

## Coastal Processes and Management – Sustainability in Coastal Use

The coasts are dynamic systems, undergoing adjustments of form and processes at different time and space scales in response to oceanographic and geomorphologic factors. It is continuously under threat from different hazards including storm surges, flooding, erosion and sea level rise. Given the predictions for climate change, the erosion and flood risk to urban, tourism and industrial facilities, agricultural lands, recreational areas and natural habitats increases every year.

The changing coastline has also been influenced by anthropogenic activities throughout the years, particularly in attempts to stop the effect of erosion or flooding. The difficulty of reconciling the safety of people and assets with the benefits offered by natural coastal processes has been exacerbated in the past few decades as a result of increasing capital investments. In some cases, this has taken place without an appreciation of the effect these actions could have on other places up and down the coast.

Although these changes continue, social, economic and environmental pressures are increasing in the coastal area. People enjoy living by and visiting the coast, and the pressure for more housing is increasing. It has been estimated that 23% of the world's population lives both within 100 km distance of the coast and less than 100 m above sea level. The population densities in coastal regions are about three times higher than the global average. Sixty percent of the world's 39 metropolis with a population of over 5 million are located within 100 km of the coast. This rapid urbanization has serious consequences on the coastal areas.

As national and international trade increases, so does the demand for port space and associated coastal-based industry. This sort of development places stress on natural coastal habitats that are often unique and of national and international importance.

### *Coastal Processes*

The coastline responds to various forcing mechanisms that provide the energy and momentum to drive the littoral processes. The

*Continued in page 2*



*Dr. Shailesh Nayak, Secretary, Ministry of Earth Sciences, Government of India, delivering Keynote address during the inaugural session of the National Conference on Coastal Processes, Resources and Management. Dr. Anjan Chaki, Director, Atomic Minerals Division, Department of Atomic Energy, Government of India, Dr. E.P. Yasodharan, Executive Vice President, KSCSTE, Dr. T. Radhakrishna, Director-in-Charge and Dr. N.P Kurian, Organizing Secretary are also seen.*

## National Conference on Coastal Processes, Resources and Management

The National Conference on Coastal Processes, Resources and Management was organized on the lines of the International Coastal Symposium at the Centre for Earth Science Studies during 5-7<sup>th</sup> February 2010. The conference was intended to provide a platform for sharing of scientific knowledge, information and experience among the various groups/agencies directly or indirectly involved with the coast. It was sponsored by the Ministry of Earth Sciences and Department of Science & Technology, Govt. of India; Kerala State Council for Science, Technology & Environment and co-sponsored by a host of other agencies. The conference had an overwhelming response from professionals who are working towards solving various coastal problems from across the length and breadth of the country. Nearly 200 delegates participated in the deliberation. The Conference was inaugurated by Dr. Shailesh Nayak, Secretary, Ministry of Earth Sciences,

Government of India. In his Keynote address Dr. Nayak dealt with the problems affecting the vast coastline of the country. He emphasized that detailed studies are essential to remove the uncertainties in understanding coastal processes. Dr. Anjan Chaki, Director, Atomic Minerals Division, Department of Atomic Energy, Government of India offered felicitations. The inaugural session was followed by 21 Technical Sessions that covered eight themes: Coastal Hydrodynamics, Coastal Resources, Coastal Geology and Geomorphology, Coastal Resources, Coastal Hazards and Pollution, Modeling and Monitoring, Coastal Zone Management and Coastal Engineering. As many as 29 invited papers were presented by leading scientists from premier institutions of the country such as Indian Institutes of Technology (Delhi, Madras, Kharagpur, Bombay), National Institute of Oceanography (NIO), Indian National Centre for Ocean Information System

*Continued in page 3*

## Director Speaks



Deficiency of drinking water in several regions of Kerala is a new phenomenon, even though the state, with its rich water potential, is considered as a water surplus region. All conventional fresh water resources of the state are under heavy strain due to increased demand caused by the rise in population, urbanization, enhanced demand from industrial and agricultural

sectors and the rapid contamination of surface and ground water sources. The climate change and erratic monsoon compound water deficiency. So preservation and maintenance of existing water sources as well as identification and development of alternative non-conventional sources are imperative to keep up with the increasing demand. The spring water sources available in several parts of Kerala remained untapped due to lack of information on its exact location, seasonal water potential variations and quality.

