



中国岩石力学与工程学会

Chinese Society for Rock Mechanics & Engineering

## NEWSLETTER

Chinese Society for Rock Mechanics & Engineering

2024 Q1 & Q2

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### President corner

Dear Members,

As President of the Chinese Society for Rock Mechanics and Engineering (CSRME), I am honored to extend my warm greetings to all of you.

It is with great pleasure that I introduce the inaugural edition of our newsletter, which serves as a platform to showcase the latest research advancements, opportunities, and challenges in the field of rock mechanics in China. Through this newsletter, we aim to foster collaboration and exchange of ideas among professionals and organizations within our community, as well as with our esteemed

colleagues from around the world.

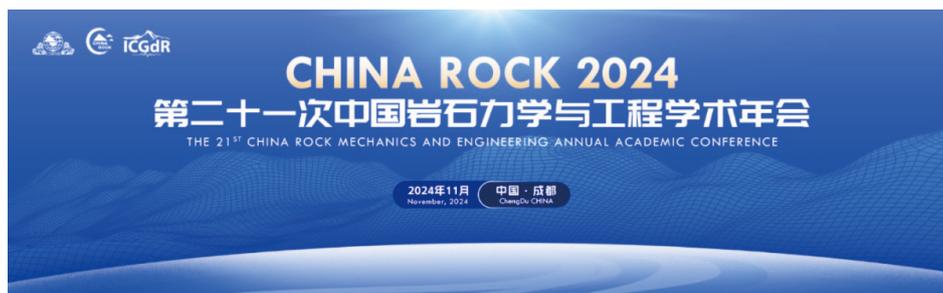
Rock mechanics plays a crucial role in various engineering disciplines, ranging from civil and mining engineering to geology and environmental science. As such, it is imperative that we stay informed about the latest developments in our field and work together to address the emerging challenges and opportunities.

I encourage all of our members to actively contribute to the newsletter by sharing their research findings, insights, and experiences. Your contributions will enrich our collective knowledge and contribute to the advancement of rock mechanics both in China and globally.

I extend my heartfelt gratitude to the editorial team for their dedication and hard work in bringing this newsletter to fruition. I am confident that it will serve as a valuable resource for our community and contribute to the continued growth and success of the CSRME.

Thank you for your continued support and participation.

## CHINA ROCK 2024



[The 21st China Rock Mechanics and Engineering Annual Academic Conference](#) will be held in **Chengdu** on **November 1-3, 2024**.

CHINA ROCK is the annual academic conference of the Chinese Society for Rock Mechanics and Engineering (CSRME). At the 20th CHINA ROCK in 2023, it featured **a main venue in Beijing, 13 central venues, and 191 satellite venues**, attracting a total of **118,600** participants from universities, research institutes, and related

enterprises.



The CHINA ROCK 2024 will continue the successful format from 2023, with a main venue in Chengdu, 15 central venues in 15 different cities, and more than 20 satellite venues.

**Abstracts submission deadline is August 14, 2024.** There are three ways to publish your paper:

1. Publication in Society-sponsored and collaborative journals.
2. Conference Proceedings.
3. Conference Abstracts.

Technical trainings and an exhibition of science and technology innovation in industry will also be featured. Click [here](#) for more details about CHINA ROCK 2024.

**Join us in Chengdu for this unparalleled academic event!**

## Conferences/Workshops

### Focused Workshop on Definition of Rockbursts

From February 1st to 4th, 2024, the ISRM Commission on Rockburst hosted a focused workshop in the field of rockbursts in Beijing, focusing on the theme of "Definition of Rockburst."



This workshop marks the inaugural session of a series of workshops, which are jointly initiated by Professor Manchao He, the Chairman of the ISRM Commission on Rockburst, in collaboration with three other professors during the ISRM Congress held in Austria in October 2023. This series of workshops is planned to be organized in rotation as part of the ISRM Commission on Rockburst's ongoing efforts. The aim of the workshop is to engage in in-depth discussions on professional issues in the field of rockburst. The four initiators of the workshop are: Professor Manchao He from China University of Mining and Technology (Beijing); Professor Ismet Canbulat from the University of New South Wales; Professor Fidelis T Suorineni from Nazarbayev University in Kazakhstan; Professor Murat Karakus from the University of Adelaide.

The workshop this year is organized by the ISRM Commission on Rockbursts and co-hosted by the State Key Laboratory of Tunnel Engineering and the Chinese Society of Rock Mechanics and Engineering. The objective of this workshop is to systematically define and refine **the concept of rock bursts** and to bridge the gap in understanding and resolve ambiguities in the field of rockbursts. During the deliberations, a groundbreaking perspective on rockburst definition emerged: **"A rock burst is a sudden failure of rock mass surrounding the excavations caused by the rapid release of stored energy when induced stresses exceed the rock strength."**

The next workshop is planned to be held in Adelaide.

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### **Workshop on Earthquake and Trace Active Faults and IULEE Council Meeting**

From February 27 to 29, 2024, the Workshop on Earthquake and Trace Active Faults and the Council Meeting of the International Union Laboratory for Energy and Environment (IULEE) were held in Beijing and Sanmenxia City. The event was jointly hosted by the CPC Sanmenxia Municipal Committee, the Sanmenxia Municipal

Government, the Chinese Society for Rock Mechanics and Engineering, among others. The meeting was chaired by Professor Manchao He, Chairman of the Chinese Society for Rock Mechanics and Engineering.



The conference brought together renowned experts to discuss the latest theories and innovative methods in key areas such as **cross-fault measurement for earthquake prediction and earthquake forecasting**. On the 29th, the Council of the International Joint Laboratory for Energy and Environment reviewed the work reports, and approved the charter, member units, and council member list. The new council, composed of **24 laboratories from seven countries**, aims to continue promoting more industrialized research outcomes.

During the conference, representatives visited the Heshi Steel Production Base project and the Yellow River Ecological Corridor.



## Technical committees

### Railway Tunnel under Modaokeng Reservoir in China

Recently, the construction of railway shield tunnel under Modaokeng reservoir in Guangdong province, China, a section of Guangzhou East station to Huadu Tianguai intercity railway (Guanghua intercity), has been successfully completed by **China Railway 15th Bureau Group Co., Ltd.** within 11 days.

- **The world's first large-diameter double shield-EPB dual-**

mode tunnel boring machine (TBM), named “Tiebing Guanghai No.6”, and the same TBM equipped with earth pressure dual-mode double-shield shield machine, named “Tiebing Guanghai 5” were adopted.

- Water cofferdams were installed to address the high groundwater level.
- The slope of the belt conveyor was specially modified to solve the problem of poor slag discharge.
- The HSP advance geological prediction system was implemented to accurately forecast the geological condition under reservoir.



## Journals

### Rock Mechanics Bulletin

Recently, the Rock Mechanics Bulletin was indexed in the database of the Chemical Abstracts Service (CAS), a subsidiary of the American Chemical Society (ACS).

#### CERTIFICATE OF CAS CONTENT ACQUISITION

This certifies that articles published in

**Rock Mechanics Bulletin**  
(ISSN 2773-2304)

are selected and included in the CAS Content Collection™

April 12, 2024

  
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Title: Assistant Director, Content Acquisition and Operation

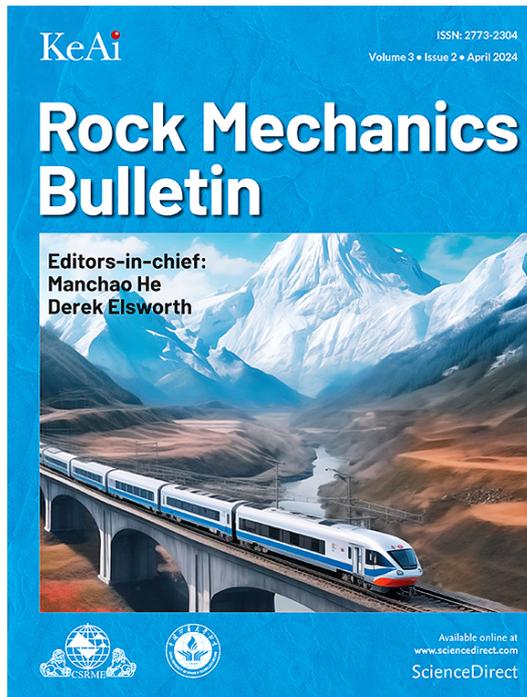
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CAS  
Chemical Abstracts Service

Chemical Abstracts Service (CAS), established in 1907, is a division of the [American Chemical Society \(ACS\)](#). Over the years, CAS has evolved into the world's authority for chemical information, providing the global scientific community with access to the most current chemical and related scientific information available immediately

through databases such as CAS REGISTRYSM and CAS References.

Thanks for the support and contribution from the editorial team, reviewers, authors and readers! Currently, Rock Mechanics Bulletin has been indexed by **Scopus, DOAJ, CAS, EBSCO host, and NASA ADS.**



**Editor-in-Chief:**

Professor Manchao He  
Professor Derek Elsworth

**Database Indexed:**

Scopus, DOAJ, EBSCO, CAS,  
NASA ADS

**Advantage:**

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## Major engineering projects

### Baihetan Hydropower Station

Baihetan Hydropower Station is the most technically difficult hydropower project in the world, with several key technical indicators breaking world records.

