



Workshop on
"Seismic Microzonation"
and
3rd Annual Convention
on
"Advances in Earthquake Science"

4-6 January 2014



ISR
INSTITUTE OF SEISMOLOGICAL RESEARCH

REPORT
AES 2014

INSTITUTE OF SEISMOLOGICAL RESEARCH

Department of Science and Technology
Government of Gujarat

REPORT ON
3rd ANNUAL CONVENTION ON
“ADVANCES IN EARTHQUAKE SCIENCE” (AES-2014)
AND
WORKSHOP ON “SEISMIC MICROZONATION”

SUMMARY

Institute of Seismological Research (ISR), Gujarat State Disaster Management Authority (GSDMA), Gujarat Institute of Disaster Management (GIDM), and Indian Society of Earthquake Science (ISES) organized the 3rd International Convention on “Advances in Earthquake Science (AES-2014)” and Workshop on “Seismic Microzonation” during January 4-6, 2014 at Institute of Seismological Research (ISR), Raisan, Gandhinagar. The inaugural function and plenary session were held at GIDM, Gandhinagar in the forenoon of 4th January 2014. Rest of the program was at ISR.

Shri S.J. Haider, Secretary, DST, Govt. of Gujarat welcomed the Chief Guest Hon’ble Minister of Revenue, Shrimati Anandiben Patel who inaugurated the Convention. DG-GIDM Dr. P.K. Mishra welcomed the delegates and guests. Honb’le Member NDMA, Prof. Harsh Gupta spoke about the activities of NDMA. Dr. Ranjit Bannerji, Principal Secretary & CEO GSDMA and Mr. T.P. Singh were also seated on the dais.

During the Plenary Session Dr. Walter Mooney of USGS described the effects of recent damaging earthquakes of the World and emphasized the idea that large earthquakes occur along the margins of intraplate blocks. Prof. Antonella Peresan from Trieste University, Italy spoke about the advantage of neo-deterministic method (hybrid between probabilistic and deterministic methods) of earthquake hazard assessment. Prof. Harsh Gupta spoke about the seismic hazard in India, Dr. P.K. Mishra gave the details of rehabilitation program after the 2001 Bhuj earthquake, and Prof. B. K. Rastogi described the macro to micro level seismic hazard assessment being done at ISR. ISES and ISR honored Dr. Hari Narain, Former Director of NGRI, Hyderabad (posthumously) and Prof. R. K. Verma for their yeoman service in the field of earth science.

The convention was organized to take stock of research in India in the field of Seismology and plan future research directions. It was to promote exchange of ideas amongst the seismologists, geologists, earthquake engineers and geotechnical engineers by discussion on subjects of interests in the field of Earthquake Science. Purpose of the “Seismic Microzonation” workshop was Standardization of Seismic Microzonation practice and to define ways of using the results.

The AES – 2014 convention themes

1. Earthquake Precursors and Prediction Studies, 2. Lithospheric Structure, 3. Seismic Hazard Assessment and Engineering Seismology, 4. Real-time Seismology and Seismicity Studies, and 5. Neotectonics: Tectonic geomorphology, Paleoseismology, Seismotectonics.

“Seismic Microzonation” Workshop themes

1. Seismic Hazard Assessment, 2. Experiences from Microzonation Studies in India, and 3. Methodologies on Seismic Microzonation and Implication for Policy.

In the Convention and Workshop, 5 foreign and about 150 Indian delegates participated. Foreign delegates were from USA, Italy, Germany and United Kingdom. Indian delegates were from different parts of the country from Uttarakhand in the northwest; Delhi and UP in the north; Assam in the northeast, West Bengal and Jharkhand in the east, Andhra Pradesh, Karnataka and Tamilnadu in the south and Maharashtra as well as Gujarat in the west. There were 65% young delegates.

List of foreign delegates from USA, Italy, Germany and United Kingdom:

1. Prof. Walter D. Mooney, USGS, USA
2. Prof. Antonella Peresan, University of Trieste, Italy
3. Prof. Shamita Das, University of Oxford, UK
4. Dr. Chandra Shekhar Pandey, Ruhr University Bochum, Germany
5. Dr. K M Bhatt, GFZ German Research Centre for Geosciences, Germany

Some 60 oral and 40 poster papers were presented. Lectures were at three levels: Sr. Scientists delivered Key Note Lectures reviewing status of different themes, Experienced scientists presented cutting edge state of the art research, while young scientists presented new results. In the three sessions of Microzonation Workshop, 16 invited speakers presented their work. Also, the panel discussions were conducted after each session. The lively discussions made the event interesting and emphasized the importance of Seismic Microzonation at national level and use of deterministic method.

In the AES – 2014 convention, parallel sessions had to be arranged due to overwhelming response and most ISR papers were put in poster sessions. Certificates were awarded to top 4 oral and 3 poster presentations to young scientists below the age of 40. Full papers were invited from the delegates for publication in ISES e-journal special issue.

PROF. B. K. RASTOGI IN HIS TALKS SPOKE ABOUT THE FOLLOWING SIGNIFICANT RESEARCH AND ACHIEVEMENTS OF ISR:

The main objective of the ISR is to assess the seismic hazard in different parts of Gujarat and suggest optimum seismic safety factors for different heights of buildings. ISR

carries out not only applied research in (i) Earthquake Monitoring (ii) Earthquake Hazard Assessment (iii) Earthquake Prediction Research and (iv) Seismic Microzonation, but also fundamental research on (v) Study of Physics of the Earthquake Processes. ISR is the only institute in India fully dedicated to Seismological Research.

Brief description of major programs of the Institute of Seismological Research regarding earthquake safety and geophysical surveys is given.

Seismological Monitoring: Gujarat seismic network of 60 Broadband Seismographs and 50 Strong Motion Accelerographs is operated since 2006. Data of 36 broadband stations is processed in real-time through VSAT and Auto location software round the clock to determine the epicenter and magnitude of earthquakes within minutes of arrival of the seismic waves and the information is disseminated to administrators for taking appropriate mitigation measures. Space-time pattern of seismicity gives information about newly active faults. In recognition of this effort *ISR got E-Governance Gold 2013-14 GoI award of Department of Administrative Reforms & Public Grievances.*

Crustal Deformation Study by GPS Measurements: Crustal deformation study to the accuracy of 1mm/year is being carried out through GPS measurements in seismically active belts of Gujarat with 22 permanent and 11 campaign mode GPS stations deployed across faults in Kachchh and other parts of Gujarat. The GPS studies as well as the InSAR studies carried out in collaboration with ISRO in Kachchh indicate significant uplift.

Seismic Hazard Assessment:

Macro Level: ISR has prepared a Probabilistic Seismic Hazard (PSH) Map of India for BIS. Vulnerability Assessment of Ports and installations in Coastal Gujarat has been worked out. ISR is participating in global efforts of seismic hazard assessment: (i) Global Earthquake Model (with Italy and Germany) (ii) Seismic & Tsunami hazard using EU-India e-Infrastructure (with Italy) using Grid & cloud computing.

Seismic Microzonation: Seismic microzonation is a rigorous process involving several types of seismic, geophysical, geological and geotechnical investigations for advising seismic coefficient for the area, amplification due to soil for different heights of buildings and ground conditioning methods to safeguard against liquefaction. A well-equipped geotechnical lab has been established at ISR for soil testing. For seismic microzonation various geophysical surveys are carried out to determine depth of bedrock, faults, and different layers of soil and shear wave velocity.

ISR has done seismic microzonation studies at Gandhidham-Kandla-Anjar area (with Oyo Intl. Corp. and for GSDMA) and Dholera SIR, Ahmedabad, Gandhinagar. Surat & Bharuch have been taken up in collaboration with Geological Survey of India. Now every year one new area will be taken up for seismic microzonation.

Seismic Hazard Assessment, Project Specific: GIFT City, Sardar Patel Statue, LNG Terminal (Mundra), Nuclear Power Plants, V S Hospital, Ahmedabad.

Earthquake Prediction Research:

Patterns of Foreshocks: Many times increased foreshock activity with larger magnitudes has been found close to impending moderate earthquakes in Kachchh. A model for earthquake prediction based on such data is being prepared.

Multi Parametric Geophysical Observatories: Three Multi-Parametric Geophysical observatories are run at Vamka, Desalpar and Badargadh in Kachchh for earthquake prediction research. Twelve different geophysical parameters are monitored. Precursory signals were observed in radon, gravity and magnetic fields. One Earthquake Research Center is established at Bhachau in Kachchh.

Paleoseismic studies: Dating of pre-historic earthquakes and past geological disturbances is being carried out which gives rates of deformation and recurrence rates of earthquakes along different active faults in Kachchh. For this purpose an Optically Stimulated Luminescence Lab has been set up. A map of geological faults in Gujarat has been prepared and their neotectonics is investigated. The study involves remote sensing, geological mapping, and identification of prehistoric earthquakes in specially dug 25 trenches as well as by dating samples of sediments.

GPS and InSAR studies: ISR is running a network of 22 permanent and 11 campaign mode GPS stations across different faults in Gujarat. Differential InSAR studies are done with ISRO. Large vertical deformation is detected in Kachchh. The deformation along the Kachchh Mainland fault and Katrol Hill fault are of importance for hazard point of view.

Tsunami Modeling: Tsunami modeling of wave arrival time and amplitude in Arabian Sea from large earthquakes in Makran has been done and such information is given for coastal towns. A constant watch is kept for earthquakes along Makran coast for sounding tsunami alert. Near real time rupture modeling of earthquakes in Makran along with real time GPS modeling is being undertaken which will be helpful in estimating directivity and tsunami amplitude for effective tsunami warning.

Geophysical Surveys:

Seismic, Gravity, Magnetotelluric, Resistivity, GPR and other Geophysical surveys are carried out for study of shallow and deep crustal structure and faults.

(i) Study of Deep Crustal and lithospheric structures: Imaging through seismic soundings, seismic tomography as well as by magneto telluric and gravity surveys.

(ii) 2D and 3D Seismic Surveys for Petroleum Exploration and Mapping of Basement Structures: ISR gets done onshore and offshore 2D and 3D seismic surveys for petroleum exploration and determining the basement structures and faults. Large areas in the transition zone of Gujarat have tremendous petroleum prospects.

In a pioneering experiment ISR has successfully demonstrated application of passive seismic method of detection of hydrocarbons in an area. This can save lot of drilling cost.

(iii) *3D Magnetotelluric Survey*: The method has been pioneered by ISR. It is found to be an effective method to find crustal structure and geological faults beneath the Deccan Basalts where other methods are not successful. This type of survey will be useful to tap vast petroleum reserves in Mesozoic rocks beneath the Deccan Traps and geothermal energy resources. The method could be essential for detecting any geological faults close to planned crucial plants like nuclear power plants or LNG Terminals close to postulated faults.

(iv) GPR survey is done to detect buried metals and to decipher nature of geological faults. Electrical soundings have been done in Dholera and GIFT city to decipher water table depth.

Outreach Program: As per OUTREACH PROGRAM, ISR helped a number of Universities in Gujarat in many ways: (i) Starting and running of M.Sc. Geophysics course at Ganpat Univ. (i) PhD and M. Tech. dissertations of about 20 students/yr for durations of months to a year (ii) training of students in geology, geophysics, geotechnical investigations in our well equipped and well maintained labs, and field surveys (iii) delivering lectures in special courses of different Univ. (iv) training of some 100 students annually in summer/winter training programs for which students come from all corners of the country. The catalogs of earthquakes on ISR website and seismograms provided by ISR are being used by PhD students of many universities.

Collaborative / sponsored Projects

New Projects

1. GSPC (Geophysical surveys for geothermal energy)
2. ISRO-SAC (three projects on (i) Earthquake precursors (ii) Vulnerability modeling (iii) calibration of Earth satellite data)
3. NHPC (seismic data analysis of Lower Subansiri dam area in Assam)

Existing & Earlier Projects

ISR has been running sponsored projects on seismic hazard from:

GOG: GSDMA (Gandhidham and Active Fault Investigations), GSPC (Mundra LNG Terminal), GIDB (Dholera SIR), GIDC (pipelines detection in Ankleswar), GIFT City, Archeological Survey (land survey and geophysical surveys)

GoI: MoES (i. seismicity monitoring and ii. crustal deformation by GPS), NPCIL, ISRO-SAC, ASI

Other states: Assam State Disaster Management Authority (Advise on Seismic Microzonation of Guwahati)

Help to Industry

Many investigations were undertaken for help to industry and as matters of societal importance like: (i) Pilot Project on Extraction of Uranium from Nuclear Waste for BARC using the magnetic separator in the OSL lab (ii) Investigation of faults crossing the petroleum

pipelines (iii) seismic hazard to new solar parks and railway stations (iv) water logging problem in Olpad, Ankleshwar (v) determination of thickness of limestone beds for adequate royalty (without the knowledge of correct thickness the lease holders were paying less royalty and (vi) discovery of paleochannels for possible potable water in Kachchh.

NEW PLANS OF ISR

Earthquake Early Warning: ISR has planned to develop Earthquake Early Warning System (EEWS) for Ahmedabad and other cities of Gujarat using the Strong Motion Accelerograph data of Kachchh region which will be connected through VSAT. Hardware and software is being setup for this system.

Seismic Hazard Maps:

- (i) Probabilistic Seismic Hazard map of India and Gujarat.
- (ii) Characteristic frequency and amplification map of Gujarat.
- (iii) Vs30 Map of Gujarat
- (iv) Deterministic PGA Map and Response Spectra for important selected areas of Gujarat

GIS-Based intelligent shake maps: To be provided soon after earthquakes on website for different magnitude earthquakes at different types of geological terrains for aid in rescue and rehabilitation.

Preparation of Geotechnical Atlas of Gujarat: It will include borehole lithologs and other geotechnical data.

