

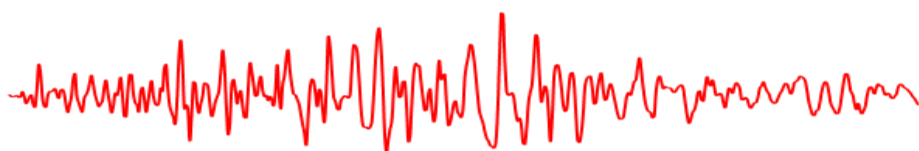
# **BHUKAMP**

The Newsletter of EERC

*(For internal Circulation only)*

# BHUKAMP

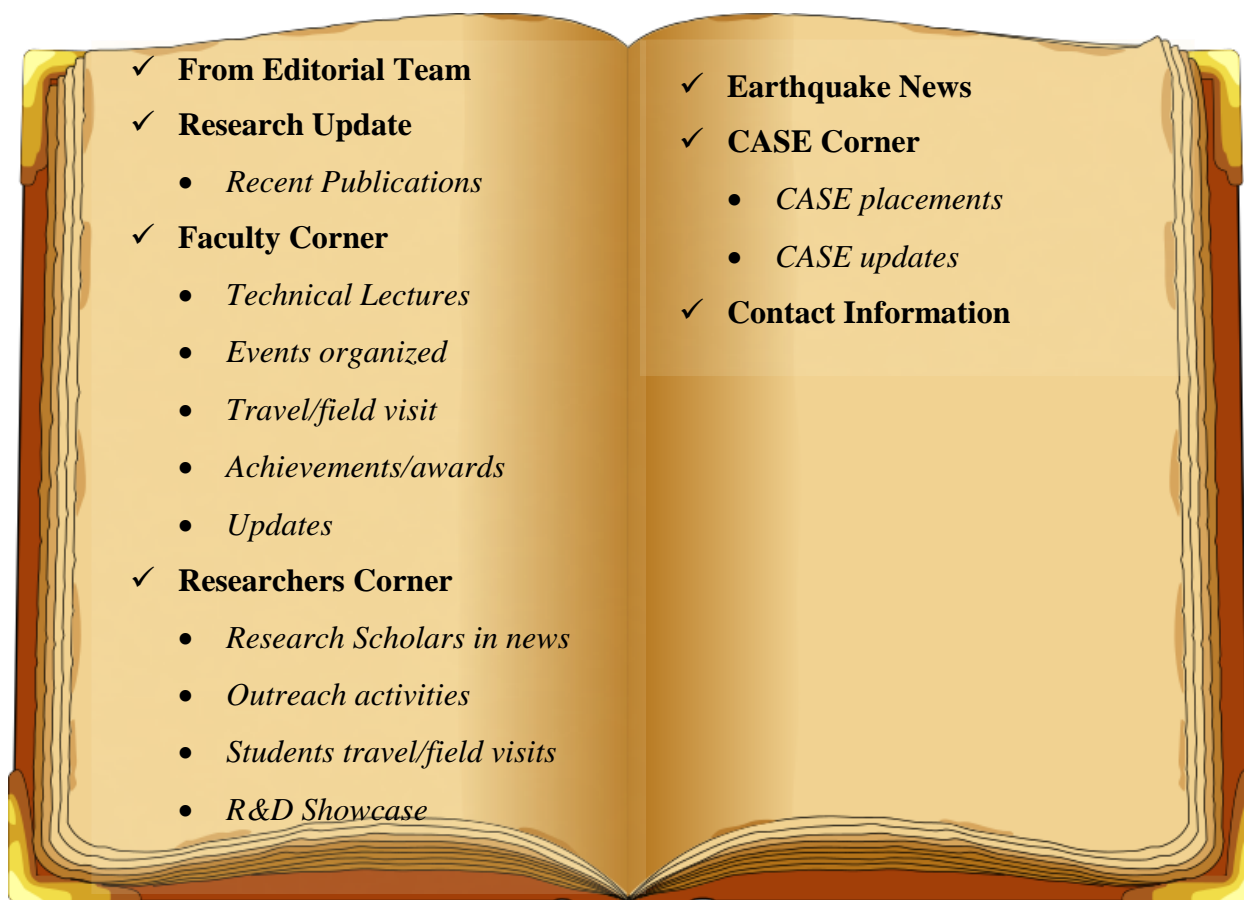
**Vol. 3, No. 1, Jan-Apr 2013**



**Earthquake Engineering Research Centre**

**International Institute of Information Technology**

**IIIT Hyderabad, Gachibowli, Hyderabad – 500 032**

**CONTENTS***From Editorial Team*

In this issue, apart from regular news, we presented about short courses, conducted by EERC. Researchers alone conducted four short courses to B.Tech Civil engineering students. Currently, many outreach activities are running in the centre like short courses. Members are encouraged to send their short write-ups. Suggestions on improving bhukamp are most welcome.

**Editorial Team:**

*Chenna Rajaram (EERC),  
PV Dilip Kumar (CASE),  
Bodige Narender (SERSL),  
Anthugari Vimala (SERSL),  
& Ramancharla Pradeep Kumar*

**RESEARCH UPDATE*****Recent Publications:***

EERC has published around 140 research papers in last 5 years. Kindly visit website to know the details. Publications during January – April are given below:

1. Murty CVR, Rupen Goswami, AR Vijayanarayanan, Pradeep Kumar R and Vipul V Mehta (2012), “Introduction to Earthquake Safety of Building Contents (Non-Structural Elements)”, Gujarat State Disaster Management Authority.
2. Ahmed Hussain and Ramancharla Pradeep Kumar (2013), "Modeling of buried faults using applied element method", International Journal of Earthquake Engineering and Science, JEES, Vol. 3, Issue No. 1, pp.1-16.
3. Chenna Rajaram, Ajay Pratap Singh, Ramancharla Pradeep Kumar and Bal Krishna Rastogi (2013), "A Study on Comparison between Real and Synthetic Ground Motions of Uttarkashi Earthquake", Proc. 2<sup>nd</sup> International Symposium on Advances in Earthquake Science (AES), Institute of Seismological Research (ISR), Gujarat, India.
