

A Report of the 52nd Annual Convention of Indian Geophysical Union (IGU)

The 52nd Annual Convention of Indian Geophysical Union (IGU) was organized jointly by the National Centre for Antarctic and Ocean Research and the IGU during November 3-5, 2015 at Goa. The aim of the convention was to provide a platform for dissemination of knowledge through oral and poster presentation, close interaction and sharing scientific thoughts/views needed for the society and, to focus and respond effectively to the risks and challenges.

The fundamental needs of the society - air, water, food, energy, shelter - are directly related to the optimal use of natural resources and knowledge of Earth system dynamics. Man-induced environmental degradation caused by excessive greed of urban development, and over-exploitation of ground water, hydrocarbons and minerals coupled with natural phenomena resultant hazards have made series of negative impacts on the Earth. This trend, if continues, will lead to ecological imbalance and obliteration of life on Earth. Different disciplines of Earth Sciences can help in taking apt measures to resolve many of the setbacks faced by Man and other life forms. Hence, the theme "Near Surface Earth System Sciences" was chosen as this assumes importance as our day-to-day activities are directly linked to earth system processes in one form or the other. As in the past, IGU provided a proper forum for presentation of current topics, local importance and results of Basic Earth Sciences covering several disciplines of Earth System Sciences, during the three-days convention of IGU.

Inaugural function started at 10 A.M on 3rd Nov. Registration of delegates was carried out from 8.30 A.M on wards. The inaugural function was presided over by Prof. Shailesh Nayak, President of IGU. Dr. Dhananjai Kumar Pandey, Local Organizing Convener invited the dignitaries on to the dais. Dr. M. Ravichandran, Local Organizing Chairman, welcomed the delegates. Dr. Kalachand Sain, Hon. Secretary of IGU, presented the secretary's report with details of IGU activities. Dr. SWA Naqvi, Director of CSIR-National Institute of Oceanography, the Guest of Honor, highlighted the significance of Geo-Sciences and its influence on society. Prof. Shailesh

Nayak, President of IGU & Distinguished Scientist of MoES, in his presidential address talked about the integration of various disciplines of Earth System Sciences and their implications to address several issues needed for the society. He has emphasized on the cohesive approach for Earth Sciences education in India; generation of human resources; development of mineral and energy resources; international collaborations; establishment of state-of-the-art national facilities for acquisition, analysis and interpretation of geo-science data etc. He also stressed upon the need of understanding the earthquake mechanism and deciphering the climate-tectonic interaction through scientific deep drilling, mountain dynamics, climate change, earthquake monitoring, services to fishermen, farmers, navigators etc.

Shri A.K. Dwivedi, Director (Exploration) of Oil & Natural Gas Corporation Limited, New Delhi, the Chief Guest of the function, inaugurated the convention. He appreciated the significant growth to Indian Geosciences and the contributions made by the Indian Geophysical Union through its Annual Convention and Journal. He stressed that the integrated approach of various disciplines of geosciences can be employed not only for the exploration of energy and mineral resources in difficult terrains, but also in understanding subsurface from surface experiments. Shri Dwivedi handed over the certificates of Prof. Jagdeo Singh & Dr. S. Balakrishna Memorial Grant to the University toppers in the discipline of Geophysics. Towards the end of the inauguration, Prof. Manik Talwani gave away the Anni Talwani Memorial Grant to the Young Women Researchers, and encouraged them to take up Geosciences in career building.

There were about 250 participants in total from different parts of the country. Apart from 9 IGU Award and Memorial/Endowment Lectures, 6 invited talks, 1 theme talk, 2 special talks, there were 60 oral and 165 poster presentations spread over several sessions on Solid Earth & Marine Geosciences, Space, Atmospheric & Planetary Sciences. The abstracts of these talks are available in www.igu.in. It is heartening to note that the three-day annual convention provided ample opportunity to the participants, especially to the

students and young researchers, to better understand the importance of scientific endeavors meant for the society and environment. After the inaugural function in the first day, Dr. P.R. Reddy, Editor, Journal of Indian Geophysical Union delivered the Theme Talk on "Importance of earth system sciences-an overview". This was followed by IGU Award and Memorial/Endowment Lectures.