National / international **Symposia / Seminars** hosted by ISR

- (1) Seminar on “Paleoseismology and Active Faults”, September 16, 2006.
- (2) Seminar on “Seismology in India”, March 12, 2007
- (3) “National Seminar on Seismic Microzonation”, October 26, 2007
- (4) International Workshop on Active Fault Studies in Kachchh, January 18-19, 2008 at Bhuj
- (5) National Training Program on “Introduction to Seismic Microzonation with Special Reference to Gandhidham” Co-organized with Oyo Intl. Corporation, March 26-April 1, 2008.
- (6) MoES Workshop on GPS Networks in India, August 3, 2009
- (7) 1st International Seminar ‘Advances in Earthquake Science’ (AES-2011), January 22-24, 2011
- (8) Indo-US Workshop on Intraplate Earthquakes, January 15-18, 2012.
- (9) Co-hosting of 2 days Indian Geophysical Union Annual convention and symposium, October 2012.
- (10) Indo-German Workshop on “Magnetotelluric Data Acquisition, Processing and Modeling”, November 1-3,, 2012.
- (11) 2nd International Symposium ‘Advances in Earthquake Science’ (AES-2013), February 1-2, 2013.
- (12) International training school on "Use of e-infrastructures for advanced seismic hazard assessment in Indian Subcontinent" February 4-7, 2013. Co-hosted with Trieste Univ., Italy

- (13) 3rd International Symposium ‘Advances in Earthquake Science’ (AES-2014) and Workshop on “Seismic Microzonation”, January 4-6, 2014.

International / National collaborations

ISR has made several international collaborations with world’s best research organizations in Japan, Italy, USA, Taiwan and Germany and academic collaboration with a number of national agencies / universities.

PUBLICATIONS

No. of Technical Reports: 77

No. of Scientific papers published in international journals: about 90

No. of PhDs awarded: 10

POINTERS TO ISR’s PERFORMANCE

Due to earthquake information available within minutes, recommendations made for seismic safety factor suggested for various projects like proposed LNG Storage Terminal at Mundra, Dholera SIR, GIFT City, proposed 13-story VS Hospital, proposed Statue of Unity and investigations for various projects of societal needs the people of Gujarat are contended that Govt. is doing appreciable work regarding earthquake safety.

REMARKS COMMUNICATED AFTERWARDS BY DELEGATES

1. Message from Prof. Shamita DAS, Professor in Earth Sciences, University of Oxford, Oxford, U.K.

Dear Prof Rastogi,

Thank you for such a warm welcome and hospitality during my recent visit to ISR. You all have set up an amazing research institute and it was good to see it. Best wishes for great success of ISR in the future.

Yours sincerely
Shamita Das

2. Message from Dr. Devajit Hazarika, Sci. C, Wadia Institute of Himalayan Geology, Dehradun

CONGRATULATION!

I would like to congratulate Dr. B.K. Rastogi Sir and all the members of the organizing committee of the workshop for successful completion of the workshop. It was really a

well organized workshop. I hope all the participants really enjoyed each and every moment. Thank you very much for your Local Hospitality. It was my first visit to ISR. I really enjoyed it....

3. Message from Mr. Chiranjib Barman, Research Scholar, Variable Energy Cyclotron Centre (VECC), Kolkata

It is my immense pleasure to write you.

Thank you so much for organizing the 3rd Annual Convention "Advances in Earthquake Science". It was a great platform for me to update or improve my research activities. I enjoyed the entire conference a lot.

4. Message from Prof. Sharadkumar P. Purohit, Professor, Civil Engineering Department, Institute of Technology, Nirma University, Ahmedabad

Congratulations for successfully conducting an International Conference. We would like to express our heartfelt thanks for your kind co-operation and hospitality. I on behalf of Department of Civil Engineering and M. Tech. Students thank you for your support for all the three days. We wish you all very best in times to come.

5. Message from Dr. (Ms.) Babita Sharma, Sc, MoES, New Delhi

“I am so much thankful to ISR for conducting a wonderful conference. We all enjoyed a lot with scientific presentations and delicious food. I with my family experienced like at home and for these days I forgot that we have to go back to Delhi also. I felt so welcomed with meeting all staff. Sir Thank you so much for this wonderful experience.”

6. Dipartimento di Matematica e Geoscienze Sezione Geoscienze

Dipartimento di Matematica e Geoscienze - Via Edoardo Weiss 2, 34128 Trieste ITALY
Segreteria Tel. +39 040 558 2045/2264; Fax 2048 P. Iva 00211830328 - Cod. Fisc.
80013890324

Dr. Antonella Peresan
Via Weiss, 4 - 34128 - Trieste
Tel.: +39-040-5582129
Fax: +39-040-5582111
aperesan@units.it
Trieste, 22nd January 2014

Dear Dr. Rastogi,

I wish to thank you for providing me the opportunity to participate and contribute to the AES2014 Symposium and the related Workshop on Seismic Microzoning, which has been organized by ISR in collaboration with key Institutions involved in earthquake risk assessment and disasters mitigation. This year, I have been especially pleased by the number and quality of papers dealing with Seismic Hazard assessment at different scales, from national scale to microzoning and by the lively discussions which accompanied them.

I was amazed by the amount of research activities carried out by ISR and by different groups and Institutes all over India, evidencing an open-minded and positively critical attitude,

which in my opinion is a key element toward effective scientific progress. Many new interesting results have been presented, showing that India is taking important steps to drive the change in current practice of seismic hazard assessment, shifting from classical probabilistic to advanced deterministic, physically based approaches.

I feel that one of the most significant aspects emerging from the Symposium and particularly from the Panel Discussions, is the need for a close interaction between scientists dealing with seismic hazard assessment, and engineers and stakeholders dealing with seismic risk mitigation. The presented studies, in fact, provide important and challenging materials for practical considerations, which are essential toward the effective implementation of the proposed methods and techniques, both for national scale hazard assessment and for seismic microzoning. I believe that Gujarat could have a leading role in promoting the interaction between seismologists and engineers, thanks to the scientific expertise available at ISR and in view of the rapid development and urbanization of the region.

Looking forward to continuing our fruitful collaboration towards an effective seismic hazard assessment for Gujarat.

With best regards,

Antonella Peresan

Research Scientist at Trieste University, Italy

Visiting Scientist at ICTP - SAND Group Trieste

ANNEXURES

ANNOUNCEMENT

3rd Annual Convention on “Advances in Earthquake Science” (AES-2014) and Workshop on “Seismic Microzonation”

Dates: Convention: 4-5 January 2014, Workshop: 5-6 January 2014

Venues:

Inauguration and Plenary Session: Gujarat Institute of Disaster Management (GIDM), Gandhinagar, Gujarat

Other Sessions and Workshop: Institute of Seismological Research, Raisan, Gandhinagar, Gujarat

Organizer:

Institute of Seismological Research (ISR), Dept of Science & Technology, Govt. of Gujarat
Gujarat State Disaster Management Authority (GSDMA), Gujarat Institute of Disaster Management (GIDM), and Indian Society of Earthquake Science (ISES).

Themes:

1. Earthquake Precursors and Prediction Studies
Conveners: **Prof. B. R. Arora and Dr P. N. S. Roy**
2. Lithospheric Structure
Conveners: **Dr. M. Ravi Kumar and Dr. Sumer Chopra**

3. Seismic Hazard Assessment and Engineering Seismology
Conveners: **Dr. Prabhas Pande and Dr. P. Anbazhagan**
4. Real time seismology and Seismicity Studies
Convener: **Dr. J. R. Kayal and Dr. Shamita Das**
5. Neotectonics: Tectonic geomorphology, Paleoseismology, Seismotectonics
Conveners: **Prof. V. C. Thakur and Prof. S. K. Tandon**

Participants:

1. Research Scholars and Scientists of various organizations in India
2. Faculty of various universities

Travel and subsistence expenses of the participants should be borne by themselves. Only limited funds are available for some participants who are retired or unable to arrange funds from their institutions.

Call for Abstracts:

The abstract should be within one A4 page in MS Word format, Times New Roman, font 12, line spacing 1.5. The title of the abstract should be in Times New Roman, font 14, bold, centered aligned followed by authors' names, affiliations, and email of corresponding author. Figures, if necessary, should be accommodated on the same page. The abstract should be sent on the email **eqsc.2014@gmail.com** on or before **25 December 2013**.

Registration

Registration fees:

Delegates	Rs. 5000
ISES Life Members	Rs. 4000
Research Scholars	Rs. 1000
Foreign Delegates	US\$ 100

- Registration fees will include Conference material and tea/coffee
- ISR guesthouse/hostel accommodation will be arranged on request

THEMES OF THE CONVENTION

S1: Earthquake Precursors and Prediction Studies

Conveners: **Prof. B R Arora, MoES, GOI, New Delhi**

Dr. Paresh Nath Singha Roy, ISM, Dhanbad

Recognizing that earthquake precursory research hold key to earthquake prediction, search for precursors and their documentation has continued in different parts of the globe. Accumulated evidences bring forth variety of precursory signals including seismological, atmospheric/ionospheric, geodetic/geomagnetic, electrical resistivity/ hydrological as well as geochemical anomalies. Despite certain definite success cases, skepticism prevails as noted changes are not observed at all earthquakes sites or even for different earthquakes in the same region. The dilatancy-diffusion model based on behavior of rocks under stresses in laboratory

conditions has some success in explaining some of the noted precursory signals. Induction of con-current multi-sensor measurements and availability of satellite data have begun to demonstrate the promising role of non-seismological parameters in earthquake forecasting programs. The present session shall review the advances in earthquake precursory programs to devise road map for future planning and practical application of earthquake precursory research. Papers dealing with any aspect of earthquake precursory research are welcome. Papers focusing on modern mathematical tools to isolate precursory signature in real time, establishing their space-time relation to earthquake cycle and highlighting strategies for integrating multi-sensor data are especially invited.

S2: Lithospheric structure

**Conveners: Dr. M. Ravi Kumar, CSIR-NGRI, Hyderabad
Dr. Sumer Chopra, MoES, New Delhi**

Our understanding of the Earth as a dynamic system has primarily evolved owing to development of new incisive tools to probe the Earth's interior from the crust to core, tremendous strides in acquisition of high quality data from dense observational networks coupled with enhanced computational power. Multidisciplinary knowledge accrued from high resolution studies of the continental lithosphere, nature and deformation of subducting slabs, physical and thermal state of the mantle transition zone, the lowermost mantle region and the inner core in conjunction with mineral physics experiments is continually refining the forefront of knowledge thereby unveiling the fundamental global and regional scale dynamic processes of our planetary interior. This session is intended to focus on our current knowledge of the deep structure, evolution and dynamics of the stable continental interiors and actively deforming plate boundary regions in diverse tectonic settings by bringing together researchers from a wide variety of disciplines from active and passive seismology, GPS geodesy, geodynamics, geochemistry, Magnetotellurics and mineral physics. Contributions specific to the evolution of the Indian shield and its plate boundary regions like the Himalaya, Burma and Andaman arc regions are particularly welcome.

S3: Seismic Hazard Assessment and Engineering Seismology

**Conveners: Dr. Prabhas Pande, Former Addl. DG, GSI, Kolkata
Dr. P. Anbazhagan, IISC, Bangalore**

Classical statistical approaches to seismic hazard assessment (SHA) clearly demonstrated their limits for most of the recent destructive earthquakes worldwide, particularly severe when dealing with the specific sites of critical structures (e.g. Fukushima NPP) and with the protection of cultural heritage, where it is necessary to cope with hazard for extremely long time intervals. Extrapolating ground motion with an infinitely long return period from a few hundred years of the available earthquake catalogues, in fact, may turn out to be a purely numerical exercise with no connection with reality. Moreover the empirical attenuation models may be unable to account for the complexity of the medium and of the seismic sources, and are often weakly constrained by the available observations. The recent introduction of the Next Generation Attenuation (NGA) may not be able to remove the

problem in that NGA involves strong simplifications that can be totally inadequate, in particular when dealing with the complex geological structures which are present, as a rule, in active deformation areas.

Nowadays it is recognized by the engineering community that a single hazard map cannot meet all the requirements from different end-users and that peak ground acceleration (PGA) estimates alone are not sufficient for the adequate design of special buildings and infrastructures. Displacements, in fact, may play a critical role in the design of seismically isolated structure, whereas for structures of considerable linear dimensions (e.g. bridges and also some buildings) it is necessary to account for the possible asynchronous ground motion along the base of the structure. Finally, the dynamical analysis of the structure response requires complete and reliable time series of ground motion.

Therefore advanced and appropriate estimates of the seismic hazard, capable of properly accounting for the local amplifications of ground shaking (with respect to bedrock), as well as for the fault properties (e.g. directivity) and the near-fault effects, are a pressing need for adequate design and urban planning. The new approaches must have an anticipatory perspective and must include a scheme for assessing uncertainties and performances.

The Session is addressed to seismologists, engineers and stake-holders, and aims to contribute bridging modern interdisciplinary research and end-users, who have to cope with the problems of the seismic risk management and earthquake disasters preparedness. We encourage contributions on advanced tools for seismic hazard assessment at local scale, particularly on the following topics:

- Site effects characterization
- Ground motion modeling
- Models validation against available data
- Source characterization and simulation
- Seismic input definition for special infrastructures
- Interdisciplinary studies about the response of structures to seismic input
- Applications, practical problems and requirements in earthquake engineering

S4: Real Time Seismology and Seismicity Studies

**Conveners: Prof. J R Kayal, ISR, Gandhinagar
Prof. Shamita Das, University of Oxford, Oxford, U.K.**

Aim of the real-time seismology is to collect and analyze seismological data rapidly during a seismic crisis and utilize them for developing information on hazard, potential damage of large events, actual damage, and aftershock risk, with the aim of mitigating the earthquake impact on human society. Before a main shock the focus is on providing indications for an impending event by time-dependent assessment of hazard and risk. During a shock an alert and shake maps of ground shaking allow rapid assessment of the damage in affected area for relief work; in many cases several seconds to a minute might be available for early warning of strong shaking with options to shut down critical facilities, secure industrial facilities, and

issue alarms where appropriate. After the main shock the rapid damage estimates based on seismological information and on a modeled ground conditions can be delivered to the agencies handling emergency. Also, the risks associated with aftershocks can be assessed. Operational systems covering some of the aspects mentioned above are already in place in Japan, Mexico, Taiwan, Europe and the U.S. The session will explore the state-of-the-art of this evolving technology and highlight application options in the Indian context.