Recognizing the potential of spring water resources as an alternative drinking water source with low investments, CESS has undertaken a detailed study to locate and map the spring resources in the coastal and midland regions of the two southern districts of Kerala - Thiruvananthapuram and Kollam. The study identified and mapped 204 perennial springs with rich water potential in the two districts. Flow rates in these springs ranged from a minimum of 0.6 litre per minute (lpm) to a maximum of 240 lpm. Analysis of water samples indicated low range of dissolved salts (conductivity of majority of sources lie in the <math><100\mu\text{S}/\text{cm}</math> range) and the chemical quality satisfies BIS/WHO drinking water specifications except for the pH level. With low cost treatment procedures the spring water could be used for drinking purposes.

The combined daily average outflow of these springs is estimated to be 12.5 million litres, sufficient to meet the drinking water needs of 1.78 lakh people, which is about 15.2% of the population of the region. Springs are important sources of potable water in the study region. The most dominant and productive cluster of springs are located in Venganoor, Varkala, Hariharapuram and Nedungolam regions. Though, some efforts have been done to construct storage structures at a few springs, optimal utilization of water from these gifts of nature is yet to be achieved.

The springs from all locations are under constant threat from natural as well as man-made factors. The unscientific use of chemicals and fertilizers for agriculture, disposal of sewage and solid wastes in the spring environments, etc. induce high nutrient loadings and microbial contamination in spring locations. Between 1950 and 2000 the population has increased three times, drastically increasing the demand for water. Land use pattern also underwent significant changes due to urbanization. Encroachment of land around springs has led to partial or complete destruction of about 18% of the spring resources in private and public land within a short span of time. Contamination of fresh spring water sources due to unhygienic environment is a major concern, and needs immediate attention for their preservation. The management of springs should be more strategic and proactive, since tapping of spring water sources yields larger economic benefits per unit volume due to its availability at local level and good quality.

*Dr. N. P. Kurian*

*Continued from page 1*

## Coastal Processes and Management.....

processes that shape shorelines can be examined with many timescales. Short-term forces include storm, wave, current and wind effects and long-term processes include sea level rise. In addition to these long and short-term processes, there is human interference by building structures for commercial, defence and coastal protection applications and more recently recreational and tourism activities. Coastal development is now causing a significant conflict with natural coastal processes and anthropogenic activities. Knowledge of coastal processes in the area concerned is required to develop strategies for sustainable coastal zone management and cope shoreline erosion effectively.

### *Coastal Erosion Management*

Key factors for managing coastal erosion before deciding on a management option are (1) identifying the cause of erosion and (2) determining the extent of problem. Management options should address the root causes of erosion and accommodate coastal processes in the solution than simply trying to mitigate the effect. Currently, the future of our beaches rests in multiple agencies and the measures used to manage coastal erosion have generally been designed from a local rather than regional perspective.

Over the past few decades, in numerous cases, poorly planned coastal protection measures may have partially solved coastal erosion locally but triggered new erosion problems elsewhere on the coast, sometimes as many as 10's of km away. The limited knowledge of coastal sediment transport processes and limited budgets have resulted in the implementation of inappropriate coastal protection measures. There is an urgent need for coastal erosion management to move away from the present piecemeal approach to a more comprehensive and pro-active one based on planning, good practice and accountability of achievements, with long-term cost-minimisation goals and economic benefits.

In spite of the availability of a large amount of coastal data from numerous research and technical organisations, significant information gaps still exist. Dissemination of research findings are limited to conference presentations or technical report submissions to the funding agency, which results in inadequate decision making in coastal erosion management. In this context, managers are unable to take an overview on the physical coastal system and in the coastal zone management (CZM) plans. Further, as coastal protection is an integral part of coastal area management, beach protection programmes need to be incorporated into coastal zone management plans.

### *A Sustainable Management Plan*

A sustainable coastal zone management plan provides 'sustainable coastal zone management policies'. However 'sustainability' is not necessarily the same for environmental managers, local self governments or local residents within a coastal settlement. What is required is consideration of the conflicting pressures on the coast and constraints upon its management and provision for an optimised plan, which considers people, nature and socio-economic realities.

