NOTES

REPORT ON THE INTERNATIONAL CONGRESS ON "ENVIRONMENTAL MICROPALAEONTOLOGY, MICROBIOLOGY AND MEIOBENTHOLOGY"

The third congress on Environmental Micropalaeontology, Microbiology and Meiobenthology (EMMM 2002) took place in Vienna, Austria during 1-6 September, 2002 as a sequel to the two earlier conferences held in Israel in 1997 and Canada in 2000 The goals of organising these conferences is to present innovative multidisciplinary work in micro- and meioorganisms (e g foraminifera, ostracoda, radiolaria, diatoms, calcareous nanoplanktons, dinoflagillates, pollen and spores), to demonstrate their significance in solving environmental/palaeoenvironmental problems in the field of geosciences, biosciences, environmental sciences, and agriculture, and to narrow the widening gap between science, industry and regulators

Hosted at the Institute of Palaeontology, University of Vienna, Austria, the event was jointly sponsored by representatives from academia and industry

Professor Marianne Popp, Dean, Faculty of Science and Mathematics, and Johann Hohennegger, University of Vienna and the President of the conference and Valentina Yanko-Hombach, Avalon Institute of Applied Earth Sciences and the President of the society welcomed the participants in a colourful inaugural function 302 scientists from 36 countries including two from India contributed sixty-five abstracts in the abstract volume and sixty-five posters in the poster sessions

The thrust areas of the event were the study of environment of the present and past using micro- and meiobenthos Five eloquent lectures were delivered in the plenary sessions V V Galtsova, Zoological Institute, Russia spoke on the Ecology of Marine Meiobenthos Progress Trends and Applied Aspects Valentina Yanko Hombach, Canada delivered a talk on the Environmental Micropalaeontology Benefits to Research on the Climatic Change, Geological Natural and Anthropogenic Hazards, Pamella Hallock, USA highlighted the importance of Micro- and Meiobiota in Environmental Monitoring and Risk Assessment of Coral Reefs Developing Tools for the Toolbox, Vladimir Pushkar, Russia talked on Environmental Interaction in Recent and Fossil Algae Communities New Ideas and Methods, and Nevio Pugliese, Italy talked on Ostracods Environments and Paleoenvironments

In the three technical sessions a total of 51 research papers were read The first session entitled 'Pollution Micro- and Meioorganisms in Assessment, Impact, Environmental Monitoring and Recovery' covered case studies on foraminifera, diatoms, meiobenthos to measure and monitor the anthropogenic stresses on the environment Twelve papers were presented The second session was devoted to 'Micro- and Meioorganisms as Indicators of Recent and Past Environments' Twenty nine papers were presented in the session In the third oral session, titled 'Industrial applications of Micro- and Meioorganisms' three papers were presented

A separate session was arranged to discuss the burning issue of the 'Noah's Flood' after the lucid talk on the subject by V Yanko-Hombach, Canada The speaker as well as the audience participated in the discussion and resolved that that there is 'no room for this hypothesis, which has been publicized unnecessarily amidst very weak evidence in its support'

During a Free Discussion Session, the following suggestions and recommendations emerged

1 Driven by concerns related to pollution and global climate change, the last decade has seen increasing emphasis on the environmental sciences Academicians in the different scientific spheres after having recognised the trend have shifted their interest in response to new funding and employment resources, resulting in a rapid expansion in the field of environmental awareness *vis a vis* the need for an organizational framework

2 An interdisciplinary approach is required to link the specialists in geology, biology, agriculture, etc together, and to coordinate their scientific activities, forums, journal publication, training programme, projects, etc in the application of traditional micropalaeontology, microbiology and meiobenthology to environmental parameters

3 The utility of micro- and meioorganisms to studies on anthropogenic stresses should be effectively communicated to the policy makers and regulators,

4 The scientists working on the environmental monitoring should develop simple but effective tools based on the local environmental parameters, and

5 The industries should come forward to work in close

scientific collaboration with the scientists devoted to problems of the environmental pollution.

The vote of thanks was proposed by the President of the event Professor Johann Hohennegger.

The event also included a post congress three-day excursion to Trieste, Italy to study some Alpine lakes; Padcriciano Section, which documents the palaeo-environment from the Cretaceous/Tertiary Boundary to the early Eocene; Rosandra Valley, Belvedre to study Eocene rocks for nummulitids, alveolinides and orbitolites; the Gulf of Trieste for a boat excursion; and the tidal flats at Staranzano.

The fourth congress is planned to be held in 2004 in Turkey.

Dr. H. S. Gour University,   P. K. KATHAL
Sagar - 470 003
Email: *kathal@vsnl.com*
pkkathal@rediffmail.com

Department of Geology,   G. K. SHARMA
Kumaun University,
Nainital,
Uttaranchal

SHORT TERM PREDICTION OF EARTHQUAKES

Short term earthquake prediction is highly desirable in view of the human and economic devastation due to earthquakes. It is a well-known fact that faulting and fracturing cause observable changes in the characteristics of electromagnetic emissions (EME) through subsurface, atmosphere and magnetosphere in very low frequency (VLF) and ultra low frequency (ULF) domains. In near future, it may be possible to measure electromagnetic signals and short-term prediction of earthquakes may be possible. The method needs careful planning, deployment of a set of ground based receivers and continuous monitoring of activity.

Tokai University Earthquake Prediction Research Centre in Japan used telephonic wires as antennae and spotted anomalous changes in electromagnetic waves in Japan's Izu island in March 2000. The VLF waves grew steadily for three months followed by an earthquake measuring 6.4 on Richter scale on 1st July 2000. The VLF electromagnetic waves died out after the earthquake.

A number of examples based on EME and quoted below have been taken from the papers presented in International Workshop on "Seismo-Electromagnetics and Space Science" held from 19th to 21st December 2000 at Agra. *The workshop was sponsored by DST, UGC and CSIR, New Delhi.*

Borehole and terrestrial antennae were employed during March-April 1999 to study very low frequency electrical field in Chamoli. The monitoring was done at Agra station. The main shock occurred on 29th March, 1999. The "noise bursts" were observed in borehole antenna 16 days prior to earthquake (Singh et al. 2000).

There are many other examples to confirm the utility of VLF and ULF emissions to predict earthquakes. Positive ULF signatures (in the frequency range of 0.01 Hz to 10 Hz) were recorded during the earthquakes of Kyushu (1997), Biak (1996) and Taiwan (1999) (Akinaga et al. 2000).

Anomalous very high frequency (VHF) emissions recorded in ionosphere can be predictors of earthquakes. Electron content (IEC) in ionsphere is measured from VHF radio beacon (RB).

Strong sporadic E-ionisation was observed at Japanese ionospheric stations for a few days before M 7.2 Hyogoken-Nanbu earthquake of January 17, 1995 and M 7.7 earthquakes east of the Ishigaki island on May 4, 1998 (Ondoh and Hayakawad, 2000).

The electromagnetic emissions may increase due to earths' geomagnetic field, lightning and thunder-storms, effect of solar rays on ionosphere, volcanoes and tsunamis. The impact of these should also be taken into consideration.

Electromagnetic VLF and ULF emissions as short-term precursors of earthquakes seem possible in near future. Scientists particularly in Japan and Russia have been working on these lines and the results so far have been encouraging. It is heartening to see that some work on these lines has started in our country also. But is just the beginning. It is hoped that more researchers will take up this promising line of work in earthquake predicition.

232, Napier Town,   V.K. KHANNA
Jabalpur - 482 001