S5: Neotectonics: Tectonic geomorphology, Paleoseismology, Seismotectonics

**Conveners: Prof V C Thakur, WIHG, Dehradun
Prof. S. K. Tandon, Delhi University, Delhi**

Neotectonics is the study of young tectonic events which have occurred or are still occurring in a given region after its orogeny or after its last significant tectonic set-up. The tectonic events are recent enough to permit a detailed analysis by differentiated and specific methods, while their results are directly compatible with seismological observations. This approach has been accepted by many researchers. It is also defined as the study of geologically recent motions of the Earth's crust, particularly those produced by earthquakes, with the goals of understanding the physics of earthquake recurrence, the growth of mountains, and the seismic hazard embodied in these processes. Another source of different interpretations for a region is that changes in different tectonic plates of the region may occur at different times, giving rise to the notion of the "transitional time", during which both palaeotectonic and neotectonic features coexist. For example, for central/northern Europe, the transitional period stretches from the middle early Miocene to the Miocene-Pliocene boundary. This session invites papers on the problems of recent tectonic movements occurred in the upper part of Tertiary (Neogene) and in the Quaternary, which played an essential role in the origin of the contemporary topography.

Workshop on "Seismic Microzonation"

Date: 5-6 January 2014

Venue: Institute of Seismological Research, Raisan, Gandhinagar, Gujarat

The objective of "Seismic Microzonation" or "Seismic Hazard and Risk Assessment" is to assess the natural hazard and consequent risk due to the earthquake quantitatively. Earthquake hazard zonation, mostly referred to as Seismic Microzonation, is the first and most important step towards a seismic risk analysis and mitigation strategy in densely populated regions. In Seismic Microzonation, the spatial variation of the subsurface response to a typical earthquake that can be expected in the area gets quantified. The output of the exercise could be used for planning and execution of the management and mitigation of the seismic disaster and damage in the area.

Gujarat State Disaster Management Authority (GSDMA) has conducted multiple Seismic Microzonation studies in areas such as Gandhidham, Dholera Special Investment Region

(DSIR) amongst others. The Institute of Seismological Research (ISR), Gandhinagar is involved in such studies. There are many more studies carried out across India such as in the cities of Delhi, Guwahati, Jabalpur to name a few. Many more are in progress. Despite numerous concluded studies or in final stages of completion, none of them has culminated in an executable engineering report for urban planning norms or revised seismic design parameters in building byelaws.

Through a joint initiative of GSDMA and Gujarat Institute of Disaster Management (GIDM) which is the nodal training institute for Disaster Management in Gujarat, a Special Workshop on “Seismic Microzonation & Hazard Assessment” has been proposed on 5th and 6th January 2014 preceded by the 3rd Annual Convention of ISR titled “Advances in Earthquake Science (AES – 2014)” from 4th to 5th January 2014 at ISR and GIDM, Gandhinagar. The salient topics of discussion are proposed as follows:

- a) Probabilistic vs. Deterministic methods for seismic hazard estimation
- b) Experiences / sharing of learnings of microzonation studies by different agencies and by different Cities / States / Countries
- c) Current methodologies of Seismic Microzonation being practiced in India / abroad and discussion on building a consensus on standardization of methodology for Microzonation in the Country

The discussions on above mentioned topics will be held for one and a half days (from 5th January 2014 post lunch session onwards). As an important expert and stakeholder in the field, we would like to invite you for this event. Please also let us know if you would like to make a presentation. The presentation may be of about 20-30 mins.

Contact Details for convention and workshop:

1. Mr. K M Rao and
2. Ms. Jyoti Sharma

Institute of Seismological Research,
Near Pt. Deendyal Petroleum University,
Raisan, Gandhinagar-382009.
Phone No. +91-79-66739033(O), +91-79-66739035(O)
Fax: +91-79-66739015.
e-mail: eqsc.2014@gmail.com

web: <http://www.isr.gujarat.gov.in>

Details of Seismic Microzonation Workshop Sessions

(1) Seismic Microzonation Workshop Session 1: Seismic Hazard Assessment

Convenors: Prof. C.V.R. Murthy, IIT Jodhpur

Prof. Antonella Peresan, University of Trieste, Italy

Speakers-

- (1) Dr. Anand Joshi, IIT Roorkee
- (2) Dr. Dinesh Kumar, Kurukshetra University
- (3) Prof. S. T. G. Raghukanth, IIT Madras
- (4) Dr. Sumer Chopra, MOES, GOI, New Delhi
- (5) Dr. G. K. Bhatt, Taru Leading Edge

Panel Members -

- (1) Prof. C. V. R. Murty, IIT Jodhpur
- (2) Dr. T. G. Sitharam, IIT Madras
- (3) Ms. Alpa Sheth, GSDMA
- (4) Mr. Sushil Gupta, RMSI, Noida
- (5) Prof. Antonella Peresan, University of Trieste, Italy

(2) Seismic Microzonation Session 2: Experiences from Microzonation Studies in India

Chairman: Prof. D. K. Paul, IIT Roorkee

Speakers-

- (1) Dr. Prabhas Pande , Former Addl. DG, GSI, Kolkata
- (2) Dr. M. Ravi kumar, CSIR-NGRI, Hyderabad
- (3) Prof. S. K. Nath, IIT Kharagpur
- (4) Prof. B. K. Rastogi, DG, ISR, Gandhinagar
- (5) Prof. T. G. Sitharam, IISc Bangalore
- (6) Dr. P. Anbazhagan, IISc Bangalore

Panel Members -

- (1) Prof. D. K. Paul, IIT Roorkee
- (2) Dr. Prantik Mandal, CSIR-NGRI, Hyderabad
- (3) Ms. Alpa Sheth, GSDMA
- (4) Dr. R. Bannerji, GSDMA
- (5) Prof. Walter Mooney, USGS, USA

(3) Seismic Microzonation Session 3: Methodologies on Seismic Microzonation and Implications on Policy

Chairman: Dr. P. K. Mishra, DG-GIDM, Gandhinagar, Gujarat

- (1) Prof. Antonella Peresan, University of Trieste, Italy
- (2) Prof. D. K. Paul, IIT Roorkee
- (3) Prof. B. K. Rastogi, DG, ISR, Gandhinagar
- (4) Prof. S. K. Nath, IIT Kharagpur
- (5) Dr. P. Anbazhagan, IISc Bangalore

Panel Members –

- (1) Dr. Bimal Patel, Director, HCP Design, Planning and Management Pvt. Ltd.
- (2) Prof. Sudhir Jain, IIT Gandhinagar
- (3) Dr. Ranjit Bannerji, GSDMA
- (4) Dr. P. K. Mishra, DG, GIDM, Gandhinagar
- (5) Shri Rajeev Kathpalia, Vastushilp Consultants
- (6) Ms. Alpa Sheth, GSDMA

BROCHURE

Participants

- Research Scholars and Scientists of various Organizations in India
- Faculty of various Universities

Accommodation & Transport

Travel and subsistence expenses of the participants should be borne by themselves. Only limited funds are available for some participants, sanctioned on request.

Registration

Registration fees:

Delegates	Rs. 5000
ISES Life Members	Rs. 4000
Research Scholars	Rs. 1000
Foreign Delegates	US\$ 100

Registration fees will include Conference material and Lunch/Dinner/Refreshments

ISR/GIDM Guesthouse/hostel accommodation will be arranged on request

Contact Details

Ms. Jyoti Sharma (Sc-B, ISR)
Email: eqtrc.2014@gmail.com,
Mob: 91-9974712172

Mr. Birju Patel (Dy. Director, GSDMA)
Email: meebirju@gmail.com,
Phone : 079-23259247

Mr. Vikas Lakhani (Dy. Director/I/c, GIDM)
Email: vikas@gsdma.org,
Phone : 079-23275809

About Gandhinagar

Gandhinagar is the capital city of Gujarat, lying on west bank of the Sabarmati river. City presents the spacious, well organized look of an architecturally integrated city. Gandhinagar is located on the west central point of the Industrial Corridor between Delhi and Mumbai. The famous Akshardham temple is located in Gandhinagar. Sardar Vallabhbhai Patel International Airport located in Ahmedabad provides connectivity with domestic flights to metropolitan and other major cities of India. Airport and Railway station are 15 and 25 km, respectively away from Institute of Seismological Research Campus, Gandhinagar. From December to February, the average maximum temperature is around 29°C (84°F), the average minimum is 14°C (57°F), and the climate is extremely dry.

Convention Patrons

- Dr. P.K. Mishra, IAS (Retd.), DG, GIDM, Gandhinagar
- Dr. Shailesh Nayak, Secretary, MoES, Government of India, New Delhi
- Dr. Ranjit Banerji, IAS, CEO-GSDMA, Gandhinagar
- Dr. V. Thirupugazh, IAS, Addl. CEO, GSDMA, Gandhinagar
- Shri S.J. Kaidar, IAS, Secretary, DST, Gandhinagar

Organizing Committee

Chairman
Dr. B. K. Rastogi
President, Indian Society of Earthquake Science (ISES) & Director General, ISR.

Organizing Secretary
Mr. K. Madhusudhan Rao, Scientist-D, ISR.
E-mail: madhusp108@gmail.com
Mobile : 09978406331
web: <http://www.isr.gujarat.gov.in>

About Organizations

DST
Department of Science & Technology (DST), Government of Gujarat mainly looks after the growth and development of new & emerging technology areas and is responsible for formulation and implementation of key policies in this sector in the State of Gujarat. As of now DST has been looking after the following areas of technology in the State: Information & Communication Technology including e-Governance, Biotechnology, Science & Technology Remote Sensing and Space Applications and Seismology.

GSDMA
The Gujarat State Disaster Management Authority is the nodal agency for Disaster Management in the State of Gujarat. As a premier in the field, GSDMA is responsible for planning and implementing pre-disaster preparedness and mitigation activities including training and capacity building of all the stakeholders involved in Disaster Management.

INAE
Indian National Academy of Engineering (INAE) founded in 1987 comprises India's most distinguished engineers, engineers scientists and technologists covering the entire spectrum of engineering disciplines, and functions as an apex body to promote and advance the practice of engineering and technology and the related sciences and disciplines in India and their application to problems of national importance.

ISR
Institute of Seismological Research (ISR) is the only institute in India, fully dedicated to seismological research.

GIDM
GIDM is state of the art premier institute for training, education and research related to disaster management within the State of Gujarat. It also serves as a model for the rest of India and focus upon enriching the capacities in areas of prevention, mitigation, preparedness, relief, recovery, rehabilitation, reconstruction and sustainable development.

WORKSHOP on "Seismic Microzonation"
Preceded by

3rd Annual Convention
"Advances in Earthquake Science"

on
4-6, January, 2014
Organized by

Institute of Seismological Research
Department of Science & Technology
Government of Gujarat
www.isr.gujarat.gov.in

Indian Society of Earthquake Science
www.ises.in

Gujarat Institute of Disaster Management
www.gsdma.org/gidm/gidm.aspx
Raisan, Gandhinagar-382009, Gujarat, India

Indian National Academy of Engineering
www.inae.in
Shaheed Jeejingsh Marge, New Delhi

Invitation

Dear Friends,

Institute of Seismological Research (ISR), Department of Science and Technology (DST), Gujarat State Disaster Management Authority (GSDMA), Gujarat Institute of Disaster Management (GIDM), Indian National Academy of Engineering (INAE) and Indian Society of Earthquake Science (ISES) are jointly organizing the 3rd Annual International Convention on "Advances in Earthquake Science" and Workshop on "Seismic Microzonation" during 4 - 6 January 2014 at Gujarat Institute of Disaster Management (GIDM), Raisan, Gandhinagar, Gujarat. Also, registration will start at 08:00 AM at GIDM. Besides Seismic Microzonation, the other themes of discussions are Earthquake Precursors and Prediction Studies, Real time seismology and Seismic studies, Lithospheric structure and Engineering Seismology, Neotectonics: Tectonic geomorphology, Paleoseismology, Seismotectonics.

On behalf of the organizing committee, I request you to participate and contribute your valuable research work in this convention in the session of your choice. Your gracious presence will add value to the convention and we are looking forward to it.

Thanking you,
With warm regards

Dr. B. K. Rastogi
Director General, ISR and
President, ISES

Symposium Themes

1. Earthquake Precursors and Prediction Studies
2. Lithospheric Structure
3. Seismic/Tsunami Hazard Assessment
4. Real Time Seismology and Seismicity Studies
5. Neotectonics: Tectonic Geomorphology, Paleoseismology, Seismotectonics
6. Seismic Microzonation

Call for Abstracts

The abstract should be within one A4 page in MS Word format, Times New Roman, font 12, line spacing 1.5. The title of the abstract should be in Times New Roman, font 14, bold, center aligned followed by authors' names, affiliations, and email of corresponding author. Figures, if necessary, should be accommodated on the same page. The abstract should be sent to the email eqtrc.2014@gmail.com on or before 25th December, 2014.

Invited Speakers

Dr. P. K. Mishra, IAS (Retd.), DG, GIDM, Gandhinagar

Dr. Shailesh Nayak, Secretary, MoES, New Delhi

Dr. Ranjit Banerji, IAS, CEO-GSDMA, Gandhinagar

Dr. V. Thirupugazh, IAS, Addl. CEO, GSDMA, Gandhinagar

Sponsors

- Ministry of Earth Sciences (MoES), Government of India, New Delhi.
- Nuclear Power Corporation of India Limited (NPCIL), Mumbai.

Venue

Inauguration and Plenary Session at
Gujarat Institute of Disaster Management & Technical Sessions
at
Institute of Seismological Research
Near Pt. Deendayal Petroleum University
Raisan, Gandhinagar-382009, Gujarat, India.

Important Dates

Last Date of Abstract Submission & Registration **25 December, 2013**

Registration Form

WORKSHOP on "Seismic Microzonation"
Preceded by

3rd Annual Convention
"Advances in Earthquake Science"

Participant's Particulars:

Name:

Title of Abstract:

Organization:

Mailing Address:

Phone:

Email:

Accompanying Person (s) if any:

Accommodation Required (Y/N):

For Foreign Delegates:

Passport No.:

Place of Issue:

Date of Issue:

Valid till:

No. of previous Visas of India:

Payment details:

Banker's Cheque/DD No.:

Date of Issue:

Amount:

Name of Bank:

Wire Transfer:

Name of Account	ISES
IFSC Code	CSIR0100833
MICR Code	38022508
Account No.	983219100875

This Registration Form along with demand draft in favour of Secretary, ISES payable at Gandhinagar should be sent to Institute address.