A sustainable management plan for a coastline into the 22<sup>nd</sup> century, should promote management policies that can achieve therefore long-term objectives without committing to unsustainable practices. It is, however, recognised that due to the present-day objectives and their acceptance, changes to existing coastal zone management plans may not be appropriate in the very short-term. Consequently, the management plan needs to provide a 'route map' for decision makers to move from the present situation towards the future.

The guiding principle should be that an integrated coastal zone management plan needs to define long-term sustainable objectives, even though these may change with time. There will always be uncertainties associated with long-term planning, both in terms of extrapolating information and making predictions regarding coastal infrastructure developments, risks, future legislative requirements, opportunities and constraints. Consequently, the primary function of CZM should be to demonstrate that coastal zone management policies proposed today, i.e. in the short-term, are not detrimental to the achievement of a sustainable management plan.

*Dr. N. P. Kurian*

*Continued from page 1*

### **National Conference on ....**

(INCOIS), Naval Physical and Oceanographic Laboratory (NPOL), Central Water and Power Research Station (CWPRS), National Institute of Ocean Technology (NIOT) and Goa University. In addition, 71 contributed papers covering all the conference themes were also presented.

The valedictory session of the conference was held in the afternoon of 7<sup>th</sup> February. Presided over by Dr. T. Radhakrishna, Director-in-charge, CESS and attended, among others, by Dr. M. Sudhakar, Advisor, Ministry of Earth Sciences and Dr. M. Prithviraj, Director, Department of Science & Technology, the session discussed on the report on the Conference, presented by Dr. T. N. Prakash, Secretary (Technical). The Conference was rated high by all those who spoke including representatives from the audience. Dr. N. P. Kurian, Organizing Secretary mooted the proposal that the national coastal conference should become a regular event in the lines of the International Coastal Symposium. It was well received by the audience and Dr. Ramesh Kumar, Scientist, NIO announced that the



*Dr. Baba is being honoured for his illustrious career and remarkable contributions to institution building by wrapping a 'Ponnada' by Dr. T. Radhakrishna, Director-in-Charge, CESS. Dr. N.P Kurian, Organising Secretary of the Conference is also seen.*

they would be hosting the next Conference at Goa. Rich tributes were paid to Dr. Baba (on the occasion of his superannuation from service) for his three decade long contributions to coastal science. The Valedictory Session was followed by a field visit to Kovalam beach near Trivandrum where the first Artificial Surf Reef in the country was being built.

The Conference was a big success in that it provided an opportunity for nearly 200 delegates from the length and breadth of the country to interact with one another. The Conference provided a rare forum for the youngsters to get exposed to the emerging areas of research in coastal science through 29 invited papers from leading scientists of the country. The conference witnessed the reporting of some of the latest contributions in coastal processes including research methodologies. There were important contributions in the field of coastal resources like the finding of huge offshore sand reserve by GSI. Methods for mitigation of coastal erosion/hazards and management of the vast coastal zone of the country were topics that received due importance in the conference. It is hoped that the coastal conferences will accelerate the R&D efforts within the country on coastal issues, provide regular platform for interaction of various stakeholders and ensure sustainability in coastal use.

### **Publications**

#### *Papers in Journals*

Arjun S, Sheela Nair L, Shamji VR and Kurian NP (2010) 'Tidal Constituents in the Shallow Waters of the Southwest Indian Coast', *Marine Geodesy*, 33: 2, pp. 206 – 217

Mallia R, Subhash N, Mathews A, Kumar R, Thomas S, Sebastain P and Madhavan J (2010) Clinical grading of oral mucosa by curve-fitting of corrected autofluorescence using diffuse reflectance spectra, *Head & Neck*, 32(6), pp.763-779, (DOI:10.1002/hed.21251).

Shiny Sara Thomas, Jayanthi J L, Subash N, Joji Thomas, Mallia R and Aparna GN (2010) Characterization of dental caries by LIF spectroscopy with 404 nm excitation, *Lasers Med Sci*, Online - (DOI: 1007/s10103-010-0771-3).