4. Ehsan Vafaeihosseini, Azadeh Sagheb and Pradeep Kumar Ramancharla (2013), “Computational Fluid Dynamics Approach for Wind Analysis of High-rise Buildings,” Proc. ACE awards Convention & Consultants Colloquium, India.
5. Hima Chandan D, Narender B, Ramancharla Pradeep Kumar, Ito T, Takano K (2013), "Micro Tremor Response of Buildings in High Seismic Areas: A Case Study on RC Framed Building in Chandigarh, India, Part-I: Response of Building", Proc. 3<sup>rd</sup> International Engineering Symposium (IES), Kumamoto University, Japan.
6. Jagan Mohan and Ramancharla Pradeep Kumar (2013), "Numerical Study on Concrete Gravity Dam Subjected to Fault Motion", Proc. 2<sup>nd</sup> International Symposium on Advances in Earthquake Science (AES), Institute of Seismological Research (ISR), Gujarat, India.
7. Mishra S, Anthugari V and Ramancharla P (2013), "Deformation Capacities of Structures with Non-Rectangular Column Cross Section Geometry”, Annual Meeting of Earthquake Engineering Research Institute (EERI), Seattle.
8. Narender B, Hima Chandan D, Ramancharla Pradeep Kumar, Ito T, Takano K (2013), "Micro Tremor Response of Buildings in High Seismic Areas: A Case Study on RC Framed Building in Chandigarh, India, Part-II: Response of Building", Proc. 3<sup>rd</sup> International Engineering Symposium (IES), Kumamoto University, Japan.
9. Neelima Satyam D (2013) “Support System Design of Underground Cavern in Disintegrated Rock Mass”, 7<sup>th</sup> International Conference on Case Histories in Geotechnical Engineering, Chicago, USA.