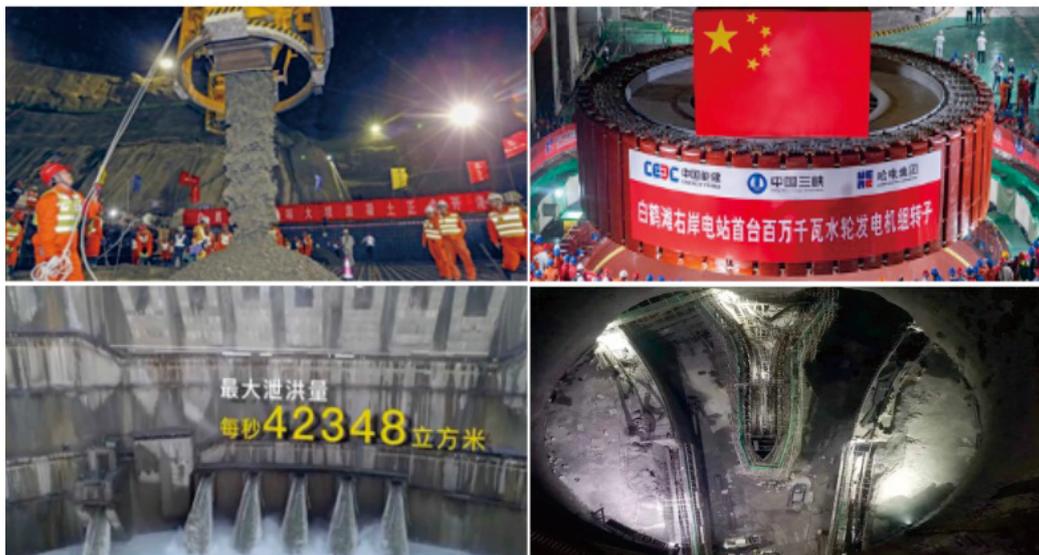


The Baihetan project is mainly for **power generation**, taking into account multitasks such as flood control, navigation, comprehensive utilization of water resources, and water ecological security, with a gross installed capacity of 16 million kilowatts, and an average annual power generation of 62 billion kilowatt-hours. After all units of Baihetan Hydropower Station are put into operation, it is able to

annually **save about 19.68 million tons of standard coal and reduce emissions of carbon dioxide by about 52 million tons.**

Planning for the construction of Baihetan Hydropower Station began in June 2010, and the main project commenced full construction in 2017. On June 28, 2021, the first generating units were commissioned and began generating electricity, and by December 20, 2022, all units had been commissioned and were fully operational. In October 2023, the cumulative power generation exceeded **100 billion kWh.**

Baihetan Hydropower Station began its construction in 2010 and has since broken numerous world records in key technical indicators. These include the world's largest installed capacity of a single million-kilowatt hydro-generator unit, the world's largest underground power station cavern group, the world's largest pressure-less flood spillway cavern group, the world's largest cylindrical tailrace surge chamber, the world's largest anti-seismic parameters of 300 m high arch dams, and the world's first full-dam application of low-heat cement concrete.



## Contact CSRME

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**END!**

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**中国岩石力学与工程学会**

**Chinese Society for Rock Mechanics & Engineering**

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**中国岩石力学与工程学会**

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## NEWSLETTER

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**2024 Q3**

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### President corner

#### **Brief Introduction of Chinese Society for Rock Mechanics and Engineering (CSRME)**

Chinese Society for Rock Mechanics and Engineering (CSRME) is an academic organization for science and technology workers in the field of rock mechanics and engineering in China.

It was founded on the basis of ISRM National Group of China (NG China). The establishment of NG China was proposed jointly by

Chinese Academy of Sciences and Ministry of Foreign Affairs and approved by the State Council in 1978. The preparatory group of CSRME was formed in 1981 and CSRME was officially established in June 1985.

CSRME has been continuously growing and developing over 30 years since its establishment. Its professional fields include water conservancy and hydropower, mining, rail transportation, national defense engineering, disaster prevention, urban construction and environment protection etc. CSRME has become an influential cross-industry, cross-sector and cross-discipline social organization in China. At present, CSRME has more than 110,000 registered individual members and 80 corporate members in China. The number of international individual members has increased from a dozen in 1979 to more than 1600 now. It also has 53 professional committees and working committees in total.

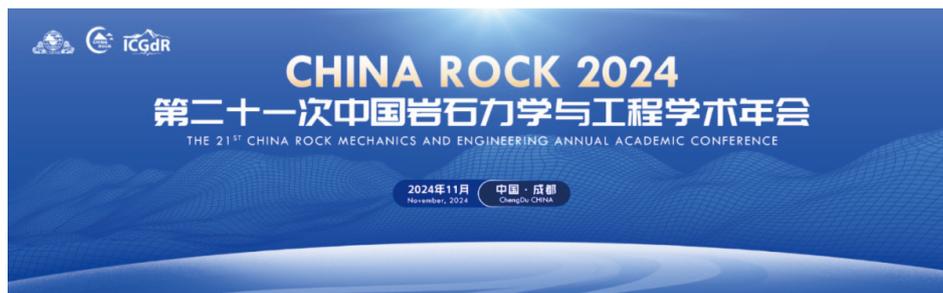
CSRME provides a solid platform for academic exchange and development for its members, establishes a series of high-quality academic conferences; continuously enhances the international status and leads in the affairs of ISRM (actively participates in ISRM activities); leads the development of rock mechanics and engineering discipline; carries out talent recommendation, selects candidates for science and technology awards, implements "Young Talents Support Project", organizes the youth innovation and entrepreneurship competition, establishes three major award brands and enhances a series of talent awards; provides suggestions and consultation reports for major national projects; extensively carries out science popularization and establishes a long-term mechanism for science popularization; implements the innovation-driven development strategy and establishes an innovation alliance; comprehensively promotes the structural reform and builds an innovative and democratic society.

The society leverages high-level think tanks to provide strong scientific and technological support for major national projects. By organizing top experts to conduct in-depth technical consultations at key project sites, it has offered strategic advice and consultation

services for significant initiatives such as high-altitude railway construction, coal mine deep well rockburst prevention at depths of several kilometers, and the development of major hydropower stations like the Three Gorges and Baihetan, as well as Muzhailing Tunnel which will be covered in detail in “Major Projects” of this issue's newsletter.

CSRME will continue to play a pivotal role in advancing scientific research and engineering practices in rock mechanics and geotechnical engineering. Through its strategic initiatives, expert consultations, and comprehensive academic services, CSRME has successfully established itself as a leading authority, driving innovation and contributing significantly to major national and international projects.

## CHINA ROCK 2024



The 21st China Rock Mechanics and Engineering Annual Academic Conference, “China Rock 2024,” will be held at the Tianfu International Convention Center in Chengdu from November 1-3, 2024. The event is co-organized by the CSRME and the International Consortium on Geo-disaster Reduction (ICGdR). The conference theme is “**Major Projects and Risk Control.**” This event consists of **a main venue** in Chengdu, **15 central venues** in 15 cities including Beijing, Shanghai, Xi’an, and Lanzhou, and **over 200 satellite venues** at universities such as Tsinghua University, Tianjin University, and Tongji University. The conference is expected to attract **more than 100,000 participants** from universities, research institutes, and relevant enterprises. Click [here](#) for more details about CHINA ROCK 2024.

## Keynote Speeches:



何满潮

**1. Name:** Manchao He, Academician of the Chinese Academy of Sciences, China University of Mining and Technology (Beijing)

**Title:** Challenges and Countermeasures in Tunnel Engineering under Extreme Conditions



Ki-Bok Min

**2.Name:** Ki-Bok Min, Seoul National University (Korea), Vice President of ISRM

**Title:** Outstanding Geomechanical Issues in Enhanced Geothermal System



何 川

**3.Name:** Chuan He, Academician of the Chinese Academy of Engineering, Southwest Jiaotong University

**Title:** Advances in Intelligent Construction Technology for Tunnel Engineering



Milorad Jovanovski

**4.Name:** Milorad Jovanovski, St. Cyril and Methodius University (North Macedonia), Vice President of ISRM (Europe)

**Title:** An integrated methodology for defining the tolerable level of risk for major engineering projects



殷跃平

**5.Name:** Yueping Yin, Academician of the Chinese Academy of Engineering, Technical Guidance Center for Geological Disasters, Ministry of Natural Resources

**Title:** Research on High-altitude Remote Geological Hazards and Engineering Safety



Giovanni Grasselli

**6.Name:** Giovanni Grasselli, University of Toronto (Canada), Rocha Award Winner in 2004

**Title:** Moving Past Simplified Assumptions and Classification Systems in Rock Engineering: Enhancing Understanding of Deformation and Failure Processes through Advanced Hybrid Numerical



刘汉龙

**7.Name:** Hanlong Liu, Academician of the Chinese Academy of Engineering, Chongqing University

**Title:** Development and application of microbial mineralization restoration technology for geotechnical cultural relics



Hide Yasuhara

**8.Name:** Hide Yasuhara, Kyoto University (Japan), Rocha Award Winner in 2007

**Title:** Exploring interactions of THMC processes governing fluid flow and transport behavior in fractured rocks: Insights from Japan's geological disposal research



**周创兵**

**9.Name:** Chuangbing Zhou, Academician of the Chinese Academy of Engineering, Nanchang University

**Title:** Research Progress on Lifecycle Stability Assessment and Safety Control of High Steep Slopes in Hydropower Engineering



**Netra Prakash Bhandary**

**10.Name:** Netra Prakash Bhandary, Ehime University (Japan)

**Title:** Ring shear machine-based laboratory assessment of residual-state creep displacement of landslides and prospects of numerical modeling



**潘一山**

**11.Name:** Yishan Pan, Academician of the Chinese Academy of Engineering, Liaoning University

**Title:** Rock Burst in Coal Mines in China: Theory, Practice, and Management



**Mostafa Sharifzadeh**

**12.Name:** Mostafa Sharifzadeh, Curtin University (Australia)

**Title:** Tunnel design approaches with emphasis on energy absorbing reinforcement design



**Murat Karakus**

**13.Name:** Murat Karakus, University of Adelaide (Australia)

**Title** □ Energy-based strain burst criterion

## CONFERENCES AND INTERNATIONAL COMMUNICATIONS

### GeoShanghai 2024 International Conference Successfully Concludes

The GeoShanghai 2024 International Conference was successfully held from May 26 to 29, 2024, at the Little South Garden Hotel in Yangpu District, Shanghai. The GeoShanghai 2024 International Conference is a quadrennial top event in the international geotechnical engineering community, co-hosted by CSRME, Tongji University, China Civil Engineering Society (CCES), International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), and Shanghai Society of Civil Engineering. This fifth GeoShanghai International Conference aimed to showcase the latest advancements and explore future directions in the geotechnical field, and attracted over 700 scholars from 36 countries and regions worldwide.



