**October 27-28, 2023**

**Venue: Department of Mathematics, Gauhati University**

**Organized by**



**Electronic Scientists and Engineers Society (ESES)**

**ESES Secretariate: Paschim Boragaon, Guwahati, Assam 781033**

**In collaboration with**

**Department of Mathematics, Gauhati University and Anundoram Borooah Academy  
Degree College, Pathsala**

**Sponsored by :**

**North East Space Application Centre (NESAC), Umium, Meghalaya  
Pollution Control Board Assam, Guwahati &**

## ***National Seminar on Advances in Electronics and Allied Science & Technology (NaSAEAST-23)***

⋮

### **Inception & formation:**

A National Seminar on Electronics & Allied Science and Technology (NaSAEAST-23) was organized from October 27-28, 2023, by the Electronic Scientists and Engineers Society (ESES) in collaboration with the Department of Mathematics, GU and Anundoram Borooah Academy Degree College, Pathsala.

*The special significance of this meeting:*

*NaSAEAST-23 has a special significance as this seminar was organized in the personal interactive platform after two years of performing in Webinar mode due to the Pandemic protocol.*

*The basic aim is to create an interactive platform between the young generation and experienced scientists and engineers mainly to bring awareness to hazards and relevant issues that the entire world is experiencing at present.*

*In a nutshell, there are four aspects (1) High-level thought-provoking scientific presentation, (2) State-of-the-art research leading to new findings, (3) Contributions from young researchers and finally framing of the (4) Interactive platform.*

*There are 17 abstracts under 1 and 2, and for the interactive platform the following arrangements were made :*

*(1) Poster presentation*

*(2) Model presentation with emphasis on working modules.*

(3) Exhibition mainly from reputed organizations, and here **RMC Guwahti** has offered their great cooperation by installing an exhibition stall at the NaSAEAST-23 venue.

### **The Abstract Book /Souvenir:**

:

The Abstract book offers a background of activities of ESES especially current modes of working disciplines along with the abstracts of papers to be presented. Also included are the list of Member -organizers and sponsors.

As an official initiation of the NaSAEAST-23, the first copy of the Abstract Book was displayed by the Secretary ESES ( Picture 1).



Picture 1 The Secretary ESES Prof. M. Devi displays a copy of the Abstract Book of NaSAEAST-23. Also present are Prof. P.H. Talukdar and Prof.T. K Dutta.

### **Inaugural Session**

The convener Dr A J D Sarma welcomes the delegates ( Picture 2) with a brief descriptive view of the activities of ESES since its inception in 1984 and its proliferation in

different dimensions as in launching an international journal (IJEAR) in 2014 during the span of thirty-nine years under the umbrella of Prof. A.K Barbara Sir, the President of Society.



*Picture 2: Dr. A J D Sarma, convener of NaSAEAST-23 welcomes Prof. T.K Dutta the chairman of the inaugural session to take the Chair.*







*Picture 3 The Seminar has an auspicious beginning with the lighting of lamps (on the platform from left): Dr. K.N. Mohan Head, RMC Guwahati; Prof. T.K. Dutta Don Bosco University; Dr. S.K. Aggarwal Director NESAC, Meghalaya; Dr. A K Mishra Chairman, Pollution Control Board Assam; Dr A JD Sarma Convener NaSAEAST-23; Prof M Devi Secretary ESES. Prof P.H Talukdar Former HoD USIC GU & Prof. A. Gohain Barua Deptt. of Physics, GU (lower panel).*



*Picture 4: Dignitaries taking seats at the Dias from left are Dr. S K Aggarwal, Prof T K Dutta, Dr. A K Mishra, and Dr K N Mohan.*



*Picture 5: Dignitaries are felicitated by the traditional Gamosa*



*Picture 6: Invocation song before the formal opening of the Seminar*

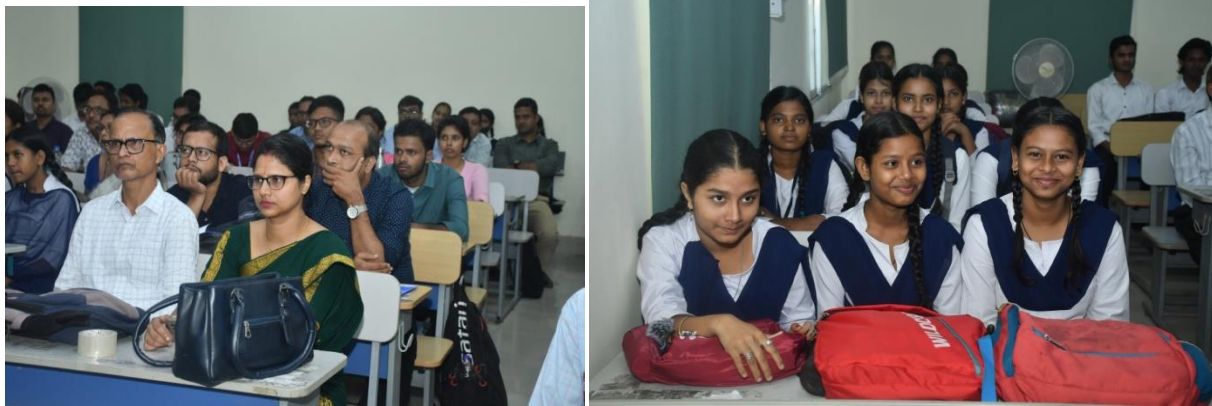
The Seminar has an auspicious beginning with the lighting of lamps (Picture 3). On the platform from left are Dr. K.N. Mohan Head, RMC Guwahati, Prof. T.K. Dutta Don Bosco University, Dr. S.K. Aggarwal Director NESAC, Meghalaya, Dr. A K Mishra Chairman, Pollution Control Board Assam, Dr A JD Sarma Convener NaSAEAST-23, Prof M Devi Secretary ESES. Prof P.H Talukdar Former HoD

USIC GU & Prof. A. GohainBarua Deptt. of Physics, GU (lower panel). Dignitaries are then invited to take seats at the Dias (Picture 4), and they are felicitated by the traditional Gamosa (Picture 5). The invocation song (Picture 6) was presented before the formal opening of the NaSAEAST-23 with due respect.

