



INTERNATIONAL UNION OF GEOLOGICAL SCIENCES

2024 REPORT

**Fostering a global voice for the geosciences
In association with ISC and UNESCO**





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WHAT IS IUGS?

The International Union of Geological Sciences (IUGS) is a non-political, non-governmental, non-profit organization. Founded in 1961, it is one of the largest member organizations of the International Science Council (ISC) and one of the world's largest scientific organizations. It has a global membership of about a million earth scientists through more than 120 member countries, which are represented through Adhering Organizations - commonly academies, geological surveys, or geological societies. In addition more than 60 international organizations are affiliated with IUGS.

IUGS promotes development of the earth sciences by supporting broad-based scientific activities. It promotes international collaboration in establishing global geostandards. It strengthens public awareness of geosciences and advances geoscience education. IUGS organizes international projects and meetings, sponsors symposia and scientific field visits, produces publications, and addresses issues of standardization. Topics range from fundamental earth science research to economic and industrial applications and extend to social, educational, environmental and developmental issues.

CORE VALUES

The core values of IUGS can be expressed through the acronym "RISE," which signifies the growing presence of geosciences in modern society: A Rejuvenated, modern, and agile union that operates based on Inclusivity, Sustainability, and Ethical professional practices.

- A union that promotes innovative research in geoscience and beyond, aligned with the International Science Council, upholds ethical standards, and promotes inclusivity, all while remaining dynamic and forward-thinking in shaping the future of geoscience.
- A union that advocates for and supports the next generation of geoscientists worldwide and acts as a global voice for geosciences and their community.

VISION



OBJECTIVES

Unite	the global geoscience community to enhance the development of Earth and Planetary Sciences by supporting relevant, broad-based scientific studies.
Apply	the results of these studies to support the environment, wise use of natural resources and sustainably for the benefit of society in achieving economic, cultural and social goals.
Strengthen	global and public awareness of geosciences and geoscientific education.
Promote	inclusivity by involving geoscientists in international geoscience activities, regardless of race, nationality, language, political stance, or gender.
Encourage	global interaction among geoscientists to meet the geoscientific needs of any country or region while representing the geosciences in international scientific and cultural organizations.

- To inspire the global geoscience community and serve humanity through innovation and collaboration.
- To foster a culture of inclusivity and diversity within the Union, emphasising the importance of representation from all regions, genders and backgrounds, and to commit to ethical decision-making in every aspect of the Union.
- To enhance informed decision-making and sustainable practices in the development and management of our natural resources.
- To foster strong collaborations with other geounions and partners in the Global South to improve knowledge exchange and technology transfer as well as to strengthen the long-term, fruitful cooperation with UNESCO through IGCP, ILP, and other potential initiatives.
- To engage with IUGS Council members to stimulate dialogue and interest in the Union's strategic agenda and activities.

MISSION

GOVERNING THE UNION

The Council

Meets every four years at the International Geological Congress

Representatives appointed by the Adhering Organizations from the active IUGS member countries/regions

Inactive or non-member countries/regions may send observers (without voting rights) to Council meetings

Executive Committee (2024–2028)

Bureau

Day-to-day decisions and responsibilities

Secretary General



Dr. Ludwig Stroink

President



Prof. Hassina Mouri

Treasurer



Emeritus Prof. David Cohen

Vice Presidents



Prof. Marko Komac



Prof. Maria Rose Petrizzo

Councilors (2022–2026)



Prof. Lola Pereira



Prof. Yamirka Rojas-Agramonte

Councilors (2024–2028)



Dr. Farnoosh Farjandi



Dr. Wei Jun Zhao

Prof. Hassina Mouri



IUGS President (2024–2028)

Dear council members,
Dear colleagues, friends, and supporters of
Geosciences and IUGS,

In this era of significant global changes, characterised by interconnected and complex geo-environmental challenges, rising geopolitical conflicts, and the need for critical raw materials, the safety of our communities and ecosystems faces increasing threats. These factors hinder progress toward sustainable development goals, increase poverty levels, and exacerbate inequalities, particularly in developing countries and densely populated areas. Today's issues are complex and interconnected, requiring coordinated strategies and innovative solutions. Climate change, earthquakes, air pollution, land, soil, and water degradation, floods, droughts, and resource depletion are just some of the critical problems we must address.

Therefore, our role as geoscientists, and through the International Union of Geological Sciences and its constituent groups, has never been more crucial. We must tackle these challenges with creativity, innovation, and focused research efforts and initiatives. As a global organisation in the geological sciences, we have a duty to our communities to apply our expertise to prevent and minimise potential geo-environmental disasters. However, effective engagement with our environment and communities requires integrating Earth science research with innovative technologies. The Fourth Industrial

Revolution, big data, and artificial intelligence are not just buzzwords but vital tools that can enhance our understanding of Earth's systems. By leveraging these tools, we can detect, predict, and gain deeper insights into the interactions among different components of our natural geo-environment.

The year 2024 has been marked by historical milestones, innovative initiatives, and strategic plans for the International Union of Geological Sciences to tackle the challenges our planet and communities face, and I am excited to share some highlights with you.

A new IUGS Executive Committee was elected for the 2024-2028 term, marking an exciting new chapter in the Union's leadership. This milestone was supported by a diverse and balanced Executive Committee, with gender equality and representation from around the world—including Africa, Europe, Asia, North America, Latin America and the Caribbean, and Oceania—highlighting the international scope of IUGS.

Since our election, we have been working tirelessly to promote progress within the Union and to consider how it can help address various challenges we face. We have committed to advancing IUGS's goals and strengthening its role in the geoscience community. To explore potential solutions and maintain a bold and impactful agenda, we have dedicated our time so far to identifying the challenges faced by the



Union and the broader geoscience community.

One of our main strategic goals during our term in office is to streamline and modernise the Union, improve its focus, and coordinate efforts to prevent overlapping activities. The primary aim is to optimise resources, including expertise and funding. To accomplish this, we have begun reviewing the objectives and activities of the Union's various constituent groups to identify opportunities and introduce new initiatives that align with modern geosciences, societal needs, the International Science Council's mission, and the United Nations Sustainable Development Goals. At the same time, we are ensuring that the importance of basic research in geology, which supports applied research, remains unchanged. We also recognise the importance of multi- and cross-disciplinary research in addressing the complex problems our planet currently faces. Therefore, we aim to promote and support innovative research initiatives through collaboration with other Geo-Unions and beyond. Furthermore, we have initiated efforts to strengthen cooperation with key partners, including the International Science Council (ISC) and UNESCO, through the International Geoscience and Geopark Program (IGGP).

To increase IUGS's visibility, motivate, and re-engage its members worldwide, several visits and discussions about global partnerships have already taken place, with many more scheduled during our term in office. This demonstrates IUGS's dedication to promoting international collaboration and inclusivity, which are core

elements of our strategic plans. As a result, several countries have already expressed interest in rejoining the Union.

It is also crucial to recognise that promoting IUGS is vital in areas where it is less known. Therefore, as part of our strategic plans, we intend to host events in remote regions, including parts of Latin America and Central, East, and Southeast Asia, to raise the Union's profile, highlight the importance of geosciences, and connect with local experts.

Furthermore, given the current economic situation, funding research remains a major challenge, especially in developing countries. The Union has mainly relied on membership dues so far, which are insufficient to meet its needs. Therefore, we plan to seek funding from potential sponsors to strengthen the Union's financial position, enabling support for new initiatives, particularly for young researchers.

In conclusion, on behalf of the IUGS Executive Committee, I would like to thank all our members, partners, and constituent groups. Your unwavering support, scientific contributions, and tireless efforts have been crucial in advancing geoscience for the benefit of society. I would also like to express my heartfelt gratitude to the IUGS Secretariat team for their daily dedication and support in ensuring the smooth operation of our activities, and to the Chinese government for their kind and generous support of our Secretariat office in Beijing.

Dr. Ludwig Stroink



IUGS Secretary General (2024 - 2028)

The year 2024 has been a year of historic milestones, visionary initiatives, and collective progress for the IUGS. The year started with the 79th meeting of the IUGS Executive Committee, held in Nairobi from 19-21. February 2024, marking the first time in IUGS's history that an ordinary executive meeting took place on the African continent. This meeting was of particular importance, as it was intended to be the kickoff for a future, more substantial commitment by the IUGS to engage with geoscience organisations across Africa and to tackle pressing challenges where geoscience and the IUGS could make a meaningful difference.


The EC meeting was followed by the "IUGS Geoscience in Africa Event", where the Executive, many affiliated members, leaders of IUGS Commissions, Task Groups, and Joint Programs, and 20+ geoscientists representing 13 African countries met over two days. IUGS, the Geological Society of Africa, the Geological Society of Kenya, and the Mineral Africa Development Organization organized the meeting. It resulted in the following "Ten Actions Plan for African Geoscience, TAP":

1. A strategy for fundraising opportunities, outreach, and education in geoscience
2. Increase IUGS presence and visibility in Africa while promoting gender balance, diversity, and inclusion
3. A common strategy for education and outreach in geosciences

4. Improve Geological knowledge and Increase the Awareness of Geological Sciences
5. IUGS sponsored research laboratories with partners
6. Science Diplomacy - IUGS with key African geoscientists as advocates to inform and influence policymakers and society
7. Decarbonisation of future energy resources
8. Support Geoscience Mapping Programs and initiatives in Africa
9. Recognize the need to preserve and enhance African geodata
10. Develop Research and Awareness in Geology for Health

The IUGS will design, implement, and support these actions in collaboration with the Geological Society of Africa (GSAf), the Organisation of African Geological Surveys (OAGS), the Minerals Africa Development Institution (MADI), local African Geological Societies, and other international organisations including UNESCO, the European Geosciences Union (EGU), and the Geological Society of America (GSA). For more information, please refer to: <https://www.iugs.org/post/iugs-ten-action-plan-for-africa-tap-for-africa>.

The highly successful collaboration with the Geological Society of London (GSL), which has been ongoing since 2003, was also continued. An updated MoU, reaffirming the publication agreement, was signed in April 2024. According to this agreement, GSL will publish geosci-



ence books of mutual interest, and all IUGS-funded activities (including Commissions, IGCP Projects, etc.) are expected to consider GSL for publication of their work.

Following the overwhelming success of the book “The First 100 IUGS Geological Heritage Sites” this success story continued with the publication of “[The Second 100 IUGS Geological Heritage Sites](#)”. It is the continuation of the spectacular collection of sites listed in the first volume, published in 2022. More than 400 experts and authors from 60 different nations participated. The list of sites is impressive, including eight new countries and covering geological disciplines that were less represented in the first book.

In addition, the “[First 55 IUGS Heritage Stones Book](#)” was published in 2024. An IUGS Heritage Stone is a natural stone that has been used in significant architecture and monuments, recognized as integral aspects of human culture. The historical use of natural stone can be a major contributor to understanding past civilizations and how different civilizations evolved over the millennia, from antiquity to the present. The “First 55 IUGS Heritage Stones” compiles the work of the “IUGS Subcommittee on Heritage Stones” during the last 10 years.

As expected, the year 2024 was dominated by the International Geological Congress (IGC), which took place from 25-31 August 2024 in Busan, Republic of Korea. The IGC is the main scientific forum of the International Union of Geological Sciences (IUGS), and it was the first in-person IGC after the pandemic. The following facts indicate the triumphant return of the international geoscience community:

- 6413 delegates from 99 countries

- 19 early career scientists were supported as part of an initiative to nurture young talent in the field of geosciences.
- 1649 oral presentations
- 1329 poster presentations
- 14 business meetings, 14 workshops, and short courses
- 317 delegates participated in 17 pre- and post-Congress field trips
- Approximately \$2 million was spent on the GeoHost support program
- 163 representatives from sponsoring and partnering companies, as well as exhibition participants
- The GeoExpo attracted some 83 exhibitors occupying 195 booths and 15,500 square metres.

At the 5th Ordinary Session of the IUGS-IGC Council during the 37th IGC in Busan, [a new IUGS Executive Committee \(2024-2028\)](#) was elected. Elected president became Prof. Hassina Mouri, the first female and African geoscientist to hold this role in IUGS’s 63-year history. During the Council meeting, delegates were also requested to decide on the venue for the 38th IGC. Three high-profile locations presented themselves to the Council: Calgary, Canada; Glasgow, Scotland; and Melbourne, Australia. After very convincing and, in some cases, spectacular presentations of their bids, Calgary came out clearly ahead with 83 of the 156 votes cast ([38th IGC Calgary](#)).

Immediately after its election, the EC began its activities. In September 2024, President Hassina Mouri visited the UNESCO Chairs Forum on Higher Education in Addis Ababa, Ethiopia, and met with Dr. Abdoulaye Saïfou, Chief of the Education Sector at the UNESCO Liaison Office to the African Union and UNECA, to discuss potential cooperation between IUGS and the



African Union.

In October 2024, Prof. Mouri visited China to attend a series of events and meetings at the invitation of the Ministry of Natural Resources. Highlights included discussions with Dr. Li Jinfa, Vice Minister of Natural Resources and President of the China Geological Survey, and Mr. Chen Jiachang, Vice Minister of Science and Technology. She delivered a keynote address at the opening ceremony of the International Symposium on Deep Earth Exploration and Practice (DEEP-2024) in Beijing. She visited several institutions and research centers, including the Ministry of Natural Resources Labs, the Beijing SHRIMP Center, the Chinese Academy of Geological Sciences (CAGS), and the IUGS Secretariat office. She also met with members of the Association of Women Scientists in Earth Sciences at Nanjing University and researchers involved in the Deep-Time Digital Earth (DDE) program. The visit concluded with meaningful dialogues on geo-heritage preservation at the Tianzhusan UNESCO Global Geopark.

Beyond the President's impactful engagements in China, IUGS representatives delivered keynote addresses (virtually) at several significant international conferences. Vice President M.R. Petrizzo represented IUGS at the Symposium on Submarine Geohazards and Offshore Wind Development hosted by the Science Council of Japan in Tokyo. Vice President M. Ko-mac brought IUGS's vision to the 12th International Conference on the Geology of Africa (ICGA-12) at Assiut University, Egypt and represented IUGS at the 57th EuroGeoSurveys Directors' Workshop and a connected Experts Dialogues in Brussels.

Under the guidance of the IUGS Bureau and Executive Committee, the Secretariat has maintained professional and efficient operation in line with its duties, and played an active role of communication and coordination in the scientific activities and daily administration of IUGS. The Permanent Secretariat is led by Mr. Ma Yongzheng (Director). Staff members include: Ms. Situ Yu, Ms. Gu Yanfei, Ms. Xu Yaqi and Ms. Mu Langfeng.



