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It is nice to note that Veeraswamy and Raval considered my comment 'that the proposition of ... about tectonic boundary of the Latur and Koyna earthquake epicentre does not hinge on any precise geological evidence', as correct. However, except reiterating that their main finding is based on magnetotelluric, deep seismic sounding and long wavelength gravity and magnetic studies, their submission armed with a long list of references is unlikely to enthruse confidence. The fact is that the use of terminological jargon cannot replace scientific truth or *raison d'être* behind any proposition.

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NEWS

MEETING REPORT

Environmental pollution*

The fast pace of industrialization, galloping demand for energy and reckless exploitation of natural resources during the last century have been mainly responsible for aggravating the problem of environmental pollution, which is now set to pose serious threat to biodiversity and ecosystem processes.

We remember the devastating earthquakes that affected Killari–Latur on 30 September 1993 and Bhuj on 26 January 2001, the supercyclone that hit Orissa coast in October 1999, the tsunami that hit the east coast of India on 26 December 2004 and recent floods of 2005 and 2006 in India. These events opened our eyes to the disaster management programmes in India.

Keeping in view the enormity of the above-mentioned problems and with a view to highlight their impact and to seek possible solutions, a national conference on 'Environmental pollution, disaster management and mitigation' (EPDMM 2006) was organized.

The conference provided a forum for discussions and deliberations on the problem of environmental pollution, disaster management and mitigation. The other important environmental issues that were deliberated upon during the Conference included environmental impact assessment studies; environmental health hazards and diseases of new millennium; disaster management and mitigation, and application of remote sensing and GIS for disaster management and environmental studies.

D. B. Yedekar (Swami Ramanand Teerth Marathwada University, Nanded) delivered the first keynote address on 'Disaster management with reference to earthquake hazards in India'. He reminded the participants about the Killari earthquake

of 30 September 1993, Gujarat disaster of 2001 and Maharashtra flood of 2005 and 2006, and the steps taken by the government to stabilize the situation. He pointed out with data and illustrations that man-made disasters like diseases and epidemics, accidents, murders, riots, terrorism, etc. are more prevalent compared to natural disasters.

Baban Ingole (National Institute of Oceanography, Goa) in his keynote address on the 'Importance of environmental impact assessment with special reference to ecological restoration of Chilika lake', emphasized on the Environmental Impact Assessment (EIA) system, which is vital to conform socio-economic development projects to environmental safety and thereby ensure sustainable economic development.

Mohan S. Kodarkar (Indian Association of Aquatic Biologists, Hyderabad) in his keynote address talked on 'Environmental consideration and ecological consequences in relation to the interlinking of rivers in India'. According to him, the

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inter-basin transfers will be a tool for socio-economic development and poverty alleviation programmes. However, from the environmental and ecological point of view, Kodarkar mentioned that 'Ecological consequences are not given serious consideration in engineering solutions of water-related issues. For example, many proposed links run through protected, forest and tribal belts and will involve massive displacement and rehabilitation. The issue is very sensitive and going by past records of social conflicts, solutions appear to be very difficult'.

The technical sessions included the plenary and special lectures followed by paper presentations.

In Session I on 'Environmental impact assessment', the lead lecture was delivered by R. D. Kaplay (Swami Ramanand Teerth Marathwada University, Nanded) on 'Behaviour of groundwater pollution at Tappa, Nanded, Maharashtra – A case study'. Kaplay found that the industries in the Tappa area were disposing-off the effluent, mostly untreated, either on the surface through local nala (stream) or through injection wells. As more people started complaining about the deteriorating quality of dug-well water, the industries then began disposing the effluent through injection wells. In the process, deeper bore wells were more contaminated than the shallow dug wells. However, the recent trend is drastically changing towards decreasing the lateral extent of pollution. Analysis of mineral species also shows the trend in tune with decrease in the level of pollution. According to Kaplay, this could be attributed to the proper use of effluent-treatment plants.

B. N. Pande (Dr Babasaheb Ambedkar Marathwada University, Aurangabad) delivered the second special lecture on 'Aeroallergens and human health'. According to him, today more than 20% of the total Indian population suffers from allergic disorders such as allergic rhinitis, bronchial asthma, atopic dermatitis, etc. Although fungi are ubiquitous in nature and are present in both outdoor and indoor environments, greater attention is currently paid to indoor fungi as children and adults, both spend most of their time indoors. In his presentation, Pande also threw light on fungal biodiversity and its impact on human health to cause various types of allergic disorders. The sources of fungal spores in the outdoor air are mostly vegetation, cereal crops, garbage storage, etc. and in the indoor environment

are mattresses, humidifiers, damp walls, carpets, dustbins, indoor plants, decaying vegetation and organic waste that provide a conducive environment for fungal growth.

