SHORT TERM FORECAST FOR AN M~4 EARTHQUAKE AT KOYNA, INDIA

We have been monitoring seismic activity in the vicinity of Koyna region, in Maharashtra where artificial water reservoir triggered earthquakes have been occurring for the past 44 years. Several of these earthquakes are preceded by precursory nucleation. Recognition of the precursory nucleation in real time has been a major objective of the work being carried out at the National Geophysical Research Institute, Hyderabad. Earlier, we succeeded in recognizing and informing a few important persons on 16th May 2006 of the possible occurrence of an M~4 earthquake, which occurred on 21st May 2006 within the forecasted parameters.

Forecast on 10th October, 2007

On the basis of the data available from 6 seismic stations operating in the Koyna region connected to a central seismic station at National Geophysical Research Institute, Hyderabad through V-SAT, we identified a nucleation, which started on 8th October 2007. This, it was felt could lead to the occurrence of an M~4 earthquake in the next 15 days. This shallow earthquake (focal depth less than 8 km) according to our prediction would occur within a radius of 10 km centered at 71°150'N, 73°780'E. On the basis of our previous experience of studying nucleation-preceding earthquakes in the Koyna region, we expect this earthquake to occur over the next 15 days (till 25th October, 2007), with a 50% probability. Time 18:00 hrs, IST, 10th October, 2007.

An earthquake of M 3.4 occurred on 14th October 2007 at 23:10:59.9 hrs (IST), with the epicenter at 17°137'N 73°780'E and a focal depth of 5.4 km indicating a fair degree of reliability of the prediction. Seismic activity in the Koyna region will continue to be monitored with a view to improving reliability of earthquake prediction.

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PALAEOCLIMATIC SCENARIO OF ANTARCTICA DURING QUATERNARY – EMPHASIS TO INDIAN RESEARCH

On the occasion of the meeting of North Indian chapter of Geological Society, on 8th June, 2007 at the Department of Geology, University of Lucknow, Dr Amalava Bhattacharyya, Scientist at the Birbal Sahni Institute of Paleobotany delivered a talk on "Palaeoclimatic scenario of Antarctica during Quaternary – emphasis to Indian research." His presentation highlighted that in last few years there has been a great focus on the palaeoclimatic studies in the Polar Regions. Antarctica provides a unique environment to study the interactions of glaciations and climate without interferences of habitation, industry and pollution.

Given our existing knowledge and understanding about the Earth as a system, there is a great potential of using biological monitors like pollen, fungal spores, diatoms, other alga, etc for the palaeoclimatic reconstructions. These are well preserved as fossils and are reliable indicators of palaeoecology, palaeotemperatures, palaeonutrients, palaeosalinity, and other physicochemical parameters of the environments. Since the flora are unique index for the particular type of environment, their alternations both qualitatively and quantitatively reflect environmental and climatic changes and can be of help to infer how are climate, environment, and ecosystems in the Polar Regions (including high latitude oceans) changing. Archives of palaeoclimatic analysis in Antarctica are ice cores, lake sediments, atmospheric suspended particles and others. Glacio-geomorphological evidences suggest that there were several phases of glacier advancements and retreats during Holocene and earlier period in the Antarctic region. However, timings of these fluctuations in most cases in terms of absolute time scale were not available. With the integration of multi-proxy data, e.g., palynology, isotopes, mineral magnetic (environmental magnetism), and geochemistry possibly the answers of how has the planet responded to multiple glacial cycles and what critical
factors triggered the cooling of the Polar Regions could be found out. Organic and other materials deposited in moraines or glacial lakes seem to be ideal sources not only for dating (AMS Radiocarbon, TL) but also to understand temporal change in vegetation and algal assemblages.

Antarctic region though appears less useful for the pollen analysis due to restricted occurrence of only two pollen producing taxa of higher plants at this region but the presence of a good amount of local and long distance transported, extra regional palynomorphs in the sediments suggest that their qualitative and quantitative changes in sediments could be interpreted in terms of past climatic changes. Based on pollen analysis three phases of broad climatic changes have been recognized during Holocene from a shallow sediment core collected from Priyadarshini, fresh water Antarctic lake, in Schirmacher Oasis, Eastern Antarctica. It shows that at the beginning of the Holocene, around 10,000 yr BP the area was under influences of cold dry climate followed by warm climate around 9000 yr BP. Climate again gets deteriorated around 3000 yr BP and two fold climatic oscillation i.e. cold -humid to warm - humid has been recorded since last 2000 year BP. Multi-disciplinary approach i.e. Palynology coupled with Limnology, Geomorphology, Geochemical studies, & mineral magnetic studies on deep lake core sediments, exposed glacio-lacustrine sediments and ice cores would provide sound data base for the better understanding of spatio - temporal climatic changes of the Antarctic region.

THE XIX MEETING OF COMNAP AT WASHINGTON

The XIX meeting of the Council of Managers of National Antarctic Programme (COMNAP) was held during 9-14 July, 2007 at Washington DC, USA. As a member of the COMNAP, India was well represented in this meeting. Various working Groups involved in activities related to safety of ships, air operations, training, energy management, medical, tourism and NGO, information technology etc also met during the meeting.

Presentations made during the meeting include: (1) COMNAP Information System, document library, Information exchange, Medical facilities, Ship Position Report System (SPRS), Voyage Information System etc., (2) Report on COMNAP’s participation to Hydrographic Committee on Antarctica (HCA-6), (3) Report on the second Antarctic Meteorological Observations, Modelling and Forecasting workshop held at NCAR, Boulder, Colorado, USA during 26-28 June, 2007, (4) Report on the recently concluded 30th ATCM hosted by India during 30 April – 11 May, 2007 at New Delhi and (5) Report on the presentation workshop convened on Waste Management along with briefing on the activities of various associate bodies such as RAPAL, APOPS, EPB etc.

Dr. Kazuyuki Shirashi from Japan was elected to succeed as chair of SCALOP from the end of the next XX COMNAP meeting at St. Petersburg. Shri Rasik Ravindra from India and Lou Sanson from New Zealand were unanimously elected as EXCOM Member with immediate effect. During IPY Contact Group Meeting, India besides other member countries presented the Indian involvement in various scientific/outreach activities in the IPY campaign.

LANDSLIDE MONITORING

Those interested in Rain-induced landslides are advised to go through the paper ‘Satellite Remote Sensing for Global Landslide Monitoring’ which has appeared in the issue of EOS Trans., American Geophysical Union, v.88, no.37, 11 September 2007.