

and biggest reactor) and (4) Radiology Laboratory where various uses of isotopes were explained by the scientists of Board of Radiations and Isotopes Technology (BRIT). Activities of BRIT/BARC and various uses of isotopes were also shown through a video-programme.

Participants were given an opportunity to interact with the expert faculty in formulating collaborative research programmes of individual interest. At the valedictory function held on 3 May, Dr. Navada welcomed the participants and other invitees. Dr. Ramamurthy, Associate Director, Isotope Group and Chief Executive, BRIT, BARC spoke about the activities of Isotope Division and advantages of isotope techniques. He distributed certificates

to all the participants. Dr. E.J. James, Executive Director, CWRDM, Kozhikode gave the valedictory address. Sri A.R. Nair proposed vote of thanks.

On the last day of the training programme, a visit was arranged to IIT, Mumbai to visit the Geotechnical Centrifuge facility in the Civil Engineering Department. The application of the facility in different fields of science and technology was explained to the participants in detail by Prof. V.S. Chandrasekaran and his colleagues.

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INTERNATIONAL CONFERENCE ON 'DRYLAND CHANGE 2001', UPINGTON, SOUTH AFRICA

A major three day interdisciplinary international conference, 'Dryland Change 2001', was held at Upington, South Africa during 30th August - 7th September, 2001. It was sponsored by UNESCO - IGCP Project 413 - 'Understanding future dryland from past dynamics' and the IGU Land Degradation Commission (COMLAND) and Third World Academy of Sciences. The Conference was co-organised by the University of Cape Town, South Africa and the Sheffield Centre for International Drylands Research, University of Sheffield, United Kingdom. It was attended by 68 delegates from 15 countries. It explored the nature of environmental changes in drylands and offered opportunities for an improved understanding of future dryland changes and their impact on dryland societies.

Deserts and drylands cover almost 50% of the global land area and pose grave challenges for their human populations. Desertification has been recognised as a globally important environmental issue. Problems of water resource availability and food production are bound to increase under the dual impacts of enhanced population pressure and the green-house warming - induced climatic changes. This IGCP-Project commenced in 1998. Despite their great extent and growing population, deserts and drylands are marked by their relative scientific neglect. It is imperative to improve understanding of spatial complexity of dryland systems and change causing linkages to allow better, region specific predictions of future changes and their remedial measures for sustainable utilisation of the available resources. Understanding the nature, magnitude, causes and timing of past environmental changes in

drylands provides critical data inputs into models and predictions of the future changes that will significantly affect societies.

This conference provided an excellent opportunity for researchers interested in long term environmental change in drylands to interface with practitioners and researchers interested in the causes and nature of contemporary land degradation. The themes covered included: Records of long-term environmental change in drylands; Using records of the past to better understand future dynamics; Role of high magnitude events (rapid and massive sedimentation and erosion) in dryland systems and landscape evolution; modern environmental change and land degradation in drylands and drylands in 21st century - predicting the roles of climate change and human actions.

Multi-disciplinary research from various desertic terrain over the past decade has demonstrated that the desert margins have fluctuated significantly during the Pleistocene and Holocene. Besides broad conformities in Quaternary climato-stratigraphic and geologic evolution, operative geomorphic processes in different deserts within the given hemispheric domains have had different response times to climatic perturbations. Different desert surfaces and climatic zones within the desert show marked differences in ecosystems characteristics and offer varying potential for human activities. Scenarios for the future impact of green-house gas induced global warming predicted that most drylands would experience increased mean temperatures and enhanced aridity. This is likely to affect operation of hydrological and geomorphological process domains or

intensity of their operation thus leading to spread of desert margins at the expense of more productive lands and triggering rapid land use changes and related inevitable land degradation.

There was a large participation from the developing world. Two geoscientists from India, the author of this note and Dr. Sheila Mishra from Deccan College, Pune, attended the Uppington Conference and presented scientific papers on the Thar desert and on the history of Narmada river respectively. They also participated in the deliberations during the post-conference field excursion to different parts of the Kalahari Desert environments in South Africa.

The formal component of the Conference comprised three days of oral presentations, organised into twelve Technical Sessions, with alternating sessions on long term and contemporary change providing papers of interest to all participants on each day. A total of 59 papers were presented, each reporting original research or in the case of four keynote papers synthesising current understanding of the topical themes.

The Technical Sessions dealt with the following themes on dryland environment: 1. Environmental change in southern African drylands; 2. Drylands in the Quaternary; 3. Dryland degradation; 4. Degradation: land user and scientific views; 5. Degradation and Desertification in South Africa; 6. Aeolian Systems; 7. Kalahari sediments and ecosystems; 8. Dryland research methods and applications; 9. Dryland hydrological systems; 10. Dryland degradation in Asia and Africa; 11. Dryland degradation in southern Africa; 12. Drylands in the Quaternary.

Thirty delegates participated in a five-day post-conference field excursion. The field trip examined peri-Kalahari and Kalahari sites of particular importance in yielding information on the dynamics and sensitivities of late Quaternary environmental change in the dryland component of the southern African summer rainfall zone. A number of areas where research into contemporary dryland

degradation and restoration is active were also visited.

Recent investigations have contributed to a clarification of the major trends in the development of the Kalahari since the Cretaceous. Recognition has been made of the complexities of controlling factors and a movement has occurred away from unhelpful over-generalisations towards an increased awareness of the need to identify local and regional factors affecting sediment stratigraphy, geomorphic processes and Kalahari development. Although the details and complexities of events in the long-term evolution of the Kalahari remain somewhat skeletal and require refinement, advances to date have provided an appropriate frame work in which the better documented Late Pleistocene-to-recent environmental changes can be evaluated and interpreted.

Research in southern Africa continues on three fronts and includes researchers from the countries concerned and from Germany and the UK. In the Kalahari, investigations on the timing and nature of major late Quaternary environmental changes continue to focus on developing a better understanding of the timing and controls on major late Quaternary events. In this respect, new work of dating deep sediment exposures at Mamatwan mine are proving most promising since they appear to identify two major phases when aeolian activity was prevalent, with a hiatus from c120-60 ka. Elsewhere, there are promising correlations in the optically stimulated luminescence dated records of dune construction in the northern Cape, South Africa and southern Namibia, respectively developed at UK and German laboratories. In the semi-arid Karoo region of South Africa, researchers from three UK institutions are collaborating with University of Cape Town investigators, examining the timing of valley fill and localised dune development, from the Late Quaternary to present.

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IAEA/RCA WORKSHOP ON APPLICATION OF RADIOISOTOPES FOR SEDIMENT TRANSPORT STUDIES

The workshop on 'Application of Radioisotopes for Sediment Transport Studies' (RAS-8-080) was organized by the International Atomic Energy Agency (IAEA) under the Regional Cooperative Agreement (RCA) through Bhabha Atomic Research Centre (BARC) Mumbai from 20-25th May 2002. The objective of the workshop was to

provide theoretical and practical knowledge on the application of radioisotopes to study suspended and bed load transport to ascertain suitability of dumping sites for dredged materials as well as for fundamental studies in sediment transport. Dr. U. Saravana Kumar of the Isotope Hydrology Section (IHS) of BARC was the Course Director.