In the first technical session on 'Young Researcher Program', the budding researchers and Ph.D. students presented their research works. All the 7 papers dealing with seismic, rock physics, fluvial, seismological, satellite topography data were adjudged excellent, and the Jury comprising Prof. V.P. Dimri and Dr. O.P. Pandey of CSIR-NGRI recommended for the First, Second and Third 'Best Presentation Awards'. The winners were recognized with Cash Prizes and Certificates at the Valedictory Function of IGU. In the second technical session, we provided an opportunity to the Exhibitors to demonstrate the state-of-the-art services or products related to acquisition, processing/modeling and interpretation of Geo-scientific data for the benefit of the delegates. On the second day, parallel sessions were arranged to accommodate papers on Earthquakes, geo-hazards and deep structures in the 3rd technical session, and on ocean drilling program, gas hydrates and continental margins in the 4th technical session.

55 posters by Research Scholars/Fellows, 62 posters by Students of Master Degree, and 48 posters by Other Delegates were presented in the 5th technical session. Even though two-hour slot was allocated for the poster session, it was encouraged for continued display of posters to enable better projection of scientific results and possible interaction. To motivate and encourage the young brains in Earth Sciences IGU created a four-member Jury comprising Prof. B. Madhusudhan Rao of Osmania University, Prof. P. Rama Rao of Andhra University, Dr. Rima Chatterjee of ISM and Dr. Nittala Satyavani of CSIR-NGRI, and they selected the First, Second and Third Prizes, and three Special Prizes for the 'ONGC-IGU Best Poster Awards' under the student category. The Jury, comprising Dr. O.P. Mishra of MoES, Prof. R.K. Mall of BHU, Dr. Mrigank Ghatak of GSI and Dr. Anil Kumar of NCAOR, after having gone through the posters and interaction with the presenters, selected the First, Second and Third Prizes, and two Special

Prizes for the 'ONGC-IGU Best Poster Awards' under the Research Scholar category. This was to inspire the students and to stimulate their thinking into the realm of Earth Sciences. All the winners were distributed with Cash Prizes and Certificates at the Valedictory Function of IGU.

As a member of the Federation of Indian Geosciences Association (FIGA), IGU extended its support in conducting the half-day afternoon session of FIGA in the second day, where key topics were deliberated. IGU also arranged for two special talks given by Prof. Manik Talwani of Rice University, USA on '50 years adventures on measuring gravity data over oceans' and by Shri P.H. Mane, on behalf of Shri G.C. Katiyar, ED Basin manager, ONGC-Mumbai & President of SPG on 'Mesozoic exploration of western margin of India and east coast basins'.

On the third day also parallel sessions were arranged. Papers on ground water, mineral exploration and environmental sciences were presented in the 6th technical session, whereas the papers covering Space, Planetary & Atmospheric Sciences were presented in the 7th technical session. Papers on structure and composition of Crust, lithosphere and mantle, and the papers on Theoretical and Experimental Geosciences were presented during the 8th and 9th technical sessions, respectively.

Each session was preceded by a lead talk. Prof. V.P. Dimri emphasized the need for scaling approach in enhancing the signal to noise ratio in acquisition, processing and interpretation of geophysical data. Dr. Dhananjai Kumar Pandey attempted to address the questions related to mountain building, weathering, erosion and climate system through long marine sedimentary records that has been pursued by the International Ocean Discovery Program (IODP) in the Arabian Sea. Prof. P. Rajendra Prasad raised his concern on quality of available water resources that has been affected by increasing urbanisation, intensive agricultural practices, industrialisation, demanding living standards and emerging pollutants. He has pointed out that these factors, coupled with floods and droughts, extraction of unlimited groundwater, improper management and inefficient utilization of water resulting in wastage are the main factors causing environmental and health hazards. Though climate is a complex system and global phenomenon, Dr. R. K.

Tiwari tried to address the paleo and present climate change and variability, and speculate the future based on appropriate time series analysis of new available data. Dr. R.N. Singh discussed on the Indian Ocean lithosphere: departures from cooling plate model. Dr. Sukanta Roy explained the importance of scientific deep drilling at Koyna, a classical site for artificial reservoir triggered earthquakes, which has been extensively probed using geological and geophysical methods in the past.