Prof. David Cohen



Treasurer (2024–2028)

General comments

On behalf of the IUGS the Bureau conveys deep thanks to Prof Kitazato for his excellent work as Treasurer and other contributions to the IUGS as a member of the Bureau.

In 2024, administration expenses account for ~14% of total expenditure and mainly relate to the operations of the Executive Committee and maintenance of the offices of the Secretariat and Treasurer. Expenditure has grown at an average rate of around 24% per year and is a result of increased funding for scientific commissions and related activities. This increase is partly underpinned by the substantial reserves held by the IUGS in the mid-2010s.

Income from membership subscriptions has remained at around USD 550k. Over 95% of the income to the IUGS is obtained from membership subscriptions, co-contributions by UNESCO to IGCP projects, and the quadrennial capitation fees delivered by the IGCs.

The expenditure of the IUGS continues to fall into three main categories – (i) fixed costs in running the offices, membership of the ISC and publication of Episodes, (ii) activities of the EC,

for which travel is the main component and (iii) the discretionary expenditure on the IUGS Commissions, Task Groups, IGCP and other geoscientific programs, with this category being the major outlay.

Treasurer's Statement

I confirm that:

- i. The financial statements in this report provide a materially accurate state of the finances of the IUGS and the income and expenditure for 2024;
- ii. The Report on Factual Findings of Agreed-Upon Procedures by Mr K. Tanaka (CPA) confirms the veracity of the IUGS financial statements;
- iii. There are no extraordinary matters that substantially affect the financial position of the IUGS since 31 Dec 2024; and
- iv. The IUGS continues to be in a position to pay all of its debts as and when they become due.

A handwritten signature in black ink that reads "David Cohen".

Em. Prof. David Cohen FRSN FAIG FAAG

IUGS Treasurer

Summary Financial Statement

STATEMENT OF SURPLUS OR LOSS FOR THE YEAR ENDED 31 DEC 2024

	Note 1	2024 \$US	2023 \$US
Revenue and other income			
Revenue from Member Fees		374,956	318,118
Contributions by UNESCO		165,526	205,302
Revenue from IGC capitation fees		0	176,993
Revenue from books and journal		15	4,637
Interest on bank accounts		98	113
Other income		0	0
		540,595	705,163
Less: expenses			
Contributions to IGCP and other joint programs		254,186	287,019
Contrib. to IUGS Commissions, Task Gps, Initiatives & affiliates		292,673	243,968
Membership of the IGC		26,810	30,737
IUGS committees, events, receptions	2	64,358	11,506
Episodes		28,000	28,000
IUGS secretariat, treasurer's office and EC meetings		93,377	79,100
Currency exchange, bank fees and audit		12,934	13,334
Other expenses		764	51,405
		773,101	745,070
Surplus or loss from operating activities		-232,506	-39,908
Currency exchange gain/loss with no cash-out	8	-34,895	5,030
Adjustment on 36IGC income (repayments)		0	-176,993
Total comprehensive income		-267,401	-211,871

STATEMENT OF FINANCIAL POSITION AS AT 31 DEC 2024

Current assets			
Cash and cash equivalents		1,354,471	1,621,012
Receivables and other assets		0	0
Non-current assets		0	0
Total assets		1,354,471	1,621,012
Total liabilities		0	0
Net assets		1,354,471	1,621,012
Equity			
Reserves		1,621,012	1,832,883
Retained surplus or loss		-267,401	-211,871
Total equity		1,353,611	1,621,012

Notes

1. From April 2025, IUGS accounts are administered by IUGS Australia Incorporated under an MOU
2. Includes receptions and awards ceremonies at the 37th IGC, Busan
3. As a not-for-profit organisation and under IUGS Statutes, no distribution to members is allowed

Financing of the IGCP in 2024

IGCP N°	TITLE	Period	Theme	Council Recommendation	Budget (\$)	Item financed	
						IUGS (\$)	UNESCO (\$)
732	LANGUAGE of the Anthropocene	2021-26	Global change	Continue as planned	12,000		12,000
725	Forecasting coastal change	2021-26	Global change	Continue as planned	12,000		12,000
751	4GEON: Geoparks' People of Four Continents Connected through Playful Earth Heritage Education	2022-26	Spec. / Geoheritage	Continue as planned	12,000		12,000
636*	Geothermal resources for energy transition: direct uses and renewable base-load power around the globe.	2020-26	Earth Resources	Continue as planned	12,000	12,000	
735	Rocks and the Rise of Ordovician Life (Rocks n' ROL)	2021-26	Global change	Continue as planned	12,000	12,000	
700	Carbonate Build-ups in South East Asia	2020-25	Global Change	Continue as planned	12,000	12,000	
696	The Fate of Mercury Used in Artisanal and Small-Scale Gold Mining (ASGM) in Amazonian Ecosystems	2020-25	Earth Resources	Continue as planned	12,000		12,000
672	Himalayan glaciers and risks to local communities	2018-24	Geohazards	Continue as planned	12,000		12,000
722	Development Minerals workshop in the Pacific	2021-26	Earth resources	Continue as planned	12,000	12,000	
730	Hydrogeological Significance of Mediterranean Geoparks	2021-24	Hydrogeology	Continue as planned	10,000		10,000
740	West Makran Paleo-tsunami Investigation	2021-24	Geohazards	Continue as planned	10,000	10,000	
765	Capacity building networks and improved methodologies for incr. interoperability mapping and monitoring C stocks	2022-26	Earth Resources	Continue with condition	10,000	10,000	
767	E-DOOR: Environmental dynamics of the volcanic region of western Rwanda: An integrated study	2023-25	Earth Resources	Continue with condition	10,000		10,000
692	Geoheritage for Geohazard Resilience	2019-24	Geohazards	Continue as planned	10,000		10,000
739	The Mesozoic-Palaeogene hypothermal events	2021-25	Global change	Continue as planned	7,500	7,500	
683	Pre-Atlantic geological connections among northwest Africa, Iberia and eastern North America: Implications for continental configurations and economic resources	2020-24	Geodynamics	Continue as planned	7,500	7,500	
710	Western Tethys meets Eastern Tethys – geodynamical, paleoceanographical and paleobiogeographical events	2020-24	Geodynamics	Continue as planned	7,500		7,500
679	Cretaceous earth dynamics and climate in Asia	2019-26	Global Change	Continue as planned	7,500	7,500	
669	Identification of seismogenic faults in populated areas of Latin America and its incorporation into seismic hazard assessment	2020-25	Geohazards	Continue as planned	7,500		7,500
731	IUGS Geological Heritage sites	2021-24	Geoheritage for Sustainable Dev'p	Continue with add'n year of funding	7,500		7,500
637*	HERitage STONES Recognition: A Step Forward (HerSTONES)	2020-25	Earth Resources	Continue with condition	7,500		7,500
675	Sandstone-Type Uranium Deposits	2019-25	Earth Resources	Continue as planned	5,500	None requested	
704	Carbon in Peat on Earth through Time: Tropical peatland processes and ecosystem services	2020-25	Global Change	Continue with condition	5,500	5,500	
705	Building Global Capacity for the Observation of Volcanic and Atmospheric Change	2020-25	Geohazards	Continue with condition	5,500	5,500	
770	Courses (RESTORE 3)	2024-24	Earth Resources	new project for 2024	12,500		12,500
Total 2024 Budget (\$)					239,500	101,500	132,500
						IUGS	UNESCO

Note: UNESCO reimburses a portion of the funding provided to IGCP projects, based on Implementation Partners Agreement upon submission of payment report by IUGS.

Mr. MA Yongzheng



PERMANENT SECRETARIAT

The IUGS Secretariat is hosted within the premises of the Chinese Academy of Geological Sciences (CAGS) under the China Geological Survey, the Ministry of Natural Resources of China. Since the relocation of the Secretariat to Beijing in December 2012, the Chinese government has been providing tremendous and stable financial and logistical support for the smooth operation of the Secretariat.

Under the guidance of the IUGS Bureau and Executive Committee, the Secretariat has maintained professional and efficient operation in line with its duties, and played an active role in the communication and coordination of the scientific activities and daily administration of IUGS.

In 2024, the Secretariat assisted in the organization of several regular administrative meetings, including the 79th EC Meeting and IUGS Geoscience for Africa Event (Nairobi, Kenya on 19-23 February, 2024), 80th EC Meeting (Busan, South Korea, August 25th, 2024), EC Virtual Progress Meetings (May 24 and December 4, 2024), Virtual Bureau Meetings (October 15, November 19 and December 17, 2024) and Nominating Committee Meeting (Zhuhai, China on 19 March, 2024). The Secretariat was also responsible for the preparation of the 81st EC meeting (Paris, France on March 17-20, 2025).

The Fifth Ordinary Session of IUGS-IGC Council

was held on August 28-29th, 2024 during the 37th International Geological Congress (IGC). The Secretariat coordinated the 5th Ordinary Session of the IUGS-IGC Council, including inviting representatives from Adhering Organizations, Constituent Groups and Affiliated Organizations, preparing meeting documents, setting up online registration system, designing meeting manual and ballots, as well as fulfilling on-site organization and Minutes taking. The Secretariat pushed forward the election of IUGS new EC and NC and the host of the 38th IGC, calling for the Expression of Interest to host the 38th IGC, 2028, the Nominations of the IUGS Executive Committee 2024-2028 and IUGS Nominating Committee 2024-2028. The Secretariat also distributed the call for applications for support from the IUGS Hutchison Young Scientists Foundation to attend the 37th IGC. The Secretariat prepared an IUGS booth and an IUGS Reception at the 37th IGC.

To promote IUGS scientific activities and achievements, the Secretariat set up IUGS booth at exhibits of several international events, including 2024 annual meeting of EGU, 37th International Geological Congress, CCOP Annual Session 2024 and the AGU Fall Meeting 2024. IUGS publications, IGCP projects and the latest version of the ICS Chronostratigraphic Chart attracted a number of meeting participants. The 37th International Geological Congress was also promoted at the IUGS booth. The Secretariat also designed a new

batch of promotional gifts that are distributed at the exhibits.

The Secretariat completed the following work related to the outreach and publications: designing and formatting the 2023 IUGS Annual Report; distributing E-Bulletins monthly to over 14,000 recipients. The Secretariat updated the IUGS Contact Database on a timely basis and assisted the EC in membership maintenance to strengthen links with IUGS bodies.

The Secretariat would like to thank the IUGS Executive Committee members for their valuable guidance and great support to the Secretariat for its smooth operation during the past year. The Secretariat staff members will continue full devotion to the Secretariat duties with concerted efforts to actively support the work of the IUGS Bureau and Executive Committee and the broad-ranging scientific activities of IUGS.



A series of IUGS activities at the 37th IGC in Busan, South Korea



IUGS Booth at EGU 2024 and AGU 2024

WHAT IS IUGS?
The International Union of Geological Sciences (IUGS), founded in 1961, is one of the world's largest scientific organizations. It encourages international co-operation and participation in the earth sciences in relation to human welfare and is a member of the International Science Council (ISC). Membership is open to countries or defined regions. IUGS has over 220 members representing over a million geoscientists.
IUGS works through topic specific Commissions, Task Groups, and Initiatives as well as Joint Programmes with other organizations.

THE UNION'S AIMS
IUGS aims to promote development of the Earth sciences through the support of broad-based scientific studies relevant to the entire Earth system; to apply the results of these and other studies to preserving Earth's natural environment, using all natural resources wisely and improving the prosperity of nations and the quality of human life; and to strengthen public awareness of geology and advance geological education in the widest sense.

GOVERNING THE UNION

The Council
Meets every four years at the International Geological Congress. Representatives appointed by the Adhering Organizations from the active IUGS member countries/regions. Inactive or non-member countries/regions may send observers (without voting rights) to Council meetings.

The Executive Committee
Consisting of 30 distinguished Earth scientists from around the world, together with the Permanent Secretariat based in Beijing, IUGS Executive Committee ensures that the Union operates as a professional scientific body and the actions approved by the IUGS Council are implemented.

IUGS PUBLICATIONS

Episodes
Episodes is the flagship quarterly international science journal of the IUGS. It contains original scientific research and review papers of global and regional significance and IUGS reports. A special issue is prepared for each International Geological Congress. Thematic issues appear regularly. The Geological Society of Korea provides editorial and production support through their office in Seoul. All issues can be accessed without charge at <http://www.episodes.org/main.html>.

IUGS Books
IUGS has a special publishing agreement with the Geological Society of London (GSL). Under this agreement, the results of scientific work completed by the various commissions and agencies of IUGS and books arising from sessions at International Geological Congresses are published under the GSL Special Publication series. For more information about publishing opportunities see the IUGS website and www.geotitles.org.uk.

THE INTERNATIONAL GEOSCIENCE PROGRAMME (IGCP)

The International Geoscience Programme (IGCP), carried out in collaboration with the International Union of Geological Sciences (IUGS), writes the six fundamental themes:

- Global change
- Geohazards
- Earth resources
- Geodynamics
- Geoheritage
- Hydrogeology

to promote the United Nations 2030 Sustainable Development Goals (SDGs).

As the only United Nations organization with a mandate to support research and capacity building in geology, UNESCO enters researchers from around the world to carry out research that not only fills knowledge gaps, but also "capacity gaps", through its strong focus on capacity-building projects in the Earth sciences. IGCP prioritizes meaningful engagement of women, youth, and developing countries, notably in Africa and Small Island Developing States. This commitment ensures diverse perspectives enrich collaborative efforts, enhancing global geoscience initiatives.

IUGS Council members during their visit to UNESCO HQ in Paris, to conduct the 8th session of its meeting.

Members of the panel of the IGCP's 50th Anniversary Conference, composed of government, private sector and academic representatives.

IUGS Geoscience in Africa Event
22-23 February 2024
Nairobi, Kenya

The IUGS Executive, its affiliate members, and a group of geoscientists representing 11 African countries, met in Nairobi in February 2024 and developed the following ten actions for African Geosciences. The IUGS will design, implement, and support these actions in collaboration with The Geological Society of Africa (GSA), The Organisation of African Geological Surveys (OAGS), The Ministry of Africa Development Institution (MADI), local African Geological Societies, and other international organizations including UNESCO, The European Geosciences Union (EGU) and The Geological Society of America (GSA).

