ESCUELA DE INGENIERÍA
FACULTAD DE INGENIERÍA

UCL

ONLINE WORKSHOP NOVEMBER 24-25, 2020

Workshop on Natural Hazards, Resources & Resilience: from Earth to People

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Tuesday 24 November 2020 10:00 - 14:00 Chile (13:00 - 17:00 UK)

10:00 - 10:20 Introduction by PUC and UCL; words of welcome from the British Embassy in Chile

10:20 - 10:50 Plenary by Juan Carlos de la Llera

10:50 - 11:00 Break

11:00 - 12:00 Session 1: "Proposals on Natural Hazards and Geothermal Energy in an Andean context", moderated by Philip Meredith, John Browning, José Cembrano

12:00 - 12:10 Break

12:10 - 13:10 Session 2: "Proposals on building Resilience to Natural, Environmental and Mining Hazards in the Atacama Desert of Northern Chile", moderated by Steve Edwards, Carlos Marquardt, Nigel Wight (SMI-ICE-Chile)

13:10 - 13:20 Break

13:20 - 14:00 Evaluation of Day 1 and a look at Day 2, led by Stephen Hart and Juan Carlos de la Llera

Wednesday 25 November 2020 09:50 - 14:00 Chile (12:50 - 17:00 UK)

09:50 - 10:00 Introduction Day 2, John Browning

10:00 - 11:00 Session 3: "Multi-hazards Resilience: A Multi-disciplinary Approach", moderated by Tiziana Rossetto, Juan Carlos de la Llera & José Torero Cullen

11:00 - 11:10 Break

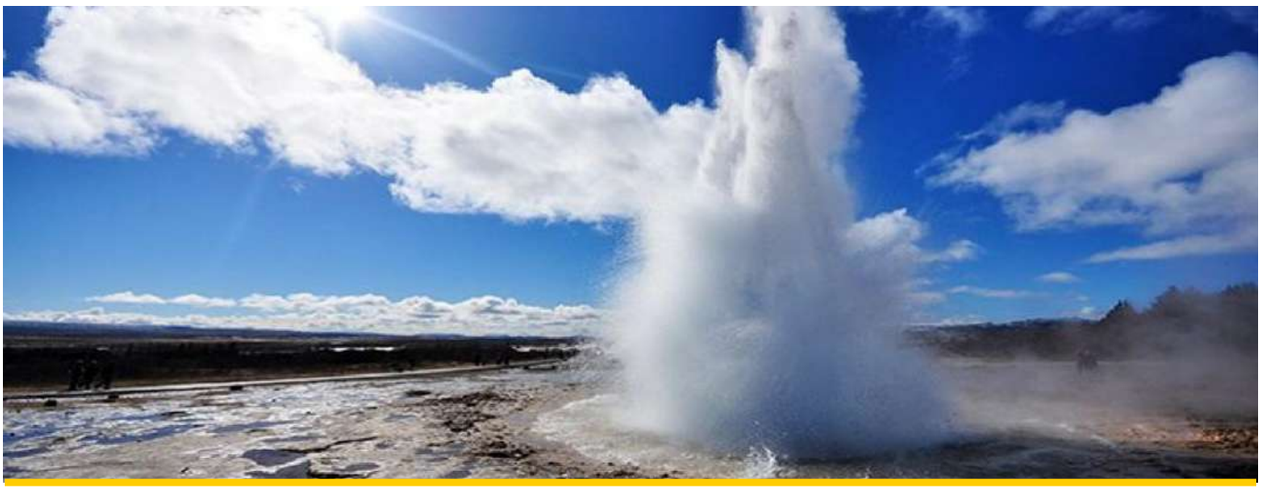
11:10 - 12:10 Session 4: "Using the Knowledge Exchange Model to Explore the Role of Schools in Supporting Pupil Resilience", moderated by Amelia Roberts

12:10 - 12:20 Break

12:20 - 13:20 Interdisciplinary roundtable on Natural Hazards, Resources and Resilience, led by Stephen Hart and José Cembrano

13:20 - 13:30 Break

13:30 - 14:00 Wrap-up and planning next steps, led by Stephen Hart and Juan Carlos de la Llera



▸ Session 1

Proposals on Natural Hazards and Geothermal Energy in an Andean context

Philip Meredith, Thomas Mitchell, John Browning, Jorge Crempien, José Cembrano, Gloria Arancibia, James Hammond, Gonzalo Yáñez