Mallia R, Subhash N, Madhavan J, Paul Sebastain, Rejnish Kumar, Anitha Mathews, Gigi Thomas and Radhakrishnan J (2010) Diffuse reflectance spectroscopy: An adjunct to autofluorescence spectroscopy in tongue cancer detection, *Applied Spectroscopy*, 64(4), pp 409-418.

Shiny Sara Thomas, Soumyakant Mohanty, Jayanthi J L, Jolly Mary Varghese, Anita Balan

and Subhash N (2010) A Clinical trial for detection of dental caries using laser-induced fluorescence ratio reference standard, *J. Biomedical Optics*, 15(2), 027001

Sampad Kumar Panda and Sukumar B. (2010) Delineation of areas for water conservation in Peruvumba basin, Kannur district, Kerala using remote sensing and GIS, *International journal of Geomatics and Geosciences*, 1, pp. 76-83

Sudhanandh V S, Amaldev S and Narendra Babu K (2010) Prevalence of autochthonous *Vibrio cholera* and role of abiotic environmental factors in their distribution along the Kerala – Karnataka coast, West coast India, *Research Journal Microbiology*, 5 (11): pp 1083-1092.

Sudhanandh V S, Ajimon V J and Narendra Babu K (2010) Water quality effects of hydraulic dredging and microbial autochthon population, a case study in Kochi (Kerala), India. *Inte. J. of Applied Environmental Sciences.*, 5 (1), pp. 57-66.

Jean Jose J, Udayakumar P, Ajimon V J, Shibu R and Narendra Babu K (2010) Hierarchical analysis of zooplankton assemblages over semidiel pattern in the lagoon of Kavaratti atoll, Lakshadweep archipelago, India. *Current Research J. of Biological Science*. 2(4): pp 294-298.

Narendra Babu K, Omana P K, Mahesh Mohan (2010) Water and sediment quality of Ashtamudi estuary, a Ramsar site, Southwest coast of India – a statistical appraisal. *Environmental Monitoring and Assessment*. 165: pp 307-319.

Shamji V R, Shahul Hameed T S, Kurian N P and Thomas K V (2010) Application of numerical modeling for morphological changes in a high-energy beach during the south-west monsoon. *Current science*, 98(5) pp.691-695.

Ruta B Limaye, Kumaran, K P N, Nair K M and Padmalal D (2010) Cyanobacteria as potential biomarker of hydrological changes in the Late Quaternary sediments of South Kerala Sedimentary Basin, India. *Quaternary International*, 213, pp.79-90.

Nair K M, Padmalal D, Kumaran K P N, Sreeja R, Ruta B Limaye and Srinivas R (2010) Late Quaternary evolution of Ashtamudi-Sasthamkotta Lake systems of Kerala, South-

west India. *Jour. Asian Earth Sciences*. 37, pp.361-372.

#### *Papers in Proceedings*

Arun R, Mahendran N and Sukumar B (2010) Identification of potential sites for water harvesting structures in Bhavani river basin, Palakkad district, Kerala. *Proc. National Conference on Trends and Advances in Civil Engineering (TRACE 2010)*, Dept. of Civil Engineering, B.S. Abdul Rahman University, Chennai, pp.588-595.

Regil R, Sukumar B and Gopalakrishnan G V T (2010) Land suitability analysis for sustainable agriculture in Anjarakandy river basin, Kannur district, Kerala using RS and GIS. *Proc. National Conference on Trends and Advances in Civil Engineering (TRACE 2010)*, Dept. of Civil Engineering, B.S. Abdul Rahman University, Chennai, pp.645-657.

Kurian N P, Sheela Nair L, Thomas K V, Shahul Hameed T S, Ramachandran K K, Rajith K, Ramana Murthy M V and Subramanian B R (2010) Shoreline Management Plan for a critically eroding sector of the Southwest Coast of India, *Proceedings, Joint Indo-Brazil Workshop on Coastal Processes Modelling Relevant to Understanding Causes of Shoreline Changes*, Chennai, March 23-25, pp.65-79.

