

Workshop: Connecting the earthquake resilience pipeline via end-to-end computational modelling

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Time: 8:00am-12:30pm Tuesday 4th September 2018

Location: Wairakei, Taupo (in conjunction with the 2018 QuakeCoRE Annual Meeting)

Coordinators: Brendon Bradley, Chris McGann

Aim:

This workshop is focused on examining the current areas of computational research within QuakeCoRE's earthquake resilience pipeline: The tools used, the disciplines involved, the connections between disciplines that already exist, and those connections that need to be established. Private industry perspectives on gaps in the pipeline are also examined.

Computational modelling is a valuable mechanism to achieve multi-disciplinary research, because the output of one disciplinary tool being the input to another provides a tangible means to achieve collaboration.

This workshop is under the umbrella of QuakeCoRE's TP4: Computational Simulation and Data Visualization. The aim of this Technology Platform is to provide computational workflows which enable the connection of all multi-disciplinary research activities across QuakeCoRE via a 'heterogeneous software ecosystem' and thus provide a pipeline by which new research results at any point can be understood in terms of their wider impacts in earthquake resilience. Further details on TP4 can be found here: <https://wiki.canterbury.ac.nz/display/QuakeCore/TP4%3A+Computational+Simulation+and+Data+Visualization>

Workshop agenda:

9am: Welcome, agenda for the workshop

910am: Topic 1: Ground motion and geohazard modelling

- Karim Tarbali: "[Ground motion simulation of historical and future EQs](#)"
- Jason Motha: "Regional liquefaction and landslide modelling"
- Romain Meite: "[Site response and smart use of programming tools](#)"

940am: Topic 2: Response history analysis of structural and geotechnical systems

- James McGuire: "OpenSees workflow for computation and visualisation"
- Connor Hayden: "[Computational workflow for geotechnical modeling](#)"
- Liam Wotherspoon: "[Soil-structure-interaction modelling at Lyttelton Port](#)"
- Vishvendra Bhanu: "[Characterising the influence of ground motion duration on structural strength and deformation capacity](#)"

1015-1030am: Morning Tea

1030am: Topic 3: Seismic performance and loss estimation of infrastructure

- Amir Orumiyehi: "[Evaluating expected annual losses for NZ code compliant steel structure buildings](#)"
- Xavier Bellagamba: "Computer-Aided Resilience of Infrastructure"
- Nirmal Nair: "[Resilience estimation of electricity distribution service during seismic events](#)"

1055am: Topic 4: Computational tools to facilitate research

- Chris McGann: "[Python interface for OpenSees analysis](#)"
- David Dempsey: "[Jupyter notebooks for communication with the public, academic community and within a research group](#)"
- Max Stephens: "Smart Seismic Cities"
- Alex Shegay: "[DesignSafe – from data storage to publication](#)"

1125am: Topic 5: Industry needs from computational modelling

- Sjoerd van Ballegooy, Tonkin and Taylor
- Didier Pettinga, Holmes Consulting/Solutions

1140am: Topic 6: Open floor discussion

Broad directions of thought:

- Where are the computational gaps that we are not addressing?
- In areas of existing activity, what can QuakeCoRE centrally do to facilitate advancements? (i.e. specific-community models or datasets)
- Research – industry partnerships to advance new areas ?
- Other?

12pm: Workshop ends