### **Formal Opening :**

Formally opening the NaSAEAST-2023 on October 27<sup>th</sup> at Gauhati University, **Dr. S.PAggarwal, Director NESAC**, Meghalaya ( Picture 7) focussed on his inaugural address on the application potentialities of Electronics and how this branch of technology has now become an indispensable part in all the spheres of our life. He then presented an extensive overview of the remote sensing facilities created by ISRO and their widespread applications from hazard warning to deep space exploration also cited the Chandryan mission. His informative talk covers all aspects of hazards right from flood, to earthquake, to which the NE zone is susceptible and how the utility of the Radar and advanced weather satellites of India with high-resolution spectra could provide fine details of both spatial and temporal resolution of precipitation, groundwater level and all met and atmospheric variabilities and finally in reliable nowcasting on hazards and helped to adopt relevant mitigation approaches by the NESAC. He has also brought into his deliberation the use of TEC from GPS in earthquake studies at NESAC. Dr. Aggarwal emphasized that in the design, working, processing of data, and retrieval of the information therein from all these state-of-the-art systems, sensors, and modules, the contribution of Electronics is indispensable. He welcomed scientists and engineers to visit their Website and to utilize the facilities of the NESAC Meghalaya. Dr. Aggarwal appreciated the contributions of the GU and ESES members in initiating and promoting such collaborative efforts between scientists and engineers toward research and development that go to the benefit of society. He wishes a grand success of the NaSAEAST-23.





*Picture 7: Deliberation and formal opening of NaSAEAST-23 by Dr. S.P. Aggarwal Director NESAC and his inaugural Speech. A section of the audience in the background.*

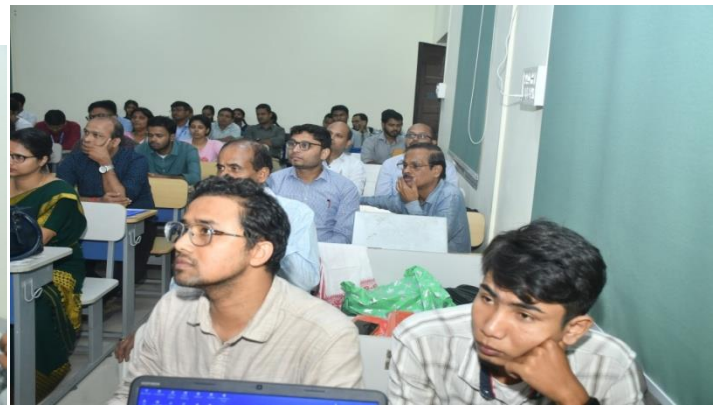
**Speech from Dignitaries :**

*Dr. Arup Kumar Mishra, Chairman PCB, Assam, started his deliberation ( Picture 8) by citing the background on the growth of ESES as how the initiative from the renowned professors of Assam Engineering Collge and Prof P.C.Mahanta & Prof A K Barbara from Gauhati University Collbataed in the growth of this scientists and Engineers Society decades back in 1984. And how their vision at that time when electronics was just came as a distant view, bore fruits now. The organizers of NaSAEAST -23 were so overwhelmed by this heartiest speech that they felt that the long bond between these two institutes was revitalized.*

*Dr. Mishra presented an intriguing deliberation in bi-lingual, Assamese, for those coming from Schools and English in general, because he realizes that the mother tongue plays a central role in the cognitive development of a child at an early stage and the brain accepts the commands in vernacular language more acceptably. In his speech as the chief guest, he took up one of the vital issues that knowledge is power. He emphasized this point by citing the example of Einstien. Dr.Misra has made it a point to the students not just to be listeners but to ask questions to teachers to understand the problem or ideas if they have any. He stressed that no matter what the child takes the course as a future career. but knowledge of science and*

technology is important to keep abreast with the growth of technology in today's global environment. He concludes that brought up in the GU environment right from his childhood to his professional entry, it has always been a sentimental point for him to be in this environment, and offered his best wishes for the success of the endeavor of NaSAEAST-23 of ESES and GU members.





*Picture 8:Delibaertaion by Dr. A K Mishra as the Chief Guest, A section of the audience*

*Dr. K N Mohan, the Head RMC, Guwahati in his Guest of Honour speech (Picture 9) presented explicit descriptions of systems and devices available at the RMC from*



*simple sensor gauges, a large number of AWS operating simultaneously all over NE and to sophisticated Doppler/Met Radars, which provide a wealth of materials for nowcasting and forecasting weather-related information which along with the South West Monsoon track to the NE and its withdrawal are regularly made available on their website, for the benefit of the people. He also said that research in this field is important and such an interactive platform as created by the ESES will go a long way in serving this purpose and in providing initiative to young minds. He wishes a great success of the event.*



+



Picture 9: Deliberation from **Dr. K.N Mohan** the Guest Of Honour and a section of the audience

**Speech from President Prof A K Barbara**, whose physical absence was due to some situation beyond control, was touched upon by his speech presented by Dr D Chakrabarty:

*I congratulate the ESES for arranging its annual convention the NaSAEAST -2023 during 27-28 October 2023, at Gauhati University. the foundation pillar of the ESES. And upholding the basic objective of the Society to create a personal interactive platform between young Scientists and engineers, and experts in the defined disciplines,*

*It would have been heartening to attend and meet my old students in this venue after the Pandemic had compelled us to go for Webner mode of the annual convention for the last years, I regret my inability to meet my friends due to some circumstances beyond my control.*

*I am kept abreast with the event and welcome the dignitaries DrS.P. Aggarwal Director NESAC, Dr. Arup kumarMishra Chairman, Pollution Control Board, Assam, and Dr. K.N.*

*Mohan, Head, RMC Guwahati for their kind presence in this meet, an event which I am sure will go in framing a strong everlasting bond between us.*

*I welcome all my dear students for helping the convention through their all capacities and to invited speakers for their valuable contributions.*

*I am very confident that the Special Session on Exhibition of the RMC, Guwahati, and Posters by students with the identified themes like Pollution, Environment, and Weather will attract young talented minds to state-of-the-art systems displayed in the exhibition, an opportunity I am sure that many will not miss availing of.*