IUGS Ten Action Plan for Africa "TAP for Africa"

1. A strategy for fundraising opportunities, outreach and education in geoscience
2. Increase IUGS presence and visibility in Africa while promoting gender balance, diversity and inclusion
3. A common strategy for education and outreach in geosciences
4. Improve geological knowledge and increase the awareness of geological sciences
5. IUGS sponsored research labs with partners
6. Science diplomacy - IUGS with key African geoscientists as an advocate to inform and influence policy makers and society
7. Decarbonisation of future energy resources - Embrace the green energy transition in Africa
8. Support Geoscience mapping programs and initiatives in Africa
9. Recognize the need to preserve and enhance African geodata
10. Develop research and awareness in Geology for Health

Newly designed Posters displayed at IUGS booth



2024 HIGHLIGHTS

JANUARY 2024

On January 29, 2024, a new chapter authored by A. Demetriades titled Applied Geochemistry – The How and Why (Chapter 7.1 in Treatise on Geochemistry, 3rd Edition, Elsevier) was published. (The chapter explores methodological foundations in geochemistry.) The text was reviewed by David B. Smith, USGS and IUGS Commission Steering Committee.

FEBRUARY 2024

On 13 February, Dr Laurance Donnelly (Chair, IUGS-IFG) was invited to University of Bradford, School of Archaeological and Forensic Sciences (SAFS), UK, to deliver a presentation on forensic geology including crime scene examination, geological trace evidence, searches for burials, and geological methods for the mitigation of crimes in the mining, minerals and metals industries.

The IUGS Executive Committee met in Nairobi, Kenya on February 19-21 2024. The Executive, its affiliate members, and a group of geoscientists representing 13 African countries, developed the Ten Action Plan for African Geoscience. The event was co-organized with the Geological Society of Africa, the Geological Society of Kenya, and the Minerals Africa Development Organization. Following the Executive Committee meeting, the IUGS hosted the Geoscience in Africa Event on February 22-23, where African Geological Surveys and related institutions shared presentations.




Photo: IUGS- Africa event in Nairobi, Kenya

From February 28 to March 1, the MSWG held its annual meeting at the Royal Canadian Military Institute in Toronto, Canada. Dr. Laurance Donnelly (IUGS-IFG) presented on mineral provenance determination and traceability in international mineral supply chains.

MARCH 2024

On March 1, 2024, Alecos Demetriades, Chair of CGGB's Sampling Committee, presented 'GEMAS: Geochemistry of Agricultural and Grazing land soil for healthy food production in Europe' as part of the Society of Environmental Geochemistry and Health's Fellows Virtual Seminars. The importance of European black soil regions was emphasised, especially that of Ukraine, which is renowned as the breadbasket of Europe that needs to be protected. The project coordinator, Prof. Daming Wang (Shenyang Geological Survey of China), received in March 2024 a congratulations letter from the IGCP Secretariat for the successful completion of IGCP 665 (co-signed by the IUGS President, Prof. John Ludden).

The IUGS Nominating Committee had its fifth



Inclusion, and Accessibility (DEIA) of the IUGS Commission on Geoethics released an Action Plan on Diversity, Equity, Inclusion, and Accessibility for the IUGS that was approved by the IUGS Executive Committee. This document presents a range of recommendations divided into primary and secondary sections, accompanied by fundamental initiatives and a list of resources for the IUGS. Its purpose is to raise awareness about diversity, equity, inclusion, and accessibility, aiming to shape policies and practices that foster broader participation and representation across the various IUGS constituent groups.

Between April and June, an exhibition at the Museum of Geology of UNAM in Mexico City celebrated the legacy of revolutionary geologist and engineer Maria Fernanda Campa Uranga, showcasing her personal archives and scientific heritage. This collection, donated to the Historical Archive of the Geologists of Mexico, offers rich insights into past and present geoscientific inquiry.

MAY 2024

An in-person meeting of the Organization of Scientific Area Committees for Forensic Science (OSAC) Group was held on May 12 to 14 2024, at the Hyatt Regency, Jacksonville, Florida, USA. The OSAC Geo trace materials sub group met as part of the wider OSAC organisation to discuss key areas of importance for geological materials in criminal investigations and held wider discussions with the Trace working group.

Alecos Demetriades, Chair of CGGB's Sampling Committee, delivered a presentation titled "EGG: European Groundwater Geochemistry" on May 17 during the SEGH Fellows Virtual Seminars. Critical global water issues were

highlighted, including the scarcity of fresh water, its extensive use in agriculture, and the dire consequences of limited access to clean water in developing countries.


From May 21 to 23, Laurance Donnelly, Chair of IUGS-IFG, participated in the 11th World Conference on Sampling and Blending in Johannesburg, South Africa. His talk focused on the challenges of forensic geological sampling at crime scenes and in law enforcement investigations, providing opportunities to develop forensic geology sampling practices aligning practices with the Theory of Sampling.

From May 28 to 31, Laurance Donnelly attended the 9th China International New Energy Industry Expo in Jiangsu Province, China. His presentation addressed the nexus between battery minerals, conflict minerals, and associated crimes, under the event theme "Empowering a Sustainable Future with Dual Carbon Intelligence."

JUNE 2024

Martina Kölbl-Ebert, INHIGEO Secretary General, received the Sue Tyler Friedman Medal from the Geological Society of London, in recognition of her outstanding contributions to the history of geology. This award is for distinguished contributions to History of Geoscience and is not confined to those with a geoscience background or to Fellows of the Society, and is awarded to an individual of any nationality.

The dedication ceremonies for the Hauterivian and Albian Global Boundary Stratotype Section and Point (GSSP) were held on June 29 in Arnayon and La Charce, Southeastern France. These were organized by the International



Subcommission on Cretaceous Stratigraphy, with support from Stéphane Reboulet (University of Lyon) and local communities.

The International Commission on Geoheritage (ICG) continued its mission of recognizing significant geological sites, stones, and collections. The Subcommission on Heritage Stones has designated 55 stones as IUGS Heritage Stones since 2016.

JULY 2024

The IUGS Commission on Global Geochemical Baselines (CGGB) hosted a 4-hour workshop in conjunction with the XI National Geological Congress of Spain, held in the city of Avila, from July 1 to 6. The workshop was attended by 12 professionals from different universities, surveys, institutes and also postgraduate students. Standard global sampling methods, data levelling techniques, and quality control practices for generating consistent and comparable geochemical maps were shared.

On July 13, a new book titled *Geoethics for the Future: Facing Global Challenge*, edited by Silvia Peppoloni and Giuseppe Di Capua, was published by Elsevier.

On July 16, Paul Cleverley represented the Commission on Geoethics (CG) at the IUGS-sponsored meeting on Large Language Models in the Geological Sciences, held at the Geological Society of London (GSL), and presented on “Geosciences and Artificial Intelligence”.

IAPG-New Zealand was officially established as the 36th national section of the International Association for Promoting Geoethics (IAPG). It also functions as the Geoethics Special Interest

Group within the Geoscience Society of New Zealand (GSNZ).

AUGUST 2024

COGE Vice President Susanna Occhipinti, International Relations Subcommission Leader Miguel Cerna Cano (Philippines), and Regular Member Young-Shin Park (South Korea) participated in the 2024 International Earth Science Olympiad (IESO) held in Beijing, China, from August 7-17.

The 37th International Geological Congress (IGC 2024) convened in Busan, South Korea, from August 25-31 under the theme “The Great Travellers: Voyages to the Unifying Earth.” The event featured significant participation and sessions from IUGS and its constituent groups. The Second 100 IUGS Geological heritage Sites were announced, the book of the First 55 Heritage Stones was presented, and the 11 Geo-collection were designated for the first time. The IUGS designation programs are becoming a global reference. More than 1,000 experts from all over the world have participated in this unique endeavor. The IUGS Initiative on Forensic Geology (IFG) also co-organized a joint Medical and Forensic Geology session during IGC, which took place over three sub-sessions on August 26-27.

At the 49th INHIGEO Annual Symposium, held in conjunction with IGC 2024, the INHIGEO Early Career Award was presented by INHIGEO President Ezio Vaccari and Secretary-General Martina Kölbl-Ebert to Lucero Morelos Rodriguez (Mexico) during the INHIGEO Business Meeting on August 24 for her outstanding presentation on “Mexican Women in Paleontology and the Oil Industries.”

During the IUGS Council's 5th Ordinary Session on August 28, the International Commission on Geoheritage presented the achievements of the subcommission and the 'First 11' IUGS Geo-Collections were ratified.

Professor Hassina Mouri, who conducts research in Medical Geology at the University of Johannesburg (UJ), has been elected President of the IUGS. In her address to IUGS council members, partners, supporters, and the

global geoscience community, Professor Mouri emphasized the importance of collaborative knowledge sharing and innovation to ensure a sustainable future. She pledged to promote inclusivity, sustainability, and ethical professional practices, envisioning a rejuvenated Union that will rise. A newly elected Executive Committee members were also elected by the council during the General Assembly held in Busan on the August 29.



Photo: Members of the new Executive Committee


The Union extended heartfelt appreciation to Professor John Ludden, Past President, for his visionary leadership and contributions to elevating IUGS's global profile. Gratitude was also expressed to Secretary General Stanley Finney, Vice-President Daekyo Cheong, Treasurer Hiroshi Kitazato, and councillors including Jennifer McKinley, Ludwig Stroink, and the late C. Cónsole-Gonella for their dedicated service.

SEPTEMBER 2024

Kenneth L. Taylor, INHIGEO honorary member

for the USA, received the INHIGEO Vladimir V. Tikhomirov History of Geology Award in recognition of his outstanding original contributions to the history of Earth Sciences. The award was presented by INHIGEO President Ezio Vaccari on September 18 at the University of Oklahoma.

IUGS-IFG hosted a plenary workshop at the 41st International Symposium on Economic Crime on "Due Diligence of Gold; Challenges and Solution is the Global Supply Chain." The aim of the event was to draw attention to gold traceability, the Clean Gold Programme and



opportunities for collaboration with the financial sector to mitigate illegal gold trading crimes.

The Joint Annual Meeting of IUGS-CGGB, EuroGeoSurveys Geochemistry Expert Group (EGS-GEG), and Ibero-American Association of Geological and Mining Surveys (ASGMI-GEG), took place from September 19 to 21 in Prague. The meeting covered past activities, proposed future workshops, collaborative publications, and upcoming international conference sessions for 2025.

Silvia Fernanda de Mendonça Figueirôa, an INHIGEO member, received the 2024 Mary C. Rabbitt History and Philosophy Award from the Geological Society of America for her exceptional scholarly contributions, during the annual meeting held in Anaheim, California, September 22-25.

CGGB members participated in the FAO's hybrid Global Symposium on Soil Information and Data, which was held from September 25 to 28 at Nanjing, China. Five virtual presentations were delivered virtually, covering national soil geochemical data, soil geochemical mapping, threats to soil health, and methodology harmonization. As of October 29, 255 downloads of related materials were recorded from a dedicated pCloud folder.

OCTOBER 2024

The 4th Annual Meeting of IGCP 735 was held in Córdoba, Argentina, from October 14 to 21. The meeting featured three days of indoor scientific sessions and a four-day field excursion to the Argentine Precordillera. The scientific program included 43 presentations, four keynote lectures, and 3 workshops. Topics discussed focused on various aspects of Early Paleozoic

oceanic life radiations and associated Earth system changes.


The International Geoethics Day 2024 was celebrated on October 17 under the theme "Valuing Geosciences for the Public Good." Events were held in Bangladesh, India, Italy, New Zealand, Spain, and Turkey. Dr. Silvia Peppoloni, Chair of the IUGS Commission on Geoethics and President of the International Association for Promoting Geoethics, delivered a message to commemorate the 8th edition of the observance.

NOVEMBER 2024

The International Commission on Stratigraphy (ICS) continued its essential work in refining the Geological Time Scale. The International Chronostratigraphic Chart now includes several newly ratified "gold spikes," or Global Stratotype Section and Points (GSSPs), which mark stage boundaries approved by both subcommissions and the IUGS Executive Committee.

On November 13-14, the Geochemistry Expert Group of the Ibero-American Association of Geological and Mining Surveys (ASGMI-GEG) hosted the second webinar in the series "Geochemical Knowledge for Societal Use" under the title "Sample Preparation: Key Stage to Generate Geochemical Information." Professor Hassina Mouri was invited as a guest speaker.

The IUGS Commission on Geoethics established a new Task Group to address the emerging ethical implications of AI in Geosciences. The group's primary goal is to draft a White Paper offering insights and suggestions for the geoscience community. The International Association for Promoting Geoethics (IAPG)



approved a new organizational chart and established a new national section in Colombia.

The IUGS-IFG Chair, Dr Laurance Donnelly, collaborated with forensic archaeologists and forensic geophysicists at the University of Bradford, Department of Archaeology and Forensic Sciences, to develop and advance 'Dark Heritage Prospection'. This combines archaeological prospection and geoforensic search to reveal and preserve objects, features, sites and landscapes that might otherwise be forgotten with regards to the heritage of humanity.

DECEMBER 2024

The International Commission on the History of Geological Sciences (INHIGEO) launched its new website, which provides comprehensive information on the Commission's work, membership, affiliated organizations, annual symposia, webinars, sponsored conferences, interdisciplinary sessions, and related publications.

The IUGS Manual of Standard Methods for Establishing the Global Geochemical Reference Network was presented at the IUGS booth during the American Geophysical Union 2024 Annual Meeting (AGU2024), held from December 9 to 13 in Washington, D.C.

As 2024 drew to a close, Professor Hassina Mouri reflected with pride on the Union's achievements over the past year. Professor Mouri, together with the newly appointed and diverse Executive Committee, has worked diligently to strengthen global partnerships with key organizations including the International Science Council (ISC), UNESCO, and the International Geoscience Programme (IGCP). On behalf of the IUGS Executive Committee, she extended heartfelt gratitude to all members, partners, and the IUGS Secretariat for their steadfast support in advancing the geosciences. Professor Mouri concluded with best wishes to the global geoscience community for a joyful and prosperous 2025.



IUGS BODIES THE REAL LIFE OF THE UNION

The International Union of Geological Sciences promotes and encourages the study of geological problems, especially those of world-wide significance throughout the activities of IUGS Commissions, Task Groups and Initiatives.

At present IUGS gives special consideration to:

- International standards;
- Geoscience education;
- Geoscience information;
- Environmental management.

IUGS believes that it is of mutual benefit to establish close links with other organizations engaged in geosciences activities and especially those organizations whose work relates to some of the major activities of IUGS.

