

USTRALIAN CENTRE OR GEOMECHANICS

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## Caving 2022

Proceedings of the Fifth International Conference on Block and Sublevel Caving

30 August – 1 September 2022 | Adelaide, Australia

Volume One

**EDITOR** Yves Potvin

# Caving 2022

# Fifth International Conference on Block and Sublevel Caving

30 August – 1 September 2022

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Editor

**Yves Potvin** Australian Centre for Geomechanics, Australia



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# **Australian Centre for Geomechanics**

The Australian Centre for Geomechanics (ACG) was formally established in 1992 as a University of Western Australia not-for-profit research centre in order to promote research excellence and continuing education in geomechanics, with particular emphasis on its application to the mineral and energy extraction sections of Australia's resources industry.

The Australian Centre for Geomechanics is an unincorporated Joint Venture involving:

- CSIRO Mineral Resources
- The University of Western Australia Civil, Environmental and Mining Engineering

The ACG draws together staff knowledge, experiences and expertise from within the two groups forming the Centre and facilitates a multi-disciplinary approach to research and education in geomechanics. Research undertaken by the ACG attracts both national and global support and the outcomes of the projects are utilised to promote safer mining and environmental geomechanics practices, operating efficiencies and to meeting community expectations for sustainable mining practices.

With the guidance of strong industry representation on the Board of Management, and close collaboration with senior representatives of the mining industry, research, training and further education activities are tailored directly to the needs of industry. The ACG Board expects the Australian Centre for Geomechanics to be the focal point for industry on geomechanics issues and to address the needs of industry through a collaborative interdisciplinary approach.

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Launched in 2017, the ACG Online Repository of Conference Proceedings provides the global mining community with open access, peer-reviewed conference papers that may assist industry practitioners to maintain and develop their skills, knowledge and capabilities. This highly interactive and searchable repository provides importable citation information in various forms, links to the paper authors' profiles on ResearchGate and LinkedIn, as well as the ability to share papers on social media.

With the recent addition of the Caving 2022 papers, 868 underground conference papers are now freely available. Setting a high standard for technology transfer and accessibility, this valuable online resource will continue to develop and grow with future conferences.



Scan the QR to view the Caving 2022 conference proceedings papers.



Data source: ACG internal analysis August 2022

## **Technical Reviewers**

The dedicated efforts of the peer reviewers have resulted in the high quality of the technical program and the papers compiled for this publication. The editor thanks the following people who contributed their time and expertise as reviewers of manuscripts for the proceedings of the Fifth International Conference on Block and Sublevel Caving. A technical and critical review of each paper was undertaken by a minimum of two reviewers for the proceedings.

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## Preface

The Fifth International Conference on Block and Sublevel Caving (Caving 2022) was held in Adelaide, South Australia, 30 August to 1 September 2022. Following the 2020 COVID-19 pandemic, where travelling was limited for over two years, the excitement and interest from the caving community to renew the face-to-face conference experience was felt for months prior to the event's opening. The South Australian host city of Adelaide, home to our principal sponsor OZ Minerals, was a new destination for the Australian Centre for Geomechanics' (ACG) Caving conference series, which added to the attraction of our international audience.

The buzz surrounding Caving 2022 translated into a broad global authorship, and more than 150 abstracts were submitted, culminating in the publication of 105 papers available in these proceedings. This important contribution to caving literature is freely accessible worldwide, along with previous Caving conference proceedings, as well as many papers from the Eighth International Conference & Exhibition on Mass Mining (MassMin 2020), via the ACG's Online Repository of Conference Proceedings (papers.acg.uwa.edu.au).

The technical content of the Caving 2022 proceedings addressed the main caving topics, with the usual emphasis on geomechanics aspects such as rockburst and seismicity, ground support, monitoring, mudrush, numerical modelling, subsidence, geotechnical characterisation, and hydraulic fracturing. The themes of mine planning, fragmentation, and case studies were also well covered.

The keynote presentations featured two world-leading caving operations: Freeport-McMoRan's Grasberg mine, given by Ryan Campbell, Freeport-McMoRan, and Codelco's El Teniente New Mine Level delivered by Pedro Landeros, Codelco. In addition, the opening keynote presentation, delivered by Simon Hanrahan, SRK Consulting, provided some very important insights into what drives the success of caving projects.

The ACG acknowledges the strong engagement of the mining suppliers and mining companies in supporting Caving 2022.

Professor Yves Potvin, Australian Centre for Geomechanics Editor and Conference Chair

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The Australian Centre for Geomechanics proudly acknowledges the generous contribution by the Principal, Industry and Major Sponsors of the Fifth International Conference on Block and Sublevel Caving.

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