*I wish NaSAEAST-23 a great Success and Hope to see you all in the near future.*



*Prof A.K.Barbara  
President ESES*





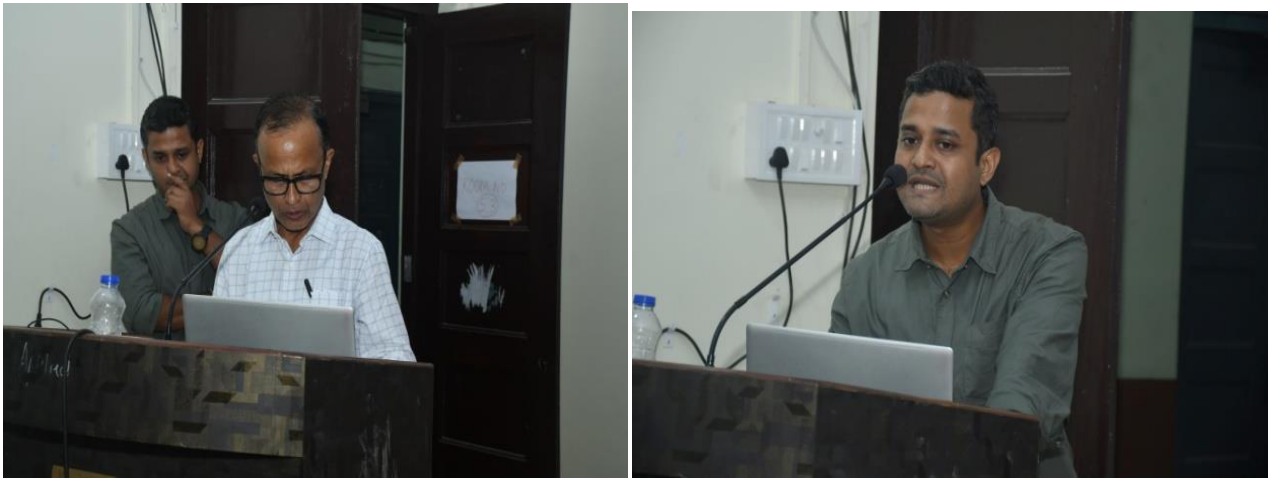
*Picture 10: Speech from Prof A.K. Baraba, President ESES who could not be present in person was read out by Dr. D Chakrabarty, A view of the dignitaries and audience.*

### **The deliberations from invitees/resource persons and young scientists/engineers.**

Besides review presentations, from invitees there were young participants from different Universities and distinguished colleges and institutes covering wide topics from (a) State of the art electronic system design, (b) Remote sensing techniques in exploration of causes to current atmospheric changes including natural hazards, (c) New approaches in the design of need-based electronic systems and devices, (d) Signal processing and Data Mining, (e) Computational methods in applied science and technology,

**Dr. Ankur Pathak** from the Pollution Control Board, Assam delivered an upcoming and serious hazard-related problem of today the “Electronic–Waste”. He put forward the dangers of E-waste as garbage and the relevant health hazard came out through toxic components. He presented the approaches taken by the PCB towards such disposal partly supported by such disposal facilities

available in other states He emphasized that recycling E-waste may be useful not only in protecting human health and the environment but also the waste extracted are of valued materials that are good resources as wealth and can also be utilized in new products. He also provided guidance and approaches to be made to the concerned services if needed to dispose of such waste.



(a)



(b)



(c)

*Picture 11: Electronic Waste Management by **Ankur Pathak** from Assam Pollution Control Board. He was introduced to the house by **Dr. M.K.Barman** HoD Physics M.C.Collger Barpeta (a) and the sessions (b and c)*

**Prof. T.K. Dutta** touched upon the health hazard the Cancer through deliberation on his topic “Complex Tumor-Virus Dynamics and Optimal Control of Tumors on Mixed Chemotherapy and Virotherapy in Cancer Diseases: A Biologically Feasible Mathematical Model”. The model is made biologically feasible by combining chemotherapy and virotherapy together and is framed by considering more independent variables and parameters. Finally, he pointed out that for chemotherapy application it is necessary to know the parameters of the individual to estimate the need or duration of chemotherapy treatment case by case, to receive a positive effect.



(a)

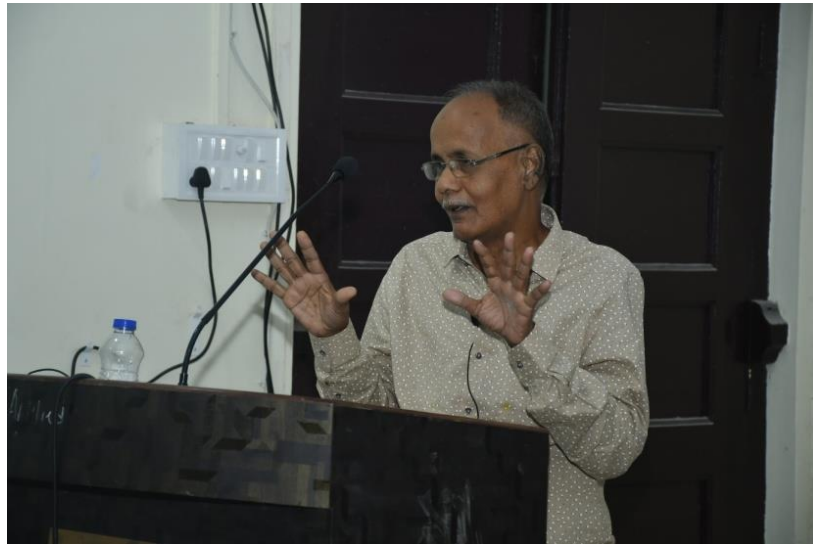


(b)

Picture 12: (a) Deliberation by **Prof T . K Dutta** on Complex Tumor-Virus Dynamics and Optimal Control of Tumors on Mixed Chemotherapy and Virotherapy in Cancer Diseases: A Biologically Feasible Mathematical Model. (b) Interactions with participants.

**Prof. P.H Talukadar's** talk ( Picture 13)started with the question: how the universe was created? what were there before the creation of the universe? what is the age of the universe? what is its shape? and many more other questions about the past, present, and future of the universe. Finally touching upon the religious views of Hinduism, Mohammdeans, and Chistianism, he describes how all religions consider the universe started from nothing though from different prospective.

He finally compared the different Avatars in Hinduism with the stage-by-stage process of human growth and finally, provided a scientific and religious view coming to a unison.



*Picture 13: Prof. P.H. Talukdar in his presentation Myths and Mysteries of the Birth of the Universe*

In system development, **Prof. B R Baruah** of IIT, Guwahati (Picture 14) shows how a cost-effective super-resolution Optical Imaging system at IIT Guwahati of locally prepared specimens is in the process of development as a part of collaborative work with Imperial



College London. This open microscope concept he showed is affordable to various groups and flexible for further improvement or adaptation.



