Volume 10, Issue 2

October 2010

NED UNIVERSITY OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF CIVIL ENGINEERING

Cowasjee Earthquake Study Centre
NED
NEWSLETTER

CESNED ACTIVITIES

Earth Science Pakistan 2010: New Developments, September 20-22, 2010

In the quest to develop Earth Sciences in Pakistan Department of Geology and National Centre of Excellence in Geology, University of Peshawar organized a three days conference from September 20 to 22, 2010 at the Baragali Summer Campus of the University of Peshawar. The conference was titled "Earth Science Pakistan 2010: New Developments". It was convened by Prof. Dr. M. Asif Khan, Prof. M. Qasim Jan and Prof. Muhammad Haneef, while Prof. Dr. M. Tahir Shah was the Chief Organizer. The venue of the conference was the University of Peshawar, Summer Campus at Baragali. The included themes of the conference were Himalayan Tectonics, Economic Mineral Deposits, Depositional Systems & Petroleum Exploration, Environmental Geosciences, Natural Hazards, Risk Assessment, Disaster Management and Mitigation andWater Resources. Dr. Sarosh H. Lodi , resource person of CESNED represented NED University.

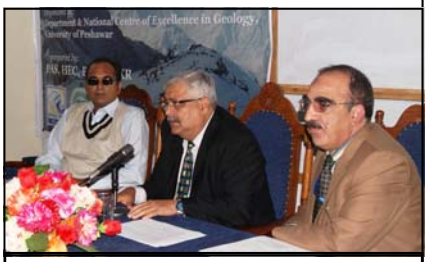

Fig 1: Dr. Lodi during the technical session

The conference was scheduled to be inaugurated by the honorable Governor, Khyber Pukhtunkhwa, Mr. Awais Ahmed Ghani but due to his last minute withdrawal, Prof. Dr. Azmat Hayat Khan (Vice Chancellor, University of Peshawar) and Mr. Muhammad Qasim Khan (Member Power, WAPDA) jointly presided the inaugural ceremony.

Fig 2: Audiences during the Conference

Eighty abstracts for presentations in the conference were received which, after peer review, were published in the Journal of Himalayan Earth Sciences, volume 43 (2010). More than 180 scientists from all over the country participated in the conference. The participation was of diverse nature including geologists, geographers, civil engineers, seismologists, environmental scientists, chemists, planners and policy makers from 12 universities and 17 earth sciences or related government and non-government organizations. These included University of Peshawar (Geology, NCE Geology, Geography, Env. Science), NWFP, University of Engineering and Technology, Peshawar, NED University of Engineering and Technology, Karachi, COMSATS Institute of Information Technology, Abbottabad, COMSATS Institute of Information Technology, Islamabad, Quid-e-Azam University, Islamabad ,University of the Punjab, Lahore, University of Sindh, Jamshoro, University of Balochistan, Quetta, Allama Iqbal Open University, Islamabad , Bahria University, Islamabad and University of Azad Jammu and Kashmir, Muzaffarabad.

Organisations like Geological Survey of Pakistan, Quetta, Pakistan Nuclear Regulatory Authority, Islamabad, Pakistan Petroleum Limited, Karachi, Pakistan Meteorological Department, Islamabad, Pakistan Museum of Natural History, Islamabad, Aga Khan Planning and Building Service (AKPBSP), Gilgit -Baltistan, PCSIR Labs, Lahore, Pakistan Mineral Development Corporation, Islamabad, FATA Development Authority, Peshawar, Directorate General of Mines and Minerals, Peshawar, Ministry of Petroleum and Natural Resources, Islamabad, LMK Resources, Islamabad, Oil & Gas Development Company Limited (OGDCL), Islamabad, National Engineering and Scientific Commission (NESCOM), Islamaba, Directorate of Seismic Studies, WAPDA, Tarbela, Lahore Electric Supply Company Limited, WAPDA, Lahore, NESPAK, Lahore.

