



## Report 2023

### Thirteenth Session of the UN Committee of Experts on Global Geospatial Information Management

31 July – 4 August 2023

#### Summary

The report provides an update on the work done by the United Nations Global Geospatial Information Management Geospatial Societies. The network is a coalition of presidents, secretaries-general or equivalent office-bearers or their nominees who lead recognized international organizations involved in the coordination, development, management, standardization or regulation of geospatial information and related matters. The report details the renewed leadership composition and efforts to increase intersession interactions and work toward collective objectives in the coming period. The accompanying technical background document provides further information and updates of the activities of the member organizations of the Geospatial Societies.

#### UN-GGIM Geospatial Societies (UN-GGIM GS)

The UN GGIM Geospatial Societies Thematic Group is a coalition of recognized international organizations involved in the coordination, development, management, standardization or regulation of geospatial information and related matters. These organizations are:

- IEEE Geoscience and Remote Sensing Society (GRSS)
- International Association of Geodesy (IAG)
- International Cartographic Association (ICA)
- International Federation of Surveyors (FIG)
- International Geographical Union (IGU)
- International Map Industry Association (IMIA)
- International Society for Digital Earth (ISDE)
- International Society for Photogrammetry and Remote Sensing (ISPRS)
- International Union of Geodesy and Geophysics (IUGG)

UN GGIM GS meets formally once each year, typically when the UN-GGIM Committee of Experts meet, and informally when schedules permit. This background-report provides a general view on the activities of these societies and on their potential future involvements with the other networks and groups within the UN-GGIM – IGIF perspective.

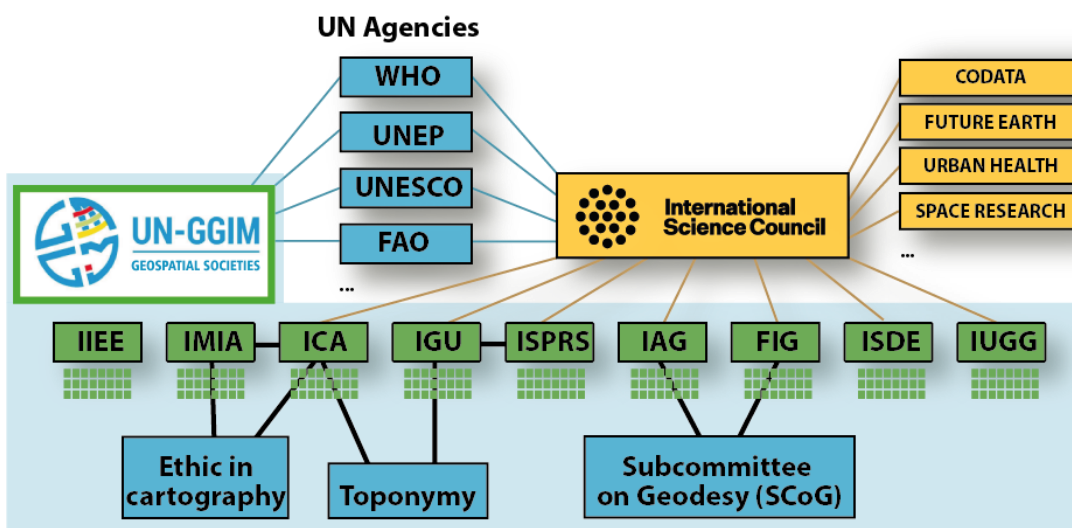


Figure 1: The UN-GGIM Geospatial societies as a whole



## Activities and Future Challenges in line with UN-GGIM

Respective organizations of UN-GGIM Geospatial Societies gather more than 100 countries' scientific organizations, academics and research institutes representing few thousands of universities and tens of thousands of people. Each society is strongly involved in research, planning, high education and sometimes in elementary education. Therefore, the UN-GGIM Geospatial Societies represents a high potential for widely diffusing scientific values, knowledge, methods, and practices, as well as collect the needs of various communities specifically in the Global South. The GGIM Geospatial Societies are also engaged in numerous inter-relations within the UN-GGIM and with various external institutions. This is why a clarification of this dense network of relations is in progress to increase the efficiency of the involvement of the UN-GGIM Geospatial Societies with UN-GGIM, in particular the implementation of the IGIF, in its actions, platforms and new centers.