During the inaugural function, Prof. Shailesh Nayak, President of IGU presented the Awards/Medal/Prize and Memorial/Endowment Lectures of IGU for the year 2015 to both the young and senior Geoscientists in recognition of their outstanding contributions to Indian Earth Sciences.

DR. HARI NARAIN LIFETIME ACHIEVEMENT AWARD-2015

Prof. V.L.S. Bhimasankaram, Professor (Retd.) from Osmania University, Hyderabad, has made a pioneering contribution in the field of Exploration Geophysics, and also in Geo-magnetism, Paleomagnetism and Rock-magnetism. In view of his invaluable contribution to Geosciences education and innovative research in Exploration Geophysics, Prof. V.L.S. Bhimasankaram has been unanimously chosen for Dr. Hari Narain Lifetime Achievement Award of IGU for the year 2015.

DECENNIAL AWARD-2015

Prof. Sankar Kumar Nath, a Senior Professor in the Higher Administrative Grade at IIT-Kharagpur, has been successful in blending of Exploration & Solid-Earth Geophysics and Earthquake Hazard Science & Engineering, and contributed significantly for delineation of near-surface structures; characterization of source, site and ground response; assessment of seismic risk and vulnerability; and seismic microzonation at different parts of India. He has developed algorithms and codes in Seismic Prospecting & Pattern Recognition, Geophysical Tomography, Groundwater Geophysics and Earthquake Seismology. In view of his diversifying research interests and outstanding contribution to methodological and conceptual developments to address geophysical and geo-environmental

problems, Prof. Sankar Kumar Nath has been chosen for the Decennial Award of IGU for the year 2015.

KRISHNAN MEDAL-2015

Dr. Girishkumar, Scientist C at ESSO-INCOIS, Hyderabad, has made an excellent research that has enhanced the understanding of the forecast of tropical cyclone and prediction of monsoon over the Bay of Bengal, and the upper ocean thermohaline structure and the chlorophyll variability in the north Indian Ocean. In recognition of his remarkable contribution to ocean-atmospheric sciences, Dr. Girishkumar has been chosen for the Krishnan Medal of IGU for the year 2015.

KRISHNAN MEDAL-2015

Dr. Parthasarathi Chakraborty, Scientist at CSIR-NIO, Goa, has made an excellent contribution in understanding the composition, source and provenance of metal-binding ligands in marine system. His pioneering works on metal-humics interactions in different aquatic environments has attracted wide attention. In recognition of his brilliant work in oceanic biogeochemistry, Dr. Chakraborty has been chosen for the Krishnan Medal of IGU for the year 2015.

ANNI TALWANI MEMORIAL PRIZE-2015

Dr. O.P. Mishra, Scientist F at MoES, New Delhi, has made an outstanding contribution in both theoretical and observational seismology. He has gone beyond conventional surface wave dispersion and receiver function analysis, and carried out rigorous high-resolution tomography. He has provided very strong seismological evidence for dehydration of the subducting Pacific Sea slab, and of dehydration embrittlement. In view of his significant contribution in understanding the physico-chemical status of crust and mantle in many seismogenic provinces, Dr. O.P. Mishra has been chosen for the Anni Talwani Memorial Prize of IGU for the year 2015.

SRI L.N. KAILASAM MEMORIAL LECTURE-2015

Mr. Ajay Kumar Dwivedi, Director (Exploration) at ONGC Limited, New Delhi, has made an outstanding contribution for the discovery of oil

& gas both onland and offshore of India. During his distinguished career of more than 34 years, he was responsible for many key exploration-related assignments. He is endowed with excellent academic records coupled with rich expertise in analysis and integration of multi-disciplinary geo-scientific data. In view of his outstanding contribution to Exploration of Hydrocarbons, Mr. A.K. Dwivedi has been chosen for Sri L.N. Kailasam Memorial Lecture award of IGU for the year 2015.