Continued : page 3

EDITORIAL

The second issue of volume 10 of CESNED NEWS LETTER is once again an endeavor towards improving awareness of earthquake engineering in Pakistan. CESNED, for over nine years having been organizing training and session for practicing civil and structural engineers in the field of earthquake engineering. Readers are encouraged to contribute in this letter. CESNED is dedicating this issue to the effectives of October 2005 Earthquake —— Editor

Inside this Issue:

CESNED ACTIVITIES

Fig 3: Dr. Lodi explaining the project achievements to US Delegates

Showcasing the PAK-US Research Collaboration

On 9th June, 2010 the showcasing of the Pak-US research collaboration was organized by Higher Education Commission. NED University participated in the event with its three projects. The project "Building Capacity in Pakistan to Seismically Retrofit Essential Structures" was also among those three. This project aimed to improve Pakistan's capacity for reducing earthquake risk by building the capacity of its universities to teach and conduct research in earthquake engineering and transfer the knowledge needed to seismically retrofit essential structures to both new graduates and practitioners. The project has achieved the objectives of training the private-sector building professionals to understand the earthquake performance of buildings and application of assessment and retrofit methods, and strengthening of the relationships between earthquake engineering research professionals in Pakistan and the United States.

Research Planning Visit to Nepal for Research on Non-Ductile Reinforced Concrete Buildings with Masonry Infill Walls

CESNED team visited Kathmandu, Nepal from 8th July -15th July 2010 . This visit was initially planned to established the network of people from three different countries for the purpose of combine research on Non-Ductile Reinforced Concrete Buildings with Masonry Infill Walls but the HEC-USAID project team thought to avail this opportunity for the project meeting as well, so it was decided to meet two days earlier to have the project meeting for this project. Starting on July 10 2010, the participants of the project meeting were Prof. S F A Rafeeqi, Prof. Greg Deierlein, Prof. Sarosh Lodi, Prof. Khalid Mosalam,, Prof. Masood Rafi, David Mar, Dr. Janise Rodgers, Tom Tobin, Hari Kumar, Aslam, Faqeer Mohammed, Tehmina Ayub and Najmus Sahar Zafar. The main discussion during the two days sessions were mainly regarding the update on Pakistan-US collaboration, Discussions on Perform and ETABS models between case study team and the project plan for the reaming period of the project.

Fig 4: Dr J. Rodgers lecturing at NSET meeting

Fig 6: Dr. Rafeeqi along with Pak team discussing the buildings during the field visit in Nepal

The main presentations regarding the research planning were started from 12th July 2010. The participants from the Pakistan and US side were from the previous project meeting while the NSET along with some Nepal University professors participated from Nepal side. The first day discussion was mainly about the recent advances in the ongoing research in each of the three countries, as well as the context in which research is being conducted (current conditions, needs, available facilities. The participants from all three countries mainly discussion about the existing conditions in Pakistan (design and construction practices, vulnerability of existing buildings, local constraints, etc.), summaries of recent applicable research, primary research needs, and research facilities .

Fig 5: CESNED team during the field visit in Nepal

Fig 7: CESNED Team during HEC-USAID project meeting

On 13 July, The NSET team facilitated the group for the field visit to local existing Nepali construction in the field. The main objective of these visits were to have the discussions of research needs and projects Site visits to existing and under-construction vulnerable buildings, as well as examples of well-built or retrofitted buildings.14th July was mainly about the discussion of major research needs as well as areas of common need and interest . A brief joint statement or list of major research needs with focus on those to be addressed jointly. Discussion of joint and complimentary research projects. Discussion of proposal elements and development of proposal writing plans (who will propose what to which agencies, etc.)

One day course on "Seismic Design & Detailing"

The CESNED teams members Ms. Tehmina, Mr. Aslam and Ms. N. S. Zafar attended the one day course on " Seismic Design and Detailing" on 13th October 2010 at Seminar Hall, IEP Karachi . The main organiser of the training were Pakistan Engineering Council (PEC) along with the collaborative support of Institute of Engineers, Pakistan. The course was basically the part of the recent continuing professional development program of PEC. The main objective of the course was to develop the understanding of the detailing in high seismic zones and their applications and limitations. Several Engineering professionals attended the course.