Mousumi Chatterjee (University of Calcutta, Kolkata) discussed 'Distribution of heavy metals in sediment cores in Sunderban mangrove wetland, northeast part of Bay of Bengal'. She observed the distribution and possible sources of nine heavy metals (Cu, Fe, Mn, Zn, Cr, Co, Ni, Pb and Ba) in core sediments ($<63 \mu\text{m}$) from three selected sites of Sunderban wetlands, northeast India located in the lower stretch of the Hugli estuary. According to Chatterjee, the most interesting feature of the study is the downward increase of concentrations of majority of the elements reaching overall maximum values at depth of 20–28 cm in the upper littoral zone of the site located in the extreme downward stretch of the estuary. Values of organic carbon showed strong positive correlations with most of the metals as revealed by correlation matrix (r) values. The overall variation in concentration can be attributed to differential discharge of untreated effluents originating from industrial, agricultural and aquacultural as well as domestic sewage along with the fishing and boating activities.

In Session II on 'Environmental protection', S. R. Dave (Gujarat University, Ahmedabad) delivered the lead lecture on 'Environmental protection by microbial metal remediation'. He mentioned that the metal bioremediation technology can be effectively used for the environmental clean-up of metallic pollutants, which provides sustainable healthy environment.

Archana A. Kulkarni (Rajarshi Shahu Mahavidyalaya, Latur) gave a lecture on 'Screening of bacteria for decolorization of offset printing waste'. Kulkarni highlighted microbial treatment of offset printing industry waste of Latur city. The waste was characterized by the presence of phenols, cadmium, high COD, low DO and acidic pH, etc. Out of fifty-six isolates, five showed considerable decolorization ability.

In Session III on 'Disaster management and mitigation', Mrinal K. Ghose (Indian School of Mines, Dhanbad) delivered the lead lecture on 'Natural disasters in India: Mitigation and management'. Ghose highlighted the need to take action for disaster reduction, mitigation, preparedness and prevention. He also focused on the policies and programmes being adopted in India in this regard. He pre-

sented the analysis of hazard vulnerability with respect to earthquakes, tsunamis, landslides and floods, and discussed the usefulness of the Vulnerability Atlas, developed by different organizations in India, for formulating proactive policies to face the threat due to natural hazards.

D. M. Maurya (M.S. University, Vadodara) presented the second special lecture on 'Recent studies on neotectonics of Kachchh with reference to earthquakes'. He presented data on detailed geomorphic and stratigraphic studies on Quaternary sediments occurring along the faults and pointed out the state-of-the-art geophysical studies using Ground Penetrating Radar (GPR) are essential to precisely locate faults, determine their nature in the shallow subsurface for evaluating contemporary stress environment and reconstruct the chronology of neotectonic events.

P. T. Sawant (Walchand College, Solapur) made a presentation on 'Influence of lineaments on landslide-prone areas around Mahad, Raigad district, Maharashtra'. He highlighted how the weak zones in the form of lineaments were prone to landsliding hazards during the heavy rainfall in 2005 and 2006 in the area around Mahad. Vaishakh P. Palsodkar (Maulana Azad College, Aurangabad) spoke on 'Mitigation of evaporation loss from poorly permeable percolation tanks through artificial recharge in Deccan Basaltic Terrain'. A. J. Shirke (P.D.V.V.P. College of Engineering, Ahmednagar) presented 'A case study of disaster mitigation and flood control'. He presented the disaster effects and causes with focus on the Mumbai floods of 26 July 2005. The causes and failure of disaster management committee, were discussed. Suggestions were also made for effective disaster mitigation.

In Session IV on 'Applications of remote sensing and IT for disaster management and environmental pollution', Ingole delivered the lead lecture on 'A journey to the heart of the tsunami'. Ingole with his vast experience during the journey at the source of the tsunami earthquake area near Sumatra Island and with the help of remote sensing satellite imageries, highlighted the deep-sea ecosystem and behavioural changes on the marine organisms during the tsunami.