The conference featured over 40 parallel sessions, including more than 10 special sessions, with a total of 316 presentations, including 22 invited talks, covering topics such as geotechnical mechanics, rock mechanics and rock engineering, tunneling and underground engineering, soil dynamics and geological hazard research, and geotechnical environment and energy engineering. Experts shared research findings, experiences, and thoughts through thematic speeches, panel discussions, and exchange sessions, promoting high-quality development in the field of geotechnical engineering and providing valuable insights for major projects, ecological civilization construction, and sustainable development. The conference witnessed lively discussions and a strong academic atmosphere.



## **CSRME Organizes Chinese Delegation to Attend the 14th International Symposium on Landslides in France**

From July 8 to 12, 2024, the 14th International Symposium on Landslides was successfully held in Chambéry, France. This symposium was organized by the JTC1 Committee of the Federation of International Geo-engineering Societies (FedIGS), with support from the French Society of Rock Mechanics and the French Society of Soil Mechanics. The conference theme was “Landslides at Various Scales: From Basic Theory to Engineering Applications”, covering a wide range of topics including landslide monitoring and early warning, experimental testing, numerical simulations, risk assessment, disaster prevention and mitigation, case studies, and engineering practices. Over 350 experts, scholars, and technical professionals from 30 countries and regions, including France, China, the United States, Germany, the United Kingdom, and Italy, participated in the event.

The Chinese delegation consisted of 37 specialists from 20 research institutions across China. Fourteen members of the delegation presented papers, and 31 participated in poster sessions. The symposium featured nine invited lectures, including two from Chinese experts. Academician Manchao He, President of CSRME, delivered the closing lecture titled “Possible Strategy for Landslide Prediction.” Professor Jidong Zhao from the Hong Kong University of Science and Technology also delivered an invited lecture titled “High-fidelity Modeling of Debris Flow and its Impact on Flexible Barriers”.

After the symposium, the organizing committee arranged a geological field study in the Alps, further exploring the local geological structures, rock layers, and their deformation characteristics, with discussions on natural disasters such as debris flows, landslides, and rock avalanches.



## **International Symposium on Geo-disaster Reduction Held in Italy, with CSRME Delegation in Attendance**

From July 22 to 25, 2024, the 22nd International Symposium on Geo-disaster Reduction (ISGdR 2024), organized by the International Consortium on Geo-disaster Reduction (ICGdR), was held in Salerno, Italy. The event attracted 168 registered scholars from over ten countries and regions, including China, Italy, France, the United Kingdom, the Netherlands, Japan, and Croatia. The Chinese delegation was particularly strong, with 68 participants, representing 40% of the total attendees. The delegation was led by Academician Manchao He, President and Party Secretary of CSRME, who delivered a keynote speech titled “Accurate Prediction of Landslides” and was elected as the new Vice President for Asia of ICGdR.

At the council meeting of the conference, Prof. Manchao He was

elected as the Vice President of the ICGdR. Additionally, Among the nine candidates nominated for the "Outstanding Young Scientist Award," four are young scientists from China: Professor Qing Lü from Zhejiang University, Professor Zhigang Tao from China University of Mining and Technology (Beijing), Professor Jianhong Ye from the Wuhan Institute of Rock and Soil Mechanics of the Chinese Academy of Sciences, and Professor Bo Li from Tongji University.

The symposium featured 90 academic presentations, covering a wide range of topics related to various types of geo-disasters such as earthquakes, landslides, and debris flows, as well as the latest advancements in theoretical research, experimental studies, and artificial intelligence applications. Notably, Chinese experts contributed 47 presentations, accounting for 52% of the total.



## **12th Sino-Russian International Forum on Deep Rock Mechanics in Mining Successfully Held in Beijing**

The 12th Sino-Russian International Forum on Deep Rock Mechanics in Mining was successfully held in Beijing from August 3 to 4, 2024. The forum was co-organized by CSRME, the Siberian Branch of the Russian Academy of Sciences, the Far Eastern Branch of the Russian Academy of Sciences, and the Far Eastern Federal University of Russia. The event was hosted by the China Coal Research Institute Co., Ltd., the National Key Laboratory of Coal Intelligent Mining and Roof Control, the China Coal Research Institute Mining Research Institute Co., Ltd., and the CSRME Professional Committee on Mine Rockburst.



With the theme "Digital Rock Mechanics: Theory, Technology, and Engineering Practice," the forum focused on the hot and challenging issues in deep rock mechanics and mining engineering. A total of 78 experts from China and Russia delivered academic presentations on topics such as "Mining Digital Technology and Equipment", "Disaster Prevention and Control in Deep Geotechnical Engineering", and "Frontier Technologies in Coal Mine Intelligence Construction". Nearly 300 experts and scholars from universities, research institutes, and enterprises in China and Russia participated in the forum. The successful hosting of this event laid a solid foundation for deeper cooperation between the two countries in the fields of rock mechanics and engineering, contributing to the intelligent and digital advancement of global mining engineering, as well as the safe, efficient, intelligent, and sustainable development of deep energy resources.



## CSRME Delegation Conducts In-Depth Alpine Expedition: Insights into Geological Hazards and Tunnel Engineering

From July 13 to 20, 2024, following the International Symposium on Landslides, a scientific delegation led by Academician Manchao He, President of CSRME, conducted a comprehensive expedition in the Alps.

From July 13 to 17, the team, accompanied by Professor Simon Löw from ETH Zurich and his colleagues, explored the western to central regions of the Alps, focusing on geological hazards such as debris flows, landslides, rockfalls, and avalanches, as well as disaster monitoring and infrastructure restoration.

On July 18, the delegation visited the Bedretto Underground Laboratory for Geosciences and Geoenergies in Ticino, Switzerland. They were received by Stefan Wiemer, Director of the Swiss Seismological Service and Deputy Director of the laboratory, along with laboratory manager Marian Hertrich. The team delved 2.5 kilometers into the tunnel, toured the main laboratory facilities, and gained detailed insights into current research directions, challenges faced, and proposed solutions.



From July 19 to 21, the delegation inspected the construction site of the Moncenisio Tunnel, located on the border between France and Italy, which is the longest deep-buried tunnel in Europe. Emmanuel Humbert, Project Chief Engineer from Tunnel Euralpin Lyon Turin, hosted the visit. The experts engaged in in-depth discussions with Humbert about the similarities and differences in constructing ultra-long deep-buried tunnels between China and France.

On July 20, under the guidance of Professor Jianfu Shao from the University of Lille, the group conducted geological investigations at Mont Blanc, the highest peak in the Alps. This expedition provided invaluable experience and knowledge to the Chinese delegation, which will significantly influence research and applications in related fields in China, offering crucial references for the development of the National Key Laboratory for Tunnel Engineering.



### **Professor Tang Chun'an launches global tour to preach new theories on Earth evolution**

In May and June 2024, Prof. Tang Chun'an from Dalian University of Technology, as the Vice Chair of the Chinese National Group of ISRM and Director of the International Exchange Committee of CSRME, attended the General Assembly of European Geophysical Union in Austria, and embarked on his 2024 international geoscience exploration tour. In Europe, he visited nearly 20 universities and research institutions in Austria, Germany, France, and UK. During this European trip, he delivered the academic lectures to introduce his cutting-edge research on 'The Breakup of Earth' and engaged in the specialized idea exchanges. Prof. Tang confidently made a significant step forward in bringing the Chinese scientific theories onto the international academic stage.

At the GFZ German Research Centre for Geosciences in Germany, Université Grenoble Alpes in France, or Imperial College London and University of Cambridge in the UK, the new theory of Earth's evolution by Prof. Tang sparked fresh interest and lively discussions. Dr. Marco Bohnhoff, Chair of the International Continental Scientific Drilling Program (ICDP) and professor at the GFZ, not only personally hosted Prof. Tang's lecture but also sent him a follow-up email, praising his highly inspiring presentation. Dr. Bohnhoff noted that Prof. Tang's new perspective on Earth's evolution had prompted many new thoughts.

Prof. Alex Webb from the Freie Universität Berlin, co-authored Prof. Tang's Nature Communications paper, met Prof. Tang again in Germany, fostering the ideas for a new round of collaboration. Both agreed to the possible plans and details for advancing research on the plate formation mechanisms. The renowned geologist and representative opponent of the mantle plume hypothesis, Prof. Gillian Foulger from Durham University and Prof. Tang outlined seven potential themes for future collaboration. Prof. Tang also made a special trip to Northern Ireland to explore the geological basalt column

wonder and discussed research on simulating the formation mechanisms of basalt columns with Prof. Tom Mitchell from University College London.



On June 19th, Prof. Tang visited University of Cambridge from Oxford. There, he delivered a lecture to researchers and students at the Department of Earth Sciences. Prof. Tang's European tour strengthened the academic link between China and the international community in relevant fields and marked a valuable attempt for Chinese scientists to present their perspectives on the international academic stage.