(a)



(b)

*Picture 14 : (a) Prof. B.R.Baua on his deliberation Development of a cost-effective super-resolution imaging system at IIT Guwahati and (b) After-session discussion Prof PH Talukdar, Prof. A Gohain Barua and Prof .M Devi*

In this talk, **Prof Gohain Barua** of Gauhati University (Picture 15) displayed with examples that the light of the firefly is the outcome of a very efficient *chemiluminescence* reaction, with changes in temperature emitted flash gets split up and also pulse width changes. Analysing these changes the female and male catalyzing reactions are analyzed the talk is informative and brought interactions from participants.





*Picture 15: Prof. A Gohain Barua On his presentation Light Emissions of the Firefly at Low Temperatures*

**Dr. S Barman** from RGU ( picture 16) demonstrated how the efficiency of a client power through a photovoltaic cell is decremented at different situations like module temperature, angle of incidence (AOI), incident solar radiation levels, and spectral characteristics. He presented that

due to higher operating cell temperatures, energy generation was found to decrease from 2.9% to 6.3% across different months of the year Further improvement is underway he said. It is encouraging to know such developments and experiments were conducted when green power was in great demand now





*Picture 16: Dr. S Barman on presentation of Energy Efficiency of Window-Integrated Photovoltaic Systems in Real Operating Conditions*

In the topic Preparation of Graphene Oxide by Modified Hummers Method **Dr. Nilam J Dutta** (picture 17 ) of Tihu Collge (ESES, Life member ) has shown that they have successfully done the employment of an easy and important method i.e., an improved or modified version of Hummers' method for the synthesis of graphene oxide. The detailed result shows confirmation of the formation of graphene oxide in the experimentation. This method is cost-effective and needs support for further implementation as commented by the members present in the house.



*Picture 17: Dr . Nilam J Dutta in his presentation on the Preparation of Graphene Oxide by Modified Hummers Method*

In the study on the “Impact of Proton Capture Reaction to the Abundance of Aluminium in B-type and HgMn stars”, Mr. **Deva Pratim Mahanta** of ABADC (picture 18) showed that their investigation on the abundances of Aluminium within the context of the nuclear chain reactions of stars—under stellar conditions, while comparing the calculated ejected element abundances with those observed in B-type and HgMn stars a strong agreement in abundances between the estimated and observed values for both B-type and HgMn stars, with a correlation coefficient exceeding 0.9." was found.



*Picture 18: Deva Pratim Mahanta on presentation of A study on Impact of Proton capture Reaction to the abundance of Aluminium in B-type and HgMn stars*

The presentation by the young participant **Mr. Babesh Kalita** of GU (picture 19) in recognition of the Assamese character is appreciated because of his first work on this exercise he was found to be confident. There are a few suggestions for further improvements.



*Picture 19: Bahbesh Kalita on Assamese Alphabet Recognition Using Deep Learning*

In the next Technical session, the important presentations were from Prof. PH Talukdar and Dr D Chakrabarty.

In Brain to Brain Communication as the topic of discourse, starting with Michel Faraday, the father of electricity, **Prof. P H Talukdar** (picture 20) touched upon from Maxwell's laws of electromagnetism, to Hertz's electromagnetic radiation Then he led a smooth transition to Marconi's electromagnetic communication crossing the Atlantic, the beginning of the modern era in long-distance signal propagation. With the elaborate description of gradual additions in this field, he moved to the human brain and its communication modes and finally propagation of human thought leading to physical action. The exercise is greatly appreciated by the participants





*Picture 20: Prof P.H.Talukdar delivering the talk on Brain-to-Brain Communication .*

**Dr. D Chakrabarty** in his talk ( picture 21) on Tendency of Rainfall by Probabilistic Approach: Application in Indian Scenario draws interactive discussions. He planned an extension of this exercise for the prediction of rain.



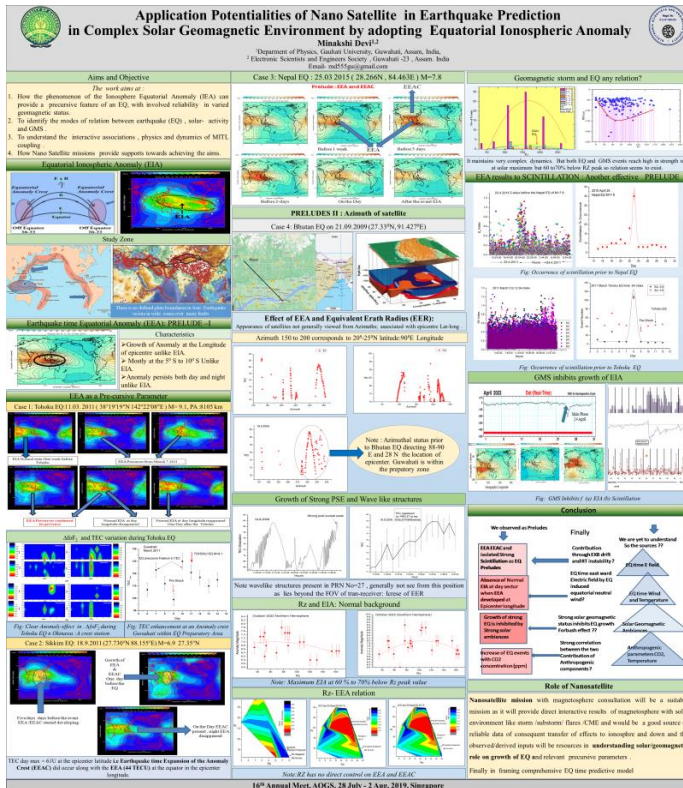
*Picture 21 : Dr.D Chakrabarty on presentation Tendency of Rainfall by Probabilistic Approach: Application in Indian Scenario*

**Display of Posters & Model:**

. In a poster presentation **Prof. M Devi** (picture 22) demonstrated how EIA ( Equatorial Ionospheric Anomaly) could effectively be used in Earthquake (EQ) precursive parameters. by displaying Total Electron Content (TEC) global and GPS-derived maps during a number of EQ events of the NE region as well as strong global events of Japan and Indonesian. She suggested that Nano satellite measurement of E and H fields during EQ time will justify the proposed explanation through the manifestation of EXB fountain contributed by EQ-induced E field generated by earthquake preparatory processes, as a future proposal. In this context, she referred to a recent AOGS Nano satellite session ( August 2023) where part of the presentation was made by her in Singapore.