The list of currently active IUGS bodies testifies to these major aims of the Union. Links allowing description of the organization and activities of the IUGS bodies are provided on the IUGS website (www.iugs.org):

Scientific Commissions

Commission on Geoscience Education, Training & Technology Transfer (COGE)
International Commission on History of Geological Sciences (INHIGEO)
Commission for the Management and Application of Geoscience Information (CGI)
International Commission on Stratigraphy (ICS)
Commission on Tectonics and Structural Geology (TECTASK)
Commission on Global Geochemical Baselines (CGGB)
International Commission on GeoHeritage (ICG)
Commission on Geoethics (CG)

Task Groups

Task Group on Igneous Rocks (TGIR)
Task Group on Submarine Geohazards (TGSG)

Joint Programs

International Lithosphere Program (ILP)
International Geoscience Programme (IGCP)
Task Group on Isotope Geology and Geochronology (TGIG)

Initiative

Initiative on Forensic Geology (IFG)

Big Science Program

Deep-Time Digital Earth (DDE)

IUGS Website



Giuseppe Di Capua IUGS Webmaster

The webmaster's activities focused on maintaining the IUGS website's efficiency by regularly creating and updating pages. Throughout the year, the webmaster worked closely with the President, Secretary General, E-Bulletin editor, Chairs of IUGS bodies, and Secretariat staff to provide continuous support to the IUGS Executive Committee, bodies, and affiliated organizations. This collaboration ensured the promotion of events and activities organized or supported by the Union and its network.

In order to analyze website accesses and user behavior, the IUGS website was monitored using Google Analytics until 31 December 2022 and from 1 January 2023 through the Analytics & Reports tool provided by WIX (the web hosting service provider).

The access statistics for the years 2020–2024 (five years), covering the period from January 1 to December 31, are presented in Table 1. The data clearly indicate a consistent number

of unique visitors in 2024 compared to 2023. Furthermore, there has been a notable surge in the number of sessions (defined as visits to the website, with a session ending after 30 minutes of inactivity) and page views, starting in 2022 and persisting into 2024. This increase can be attributed to the active promotion of the IUGS image through activities organized for the sixtieth anniversary of the Union's foundation in 2022. These efforts renewed interest in IUGS activities throughout 2023 and were further boosted by the great attention surrounding the International Geological Congress (IGC) in 2024.

In 2024, an average of 128 visitors, 176 sessions, and 324 page views per day were recorded. Table 2 shows the percentage increase in unique visitors, sessions, page views, and average pages per session from 2023 to 2024. Additionally, there was a slight decrease in the average time on page. Finally, the bounce rate in 2024 showed a small increase compared to 2023.

Table 1. Comparison of access statistics to the IUGS website for the years 2020–2024, period 1 January–31 December (Source: Google Analytics for 2020, 2021, and 2022; Analytics & Reports tool by WIX for 2023 and 2024).

	2020	2021	2022	2023	2024
Unique visitors (n)	29227	29930	35736	35827	46734
Sessions (n)	31757	32080	38937	47640	64212
Page views (n)	67601	62668	71429	87321	118371
Average pages/session (n)	2.1	2.0	1.8	1.5	1.6
Average time on page* min.)	1:41	1:25	1:22	1:30	1:24

	2020	2021	2022	2023	2024
Bounce rates** (%)	62	68	71	71	72

* Time spent on each page is calculated as the time gap between a visitor looking at one page and looking at the next page. Time spent on the last page in a session is not included.

** The Bounce Rate is the percentage of visitors who access the website to visit a page and then leave website from that page rather than continuing to view other pages within the same website. The bounce rate is calculated by counting the number of single page sessions and dividing that by the total sessions. It is then represented as a percentage of total sessions.

Table 2. Comparison of access statistics to the IUGS website for the years 2023 and 2024, period 1 January-31 December (Source: Google Analytics for 2022 and Analytics & Reports tool by WIX for 2023).

	2023	2024	Difference 2024-2023(n)	Difference 2024-2023 (%)
Visitors (n)	35827	46734	+ 10907	+ 30.4
Sessions (n)	47640	64212	+ 16572	+ 34.8
Page views (n)	87321	118371	+ 31050	+ 35.6
Pages/Session (n)	1.5	1.6	+ 0.1	+ 6.7
Average time on page (min.)	1:30	1:24	- 0:06	- 6.7
Bounce rates (%)	71	72	+ 1	+ 1.4

In 2024, there were 111 instances where session peaks reached or exceeded 200, including six occurrences where sessions surpassed 300, specifically during the International Geological Congress (IGC) in August. In contrast, 2023 recorded a total of 13 peaks of 200 sessions or more. The highest peak in 2024 occurred on 29 August, with 555 sessions recorded. Other significant peaks occurred on 30 April, with 396 sessions recorded, and on 6 March, with 367 sessions recorded.

The highest peak of unique visitors occurred on 26 August (during the IGC 2024), with 491 users recorded.

Sessions originate from visitors in 189 countries (8 more than in 2023), predominantly from China (19.1%), USA (9.7%), India (7.9%), and South Korea (5.2%). Less than 4% of sessions

come from each of the remaining countries.

The most visited pages of the website were as follows: Homepage (27.0%), IGC (12.0%), History (8.1%), Calendar 2024 (6.1%), ICS (5.1%), Calendar 2025 (3.2%), Executive (3.0%), Flagship Activities (2.8%), Episodes (2.4%), DDE (2.4%), Organization (2.1%). Other pages received less than 2.0% of visits.

The contribution of social media to the number of sessions (visits) remains minimal in 2024 compared to the total number of sessions, as shown in Table 3. However, the percentage of visits from social media grew in the last year (from 0.41% in 2023 to 0.51% in 2024), alongside an increase in the total number of visits. The majority of visits come from Facebook.

Table 3. Visits to the IUGS website from the most important social media for the years 2023 and 2024, period 1 January-31 December (Source: Analytics & Reports tool by WIX).

	2023	2024	Difference 2024-2023(n)	Difference 2024-2023(%)
Visits from social media (n) (total number of session)	194 (0.41% of 47640)	329 (0.51% of 64212)	+ 135	+ 69.6
From Facebook (n)	137	222	+ 85	+ 62.0
From Twitter (n)	39	39	0	0
From LinkedIn (n)	18	68	+ 50	+ 277.8

In 2024 the IUGS domain (iugs.org) was renewed for 20 years (current date of expiration: 18 October 2044). IUGS is the official owner of its website domain, so the webmaster has direct access to it without any intermediaries.

In 2025, the web-hosting service must be renewed (current date of expiration: 26

November 2025). The current cost for the two-year renewal (until 2027) of the Premium package with Wix is 336.72 Euro (VAT included).

Finally, the year 2024 marks the end of the current webmaster's tenure, which began on 1 September 2017.

IUGS E-Bulletin



Gurmeet KAUR E-Bulletin Editor

The E-bulletin is the primary communication tool for sharing updates on the initiatives, activities, achievements, events, and publications of the International Union of Geological Sciences (IUGS). Published monthly, it reaches a wide audience within the geoscientific community. The E-bulletin also plays a key role in promoting Episodes, IUGS's quarterly scientific journal. Contributions are welcomed from IUGS commissions, task groups, initiatives, International Geoscience Programme (IGCP) projects, and affiliated bodies. Submissions typically consist of brief text accompanied by a few illustrations, such as photographs or diagrams. It is important to note that the E-bulletin does not feature scientific reports or research papers.

A new template of the e-Bulletin was introduced in 2024. The news was collected in the new format every month. The brief news featured in the e-Bulletin was linked to the IUGS website, IUGS social media channels, and the websites of various commissions, subcommissions, task groups, the Deep Time Digital Programme, the IGCP programme, and more.

The e-Bulletin was distributed monthly to more than 17,000 members via the IUGS Secretariat. It was regularly uploaded to the IUGS website and shared across various IUGS social media platforms. This distribution was made possible through the collaboration of the IUGS Secretariat, IUGS Webmaster, and IUGS Social Media Coordinator.

EPISODES Journal of International Geoscience



Prof. Dr. Sung Keun LEE
Editor in Chief

There are a total of 141 manuscripts received through the Editorial Manager (EM) system, (as of 2023.12.31) and 52 manuscripts (39 original articles, 2 reviews, 6 communication regarding IUGS geological standards, 2 History of Geology, and 3 editorials) were published in Vol. 47, no.1~4.

Volume/ Issue	Publication Date	Number of published manuscripts (n)
Vol. 46, No. 1	2023.03.01	13 (8 articles, 3 communication regarding IUGS geological standards, 1 review and 1 History of geology)
Vol. 46, No. 2	2023.06.01	13 (8 articles, 3 communication regarding IUGS geological standards, 1 review and 1 History of geology)
*Vol. 46, No. 3	2023.09.01	18 (16 articles and 2 editorials)
*Vol. 46, No. 4	2023.12.01	8 (7 articles and 1 editorial)

* Special Issue

- September issue (Vol.47, no. 3) - Recent Advances in Korean Geosciences (Dr. Jin-Yong Lee and Dr. Jinho Ahn served as Guest Editors-in-Chief)
- December issue (Vol.47, no. 4) - International Geoscience Education Strategies: innovations, collaborations and future directions (Dr. Susana Alaniz served as Guest Editor-in-Chief)
- The impact factor (Clarivate index) decreased from 3.1 in 2022 to 2.2 in 2023, while the CiteScore dropped from 5.6 in 2023 to 3.4 in 2024.
- Publication of commentary on what makes Episodes unique (by Lee SK): <https://www.gskorea.or.kr/html/?pmode=webzine&smode=viewDetail&par=14&seq=5622>
- Episodes promotional booth at the 2024 IGC held in Busan
- Informal AE meeting (Aug. 30) during IUGS; 8 AE members (Dr. Kathleen Histon, Dr. Laia Alegret, Dr. Giuseppe Di Capua, Dr. Stan Finney, Dr. Maria Rose Petrizzo, Dr. Hema Achyuthan, Dr. Kristine Asch, and Dr. Heejung Kim) and Sung Keun Lee attended.
- We have discussed several ways to make Episode greater. Some of these include,
 - a) Regarding handling of the manuscripts for special issues;
 - b) Regarding manuscript type;
 - d) Journal Metric, Lead/focus paper invitation, etc.;
 - e) Securing 'Lead/focus' papers by extinguished geologists;
 - f) Page number of the manuscript may need to be provided upon manuscript acceptance, which may increase its visibility.



The International Commission on Stratigraphy (ICS)



Elisabetta Erba
Chair



Charles Henderson
Secretary-General



Shuzhong Shen
Vice-Chair

The **International Commission on Stratigraphy (ICS)** is a body of stratigraphy experts with the primary objective of defining global units (systems, series, stages) of the International Chronostratigraphic Chart. Global Stratotype Sections and Points (GSSPs) establish the definitions of these units. These results form the basis for the units (periods, epochs, and ages) of the International Geologic Time Scale (GTS). In doing so, the ICS provides global standards for expressing the history of the Earth.

ICS comprises an executive and seventeen active subcommissions (SC) involving over 750 scientists from around the world, which represents the largest cluster of geoscientists within the IUGS. New ICS Executive and Subcommittee voting members were finalized during the 37th International Geological Congress (IGC) in Busan, South Korea. Many early career scientists were recruited for 2024-2028, and significant improvements in equality, inclusion and diversity of membership were achieved. The ICS executive, including David Harper as Chair and new ICS Chair Elisabetta Erba in attendance, met for a business meeting on Monday August 26th, 2024 at 08:00 Korean Standard Time during the 37th International Geological Congress.

Two key areas continue to be the primary

focus of ICS activity, including the ICS Chronostratigraphic Chart itself, based mainly on GSSPs, and the modernization of the webpages (www.stratigraphy.org). The current version of the chronostratigraphic chart is the 2024/12 version. The numerical ages of this version have mostly been updated to match the ages from “A Geologic Time Scale (GTS) 2020”. At the same time the Timescale Calibration SC are developing protocols to provide a more modern statistical framework for the GTS age-model. Translations of the chart have been kept up-to-date and are available in twenty languages. Several authors, educators and professional societies were granted permission to freely use and reproduce the ICS International Chronostratigraphic Chart in their productions.

The Global Stratotype Section and Point for the Langian Stage of the Neogene (Miocene Series) and the GSSP redefinition and Standard Auxiliary Boundary Stratotype (SABS) for the Wuchiapingian Stage (Permian; Lopingian Series) were published in Episodes as communications of IUGS geological standards (see <https://www.episodes.org> in Episodes 47(2), 311-333; Episodes 41(1), 147-177). Ceremonies and dedications for three Cretaceous stages were held, including the Hauterivian and Albian stages during June in Arnayon and La Charce, SE France and for the Barremian (Figure 1) during November near

Caravaca, SE Spain. The Cretaceous SC and ICS also passed the GSSP for the Valanginian Stage (Nov. 2024) and the IUGS Executive

Committee ratified it on December 18, 2024. Two GSSPs for the Silurian stages Aeronian and Telychian were ratified in 2024 by IUGS.



Figure 1. From left to right; Miguel Company (local organizer and Chair of Barremian working group), Maria Rose Petrizzo (IUGS Vice President), Ian Jarvis (Cretaceous Subcommittee Chair), and Elisabetta Erba (ICS Chair); Right: “gold disk” for Barremian Stage at the base of bed 171.

The voting members of the Quaternary SC, following voting procedures outlined in ICS statutes, rejected a proposal for an Anthropocene Epoch in March 2024. The ICS executive and ICS Voting Members supported the decision. IUGS and ICS then prepared a joint statement (<https://stratigraphy.org/news/152>) indicating that “despite its rejection as a formal unit in the Geologic Time Scale, the Anthropocene nevertheless will continue to be used not only by Earth and environmental scientists, but also by social scientists, politicians and economists, as well as the public at large”. It concludes that the Anthropocene “will remain an invaluable descriptor of human impact on the Earth System”.

There are many publications associated with the activities of ICS including in 2024 three papers in a special issue on biostratigraphy (on graptolites, conodonts, and foraminifers) in Newsletters on Stratigraphy coordinated by the Stratigraphic Classification SC. The chronostratigraphic chart continues to support a range of research programs and is used

and cited extensively in scientific papers; the original paper by Cohen, Finney, Gibbard and Fan 2013 in *Episodes* has been cited over 3700 times. An update and revision of this paper has been accepted by *Episodes* and will appear in 2025. The chart is the authorized geological timescale and the single point of truth, where rock meets time, for global chronostratigraphy and geochronology. It is colour coded following the scheme of the Map of the World.