Institute of Seismological Research (ISR)
Near Pt. Deendayal Petroleum University
Raisan, Gandhinagar-382009, Gujarat, India.

INVITATION CARD

Dst
Department of Science & Technology
Government of India

Government of Gujarat

GSDMA

Invitation

Workshop on
"Seismic Microzonation"
and
3rd Annual Convention
on
"Advances in Earthquake Science"
4-6 January 2014

WINTER GUJARAT 2015
11-19 Jan.
The World's Earthquake Day 2015

Contact Details for Convention...
Dr. B K Rastogi
Director General, Institute of Seismological Research (ISR)
Near P.C. Dandayajee Petroleum University
Raisan, Gandhinagar-382009, Gujarat, INDIA
Phone No. : +91-79-66739035 (D)
 +91-9674712172 (M)
 +91-79-66739015.
Fax No. :
e-mail :
 - eqsc.2014@gmail.com
 - isrs2009@gmail.com

Organized by

ISRS **GIDM** **ISR**

Institute of Seismological Research
Raisan, Gandhinagar-382 009,
Gujarat, India

Dst
Department of Science & Technology
Government of India

Government of Gujarat

GSDMA

Invitation

workshop on
"Seismic Microzonation"
and
3rd Annual Convention
on
"Advances in Earthquake Science"
4-6 January 2014

WINTER GUJARAT 2015
11-19 Jan.
The World's Earthquake Day 2015

Organized by

ISRS **GIDM** **ISR**

Institute of Seismological Research
Raisan, Gandhinagar-382 009,
Gujarat, India



Program

*Welcome Address by
Dr. P. K. Mishra, DG, GIDM*

*Introduction to the Convention and Workshop by
Dr. Bal Krishna Rastogi, DG-ISR*

*Need of the present Convention and Workshop by
Dr. Walter Mooney, US.Geo.Soc*

*Address by Guest of Honour
Dr. Harsh K. Gupta, Member NDMA*

*Honoring of eminent personalities
Dr. Hari Narain (Posthumously), Former Director, NGRI
Prof. R. K. Verma (Retd.), ISM, Dhanbad*

*Release of Abstract Volume and Address by Chief Guest
Smt. Anandiben Patel, Hon'ble Revenue Minister*

*Vote of Thanks by
Dr. Ranjit Bannerji, CEO, GSDMA*

*National Anthem
Tea and Interaction with Scientists*

**Institute of Seismological Research (ISR)
Gujarat Institute of Disaster Management (GIDM)
and
Indian Society of Earthquake Science (ISES)**

*are pleased to invite you to the
Inaugural Ceremony of
workshop on*

**“Seismic Microzonation”
and
3rd Annual Convention
on
“Advances in Earthquake Science”**

*The convention and workshop will be declared open by
Smt. Anandiben Patel
Hon'ble Revenue Minister of Gujarat*

<i>Date</i>	<i>Time</i>
4th January 2014	10.00 AM

Venue

Gujarat Institute of Disaster Management (GIDM)
*Near Pt. Deendayal Petroleum University,
Raisan, Gandhinagar-382009. Gujarat, INDIA*

<p>Dr. P. K. Mishra Director General GIDM</p> <p>S. J. Haider, IAS Secretary DST</p>	<p>Dr. Ranjit Bannerji Chief Executive Officer GSDMA</p> <p>Dr. B. K. Rastogi Director General ISR</p>
--	--

BANNERS



WELCOME TO

Workshop on
“Seismic Microzonation”
and
3rd Annual Convention
on
“Advances in Earthquake Science”

4-6 January 2014

Vibrant GUJARAT 2015
11-12 Dec
The Global Business Hub / Global Summit






WELCOME TO
 Workshop on
“Seismic Microzonation”
 and
3rd Annual Convention
 on
“Advances in Earthquake Science”
 4-6 January **2014**









Workshop on
“Seismic Microzonation”
 Preceded by
3rd Annual Convention
 on
“Advances in Earthquake Science”
 4-6 January 2014

Organized by...







A E S 2014







Government of Gujarat
Workshop on
**“Seismic Microzonation”
and
3rd Annual Convention
on
“Advances in Earthquake Science”**

Symposium Themes

- ❑ Earthquake Precursors and Prediction Studies
- ❑ Lithospheric Structure
- ❑ Seismic/Tsunami Hazard Assessment
- ❑ Real Time Seismology and Seismicity Studies
- ❑ Neotectonics: Tectonic Geomorphology, Paleoseismology, Seismotectonics
- ❑ Seismic Microzonation

4-6 January 2014







Government of Gujarat
Workshop on
**“Seismic Microzonation”
and
3rd Annual Convention
on
Advances in
Earthquake
Science 2014**

4-6 January 2014




11-13 Jan.
ibrant GUJARAT 2015
The Global Business Hub | 7th Global Summit



ABSTRACT VOLUME COVER PAGE

Organized by

INSTITUTE OF SEISMOLOGICAL RESEARCH
Department of Science & Technology, Government of Gujarat
Email: dg-ir@gujarat.gov.in • dgirged@gmail.com

**Workshop on
"Seismic Microzonation"
and
3rd Annual Convention
on
"Advances in Earthquake Science"
4-6 January 2014**

ISR
INSTITUTE OF SEISMOLOGICAL RESEARCH

**ABSTRACT
VOLUME
AES 2014**

INSTITUTE OF SEISMOLOGICAL RESEARCH
Department of Science and Technology
Government of Gujarat

Contact Details for Communication...
Institute of Seismological Research (ISR)
Near Pt. Dhanraj Patel University
Rajkot, Gandhinagar-362008, Gujarat, INDIA
Phone No. : +91-79-88739028 (O)
 : +91-9874712172 (M)
Fax No. : +91-79-88739015,
 : spc.2014@gmail.com
 : isrc2008@gmail.com



Institute of Seismological Research

Raisan, Gandhinagar, Gujarat

“Seismic Microzonation”
and
3rd Annual Convention
on
“Advances in Earthquake Science-2014”

Certificate of Participation

This is to certify that

Dr./Mr./Ms. _____

*has participated/ presented paper (awarded 1st / 2nd Prize) /
presented poster (awarded 1st / 2nd Prize) in this symposium held at
Institute of Seismological Research, Gandhinagar during
4-6 January 2014.*

Organized by...



(B K Rastogi)
President, ISES &
Chairman, LOC, AES 2013

BEST ORAL AND POSTER PRESENTATIONS

Prize	Session	Authors	Abstract Title
ORAL PRESENTATIONS			
1 st	S2_C1	Devajit Hazarika (WIHG Dehradun)	Seismic characteristics of crust and upper mantle beneath Eastern Ladakh: constrains from receiver function analysis
1 st	S5_C9	J. N. Sarma and Sangeeta Sharma (NEIST Jorhat)	Morphotectonic analysis of selected drainage basins from Belt of Schuppen
2 nd	S1_C7	Chandra Shekhar Pandey (Ruhr University Bochum, Germany)	Resonant ultrasound spectroscopy: A method to analyze seismic data and to understand earth structure
2 nd	S3_C7	Jyotima Kanaujia, Ashwani Kumar, S. C. Gupta (IIT Roorkee)	Vp/Vs value and Poisson's ratio of the parts of Garhwal Himalaya
POSTER PRESENTATIONS			
1 st	S5_P10	Girish Ch Kothiyari, B. K. Rastogi and R. K. Dumka (ISR Gandhinagar)	Active Faults and related Quaternary Deformation in Kachhh, Western Peninsular India
1 st	S3_P6	A.P. Singh and O.P. Mishra (ISR Gandhinagar)	Crack attributes beneath the 2011 Talala, Saurashtra Earthquake, Gujarat, India and its implications for Monsoon induced Micro to Moderate earthquake Sequence
2 nd	S1_P2	Ananna Bardhan, D. K. Sharma and S.K. Sharma (Manav Rachna College of Engineering, Faridabad)	O+ ion density variation during seismic activity as measured by SROSS-C2 satellite

PROGRAMME SCHEDULE

4th January, 2014			
<i>Time</i>	<i>Program</i>		<i>Place</i>
08:00 – 10:00	Registration and Tea		GIDM
10:00 – 11:15	Inaugural function		Auditorium GIDM
11:15 – 11:45	Tea		GIDM
<i>Time</i>	<i>Session</i>	<i>Subject</i>	<i>Place</i>
11:45 – 13:30	Plenary Session		Auditorium GIDM
	Speakers: Dr. P. K. Mishra , Director General, GIDM, Gandhinagar Prof. Harsh K. Gupta , Member, NDMA, New Delhi Prof. B. K. Rastogi , Director General, ISR, Gandhinagar Prof. Antonella Peresan , University of Trieste, Italy Dr. Walter Mooney , USGS, USA		
13:30 – 14:00	Lunch		GIDM
14:00 – 16:00	S1-8 papers	Earthquake Precursors and Prediction Studies	Auditorium ISR
14:00 – 16:00	S2-7 papers	Lithospheric Structure	Conference Room 1, ISR
16:00 – 16:30	Tea and poster session		ISR
16:30 – 18:00	S1-8 papers	Earthquake Precursors and Prediction Studies- contd.	Auditorium ISR
19:00 – 20:00	Dinner		ISR
5th January, 2014			
09:00 – 11:00	S3-9 papers	Seismic Hazard Assessment and Engineering Seismology	Auditorium ISR
09:00 – 11:00	S5-7 papers	Neotectonics: Tectonic geomorphology, Paleoseismology, Seismotectonics	Conference Room 1, ISR
11:00 – 11:30	Tea and Poster session		ISR
11:30 – 13:30	S4-8 papers	Real Time Seismology and Seismicity Studies	Auditorium ISR
11:30 – 13:30	S5-6 papers	Neotectonics: Tectonic geomorphology, Paleoseismology, Seismotectonics – contd.	Conference Room 1, ISR
13:30 – 14:00	Lunch		ISR
14:00 – 14:30	S3-4 papers	Seismic Hazard Assessment and Engineering Seismology – contd.	Auditorium ISR
14:30 – 16:30	MZS1-5 papers	Seismic Microzonation Workshop Session 1	Auditorium ISR
16:30 – 16:45	Tea		ISR

16:45 - 18:00	Panel Discussion		Auditorium ISR
19:00 - 20:00	Dinner		ISR
6th January, 2014			
09:30 - 11:30	MZS2 - 4 papers	Seismic Microzonation Workshop Session 2	Auditorium ISR
11:30 - 11:45	Tea		ISR
11:45 - 13:30	Panel Discussion		Auditorium ISR
13:30 - 14:30	Lunch		ISR
14:30 - 16:30	MZS3-6 papers	Seismic Microzonation Workshop Session 3	Auditorium ISR
16:30 - 16:45	Tea		ISR
16:45 - 18:00	Panel Discussion and Concluding Session		Auditorium ISR
19:00 - 20:00	Dinner		ISR

SESSION DETAILS OF AES-2014

S.No.	Session	Authors	Abstract Title	Time
Day 1		Date: 04/01/2014		
Plenary Session				
Chairman: Prof. Harsh K. Gupta				
Time: 11:45 - 13:15			Place: Auditorium GIDM	
Lecture 1	Dr. P. K. Mishra	Lessons of the Bhuj Earthquake 2001		20
Lecture 2	Prof. Harsh K. Gupta	Earthquake scenarios for Himalayan Region		20
Lecture 3	Prof. B. K. Rastogi	Earthquake Hazard Assessment at Different Scales by Institute of Seismological Research (ISR)		15
Lecture 4	Prof. A. Peresan	Neo-deterministic definition of seismic and tsunami hazard scenarios by exploiting advanced e-infrastructures		20
Lecture 5	Prof. Walter D Mooney	Earthquake Effects from Recent Destructive Moderate and Large Events		15
Day 1		Date: 04/01/2014		
S1: Earthquake Precursors and Prediction Studies				
Chairman: Prof. B. R. Arora			Co-Chairman: Dr. P. N. S. Roy	
Time: 14:00 - 17:30			Place: Auditorium ISR	
1	S1_I1	Baldev R. Arora	Road Breakers in Earthquake Forecasting	30

S.No.	Session	Authors	Abstract Title	Time
2	S1_I2	A. Peresan, A. Gorshkov, A. Soloviev and G.F. Panza	Pattern recognition of earthquake prone areas and seismic hazard assessment in the Po Plain (Italy)	25
3	S1_I3	T. Harinarayana	Anomalous subsurface structure as earthquake long term precursor	20
4	S1_C3	P. N. S. Roy, Nitesh Bhadauria	Detection of the Statistical precursor from Spatio-temporal pattern of earthquakes in the Eastern Indonesia Banda Sea region	15
5	S1_C4	Babita Sharma, P. Chingtham and Sumer Chopra	Isolation of seismomagnetic signals from the natural geomagnetic variations: Testing of IMV index	15
6	S1_C5	Pankaj Kumar and S. C. Gupta	Temporal variation of coda Q as an earthquake precursor	15
7	S1_C6	Chiranjib Barman, Hirok Chaudhuri, Debasis Ghose, Bikash Sinha	Essence of EMD & FFT in analysing Seismo- geochemical precursory signal	15
8	S1_C7	Chandra Shekhar Pandey	Resonant ultrasound spectroscopy: A method to analyze seismic data and to understand earth structure	15
9	S1_C8	R. D. Shah and Darji Simone	A Treatise On Early Warning Systems	15
10	S1_C14	Santosh Kumar, P. Mahesh, Sorabh Sharma, K.M. Rao, B.K. Rastogi	Earthquake Early Warning System for Gujarat- A concept	15
11	S1_P1	Ashok Kumar, Sanjay K Prajapati, Sumer Chopra	The effect of noise on the uncertainties of rates estimated from Himalayan and Indo-gangetic geodetic time series	Poster
12	S1_P2	Ananna Bardhana, D. K. Sharma and S.K. Sharma	O ⁺ ion density variation during seismic activity as measured by SROSS-C2 satellite	Poster
13	S1_P3	Rashmi Pradhan and Ashok Kumar	Appraisal of hydrology and Pressure induced deformation in GPS data: Preparing data for short term precursors	Poster
14	S1_P4	P. Chingtham and Babita Sharma	To study the seismo-electromagnetic effects using Ultra Low Frequency (ULF) data recorded at Multi Parametric Geophysical Observatory (MPGO), Shillong	Poster
15	S1_P5	K. Yadav, S. P. Karia, K. N. Pathak	Variation in refractivity of atmosphere and anomalous variation in TEC associated with some earthquakes	Poster
16	S1_P6	K. Madhusudhana Rao, Chiranjib Barman and B. K. Rastogi	Time series analysis of Soil Radon-222 recorded at Desalpar, Kutch region, Gujarat, India	Poster
17	S1_P7	M. S. B. S. Prasad, K. Madhusudhana Rao and B. K. Rastogi	Study of Ultra Low Frequency signals (0.001-1.0 Hz) associated with moderate earthquakes occurred in Kachchh region, Gujarat	Poster