Thomas K V, Kurian N P, Sundar V, Sannasiraj S A, Badarees K O, Saritha V K, Abhilash S, Sarath L G and Srikanth K (2010) Morphological changes due to coastal structures along the southwest coast of India, *Proceedings, Joint Indo-Brazil Workshop on Coastal Processes Modelling Relevant to Understanding Causes of Shoreline Changes*, Chennai, March 23-25, pp.125-133.

#### *Reports published*

Narendra Babu, et al., Coastal Ocean Monitoring and Prediction system: Monitoring along Kavarathi Island Lakshadweep, Project Report submitted to Ministry of Earth Sciences, No.CESS-PR-01-2010, 18p.

Narendra Babu et al., Coastal Ocean Monitoring and Prediction system: Monitoring along Kochi-Vallarpadam, Project Report submitted to Ministry of Earth Sciences, CESS-PR-02-2010, 18p.

Narendra Babu et al., Coastal Ocean Monitoring and Prediction System:

Monitoring along Mangalore and Veli, Project Report submitted to Ministry of Earth Sciences, CESS-PR-03-2010, 15p.

Narendra Babu, et al., Hydrochemical characterization and drinking water potential of the coastal springs of southern Kerala, Project Report No. CESS-PR-04-2010, 133p.

M. Samsuddin, et al., Geospatial survey of Munnar and adjoining Panchayats by modern tools of Geomatics. Final Project Report submitted to the KSCSTE, 230p.

M. Samsuddin, et al., Coastal Zone Studies – Kerala and Lakshadweep Islands. Final Project Report submitted to the Space Applications Centre, Ahmedabad, 191p.

### Invited Talks

Dr. N. P. Kurian delivered a Key Note address in the Seminar organized at Kavaratti on 17 March by the DST, UTL in connection with the Science Day Celebrations.

CESS Scientists delivered the following Invited Talks in the National Conference on Coastal Processes, Resources and Management held at the Centre for Earth Science Studies during 5-7 February 2010:

Dr. M. Baba (Lead Paper): Coastal Zone Management - a myth or reality?

Dr. C. P. Rajendran: Exploring the coastal geology for past tsunamis: A global excursion with focus on the Bay of Bengal shores.

Dr. A. K. Varma: Critical Environmental Factors for Impact Assessment of Development Projects in Coral Islands Terrain.

Dr. Sreekumar Chattopadhyay: Geomorphology for Integrated Coastal Zone Management: A Theoretical Approach with Examples from Kerala.

Dr. K. V. Thomas: High Tide Line and morphological signatures for Coastal Regulation Zone.

Dr. Ravindra Kumar: Tracing the source to sink link in the development of Placer deposits of Southern Kerala: Constraints from chemistry of Garnets.

Dr. N.P. Kurian: Tsunami wave propagation in the Arabian Sea and its effect on run-up/inundation characteristics along the south west coast of India.

### Papers Presented in Conferences

Mr.B. Sukumar delivered a talk titled "Disaster management and geomatics" in the National seminar on 'Frontier Areas of Research and Teaching in Geo-Sciences' organized by the Dept. of Geography, Bharathidasan University at Thiruchchirappalli on 26<sup>th</sup> Feb, 2010.

Mr.B.Sukumar delivered a talk titled "Geospatial analysis: A few examples from the studies in Kerala state" in a National Seminar on Trends in Geospatial analysis for Resource and Environmental Management organized by the School of Earth and Atmospheric Science at Madurai Kamaraj University, Madurai during 29-30 March 2009.

Dr.N.P. Kurian presented a paper titled "Shoreline Management Plan for a critically eroding sector of the Southwest Coast of India" in the Indio-Brazilian Workshop organized by ICMAM at Chennai during 23-25 March 2010.

Dr.K.V.Thomas presented a paper titled "Morphological changes due to coastal structures along the southwest coast of India" in the Indio-Brazilian Workshop organized by ICMAM at Chennai during 23-25 March 2010.

Dr.E.J. Zachariah delivered a talk on 'Methane Emissions from Wetlands in Kerala' at the National Symposium on Impact of Climate Change on Aquatic Ecosystems' at CUSAT, Kochi.