### GOVERNANCE

#### 1- Global governance Framework

##### **Better coordinate the UN-GGIM Geospatial Societies with the International Science Council (ISC) actions**

As mentioned in the scheme representing the *Geospatial Societies as a whole* (Fig.1), **seven out of the nine UN-GGIM Geospatial societies** belong to the **International Science Council (ISC)**. The ISC maintains an active role at the **intersection of science and policy** with governments and UN agencies, developing now a project on '[Science in and for the intergovernmental system](#)'. It will also be strengthened by closer alignment and active collaboration with the International Network for Government Science Advice (INGSA), which operates under the auspices of the ISC.

Being at the same time involved in different ISC scientific committees<sup>1</sup> and in the UN-GGIM, the Geospatial Societies should take a predominant role in fostering the education of all the High education institutions of the world as well as primary education in their ramifications present in many countries. Furthermore, their numerous scientific meetings all over the world could become places where the UN-GGIM could be easily promoted.

##### **Direct involvement of the UN-GGIM Geospatial Societies in the work of UN agencies**

Numerous collaborations link the geospatial societies with UN agencies. IAG and FIG actively participate to the UN-GGIM subcommittee on Geodesy (SCoG). Besides, IAG is part of the Group on Earth Observation (GEO), of the United Nations Office for Outer Space Affairs (UNOOSA), UNOOSA Space-based Information for Disaster Management and Emergency Response (UN-SPIDER), UNOOSA International Committee on Global Navigation Satellite Systems (ICG). IGU participated to a large program with the International society for Urban Health (ISUH) and to the ISC group of experts for the WHO Future Urban agenda.

##### **Collaborations between UN-GGIM Geospatial Societies**

ICA and IGU collaborate for long time in a joint commission on toponymy which participate to the United Nations Group of Experts on Geographical Names (UNGEGN). ICA and IMIA secured a new partnership in 2022 on Geodesy observation. Next year 2023-2024, the UN-GGIM Geospatial Societies will elaborate a plan to privilege common research with other IUGG Associations. The IGU Commissions on Geographical Information Science and Modelling Geographical Systems have consistently cooperated with each other and with Commission II of the International Society for Photogrammetry and Remote Sensing (ISPRS). Annually, both Commissions contribute to GIS Awareness Week and World GIS Day.

##### **Collaborations between the UN-GGIM Geospatial societies and the UN-GGIM Academic Network**

A better mix of competences will benefit to the consistency of the UN-GGIM thematic networks. For example, FIG Commission 2 delegates have been encouraged to respond to the Chair of the UN-GGIM Academic Network. The extension of these connections will increase the building capacity of each group.

<sup>1</sup> A section details below actions of the ISC in which the UN-GGIM Geospatial Societies are very active (page 5).



### Collaboration with the UN-GGIM Private Sector Network

IMIA is both engaged in the GGIM Geospatial societies and in the GGIM Private Sector Network forming a strong connection between both networks.



Figure 2: The Geospatial societies inside the UN-GGIM eco-system

The ongoing mapping of all these individual relations of the Geospatial societies inside and outside the UN-GGIM will permit to identify the strengths, the lacks, and will lead to better elaborate the future strategies.

### 2- Geospatial Policy and Legal framework

IAG participate to the Advisory Board on the Law of the Sea (ABLOS). Different societies like ICA, ISDE, IMIA have long experiment of reflecting on Ethics. Other initiatives exist and should be listed at all national and international levels.