Links continue to be developed with the DDE (Deep-time Digital Earth; <https://www.ddeworld.org/>) program and the Geobiodiversity Database (GBDB; <http://geobiodiversity.com/>). Shuzhong Shen (ICS Vice-Chair) is the primary ICS representative to DDE. The GBDB is the formal database of the ICS (established in 2012 and directed by Hua Zhang). All of this work is aimed at converting stratigraphic data into a computer-readable way to assist future innovations in stratigraphic interpretation.

New stratigraphic data were generated throughout the year at many field sites in order

to better establish GSSPs proposals planned in 2025. For example, the Jurassic SC is now focused on two candidate sites for the Oxfordian GSSP at Redcliff Point, Weymouth, England and Thuoux near Aspermont, SE France and the Cretaceous SC plans to submit a GSSP

for the base-Aptian. The Permian SC (SPS) collected new data in May 2024 for Sr isotopes and fusulinid biostratigraphy at the Rockland Section, NE Nevada in the Basin and Range Province (Figure 2).



Figure 2. From left to right standing just above the planned Kungurian Stage GSSP at Rockland section NE Nevada; Charles Henderson (ICS Secretary-General), Lucia Angiolini (former SPS Chair), and Mike Read (SPS voting member). Right: returning via thick resistant carbonate cycles of Pennsylvanian age.

There are many plans in place for 2025. The Devonian, Carboniferous and Permian SCs will meet at Toulouse France from June 22 to July 1 (<https://GeoTolosa2025.sciencesconf.org>). Many subcommission business meetings and field workshops will be conducted throughout the year. The Cretaceous SC will host the 12th Cretaceous Symposium in Hanover Aug 31 to Sept 5 and will organize a celebration for the recently ratified Valanginian GSSP. The 4th International Conference on Geobiology will be held during June 2025 where the Triassic and Cryogenian SCs will be especially active. Looking further forward it has been decided that the next STRATI meeting will be held in Suzhou China in June 2026.

The Commission continues to focus on sustainability and contributes to a range of the 17 UN Sustainability Development Goals through its products. ICS activities align with

quality education (4) related to the Earth. Those that appreciate more the history of Earth will better support sustainable practices. Gender equality across the subcommissions, task and working groups (5) is supported. Stratigraphic correlation helps to identify water and energy resources (6, 7). Industry, Innovation and Infrastructure through development of big science databases and electronic communication (9), Reduced Inequalities are considered in its focused work groups and at meetings (10), and Responsible Consumption is supported by electronic communication and encouragement of sustainable travel (12). Many members of the ICS community have a unique perspective on climate change (13) because they study similar events that occurred in the geologic past. Paleontologists who study ancient life below the water (14) and on the land (15) provide important perspectives on the fragility of life.

IUGS COMMISSION ON GEOSCIENCE EDUCATION (COGE)



Sandra Villacorta Chambi
Chair

In 2024, the IUGS Commission on Geoscience Education (COGE) embarked on a significant journey in advancing geoscience education worldwide. A defining moment was COGE's successful participation in the 37th International Geological Congress (IGC) in Busan, South Korea, where participants highlighted the commission's positive impact on geoscience education and its collaborative ethos. COGE also celebrated its expanding membership, welcoming new members from Ghana, Colombia, Bolivia, Nigeria marking its growing influence across key regions.

To ensure sustainable growth, COGE updated its Terms of Reference (ToR) and enhanced the Geoscience Education Field Officer (GEFO) Programme. With a renewed focus on Africa and South America, the GEFO Program expanded its reach and visibility, amplifying the voices of field officers through impactful social media campaigns. Additionally, COGE leaders Susanna Occhipinti (Italy), Miguel Cerna Cano (Philippines), and Young-Shin Park (South Korea) participated in the 2024 International Earth Science Olympiad (IESO) in Beijing as they did in the past 12 years, as members of IGEO and acting as mentors for their respective countries, showcasing COGE's global commitment to education.

The Public Outreach and Communication (POC) subcommission, in collaboration with the Social Media (SM) team, hosted two engaging webinars, now available on the COGE YouTube channel. These webinars bridged global communities, showcasing the role of geoscience education in addressing critical challenges. Complementing this effort, the Equality, Diversity, and Inclusion (EDI) Committee conducted a global diversity survey to understand the situation on EDI in the global geoscience education community, and the S M Team launched the GEM campaign, recognizing outstanding geoscience educators who are transforming education in their regions. Two trailblazers from Latin America were honored, exemplifying the profound impact of their work. This recognition along with the work of COGE Awards committee which organized a presentation during the Argentinian Geological Congress, to feature Dr. Hector Lacreu our inaugural receiver of the Chris King Medal. In his inspiring speech, Dr. Lacreu called for national institutions to champion geoscience education. His address, recorded and shared on COGE's YouTube channel, continues to inspire educators globally.

A major milestone on the international front was the finalization of the Memorandum of

Understanding (MoU) between COGE and the European Geosciences Union (EGU), fostering deeper collaboration. The Publications Committee also excelled, publishing seven papers in the December Special Edition of *IUGS Episodes* and nine additional articles in *Teaching and Communication of Geosciences* thanks to our MoU with UNAM. These works highlight innovative practices and research in

geoscience education globally.

As COGE looks ahead to 2025, the commission is energized by its achievements and determined to further strengthen partnerships and initiatives. Together, we are contributing to build a brighter future for geoscience education worldwide.



Pictures 1 and 2. Highlights from IGC 2024. Left: COGE's General Secretary, Elvaene James, Chair Sandra Villacorta, and Voting member representative South Korea Young Shin park at the IUGS booth during IGC24. Right: Participants of the COGE Round Table on International Geoscience Education Initiatives. Pictures 3 and 4. Left: Dr. Hector Lacreu was honored with the prestigious Chris King Medal. Right: Cover of the Episodes Special Issue (Vol. 47, No. 4, December 2024), highlighting "International Geoscience Education Strategies: innovations, collaborations, and future directions," guest-edited by IUGS-COGE experts.



INTERNATIONAL COMMISSION ON THE HISTORY OF GEOLOGICAL SCIENCES (INHIGEO)



Ezio Vaccari
President



Martina Kölbl-Ebert
Secretary General

The International Commission on the History of Geological Sciences (INHIGEO) includes an active and growing community of individuals and institutions around the world, with 312 members from 57 countries. Our aim is the historical study of geological sciences in all their forms, as well as its promotion and dissemination, in order to establish new links between this historical knowledge and the broader contemporary context of the Earth sciences.

The products of our research work, as well as the various outreach activities, are presented on

the new INHIGEO website (<https://www.inhigeo.org>), launched in December 2024.

The highlights of our activities in 2024 included the 49th INHIGEO Annual Symposium, followed by a geo-historical fieldtrip in southern Japan, the collaboration to the Second 100 IUGS Geological Heritage Sites project, the scientific awards received by our young and senior members, as well as a new series of webinars focused on some remarkable research works carried out by early career scholars.



Claudia Principe presenting the site 107, Mt. Vesuvius, on 27 August 2024, at the 37th IGC in Busan.

At the 37th IGC in Busan INHIGEO organized five scientific sessions and one workshop on the following topics: "Geosites and georoutes in the history of geological sciences", "Anthropocene, History and the Geosciences: contributions to contemporary debates", "History of women in geology: trailblazers, leaders and those in the shadows", "History of geoscientific travels in Asia and beyond", "General contributions to the history of geological sciences", "Hidden histories in the geological sciences". At the special event on the Second 100 IUGS Geological Heritage Sites, organized within the IGC by the International Commission on Geoheritage,



INHIGEO members presented six new sites selected for their importance in the history of geosciences (Agno Valley and Mt. Vesuvius in Italy; Scheibenberg in Germany; Maruia Falls in New Zealand; Cavansham Ferry and Llanstephan in Great Britain; Esmark and Tank Moraines in Norway).

The INHIGEO fieldtrip to Northern Kyushu (Japan) took place on 1-4 September 2024 and included geohistorical sites such as Imaemon Kiln and Izumiyama Quarry, Gamadasu Dome, Mt. Unzen volcano and hot springs.



Explaining the geology of Mt. Unzen (left) and a group photo near the top of the volcano (right).

At the INHIGEO Business Meeting held on 28 August 2024 in Busan, the "INHIGEO Early Career Award", was presented to Lucero Morelos-Rodriguez (Mexico) for her presentation Mexican Women in Paleontology and the Oil Industries at the 49th INHIGEO Symposium; moreover, Kenneth L. Taylor (USA) was announced as the recipient of the "INHIGEO Vladimir V. Tikhomirov History of Geology Award" for 2024 in recognition of his outstanding original contributions and achievements that mark a major advance and contribution to the history of the Earth Sciences. The award was later presented to Ken Taylor during an event

hosted by his university on 18 September 2024, at the History of Science Collections of the University of Oklahoma in Norman (USA). As part of this event, Kerry Magruder (INHIGEO Editor) organized the Tikhomirov Award Roundtable: A Fascination for Geology's Past - Three Historians Reflect on their Work.

On 12 June 2024, INHIGEO Secretary-General Martina Kölbl-Ebert (Germany) was awarded the "Sue Tyler Friedman Medal" by the Geological Society of London for her contribution to the history of geology. Moreover, INHIGEO member Silvia Figueirôa (Brazil) was the recipient for her

contribution to the history of geology of the 2024 "Mary C. Rabbitt History and Philosophy Award" of the Geological Society of America, presented

at the annual meeting held in Anaheim, California, 22-25 September 2024.



Martina Kölbl-Ebert, Lucero Morelos-Rodriguez, Kenneth Taylor, and Sílvia Figueirôa (2nd from right) receiving their awards.

The INHIGEO Webinar Series New Perspectives in the History of Earth Sciences, with free access, continued to provide a dynamic virtual forum for discussion. The two webinars held in September and November covered topics such as Bridging the Gulf: Intersections of Geology,

Biology and Environmental Justice (talk by Kailani Acosta, Columbia University, USA) and The Art of the Carboniferous Period in the times of decarbonization: a short introduction (talks by Marta Tomczok and Pawel Tomczok, University of Silesia, Poland).



COMMISSION FOR GEOSCIENCE INFORMATION (CGI)

Harvey Thorleifson Chair



The IUGS Commission for the Management and Application of Geoscience Information (CGI) fosters the interoperability of geoscience information, through leadership, collaboration, education, standards, and best practices.

CGI strives to ensure that geoscience information can be exchanged, understood, used, and integrated with information from other domains. Geoscience information needs to be semantically rich and structured to enable seamless interaction in all environments. Global education about the management and use of information enables societal benefits.

CGI represents IUGS on geoscience information matters, provides the means for transferring knowledge on geoscience information and systems, assists international dissemination of best practice in geosciences information, stimulates and supports initiatives that are developing standards, and its Council members hold leadership positions in the information community.


CGI was active throughout 2024. We now have 534 members in 82 countries.

We have a Chair, Past Chair, Co-Secretaries General, Treasurer, and eight Councilors, from Australia, Botswana, Brazil, China, France, Japan, NZ, Slovenia, UK, and USA. CGI hosts or co-hosts the DDE Standards Task Group (DDE-STG) and five working groups, and we coordinate with partners.

In 2024, CGI Council meetings were held online on Jan 24, Ap 30, June 26, in-person on Aug 30, and Dec 11. The web site and flyers were updated, and a Newsletter produced.

The CGI secretariat is located at the Development Research Center of China Geological Survey, Ministry of Land and Resources (CGIsecretariat@mail.cgs.gov.cn). The CGI bank account is managed in New Zealand.

CGI is very active in supporting implementation of the IUGS Action Plan for Africa, as cohost



and financial supporter of the Dublin Workshop in February 2025.

Our 2024 highlight was a new strategic plan. For each theme, we identified short term actions for 2024-25, medium term for 2025-2026, and long-term for 2026-28:

Governance: This activity will look at the structure of CGI Council and our governance in the short term, documentation of procedures for CGI and other standards in the medium term, and a revisit of the structure of CGI Council in the long term.

Vocabularies: This activity will look at the GTWG web content, vocabulary uptake, and reduced thresholds for vocab publication in the short term, increased assessment and hosting for third-parties in the medium term, and new ontologies in the long term.

Logical Data Models: This will look at ERML governance in the short term, journal papers in the medium term, and opportunities for new and improved data models in the long term.

AI: We will interact with users of existing standards for AI in the short term, provision of advice to IUGS, & assessment and engagement in the medium term, as well as communication of CGI standards and consideration of parallel activity in other fields in the long term.

3D Geology & Digital Twins: We will investigate standards requirements for process-focused geoscience digital twins in the short term, and investigate new information standards

requirements of a global 3D geology model in the long term.

Cross-IUGS Collaboration: We will connect CGI with Data/Information activities across IUGS, and encourage DDE scientists, especially early career, to get involved in information standards development, including working with CGI working groups in the short term.

In the medium term, we will promote CGI standards at many more conferences, leverage IUGS connections with CODATA, ISC, and UNESCO, work with affiliated organizations in supporting geoscience mapping standardization, and support development of online platforms through which standards and vocabularies can be hosted.

In the long term, we will subcontract with academic institutions who are willing to implement identified projects with CGI, and CGI will be involved with WorldFAIR as it takes approaches forward in the context of EU Funded projects.

CGI will have a busy 2025, focusing on strategic plan implementation. We will ensure that our work groups receive the support they need. We will support the DDE Standard Task Group focus on FAIR and Open Science. We will sustain our broad communication mechanisms.

We will sustain our partnerships. We will hold an annual hybrid in-person meeting in association with the Geoscience Information Consortium meeting in Denmark, in May 2025. Support from IUGS, and from our employers, is appreciated.

COMMISSION ON GLOBAL GEOCHEMICAL BASELINES

<https://www.globalgeochemicalbaselines.eu/>

The Commission on Global Geochemical Baselines (CGGB) published in 2022 the '[*International Union of Geological Sciences Manual of Standard Methods for Establishing the Global Geochemical Reference Network*](#)'. A comprehensive Manual of Standard Methods for a harmonised Global Geochemical Reference Network, leading to the preparation of a compatible global geochemical database, and

the documentation of the concentration and distribution of chemical elements and species in the Earth's near-surface environment. During 2024, CGGB members promoted the Manual by organising and/or participating in oral presentations in sessions at international conferences, webinars and physical workshops (Fig. 1). The book has been displayed in international conferences (e.g., 37 IGC, AGU).



Figure 1. Group photograph taken during the Joint Annual Meeting in Prague, Czech Republic (September 2024).