**FACULTY CORNER**

1. Technical Lectures
2. Events Organized
3. Travel/Field Visits
4. Achievements/Awards
5. Updates

### *Technical Lectures:*

Date	Name	Topic
25 <sup>th</sup> Jan 2013	Prof. Pradeep Kumar	Earthquake Disasters in India: Where do we stand? NIRD, Hyderabad
30 <sup>th</sup> Jan 2013	Prof. Pradeep Kumar	Building Collapse during disasters. MCR HRD, Hyderabad
12 <sup>th</sup> Feb 2013	Prof. Pradeep Kumar	Overview of Research in Earthquake Engineering, IIIT-H, Hyderabad
28 <sup>th</sup> Feb 2013	Dr. Neelima Satyam	Site characterization and Ground Response Analysis with examples from India, Japan
14 <sup>th</sup> Mar 2013	Prof. Pradeep Kumar	Main Streaming Disaster Risk Reduction. NIRD, Hyderabad
21 <sup>st</sup> Mar 2013	Mr. Dilip Kumar & Mr. Chenna Rajaram	Virtual Labs, Eluru, INSPIRE by DST
22 <sup>nd</sup> Mar 2013	Prof. Pradeep Kumar	Cyclone Risk Mitigation. MCR HRD, Hyderabad
22 <sup>nd</sup> Mar 2013	Mr. Dilip Kumar & Mr. Chenna Rajaram	Disaster Management (Earthquakes) – Current Status Importance of Science & Research in our Daily Life, Eluru, INSPIRE by DST
22 <sup>nd</sup> Mar 2013	Mr. Dilip Kumar & Mr. Chenna Rajaram	Earthquake Resistant Structures, CRR College of Engineering, Eluru
29 <sup>th</sup> Apr 2013	Prof. Pradeep Kumar	Disaster Resistant Housing in Rural Areas at NIRD, Hyderabad

### *Events Organized:*

1. Dr. Ramancharla Pradeep Kumar and his research team (Mr. Dilip Kumar, Mr. Chenna Rajaram, Mr. Bodige Narendra, Mr. Hima Chandan and Mrs. Anthugari Vimala, Mr. Swajit Singh Goud, Mr. Ajay Kumar Sreerama and Ms. Neelima Patanala) conducted short course on “Earthquake Resistant Design of Buildings” organized by Earthquake Engineering Research Centre, IIIT Hyderabad on 1<sup>st</sup> – 4<sup>th</sup> April 2013.



1. Dr. Ramancharla Pradeep Kumar is organized a one day Symposium on “Geotechnical Applications” in collaboration with Jawaharlal Nehru Technological University (JNTU) Hyderabad and Indian Geotechnical Society (IGS) on 16<sup>th</sup> March 2013.

### *Travel/Field trips:*

1. Dr. Neelima Satyam has visited University of Tokyo as Visiting Scientist during January - March 2013 under JSPS fellowship.
2. Dr. Neelima Satyam has visited Nagoya for soil testing along with Prof. Towhata on 5<sup>th</sup> February 2013.
3. Dr. Neelima Satyam has visited liquefied sites at Itako city and Tokyo bay reclaimed areas on 11<sup>th</sup> February 2013.
4. Dr. Pradeep Kumar has visited Chennai on 14<sup>th</sup> January 2013.
5. Dr. Pradeep Kumar has visited Chennai on 18<sup>th</sup> April 2013.
6. Dr. Pradeep Kumar has visited Chandigarh during 5-13, January 2013 to check the strength of the existing building by installing building vibration sensors.
7. Dr. Pradeep Kumar has visited Chandigarh on 03<sup>rd</sup> April 2013 to check the strength of the existing building located at sector 19C.

### *Achievements/Awards*

1. Dr. Ramancharla Pradeep Kumar has become professor on 11<sup>th</sup> January 2013.

### *Updates:*

1. Dr. Neelima Satyam has elected as one of the reviewer for 7<sup>th</sup> International Conference on “Case Histories in Geotechnical Engineering and symposium in honor of Clyde baker”, Wheeling, Chicago, 29<sup>th</sup> April – 4<sup>th</sup> May, 2013.
2. Dr. Neelima Satyam is one of the examiner for Ph.D dissertation by Mr. P. Ramesh on “Modification of Geotechnical Properties of an Expansive Clay through Inorganic Chemicals”, Sri Venkateswara University Tirupati.
3. Dr. Pradeep Kumar has elected as convener for International Colloquium on Architecture Structure Interaction for Sustainable Built Environment.
4. A technical lecture was given on “Introduction to Strong Ground Motion Simulation” by Prof. Matsuda, University of Tokyo on 20<sup>th</sup> February 2013.
5. A technical lecture was given on “Sikkim Earthquake Research Gaps and Challenges to Geo-Professionals” by Prof. Chandan Ghosh, National Institute of Disaster Management (NIDM) on 28<sup>th</sup> January 2013.
6. A technical lecture was given on “Stochastic Simulation of Ground Motions in Himachal Region, Northwest Himalaya” by Dr. Ashish Harbindu, IIT Roorkee on 6<sup>th</sup> January 2013.