The poster by two young students Mr. Jayan Deep Pathak and Mushtaq Ahmad from Anundoram Borooh Academy Degree College, Pathsala on the basic dimensional conception, (Picture 22) an encouraging academic exercise

**Poster presentation**



**Nanosatellite Application Potentialities in Earthquake-prediction: Adaptation of Ionospheric Equatorial Anomaly**  
 .DEVI ET AL



*Picture 22: Poster Display : (a) Nanosatellite Application Potentialities in Earthquake-prediction: Adaptation of Ionospheric Equatorial Anomaly by M Devi et al and (b) on 4<sup>th</sup> dimension by Mr. Jayan Deep Pathak and Mushtaq Ahmad from Anundoram Borooah Academy Degree College, Pathsala*

### **Model display :**

. The involvement of young students from colleges displaying their innovative scientific ideas and thoughts through posters and working models is a good sign that the ESES could make an impact on young minds by creating interest in Sciences/Technology. A view of the model by students is displayed in Picture 23 . The Coordinator was: Mr. P C Kalita, Department of Physics, Gauhati University



*Figure 23 : Romancita Choudhary of Pandu Collge on her demonstration of working Models*

**Exhibition: Regional Meteorological Centre (RMC) , Guwahati installed a Stall at the NaSAEAST-23 venue displaying the meteorological instruments /devices.**

The exhibition was opened by Prof. P.H., Talukdar (Picture 24). The overwhelming response from students and participants to visit the stall and to learn about the displayed equipment and its operation is a success of the aims of the organizers. The Exhibition no doubt has opened the vision and interests of young participants about the weather and associated hazards, a burning global problem of today as can be viewed from Pictures 25 ( a to g).



*Picture 24 : Opening of the exhibition at the NaSAEAST-23 venue: from left, Mr. N. Saikia (GU); Dr. N J Dutta (Tihu College); Prof.P H Talukdar ( inaugurating the exhibition ); Dr.M Barman ( M C College, Barpeta); Dr.D Chakrabarty (ESES); Dr. AJD Sarma Convener ESES; Mr. P.C.Kalita (GU). (2<sup>nd</sup> row ) : Mr. G Charkrabarty ( ESES & GU former employee), Ms. A Sarma (RMC); Dr A Bora(GU); Dr. S Barman (RGU), and (3<sup>rd</sup> row) A Mahanta (ABADC Pathsala); S Patgiri (GU); Mr. H Kalita (ABADC, Pathsala): Prof T.K.Dutta (Donbosco university) and others.*



(a)

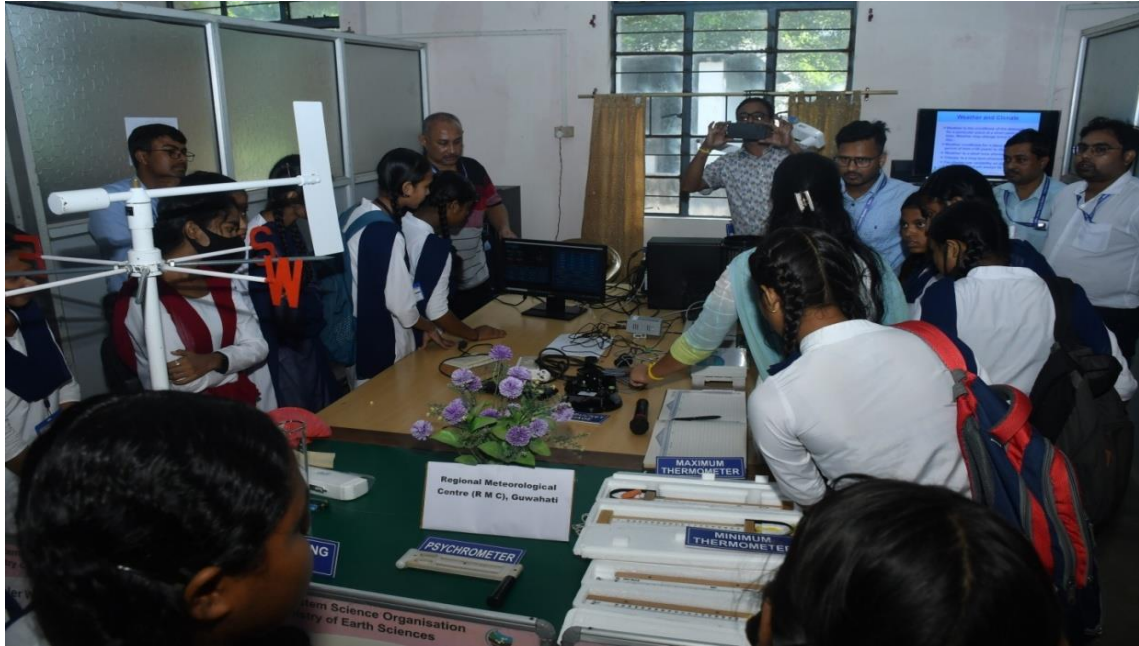




(b)



(c)



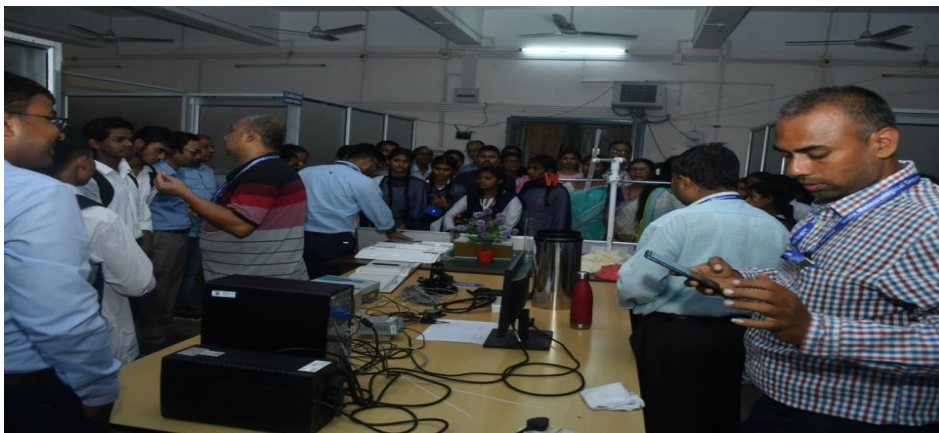
(d)



(e)



(f)



(g)



(h)

*Picture 25 ( a to h): The interests of participants and young school and college students to see and learn about the equipment displayed by RMC personnel are overwhelming. The members of the RMC team received high appreciation for their untiring efforts to make the viewers understand the use and application potentialities of the equipment displayed at the stall.*

### **Concluding Session:**

NasAEAST -23 came to a successful ending after the overwhelming response from scientists and engineers from different parts of Assam and the NE region of India and the participation of top Research and Scientific organizations of the country as well as from Japan. The success of the interacting platform between the young generation and experienced scientists/engineers of the country was a great achievement of the NaSAEAST-23.

