



# 15<sup>TH</sup> WORLD CONFERENCE ON EARTHQUAKE ENGINEERING

24 TO 28 SEPTEMBER 2012  
LISBON - PORTUGAL



15 WCEE  
LISBOA 2012

## Newsletter

## July, 2011

## issue 02

### 15 WCEE

#### ▼ Christchurch earthquake

See next page short new →



#### ▼ Lisbon the host city

For the first edition of the *Best Destination* by European Consumer Awards, Lisbon has been selected as the most beautiful place to go for a trip or a week



Photo:Turismo de Lisboa

#### ▼ Upcoming news

Future newsletter articles will address the following topics:

- Keynote lectures
- 15 WCEE courses
- Pioneering initiatives
- Short news on Lorca earthquake

#### ▼ Feedback

Share your opinions about 15WCEE newsletter. Suggest topics or contribute with short news or pictures. Please send your feedback to:

## Call for exhibitors

The Organizing Committee of the 15WCEE invites you to participate, as an exhibitor, in the 2012 World Conference, to be held from 24<sup>th</sup> to 28<sup>th</sup> September, at the Lisboa Congress Centre, in Lisbon, Portugal.

Exhibiting at this top meeting of earthquake engineering professionals provides you a close contact with an innovative market place. Almost 3 000 researchers, practitioners and



decision makers are expected to take part in the 15WCEE, being a unique opportunity to demonstrate and promote your products, services and innovations to the right target audience, to maximize your brand visibility and to share the Conference's impact on society.

The exhibition areas are the main meeting points outside the technical sessions. Delegates will be encouraged to visit the technical exhibition where coffee and refreshments are to be served.

For further information please contact Joana Ramalho at the 15WCEE secretariat: [secretariat@15wcee.org](mailto:secretariat@15wcee.org) Special **discounted rates** apply until **August 15<sup>th</sup>, 2011**. Exhibit space will be assigned on a first-come, first-served basis.

## Call for abstracts

The deadline for abstract submission is **October 15, 2011**. Abstracts, with no more than 450 words, should be uploaded through the online submission system, available in the Conference Web page: <http://www.15wcee.org>.

15WCEE covers the following main topics:

Engineering seismology	Tsunamis	Geotechnical earthquake engineering	Design of new structures	Assessment & retrofitting of existing structures
Infrastructures and lifeline systems	Social and economic aspects	Preparedness and emergency management of large eqs	Urban risk assessment	

## Christchurch earthquake



João Leite

(joaoleite@civil.uminho.pt)

Jason Ingham



Paulo B. Lourenço

**Christchurch** is the second largest city in New Zealand, with 338.748 inhabitants (2006 census), and it is located in the East Coast of New Zealand's South Island. In recent history, the city was struck by two major earthquakes, one in 1888 with a magnitude  $M_w$  9.0 and epicentre 100 km north and another in 1931 with a magnitude  $M_w$  7.8 with epicentre on Napier, North Island. The second one caused total collapse of most of the unreinforced masonry buildings on the city centre of Napier and subsequently led to the prohibition of its use.

On the 4<sup>th</sup> of September 2010, at 4:35 am, a magnitude  $M_w$  7.1 earthquake struck the entire **Canterbury region**. The epicentre was located in Greendale, only 40km West of Christchurch, at a depth of about 10 km and it

produced a ground-surface fault rupture with a length of nearly 30km. Horizontal Peak Ground Accelerations of 0.82g and 1.26g vertical were recorded during the ground motion.



There were no fatalities and only two serious injuries, in part due to the timing of the earthquake, in the early hours of a Saturday. The main cause of damage to all structures and infrastructures were the widespread liquefaction and lateral spreading in areas close to main streams.

Unreinforced masonry buildings were also severely damaged.

Subsequently, more than 800 aftershocks with a minimum magnitude of  $M_w$  3.5 have been recorded, though none like the one on the 22<sup>nd</sup> of February 2011. At 12:51 pm a magnitude  $M_w$  6.3 aftershock, with an epicentre only 10 km south-east of Christchurch and at a depth of 5 km was felt in all of the South Island. Once again all the infrastructures of the city were heavily damaged and the Commercial and Business District of Christchurch, located in the central area of the city, was partially destroyed and more than 180 people lost their lives. This same area was considered unsafe by the Earthquake Commission, and sealed to the public. The same geotechnical problems happened, with all the suburbs along the Avon River being subjected to liquefaction and lateral spreading. Many unreinforced masonry buildings, including heritage ones, were damaged beyond repair, just like other emblematic buildings.

The city center is still closed, and given the uncertainty of more high magnitude aftershocks, just like on the 13<sup>th</sup> of June 2011, the Christchurch City Council decided to permanently evacuate certain areas. All the houses will be demolished and the owners refunded. The city is slowly recovering, as all the infrastructures are being repaired and buildings are being demolished, and the years to come will certainly be of hard work for the people of Christchurch.



Damaged commercial buildings in the CBD