**RESEARCHERS CORNER*****Research Scholars in News:***

1. Mr. Pulkit D. Veloni has joined MS by Research program in Structural Engineering in the month of January.
2. Mrs. Anthugari Vimala has successfully completed comprehensive viva exam on “Numerical Modeling of Performance of RC Framed Buildings: Effect of Local Damage on Global Damage” in the month of March.
3. Mr. Jagan Mohan has successfully defended his MS thesis on “Numerical Study of Near-Field Earthquake Effects of Concrete Gravity Dams” in the month of April.
4. Mr. Madhu K joined as Research Assistant and working with Dr. Neelima Satyam on “deep excavations in expansive soils”.

**BHUKHAMP** congratulates all the above students.

***Outreach Activities*****1. Short Course on “Earthquake Resistant Design of Buildings, 1<sup>st</sup> – 4<sup>th</sup> April 2013”**

Around 16 students had participated in short course. The course takes a flight understanding basic seismology, understanding vibration of single degree of freedom, multi degree of freedom, calculation of lateral forces, IS:1893-2002 design code procedure, ductile detailing, SAP analysis of structure, practice session on complete analysis & design of G+3 structures and importantly role of civil engineer in the society. Also we had interacted with the students during breaks.

***Students Travel/Field Visits:***

1. Mr. Chenna Rajaram and Mr. Jagan Mohan have attended four day workshop on “International School on Use of e-infrastructure for Advanced Seismic Hazard Assessment in Indian Subcontinent” organized by Institute of Seismological Research (ISR) and Trieste University during 4<sup>th</sup> – 7<sup>th</sup> February 2013 at Institute of Seismological Research, Gujarat. He also presented around 8 papers during the conference.
2. Mr. Chenna Rajaram and Mr. Jagan Mohan have attended two day conference on “International Symposium on Advances in Earthquake Science (AES)” organized by

- Institute of Seismological Research (ISR) during 1<sup>st</sup> – 2<sup>nd</sup> February 2013 at Institute of Seismological Research, Gujarat. They have also presented 2 papers during the conference.
3. Mr. Narender and Mr. Hima Chandan have attended three day conference on “International Engineering Symposium (IES) during 4<sup>th</sup> – 6<sup>th</sup> March 2013 at Kumamoto University, Japan. They have also presented 2 papers during the conference.
  4. Mr. Dilip Kumar & Mr. Chenna Rajaram have visited St. Theresa’s Autonomous College for Women, Eluru, as a part of Innovation in Science Pursuit for Inspired Research (INSPIRE) program sponsored by Department of Science and Technology for SSC students. They have also given lectures on “Disaster Management: Current Status and Importance of Science and Research”.
  5. Mr. Dilip Kumar & Mr. Chenna Rajaram have visited CRR College of Engineering, Eluru for delivering lecture on “Earthquake Resistant Structures” to B.Tech Civil engineering students.
  6. Mr. Narender, Mr. Hima Chandan and Mr. Raju Sangam have visited Chandigarh during 5-13, January 2013 to check the strength of the existing building by installing building vibration sensors.
  7. Mr. Hima Chandan and Mr. Raju Sangam have visited Chandigarh during 1-4, April 2013 to check the strength of the existing building by installing building vibration sensors.

### R&D Showcase:

The R&D showcase was held on 9-10<sup>th</sup> February 2013 at IIIT-H. On 3<sup>rd</sup> Mar.2012, Dr. Amit Chattarjee (R&D Managing Director, Microsoft, INDIA) gave a valuable lecture. He also visited different research centres. Around 280 posters were presented during the showcase.

Many students from different engineering colleges/institutions came to visit the ongoing research at IIIT-H. Around 500 people visited our centre and gave their feedback. Different news/TV channels visited and collected the information about ongoing research at various research centres. The following are the articles published in news.

