

## *Meeting Report*

### **Challenges in Earth Science in the Next Decade\*\***

V P DIMRI\*

*National Geophysical Research Institute (CSIR), Uppal Road, Hyderabad 500 007, India*

(Received 12 February 2014; Accepted 12 February 2014)

A symposium on “Challenges in Earth Science in the Next Decade” was held during INSA Annual meeting on 27<sup>th</sup> Dec 2013 at SGPGI, Lucknow, with a view to discuss some of the issues and problems in earth system sciences and the measures to manage them.

Prof. Harsh K Gupta, Member NDMA, Govt. of India delivered the first lecture with an elaborate discussion on Earthquakes and Tsunami. He highlighted the need for preparedness in case of earthquakes in highly populated areas. He informed about the successful Tsunami Warning System setup in record time after the deadly 2004 Tsunami that claimed nearly 250000 human lives. He also discussed the need for detailed geo-scientific investigations in the Earthquake prone areas. In this context, he informed the audience about the ambitious Continental Deep Drilling Project in Koyna, Maharashtra, which is supported by the Ministry of Earth Sciences (MoES), Govt. of India. The preliminary drilling results have brought out certain very interesting facts about the region.

Second Lecture, delivered by Prof. B N Goswami, IITM, Pune, dealt with the predictability of Indian Summer Monsoon rainfall (ISMR). He discussed the the complex processes that are responsible for difficulties and limitations in prediction of Monsoon rainfall using the present climate models. He highlighted an innovative Indian

initiative called the “National Monsoon Mission”, which is directed to improve, within a reasonable timeframe, the current models so as to improve the predictability of Monsoon.

Third lecture by Professor V P Dimri, CSIR-NGRI, discussed the worst rainfall disaster that hit Uttarakhand in June 2013. He also discussed the possibility of further devastating earthquakes in seismically active Uttarakhand and their consequences. He related the rising number of extreme events in Uttarakhand with anthropogenic causes such as deforestation, establishment of new townships, mining activities etc and highlighted the need to address these issues at the earliest so that further damages to natural eco-system can be prevented.

Last lecture in the symposium was delivered Dr. B R Arora, MoES, on the geo-scientific investigations being carried out in Himalayan Collision zone as it holds the key to understand complexities of climate-tectonic interactions as well as large scale Earthquake activities. Dr. Arora highlighted the merit of imaging the internal structures of Himalaya collision belt in terms of electrical resistivity of rocks. Since the electrical resistivity is influenced by fluid content, resistivity images serve useful guide to trace the spatial distribution of high pore pressure fluids at crustal depths. With the help of field examples, he showed

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\*Author for Correspondence: e-mail: dimrivp@yahoo.com; 040-2343 4655

\*\*Symposium organized during the INSA Anniversary Meeting held at Lucknow on 27 December 2013

that north-east dipping intra-crustal high conducting layer overlying the basal detachment is a most coherent feature of the Himalayan collision zone. Incorporation of the mechanical weakening effects of fluid content on the rheology of rocks permits to explain several facets of seismicity in the Himalaya, e.g. the clustering of large earthquakes on the

detachment plane, confinement of small earthquakes to a narrow belt marking ramp structure on the detachment.

The symposium aroused intense and informative discussion between speakers and the audience.