Advances in Geo-Energy Research

Vol. 20, No. 1, p. 98-100, 2026

Editorial

Forging the future of geo-energy: The one-journal-one-forum mode and the path to global excellence

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Keywords:
One-journal-one-forum mode
exchange platform
academic communication
interdisciplinary collaboration

Cited as:
Cai, J. Forging the future of geo-energy: The one-journal-one-forum mode and the path to global excellence. Advances in Geo-Energy Research, 2026, 20(1): 98-100.
https://doi.org/10.46690/ager.2026.04.08

Abstract:
Building on the "one-journal-one-forum" (OJOF) mode first proposed by the inaugural event in 2024, the editorial department of *Advances in Geo-Energy Research* (*AGER*), under the guidance of several professional associations, successfully hosted the second "International Geo-Energy Frontier Forum" from April 10 to 13, 2026. Under the theme "New Opportunities and Challenges in Geo-Energy Exploration and Development," the forum retained and further refined several innovative organizational approaches introduced at the inaugural edition. The event reached unprecedented scale and influence, further demonstrating that the OJOF mode is not only feasible but also an excellent framework for the synergistic development of a journal and a conference. Another notable feature of this forum was its effective promotion of the platform's internationalization. In addition to participants from China, experts and scholars from nine other countries joined the conference both in person and virtually. The event significantly expanded *AGER*'s service capabilities and fostered international interdisciplinary collaboration across various disciplines and industries.

Background. Looking back at the first "Geo-Energy Frontier Forum" in 2024 (Cai, 2024), the forum successfully set sail with the eager anticipation and collective efforts of scholars. The successful convening of the inaugural forum officially launched a new development pattern of "one-journal-one-forum" (OJOF) and journal-forum collaboration. The forum received positive responses from experts and scholars, with an enormous scale of participation and diverse forms of communication. It not only built a high-level academic exchange platform but also explored pathways, accumulated experience, and laid a foundation for the collaborative development of journals and forums. This forum has also attracted widespread attention in the academic journal field, consequently prompting many journals to hold their conferences in a similar manner.

From the first forum to today, we have come to deeply realize that OJOF is a new mode for organizing journals and forums, and an important platform for gathering the academic community, serving the development of disciplines, and promoting communication and collaboration. The journal and forum support and empower each other, expanding the breadth and depth of *AGER*'s service to scholars and its connection with the academic community. At the same time, it further strengthens the cohesion, influence, and appeal of China's geo-energy academic field.

The convening of the second "International Geo-Energy Frontier Forum" represents a new departure, deepening, and enhancement built upon previous foundation. Obviously, today's forum is carrying the mission of continuing the achievements of the inaugural event and deepening exchanges and cooperation, and reflecting our higher expectations for the future development of the geo-energy field. In the face of the accelerating global energy transition, the ongoing deepening of interdisciplinary studies, and the increasingly urgent demand for frontier innovations, we now more than ever need a

Yandy Scientific Press

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2207-9963 © The Author(s) 2026.
Received April 14, 2026; revised April 20, 2026; accepted April 22, 2026; available online April 23, 2026.

high-level exchange platform that is comprehensive, strategic, cutting-edge, and innovative—one that can bring together ideas, spark discussions, lead the way, and foster collaboration.

The change in name from "Geo-Energy Frontier Forum" to "International Geo-Energy Frontier Forum" reflects the further elevation of the platform's positioning and embodies our shared aspiration for more advanced, open exchanges and the gathering of global academic resources. This is more than just a natural outcome of the forum's expanding influence; it signifies that the OJOF mode is accelerating its transition from a high-level domestic exchange platform to a world-class platform with greater international reach and academic leadership.

Key achievements. Following the OJOF mode and held biennially, the second "International Geo-Energy Frontier Forum," themed "New Opportunities and Challenges in Geo-Energy Exploration and Development," was successfully held in Zhengzhou, China, from April 10 to 13, 2026. Building on the innovative initiatives introduced in the first forum, this edition once again provided scholars with a premier academic gathering in geo-energy and achieved two notable outcomes:

1) Maintaining the breadth of the conference presentations, this forum brought together experts and scholars from 10 countries. It featured 33 plenary reports and 10 international special invited reports (running online throughout April 13), organized across 80 parallel sub-sessions (under 70 thematic topics). Notably, the event hosted a total of 730 presentations (in 80 sub-sessions), a significant increase from the 476 presentations delivered in 54 sub-sessions at the first forum. The scheduling of plenary and parallel sub-session was carefully alternated to facilitated maximum participation.
2) The scale of participation and the quality of presentations marked a significant increase compared the inaugural forum. Over 1,000 experts and scholars attended in person, while more than 31,000 participated online—a significant increase from the 700 and 14,000 recorded previously. The in-person attendees represented over 230 institutions, a substantial increase from the 90 institutions represented at the first forum. The 33 plenary reports were all delivered by distinguished speakers from various fields, including two Chinese academicians and five international experts who presented on-site (from Australia, Russia, and the United States), as well as a Fellow from the Royal Society and the Royal Academy of Engineering who joined online. Furthermore, several scholars from Australia, Canada, Germany, and the United Kingdom contributed to the offline sub-sessions, significantly enhancing the conference's international profile.