#### భూకంపం వస్తే ఎంత నష్టం...

జపాన్‌లో కలిసి కేంద్ర ప్రభుత్వం చేపట్టిన ప్రాజెక్టులో దిశానిబ్ బకటి. దీని ఆధారంగానే ఎర్త్‌క్వేక్ ఇంజనీరింగ్ రీసెర్చ్ విభాగం చేపట్టింది. ఈ పరిశోధనకు చండీమర్ నగరాన్ని ఎంచుకున్నారు. అక్కడ ప్రభుత్వ, పురాతన, వాణిజ్య భవనాలపై సెన్సార్లు అమర్చారు. అవి భూఅంతర్భాగంలో వచ్చే కదలికలకు ఎలా స్పందిస్తున్నాయి, ఎలాంటి ప్రభావానికి లోనవుతున్నాయో గుర్తిస్తాయి. దీన్ని ట్రిబుల్‌బెడ్ నుంచే పరిశీలించవచ్చు. ఒకవేళ భూకంపం వస్తే ఎలాంటి భవనాలకు ఎక్కువ నష్టం జరుగుతుంది, ముందు జాగ్రత్తలు ఏమి తీసుకోవాలో తెలుస్తుంది. ఎక్కువ భూకంపాలకు అవకాశం ఉన్న(డోన్ 5) ప్రాంతంలో చండీమర్ ఉండటంతో దాన్ని ఎంచుకున్నామని పీ హెచ్‌డి విద్యార్థి హేమచంద్ చెప్పాడు.



#### సునామీ తీవ్రత అంచనా...

సునామీ వంటి ప్రకృతి వైపరీత్యాలలో జరిగే నష్టం అపారం. సునామీ ఏ విధంగా వస్తుంది.. ఎంత వేగంగా వస్తోంది వంటి అంశాలను వివరించేందుకు ఈ ప్రదర్శనలో ట్రిబుల్‌బెడ్ ఎర్త్‌క్వేక్ ఇంజనీరింగ్ అధ్యయన కేంద్రం విద్యార్థులు సమూహా ఏర్పాటు చేశారు. సునామీ సంబంధించిన వెంటనే ఎంత సమయంలో అది తీరాన్ని తాకుంది.. అలా ఎంత ఎత్తున విగసిపడతాయనే విషయాన్ని అంచనా వేసే పరిజ్ఞానం వీరిదగ్గర ఉంది. అలా బద్దుకు చేరే సమయంతోపాటు అలల ఎత్తును పనిగట్టువచ్చని విద్యార్థి దిలీపకుమార్ తెలిపారు.