DR. H.N. SIDDIQUE MEMORIAL LECTURE-2015

Dr. Maruthadu Sudhakar, Director, ESSO-CMLRE, Cochin, has contributed extensively in the field of deep-sea bed resources and oceanographic surveys/polar sciences/ marine technology. His expeditions include Southern Ocean and Antarctica. His major scientific achievements include delineation of major nodule deposits in Central Indian Basin; demarcation of potential areas for resource development; discovery of a large pumice field, zeolite deposits on Australasian microtektites; mapping seabed; and charting bathymetry of Prydz Bay, Eastern Antarctica. In view of his outstanding contributions to Marine Geosciences, Dr. M. Sudhakar has been chosen for Dr. H.N. Siddique Memorial Lecture award of IGU for the year 2015.

ELECTROTEK & GEOMETRICS ENDOWMENT LECTURE-2015

Prof. Amarendra Kumar Sinha, Director at the Centre of Excellence - Climate Change & Water Research, Jaipur, has contributed significantly in Hydrology including the Environment Geology. He played a key role in creation of PG Department in Geology, Indira Gandhi Centre for Human Ecology, Environmental Science and Population Studies and Centre for Water Management & Research within the campus of University of Rajasthan. He also founded two professional societies namely the ENVIRON at School of Environmental Science, JNU, Delhi and the Association of Geo-environmentalists to promote linkage between science and society. He has supervised 22 Ph.D. students. In view of his significant contributions to Geosciences, Prof. Amarendra Kumar Sinha has been chosen for the

Electrotek & Geometrics Endowment Lecture award of IGU for the year 2015.

PRINCE MUKARRAM JAH ENDOWMENT LECTURE-2015

Prof. Talat Ahmad, Vice Chancellor (VC) at Jamia Millia Islamia in New Delhi, is an accomplished academician and renowned Geologist. He has contributed significantly in understanding the genesis of Precambrian magmatism and evolution of the Himalaya and north Indian shield based on geochemical and isotopic studies. He has established a Precambrian Research Group, which helped the Department of Geology at University of Delhi to become a Centre of Advanced Studies with Precambrian Research as a thrust area. As a VC of Kashmir University, he has formed a consortium with Delhi University, JNU, Sikkim University and Jammu University to study the Himalayan Glaciers. He is now starting new courses on Disaster Management, Atmospheric Sciences and Mountain Meteorology. Prof. Ahmad supervised 17 Ph.D. students. In view of his significant contribution to Precambrian Geology, Prof. Talat Ahmad has been chosen for Prince Mukarram Jah Endowment Lecture award of IGU for the year 2015.

PROF. D. LAL BEST PAPER AWARD-2015

The selection committee, duly constituted by the executive committee of IGU, examined all the papers published in four Issues of IGU during the year 2015, and unanimously found the article entitled 'Geological and Geotechnical Characterization of Ramagundam Opencast-II of Singareni Collieries using Geophysical Logs' authored by G. Uday Bhaskar, A. Srinivasa Rao, G.V.S. Prasad and B. Shravan Kumar deserving for Prof. D. Lal Best Paper Award of IGU for the year 2015. Dr. Uday Bhaskar, Deputy General Manager at Singareni Collieries Company Limited, Kothagudem, received the cash award on his and his co-authors behalf.

ONGC-IGU Best Oral Presentation Award under Research Scholar Category:

First: Mr. Nara Damodara, CSIR-NGRI, Hyderabad
Second: Ms. Vinee Srivastava, IIT Mumbai
Third Prize: Ms. Falguni Bhattacharya, Institute of Seismological Research, Gandhinagar

ONGC-IGU Best Poster Presentation Award under Research Scholar Category:

First: Mr. Shib Shankar Ganguli, CSIR-NGRI, Hyderabad

Second: Mr. Vipin Kumar Pathak, ISM, Dhanbad

Third: Mr. N. Lachit Singh, NCAOR, Goa

Special Prizes:

Mr. Soumya Chandan Panda, IIT, Kharagpur

Ms. Soumya Shukla, CSIR-NGRI, Hyderabad

ONGC-IGU Best Poster Presentation Award under Students Category:

First: Mr. Aayush Agarwal, ISM, Dhanbad

Second: Mr. Deepak Kumar, Kurukshetra University

Third: Miss. Alka Rani, Kurukshetra University

Special Prizes:

Mr. Pankaj Baruah, Dibrugarh University, Dibrugarh

Ms. Debashree Dutta, Dibrugarh University, Dibrugarh

Mr. Shubham Priyadarshi, ISM, Dhanbad

Prof. Jagdeo Singh & Dr. S. Balakrishna Memorial Grant to University Toppers:

Osmania University (Geophysics), Hyderabad

Ms. G. Blessy

Mr. B. Laxman

Andhra University (Geophysics), Visakhapatnam

Ms. Ch. Mohana Lakshmi

Ms. S. Mounica

IIT Mumbai (Applied Geophysics)

Mr. Amit Kumar

Mr. Priyank Lal

ISM (Three Years App. Geophysics), Dhanbad

Mr. Subrata Singha

Ms. Soumya Mukherjee

ISM (Five years App. Geophysics), Dhanbad

Mr. Ankit Kumar

Mr. Arka Das

Kurukshetra University (Geophysics), Kurukshetra

Ms. Shivani Baliyan

Ms. Shruti Malik

Banaras Hindu University (Geophysics)

Mr. Ashwini Anand

Mr. Puneet Pavan Upadhyay

IIT, Kharagpur (Exploration Geophysics)

Mr. Pushkar Mondal

Mr. Nishant Kumar

Anni Talwani Memorial Grant to Young Women Researchers:

Ms. Uma Vadapalli, CSIR-NGRI, Hyderabad

Ms. Drasti Gandhi, Institute of Seismological Research, Gandhinagar

Ms. Archana Jarial, CSIR-NGRI, Hyderabad

Ms. Jayashree Banerjee, Indian School of Mines, Dhanbad

At the valedictory function of IGU, Prof. Manik Talwani, Guest of Honor, advised the students and researchers to achieve excellence in whatever field they pursue their research. He handed over the Cash Prizes and Certificates to the Students and Research Scholars for their best performance in the 52nd Annual Convention of IGU. Prof. Sashikumar Punnekkat, Director, BITS Pillani, Goa & Chief Guest of the function narrated the tremendous growth of computers that has taken place with the passage of time, and their application to understand the complexity of Earth System Sciences. He handed over the Certificates to the Students who participated in the Interaction-cum-Poster session earlier organized by the IGU, Goa Chapter.

The delegates thoroughly enjoyed the scientific proceedings and the excellent hospitality provided by the local organizers. In this regard, Dr. M. Ravichandran, Dr. Dhananjai Kumar Pandey, Mr. Ajeet Kumar and other members from NCAOR deserve the compliments. IGU places on record the financial support received from the MoES, INCOIS, NCAOR, NCESS, NGRI, NIO, IIG, ONGC, OIL, Electrotek International, Omni Infoword (P) Limited, JCS Instruments (P) Limited, Horizon Geosciences, Aimil Limited.

**Kalachand Sain & ASSRS Prasad
Hon. Secretary & Organizing Secretary,
Indian Geophysical Union**



Inaugural Function: Releasing the abstract volume by Shri A.K. Dwivedi, Chief Guest & Director (Exploration) of ONGC Ltd. Dr. Kalachand Sain, Hon. Secretary of IGU, Dr. SWA Naqvi, Guest of Honor & Director of CSIR-NIO, Prof. Shailesh Nayak, President of IGU & Distinguished Scientist of MoES, Dr. M. Ravichandran LOC Chairman & Director of ESSO-NCAOR, Dr. ASSRS Prasad, Org. Secretary of IGU and Dr. Dhananjai Kumar Pandey, LOC Convener are also seen on dais.



Audience during the inauguration of the 52nd Annual Convention of IGU.



Dr. SWA Naqvi, Director of CSIR-NIO is inaugurating the Exhibition. Dignitaries and delegates look on.



Prof. V.P. Dimri, INSA Senior Scientist is inaugurating the Poster Session, and the delegates look on.



Valedictory Function: Prof. Sasikumar Punnekkat, Director of BITS Pilani, Goa & Guest of Honor, giving away the certificates to students. Dr. Kalachand Sain, Dr. M. Ravichandran, Prof. Shailesh Nayak and Prof. Manik Talwani look on.