S.No.	Session	Authors	Abstract Title	Time
18	S1_P8	K. Madhusudhana Rao, Vishal Chouhan and B. K. Rastogi	A possible correlation of electromagnetic emissions and local earthquakes in Kachchh region of Gujarat	Poster
19	S1_P9	C.P. Simha, G. Pavan Kumar, P. Mahesh, A. Navaneeth, K. M. Rao, B. K. Rastogi, V. N. Sridhar and A. K. Shukla	Ionospheric disturbances with the time of occurrence, magnitude and location of the earthquakes near the Indian sub continent – A Case study	Poster
Day 1		Date: 04/01/2014		
S2: Lithospheric Structure				
Chairman: Dr. M. Ravi Kumar		Co-Chairman: Dr. Sumer Chopra		
Time: 14:00 – 16:00		Place: Conference Room 1, ISR		
1	S2_I1	Sunil Kumar Roy, M. Ravi Kumar, Prakash Kumar and D. Srinagesh	Postcollisional deformation of the Indian tectonic plate	30
2	S2_C1	Devajit Hazarika	Seismic characteristics of crust and upper mantle beneath Eastern Ladakh: constrains from receiver function analysis	15
3	S2_C2	K. M. Bhatt	Natural generation of the Electromagnetic signal by the motion	15
4	S2_C3	Jayashree Banerjee and Prosanta K. Khan	Lithosphere dynamics in Chili subduction margin	15
5	S2_C4	Sagar Singh and Chandrani singh	Frequency-dependence attenuation characteristics of Coda wave in Lesser Himalaya by varying the focal depth of events	15
6	S2_C6	Amit Kumar, Naresh Kumar and Sagarika Mukhopadhyay	Sub-surface Structure Investigation in the Indo-Gangetic Plains Using Surface Waves	15
7	S2_P1	Vishwa Joshi and Sandeep Aggarwal	Inter Gujarat crustal structure using Surface Wave Dispersion data	Poster
8	S2_P2	Rakesh K. Dumka, B. K. Rastogi, S. Chopra, P. Chaudhary and S. Kumar	Crustal Strain analysis in the Western Part of the Indian Plate by Gujarat Permanent GPS Network (GPGN), Context of Devastating M 7.7 - 2001 Earthquake	Poster
Day 2		Date: 05/01/2014		
S3: Seismic Hazard Assessment and Engineering Seismology				
Chairman: Dr. Prabhas Pande		Co-Chairman: Dr. P. Anbazhagan		
Time: 09:00 – 12:00		Place: Auditorium ISR		
1	S3_C1	Anbazhagan P., Ketan Bajaj, Nairwita Dutta	Region Specific Seismic Hazard Analysis	15
2	S3_C2	Sreevalsa Kolathayar	Unexploited Potential of Seismic Hazard studies for Seismic Safety of India	15
3	S3_C3	Raju Sarkar	Post Earthquake Debris Management in NCR-Delhi - Are We Prepared?	15
4	S3_C4	Arun Bapat	Seismic Assessment of Bridges and Fly over in NCR Delhi	15

S.No.	Session	Authors	Abstract Title	Time
5	S3_C5	Alpesh Adesara and Rajul k. Gajjar	Comparison of Static and Dynamic analysis of Liquid Retaining Structure and discussion on impact of Response Reduction Factor - "R"	15
6	S3_C6	Chenna Rajaram, A. P. Singh, Ramancharla Pradeep Kumar and B K Rastogi	Vulnerability Assessment of Kandla Port Building	15
7	S3_C7	Jyotima Kanaujia, Ashwani Kumar, S. C. Gupta	Vp/Vs value and Poisson's ratio of the parts of Garhwal Himalaya	15
8	S3_C8	Pushpa Kumari, A. Joshi and M. L. Sharma	Component-wise Simulation of Strong Ground Motion due to the 1991 Uttarkashi, India Earthquake of Mw6.8 using Modified Semi-Empirical Technique	15
9	S3_C10	Pratima Singh	Geophysical Input for Earthquake Vulnerability of Buildings	15
10	S3_C11	Sharadkumar P. Purohit	Development of Response Spectrum in Indian Context and It's Comparison with Design Spectrum	10
11	S3_C12	R. Biswas and S. Baruah	Estimation of Shear Wave Velocity Profile in Shillong City, NER, India	15
12	S3_C13	K. K. Singh and U. K. Singh	Identification of Lithology using Neural Network and Fuzzy Inference System	5
13	Raju Dalta			10
14	Sushil Gupta			5
15	S3_P1	Kuntal Bhukta, Prosanta K. Khan, Sandeep Aggrawal and Jayashree Benerjee	Site Effect Evaluation of Seismic Broadband station at Indian School of Mines, Dhanbad	Poster
16	S3_P2	Sanjay K. Prajapati, Ashok Kumar, Sumer Chopra	Empirical Relationships between Modified Mercalli Intensity and Ground-Motion Parameters for 2011 Sikkim-Nepal border earthquake and its relationships with Distance and Magnitude	Poster
17	S3_P3	Babita Sharma and Sumer Chopra	Simulation of Strong Ground Motion in NW Himalayan region in India using Empirical Green's Function Technique.	Poster
18	S3_P4	R K Singh, R. Pradhan, B K Rastogi, S V Rao, A K Basantaray, K Pasricha and M Arora	Vertical Electrical Sounding (VES) Surveys to locate the depth of water table and to know its effect on liquefaction potential hazard in Dholera SIR Area	Poster
19	S3_P5	A.P. Singh, N. Annam and B. K. Rastogi	Site Effects Beneath Historically Damaging Site, Anjar, Kachchh Region, Gujarat Using Microtremor Array Measurement	Poster
20	S3_P6	A.P. Singh and O.P. Mishra	Crack attributes beneath the 2011 Talala, Saurashtra Earthquake, Gujarat, India and its implications for Monsoon induced Micro to Moderate earthquake Sequence	Poster

S.No.	Session	Authors	Abstract Title	Time
21	S3_P7	Mohammad Ahmed Hussain and Ramancharla Pradeep Kumar	Numerical Study of Spatial Variation of Ground Motion by Modeling Dip Slip Surface Faults	Poster
22	S3_P8	B. Sairam and B. K. Rastogi	Seismic Site Characterization study of the Gandhinagar area, Gujarat, India	Poster
23	S3_P9	Rudra Upadhyay, Sandeep Kapadia and Vasudeo Chaudhari	Seismic Study of Modhera Sun Temple	Poster
24	S3_P10	Vasudeo Chaudhari and Ramancharla Pradeep Kumar	Study of Pipeline Subjected To permanent ground deformation (PGD)	Poster
25	S3_P11	Kapil Mohan and B.K. Rastogi	Soil Modeling, Strong motion Simulation and Ground Response Analysis for Micro Seismic Hazard Assessment in Gujarat (India)	Poster
Day 2		Date: 05/01/2014		
S4: Real Time Seismology and Seismicity Studies				
Chairman: Prof. J. R. Kayal		Co-Chairman: Prof. Shamita Das		
Time: 12:00 - 13:30		Place: Auditorium ISR		
1	S4_I1	J R Kayal	Is the Kopili fault vulnerable for an impending large earthquake in NE India?	15
2	S4_I2	Shamita Das	Supershear Earthquake Ruptures	30
3	S4_C2	Santanu Baruah and Saurabh Baruah	A study on active tectonics of northeastern India from Focal Mechanism Solutions	15
4	S4_C5	Deepali Gadkari	Temporal variations in b-values and major earthquakes in Japan	15
5	S4_C6	Sandeep, A. Joshi and Kamal	Source model estimation of Uttarkashi earthquake from strong ground motion simulations using modified semi empirical technique	15
6	S4_P3	Chenna Rajaram and Ramancharla Pradeep Kumar	Generation of Synthetic Accelerogram of 16th April 2013, Iran-Pakistan Border Earthquake Using Semi-empirical Approach	Poster
7	S4_P4	Arjav Shukla	Estimation of Site Response study on varied Geological formations in Kachchh Seismic zone using HVSR Spectral Ratio computation.	Poster
Day 2		Date: 05/01/2014		
S5: Neotectonics: Tectonic geomorphology, Paleoseismology, Seismotectonics				
Chairman: Prof. V. C. Thakur		Co-Chairman: Prof. S. K. Tandon		
Time: 09:00 - 13:00		Place: Conference Room 1, ISR		
1	S5_I1	V. C. Thakur and M. Joshi	Linkage between erosion of Dhauladhar range and reactivation of Jawalamukhi Thrust in formation of late Quaternary Kangra intermontane basin, NW Himalaya	30
2	S5_C1	B. K. Rastogi, G. C. Kothyari and Falguni Bhattacharya	Paleoseismological Investigations in Kachchh	15

S.No.	Session	Authors	Abstract Title	Time
3	S5_C2	T. J. Majumdar and R. Bhattacharyya	On the present tectonic scenario over the western Indian offshore using 3D satellite gravity image	15
4	S5_C3	K.S. Misra	Identification and Assignment of Weightage to Geological and other parameters for Seismo - Geological Zonation - A Case Study of Western India	15
5	S5_C4	K.S. Misra and Suman Kumari	Drainage Anomalies and Related Seismicity In Peninsular India	15
6	S5_C5	K.S. Misra and Shagun Sharma	Seismic Events along Transverse Fold and Faults in Himalayan Range and Gangetic Plains	15
7	S5_C6	P.D. Pant, Girish Ch. Kothiyari, Ritu Chauhan, Khayingshing, Luirei and S. S. Bhakuni	Role of the North Almora Thrust and tear faults on the evolution of young tectonic landforms in the Kumaun Lesser Himalaya, India	15
8	S5_C9	J. N. Sarma and Sangeeta Sharma	Morphotectonic analysis of selected drainage basins from Belt of Schuppen	15
9	S5_C11	Javed Malik	Earthquake Geology and Related Hazard in Kachchh, Gujarat, Western India	15
10	S5_C12	Gaurav Chauhan and M. G. Thakkar	Neotectonic Significance of Median High of Kachchh rift basin: A case study of Khari river Basin	15
11	S5_P1	Falguni Bhattacharya, B.K. Rastogi, M.G. Thakkar, R.C. Patel, N.Juyal	Late Quaternary aggradation and incision during evolution of fluvial landforms in southern Katrol Hill Range, Kachchh, Western India	Poster
12	S5_P2	S. P. Prizomwala, Dipika Ahirrao and B. K. Rastogi	Delineation of Faults in Southern Saurashtra, Western India	Poster
13	S5_P3	Archana Das, Navin Juyal, B. K. Rastogi and M. G. Thakkar	Fluvial Sequences of the Southern Kachchh Mainland, Western India - An Archive of Climate, Tectonic and Sea Level Changes	Poster
14	S5_P4	Sandeep Aggarwal and B.S. Chaudhary	Palaeochannels and Integrated Ground water resource Mapping in parts of Hisar District, Haryana	Poster
15	S5_P5	Drasti Gandhi, S.P. Prizomwala, Kapil Mohan, Nishith Bhatt and B.K.Rastogi	Coastal Geomorphic Archives of Kachchh Coast: Implications in Coastal Response and Preservation Potential of Palaeotsunami Deposits	Poster
16	S5_P6	Tarun Solanki, S. P. Prizomwala and B. K. Rastogi	Morphotectonic Segmentation of Kachchh Mainland Fault, Kachchh, India: Insights from Geomorphic Indices and Drainage Pattern Analysis	Poster
17	S5_P7	Vasu Pancholi, Vinay Kumar Dwivedi, Sarada Maibam, Jaina Patel and B. K. Rastogi	Geotechnical Characterization of soil of Gandhinagar for Seismic Microzonation	Poster
18	S5_P8	Thokchom Sarada Maibam, B.K. Rastogi, Jaina Patel, Vasu Pancholi	Liquefaction Resistance of Soil: A Comparative Study	Poster

S.No.	Session	Authors	Abstract Title	Time
19	S5_P9	Girish Ch Kothyari	Geomorphometric Analysis of Seismically active Pindar and Saryu River Basins: Central Kumaun Himalaya	Poster
20	S5_P10	Girish Ch Kothyari, B. K. Rastogi and R. K. Dumka	Active Faults and related Quaternary Deformation in Kachchh, Western Peninsular India	Poster
21	S5_P11	Girish Ch. Kothyari, B. K. Rastogi, Rakesh Dumka and Bhawani Singh Desai	Paleoseismic investigation along Kachchh Mainland Fault zone; Western India, Gujarat	Poster
22	S5_P12	Rakesh K. Dumka, Girish Ch Kothyari and B. K. Rastogi	Application of Real Time Kinematic (RTK) survey for Active Fault study in NWF and GF areas of Kachchh Rift Basin	Poster
Day 2 Date: 05/01/2014				
Seismic Microzonation Session 1: Seismic Hazard Assessment				
Chairman: Prof. C. V. R. Murthy			Co-Chairman: Prof. Antonella Peresan	
Time: 14:30 - 16:30			Place: Auditorium ISR	
1	MZS1_C3	Anand Joshi	A new method of seismic zonation based on probabilistic mapping of strong motion parameters from finite earthquakes sources	
2	MZS1_C4	Dinesh Kumar, Manisha and S.S. Teotia	Earthquake Hazard Assessment in National Capital (Delhi) Region using a Deterministic Approach	
3	MZS1_C5	S.T.G. Raghukanth	Engineering models for seismic hazard of India	
4	MZS3_C4	Sumer Chopra	Seismic Microzonation of 30 targeted cities in India	
5	MZS3_C5	G. K. Bhatt	Challenges of Mainstreaming Microzonation in Urban Development	
Time: 17:00 - 18:00 Place: Auditorium				
ISR				
Panel Discussion				
Panel Members -				
(1) Prof. C. V. R. Murthy				
(2) Dr. T. G. Sitharam				
(3) Ms. Alpa Sheth				
(4) Mr. Sushil Gupta				
(5) Prof. Antonella Peresan				
Day 3 Date: 06/01/2014				
Time: 09:00 - 09:30			Place: Auditorium ISR	
ISES LECTURE 2				
Lessons From Great Earthquakes by Prof. WALTER D. MOONEY				
Time: 09:30 - 12:00			Place: Auditorium	
ISR				
Seismic Microzonation Session 2: Experiences from Microzonation Studies in India				
Chairman: Prof. D. K. Paul				