Core themes. Given the vast and complex nature of geo-energy, this forum featured 33 plenary reports and 70 thematic topics. The plenary reports mainly focused on four key areas: Oil and gas geology, field development engineering, geo-energy development and storage, petroleum geophysical exploration. Meanwhile the thematic topics were designed to cover a broad spectrum, ranging from oil and gas exploration, carbon sequestration, and clean energy to complex oil and gas reservoir drilling, rock mechanics, and artificial intelligence. This comprehensive structure reflects the mainstream trend of interdisciplinary integration in current research.

Geo-energy research transcends traditional boundaries, extending beyond geology and petroleum engineering to incorporate physics, chemistry, and artificial intelligence. By curating a diverse range of topics, we aim to foster interdisciplinary integration and innovation to tackle increasingly complex energy challenges. Concurrently, a key focus is placed on the deployment of cutting-edge solutions, particularly the widespread adoption of digital, intelligent, and simulation technologies in energy extraction. These advancements have significantly enhanced development efficiency and precision, catalyzing transformative breakthroughs across the industry. Furthermore, in the realm of sustainability and green development, our topics emphasize carbon sequestration and low-carbon green technologies, driving the energy sector toward environmental protection and sustainable growth.

Additionally, the forum places particular focus on the efficient development of complex oil and gas reservoirs and unconventional resources, with an emphasis on maximizing resource utilization and achieving technological breakthroughs. Finally, safety and risk management are also crucial areas of concern. This is especially vital in the energy extraction process, where robust safety protocols and disaster management are paramount to ensuring the industry's sustainable development. Overall, the design of these topics not only reflects the trends of technological innovation, interdisciplinary integration, and global development within the geo-energy field, but also highlights the industry's strategic direction in tackling technical challenges and driving future growth.

Emerging trends. This forum serves as both a showcase of achievements and a barometer of trends. The intense exchanges and discussions clearly signal three key developments in the field of geo-energy technology:

1) Energy development is transitioning from a traditional single-resource focus to a new phase of multi-energy synergy development and integrated underground space utilization. Topics spanning oil and gas, geothermal energy, energy storage, and carbon sequestration were extensively discussed at this forum. This indicates that the "underground multi-energy system" is emerging a pivotal direction for future research and application.
2) The research paradigm is rapidly evolving from traditional experience-driven approaches to a deep integration of "experiment—theory—numerical simulation—artificial intelligence." Topics such as digital rock physics, transparent geology, intelligent drilling and completion, and the fusion of data and physical models for smart development underscored this transition. This clearly indicates that geo-energy research is entering a new phase propelled by both mechanistic understanding and data-driven insights.
3) The industry's focus is shifting from merely assessing technical feasibility to achieving green, low-carbon, safe, and efficient development. Topics such as CO_2 geological

sequestration and utilization, methane reduction, deep-earth disaster prevention, and environmental risk assessment have been prioritized. This signals that decarbonization goals have become deeply embedded in the geo-energy innovation and industrial upgrading.

Outlook. We firmly believe that the vitality of a platform comes from its scholars, its influence stems from academia, and its growth depends on the support of the entire community. The success of *AGER* would not have been possible without the trust and dedication of our editorial board, peer reviewers, authors, and readers. Likewise, the "International Geo-Energy Frontier Forum" owes its continuous evolution to the active participation and collective efforts of experts worldwide.

A prime example of this synergy occurred during the plenary sessions, where experts from Russia and representatives from the China University of Petroleum (Beijing) reached a consensus on collaborative research and joint applications for international projects in unconventional oil and gas development, *in-situ* hydrogen production, and artificial intelligence. In the dedicated session for graduate students, participants presented the core findings of their latest research. With on-site commentary provided by multiple mentors, including members of the *AGER* Editorial Board, many students found the session highly beneficial and expressed their intention to submit manuscripts to *AGER* in accordance with its high standards.

This is precisely the microcosm of the OJOF mode in action: breaking down barriers, fostering collaboration, and accelerating the path from research to publication. It is this unwavering support from the academic community that has empowered *AGER* and the forum to grow through exploration, serve academia with greater impact, and reach new heights through open exchange.

AGER and the "International Geo-Energy Frontier Forum" will continue to partner closely with all of you, taking bold strides in the serving academia, promoting innovation, and fostering cooperation. Together, we are committed to building a high-level academic community in the geo-energy field and establishing a world-class academic platform with global influence.

Acknowledgements

I sincerely acknowledge the support from two foundations through the 2024 Petroleum Higher Education Research Project of China Petroleum Education Society, "Research on a Service Platform for Sci-Tech Self-Reliance and Self-Strengthening at Higher Levels in the Geo-Energy Field under the Context of Chinese-style Modernization" (No. CPES20240102), and the 2024 Higher Education Scientific Research Planning Project of China Association of Higher Education, "Exploration of Diversified International Research Cooperation Models under the 'One-Journal-One-Forum' Mode in the New Era" (No. 24KJ0303), which were crucial in the conceptualization and successful implementation of the "one-journal-one-forum" mode.

As the founder and Editor-in-Chief of *AGER* and the Chair of the Organizing Committee of "International Geo-Energy Frontier Forum," I extend my heartfelt thanks to *AGER*'s Editorial Board, authors, reviewers, and readers, as well as the forum's Steering Committee, Academic Committee, dedicated Organizing Committee and volunteers, and my own Reservoir Petrophysics and Fluids Flow Team. Collectively, your enduring support has been instrumental in establishing a highly promising journal and a leading exchange platform in the multidisciplinary field of geosciences.

Conflict of interest

The author declares no competing interest.

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