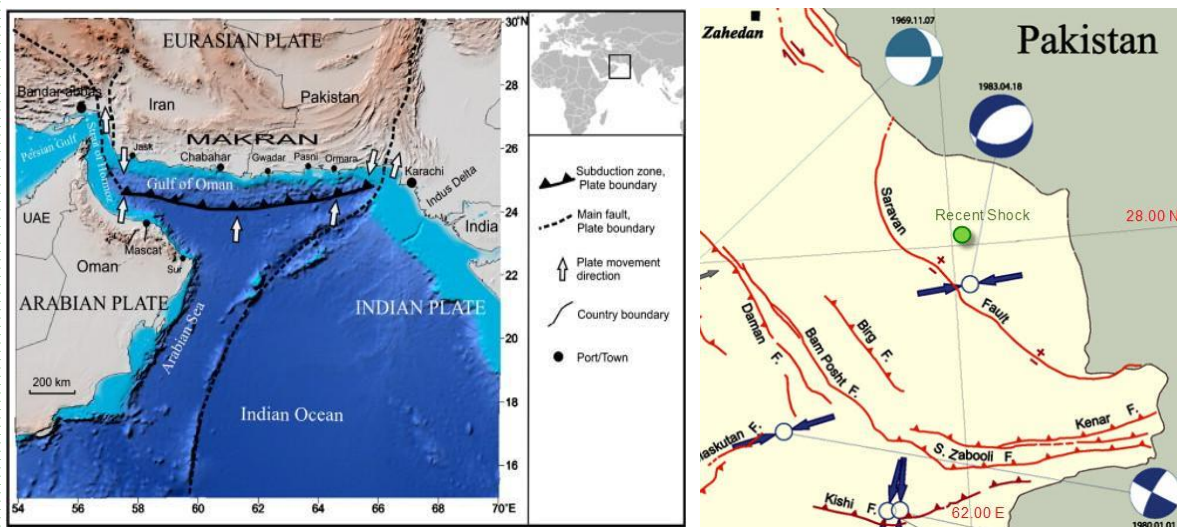


## Magnitude 7.8 – NORTH SARAVAN IRAN Earthquake

*2013 April 16 10:44:17 UTC*

The North Saravan seismic event of April 16 2013 occurred at 10:44:17 UTC within Sistan-Baluchestan province, SE Iran. The instrumental epicenter of the event given by IRSC is 28.04° N, 62.03° E; located north of Saravan city with 82 km in depth (USGS). Generally, this earthquake occurred in a sparsely populated area. The epicenter of this event is located within a fault zone trending mainly NW-SE, north of Makran E-W trending subduction zone. This earthquake felt in a far distance to the epicenter because of deep focus. Considering the epicentral location of the earthquake, the seismic event could be caused beneath the Saravan fault system. The fault is a major NW-SE active fault zone (approx. length 250km) in SE Iran. According to Normal mechanism of ENE-WSW faulting (N 60°-70° E) presented in focal solutions and depth of the event, it could be potentially caused by extension-brittle deformation concentrated in slab zone of Makran subduction zone.

Makran subduction zone contains one of the largest accretionary wedges on the globe, formed by the convergence between the Eurasian and the Arabian Plates. It is characterized generally by a shallow subduction angle. According historical and instrumental seismicities, Makran region is known as an active seismic zone. In General view, the western and eastern portions of the zone are located in Iran and Pakistan territories, respectively. Seismologically, strong earthquakes within Makran have long return periods, especially in Iranian portion. Review of earthquakes mechanism's occurred within Makran could be show two different types of reverse-shallow and mainly Normal-deep seismic events. The pattern of this secondary surface feature is En-echelon left-stepped with a steep normal vertical component. During the seismic event it is however southern block which has been uplifted (**Source: USGS, GSI-IRAN**)



### CASE CORNER

#### CASE Placements:



Our M.Tech Students (2011-13) got placed in various companies like Ramboll, Aveva Technologies and Smart Track Solar systems Ltd. Some of them are interested in research and joined in EERC. Currently, Mr. Ajay Kumar Sreerama is working on “Behavior of buildings on slopes”, Mr. Swajit Singh Goud is working on “Behavior of masonry buildings”, and Ms. Neelima is working on “Vulnerability assessment of heritage structures”. The placement details are as follows:

S.No	Full Name	Placement Details
1.	Swathi Yaski	Ramboll
2.	S Hemanth	Ramboll
3.	Pammi Raghu Nandan Vyas	Aveva Technologies
4.	C.Preeti	Ramboll
5.	Chadalawada Ipsita	---
6.	Kollipara Rajesh	Aveva Technologies
7.	Naseer Ahmed	Aveva Technologies
8.	G.Sai Krishna	Ramboll
9.	Yashvardhan Singh Sisodiya	Smart Track Solar systems Ltd
10.	Mandava Divya	Aveva Technologies
11.	Krishna Mohan Ajjamoudi	---
12.	Bharat Prakke	RGUKT (Waiting list)
13.	Sri Vasudha	---
14.	P. Neelima	MS by Research @ EERC, IIT-H
15.	Ajay Kumar Sreerama	Ph.D @ EERC, IIT-H
16.	Swajit Singh Goud	Ph.D @ EERC, IIT-H

### *CASE Updates*

Mr. Raghunandan Vyas (PG-2, CASE) and Mr. Akash K Chauhan (PG-1, CASE) won “S C MEHROTRA” Award organized by Indian Association of Structural Engineering for essay competition on “High Rise verses low rise development - Pros & Cons”.

Our M.Tech PG-1 students are doing internships in various companies such as, Larson and Tubro, Worley Parson, Technip India, Tech9, Toshiba, F L Smith. Some of the students are doing projects under the guidance of Prof. Ramancharla Pradeep Kumar.

Contact Information

## Editor

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