Sri.B.K.Jayaprasad attended the International Problem Analysis and Train-the-Trainer GIS workshop on Integrated Water Resource Management and presented a paper Geo-environmental appraisal for the mitigation of flash flood hazards using Geo informatics - a case study of Karamana and Kili interflaves in the Thiruvananthapuram city, Corporation, Capital of Kerala, India at Chennai under the UNINET programme, Austria during 22-25 February 2010.

The following papers were presented in the National Conference on Coastal Processes, Resources and Management held at the Centre for Earth Science Studies during 5-7<sup>th</sup> February 2010:

N. Subhash, Anu Baburaj, T.N. Prakash and M.I. Koya: Fluorescence Spectroscopy in Monitoring of Reef Health and Composition.

K.K. Ramachandran: Geoinformatics approach for extraction of multitemporal vector coastlines along the Kerala coast.

M.N. Muraliedharan Nair and K.V. Thomas: Salinity Criterion for Determining the Influence of Tidal Action in Rivers and Backwaters (for Coastal Regulation Zone).

B. Sukumar, Ahalya Sukumar, V. Diji, P. Deepthi, P. Jothirmayi, M. Sulfikkar and Savitha Vijayan: A study of demographic aspects along Kerala coast.

K.O Badarees, Abhi R. Aravind, T.Neelima, D. Raju, S. Mohanan, M. Ramesh Kumar, K.V. Thomas: Coastal Regulation Zone and Urban Development.

V. Noujas and T.S. Shahul Hameed: Numerical wave height distribution off a medium energy coast in Southern Kerala.

Tiju Varghese, T.N.Prakash, R.Nagendra and M.Samsuddin: Sedimentological Studies of Subcrop Sediments in Southern Kerala: Implications to Sea Level Changes.

T.N. Prakash and N.P. Kurian: Resuspension and Enrichment of Placer Minerals During Monsoon, SW Coast of India.

V. Shraavan Kumar, V. Muralidharan, P. Resmi, V. Dhanya: Drinking Water Resource Development Management along the Coastal Regions of Thiruvananthapuram District, in the Light of Changing Environmental and Economic Developmental Scenario.

L. Sheela Nair, N.P. Kurian: Numerical Model Simulation of Coastal Processes and Shoreline Changes along Alappad Coast in Kerala.

G.L. Lekha and K. Narendra Babu: Chemistry of interstitial water and its impact on overlying water: a case study of Paravur Lake sediment, West Coast of India.

L.G. Sarath, B.L. Shilpa, S. Abhilash, K.O. Badarees, R. Raveesh and K.V. Thomas: Beach and sediment characteristics within sediment cells along the southwest coast of Kerala.

S. Arjun, L. Sheela Nair and N.P. Kurian: Numerical Modelling of the Effects of Remote Forcing on Nearshore Coastal Processes. R. Shibu, J. Jean Jose, P. Udayakumar, V. J.

Ajimon, K. Narendra Babu: Biological Productivity of Kavaratti Lagoon-Macrophytes versus Micro Algae.

T.N. Prakash, L. Sheela Nair, T. S. Shahul Hameed & Tiju Varghese: Numerical Modelling for Reconstruction of Reef at Kavaratti Island, Lakshadweep Archipelago.

### Honours/Awards

Dr.V.Nandakumar was awarded the INSA-Royal Society Fellowship to visit Scotland, UK for a period of three months under the International Collaboration/ Bilateral Exchange Programme during 2010-2011.



Mr. S. Arjun, Research Fellow, Marine Sciences Division won the Young Scientist Award during the 22<sup>nd</sup> Kerala Science Congress held at the Kerala Forest Research Institute, Thrissur for the paper 'Numerical Validation of Kallakkadal-Flooding due to Remote Forcing'. The paper was co-authored by Ms. L. Sheela Nair and Dr. N. P. Kurian, Scientists, CESS.



### Exhibition

CESS participated in the Kerala Science Congress Exhibition held at KFRI, Peechi during 28-31 January 2010.

### Nomination

Dr. K. V. Thomas was nominated as Member of Lakshadweep Coastal Zone Management Authority by the Ministry of Environment & Forests, Govt. of India.