1. Workshop in Spain about the IUGS Manual of Standard Methods

The IUGS Commission on Global Geochemical Baselines (CGGB) organised a 4-hour workshop in conjunction with the XI National Geological Congress of Spain (<https://congresogeologicosge.es/>), held in the city of Avila from the 1st to 6th of July 2024. On the 1st of July, Commission members from Spain (Paula Adánez-Sanjuan and Iván Martín-Méndez – [IGME](#)) and Portugal (Maria João Batista – [LNEG](#)) were instructors for the short

course in Spanish entitled “Fases y protocolos a seguir para una red de referencia geoquímica global” (Phases and protocols to be followed for a global geochemical reference network). Twelve professionals from universities, surveys, institutes, and postgraduate students attended the workshop.

2. International conference on environment and health

Alecos Demetriades (Chair of CGGB's Sampling Committee) presented a plenary

talk titled ‘Standardisation of Applied Geochemical Methods’ on August 13, 2024, at the [International Conference on Environment and Health](#), which was held at the University of Galway (Republic of Ireland). The talk was about the “[International Union of Geological Sciences Manual of Standard Methods for Establishing the Global Geochemical Reference Network](#).” More than 200 participants from many parts of the World, mainly from China, attended the plenary session. This was an opportunity to make three new members from the [National Research Center for Geoanalysis of the Chinese Academy of Geological Sciences](#).

In collaboration with the EuroGeoSurveys Geochemistry Expert Group, the Commission organised a session on Tuesday, August 13th, 2024, titled “Geochemical Mapping.” Timo Tarvainen and Jaana Jarva, both from the Geological Survey of Finland and CGGB members, were the session conveners. Five oral presentations were delivered in total. The keynote and presentations are available by using the following hyperlink: <https://u.pcloud.link/publink/show?code=kZK4PI0Zsw3RrqTwvEyWFqsLk652NYYezXMy>.

3. Fourth Arthur Darnley Symposium and Workshop, 37 International Geological

Congress, Busan, South Korea


The International Geological Congress (IGC) is organised every four years. In 2000, the forerunner of the Commission started organising a ‘Symposium on Geochemical Baselines’. After [Arthur G. Darnley](#)’s passing away in 2006, it was decided to remember his dedicated input to Global Geochemical Baselines by organising a Symposium in his honour on the occasion of the International Geological Congress.

The CGGB at the 37 IGC in Busan (South Korea) organised a session on Tuesday, 24 August 2024, with the name ‘[Challenges and Opportunities of Global-Scale Geochemical Mapping \(4th Arthur Darnley Symposium\)](#)’ with conveners Anna Ladenberger (CGGB Chair 2020-2024) and Maria João Batista (Chair of [ASGMI-GEG](#)).

Over 40 people attended the session, and ten presentations on different themes were delivered orally. Alecos Demetriades (Chair of the Sampling Committee) delivered the keynote presentation (Fig. 2). The keynote and session presentations are available by using the following hyperlink: <https://u.pcloud.link/publink/show?code=kZv6fC0ZsKwQhCg2ijzKdfxgrsBC85WINwD7>.



Figure 2. (a) Group photograph of workshop participants and instructors, and (b) field workshop participants recording observations on the soil observation sheet



The Commission organised, on the occasion of the 37 IGC in Busan, South Korea, a workshop to promote and teach the methods described in the [IUGS Manual of Standard Methods](#) (Fig. 2a). The workshop consisted of lectures and hands-on exercises, which were performed with [Golden Software](#)'s Surfer™ and Grapher™ or with dedicated software programs compiled by CGGB members designed to be practical and applicable. These resources are available for download from the Commission's 'Publications' webpage (<https://www.globalgeochemicalbaselines.eu/content/91/publications/>). The last day was devoted to a field training course where the sampling of rock, stream water, stream sediment, soil, and floodplain sediment was demonstrated (Fig. 2b).

In total, 36 participants attended the workshop. Instructors were Alecos Demetriades, Maria João Batista, Ariadne Argyraki, Anna Ladenberger, Paula Adánez-Sanjuan and Iván Martín-Méndez with interventions in the form of short, engaging tutorial presentations by David Cohen, current IUGS Treasurer.

The [International Union of Geological Sciences](#) and the [Association of Applied Geochemists](#) co-sponsored the workshop, and both entities are thanked for their generosity.

The workshop lectures and hands-on exercises are available for download using the following hyperlink: <https://u.pcloud.link/publink/show?code=kZG9bO0ZDA94k65fvy8erLL3aqGBqLeAR777>.

4. FAO: Global Symposium on Soil Information and Data

CGGB members participated in FAO's hybrid

[Global Symposium on Soil Information and Data](#), held in Nanjing (China) from September 25 to 28, 2024, with five virtual presentations. The abstracts and Microsoft® PowerPoint presentations are available from a dedicated [pCloud folder](#), which can be accessed by using the following hyperlink: <https://u.pcloud.link/publink/show?code=kZ8bKI0ZBGKxctw3NqL1sxsJoyPnHjX3TR5X>.

5. Webinar: Sample preparation - Key stage to generate geochemical information

The Geochemistry Expert Group of the [Ibero-American Association of Geological and Mining Surveys \(ASGMI-GEG\)](#) organised on the 13th and 14th of November 2024 the second webinar in the series "Geochemical Knowledge for Societal Use" with the title "Sample Preparation: Key Stage to Generate Geochemical Information", which was coordinated by the [Instituto Hondureño de Geología y Minas](#). This webinar offered a valuable opportunity to discuss sample preparation techniques and standard procedures in various matrices and sampling environments as key to the quality of geochemical data and their application in areas such as environmental planning and sustainable development. Professor Hassina Mouri (IUGS President), Alecos Demetriades (Chair of the IUGS-CGGB) and Anna Ladenberger (Chair of the IUGS-CGGB from 2020-2024) participated as guest speakers.

The webinar presentations are available on YouTube in two parts, [Day 1](#) and [Day 2](#), and some of the original Microsoft® PowerPoint presentations from the following hyperlink: <https://u.pcloud.link/publink/show?code=kZpvkF5ZhOH0CTdsQbV3dOpg0LdSuYVMNgdk>.



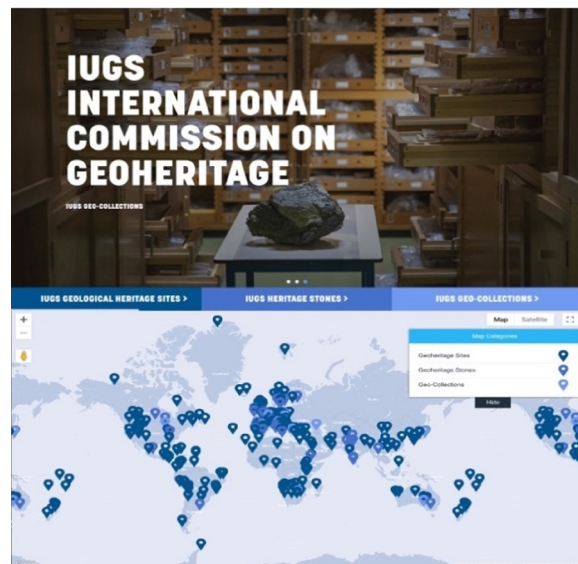
INTERNATIONAL COMMISSION ON GEOHERITAGE

www.iugs-geoheritage.org



Asier Hilario
Chair

The IUGS International Commission on Geoheritage (ICG) was reformulated in 2020. During the last four years the IUGS ICG has become into a global reference in the field of Geoheritage with more than 1.000 collaborators from all over the world. The internal structure of the commission has been well established as a unified body working under a unified strategy and the visibility of our designation programs (Sites, Stones and Geocollections) has provided huge visibility to the IUGS. Our website has received 155.000 visitors from over 190 nations since October 2022 and many events of recognition have been organized across the world.



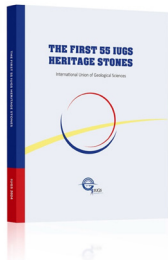
Our designation programs have been strongly consolidated in 2024. The Second 100 IUGS geological Heritage Sites, The First 55 IUGS Heritage Stones and the first 11 Geocollections were announced and presented during the IGC 2024 in Busan.



The Second 100 is a huge milestone that consolidates the initiative started in 2022 with the First 100. This global initiative has become into the main program for the recognition of the scientific value of geological heritage sites worldwide and has places the IUGS as a global leader in the field of Geoheritage. 363 authors

representing 20 international organizations and 85 countries have participated making proposals that were evaluated by 89 experts. All the sites have been carefully compiled in a high quality coffee table book and all the files have been uploaded in our website, which was opened for the announcement event that took place within the IGC 2024. The Second 100 were announced by IUGS president, John Ludden, IUGS secretary general Stanley Finney, IUGS ICG chair Asier Hilario and IUGS ICG secretary general Juana Vegas during the IGC 2024. The event was a big success with a very

wide international impact. 11.000 people from 80 nations visited our website only during the next two days and the communication strategy involving our network of collaborators worked effectively creating dozens of high quality mass media communications across the world.



IUGS Heritage Stones endeavor has been also strongly consolidated in 2024. 23 new Heritage Stones have been designated with more than

50 international experts involved in writing and evaluating proposals. All of them have been included into the book of the First 55 IUGS Heritage Stones, which compiles all the heritage stones designated by the IUGS since 2016. The new stones and the book were announced at the IGC 2024 in Busan increasing substantially the visibility and the interest among the stone community. All the files since 2016 have been updated and uploaded in our website. 2024 has been also a year for reflection within Heritage Stones sub-commission. The standards and the guidelines of the program have been updated and aligned with the Sites and Geocollections initiatives.

Last but not least, 2024 has been the real starting point for the IUGS Geo-collection initiative. 18 proposals were evaluated and the First 11 Geo-collections were selected. More than 40 international experts have been involved in this endeavor which finally has put into work this long demanded initiative. The 11 new geo-collections have been uploaded to our website.



Our three designation programs are based on international collaboration. More than 20 international organizations representing all geological disciplines have participated in our activities. The number of international organizations and national delegates is increasing every year, which show the credibility and the potential of the IUGS as a global leader in geological sciences.

The IUGS ICG provides the desktop assessment of the international significance of geological heritage in aspiring UNESCO Global Geoparks. In 2024 16 files were evaluated and 50 evaluators were involved. The new guidelines approved in 2023 were used for the first time and have clearly improved the quality of the proposals and the evaluations. This is a very important contribution that the IUGS does to the development of UGGp program at UNESCO.

Publications: The books of the First 100, The Second 100 and the First 55 Heritage Stones can be downloaded for free in our website. 6.100 books have been already downloaded. The coffee table books can be also purchased in our online shop.



www.iugs-geoheritage.org

SITES: <https://iugs-geoheritage.org/designations/>

HERITAGE STONES: <https://iugs-geoheritage.org/designations-stones/>

GEO-COLLECTIONS: <https://iugs-geoheritage.org/designations-geo-collections/>

PUBLICATIONS / BOOKS: <https://iugs-geoheritage.org/publications/>

Commission on Geoethics



Silvia Peppoloni
Chair



The CG is the supporting branch of the International Association for Promoting Geoethics (IAPG) to the IUGS and the IUGS body that officially deals with geoethics and social geosciences for the Union.

The CG has a light organization made up of a **Governing Board**, a **Supportive Structure**, and an **Operative Structure** consisting of **Task Groups** working on specific issues.

All the information at the CG website: www.geoethics.org/iugs-cg.

In 2024, the CG main goals were as follow:

- Drafting and securing approval from the IUGS Executive Committee for the ethical guidelines of the IUGS and the Action Plan on Diversity, Equity, Inclusion, and Accessibility.
- Supporting the IUGS Presidency and Executive Committee in resolving disputes that may arise among IUGS officers, bodies, affiliated organizations, and adhering members by reporting issues and recommending potential actions for resolution.
- Contributing to the activities of the Chair on Geoethics of the International Council of Philosophy and Human Sciences (CIPSH).
- Co-organizing sessions on geoethics at the European Geosciences Union (EGU) General Assembly 2024 and the International

Geological Congress (IGC) 2024.

- Delivering presentations on geoethics by CG members at the EGU General Assembly 2024, IGC 2024, IUSS Congress 2024, and the I Latin American Symposium on Geoethics.
- Completing relevant editorial projects on geoethics, including new book proposals and special issues for scientific journals.
- Promoting CG's activities through dedicated pages on the website www.geoethics.org, the IUGS E-bulletin, and CG's social media pages to enhance visibility for the IUGS.

All these goals were successfully accomplished. In particular:

- The **Task Group on IUGS Ethical Guidelines** released the "Guidelines for Ethical Conduct at IUGS/IGC Meetings and Events" (March 2024).
- The **Task Group on Diversity, Equity, Inclusion, and Accessibility (DEIA)** released the "Action Plan for the IUGS on Diversity, Equity, Inclusion, and Accessibility" (April 2024).
- The CG Chair and CG Secretary prepared the report: "Assessment of Diversity within IUGS Bodies" (June 2024).

All these documents were approved by the IUGS Executive Committee. Moreover:

- Alongside the existing Task Groups, the CG Governing Board decided to establish a **Task Group on Artificial Intelligence (AI) in Geosciences**, with the aim to draft a White Paper on AI in Geosciences, which may serve as a guiding document for IUGS and the international geoscience community. Its members are Paul Cleverley (United Kingdom), Mrinalini Kochupillai (Germany/India), Mark Lindsay (Australia), Emma Ruttkamp-Bloem (South Africa).
- The CG provided the IUGS President with two reports (January and October 2024) following ethical complaints and thorough analyses conducted by its members. Both reports included suggestions and recommendations for addressing the cases. In fact, The Commission on Geoethics (CG) has actively engaged in addressing controversies within various IUGS bodies and affiliated organizations, as well as individual scientists, in verifying documents of general interest to the Union, in drafting reports about cases and upon requests of specific activities.
- In its supportive role in the endeavors of the IUGS within the Standing Committee on Gender Equality in Science (SCGES), the CG Chair prepared the IUGS Annual Report 2024 for SCGES on IUGS efforts in upholding ethical standards, diversity, and fairness within its reference community (October 2024). Moreover, she attended the SCGES meeting and the 10th SCGES webinar "Popularizing science without gender bias" for the Global Women's Breakfast, held in Paris, France (26-27 February 2024).
- The CG Chair (online) and Treasurer (onsite) attended the 79th IUGS EC meeting in Nairobi, Kenya (19-21 February 2024) and the 5th Ordinary Session of the IUGS-IGC Council in Busan, Republic of Korea (28-29 August 2024) and reported on CG's activities.