Prof. Tang first proposed the 'The Breakup of Earth' hypothesis at the 80th Academic Salon on New Perspectives and Theories hosted by the China Association for Science and Technology in 2013. Then, he published many related papers, such as 'The Earth evolution as a thermal system' in Geological Journal in 2016, 'Breaking Earth's shell into a global plate network' in Nature Communications in 2020 and 'Earth's thermal cycles and major geological events' in Science China - Earth Sciences in 2021. With the joint recommendation from Prof. Qian Qihu (the Academician of Chinese Academy of Engineering and expert in rock mechanics) and Prof. Ren Jishun (the Academician of the Chinese Academy of Sciences and expert in geological science), Prof. Tang has been granted the original exploration funding for his research on 'The Breakup of Earth' by the Department of Earth Sciences of the National Natural Science Foundation of China.

## Climate change and glacier collapse: A study of ice avalanche events in the Amney Machen Range

Professor Xuanmei Fan's team studied multiple glacier collapse events in the Amney Machen Range, eastern Tibetan Plateau, with findings published in *Geomorphology*. The research focused on large-scale ice avalanches, also known as glacier detachments, from a low-angle ( $\sim 14^\circ$ ) surging valley glacier. Over a 15-year period (2004–2019), four glacier detachments were analyzed using satellite imagery, terrain profiles, and field data. Key factors contributing to these events were anomalous warming, subglacial hydrology, repeated glacier surging, a soft glacier bed, and ice-rock loading from the glacier headwall, with the latter being the most significant in all events.

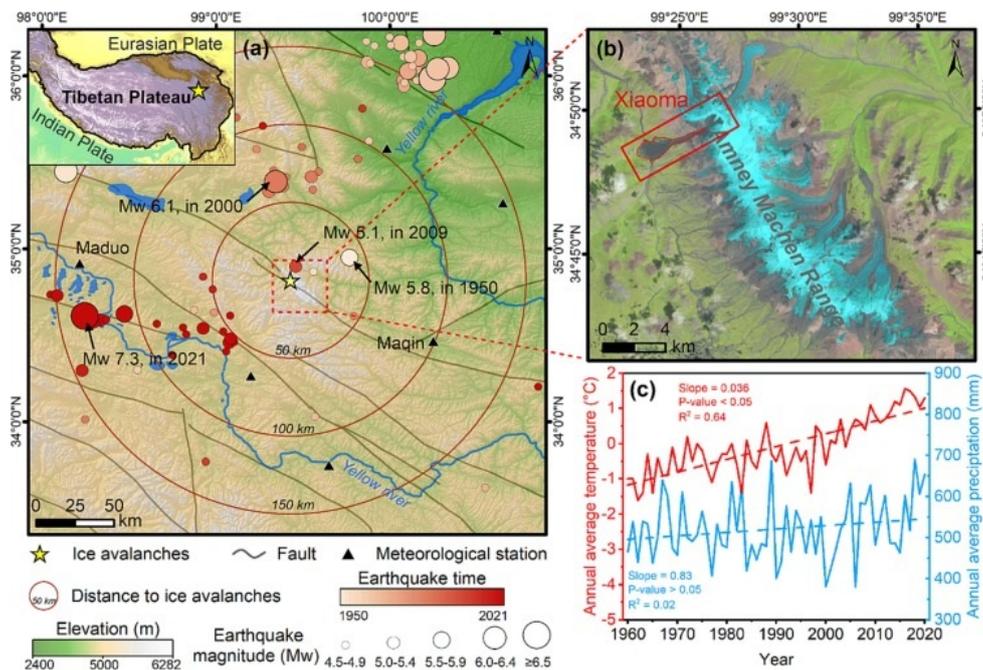


Fig. 1. Regional setting of study area. (a) Location of study area and regional seismic activity. (b) Glaciers in the Amney Machen Range and location of glacier detachments (Sentinel 2 image, August 4, 2017). (c) Mean annual air temperature (red line) and mean annual precipitation (blue line) for the interval 1960–2020 at the Maqin meteorological station; best-fit regression lines indicate overall increase in mean temperature (dashed red) and mean precipitation (dashed blue) over time. The temperature record shows clear warming but the slight increase in precipitation is not statistically significant ( $p > 0.05$ ).

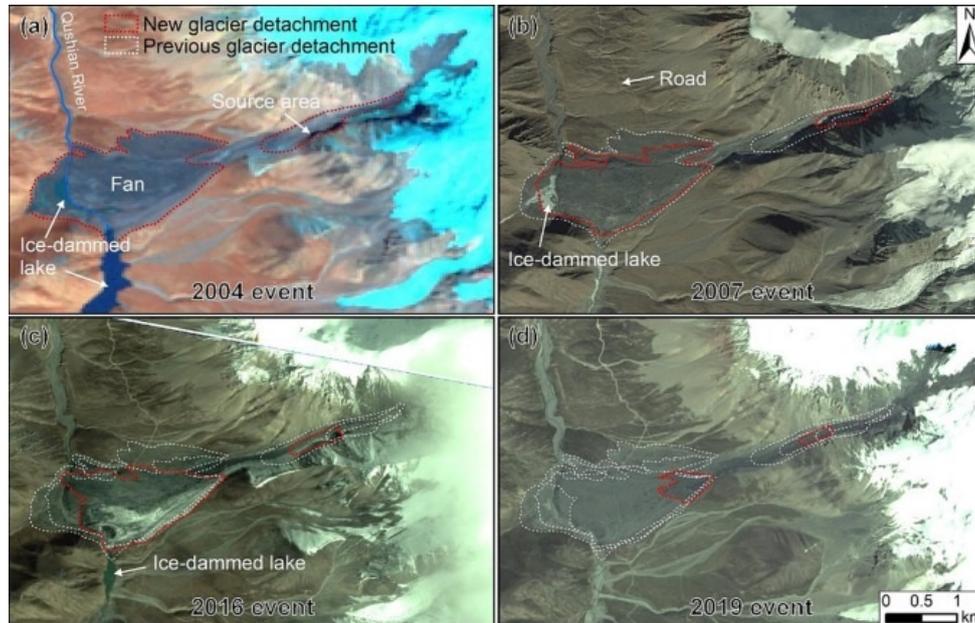


Fig. 2. The four glacier detachment events; new deposits (red dashed outline) overlie those preceding (white dashed outline). (a) Event of February 3–10, 2004 (Landsat 5 TM, September 14, 2004). (b) Event of October 8, 2007 (©Google Earth image, January 13, 2008). (c) Event of October 6, 2016 (Planet image, October 7, 2016, ©Planet Labs PBC and CC BY-NC-SA 2.0). (d) Event of July 2019 (Planet image, July 25, 2019, ©Planet Labs PBC and CC BY-NC-SA 2.0).

The upstream area of Xiaoma Valley, underlain by phyllite, provided fine-grained material through weathering and glacial abrasion, creating a soft glacier bed, essential for the collapses. Early glacier surges weakened the cirque wall glacier's support, leading to small-scale ice-rock avalanches in 2001 and 2003. The resulting debris accumulated on the valley glacier, intensifying deformation and disrupting drainage, increasing basal water pressure and reducing shear strength. The 2004 event likely resulted from the additional loading caused by these avalanches.

Subsequent ice-rock avalanches further destabilized the glacier, turning it into a hanging glacier. Debris from the cirque wall continued to feed into the valley glacier, setting the stage for further collapses in 2007, 2016, and 2019. Meteorological data indicated that abrupt temperature rises and significant rainfall likely influenced these events by increasing meltwater, which lubricated the soft glacier bed, further reducing its shear strength. While long-term climate change may have affected the glacier's overall behavior, its direct impact on these specific collapse events was likely limited.

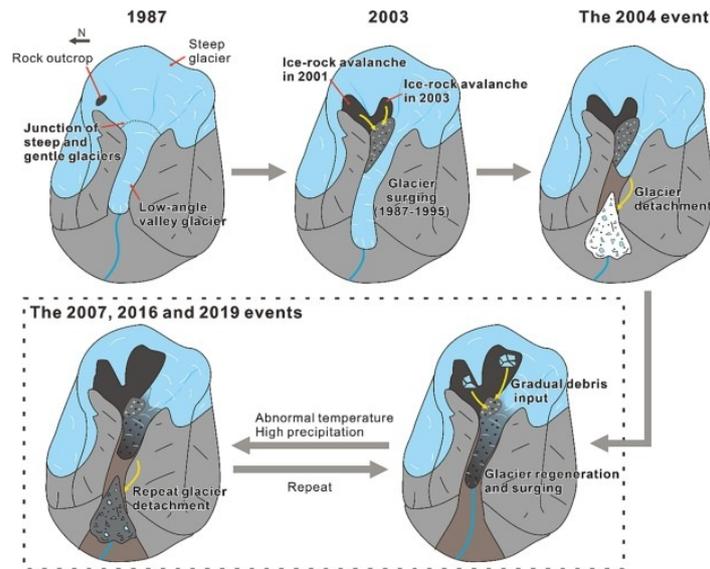


Fig. 3. Schematic diagram of the sequence of events at Xiaoma Glacier.

## Chinese Society of Rock Mechanics and Engineering "Overlay rope core drilling technical regulations" (draft) and other 3 technical standards passed expert review

In July 2024, the CSRME organized experts in Chengdu, Sichuan, to review three technical standards--"Specification for wireline core drilling on overburden", "Specification for directional drilling of geotechnical engineering" and "Specification for deep hole drilling in geotechnical engineering" (draft), which were led by CHENGDU ENGINEERING CORPORATION LIMITED. 28 experts in the domestic engineering survey industry participated in this meeting.