CESNED ACTIVITIES

The Coordination meeting for EMME (Earthquake Model of the Middle East Region) project WP4 and WP5 ,was held on 14th – 16th October, 2010, Istanbul. The meeting was arranged for the feedback and updates on Seismic Risk Assessment and City Scenario of the participant countries. Participants generally discussed their contribution and next to do steps in each WP4 task and WP5 application. Discussion on the overall evaluation along with update on data submission and deliverables for WP4 & WP5 was mainly carried out during the meeting. Prof. S.H. Lodi being the lead from Pakistan side participated in the meeting and presented the related research about the seismic risk assessment and proposal for the city scenario of the city of Karachi.

Earth Science Pakistan 2010: New Developments, September 20-22, 2010 *Continued from page 1*

The conference was divided into one Special Session and eight technical sessions such as 1) Tectonics and Earthquake Seismology/ Engineering, 2) Economic, Engineering and Applied Geology, 3) Sedimentology and Biostratigraphy, 4) Environmental Sciences, 5) Climate Change and Natural Hazards, 6) Petroleum and Geophysics, 7) Mineral Deposits, and 8) Petrology and Tectonics. The Special Session was dedicated to professional earth-science organizations, their functions, achievements and future plans. Every technical session was started with the Invited talks by eminent scientists in different fields of earth and environmental Sciences. Seventy two scientists and students presented their papers in different technical sessions. This conference was distinctly different in its nature because it didn't restrict itself to geology but provided a chance to a wide array of experts from across the earth science spectrum to share their expertise for the development of mineral and oil and gas sectors, water resource management and the disaster risk assessment, management and mitigation.

One full technical session was devoted to the Neotectonic & Earthquakes Seismology/Engineering. The following talks were presented during this session: 1) Advances in earthquake engineering by Prof. Sarosh H. Lodi, NED University of Engineering and Technology, Karachi, 2) Climate change and vulnerability of Pakistan by Muhammad Mohsin Iqbal, Global Change Impact Studies Centre, NCP Complex, Quaid-i-Azam University, Islamabad, 3) Status of seismic hazard assessment in Pakistan by Dr. Muhammad Javed, NESPAK, Lahore, 4) Temporal evolution of surface rupture deduced from coseismic multi-mode secondary fractures: insights from the October 8, 2005 (mw 7.6) Kashmir earthquake, NW Himalaya by Dr. Muhammad Sayab, National Centre of Excellence in Geology, University of Peshawar, 5) A statistical approach to determine the earthquake probability, calculation of peak ground acceleration for Karachi by Dr. Naseer Ahmed, Pakistan Nuclear Regulatory Authority, Islamabad 6) Sheikhupura (northern Punjab) earthquake of August 08, 2010: preliminary investigation by Dr. MonaLisa, Department of Earth Sciences, Quaid-i-Azam University, Islamabad, 7) Numerical modeling and tsunami inundation for potential earthquake at Makram subduction zone, Pakistan by Mr. Zahid Rafi, Pakistan Meteorological Department, Islamabad, Pakistan, and 8) Site amplification factor at Mardan by Dr. Irshad Ahmad, Department of Civil Engineering, NWFP University of Engineering and Technology Peshawar Pakistan,

At the end of the technical sessions, a plenary discussion was held in which the recommendations for further developments in the field of earth and environmental sciences were formulated. These recommendations will be sent to the government and various agencies for wider impact and policy making. During this session, Convener of the Conference proposed creation of a Society of Earth Scientists and Engineers cater for the broader needs of the country and would also help the government in its technical issues pertaining to earth sciences. The suggestion was broadly welcomed and lauded. The NCE Geology offered its premises and staff as a launching pad for such a society/ council. At the end of the conference a simple ceremony was held for certificates and awards distribution.

Fig 8: The Technical Scientists Group during the conference on Earth Science Pakistan 2010: New Developments.

RECENT EARTQUAKES

Earthquake News

Earthquake strikes Christchurch in New Zealand

A powerful 7.0 magnitude earthquake struck New Zealand's South Island on September 3 2010, causing widespread damage to buildings, although there were few injuries. Christchurch mayor declared a state of emergency four hours after tremors rocked the region, and the continuous warnings were given regarding the continuing aftershocks as the masonry walls were vulnerable to fall from damaged buildings. Almost two-thirds of the 160,000 homes in and around Christchurch were damaged by this earthquake. Two people were reported seriously injured but the major structural damages were observed, six bridges and many buildings were damaged at Christchurch. More than 5 km of right-lateral surface faulting was observed southeast of Darfield. This earthquake occurred as a result of strike-slip faulting within the crust of the Pacific plate. (courtesy : USGS)