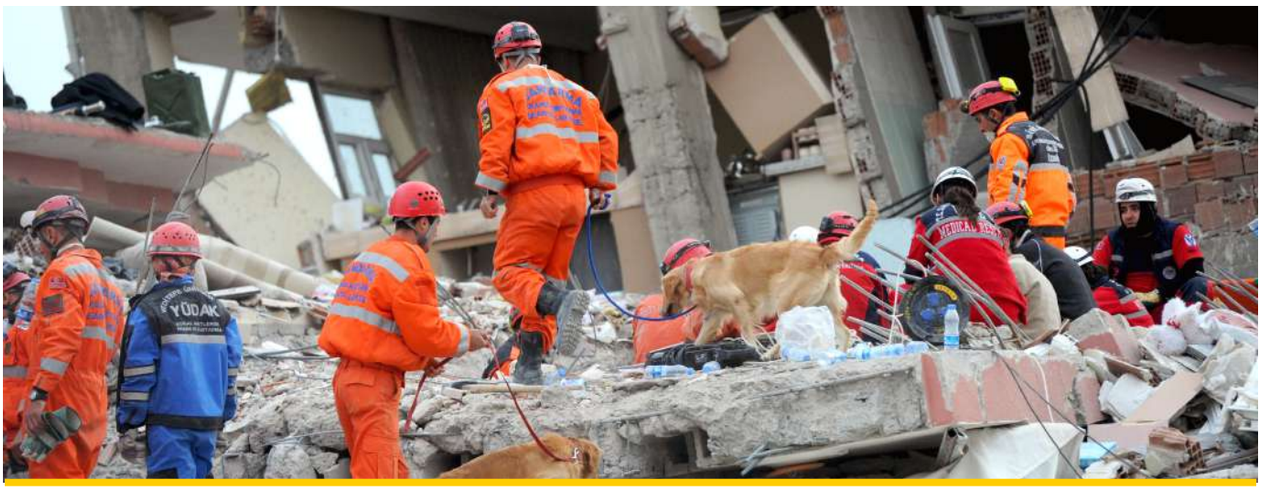
Natural hazards in Chile (earthquakes, volcanic eruptions and associated landslides) are all driven by geological processes operating within the Andean mountain chain. However, it is a juxtaposition that these same processes also control the emplacement of Chile's great natural mineral wealth and its vast, but as yet untapped, sources of geothermal energy. A recent UNESCO report showed that Chile actually has the greatest potential for geothermal energy generation of any country in the world; providing a clean and sustainable source of energy that would substantially reduce carbon emissions. The basis of our roundtable discussion is therefore the contention that effective resilience to both natural hazards and energy supply must be scientifically and quantitatively based, and built on critical understanding of the geologic, tectonic and magmatic processes that operate within the Andean mountain chain. A key element in both assessing hazard potential and in maximizing geothermal energy potential, is quantitative knowledge of the physical, structural and mechanical properties of the host rocks, their anisotropy and their dependence on measurement scale. We are therefore proposing a roundtable with short presentations on: *Structural and geological setting of Chilean natural hazards and geothermal potential; Volcanic eruption potential and hazard analysis in the Chilean Andes; Hazard and energy potential and of fluid storage and flow in fault damage zones; and Subcritical crack growth and seismicity - the mechanism of accelerating hazard potential;* to be followed by an open roundtable discussion led by the speakers. Proposals will bring together researchers from Centres of Excellence CEGA, CIGIDEN and the UCL Hazard Centre.

▸ Session 2

Proposals on building resilience to natural, environmental and mining hazards in the Atacama Desert of northern Chile

Steve Edwards, Stephen Hart, José Cembrano, Carlos Marquardt, Nigel Wight (SMI-ICE-Chile)