The overburden in western China is mostly of glacial origin and complex layers, and the core extraction rate is low and the drilling depth is limited. "Specification for wireline core drilling on overburden" have formed a technical breakthrough in the aspects of drilling tools and flushing fluid, and have made up for the shortcomings of the existing technical standards for rope coring drilling on overburden.

The geological investigation of hydraulic engineering in mountainous areas of plateau is faced with complex and extreme geological environment such as high altitude and large burial depth which normal vertical holes cannot work out. Moreover, the existing innovative

technology of directional drilling has difficulty in trajectory control and continuous coring. "Specification for directional drilling of geotechnical engineering" have formed technological breakthroughs in directional drilling trajectory control and coring of inclined section, and have become the first domestic and technical standards applicable to directional coring drilling in multiple industries of engineering investigation with practical guiding significance.

With the depth of underground engineering increases, the depth of drilling demand has also increased significantly. Drilling is faced with extremely geological conditions such as superhard rock, high stress, high temperature and high water pressure, and conventional drilling has the problems of low drilling efficiency and difficult hole formation. "Specification for deep hole drilling in geotechnical engineering" have formed technological breakthroughs in deep hole drilling, and have strong guidance and operability for deep hole drilling for engineering investigation.

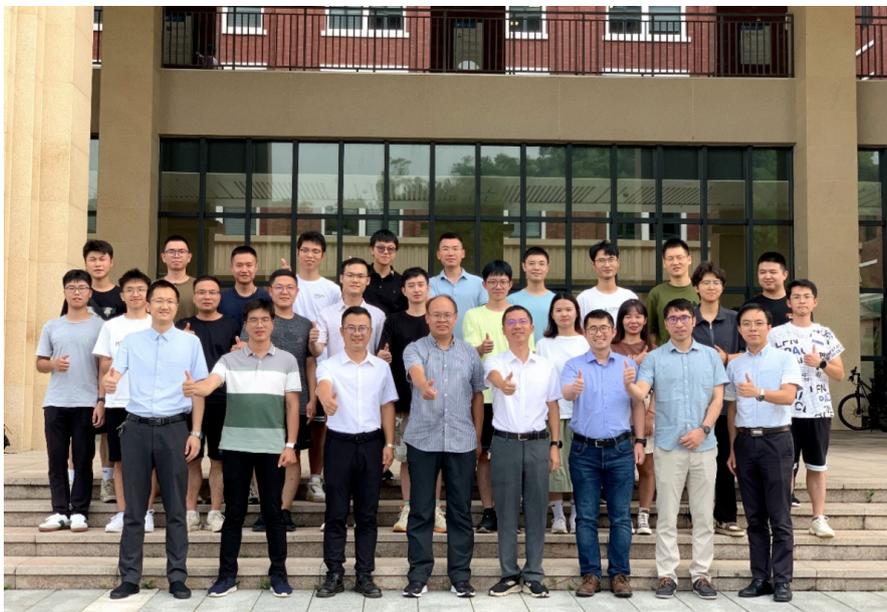


## **Underground Pipeline Engineering Research Team of Sun Yat-sen University**

The Underground Pipeline Engineering Research Team of the School of Civil Engineering, Sun Yat-sen University, founded and headed by Prof. Baosong Ma, consists of 3 professors, 7 associate professors, 3 postdoctoral fellows, and more than 30 PhD and master students. The team mainly involves: disaster prevention and control technology of underground pipeline network, trenchless pipeline construction

technology, new technology of comprehensive pipeline corridor and underground facilities construction and safety maintenance, as well as new technology of underground space engineering development and utilization.

The research team has undertaken more than 50 research projects of National Natural Science Foundation of China and National Key Research and Development Program, published more than 500 academic papers, obtained more than 50 invention patents, edited and published more than 10 monographs in the field of non-excavation technology, and edited the international standard ISO11298-11, the national standard GB/T 41666.4 “Plastics piping systems for renovation of underground non-pressure drainage and sewerage networks — Part 4: Lining with cured-in-place pipes”, GB/T 43892.1 “Plastics piping systems for trenchless renovation of underground water supply networks—Part 1: General”, GB/T 37862 “Plastics Pipes used for Pipeline Rehabilitation — General”, CJJ/T 210-2014 “Technical Specification for Trenchless Rehabilitation And Renewal Of Urban Sewer Pipeline”, etc. more than 10 National, Departmental, and provincial standards. The team has won more than 10 science and technology awards at international and provincial levels. The team has initiated and hosted 14 consecutive International Conference on Pipelines Engineering and Trenchless Technology (ICPTT), which has provided a platform for researchers and practitioners in the field of underground pipeline network engineering at home and abroad.



## Academician Zhao Yangsheng, Establishes the ISRM's Specialized Committee on Ultradeep Rock Mass Mechanics and Engineering

Recently, Academician Zhao Yangsheng, Supervisor General of our Society, in collaboration with Academician Derek Elsworth from Pennsylvania State University, co-founded the ISRM's specialized committee on Ultradeep Rock Mass Mechanics and Engineering. The committee consists of two co-chairs and twelve expert members from nine countries. It aims to provide a platform for the exchange and discussion of ultradeep rock mass mechanics, sharing new theories on ultradeep geothermal resources and ultradeep oil and gas development, as well as new achievements and engineering practices in deep coal mining, ultradeep energy storage, and geological disaster prediction and prevention.

Commissions and JTCs

### Commission: Ultradeep Rock Mass Mechanics and Engineering

co-Chairs

Prof. Yangsheng Zhao  
China

Prof. Derek Elsworth  
USA

Members

Auli Niemi (Sweden)  
Hywel R Thomas (UK)  
Kwang-Yeom Kim (Korea)  
Maurice Bernard Dusseault (Canada)  
Qiang Yang (China)  
Pathegama Gamage Ranjith (Australia)  
Shemin Ge (USA)  
Victor Vilarrasa (Spain)  
Wei Wu (Singapore)  
Yishan Pan (China)  
Zhihong Zhao (China)  
Zijun Feng (China)

Seokwon Jeon (ex officio), ISRM President  
Ki-Bok Min (ex officio), ISRM VP for Asia

Currently, the International Society for Rock Mechanics and Rock Engineering (ISRM) has 22 specialized committees, with 10 chaired by Chinese experts, accounting for more than 45%. This demonstrates the significant contributions and leadership of Chinese

scientists in international academic organizations. We look forward to the specialized committee on Ultradeep Rock Mass Mechanics and Engineering achieving more breakthrough innovations in the future, contributing valuable insights and advancements to the global field of rock mechanics and engineering.

## Journals

### **Rock Mechanics Bulletin Receives the First CiteScore (Scopus Database) of 2.4**

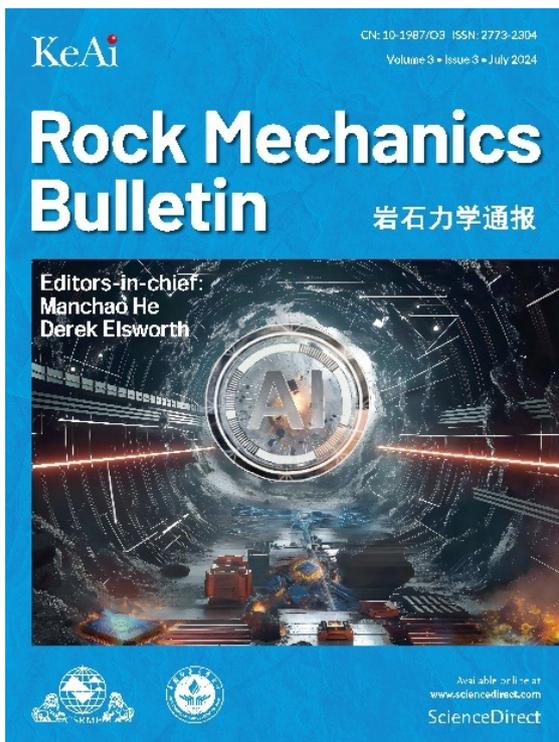
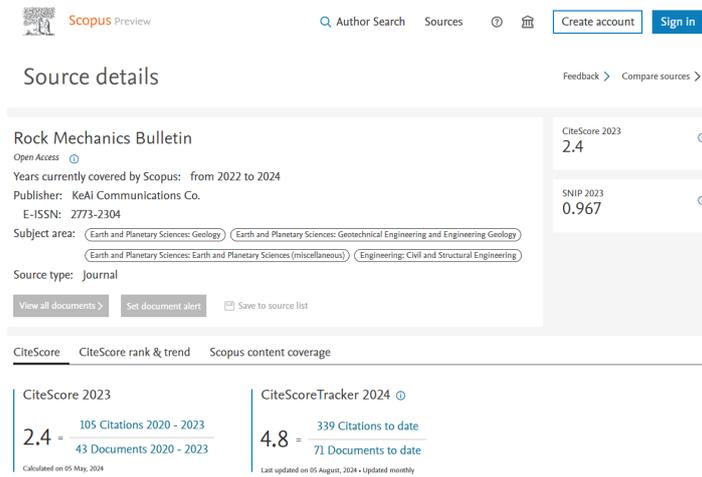
*Rock Mechanics Bulletin* has received its first **CiteScore** of 2.4, offering a comprehensive and transparent view of the impact and influence. The CiteScore by Elsevier's Scopus database in 2016 measures the average number of citations per paper published in a journal over three consecutive years, with citations counted in the fourth year. This method provides a stable and consistent reflection of the scientific contributions of research journals while maintaining features such as comprehensive coverage, real-time tracking, transparency, and free access.