S.No.	Session	Authors	Abstract Title	Time
1	MZS2_C5	(1) Prof. Prabhas Pande (2) Dr. M. Ravi kumar	Jabalpur Experience	
2	MZS2_C1	S. K. Nath and M. D. Adhikari	Seismic Hazard Microzonation: An Indian Perspective	
3	MZS2_C2	B. K. Rastogi	Microzonation of Dholera Special Investment Region	
4	MZS2_C3	T. G. Sitharam	Comprehensive Seismic Microzonation of Lucknow City with detailed Geotechnical and Deep Site Response Studies	
5	MZS2_C4	P. Anbazhagan	Methodology for Seismic Microzonation - Case study of Bangalore	
Time: 12:10 - 13:30			Place: Auditorium	
ISR				
Panel Discussion				
Panel Members -				
(1) Prof. D. K. Paul				
(2) Dr. Prantik Mandal				
(3) Ms. Alpa Sheth				
(4) Dr. R. Bannerji				
(5) Prof. Walter Mooney				
Time: 14:30 - 16:30			Place: Auditorium	
ISR				
Seismic Microzonation Session 3: Methodologies on Seismic Microzonation and Implication for Policy				
Chairman: Dr. P. K. Mishra, DG-GIDM				
1	MSZ_C7	D. K. Paul		
2	MZS1_C1	F. Vaccari (Presented by A. Peresan)	A web application prototype for the modeling of seismic input at regional and local scale	
3	MZS3_C1	Sankar Kumar Nath	Preamble on Seismic Microzonation Handbook	
4	MZS3_C2	B. K. Rastogi	Seismic Microzonation Procedure Followed by ISR	
5	MZS3_C3	P. Anbazhagan	Indian Seismic Microzonation Practices and Research Challenges	
Time: 16:45 - 18:00			Place: Auditorium	
ISR				
Panel Discussion and Concluding Session				
Panel Members				
(1) Dr. Bimal Patel				
(2) Prof. Sudhir Jain				
(3) Dr. Ranjit Bannerji				
(4) Dr. P. K. Mishra				
(5) Shri Rajeev Kathpalia				
(6) Ms. Alpa Sheth				

LIST OF DELEGATES

AES -2014 Delegates

Delegates	Institute
Dr. Shamita Das	University of Oxford, Oxford, UK
Dr. Antonella Peresan	University of Trieste, Italy
Dr. Walter Mooney	USGS, USA
Dr. Chandra Shekhar Pandey	Ruhr University Bochum, Germany
Dr. K M Bhatt	GFZ German Research Centre for Geosciences, Germany
Prof. Harsh K Gupta	NDMA, New Delhi
Prof. R. K. Verma	Distinguished Scientist
Ms Manjari Bhatnagar	
Ms Saroj Narain	
Prof. Baldev R. Arora	MoES, GOI, New Delhi
Dr. Sumer Chopra	MoES, GOI, New Delhi
Dr. Babita Sharma	MoES, GOI, New Delhi
Dr. Sanjay Prajapati	MoES, GOI, New Delhi
Shri P. Chingtham	MoES, GOI, New Delhi
Shri Ashok Kumar	MoES, GOI, New Delhi
Dr. M. Ravi Kumar	CSIR- NGRI, Hyderabad
Dr. P. N. S. Roy	ISM Dhanbad
Dr. Sreevalsa Kolathayar	ISM Dhanbad
Ms. Jayashree Banerjee	ISM Dhanbad
Shri Kuntal Bhukta	ISM Dhanbad
Shri Kunal Kishore Singh	ISM Dhanbad
Dr. Prabhas Pande	Former Addl. DG, GSI, Kolkata
Dr. S.C. Gupta	IIT Roorkee
Shri Amit Kumar	IIT Roorkee
Ms. Jyotima Kanaujia	IIT Roorkee
Ms. Pushpa Kumari	IIT Roorkee
Shri Sandeep Arora	IIT Roorkee
Shri Sagar Singh	IIT Kharagpur
Dr. Arun Bapat	Pune
Dr. P. Anbazhagan	IISc Bangalore
Shri Chiranjib Barman	Variable Energy Cyclotron Centre, Kolkata
Ms. Ananna Bardhana	Manav Rachna College of Engineering
Shri Kunvar Yadav	S. V. National Institute of Technology
Prof. V.C.Thakur	WIHG, Dehradun
Dr. Devajit Hazarika	WIHG, Dehradun
Prof. J R Kayal	Visiting Professor, ISR Gandhinagar
Dr. Santanu Baruah	CSIR-NEIST, Jorhat
Ms. Sangeeta Sharma	CSIR-NEIST, Jorhat
Ms. Parul C. Trivedi	IMD, Ahmedabad
Dr. Deepali Gadkari	Pune University, Pune
Prof. S. K. Tandon	Delhi University, Delhi
Dr. Raju Sarkar	DTU, Delhi
Dr. Vasudeo Chaudhari	Indus University, Ahmedabad

Shri Alpesh Adesara	Indus University, Ahmedabad
Shri Chenna Rajaram	IIIT Hyderabad
Prof. Ramancharla Pradeep Kumar	IIIT Hyderabad
Prof. K.S. Misra	University of Petroleum and Energy Studies
Ms. Suman Kumari	University of Petroleum and Energy Studies
Ms. Shagun Sharma	University of Petroleum and Energy Studies
Dr. T. J. Majumdar	SAC-ISRO, Ahmedabad
Dr. K. M. Sreejith	SAC-ISRO, Ahmedabad
Dr. I. M. Baluguna	SAC-ISRO, Ahmedabad
Dr. Arundhati Misra	SAC-ISRO, Ahmedabad
Dr. A. S. Rajawant	SAC-ISRO, Ahmedabad
Dr. Hrishikesh Kumar	SAC-ISRO, Ahmedabad
Shri Arjav Shukla	KSKV Kachchh University
Shri Gaurav Chauhan	KSKV Kachchh University
Dr. Rajib Biswas	Tezpur University, Assam
Dr. R. D. Shah	M. G. Science Institute, Ahmedabad
Dr. Nishith kumar Yashvantray Bhatt	M. G. Science Institute, Ahmedabad
Dr. Paras M. Solanki	M. G. Science Institute, Ahmedabad
Shri Dessalegn Gezahegn	M. G. Science Institute, Ahmedabad
Ms. Darji Simone	M. G. Science Institute, Ahmedabad
Ms. Khusboo Khatri	M. G. Science Institute, Ahmedabad
Dr. Pratima Singh	NIRMA University, Ahmedabad
Prof. Sharadkumar P. Purohit	NIRMA University, Ahmedabad
Shri Sahil Gondalia	NIRMA University, Ahmedabad
Shri Mayur Baxani	NIRMA University, Ahmedabad
Shri Jay Kapadiya	NIRMA University, Ahmedabad
Shri Akash Jivani	NIRMA University, Ahmedabad
Shri Husain Patrawala	NIRMA University, Ahmedabad
Shri Brijesh Kunjadiya	NIRMA University, Ahmedabad
Shri Harsh Rathod	NIRMA University, Ahmedabad
Shri Parth Vaghani	NIRMA University, Ahmedabad
Shri Deepen Shah	NIRMA University, Ahmedabad
Ms. Jahnvi Maniar	NIRMA University, Ahmedabad
Ms. Stuti Patel	NIRMA University, Ahmedabad
Shri M. M. Zahzrukiya	SSNNL, Kevadiya Colony
Shri Sanjay Prasad	Government of Gujarat
Shri S.M. Sanghada	GSDMA, Gandhinagar, Gujarat
Ms. Payal Patel	Ganpat University, Mehsana
Shri K. Jagan Mohan	Mahatma Gandhi Institute of Technology
Shri Raju Dalta	AIR worldwide India Pvt. Ltd
Shri Ankit Patel	LDRP College, Gandhinagar
Shri Om Behari	Retd. from GWSSB
Shri M. H. Kalubarme	BISAG, Gandhinagar
Shri Khalid Mehmood	BISAG, Gandhinagar
Shri Vijay Singh	BISAG, Gandhinagar
Shri Krunal Patel	BISAG, Gandhinagar

Shri Manoj Pandya	BISAG, Gandhinagar
Shri Indra Prakash	BISAG, Gandhinagar
Shri Ajay Patel	BISAG, Gandhinagar
Shri Paru Thakkar	BISAG, Gandhinagar
Ms. Leena Patel	BISAG, Gandhinagar
Ms. Apurva Dalwadi	BISAG, Gandhinagar
Shri Bhagirath Kansara	BISAG, Gandhinagar

ISR Delegates List (AES-2014)

Prof. B. K. Rastogi	ISR, Gandhinagar
Shri Santosh Kumar	ISR, Gandhinagar
Shri K M Rao	ISR, Gandhinagar
Shri R.K. Singh	ISR, Gandhinagar
Dr. Kapil Mohan	ISR, Gandhinagar
Dr. A.P. Singh	ISR, Gandhinagar
Dr. B Sairam	ISR, Gandhinagar
Dr. G. C. Kothiyari	ISR, Gandhinagar
Dr. Rakesh Dumka	ISR, Gandhinagar
Shri M.S.B.S.Prasad	ISR, Gandhinagar
Ms. Falguni Bhattacharya	ISR, Gandhinagar
Shri S. P. Prizomwala	ISR, Gandhinagar
Shri Sandeep Aggarwal	ISR, Gandhinagar
Shri C. P. Simha	ISR, Gandhinagar
Ms. Vishwa Joshi	ISR, Gandhinagar
Ms. Archana Das	ISR, Gandhinagar
Ms. Drasti Gandhi	ISR, Gandhinagar
Shri Tarun Solanki	ISR, Gandhinagar
Shri Vinay Kumar Dwivedi	ISR, Gandhinagar
Ms.Thokchom Sarda Maibam	ISR, Gandhinagar

Seismic Microzonation Workshop Delegates

Dr. P. K. Mishra	GIDM, Gandhinagar
Prof. B. K. Rastogi	ISR, Gandhinagar
Dr. R. Bannerji	GSDMA, Gandhinagar
Ms. Alpa Sheth	GSDMA, Gandhinagar
Prof. C. V. R. Murty	IIT Jodhpur
Prof. Antonella Peresan	University of Trieste, Italy
Prof. D. K. Paul	IIT Roorkee
Dr. Anand Joshi	IIT Roorkee

Dr. Dinesh Kumar	Kurukshetra University
Prof. S. T. G. Raghukanth	IIT Madras
Dr. Sumer Chopra	MOES, GOI, New Delhi
Dr. M. Ravi kumar	CSIR-NGRI, Hyderabad
Dr. Prantik Mandal	CSIR-NGRI, Hyderabad
Prof. S. K. Nath	IIT Kharagpur
Prof. T. G. Sitharam	IISc Bangalore
Dr. P. Anbazhagan	IISc Bangalore
Prof. Sudhir Jain	IIT Gandhinagar
Dr. Prabhas Pande	Former Addl. DG, GSI, Kolkata
Dr. G. K. Bhatt	Taru Leading Edge
Dr. Bimal Patel	HCP Design, Planning and Management Pvt. Ltd.
Shri Rajeev Kathpalia	Vastushilp Consultants

AES - 2014 and “Seismic Microzonation” Workshop Organizers

Dr. P. K. Mishra	GIDM, Gandhinagar
Shri Vikhas Lakhani	GIDM, Gandhinagar
Shri Birju Patel	GSDMA, Gandhinagar
Prof. B. K. Rastogi	ISR, Gandhinagar
Shri Santosh Kumar	ISR, Gandhinagar
Shri K M Rao	ISR, Gandhinagar
Dr. Kapil Mohan	ISR, Gandhinagar
Dr. Pallabee Choudhury	ISR, Gandhinagar
Dr. A.P. Singh	ISR, Gandhinagar
Dr. B Sairam	ISR, Gandhinagar
Ms. Jyoti Sharma	ISR, Gandhinagar
Shri P. Mahesh	ISR, Gandhinagar
Dr. G. C. Kothiyari	ISR, Gandhinagar
Dr. Rakesh Dumka	ISR, Gandhinagar
Shri M.S.B.S.Prasad	ISR, Gandhinagar
Ms. Falguni Bhattacharya	ISR, Gandhinagar
Shri Ketan Singha Roy	ISR, Gandhinagar
Shri S. P. Prizomwala	ISR, Gandhinagar
Shri Sandeep Aggarwal	ISR, Gandhinagar
Shri C. P. Simha	ISR, Gandhinagar
Ms. Vishwa Joshi	ISR, Gandhinagar
Ms. Archana Das	ISR, Gandhinagar
Ms. Drasti Gandhi	ISR, Gandhinagar
Shri Tarun Solanki	ISR, Gandhinagar
Ms. Vandana Patel	ISR, Gandhinagar
Shri Navneet Annam	ISR, Gandhinagar
Shri Vinay Kumar Dwivedi	ISR, Gandhinagar