### Ph.D Awarded

Dr. Harikumar R, a full time research scholar of Centre for Earth Science Studies who worked under the guidance of Dr. S. Sampath has been awarded Ph.D Degree for his thesis entitled 'Study of tropical rain with special reference to rain drop size distribution and integral rain parameters using ground based and satellite measurements', by CUSAT, Kochi.



## Earth Day 2010

Earth Day 2010 coincided with the World



Students listening to talks, visiting laboratories and interacting with scientists during Earth Day.

People's Conference on Climate Change, held in Cochabamba, Bolivia, and with the International Year of Biodiversity. The focus of the fortieth anniversary of Earth Day was on outdoor environment. CESS observed the Day along with the rest of the world on 22 April 2010. The students from nearby schools along with parents and teachers visited the various laboratories and interacted with the scientists. Lectures were arranged for children on Green House Effect, Ozone Hole and Tsunami Early Warning System.

## National Technology Day

National Technology Day 2010 was observed in CESS jointly organized by Department of Science & Technology, Government of India and the Kerala State Council for Science, Technology & Environment on 8 June 2010. Dr. Anil Bhargava F.N.A, F.A.Sc, Scientist, Space Physics Laboratory, Vikram Sarabhai Space Centre, Thiruvananthapuram delivered a talk on the 'Chandrayan-1: Indian Lunar Mission'.



Dr. R.V.G.Menon delivering the Presidential Address during National Technology Day function. Dr. N. P. Kurian, then Director in Charge, Dr. Anil Bhargava and V. Shrivani Kumar, Scientist, CESS are also seen.

Dr. R. V. G. Menon, noted scientist and science populist, presided over the function. Scientists and technologists from various institutions in the city attended the lecture.

## Retirements

### Dr. M. Baba



Dr.M.Baba retired as Director on superannuation on 28 February 2010, after an illustrious career spanning over three decades. He joined CESS as a scientist in 1978 after obtaining his doctorate from Moscow Institute of Civil Engineering and a short stint at the National Institute of Oceanography. Dr. Baba initiated a strong coastal oceanography program by establishing four coastal laboratories spread along the Kerala coast for continuous monitoring of the coastal ocean environment. Study of ocean waves in the country was given a boost through his concerted efforts. He championed alternate methods and integrated coastal zone management as effective tools for coastal protection. He made a strong multidisciplinary group of coastal oceanographers in CESS and guided several students including seven PhDs. He contributed significantly in restructuring India's coastal regulation framework considering it as an essential component for coastal management. In recognition of his contributions, the Government of India maintained him as an expert member of the National Coastal Zone Management Authority since its inception.

As Director of CESS for about 12 years, Dr. Baba gave a new direction to R&D programs in CESS in the areas of earth system studies, natural hazard management, natural resources and environmental management. He provided leadership to numerous research projects and was instrumental in the organization of several conferences. CESS could establish excellent rapport with several Government Departments and other organizations under his leadership. Dr. Baba has served in several important committees at the international, national and state levels. He has a few books to his credit and a

Dr.M.Baba retired as Director on superannuation on 28 February 2010, after an illustrious career spanning over three decades. He joined CESS as a

sizable number of papers in Indian and international journals. CESS will remain indebted to Dr. Baba for all his contributions in institution building.

### Sri. K Ravikumar



Sri. K. Ravikumar, Deputy Registrar, CESS retired on 31 January 2010. Sri. Ravikumar joined CESS as Stores Officer in 1980.

### Sri. A. Gopinathan

Sri. A. Gopinathan, Assistant Registrar, Administration Section retired on 30 April 2010. Sri. Gopinathan was enrolled in the services of the Institute as a Stenographer in 1979.



### Sri. K.P. Bhaskaran



Sri. K. P Bhaskaran, Stenographer, Camp Office, Kochi retired on 30 April 2010. Sri. Bhaskaran had joined CESS in 1979.

### Sri. R. Karunakaran Nair



Sri. R. Karunakaran Nair, Helper, Thin Section Laboratory, retired on 28 February 2010.

### Sri. K. P. Thulaseedharan

Sri K. P. Thulaseedharan, Skilled Assistant, retired on 28 February 2010.



### Sri. R. Karthikeyan Nair



Sri. R. Karthikeyan Nair, Helper, Administration Section retired on 30 June 2010.