J. Loveson Immanuel (Manonmaniam Sundaranar University, Tirunelveli) in a special lecture presented the 'Application of remote sensing and GIS in disaster management and mitigation'. He pointed

out that the analysis of hazard is a complex task, as many factors can play important roles in the occurrence of the disastrous event. Therefore, analysis requires a large number of input parameters, and techniques of analysis may be costly and time-consuming. He further added that space technology has made significant contribution in all the three phases, i.e. preparedness, prevention and relief of disaster management. With a constellation of both INSAT and IRS series of satel-

lites, India has developed an operational mechanism for disaster warning, especially cyclones and droughts, and their monitoring and mitigation. However, prediction of certain events like earthquakes, volcanic eruptions and floods is still at the experimental level. Developments in space-based earth observation and weather-watch capabilities in future may help refining existing models/approaches for prediction of such events and their management.

After discussions several recommendations were formulated at the final panel discussion session on 'Environmental awareness and preparedness for natural disasters: An Indian perspective'. The details can be obtained from the author.

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MEETING REPORT

Tenth Orissa Bigyan Congress*

The focal theme of the Tenth Orissa Bigyan Congress was 'Planet Earth'. Delegates from different parts of Orissa participated in the congress.

The keynote address on 'Science and technology-based agricultural development and its impact on environment' was delivered by B. Senapati (Orissa University of Agriculture and Technology, OUAT). The beginning of agriculture, according to Senapati, took place about 10,000 years ago in an oasis called Fertile Crescent in Mesopotamia, which included parts of Iran, Iraq, Turkey, Syria, Lebanon and Israel. Agriculture originated due to environmental, biological and cultural interactions during the early period of human development. The biosphere concept recognizes that, because of the global nature of various interactions, physical or biological, modifications of the environment in one part of the world, may affect all the flora and fauna in remote places. Studies on impact of technology adoption on agroecosystem have to be made, keeping in view the above concept. Three strategic approaches for science-based technology development through research for agricultural growth in the world are enhancement of capability of crop variety for higher production, management technology, and knowledge-intensive technology.

Senapati's lecture covered topics including protecting plants from abiotic stresses, crop cultivars for weed control, development of new plant-type varieties, water harvesting and water-, crop-, pest-, soil fertility-, energy- and post-harvest managements and genetically modified plants for yield and quality improvement.

In the Life Sciences Section, B. K. Sahoo (OUAT) spoke on 'Conservation of indigenous grasses in meeting fodder deficit in Orissa'. The natural fodder resources on which majority of the livestock depend for grazing, bear a future for sustainable development. About 90% of animals in rural Orissa maintain their livelihood on several herbs/grasses suitable for a variety of land situations. These grasses grow naturally on field, river and canal embankments, forest areas, hilly slopes and swampy areas. These are palatable and have a potential for improving the health and productivity level or can be genetically manipulated for improving their nutritive status and productivity.

B. K. Mohanty (Khallikote Autonomous College, Berhampur), in the Environmental Section, spoke on 'Hazards of mercurial ayurvedic drugs'. Mercurial compounds and drugs are commonly used in ayurvedic therapy, but the role played by mercury in biological systems has been ignored. The speaker detailed on kayjoli, a widely used ayurvedic drug containing mercury. It is applied externally in the treatment of venereal diseases such as syphilis, and in skin disorders. According to Mohanty, since the outbreak of Minamata/Hunter Russel disease, mercury

has gained importance as an extremely hazardous environmental pollutant. According to him, the usual symptoms of acute mercury toxicity consists of shock, cardiovascular collapse, acute renal failure and severe gastrointestinal damage. He lamented over the fact that ayurvedic drugs containing high percentage of mercury are still in use throughout this country, particularly in the rural areas.

In the Physical Sciences section, Swaswat Kumar Mohanty (Orissa State Pollution Control Board, Bhubaneswar) spoke on 'Solar energy, our future energy source'. Due to rapid increase in population and growth in the number of industries, there is tremendous pressure on the finite fossil fuel deposits, which are the major sources of energy. An ecofriendly and economic alternative source of energy is the need of the hour. Solar energy can fulfil the energy demand to some extent. Solar energy is available through a variety of processes like solar heating, solar water heating, photovoltaic energy (converting sunlight directly into electricity) and solar thermal electric power. Mohanty also discussed details of solar thermal technologies and solar photovoltaic technology, which are the processes by which solar energy can be converted to other forces of energy according to requirement.

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