Risk management in complex multi-hazard environments is highly challenging and requires open and transparent multi-stakeholder collaboration to achieve effective risk reduction. Arguably, such challenges and needs are no better exemplified than in the Atacama Desert of northern Chile, where long-established indigenous communities co-exist with modern mining companies that place huge demands on natural resources and impact the environment. This potentially confrontational co-existence is located in one of the driest and harshest multi-hazard environments on Earth that is subjected to earthquakes, tsunami, volcanic and geothermal activities, floods, mass flows, droughts, climate variation and natural environmental contamination. The region has provided critical and crucial minerals to the international market for over 150 years and the spotlight is now on lithium, as the Atacama Desert constitutes part of the "Lithium Triangle", which hosts the largest known lithium deposits on Earth. Such is the global importance of this desert region for providing lithium, copper and other metals—particularly in the push for so called cleaner and greener technologies—that it is absolutely essential that risks are adequately managed, particularly through designing and employing resilient systems that allow for the sustainable and equitable co-existence of all users of the region. To achieve this ambitious and urgent need requires the collaboration of interdisciplinary researchers engaging with the multiple users of the Atacama Desert. To initiate this process, the workshop will explore the key elements of risk in the region and identify who and how to best address them.



▸ Session 3

Multi-hazards Resilience: A Multi-disciplinary Approach

Tiziana Rossetto, Juan Carlos de la Llera & José Torero Cullen

According to the 2016 World Disasters Report by the International Federation of Red Cross, in the last decade natural disasters have affected more than 1.9Bn people, killed 700k and caused $1.9Tr worth of damage. This proposal brings together academics and researchers from across UCL and PUC to participate in a workshop session where multi-hazards resilience will be explored from different disciplinary perspectives. The proposers believe that disaster risk reduction measures (for natural hazards) must be an integral part of the wider sustainability discourse, hence the workshops will draw upon centres of excellence in hazards resilience and urban sustainability at UCL and PUC, namely: EPI Centre at UCL (represented by Rossetto, Torero and Rivera), Centro de Investigación para la Gestión Integrada del Riesgo de Desastres (CIGIDEN) and Centro de Desarrollo Urbano Sostenible (CEDEUS).

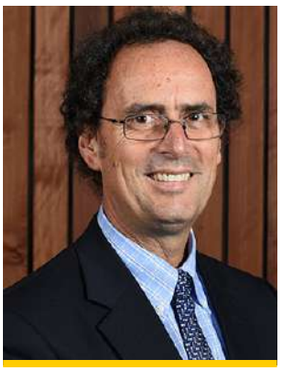
▸ Session 4

Using the Knowledge Exchange Model to Explore the Role of Schools in Supporting Pupil Resilience

Amelia Roberts

The workshop will be used to introduce the core principles of Knowledge Exchange as a model for sharing and generating research in schools, using SWERL as an example of how the approach can be used to support schools in managing change to improve provision for vulnerable young people.
Crucially, the workshop will be an opportunity to explore the potential application of Knowledge Exchange in respect of Resilience across a new context, Chilean schools. Participants will be invited to generate their own domains in respect of whole school approaches to resilience and these will be mapped onto the seven SWERL domains. We will then choose one domain, perhaps The Graduated Response to Need: Role of the Teacher or Whole System Planning and Design and Interrogate the SWERL criteria in respect of a Chilean context.

SESSION LEADERS AND MODERATORS



Professor
Juan Carlos de la Llera
Dean of Engineering PUC

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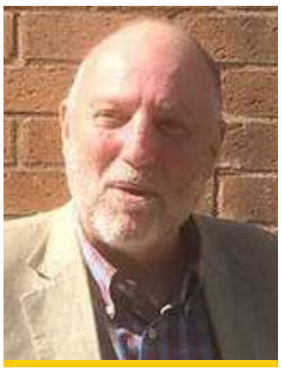

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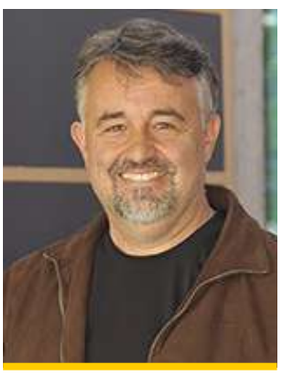

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Pro-Vice-Provost (Latin America), UCL Global Engagement Office

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Professor
Tiziana Rossetto
Dept of Civil, Environmental & Geomatic Engineering UCL

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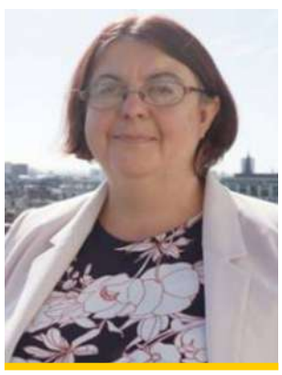

Dr. Amelia Roberts
UCL Institute of Education

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