This milestone highlights the growing recognition of the *Rock Mechanics Bulletin* as a platform for high-quality research and innovation. Thanks for the support and contribution from the editorial team, reviewers, authors and readers.

For more information about the *Rock Mechanics Bulletin* and to explore its latest research, please visit homepage:

<https://www.sciencedirect.com/journal/rock-mechanics-bulletin>

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**Establishing a world-class Scientific Journal: CSRME Collaborates with KeAi to Launch Intelligent Geoengineering**

On June 19, 2024, the Chinese Society for Rock Mechanics and Engineering (CSRME) and KeAi Publishing Company (a joint venture of Science Press and Elsevier) convened in Beijing to sign a partnership agreement for the launch of *Intelligent Geoengineering*, CSRME's second English-language journal. The meeting was attended by CSRME President and Party Secretary, Academician He

Manchao, and KeAi Deputy General Manager, Chai Zhao. The session was chaired by Professor Zhang Fengshou, Vice Secretary-General of CSRME and Vice President of the International Society for Rock Mechanics and Rock Engineering. Representatives from the CSRME Secretariat, Editorial Working Committee, and KeAi were also present.



During the meeting, the *Intelligent Geoengineering* Journal Preparation Committee outlined the journal's mission, current progress, and future plans. KeAi presented an overview of its recent developments and its strategy for collaborating with CSRME, emphasizing a commitment to high-quality journal management and production services to support the development of a world-class academic journal. Both sides discussed cooperation models, journal positioning, and strategies for enhancing its impact, culminating in the formal signing of the partnership agreement. The editorial team of *Rock Mechanics Bulletin* also provided an update on the journal's progress, challenges, and future outlook.

## CSRME and Springer Nature Launch the First AI-Powered Monograph in Rock Mechanics

As artificial intelligence (AI) continues to advance, its application in book publishing is becoming increasingly crucial for innovation and efficiency. The internationally renowned publishing house Springer Nature has begun exploring the use of AI in book production.



Currently, the Chinese Society for Rock Mechanics and Engineering (CSRME), in collaboration with Springer Nature and Zhongtu Ke Xin Smart Technology (Beijing) Co., Ltd.(ZKST), is jointly developing the first AI-powered monograph in the field of rock mechanics, titled *The Research Progress of Rock Dynamics Mechanics*. In this partnership, CSRME coordinates experts in the field to write the content, ZKST provides technical and platform support, and Springer Nature handles the publication and distribution of the book.



At the 2024 "PubTech Conference" held on June 19, CSRME President, Academician He Manchao, attended and delivered the opening speech. During the conference, Niels Peter Thomsa, Managing Director of Books at Springer Nature, announced the launch of the "Artificial Pen Project" in China, an AI-driven monograph initiative. This project signifies the beginning of a new chapter in scientific publishing, with the collaboration of Academician He Manchao's team and ZKST



The application of AI-powered monograph technology in China's academic publishing sector holds significant importance. It not only showcases China's independent innovation capabilities in AI but also accelerates the dissemination of academic achievements, enhances research efficiency, and enables experts to focus on more in-depth studies. Moreover, through personalized recommendations, it meets the academic needs of readers, fostering innovation and knowledge production. The publication of the first AI-powered monograph in rock mechanics is expected to profoundly impact the sustainable development of the academic publishing industry and contribute positively to academic exchanges in rock mechanics both in China and globally.

### Muzhailing Tunnel on the Lanzhou-Chongqing Expressway

#### Project Background and Significance

The Muzhailing Tunnel, a key project of the Lanzhou-Chongqing Expressway, plays a significant role in advancing the Belt and Road Initiative, promoting transportation in the northwest and southwest, and accelerating the outward-facing economic development of the western region. After the Muzhailing Tunnel is completed, the driving time between Weiyuan and Wudu in Gansu Province will be reduced from 4 h to 2.5 h. This will enable the full operation of the G75 National Expressway from Lanzhou to Haikou, one of China's major north-south highways. The completion of the Muzhailing Tunnel is a milestone in China's expressway construction, marking a significant breakthrough in overcoming world-class tunnel construction challenges—tunneling in soft rock with high in-situ stress and large deformation.



Figure 1. Successful completion of the Muzhailing Tunnel (source: China Science and Technology Network)

## Project Overview

The Muzhailing Tunnel is located at the junction of Minxian and Zhangxian counties in Dingxi City, Gansu Province, and runs parallel to National Highway G212. The total length of the tunnel is 19.095 kilom. The tunnel is designed with a separated dual-tube structure, accommodating four lanes with a design speed of 80 km/h.

Muzhailing is located at the junction of the North China, Yangtze, Tarim, and Qinghai-Tibet plates, where the rock is primarily composed of weak carbonaceous slate, significantly affected by tectonic stress. The problem of large deformations in soft rock under high in-situ stress is particularly prominent. The tunnel site is at a high altitude with steep mountains and deep valleys in a "V" shape. Natural slopes are generally steeper than 50 degrees. The surface elevation ranges from 2,416 to 3,133 m, with a relative height difference of 717 m. The rock mass is exposed along the ridges, with severe weathering and well-developed joints.



Figure 2. Muzhailing Tunnel (source: social media video)

## Technical Challenges

Over 60% of the Muzhailing tunnel is buried deeper than 500 m, with the maximum burial depth reaching 629.1 m, placing it in a high-stress zone. Since construction began in May 2016, the large deformations in the soft rock have been severe. The maximum deformation on one side of the tunnel exceeded 2,000 mm, setting a national record. This

scale of deformation exceeded the theoretical understanding of rock mechanics and tunnel construction practices, surpassing existing codes and standards. There was no prior experience to draw from, leading experts to refer to it as a "world-class challenge in tunnel engineering" and a "no-go zone in the field of tunnel construction."

To address the challenges of constructing the Muzhailing Tunnel, a new method for controlling large deformations in soft rock tunnels was developed. This method utilizes a novel NPR (Negative Poisson's Ratio) anchor cable system, which compacts the loose and fragile rock to form an arched bearing structure, improving rock stability. The NPR anchor cables continue to resist deformation even when the axial force exceeds the constant resistance, preventing sudden failures. As the surrounding rock deforms, the NPR anchor cables stretch, slowly releasing deformation energy. After the rock stabilizes, the cables maintain stable support resistance and can be re-tensioned if needed. These cables, embedded in the rock, act like sewing threads that compress the carbonaceous slate, reinforcing the rock, increasing its stiffness, and controlling deformation. However, under such high-stress conditions, this method alone was insufficient to control deformation. By adding single-layer arch concrete support, the combined effect reduced the maximum tunnel deformation from 2 m to 30 centim.

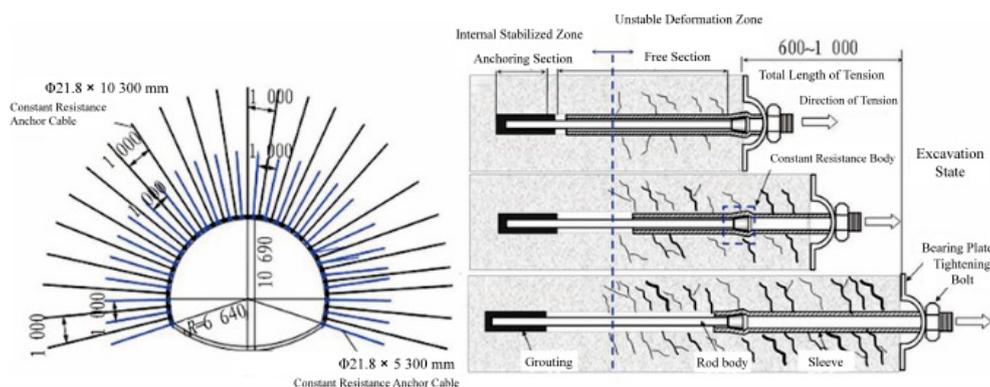


Figure 3. Schematic diagram of the NPR anchor cable technology principle (Hong et al., 2021)

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## NEWSLETTER

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2024 Q4

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### **Progress in International Collaboration by CSRME in 2024**

In 2024, the China Society for Rock Mechanics and Engineering (CSRME) has made significant strides in international collaboration. These advancements reflect our ongoing commitment to promoting academic exchange, fostering cross-border partnerships, and contributing to global scientific progress.

A key highlight of the year was CSRME's leadership in international organizations. Academician Manchao He, CSRME President, was appointed Vice President of the *International Consortium on Geosaster Reduction* (ICGdR), further elevating CSRME's influence in global geohazards and disaster risk management. Additionally, CSRME member Professor Shengwen Qi was elected Vice President of the *International Association of Engineering Geology* (IAEG). Currently, 15 CSRME experts hold significant positions in leading international organizations like ISUFT, ACUUS, and ISRM, reflecting the growing global influence of CSRME members.

In addition to individual achievements, CSRME has been instrumental in the establishment of technical committees within the *International Society for Rock Mechanics* (ISRM). Academician Yangsheng Zhao and Professor Derek Elsworth co-founded the ISRM Technical Commission on Deep Rock Mechanics, while Professor Yanli Huang of China University of Mining and Technology initiated the ISRM Technical Commission on Rock Weathering and Erosion. With 22 technical committees in ISRM, 10 are chaired or co-chaired by Chinese scholars, demonstrating China's leadership in rock mechanics research and practice.