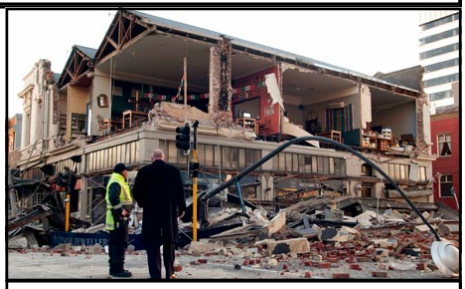

Fig 9: Earthquake damage: buildings in Christchurch, 19 miles from the epi-centre, demonstrate the power of the tremors

4-Days Training on "Structural and Non-Structural Vulnerability Assessment of Critical Buildings and Infrastructure"

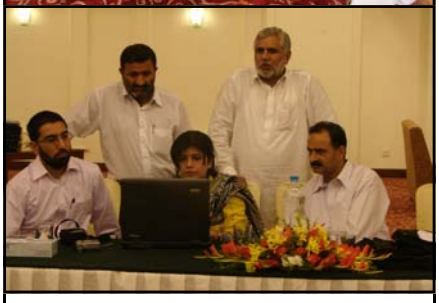

Fig 10: Participants along with the trainers during the evaluation of the sample building

A 4-day training program on "Structural and Non-Structural Vulnerability Assessment of Critical Buildings and Infrastructure" was arranged by National Disaster Management Authority, in collaboration with United Nations Development Programme with Technical Support of NED University of Engineering & Technology . Dr Rafeeqi. Dr Lodi , Dr. Rafi, Ms Tehmina, Mr Aslam, and Ms N S Zafar attended and delivered the lectures during this training.

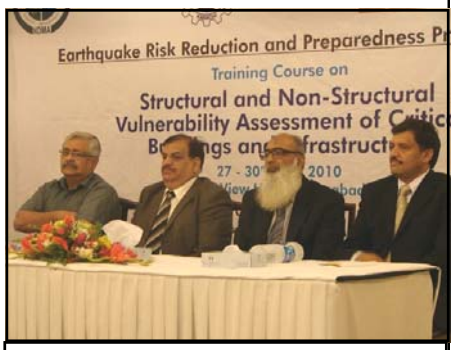

Fig 10: Dr Rafeeqi and Dr. Lodi along with the chief guest during the closing session

The theme of the workshop was "Structural and non structural Vulnerability Assessment of Critical Buildings and Infrastructure, it was held on July 27th -30th, 2010, in Islamabad. About forty five professionals like consulting engineers, builders, officials of civic agencies, academics, owners and architects participated. The training materials which were distributed among the participants were developed by the NED team which has already received the training through several video conferences and the visit to USA by the US participants.

The first two days sessions were basically comprised of a opening speeches, discussions on the level of earthquake risk in Pakistan, the basic knowledge of earthquake, historical earthquakes and the seismicity of the Pakistan and vulnerabilities and deficiencies– assessment and mitigation for both the structural and non structural elements of the builidngs. The third day was consisted of the tour to the three sample building located in Murree. During the visits the participants noted all the essential features of the building and also completed the checklists provided by the trainers for the evaluation of the building.

The fourth day was started with the discussion of the evaluation procedure by the trainers. The trainers outlined the evaluation procedure as specified in ASC 31. All the participants were divided in several groups and were given a task to complete the evaluation . Each group had a one resource person and one coordinator to instruct and guide the them during the whole process. The participants were than given a task to present their evaluation. During their presentation they clearly identify this training as the entirely a different and worth taking exercise, the certificates were also

RESOURCE PERSONS:

- Prof. Dr. S F A. Rafeeqi
- Prof. S. H. Lodi
- N S Zafar

Mail: Cowasjee Earthquake Study Centre NED,
Department of Civil Engineering,
NED University of Engg. and Tech.,
Karachi-75270, Pakistan

Phone: +92-21-926 1261-68
Ext. 2205 & 2223
Fax: +92-21-926 1255
Email: cesned@neduet.edu.pk
Web page: www.neduet.edu.pk

Information, news items, short notes on research findings are invited from across the globe.