

Centre for Science Education. Mukunda expressed hope that in future editions of YISC, there would be speakers representing a wider cross-section of Indian universities. R. Srinivasan dwelt on his new venture of building kits for demonstrating various experiments for the benefit of colleges.

There was immense interaction between the audience and the panel chairs and this mainly dealt with the conditions in the university sector both in teaching and research, expectations from premier research institutes, and science academies. Also, there were discussions between various TIFR faculty members and the

invited college teachers. A formal laboratory visit programme was held, in which various TIFR groups actively participated, such as high energy physics group, gravitation group, NMR facility, pelletron, cryogenics, fluorescence correlation spectroscopy laboratories, astrophysics group, biology labs and supercomputer centre. These visits enabled the participants to witness the state-of-the-art in Indian science and interact with TIFR scientists, many of whom identified niche issues to explore using facilities in TIFR. M. Barma (Director, TIFR) also offered support to facilitate future individual interactions with college teachers.

N. Mukunda supported the proposal to host YISC-like venture every two years at different venues in India. It is hoped that YISC series will become a national event to disseminate scientific contributions by young researchers in India to the community of college teachers.

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MEETING REPORT

Earth system processes and disaster management*

A three-day National Conference on 'Earth system processes and disaster management' was conducted to understand earth processes and disaster management with special emphasis on climate change. There were seven highly interdisciplinary thematic sessions with 25 invited papers and 15 short presentations.

In the inaugural address, S. K. Tandon (Pro-Vice Chancellor, Delhi University) discussed natural climate variability from inter-annual to millennium scale emphasizing on the dynamics of the coupled climate system which is likely to be disturbed by anthropogenic factors. He gave special focus to the sustainability of the river systems of India which have been cradles of Indian civilization. N. K. Dutta (Director General, Geological Survey of India) emphasized the need for integration of multidisciplinary data to understand the processes which will be helpful in disaster mitigation.

The session on 'Atmospheric and surface processes' started with a lecture by D. R. Sikka by who elaborated on the development of early warning systems

for hydro-meteorological natural disasters. Giving an account of the march from climatology to dynamical weather prediction and climate prediction in the emerging climate change scenario, he emphasized that the mitigation of hydro-meteorological disaster rests with better monitoring, better modelling efforts and better communication of threat perception in a probabilistic manner for which public awareness is to be aggressively promoted. D. K. Pal (National Bureau of Soil Survey and Land Use Planning, Nagpur) focused on the soil resources of India and discussed the utility of clay minerals as a palaeoclimate proxy. Deepak Srivastava (Centre for Glaciological Studies, WIHG) pointed out that any imbalance in the glacier regime of Himalayas, triggered by natural as well as anthropogenic impacts of climate change, affects the water balance of the region. M. Baba (CESS) emphasized the role of multidisciplinary studies in earth sciences in disaster mitigation. Amit Dharwadkar (GSI) revealed that the recession of the Dakshin Gangotri glacier snout, Schirmacher Oasis, east Antarctica between 1983 and 2009 has varied from 0.57 to 0.78 m per year.

In the 'Subsurface processes and hydrology' session, K. R. Gupta highlighted the importance of shallow subsurface studies in India, and emphasized that shallow subsurface of earth down to a

maximum depth of 200 m is the critical layer on which, in which and with which we build and live. Motivated by a mix of scientific, environmental, economic, health and safety concerns, it is imperative to study and understand the shallow subsurface. S. Rajan (NCAOR) explored different aspects of the extended continental shelves beyond 200 nautical miles. Spread over nearly two years, over 31,000 line km of multichannel seismic reflection, gravity and magnetic data together with bathymetric information was acquired along 42 pre-determined profiles. Manohar Arora (NIH) elaborated upon the impact of climate change on stream flow volume as well as the temporal distribution throughout the year over the Asian region, imposing significant stress on the water resources in the region. J. K. Pati (Allahabad University) discussed progress and breakthroughs in studies on the Dhala impact structure, Central India.