Several CSRME members were also honored with prestigious

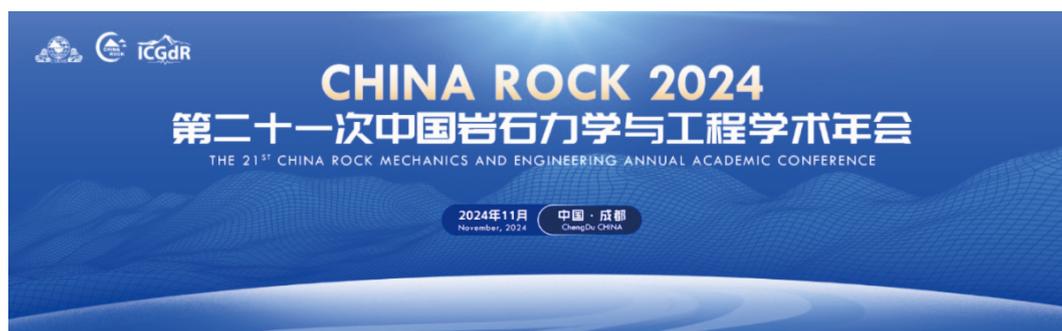
international awards this year. Notably, Researcher Yufang Zhang from the China Academy of Railway Sciences Corporation Limited received the ISRM John Hudson Rock Engineering Award, and Professor Zhigang Tao was awarded the ICGdR Outstanding Young Scientist Award.

CSRME's global engagement was further demonstrated through its successful hosting of several key international events in 2024. These included the *2024 Earthquake and Fault Measurement Forum* in Beijing, the *first Focused Workshop on Rockburst*, the *14th International Landslide Forum* in Chambéry, France, and the *2024 International Geomechanics Conference* in Kuala Lumpur, Malaysia, where CSRME members played leading roles.

Looking ahead, CSRME remains committed to expanding its international network, fostering collaborative research, and ensuring China's continued leadership in rock mechanics and geotechnical engineering on the global stage. Through these efforts, CSRME is strengthening its international reputation and building a more connected and cooperative global scientific community.

These milestones reflect CSRME's dedication to advancing rock mechanics research and its important role in shaping the future of geotechnical engineering worldwide. As we continue to engage globally, we remain optimistic about the future of rock mechanics and the essential contributions that CSRME will make to the field in the years ahead.

## CHINA ROCK 2024



### China Rock 2024: Major Projects and Risk Management

The 21st China Rock Mechanics and Engineering Annual Academic Conference, CHINA ROCK 2024, was grandly held in Chengdu on November 1-3, 2024. With a main venue in Chengdu, 15 central venues in different cities and 277 satellite venues, the conference reached nationwide coverage. The event, themed "Major Projects and Risk Management", was jointly organized by the Chinese Society for

Rock Mechanics and Engineering (CSRME) and the International Consortium on Geo-disaster Reduction (ICGdR). The conference attracted over 40 academicians and more than 120,000 domestic and international experts and scholars. The online participation reached 2.68 million.

The President of CSRME and Academician of the Chinese Academy of Sciences, Professor Manchao He, gave the welcome speech at the opening ceremony, followed by seven keynote lectures from Academician Manchao He, Professor Milorad Jovanovski, Academician Yueping Yin, Professor Hide Yasuhara, Academician Chuan He, Professor Giovanni Grasselli, Academician Chuangbing Zhou.



From the afternoon of November 2 to the morning of November 3, various sub-forums and special events showcased highlights in multiple cutting-edge fields and regional specialties. The main, central and satellite venues delved deeply into key issues such as major engineering risk management, energy transition to low carbon, and disaster prevention. A total of 789 academic presentations highlighted frontier technologies such as compressed air energy storage, geothermal development, CO<sub>2</sub> sequestration, and intelligent tunnel construction, drawing significant attention from professionals both within and outside the industry. Training workshops on CoSim coupling simulators, MatDEM discrete element technology, Massflow surface disaster simulation, etc. were held. Furthermore, the Technology Innovation Industrial Exhibition attracted 109 exhibitors, showcasing the latest materials, equipment, software, and research achievements. The exhibition spanned multiple fields, including major engineering, intelligent construction technology, academic journals, and science popularization bases.



On the afternoon of November 3, China Rock 2024 successfully concluded at the Chengdu main venue. During the closing ceremony, six experts from both China and abroad delivered keynote lectures, including Professor Ki-Bok Min, Academician Hanlong Liu, Professor Netra Prakash Bhandary, Academician Yishan Pan, Professor Mostafa Sharifzadeh and Professor Murat Karakus. These lectures shared the latest research findings in key technologies such as tunnel engineering, enhanced geothermal systems, and rockburst criteria.

Academician Manchao He summarized the achievements of the conference, emphasizing the importance of open collaboration in the globalized context. He pointed out the need for enhanced international exchange in the field of rock mechanics, to jointly address global engineering challenges and promote the deep application of scientific research outcomes. He also encouraged scientists and engineers to focus on national strategic needs, emphasize frontier and innovative research, strengthen the training of young talents, and actively contribute to the future development of the industry.



By the end of 2024, the total number of CSRME members has reached a new high of 169,000, marking an increase of more than 56,000 compared to the previous year.

More information can be found [here](#).

## Conferences and International Communications

## IGS 2024 Successfully Concluded in Kuala Lumpur

The *International Geomechanics Conference (IGS 2024)* was held in Kuala Lumpur, Malaysia, successfully, from November 18-20, 2024, co-hosted by 10 leading organizations, including ARMA, SEG, AAPG, and CSRME. The event welcomed 269 participants from 34 countries, with China contributing 70 delegates (26% of attendees) and 47 of the 176 presentations, underscoring China's significant contributions to the field of geomechanics.

### Conference Theme and Highlights

This year's conference, themed "*The Role of Geomechanics in Sustainable Development and Energy Efficiency*," focused on the latest advancements and technological achievements in geomechanics across energy storage, CO2 sequestration, petroleum, mining, geothermal, geotechnical engineering, and environmental sectors. The "*Presidents' Forum*," chaired by Dr. Gang Han, featured insights from co-hosting organizations, with CSRME President Academician Manchao He presenting on CSRME's achievements and future plans.



### Special Session: Chinese Rock Mechanics and Geomechanics

The Chinese Rock Mechanics and Geomechanics Session, held on November 18, featured five prominent Chinese professors presenting their latest research. Prof. Zhang Fengshou (Tongji University) presented on CO2 sequestration, Prof. Liu Chun (Nanjing University) presented on AI-based event identification, Prof. Wang Lige (Shandong University) presented on tunnel excavation, Prof. Qiu Wenge (Southwest Jiaotong University) presented on tunnel stability, and Prof. Wu Hui (Peking University) presented on fracture networks. The session garnered significant attention from international experts,

including National Academy of Engineering (NAE) members Derek Elsworth and Laura Pyrak-Nolte, as well as Prof. Maurice Dusseault from the University of Waterloo, who actively engaged in discussions.

### **Strengthening International Collaboration**

The Chinese delegation, led by Academician He Manchao, visited The National University of Malaysia (UKM) on November 20, exploring collaboration opportunities.



More information can be found [here](#).

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## **Researcher Shengwen Qi Elected as Vice President of IAEG, Leading Asian Affairs**

From October 8 to 12, 2024, the 4th European Regional Conference of IAEG (EUROENGEO 2024), was held in Dubrovnik, Croatia, organized by the International Association of Engineering Geology (IAEG). Researcher Shengwen Qi, Executive Director of the Chinese Society for Rock Mechanics and Engineering (CSRME) and Chairman of the Engineering Geology Mechanics Committee, was elected as Vice President of IAEG, responsible for overseeing Asian affairs. Additionally, Faquan Wu, Executive Director of the Geotechnical Engineering Technology Working Committee, was approved to establish the IAEG Engineering Geology Mechanics Committee. Weiwei Zhu, Associate Researcher and Deputy Secretary-General of the International Affairs Secretariat of CSRME, was awarded the 2024 IAEG Richard Wolters Prize (IAEG RWP) and delivered a keynote report at the conference's closing ceremony.



More information can be found [here](#).

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## **Researcher Yufang Zhang from China Railway Scientific Research Institute Won the ISRM John Hudson Rock Engineering Award**

On September 25, 2024, during the 13th Asian Rock Mechanics Symposium (ARMS 13) in New Delhi, India, the International Society for Rock Mechanics and Rock Engineering (ISRM) announced the winners of the 2024 John Hudson Rock Engineering Award. Yufang Zhang, Researcher at China Railway Scientific Research Institute, won the award for his outstanding contributions to the development of ultra-large, high-energy flexible rockfall barrier technology. This recognition marks Zhang as the first Asian scholar to receive this prestigious award, underscoring his remarkable achievements in rock engineering and further enhancing the academic influence and industry leadership of Chinese rock mechanics professionals in the international rock mechanics field.



More information can be found [here](#).

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## **Dr. Quan Zhang from China University of Mining and Technology Awarded Runner-Up for the ISRM Rocha Medal**

Recently, the ISRM announced the results of the 2025 Rocha Medal selection. Dr. Quan Zhang from China University of Mining and Technology received the Runner-Up award for his doctoral dissertation titled *Investigation on Principles and Applications of Directional Rock Breaking by Instantaneous Expansion*. Zhang was recommended for this award by the Chinese Society for Rock Mechanics and Engineering.

More information can be found [here](#).

## Technical Committees

### **The "Early Career Forum" (ECF) Session of the ISRM Was Successfully Held**

On Nov. 3, 2024, the "Early Career Forum" (ECF) session of the International Society for Rock Mechanics and Engineering (ISRM) was successfully held at the Tianfu International Convention Center in Chengdu, China, as part of China Rock 2024. Under the theme "Inspiring Youth Innovation and Building the Future of the Industry," young scholars from worldwide discussed innovative concepts and practices in rock mechanics and engineering.