Finally, a Vote of Thanks was offered by Mr. P.C. Kalita ( Picture 26), and the Seminar came to the End.



*Picture 26: Vote of Thanks by **Mr. P.C Kalita**, EC member ESES and Joint Treasurer NaSAEAST-23*

The Group members of NaSAEAST-23 then finally get together in a picture before saying Goodbye to the Seminar (Pictures 28 &29)

## Group Members NaSAEAST-23



*Picture 28 : From left: Mr. Hriday Kalita Anundoram Borooh Academy Degree College (Faculty ABADC, Pathasala), Mr. Jayan Deep Pathak (Student, ABADC.Pathasala), Dr. Sankar Pathak (Faculty Royal Global University, Guwahati), Dr. Arup J D Srama Convener NaSAEAST -23, Mr. Sanjeeb Deka (ESES ), Dr Dhrisikesh Charkrabarty ( ESES), Mr. Prafulla C Kalita (GU), Ms. Utpreksha Devi (GU), Prof. Minakshi Devi Secretary ESES, Prof. Pran Hari Talukdar ( Ex HoD USIC GU), Mr. Deva Pratim Mahanta ( Faculty ABADC Pathasala), Dr Nilam J Dutta (Faculty Tihu Collge, ESES), Mr Bhabesh Kalita (GU) and Mushtaq Ahmad (student ABADC Pathasala)*





Picture 29 : From left: ...Mr D Rai, Ms. Hiramani Kalita (student), Mr Gadadhar Chakrabarty (ESES), Mr Prafulla C Kalita (GU), Dr. Arup J D Srama Convener NaSAEAST -23, Dr Dhrishikesh Charkrabarty (ESES life member), Prof Minakshi Devi Secretary ESES, Prof. Tarini .K. Dutta ( Don Bosco University, Guwahati), Prof Pran Hari Talukdar ( Ex HoD USIC GU), Mr. Jayan Deep Pathak (students ABADC Pathsala), Mushtaq Ahmad (student, ABADC Pathsala), Mr. Bhabesh Kalita (GU) and others

### **Panel Discussion and Resolution;**

In the panel discussion, it was decided that ESES would go ahead with a project “to make science simplified to many”. For this purpose members will visit remote areas with scientific modules and kits to present to young members of the Society as how things work, in simple language.

It is also planned to enhance the research activities of the Centre. The mode of operation will be farmed out.

It is decided to organize in 2024 an International Seminar inviting scientists or requesting participation in online mode, based on the availability of resources. The tentative period is October/November 2024.

The resolution adopted in the Panel Discussion was read out by the Secretary ESES (Picture 30)



*Picture 30 :The resolution adopted in the Panel Discussion was read out by the Secretary ESES, present is Mr.P.C Kalita. Dr. D Chakrabarty, P.H.Talukdar and T.K. Dutta*

NaSAEAST -23 came to its successful ending: Looking forward to meet all our dear participants in 2024



Prepared and presented by

Minakshi Devi

Secretary ESES

Acknowledgement :

Our thanks go to **Dr. S P Aggarwal** NESAC Meghalaya, for gracing the inaugural function of NaSAEAST-2023 and formally opening the Seminar. His financial support to the Seminar is acknowledged by the organizer with great appreciation & thanks. We bestow our sincere thanks and gratitude to **Dr. A K Mishra** Chirman PCB for his honored presence, as the chief guest, and for the financial support to the meeting. We thank **Dr N.K.Mohan** Head RMC Guwahati for his deliberation as the Guest of Honour in the Seminar and for the RMC stall installed at the venue. The organizer thanked ASTEC Director **Mr.Joydeep Barua** for the financial support offered towards this Seminar.

The **RMC** Guwahati receives our appreciation and thanks for installing a stall at the NaSAEAST venue with equipment and manpower support. The **cooperation and help from Dr S Shaw, DDGM RMC** in this regard is acknowledged with many thanks. 'We offer our gratitude to all the members of RMC whose untiring deliberations in presenting and displaying their equipment at the stall have gone a long way in the success of the NaSAEAST-23.

The collaborative support from **Prof. Hemanta Kumar Sarmah**, Head of the **Mathematics Department GU** and **Anunduram Barua Academy Degree College**, Pathsala is acknowledged with appreciation.

The untold help from **Prof T.K. Dutta** of Don Bosco University and **Prof P H Talukdar** Ex HoD USIC Gauhati University, are highly acknowledged. Their constant support towards the organization of the Seminar has made its successful completion.

The **invited speakers and all participants** who have come and joined in the meeting are an inspiration to the academic program. Their support is duly acknowledged with thanks ' We thank the **Head Masters** of the Jalukbari Girls' High School and Jalukbari Higher Secondary School for allowing students to participate in the meeting.

It would have been difficult to conduct the meeting smoothly without the untiring support of **Mr. Prafulla C. Kalita** of GU, **Mr.Gadahar Chakrabaty** ( ESES, EX employee GU), and voluntary young workers **Ms. Utpekhyia Devi** (GU), **Ms. Hiramoni Kalita** (Ex-student GU), and **Mr. Bhabesh Kalita** (GU). Their support is greatly appreciated.

Thanks to **Dr. Malay Kr. Barman** ( ESES life member . M. C Collge Barpta ) and **Dr. Nilam Jyoti Dutta** (ESES life member, Tihu Collge ) for their instant support whenever necessary at the Seminar.

**Dr. Arup J D Sarma** Convener deserves special thanks for his effort in the framing of the Abstract book besides his Conver roles and despite his heavy official and academic duties

The support and help received from members **Dr. Samiran Patgiri** (GU), **Mr. Abhay Mali** (GU) ). **Mr.Rakesh Ali** (GU), and **Mr.Sanjib Deka** (ESES) are acknowledged with great thanks.

Finally our overwhelming thanks and gratitude to **Prof. Ananda K. Barbara** Sir, the President of the society whose inspiration and well wishes helped us overcome many problems and hurdles and to achieve the goal of Success.