The 'Natural disaster' session covered issues of earthquakes, floods, landslides and tsunami with particular reference to Indian scenario. R. K. Chadha (NGRI) presented an account of studies taken up in the Indo-Gangetic plains in general and Lucknow city in particular, to understand the tectonics and hazards where initial results on site response investigations have shown encouraging results. V. Bhanumurthy (NRSC) emphasized on the

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space inputs from ISRO DMS programme for flood management. He elaborated about the data acquisition, analyses and dissemination in disaster management support programmes (DMS) taken up by ISRO/NRSC. Rajiv Sinha (IIT Kanpur) delivered a talk on the recent unprecedented avulsion of the Kosi river in North Bihar and pointed out that this event was different from the usual overbank flooding. He described this as a man-made disaster due to continued intervention on the river systems. S. S. C. Shenoi (INCOIS) described the tsunami warning system and elaborated about a host of communication systems (INSAT DRT and MSS) employed for the timely reception of data from the sensors and for dissemination of bulletins. P. C. Nawani (NIRM) highlighted the Varanasi landslide, Uttarakhand Himalaya and its mitigation as a case history.

The 'Earth resources' session, started with a talk on gas hydrates by Kalachand Sain (NGRI) who informed that the coring and drilling, mostly confined to the eastern Indian offshore, by the Indian National Gas Hydrate Program have established the presence of gas-hydrates in the Krishna-Godavari, Mahanadi and Andaman regions. R. P. Verma (GSI) discussed the contribution of National Geochemical Mapping Programme in

identifying mineral resources in Rajasthan. S. K. Bhushan (Bodata Group) presented a talk on the gold mineralization in Gadag Schist Belt. V. C. Tiwari (WIHG) discussed about the neoproterozoic hydrocarbon potential of the Indian sedimentary basins.

The final technical session on 'Climate change' brought out some of the important findings in the Indian scenario. Rajiv Nigam (NIO) presented some case studies using foraminifera for detecting palaeomonsoons, palaeo-tsunamis and sea-level changes and emphasized the need for generating high-resolution proxy data for reconstructing palaeoclimate. A. Rajnikant (BSIP) spoke on relevance of palaeo-phyto-resource (PPR) studies in earth system science. Manish Tiwari (NCAOR) compared western and eastern Arabian sea palaeoclimatic records of Southwest monsoon wind versus precipitation. Thamban Meloth (NCAOR) presented data on climate variability during the past few centuries as depicted in ice cores from Antarctica and its implications on global climatic teleconnections. Rajesh Agnihotri (NIO) discussed the role of natural (solar) forcing in the recent era of anthropogenic climate change.

The concluding session was chaired by D. R. Sikka and the following major recommendations were adopted.

1. An integrated approach in earth system science would enhance India's capabilities in sustainable development in the face of climate change and rising adverse impacts of disintegrated national development.
2. Earth scientists should encourage collaborative research among individual scientists and organizations in multidisciplinary areas.
3. The Indian community of earth scientists should find opportunities to participate in various international programmes (GEOS, ESSP, IGB, IGCP, WCRP, etc.) to work together for climate prediction at all spatio-temporal scales (inter-annual to decadal; centennial of millennial scale) and adopt the approach of seamless prediction of the earth systems.
4. Young scientists should be sensitized about the challenges of earth system science.

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MEETINGS/SYMPOSIA/SEMINARS

National Workshop on Quantitative Techniques in Biodiversity Assessment

Date: 26–27 February 2010
Place: Nanded

The workshop will cover theoretical and practical aspects on biodiversity assessment and data analysis.

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Workshop on Building Fire Protection

Date: 25–26 February 2010
Place: Bangalore

The workshop is designed to improve fire safety through applying understanding of a comprehensive fire protection approach. The workshop focuses on the following: (i) A comprehensive approach, because no one element can ensure complete fire protection; (ii) Commercial occupancies, as it is these occupancies that are more strictly regulated by building, life safety and fire codes.

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