Ms.Thokchom Sarda Maibam	ISR, Gandhinagar
Shri Vasu Pancholi	ISR, Gandhinagar
Shri Piyush Chaudhary	ISR, Gandhinagar
Ms. Jaina Patel	ISR, Gandhinagar
Shri S.Venkateshwar Rao	ISR, Gandhinagar
Ms. Jayshree Solanki	ISR, Gandhinagar
Shri Aurobindo Ku.Basantaray	ISR, Gandhinagar
Shri Rahul Singh	ISR, Gandhinagar
Shri Rahul Ranjan	ISR, Gandhinagar
Shri Suraj Kumar	ISR, Gandhinagar
Shri Auchitya Pandey	ISR, Gandhinagar
Shri Abhay Bharti	ISR, Gandhinagar
Shri Dhaval G. Patel	ISR, Gandhinagar
Shri Piyush Mishra	ISR, Gandhinagar
Ms. Dipika Ahirrao	ISR, Gandhinagar
Shri Mayank Dixit	ISR, Gandhinagar
Ms. Parul	ISR, Gandhinagar
Ms. Monica	ISR, Gandhinagar
Ms Komal	ISR, Gandhinagar
Shri Mohit	ISR, Gandhinagar
Shri Virendera	ISR, Gandhinagar
Shri Ganpat Parmar	ISR, Gandhinagar
Shri Jignesh Patel	ISR, Gandhinagar
Shri Pritesh Chauhan	ISR, Gandhinagar
Shri R O Suchak	ISR, Gandhinagar
Shri Utpal Bhatt	ISR, Gandhinagar
Shri P H Charan	ISR, Gandhinagar
Shri Girirajsinh Chavda	ISR, Gandhinagar
Shri Bharat Mevada	ISR, Gandhinagar
Shri Sandeep Prajapati	ISR, Gandhinagar
Shri Dilip Chaudhari	ISR, Gandhinagar
Shri Bihari Darji	ISR, Gandhinagar
Shri Nirav Patel	ISR, Gandhinagar
Shri Tejendra Vaghela	ISR, Gandhinagar
Shri Darshit Modi	ISR, Gandhinagar
Shri Mitesh Lakhwara	ISR, Gandhinagar
Shri Jay Pandit	ISR, Gandhinagar
Shri Suresh P.Thadani	ISR, Gandhinagar
Shri Paresh Paradiya	ISR, Gandhinagar
Shri Mahesh Valekar	ISR, Gandhinagar
Shri Thokchom Romio Singh	ISR, Gandhinagar

ORGANISING COMMITTEE

<u>CHAIRMAN OF ALL COMMITTEES:</u>		H	<u>HOSPITAL & MEDICAL COMMITTEE:</u>	
Dr. B. K. RASTOGI	99784 07515		DR. MEHTA	9426011031
<u>COORDINATION TEAM:</u>		I	<u>HALL ARRANGEMENT:[Auditorium]</u>	
			GANPAT PARMAR	90990 34457
K.M.RAO	99784 06331		DILIP CHAUDHARI	9825092807
SANTOSH KUMAR	99252 43646		DARSHIT MODI	9428508184
JYOTI SHARMA	9974712172			
<u>HOST GUIDE</u>		J	<u>HALL MANAGEMENT:[Conf room-1]</u>	
GANPAT PARMAR	9099034457		BHARAT MEVADA	97246 15549
JIGNESH PATEL -[T.O.]	94280 47567		SANDEEP PRAJAPATI	9924287518
<u>TRANSPORT COMMITTEE:</u>		K	<u>LAN & INTERNET MANAGEMENT:</u>	
			JIGNESH PATEL -[T.O.]	94280 47567
Dr. RAKESH DUMKA	8000137268		PRITESH CHAUHAN	9624927033
Dr. GIRISH KOTHYARI	9428693921	L	<u>ELECTRICAL MAINTENACE:</u>	
<u>ALL DRIVERS</u>			DILIP CHAUDHARI	9825092807
MAHENDRA S. CHAVDA	9737283288		BIHARI DARJI	97279 09988
JAYDIP CHAUHAN	9737399348		NIRAV PATEL	7600024566
NARENDRA CHAVDA	9173428755		TEJENDRA VAGHELA	9099034464
PRITHVI JADEJA	99795 59368	M	<u>ACCOMODATION COMMITTEE:</u>	
JATIN M. VAGHANA	9925194299		A. P. SINGH	90990 34461
BHARATSINH VAGHELA	9913584529		P. MAHESH	9737436495
RAJESH SHARMA	9624518981		VINAY	9824481692
			MONIKA	
<u>FOOD COMMITTEE:</u>		N	<u>GUIDES FOR VISITS TO LABS.OF ISR:</u>	
P. MAHESH	9737436495		GIRISH KOTHYARI- OSL	9638041829
			R.K.SINGH - Gravity & Mag.	8905229598
			VASU PANCHOLI - GEOTECH	81407 62131
<u>REGISTRATION COMMITTEE</u>				
Dr. KAPIL MOHAN	9099034451		RAKESH DUMKA- GPS	90990 34470
PEUSH CHAUDHARY	94285 02042		KETAN S. ROY - DATA CENTER	9429517873
MOHIT				
DRASHTI GANDHI		O	<u>POSTER:</u>	
KOMAL			VASU PANCHOLI	9428219626
MONIKA			RAHUL	
			SURAJ	
			VINAY DWIVEDI	
<u>ACCOUNTS COMMITTEE</u>				
SHRI P.H. CHARAN	98357 30654			
SHRI SUCHAK BHAI	90999 54097	P	<u>MEDIA MANAGEMENT</u>	
GIRIRAJ SINH CHAVDA	97140 00541		DARSHIT MODI	9428508184

Profiles of some of the speakers of Workshop on Seismic Microzonation and 3rd International Convention on “Advances in Earthquake Science” held during 4-6 Jan, 2014 at Institute of Seismological Research, Gandhinagar

Foreign Delegates

PROF. SHAMITA DAS

Department of Earth Sciences, University of Oxford, U.K.

Fellow of the American Geophysical Union.

I am a seismologist and received my doctorate at MIT in 1976. My research in earthquake studies has been conducted in several broad areas of observational and theoretical seismology and fracture mechanics over the last 35 years. The major goal of the work is to understand the physics of the earthquake preparation and faulting process, maximum possible earthquake rupture speeds, and to predict expected motion at sites of engineering interest (the built environment) due to large earthquakes. The long-term goal is to prepare the physical basis for developing the capability to predict earthquakes, in future, if possible. Current research is focused on the scaling of small to large earthquakes, study of very large submarine earthquake which cannot be studied by any other means such as GPS or SAR, analysis of strong ground motion to infer faulting properties, very detailed modelling of the earthquake fracturing process, and study of deep earthquakes and shapes of deep seismic zones along with its implications for mantle dynamics.

I have worked on great earthquakes in Sumatra, Antarctica, South America, Tibet and Indonesia. I have served on the UK Government's Natural Hazards Working Group, set up by Sir David King, Chief Scientific Advisor to the UK Government.

My full CV and Publication List can be found at:

<http://www.earth.ox.ac.uk/people/profiles/academic/das>



PROF. ANTONELLA PERESAN

Dr. Antonella Peresan is seismologist at the Department of Mathematics and Geosciences, University of Trieste (Italy). Since 1997 she collaborates in the research activities of the SAND Group at the Abdus Salam International Centre for Theoretical Physics (ICTP, Trieste). Adjunct professor at the University of Trieste, Roma Tre University and ICTP, she conducts research activities related with seismic hazard assessment, ranging from the analysis of spatio-temporal characteristics of seismicity to the implications for the estimation of seismic ground shaking, with special attention to issues related with testing and validation of the applied methodologies.

Her scientific contributions are mainly related with the following topics: development of an integrated procedure for scenario-based time-dependent seismic hazard assessment; analysis of earthquake catalogs and seismicity patterns in tectonic and volcanic areas; application and testing of intermediate-term earthquake prediction algorithms; joint analysis of seismic and geodetic anomalies; numerical simulation of the lithosphere block-structure dynamics.



Dr. Peresan has been involved in a number of international and national projects. She coordinated an Indo-Italian cooperation project aimed at neo-deterministic seismic and tsunami hazard assessment in Gujarat (India). She collaborates as scientific advisor with eXact Lab, an innovative technological startup specialized in HPC (High Performance Computing), to the development of an on-demand service for the realistic modeling of seismic input.

Dr. WALTER D. MOONEY

Dr. Walter D. Mooney is a research seismologist with the US Geological Survey (USGS), Earthquake Science Center in Menlo Park, CA. His thirty-four-year career at the USGS has focused on reducing earthquake hazards, both domestically and internationally. Most recently, he has travelled to Japan, China, Indonesia, Haiti and Chile to investigate the deadly earthquakes that struck those countries. He is a native of New York and graduate of Cornell (B.S.) and the University of Wisconsin (Ph.D.). Dr. Mooney has published over 175 scientific reports, and is a frequent lecturer in the San Francisco Bay Area and elsewhere. He is a Fellow of the Indian Geophysical Union, American Geophysical Union, Geological Society of America, and the Royal Astronomical Society (London).



Plenary Session Speakers

PROF. HARSH GUPTA

Prof. Harsh Gupta, recipient of a prestigious civilian award, the Padma Shri and a former Director of NGRI, President Geological Society of India and President IUGG. Prof. Gupta is a seismologist of international repute and well known for his contributions for providing the first geophysical evidence for an enormously thick crust below the Tibet Plateau. He has pioneered investigations of reservoir triggered earthquakes. His study of earthquake swarms and quiescence that precede major earthquakes lead him to successful medium term earthquake forecasting, His current interests include Super Deep Borehole Drilling in the Koyna-Warna reservoir region.



Dr. P.K. Mishra

Dr. P.K. Mishra, at present Director General, Gujarat Institute of Disaster Management, has, as a former member of the Indian Administrative Service, varied work experience (holding senior positions) in field organizations as well as at the policy-making levels of the government.

He was chairing a Task Force constituted by the Union Home Ministry to review the Disaster Management Act, 2005. At present he is chairing a committee constituted by the Union Agriculture Ministry to examine some issues of crop insurance. He was also a Member of the committee of the Reserve Bank of India to review the Priority Sector Lending Policy.

He is a member of the International Advisory Group of the World Bank for preparing a Disaster Recovery Framework.

As Secretary to Government of India, Ministry of Agriculture during 2006-08 Dr. Mishra was actively involved in path-breaking national initiatives such as



the National Agriculture Development Programme (RKVY) and the National Food Security Mission (NFSM). He also worked as Secretary, National Disaster Management Authority during 2006.

He functioned during 2001-2004 as Chief Executive Officer of the Gujarat State Disaster Management Authority (GSDMA) created after the Kutch earthquake of 26 January 2001. He played a crucial role in shaping the GSDMA into a vibrant, dynamic and innovative organization, which received a number of prestigious international awards – including those of the United Nations, and the Commonwealth Association for Public Administration and management (CAPAM) - for outstanding work in disaster recovery and management.

He published a book entitled **The Kutch Earthquake 2001: Recollections, Lessons and Insights** in 2005. He has also written a book entitled **Agricultural Risk Insurance and Income** published from UK in 1996. He has edited a book on Agricultural Insurance for the Asian Productivity Organization, Tokyo. He has published a number of papers in national and international journals, and has been invited to many international conferences as resource person and to present papers.

Dr. B.K. Rastogi

Dr. B.K. Rastogi, formerly Head, Seismology at NGRI, Hyderabad is Director General Institute of Seismological Research which he has established. Rastogi is M.Sc and PhD (Geophys.) from ISM, Dhanbad. He has worked for over 5 yr in most prestigious institutes of the world including Univ. South Carolina, Univ. Colorado, Boulder, IISEE, Tokyo, Univ. of Tokyo, US Geol. Sur., Menlo Park, Univ. Hamburg, Germany, Grenoble Univ. IPSN, Paris and Inst Phys. Earth, Moscow. His significant contributions include (i) identification of Bombay High, the oil-bearing structure in 1968, (ii) development of seismic characteristics to differentiate reservoir-induced earthquakes from ordinary earthquakes, and (iii) assessment of seismic hazard on regional basis and in specific areas (iv) characterization of intraplate earthquakes and their foreshock-aftershock patterns. He has a US patent for Earthq. Prediction method. He is author of the book “Dams and Earthquakes” which is translated into Russian and Chinese and followed by engineers worldwide like a bible and 86 SCI papers with H-index of 21. He is Fellow of Ind. Geophys. Un. and Guj. Sc. Academy, and, is recipient of IGU Decennial 2011 medal, ISM Distinguished Alumni Award, European Council Madam Curie Bursary, JICA Fellowship and NSF Fellowship. He has been honored with a Decennial Award-2011 by the Indian Geophysical Union (IGU).



PROF. R. K. VERMA

Distinguished Professor

Prof. RK Verma did M.Sc. Physics from Punjab Univ. in 1950 and PhD from Harvard in 1959. He worked as Lecturer in Delhi Univ. (1953-54), Harvard (1955-59), ONGC (1959-61), Nat. Geophys. Res. Inst. (NGRI), Hyd (1961-68), In.Sch. of Mines (ISM), Dhanbad (1968-88). He has done pioneering work in the field of Heat flow, Paleomagnetism and gravity and established labs for these studies at NGRI and ISM. He is author of two books "Gravity Field, Seismicity and Tectonics of Indian Peninsula and the Himalayas" and "Geodynamics of Indian Peninsula and Indian Plate Margin" published by D. Reidal. He got Krishnan and Decennial awards of In. Geophys. Un. and Distinguished Academy award of ISM.



Coneveners

Prof. B. R. Arora

Prof B R Arora is currently engaged as Consultant to Division of Seismology, Ministry of Earth Sciences, Govt. of India, New Delhi. Earlier, he served at IIG Mumbai and during 2003-2009 was the director of the Wadia Institute of Himalayan Geology, Dehradun. Prof Arora is Fellow of National Academy of Sciences, India and Indian Science Academy. He has been the recipient of National Mineral Award (2002), IGU- Electrotek and Geometrics Endowment Medal (2008), GSI- Hari Narain Award (2009). He has served as a member of the Executive Council, International Association of Geomagnetism and Aeronomy and he is currently Chairman of the Uttarakhand Chapter of NASI.



He has long been engaged in imaging the deep structures of the Himalayan collision zone using magnetotelluric and passive seismology. His more recent accomplishment is establishment of Multi-Parameter Geophysical Observatory for earthquake precursory research in integrated manner.

Prof. J. R. Kayal

Professor J. R. Kayal did his M Sc Tech (Applied Geophysics), from the Indian School of Mines (ISM), Dhanbad in 1969, and Ph D in Microearthquake Seismology from the Victoria University of Wellington, New Zealand, in 1983 as a Commonwealth Scholar.