*Minakshi Devi*

Minakshi Devi  
Secretary ESES

## Other Activities:

### Events:

### New Year Promises:

This year the ESES members made it a simple but action-planned day. Keeping the tradition of distributing sweets and cakes, the members had taken the pledge to plan this year for the first person-to-person interactive platform after the pandemic, between ESES members and scientists of international repute. The intention would be to have a free discussion between the members with the resource scientist on problems such as Earthquake precursive study, a fundamental issue of the research problems of the scientists of ESES. The other programs with the built-in action plans of the Society will remain. A few view graphs of the meeting and discussion followed are presented.





View graphs: ( 1 and 2) Secraetary ESES welcomes EC members on the eve of the new year 2023and distributing cakes and sweets, Secretary M Devi with ESES EC members Dr. D Chakrabarty, and Mr. P . C. Kalia . In the lower panel, ( view graph 3 ) the discussion continued with Dr. S Das (EC member ESES ) and Dr. S Patgiri (ESES EC member)

**Offering Pranam to Devi Saraswati the Goddess of Learning:** offering Pranam The ESES has made it a tradition to seek blessings every year, from Devi Saraswati, the Goddess of Wisdom and Learning. This year the, Basanta Pansami, enters on January 25th, 2023, and continues to January 26th. As the auspicious hour i.e., the Adivas. enters with the clock striking 1800 on the 25th, the ESES members plan to welcome DEVI to the ESES Enclave this evening. The Puja arrangements started in the afternoon with establishing Devi on the Thapana by lighting the earthen lamps and flowers to adore the arrangements (Picture 1) along with the offering of Puja parsed keeping the religious /cultural tradition of this region (Picture 2)



Picture 1



Picture 2

Picture 1: DEVI *Pratistha*

Picture 2; DEVI was welcomed with flowers, incense, and traditional Prasad

. The Secretary ESES opened the ritual process through prayers in Assamese and Sanskrit & members waited for the Priest to arrive (Picture 3).



Picture 3: Members waiting for the Priest to arrive

The Vedic Pjua was started by the Priest just at the auspicious moment and continued with all rituals and devotions ( Pictures 4 to 6 )



Picture 4: The priest started the Vedic ritual just after the clock announced the onset of *Pansami tithi* on the evening of 25<sup>th</sup> January-2023.



Picture 5



Picture 6

Pictures 5 and 6: The priest offered Puja to DEVI

As ESES philosophy goes, this religious celebration is decorated by blending the cultural heritage of the region with a broad outlook through a short cultural discourse. The serenity of the event is glorified with the final prayer to the Devi seeking blessings “Oh the Goddess of Wisdom please lead us to the Path of Wisdom”.

The celebration came to an end with sharing of Prasaad by the members ( Picture 7).





Picture 7: Sharing of Prasad

## **The ESES has celebrated World Environment Day – 2023, at the convention site**

[5 June 2023 marks the 50th anniversary of World Environment Day after it was established by the United Nations General Assembly in 1972].

A brief discourse was prepared and shared on the Theme taken on this year:

### ***Solutions to plastic pollution***

An appropriate theme for the degradation of the Environment leading to climate change when

- A million tonnes of plastic waste are dumped annually into oceans (see view graphs 1a.b)
- 80% of all marine debris consists of Plastic components
- Plastic pollution in the Asia-Pacific region the situation is considered to be serious though is a global problem

### **Who is affected?**

.Marine species, Food safety for all

Human health,

Flora –Fauna

Climate change.

Finally the existence of life on our planet



(a)



(b)

Viewgraph -1: One can see the contribution of Plastic to the Environment –Catastrophe

### **Plastic and negative roles:**

Plastic came into existence 100 years ago and progress and its refinements were built up after the two world wars and since 1946 use of Plastic has started increasing. Now it has become an integral part of our life. Besides the positive aspects of the wide horizon of its utility, the negative role is surfacing more often, which is also alarming. If we look at its origin it is predominantly produced from oil and gas, both of which are fossil fuels. Therefore the more plastic we make, the more fossil fuel is required, and the environmental degradation results leading to a large chain of actions that may even lead to a crisis in the survival of living beings on our planet.

### **ESES has this day taken the stand on :**

- To see that Plastic materials with long life are not to be used (whenever possible) in any platform.
- To make awareness programs to highlight the catastrophe that may bring by plastic to the survival of the Planet
- To preserve a green environment wherever the ESES has access.
- To grow trees specialty indigenous and Medicinal plants (view graph 2) of this region.
- **PROGRAM TAKEN ON THIS DAY:**
- Planted the traditional Medicinal Plants of the NE region of India. (Viewgraphs 3 and 4).
- Destroyed the plastic materials wherever they have access.
- Started using Biodegradable serving utensils as a token of the first step.

### **(1) A few Medicinal Plants planted at the ESES Convention Centre**



*Tenges* or Indian sorrel plant



Nayantora



*Duron bon* or Leucas plant



*Dupor bon* or Goethe plant

Viewgraph 2



- Viewgraph 3: A few medicinal plants were planted on this occasion at the ESES convention site.



Viewgraph 4: Mr. P.C. Kalia executive member of ESES. on watering the plants.

## **2. Use of Biodegradable serving utensils :**

The ESES has made it a practice to use bio-friendly materials in the day to day use where possible, as a step towards saving the planet from environmental degradation. Thus we start by serving tea in this environment day in earthen utensils to whoever comes to visit us ( Picture 5)

## **3:A short discourse on Pollution and our region**

A short discussion was made on the overall scenario of pollutant contributors around us. Plastic is not the only parameter contributing to environmental degradation, especially in this region, though a vital pollutant. There are hundreds of issues in and around us like incomplete combustion fuel products leading to methane and hydrocarbon (HC) emissions in exhaust from unburned fuel, and fossil fuels releasing nitrogen oxides into the atmosphere, which contribute to the formation of smog and acid rain. PM<sub>2</sub>/PM<sub>10</sub> generated by combustion generally consists of different chemical species and of a complex mixture of solids and aerosols consisting of small droplets of liquid, dry solid fragments. Further, depending on size, shape, and chemical composition, particulates may contain inorganic ions, metallic compounds, elemental carbon, organic compounds, and compounds from the earth's crust. Particles are defined by their diameter for air quality regulatory purposes. Those with a diameter of 10 microns or less (PM<sub>10</sub>) are inhalable into the lungs and can induce adverse health effects.