In 2024, CG members contributed to various publications and editorial projects, including:

- **Book:** Geoethics for the Future: Facing Global Challenges (Peppoloni & Di Capua, 2024). Elsevier.
- **Special Issue:** 25 Years of Advancing Geoethics and Social Geosciences at INGV (Peppoloni & Di Capua, ongoing).
- **Articles:**
 - HSIT System: Citizen Participation in Seismology (Tosi et al., 2024).
 - Pagina della Memoria: Impact of Italian "Racial Laws" (Winkler et al., 2024).
 - Etna 2018 Earthquake: Geoethical Principles in Recovery Planning (Neri & Neri, 2024).
 - Advancing Epistemic Justice with Local Knowledge (Bobadilla et al., 2024).
 - Advancing Transparent and Ethical AI (Cleverley et al., 2024).
 - Water Resources Management for Sustainable Hydrogeoethics (Abrunhosa et al., 2024).
 - The Anthropocene Event as Cultural Zeitgeist (Koster et al., 2024).
 - Geoethics in Theological Perspective (Bellaubi Fava, 2024).
 - Ethical Considerations in Geological Profession (Cameron, 2024).
 - Ethical Recommendations for AI in Geological Sciences (Cleverley, 2024).

CG members also organized sessions and meetings at major congresses:

- **EGU General Assembly 2024:** Geoethics: Significance of Geosciences for Society and Environment (15-16 April, Vienna).
- **IUSS Centennial Congress 2024:** Soil Science and Geoethics (19-21 May, Florence).
- **37th International Geological Congress 2024:** Geoethics and Societal Relevance (Busan, August).
- **Geoethics Special Interest Group Meeting**

(GSNZ/IAPG, 26 November, Dunedin).

Additionally, CG members delivered talks at several scientific events:

- **RomaTre and Sapienza Universities:** Geoethics and Global Anthropogenic Impacts (29 February, Rome).
- **International Existential Humanistic Conference:** Geoethics for Ecological Humanism (21-23 June, Assisi).
- **37th International Geological Congress:** The Future of Geosciences Through the Lens of Geoethics (28 August, Busan).
- **51st Congresso Brasileiro de Geologia:** Geoethics: Resources, Risks, Responsibilities (15 October, Belo Horizonte).
- **XXII Argentinian Geological Congress:** The International Infrastructure for Geoethics (20 November, online).
- **Geoscience Society of New Zealand Conference:** The Global Geoethics Infrastructure (26 November, Dunedin).

Other activities include:

- Participation in the **Advisory Board Member** for AGU's Ethical Framework for Climate Intervention.
- Release of the **interview with SEG:** Navigating Geoethics in Geosciences (30 October).

This summary highlights the CG's extensive contributions to the advancement of geoethics in 2024.

In addition, IAPG carried out several geoethics-related activities, which should be considered part of the CG's Annual Report, in accordance with point 9 of the CG's Statutes. These activities reflect IAPG's ongoing efforts to promote geoethics globally. They include participation in European projects, organization of scientific events, delivering of keynote/ lecture in congresses, establishment of new IAPG national sections (that are now 37 in total in 5 continents), publication of articles on IAPG Blog. Finally, the CG has contributed to the creation and development of the International Geoethics Research Infrastructure (IGRI) along with IAPG and the Chair on Geoethics of the International Council for Philosophy and Human Sciences (CIPSH, an organization within UNESCO). The CIPSH Chair on Geoethics, supported by the IUGS Commission on Geoethics and IAPG is focused on creating a research network aimed at developing discussions on a global ethics grounded in geoethics and to bridge geosciences and humanities.

The CG has consistently updated the IUGS community regarding its activities through various channels. These have included the official CG page hosted on the IAPG website, and the IUGS E-Bulletin. Additionally, the CG has maintained an active presence on social media platforms such as Twitter, X, Facebook, and Bluesky. This has ensured broader outreach and engagement with its audience.



Fig. 1: Guidelines for Ethical Conduct at IUGS/IGC Meetings and Events (left), Action Plan on Diversity, Equity, Inclusion, and Accessibility (middle), and cover of the book "Geoethics for the Future" (right).



Fig. 2: Members of the new Task Group on AI in Geosciences of the IUGS Commission on Geoethics.



Fig. 3: Silvia Peppoloni during her plenary speech on geoethics at the 37th International Geological Congress.



International Union of Geological Sciences Task Group on Submarine Geohazards (TGSG)

Kiichiro Kawamura (Yamaguchi University) and TGSG members

<https://iugs-tgsg.com>



Kiichiro Kawamura
Chair

Submarine geohazards are widespread across the globe. Submarine geohazards range from volcano eruption to earthquakes, tsunamis, seabed liquefaction, seabed creep, submarine slides, turbidity currents, shallow gas eruptions, mud volcanoes, and sediment instability such as migrating bedforms and scour and erosion around marine and offshore structures. Submarine landslide tsunamis are now seen from all geological environments; passive, convergent and transform margins, as well as volcanoes. The Task Group on Submarine Geohazards (TGSG) targets the full spectrum of such geohazards that impact people's lives and critical infrastructures. Offshore renewable energy systems are rapidly advancing to meet global requirements for sustainable development. Underwater fiber optic cables, underwater power cables, and underwater pipelines have been laid over many parts of the seafloor, and their importance, either strategic and economic, increased dramatically in recent years. However, these marine and offshore infrastructures are at risk from multiple cascading multi-geohazards that include landslides, tsunamis, earthquakes, and volcanic eruptions. Due to their widespread occurrence

across the globe, submarine geohazards are a globally relevant and critical issue to be better addressed in the face of global climate change.

Therefore, the global development of offshore renewable energy systems is facing new challenges. For the development of offshore renewable energy in a wide variety of geological settings including narrow continental shelves, plate subduction zones and steep seafloor topography, risk management and geohazard mitigation strategies need to be defined. These require advancement and integration of research across marine geology, oceanography, and physical processes (Figure 1). To this end, TGSG will work with the offshore renewable energy and submarine cable industry to identify and address key knowledge gaps. Further, the TGSG aims to provide global mapping of submarine geohazard risks and create guidelines for assessing various submarine geohazard risks pertaining to emerging energy transitions. The targeted submarine geohazards are indeed broad, as described above. Suggested objectives and actions include providing the sector with (1) Case studies of submarine geohazards; (2) Data

archive of offshore geological and geophysical data; (3) Guidelines of seafloor geological and geophysical surveys; (4) Submarine geohazards risk assessment; and (5) International capacity building and knowledge exchange. We aim to resolve these issues together with our cooperative works in this proposed international framework across Asia-Oceania, Europe-Africa, and North America-South America regions.

We are implementing the following work plan to create international guidelines for submarine geohazards. In FY2024, we held three international conferences/parallel session at IGC, IRDR, and SCJ to exchange opinions on the theme and guidelines (Photo 1). We

supported young researchers and students for this purpose (Photo 2). In FY2025, we plan to hold more detailed discussions in Asian countries and across the globe. We would like to support young researchers in areas where travel expenses are difficult to be covered by their own funding. In FY2026, the Science Council of Japan is scheduled to issue a statement in Japanese that will serve as the basis for the guidelines. In line with this, we plan to publish international guidelines through international discussions. Here too, we would like to support young and early career researchers accordingly. We also plan to publish a Special Issue on Submarine Geohazards and their Risks in IUGS journal Episodes in 2026.

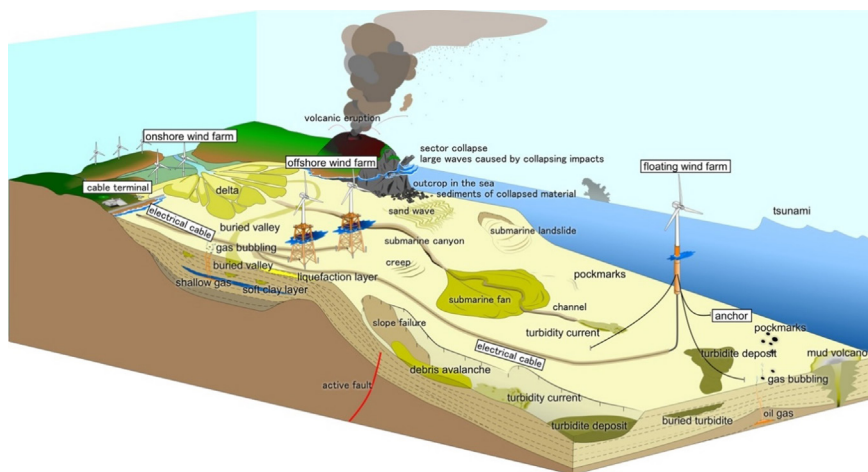


Figure 1. Various submarine geohazards



Photo 1. Field trip at Miura Peninsula, Central Japan during the Science Council of Japan Symposium



Photo 2. 2024 IUGS-TGSG Best Student Presentation Award Winners, IGC2024 Busan
 Chien-Wei HSU (Taiwan), Hisashi IKEDA (Japan), Momoko TSUTSUMI (Japan), Qing WANG (China)

THE INTERNATIONAL GEOSCIENCE PROGRAMME

The International Geoscience Programme (IGCP) is jointly run by the United Nations Education, Scientific and Cultural Organization (UNESCO) and the IUGS for over 50 years. Originally intended to unite Western and Eastern Earth scientists, the programme has evolved to support North-South and South-South collaborations, with a particular emphasis on geoscientists representing African countries, Small Island Developing States, women, and youth/early career.

In 2024, the ninth closed session of the IGCP Council was held at UNESCO Headquarters in Paris, France, during which it was agreed to support 33 different projects with a total of 227,000 USD. These projects span diverse topics from the Anthropocene to the evolution of ancient life, to geoheritage identification. One key outcome of the ninth closed session was to not announce a call for new projects, and instead, focus on a reformulation of IGCP projects, whereby fewer projects are supported, but with more resources. The initial focus of this new generation of projects will be Africa, shifting to another region after four to five years.

Capacity-building and outreach are core parts of the IGCP, and during 2024, IGCP projects held more than 70 such events were held, reaching more than 2,600 participants. Collectively, these activities reached more than 120 countries around the world, with 50% of participants from developing countries, 52% representing youth/early-career, and 43% women.

IGCP Project Spotlight:

Project 672: Himalayan glaciers and risks to local communities

This project, led by researchers in France, India, and Nepal, aims to understand how debris-covered glaciers react to climate change, and how local communities are impacted. In 2024, this project carried out a fieldtrip to northeastern Nepal to study the impact of the changing glacial system on the village, including through interviews with the local community.



IGCP 672. © Dibas Shrestha and Guillem Vincent

Project 705: Building Global Capacity for the Observation of Volcanic and Atmospheric Change

Led by researchers based in Canada, Ecuador, Sweden, and the United States, this project is supporting the Network for Observation of Volcanic and Atmospheric Change, a system developed by volcanologists and remote-



sensing experts for studying volcanic gas and ash emissions. A major goal of IGCP 705 is to strengthen collaboration between experts, as well as strengthen local capacity building. In 2024, this project organized a workshop in Ecuador, and made additional to volcano monitoring systems.



IGCP 705 © IAVCEI/CCVG groups

IGCP 722: Stone for Development

Coordinated by researchers in Australia, Cameroon, Fiji, Ghana, Philippines, and Zimbabwe, IGCP 722 is building capacity in Small Island Developing States for the sustainable use of ‘development minerals’ that are used ubiquitous in everyday life. Development minerals, which can include industrial minerals, construction materials, dimension stones, and semi-precious stones,

are often sourced and used on the local level, making the important for economic development. In 2024, IGCP 722 held a 40-hour online training course for participants from Albania, Australia, Colombia, Eritrea, Fiji, and New Zealand, followed by an 80-hour training programme onsite in Fiji for early career geoscientists from Fiji, Kiribati, Solomon Islands, Tonga, and Tuvalu. During this time, participants worked with expert project leaders studying environmental monitoring of river gravel extraction, mapping and assessment of geohazards, study of heritage stones, and other important topics. Of the 24 participants, 100% indicated they would recommend the course to colleagues, reflecting the success of the project.



IGCP 722. © Olivia Nicoll, Lucille Moore, Bora Aska and Kilisitina Moala





INTERNATIONAL LITHOSPHERE PROGRAM



Hans Thybo
Chair

International Lithosphere Program (ILP)

The lithosphere forms the connection between deep Earth and the surface. This basic observation was the background for International Union of Scientific Unions (ICSU - today ISC) to form ILP in 1980 charged to:

- promote interdisciplinary research on the lithosphere
- at the interface between IUGS and IUGG
- through multidisciplinary research projects

ILP's activities build on the understanding that major breakthroughs in the study of the Lithosphere require integration of imaging, monitoring, reconstruction and process modelling. ILP seeks to achieve a fine balance between "addressing societal needs", e.g. understanding natural catastrophes and other solid earth processes that affect the biosphere, providing information for improved resource exploration and environmental protection; and "satisfying scientific curiosity" to promote high-level fundamental research.

ILP is financed through national contributions from member countries and annual contributions from IUGS and IUGG. Nanjing University complimentary runs the secretariat.

ILP is a bottom-up organisation that takes initiatives to bring together individuals and

organisations in Task Forces and Regional Coordinating Committees, selected solely on the basis of scientific quality and societal needs. Key features of the projects are their dynamic nature and focus on bringing in new talent. Task forces exist for a period of five years, which may be extended for one term after successful review. The task forces are organised within four thematic subjects:

- Geoscience of Global Change
- Contemporary Dynamics and Deep Processes
- Continental Lithosphere
- Oceanic Lithosphere

Several major successful international research programmes have grown from ILP projects, and many continue as high-level organisations outside ILP, including International Continental Drilling Program (ICDP), Global Seismic Hazard Map, World Stress Map, Global Geoscience Transects and regional committees, such as EGT, EUROPROBE, TOPOEUROPE, TOPOASIA.

The activities in 2024 show that the Task Forces/Coordinating Committees again are in full activity; they held several in-person meetings as separate workshops and as symposia at international conferences, in particular EGU24, AGU24, DEEP24. ILP was a co-organiser of the successful DEEP24 meeting in Beijing. The ILP secretariat also held "ILP Workshop

on Interaction Between the Lithosphere and Surface Processes” for a large group of students with lectures given by 4 distinguished lecturers from ILP.