He is author of more than 130 research papers in national and international journals, editor in several international journals and reviewer of almost all international and national journals in Earth Sciences. He presented more than 160 seminar papers, invited and keynote lectures in India and abroad. He has attended and presented papers in more than 100 national and international Seminars. He is author of the Book on: *Microearthquake Seismology and Seismotectonics of South Asia*, published in 2008 by the Springer Publisher, Germany and by the Capital Publisher, India,

He has been honoured with a National Geoscience Award-1994 by the Government of India, a Decennial Award-2010 by the Indian Geophysical Union (IGU), and was awarded the honour of Fellow by the West Bengal Academy of Science & Technology (WBAST), IGU, AEG and by the New York



Academy of Sciences.

Dr. M. Ravi Kumar

Dr. M. Ravi Kumar received his B.Sc (Hons.), M.Sc. (Tech.) and Ph.D. degrees from the Osmania university, Hyderabad. He has been working as a scientist at the National Geophysical Research Institute, Hyderabad, for the past 24 years pursuing research in the field of earthquake seismology together with a number of students and collaborators. He has designed and executed several passive seismological experiments in geologically complex and diverse terrains in the Indian shield, eastern Himalaya and the Andaman subduction zone. Dr. Kumar developed and applied new seismological techniques to investigate the shear structure, composition and deformation of the lithosphere and sub-lithospheric mantle and decipher their bearing on the evolution of the disparate geological terrains and seismogenesis. He has provided new understanding of the geodynamics of the Indian tectonic plate through high resolution imaging of the deep structure of its stable and actively deforming regions. He has published 70 research papers in peer reviewed journals, supervised ten students for their master's dissertation work and four for doctoral thesis.



Prof. K. S. Misra

Dr. K. S. Misra has completed his M. Sc. from Vikram University, Ujjain in 1969 and Ph.D. from the University of Manitoba, Winnipeg, Canada, in 1983. He has worked for Geological Survey of India for 37 years and retired as Sr. DDG. On deputation he has worked at IIT Bombay and also served as Head of Remote Sensing Application Center at Bhopal. He has availed Canadian Government Laboratory Visiting Fellowship for two and half years to work in microwave remote sensing and hydrocarbon exploration. Presently, he is working as Professor in University of Petroleum and Energy Studies.



Dr. Anbazhagan Panjamani

Anbazhagan Panjamani graduated in Civil Engineering (B.E.) from College of Engineering, Anna University, Guindy, Chennai, 2002, and received his Masters in Soil Mechanics and Foundation Engineering from the same institute in 2004. In 2007, he obtained his Doctorate in Geotechnical Engineering at Indian Institute of Science (IISc), Bangalore, India. Presently, he is working as an Assistant Professor in Civil Engineering Department at Indian Institute of Science, Bangalore. His main interests are in earthquake geotechnical engineering, particularly hazard estimation using deterministic and probabilistic approach, site characterization, site response studies and liquefaction studies. His research involves site classification using standard penetration test data and shear wave velocity from multichannel analysis of surface wave (MASW) field testing. He received the prestigious Endeavor Fellowship Award from Australian Government in 2009. His research work on microzonation of Bangalore city has been selected for Research highlights presentation on the IISc Main Web page from 2006. He received IEI Young Engineers Award 2010-2011 in Civil Engineering Discipline from the



Institution of Engineers (India). He is also serving as a Visiting Professor for calendar year 2014, at King Saud University, Riyadh Saudi Arabia for the effective joint scientific research and scientific capacity building in the area of Seismic Hazard Analysis and Microzonation. He has authored more than 40 journal papers and 80 conference papers from his research work.

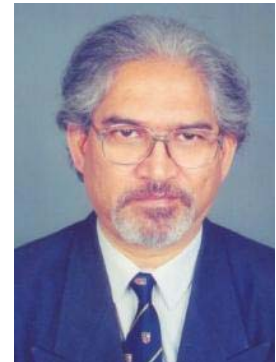
Dr. Paresh Nath Singh Roy

He has completed his education, M. Sc. Tech. in Geophysics in the year 2000 and Ph.D in Geophysics in the year 2004 from Banaras Hindu University, Varanasi, INDIA. He has served as Visiting Faculty in the Department of Geology & Geophysics, I.I.T, Kharagpur, India from January 2006 – March 2007. Presently, he is working as Associate Professor in the Department of Applied Geophysics, Indian School of Mines, Dhanbad. He has specialization in the field of Geophysical Signal Processing & Mathematical Geophysics.



Prof. Vikram C. Thakur

Prof. Vikram C. Thakur is the former Director of the Wadia Institute of Himalayan Geology, Dehradun.. Presently he is the Emeritus Scientist in the same institute carrying research work in active tectonics and earthquake geology of Himalaya. He is a Fellow of the Indian Academy of Sciences. He is also a recipient of the National Mineral Award of Government of India. Dr. Thakur did his M.Sc. from Punjab University, and Ph.D. from Imperial College of Science and Technology, London University. In addition to more than 100 research papers, he has authored a book “Geology of Western Himalaya” by Pergamon Press.



Other Delegates

Prof. T. Harinarayana

Prof. Harinarayana T, Formerly, Head, Magnetotellurics, National Geophysical Research Institute and presently the Director of GERMI-Gujarat Energy Research and Management Institute (GRIIC), Gujarat has done onshore and offshore deep electromagnetic applied to Oil exploration, geothermal energy assessment, crustal studies. He introduced marine magnetotellurics – in Gulf of Kutch for hydrocarbon exploration that has delineated 4 km thick buried sediments below the volcanic cover. He is recipient of Indian National Mineral Award and best scientist award by Government of Andhra Pradesh. He is fellow of In. Geophys. Un. and Andhra Pradesh Academy of Sciences.



Dr. Sreevalsa Kolathayar

Dr. Sreevalsa Kolathayar, is currently working as Assistant Professor at Indian School of Mines Dhanbad. He completed his PhD from IISc Bangalore and served as International Research Staff at UPC BarcelonaTech before joining ISM. He authored/co-authored around 15 International Journal publications and 25 conference papers, mostly on seismic hazard analysis. He is reviewer of various International journals. He holds various Academic and Administrative positions at National level and is actively involved in bringing science to the benefit of common people.



Dr. Ramancharla Pradeep Kumar

Dr. Ramancharla Pradeep Kumar is the Professor of Civil Engineering and Head of Earthquake Engineering Research Centre in International Institute of Information Technology (IIIT), Hyderabad. He has done PhD from University of Tokyo, Japan. His area of interest are Earthquake engineering and Structural Dynamics Analysis and design of RC structures Numerical simulation of non-engineered buildings Development of awareness raising tools for earthquake disaster mitigation Collapse analysis of structures.



Dr. T. J. Majumdar

Dr. T. J. Majumdar received a Ph.D. in Applied Geophysics from the Indian School of Mines, Dhanbad in 1990. Presently working as CSIR Emeritus Scientist and posted at SAC. Formerly Head, Earth Sciences & Hydrology Division, MESG/RESA, Space Applications Centre (ISRO), Ahmedabad. His current fields of interest include satellite geoid/gravity for lithospheric modelling, ASTER data analysis for oil field signatures, satellite data fusion and analysis over Singhbhum Shear Zone for lithological mapping, Antarctic studies using SSM/I passive microwave and Geosat altimeter data, Disaster/earthquake occurrences monitoring using satellite gravity and thermal IR data etc. Dr. Majumdar has around 80 publications in National/International Journals. Fellow/Life Member, Geological Society of India, Indian Society of Remote Sensing, India Meteorological Society, Indian Society of Geomatics, Indian Society of Earthquake Science.



Dr. Prantik Mandal

Dr. Prantik Mandal is a Principal Scientist in the National Geophysical Research Institute (NGRI), Hyderabad, India. Dr. Mandal had his education at the Indian School of Mines, Dhanbad (M.Sc. (tech)) and Osmania University, Hyderabad (Ph.D.). Dr. Mandal's high-resolution studies in the Bhuj Earthquake region identify the fluid-filled mafic intrusives as stress accentuators that generate crustal earthquakes while the uninterrupted occurrence of aftershocks are triggered by stress-transfer and fluid or volatile CO₂ flow mechanisms. This model gets further support from the coincidence of area of crustal (3-7 km) and astheonspheric (6-12 km) thinning, and aftershock activity, as observed through receiver function modeling and precise relocations of aftershocks. Dr. Mandal has published 65 research papers in International referred journals and 80 abstracts in National and International conferences. Toward the reorganization of his scientific achievements, he has been awarded the National Mineral award (in Disaster management in 2007).



Dr. Prabhas Pande

Dr. Prabhas Pande did his M.Sc. in Geology in 1971 and was awarded PhD in 2008. In his service career spanning for 36 years in the Geological Survey of India, he carried out geotechnical investigations for several river valley and communication projects and studied over 15 damaging earthquakes that occurred in the Indian subcontinent since 1980. He supervised seismic hazard assessment of Urban Agglomerations at micro level, active fault mapping in the Frontal Himalayan belt and palaeoseismic studies. He superannuated as Additional Director General, GSI on 31st August 2011.

He has served as a Member of the Scientific Board of IGCP, UNESCO, Paris from 2002 to 2005, He was sent on deputation to France in 1995 and to Bhutan in 2001 to conduct seismotectonic evaluation studies. Dr. Pande was part of the Indian delegation to visit Chile, Peru and Canada in 2010 and 2011 and served as a geotechnical Consultant for Chindwin Valley projects in Myanmar. He was a Technical Consultant for Kalpasar Project, Government of Gujarat, and represented GSI in several National and International Committees including the Global Earthquake Model (GEM). He was a member of the Peer Group that was constituted by the BMTPC for the First Revision of the Vulnerability Atlas of India. He has written over 50 technical papers and authored/edited several major publications of GSI, including the Seismotectonic Atlas of India and 2001 Kutch Earthquake.



Dr. Chandra Shekhar Pandey

Chandra Shekhar Pandey born in Bareilly, India is an M.Sc, M.Tech. He received his PhD (elastic constants of solids) in 2010 from the Institute of Geology, Mineralogy and Geophysics at the Ruhr University Bochum (RUB), Germany. Presently he is doing Habilitation from RUB, where he holds the position of Academic scientist (postdoc cum lecturer). His current research interests are in Earth science; mineralogy and geophysics, with prime focus on phase transitions, and elastic properties of solids using resonant ultrasound spectroscopy. He received young scientist MRD research grant for from the RUB in 2010; and DRDO fellowship in 1999. Prior to join RUB, he served as a Scientist in DRDO India for more than 9 years.



Dr. Raju Sarkar

Dr. Raju Sarkar is presently working as Assistant Professor in the Department of Civil Engineering, Delhi Technological University. He has done M.E in Soil Mechanics and Foundⁿ. Engg and PhD in Geotechnical Earthquake Engineering. He has around 15 years experience in teaching and has 8 papers in International Journals and 14 in International Proceedings. He has received many awards and honour including Academic Honor Award and Medal (1993), International Travel Awards by IUGG, DST, INSA, UGC, NGRI, AOGS and ASC (2003-2011).



Dr. T. G. Sitharam

Dr. T. G. Sitharam has obtained his BE(Civil Engg) from Mysore University, India in 1983, Masters from Indian Institute of Science, Bangalore in 1986 and Ph.D. from University of Waterloo, Waterloo, Ontario, Canada in 1991. Further he was a post doctoral researcher at University of Texas at Austin, Texas, USA until 1994. He has served in many organizations like Govt of India, University of Waterloo, Canada, University of Texas at Austin, USA, and Yamaguchi University, Japan. Since 1994 he is at Indian Institute of Science as a PROFESSOR in the department of Civil Engineering. He is the founder Chairman of Centre for infrastructure, Sustainable Transportation and Urban Planning (CiSTUP at Indian Institute of Science, Bangalore. He is also an Associate Editor (AE) for ASCE Journal of Materials in Civil Engineering, USA for the period 2006-2009 and also Member, Committee on Soils and Rock Instrumentation (AFS20), Transportation Research Board of the National Academies, Division of National research Council (NRC), USA for the period 2007-2009. He is a recipient "Sir C.V. Raman State Award for Young Scientists", Government of Karnataka, the year 2002 in recognition and appreciation of exceptional contributions to Engineering Sciences awarded in October 2004. He is also the recipient of 1998 S.P. Research award (SAARC).



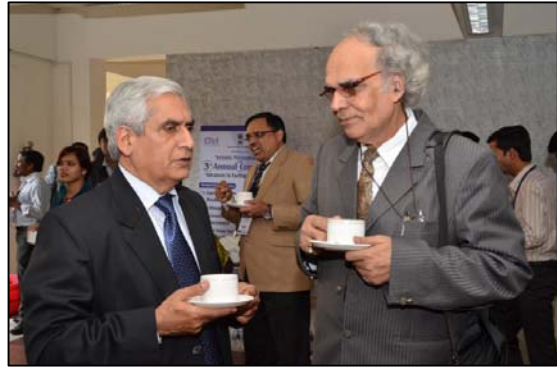














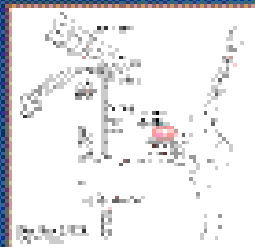


Organized by



INSTITUTE OF SEISMOLOGICAL RESEARCH

Department of Science & Technology, Government of Gujarat
Email: ig-ir@gucl.ac.in • igirped@gmail.com



Central Executive Committee...

Institute of Seismological Research (ISR)
Near P.T. Derasar Parkam University
Palna, Gandhinagar-360006, Gujarat, INDIA
Phone No. : +91-79-2673900 (0)
 +91-8874712175 (04)

Facs. : +91-79-26739013
e-mail : igsu.0116@gmail.com
 ir2016@gmail.com

Filename: Report-AES2014
Directory: C:\Documents and Settings\Administrator\My Documents
Template: C:\Documents and Settings\Administrator\Application
Data\Microsoft\Templates\Normal.dotm
Title:
Subject:
Author: DG ISR
Keywords:
Comments:
Creation Date: 1/15/2014 12:22:00 PM
Change Number: 270
Last Saved On: 1/27/2014 4:07:00 PM
Last Saved By: Admin
Total Editing Time: 1,486 Minutes
Last Printed On: 5/5/2015 9:09:00 PM
As of Last Complete Printing
Number of Pages: 58
Number of Words: 13,982 (approx.)
Number of Characters: 79,704 (approx.)