Similarly, Carbon Monoxide a colorless gas (CO) is another dangerous pollutant in this region. As already mentioned the incomplete combustion of fuels leads to many toxic gases also in the formation of CO. People on exposition to CO gas will suffocate on positioning, as the CO molecules will displace the oxygen in their bodies. CO Concentration even of 1 ppm may increase CardioVascular Disease and 400 ppm is life-threatening within 3 hours. Even in Guwahati, CO reaches dangerous levels, especially during winter and early equinoctial seasons when Inversion layers are very often formed. The result is trapped CO in the near-earth environment posed severe health hazard.

Some of the household (Close door) appliances that generate CO may be avoided like :

- Orange or yellow flame in combustion appliances instead of the flame which should be blue.
- Soot in fireplaces
- Poor updraft in Chimny over the fireplace
- Keeping burning candles /earthen lamps in a closed environment

In the case of Plastic, the pollution it generates is of course an extremely important issue as important its use in all spheres of our life as it makes our life easy. In brief, history shows that the plastic industry that grew after World War II had contributed on all fronts like in defense, automobiles, and all constructions not to speak of household uses. Therefore Plastic will be there and Pollution created by Plastic needs to be controlled perhaps if judiciously used and finding ways of annihilating or successfully recycling. But one of the main drawbacks of the use of Plastic is its long lifetime as shown in a few cases :

**Plastic straws – 200 years old**, so better use is paper straws or traditional sipping ways.

**6-pack plastic rings – 400 years**

**Plastic bottles – 450 years**

**Plastic cups:** Durable, but. Overtime, these cups release toxic chemicals into the environment and make them dangerous

**Disposable diapers – 500 years** These are dangerous because they need to be exposed to sunlight for decomposition but don't get decomposed on land. Serious is that they contaminate groundwater resulting in a serious threat to the environment

Therefore small changes like the adaptation of classical biofriendly earthen utensils and traditional serving ways ( View graph 5) may contribute partially towards preserving the Biosphere and de-accelerating the process of environmental degradation ( View graph 5 ).



(a)



(b)



Viewgraph 5: On the Environment issue, ESES served tea to all in earthen cups : (a) Mr. Gadadhar Charkrabarty on his visit to the ESES center and (b) Our guest Mr. Mrinal Chakrabarty, an artist of acclaim. Figures (c) and (d) ESES members ( here are from left Mr.Rakesh, Dr. Samiran, and Dr. Subrat ) made it a practice to go for bio-friendly utensils whenever possible.

Here is now Mr.Abhay Mali,( picture 6) a young ESES member displaying his homegrown Organic Products, a practice ESES tries to implement wherever possible. Thank you Abhay!



Picture 6: Homegrown Organic products from Abhay Mali

So let us all join hands!



## **Vishakarma Puja the September 16, 2013**

Lord Visa Karma the Devine architect stands as one of the most devoted Gods irrespective of any boundary of religion but to those who respect the hands-on tool that shapes the beauty of technical crafts even in today's digital robot-controlled machine-platform.

We, the ESES the members of science and technology disciplines, working and designing with machines and devices, keep the tradition of seeking divine blessings on this special Day.

This year is no exception. So on the morning of September 16, 2023, the Lord Vishwakarma is placed at the *Thapana* , with the traditional ritual around the beautiful aroma of incense, Dhuna, and naturally tuned flames from earthen lamps, decorated by plantain leaves as the culture goes.



View graph 1 The Lord Vishakarma is placed in Thapana with traditional rituals at the ESES Centre.

In the beautiful environment the Prist formally lighted the lamp and with Vedic Mantra conducted puja (view graph 2 -3)



View graph 2 and 3 : The priest conducted the Puja with all traditional and Vedic Mantras and rituals

At the end of the puja, the members gathered around the deity and took blessings the Lord ( view graphs 3 and 4).



View graph 3 and 4 : Puja came to an end and devotees sought Blessing from the Lord around the deity.

“Oh divine architecture, we seek your blessings to bestow us your skill and intelligence to make us worthy as a scientist and engineers, propagating our knowledge to the generations to come and making a worthy human being!”

So finally we all came to a decisive conclusion to train our special sections of society with skill jobs whatever we have earned by now.

## **Goodbye to 2023 and welcome to 2024**

ESES members assembled at the ESES complex on the eve of 2024 and took stock of the outputs of the activities in 2023.

The members highly appreciated the benefits that come through personal interactions with eminent scientist Prof. Oyama of Japan when he visited the ESES site especially the approach of ground motion suggested by him for the earthquake precursor study.

Training conducted in school on fundamental laws of science through demonstration was found to be fruitful and there are requests from other institutes to conduct such programs, which ESES members gave serious thought.

The benefits to school children through their interaction with the national scientists at the NaSAEST -23 and exposure to meteorological instruments/devices in working modes in the exhibition displayed by the Regional Meteorological Centre Guwahati at the NaSAEST -23 venue are overwhelming. The personal interactions with the scientists and engineers of RMC were of great opportunity for participants to know more about the weather, Hazrad, and how to identify these events from the parameters/ charts displayed by them. Members thanked the RMC for their valuable cooperation and help and expressed confidence to receive their goodwill support in the near future.

Finally, the program conducted during World Environment Day was of great interest as pollution is identified as one of the major contributors to the greenhouse effect. The resolution adopted by ESES in this regard was appreciated.

Other recreation programs taken-up are part of the society's annual function to bring harmony to all sections of Society and also such programs are part of training to young generation to learn the art of management.

The members expressed satisfaction as the programs that have been taken up covered all the aims and objectives of ESES. And pledged to uphold the activities and especially to organize the long-due international Seminar appropriate to the aims of the ESES

With thanks to all, the Secretary offered Goodbye to 2023 and welcomed all the Gloal members a very Happy 2024.

Dear Colleagues,

*Wishing you all a Happy New Year*

明けましておめでとうございます。 (*Akemashite omedetō gozaimasu!*) [Japanese]

새해 복 많이 받으십시오 (*saehae bok mani badeusipsio*) [South Korean ]

ч е с т и т а н о в а г о д и н а (*Chestita nova godina*) [Bulgarian]

*Buon Anno* [Italian]

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[Ukrainian]

*Natun Basarar subheshaa* [Assamese]

Meet you in 2024.

*Minakshi Devi*

Prof Minakshi Devi  
Secretary ESES

Dear Colleagues,

*Wishing you all a Happy New Year*

明けましておめでとうございます。 (*Akemashite omedetō gozaimasu!*) [Japanese]

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Secretary ESES