The hybrid business meeting was held in Vienna in April 2024 with short presentations on the achievements of the ongoing projects, introduction to IUGS and IUGG, and discussion of ILP’s strategic plan. The Evgenyi Burov medal was awarded to Prof. Fabio Capitanio, Monash University, Australia for “his outstanding contributions to studies of Geodynamics on a broad variety of subjects by use of modelling methodologies and high-performance computing, and his noteworthy scientific leadership”. The Flinn-Hart Award to an early career scientist was given to Dr. Eszter Békési, Institute of Earth Physics and Space Science, Sopron, Hungary for “her

outstanding research and community service, and very promising career path, in particular in the field of geothermal studies of basins and the lithosphere”. Both awardees gave a presentation with overview of their scientific achievements at the Annual ILP Business meeting during EGU24.

ILP is more active than ever, with a record number of 15 active projects. The projects include researchers from all continents and represent a broad coverage of lithosphere research. We are in particular pleased that the group of PIs include an increasing number of early career scientists.

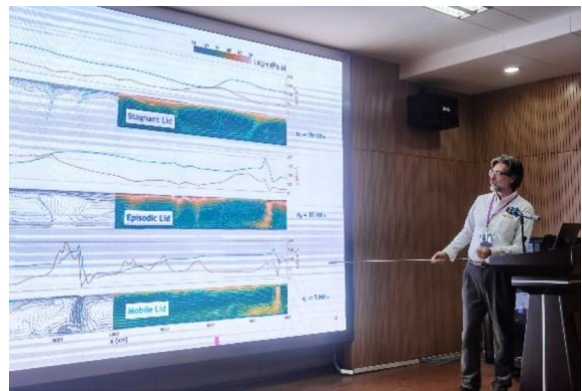
Hans Thybo, President, Mian Liu, Secretary General and Qin Wang, Executive Secretary January 2024, web-site: <https://ilp.nju.edu.cn>



Participants at the ILP workshop at Nanjing University, China, in the 28-29 October (Right), Prof. Hassina Mouri (IUGS president) gave Prof. Sierd Cloetingh the Distinguished Lecturer Medal of ILP.



The Evgenii Burov Medal for 2024 was awarded to Prof. Fabio Capitanio for “his outstanding contributions to studies of Geodynamics on a broad variety of subjects by use of modelling methodologies and high-performance computing, and his noteworthy scientific leadership”.



Prof. Fabio Capitanio with the Evgenii Burov Medal in hand (left) and gave lectures at the ILP workshop in Nanjing (right)

The Flinn-Hart Award was presented to Dr. Eszter Békési for “her outstanding research and community service, and very promising career path, in particular in the field of geothermal studies of basins and the lithosphere”.



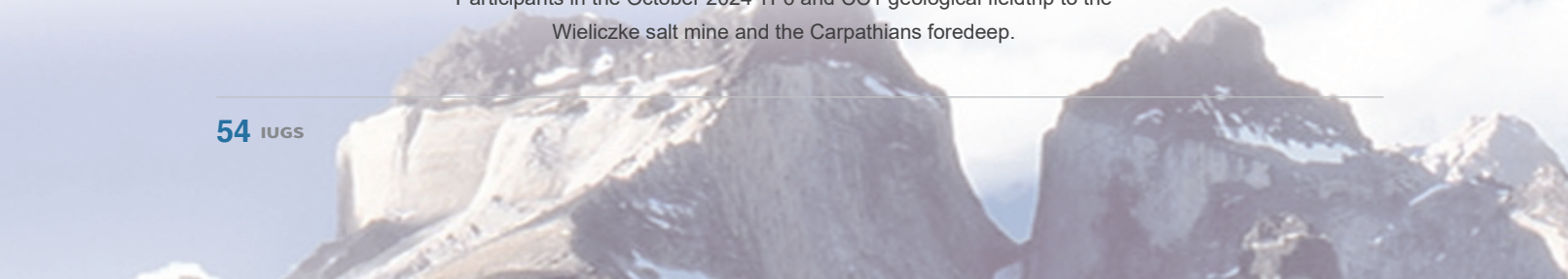
Dr. Eszter Békési with the Flinn-Hart Award



Participants in the 7-11 October 2024 18th Workshop of the International Lithosphere Program Task Force VI Sedimentary Basins in Krakow, Poland.



Participants in the October 2024 TF6 and CC1 geological fieldtrip to the Wieliczke salt mine and the Carpathians foredeep.





TF4 actively joined in the ICDP Drilling the Ivrea-Verbano zonE (DIVE project). Left: The recovered cores held by two key members of the on-site team; Right: Group photo after the completion of the fully cored, 909.5 m deep borehole, with people from the DIVE Team, the drilling company, and local authority representatives





INITIATIVE ON FORENSIC GEOLOGY



Dr Laurance John Donnelly
Chair


The IUGS Initiative on Forensic Geology (IFG) continued to expand, develop and diversify throughout 2024, whilst simultaneously increasing the exposure and globally visibility of IUGS in new and hard to reach audiences, communities and countries.

The first combined event on forensic and medical geology, was at the, '37th International Geological Congress', in Busan, South Korea. Organised by IUGS-IFG and the International Medical Geology Association, the session attracted over 100 delegates from Australia, Brazil, Cameroon, Chile, China, England, Ghana, Greece, India, Italy, Mozambique, New Zealand, Northern Ireland, Poland, South Africa, Sri Lanka and Sweden. The links between health, livelihood and criminal investigations were explored. Investigative and mitigative geological solutions and strategies were proposed to address medical and forensic geology challenges associated with the land, air and water environments.

IUGS-IFG held a Plenary Workshop at the, '41st International Symposium on Economic

Crime' on, 'Due Diligence of Gold; Challenges and Solution is the Global Supply Chain', at Jesus College, University of Cambridge, UK. This was attended by representatives from; Organised Immigration Crime, National Crime Agency, Ministry of Defence, Federal Reserve Bank in New York, consultants and collaborators from anti-money laundering, financial crime, bribery and sanctions compliance. IUGS-IFG drew attentions to gold crime and methods for minerals traceability, provenance determination, the Clean Gold Programme (Brazilian Federal Police) and opportunities for collaboration with the financial sector to mitigate illegal minerals trading crimes.

IUGS-IFG Chair, (Dr Laurance Donnelly) was invited to join the Mining Security Working Group (MSWG) and attended a workshop at the Royal Canadian Military Institute in Toronto, Canada. The event was the mining and minerals industry to share expertise and capabilities to align with the UN declaration of human rights. IUGS-IFG presented on the role of forensic geology for the investigation of mining crimes and illicit minerals trading. Support was also



provided throughout 2024 on illegal mining for the Brazilian Federal Police, Clean Gold Programme; the Rand Refinery in South Africa; INTERPOLs Illegal Mining Team. IUGS-IFG supported PhD research investigations conducted in the Amazon Brazilian rainforest, concerning illegal mining from artisanal and small-scale mining operations.

IUGS-IFG advanced crime scene examination and geological trace evidence by collaborating with the Animal Plant and Soil Traces (APST) expert working group of the European Network of Forensic Science Institutes (ENFSI). A workshop took place at the State Forensic Science Bureau, Latvia. The importance of crime scene sampling was also addressed by IUGS-IFG at the, '11th World Conference on Sampling and Blending', Johannesburg, South Africa,' IUGS-IFG presented a paper on, 'Challenges Associated with the Forensic Geological Sampling of Crime Scenes and Exhibits for Police.' Similarly, in China IUGS-IFG presented at the '9th China International New Energy Industry Expo, CLNB Jiangsu Province, China,' in the session 'Empowering a Sustainable Future with Dual Carbon Intelligence,' where battery minerals, conflict minerals and associated crimes were discussed by IUGS-IFG.

IUGS-IFG continued to provide training and police and law enforcement operational support in ground searches for homicide graves, mass graves associated with genocide and terrorist hides. In 2024, there was a particular focus on searches in Colombia and other parts of Latin America. The UK Police also agreed to include the IUGS-IFG developed, Geoforensic Search Strategy (GSS) as part of their training for UK police officers and the military. IUGS-

IFG worked with forensic archaeologists and forensic geophysics to develop 'Dark Heritage Prospection', which combines archaeological prospection and geoforensic search to reveal humanity such as the Nazi German extermination camps in Poland at Treblinka II, Belzec and Kulmhof. The police in New Zealand was able to locate the remains of a teenager who had gone missing using GSS. There were increased interests in water searches during 2024, following a high-profile missing persons case in the UK, where a body was subsequently found by police in a river. As such, IUGS-IFG aims to develop a special interest task group on water searches for bodies and human remains.

IUGS-IFG was active in producing and supporting several publications and standards including:

'Exploring the Growing Importance of Forensic Geoarchaeology in Italy' (Forensic Science), 'Standard Practice for the Forensic Analysis of Geological Materials by Scanning Electron Microscopy and Energy Dispersive X-Ray Spectrometry' (OSAC-GEO standards), 'Clean Gold Programme' (Federal Forensics), and a 'Special Issue on Forensic Geology' (Geology Today).

IUGS-IFG held the first virtual international meeting for the forensic geological investigation of fossil crimes. Fossils are part of a nation's cultural heritage, are in increasing demand from collectors and have become an international legal and illegal profitable market. Forensic geologists and palaeontologists are working with law enforcement agencies to disrupt fossil hunters (whether scientists, traders or poachers) who are trading rare fossils for multi-millions dollar trades.

IUGS-IFG Selected Photographs for Potential Inclusion in the IUGS 2024 Annual Report



Presentation on forensic geology, the University of Bradford, School of Archaeological and Forensic Sciences (SAFS), UK (source: University of Bradford, UK).



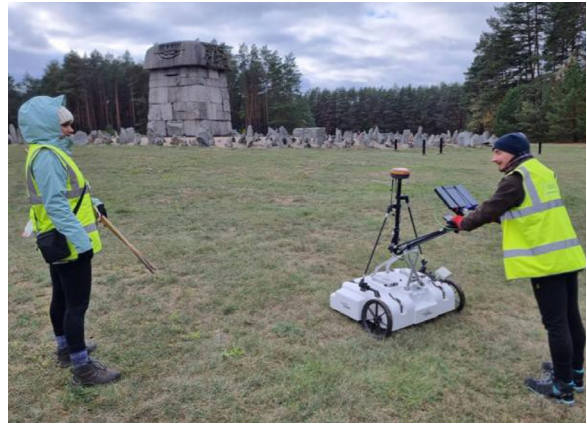
Dr Laurance Donnelly (IUGS-IFG, Chair) presented at MSWG on provenance determination (predictive geolocation) and traceability (source: MSWG).



Forensic geology investigation and the collecting of soil samples at artisanal and small-scale mining operations on the Amazon, Brazil (Photos: Marcelo Tortelero).



The Gobi Desert of Mongolia remains the target for illegal collection of fossils. International collaborations are now repatriating unique specimens to Ulaanbaatar, Mongolia (source. Prof Federico Fanti).



Geophysical searches taking place to delineate the infrastructure and graves at the Treblinka Nazi Death Camp, in Poland, (source: Dr Michael Pisz, the University of Bradford, School of Archaeology and Forensic Sciences).



37th International geological Congress, South Korea, where IUGS-IFG held the first combined session on forensic and medical geology with the International Association of Medical Geologists. (Source: Laurance Donnelly and Robert Fitzpatrick).



DDE 2024

DDE implementation began in 2019 and entered its sixth year in 2024. Having missed the opportunity to showcase its progress at IGC 36, scheduled for 2020 but cancelled due to the COVID Pandemic, IGC 37 convened in Busan,

Korea, from 25 to 31 August 2024 was an important international forum for DDE to display its achievements and showcase the products and services it had developed.



DDE booth at IGC 37, visitors to the booth, and IUGS, IGC 37 and DDE leaders at the venue

DDE Convened 14 technical sessions and staged one of the most visited booths at IGC 37 where outputs of DDE funded projects were on display; services offered by the DDE Platform was demonstrated, and panel discussions on GeoGPT, a geoscience chatbot developed by DDE and Zhejiang Lab of China was convened. Moreover, DDE hosted a reception to about 60 invited guests where DDE intentions to launch an African Initiative in 2025 was announced.

DDE was present at several regional (EGU, Vienna, Austria; April 2024), and national

(NMGS, Jos, Nigeria; March 2024. JpGU, Chiba, Japan, May 2024 and GSA CONNECTS, Anaheim, California, USA, September 2024) conferences. DDE and Springer Nature signed an MoU for collaboration and conducted a global survey that identified the 10 most important research themes of concern to earth scientists. The process and methodology used in identifying the 10 topics and the results of the survey could be accessed at: [The Deep-time Digital Earth \(DDE\) Big Science Program: Geoscientists vote on most pressing global challenges](#)



Representatives of DDE and partners at EGU, GSA CONNECTS and NMGS events

DDE Science Committee (SC) and Executive Committee (EC) had hybrid sessions in Kunshan City, Suzhou, China, host of the DDE Secretariat, from 20 to 23 August 2024. Prof. Harvey Thorleifson, University of Minnesota, USA, the newly elected Chair of the DDE Governing Council (GC) in July 2024, attended the SC & EC sessions in person. The SC reviewed progress reports of ongoing DDE

funded projects approved during 2021-2023 and evaluated more than 20 project proposals for funding under a new round of research and development and seed grant funds. The EC, based on SC recommendations, approved 7 projects for DDE funding from 2025 to 2027; one of them is the first DDE financed African project, on mineral resources mapping of West Africa.



Members of GC, EC & SC and the DDE Secretariat at Kunshan meetings

February 2024 marked the end of 5 of the 10-year horizon originally envisioned for DDE. The DDE Medium-Term Plan (MTP; July 2021-June 2026) had foreseen a mid-term review of implementation by an IUGS-led team in 2024. The review started soon after IGC 37 and preliminary findings were provided to the DDE Secretariat in November 2024. The DDE GC and EC Chairs provided feedback on the findings following discussions at an online GC meeting on 5 December 2024. Conclusions and recommendations of the IUGS-led review will be finalized at the next IUGS-EC session in March 2025 and will serve as an important input to the preparation of DDE strategic plan for 2025-2028 that the DDE GC intends to adopt by mid-2025. DDE GC will also decide by mid-2025, whether

a new round of call for project proposals for DDE funding could be opened based on budgetary forecasts for 2026 and beyond.

DDE will continue to present its products, services and project outcomes in 2025 in several national, regional and international forums. The 30th Colloquium of African Geology (CAG30) in September, in Nairobi, Kenya, and the GSA session in San Antonio, Texas, in October will be key events. DDE will aim to diversify the services offered by the DDE Platform to regions like Africa which are constrained by the global digital divide. Efforts to expand DDE outreach globally will be coordinated with IUGS, UNESCO, CODATA and other international organizations and partners.



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