Pan Yishan, Academician of the Chinese Academy of Engineering and member of the leadership team of CSRME, delivered a speech on behalf of the CSRME. He emphasized the crucial role of young researchers in technological innovation and encouraged them to actively bridge theoretical research to engineering practice.

The forum featured key international figures, including ISRM Vice Presidents Ki-Bok Min and VP at large Milorad Jovanovski, former ISRM Vice President Yang Qiang, and professors Giovanni Grasselli, Steven D. Glaser, and David Potyondy. The session was chaired by Professor Zhang Fengshou, ISRM Vice President at large and ECF Chairman.

ISRM Vice President Ki-Bok Min expressed his gratitude to CSRME for its strong support of the ECF and stressed the importance of international collaboration in the interdisciplinary field of rock mechanics. He hoped the forum would foster increased communication and cooperation among experts from different countries.

The forum featured a series of presentations on cutting-edge topics in rock mechanics. Notable reports included Professor Steven D. Glaser's analysis of "Sliding Behavior of Free Interfaces," Dr.

Muhammad Irfan bin Shahrin's study on "Non-Continuum Orientation and Blasting Fragmentation," and Professor Wei Wu's exploration of "AI Methods in Rock Mechanics." Other highlights included innovative research on rock fracture networks and geomechanical modeling.

The ECF, organized by the ISRM Education Foundation (EFC), has been held annually since 2017, providing funding and career development guidance for young scholars, especially from developing countries. This successful event marks a new milestone for CSRME, offering a valuable platform for young scholars to exchange ideas and promote innovation in rock mechanics and engineering.



## **Academician Xiangsheng Chen Led Delegation to ICCES 2024 in Singapore**

On August 4, 2024, the 30th International Conference on Computational & Experimental Engineering and Sciences (ICCES 2024) grandly opened at the Marina Bay Sands Expo & Convention Centre in Singapore.

This follows the successful hosting of ICCES 2023 at Shenzhen University in 2023, and marks the continued deep involvement of faculties from the Underground Polis Academy (UPA) of Shenzhen University in ICCES. Professor Shaofan Li from the University of California, Berkeley, announced the opening of the conference. The conference chair, Professor Kun Zhou from Nanyang Technological University in Singapore, delivered the welcoming address. Over one thousand renowned scholars, including Academician Huajian Gao, attended the event. At the invitation of Professor Kun Zhou, Academician Xiangsheng Chen, the dean of the Underground Polis Academy (UPA) of Shenzhen University, chaired the first keynote speech session.



## Journals

### **CSRME Launched New Journal: *Intelligent Geoengineering***

The Chinese Society of Rock Mechanics and Engineering (CSRME) has officially launched the new academic journal *Intelligent Geoengineering* (ISSN: 3050-6190). Dedicated to exploring the intersection of Artificial Intelligence and geotechnical engineering, *Intelligent Geoengineering* aims to serve as a premier platform for disseminating innovative research and fostering interdisciplinary collaboration.

The launch ceremony of *Intelligent Geoengineering* was a highlight of CHINA ROCK 2024. Four editors-in-chief, along with leading scholars and practitioners in rock engineering, gathered to celebrate the exciting release of this high-level new journal. The launch ceremony showcased the journal's vision of integrating AI-driven innovations with traditional geotechnical practices and fostering a global academic community.



## About Intelligent Geoengineering

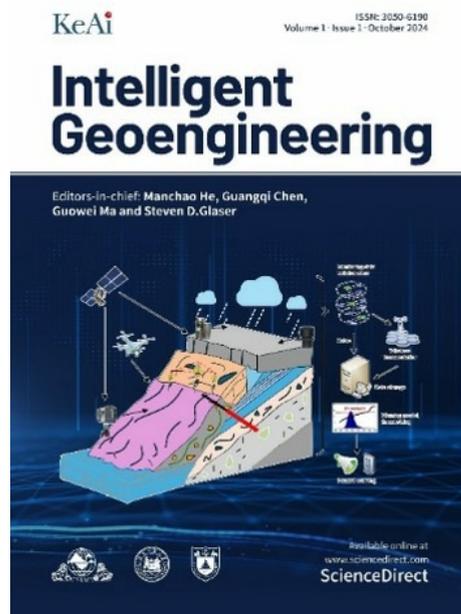
*Intelligent Geoengineering* is an international, peer-reviewed journal committed to advancing research at the intersection of artificial intelligence and geotechnical engineering. The journal emphasizes innovation by integrating AI, big data, IoT, and advanced numerical modeling into geotechnical practices, with a focus on sustainability and interdisciplinary collaboration.

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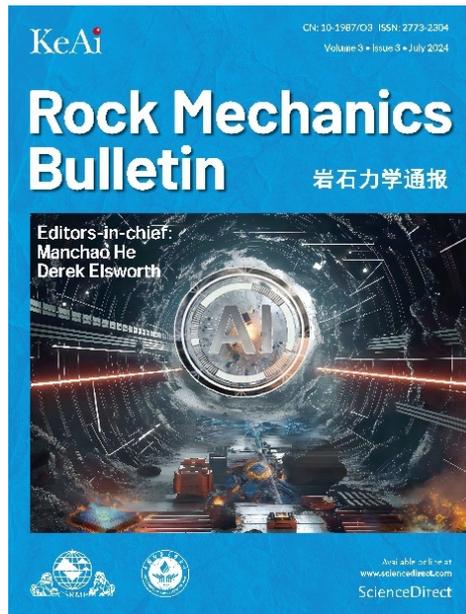
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## ROCKMB Indexed in ESCI

The Rock Mechanics Bulletin (ROCKMB), an English-language journal hosted by the Chinese Society for Rock Mechanics and Engineering, has been officially indexed in the Emerging Sources Citation Index (ESCI) database of the Web of Science Core Collection. It is expected to receive its first impact factor in 2025. All articles published since its inaugural issue in 2022 (Volume 1, Issue 1) will be included in the ESCI database.

This marks another significant milestone for ROCKMB after it included in China's Excellence Action Plan for Science and Technology

Journals as a high-starting-point new journal, and later indexed by Scopus and DOAJ databases.



**Editor-in-Chief:**

Professor Manchao He, China  
Professor Derek Elsworth, USA

**Database Indexed:**

ESCI, Scopus, DOAJ, EBSCO, CAS, NASA ADS

**Journal Homepage:**

<https://www.sciencedirect.com/journal/rock-mechanics-bulletin>

**Journal Editorial Office:**

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## Major Engineering Projects

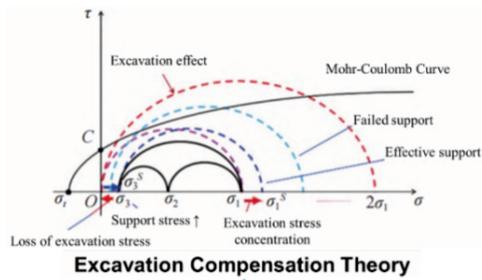
### Qinling Water Diversion Tunnel

**Engineering Significance**

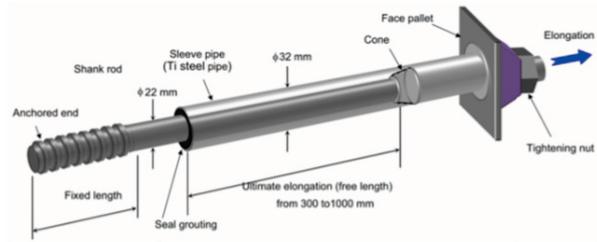
The Hanjiang-to-Weihe River Water Diversion Project addresses water scarcity in Shaanxi by transferring water from the Hanjiang to the Weihe River, supporting multiple regions and restoring local ecology. The Qinling Water Diversion Tunnel, the first large-scale tunnel across the Qinling Mountains, is a key part of this critical project.

**Key Technical Challenges**

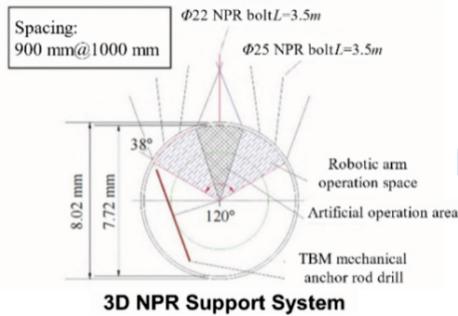
The northern section of the Qinling Tunnel faces complex geology, high in-situ stress, and frequent rock bursts (8,012 recorded in two years), with traditional support methods proving ineffective. In response, Academician He Manchao's team proposed the Excavation Compensation Theory, which explains how excavation disrupts rock stress, causing instability and bursts. To address this, they developed a high-stress compensation system using second-generation micro NPR bolts, axial flexible nets, and circumferential W-shaped steel strips. Field data from the Qinling Tunnel showed that this system effectively controlled rock bursts, reduced microseismic activity, improved rock integrity, and enhanced tunnel stability in high-stress, fractured sections.



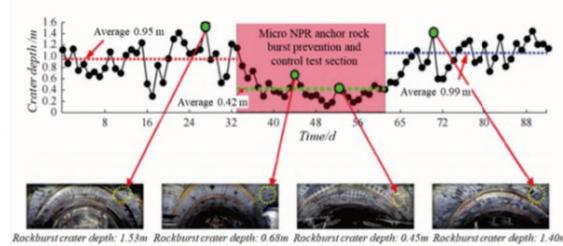
**Excavation Compensation Theory**



**Second-Generation NPR Bolt**



**3D NPR Support System**



**Rockburst Effectively Controlled**

More information can be found [here](#).

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**END!**

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**Editors:** Danting Hu, Hui Wu, Xiaodong Ma, Peiyuan Lin, Chen Chen



**中国岩石力学与工程学会**

Chinese Society for Rock Mechanics & Engineering

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