### 3- Scope new 4IR (4<sup>th</sup> industrial revolution) business models

Most of the societies are engaged in the 4IR, developing methods and scientific expertise. For example, International Symposium on Spatial Data Handling and Geographic Intelligence series (SDH&GI) are planned by IGU for 2024 and the 13<sup>th</sup> International Symposium on Digital Earth in Athens, Greece, organized by ISDE, will cover topics such as Digital Twins, Big Earth Data, Earth Observation & GIS, and extensive applications of Digital Earth technologies and products. Networking at the UN-GGIM is critical to bring together efforts to leverage the new 4IR and making it benefit for all people, specifically towards the Global South.

## TECHNOLOGY

### 4- Global Use Case Framework to prioritize data and geo-analytics for SDGs

The Global Geodetic Observing System (GGOS) is IAG’s observing system to monitor the geodetic and global geodynamic properties of the Earth as a system completed by the IAG Services to facilitate the production of geodetic products and to promote their use to the scientific community, policymakers and the public. The COB provides communication, public information, and outreach links, via the [IAG Website](#) and the monthly Newsletters. More promotion and diffusion through the UN-GGIM Geospatial societies’ networks would strengthen geo-analytics for SDGs from human to natural interacting factors.

### 5- Road Map for knowledge-sharing

Each society follow their own strategies of knowledge sharing within the UN framework of SDGs. For example, the ICA promoted its recent ICA-UN book “[Mapping for a Sustainable World](#)” translating it into French and other languages underway. The list and sharing of these road maps will be more elaborated in the future. Joined projects would allow to better involve the UN-GGIM Geospatial societies in a roadmap for knowledge sharing.



#### 6- Knowledge representation standards

IAG is involved in the International Standards Organization (ISO) TC 211. IGU participated in 2022-2023 to the group of experts for the ISO standard of Digital Twin cities coordinated by ICLEI and EU. Together with IMIA and with the UN-GGIM group of experts, the UN-GGIM Geospatial societies should constitute a strong network of academies supporting the reflections and the training of the good practices in representation standards all over the world.

### PEOPLE

#### 7- Partnerships in multimodal ecosystem

All the societies are multi-level frameworks of governance from regions, countries to international organizations. They organize numerous international and regional meetings, workshops and training. The whole eco-system represents a complex system that would deserve to be better visible and coordinated within the UN-GGIM. A workshop could be organized in 2023-2024 to clarify and better integrate all the links between societies and with the international sphere. A common calendar of the large and shared events would increase partnerships in multimodal ecosystem.

#### 8- Workforce ready skills development framework

Academic societies are particularly dedicated to education through numerous meetings and workshops. ISDE organizes every year the International Symposium on Digital Earth. Next July, the theme of "Earth Intelligence to Understand and Protect Our Living Planet". All the societies including IMIA continue to promote Education. In the future, their sharing on the UN-GGIM Geospatial societies website would open them outside academy, strengthening the private-academy mutual impacts on skill development.

#### 9- Consistent brand and messaging

Each society has got its own brand and communication framework through meetings and publications. Notably, ISDE organized in 2022 the 9th Digital Earth Summit was successfully held with the theme of "Digital Earth to Bridge Digital Divide for Attainment of Sustainable Development Goals". Other societies like ICA continued recent publications of the *International Journal of Cartography*, the *ICA News*, eCarto News on the ICA website, and articles in GIM and ArcNews. The IGU has got two book collections (*Springer* and *Edward Elgar*), several journals and the [IGU trimester newsletter](#) promotes the IGU community activities but also the neighbor associations and the UN-GGIM. More exchanges and promotion between the societies and the UN-GGIM will improve the consistency of the UN-GGIM brand and messaging.

### TARGETED FUTURE CHALLENGES

To better address the 9 UN-IGIF strategic pathways, preliminary discussions in May-June 2023 between the UN-GGIM Geospatial societies aimed at better coordinate their actions two UN-GGIM targeted issues:

#### Innovation

IAG and FIG will participate to the **United Nations Global Geodetic Centre of Excellence, opened in March 2023 in Bonn** Germany. FIG Commission 5 looks forward to continued cooperation with the UN-SCoG and is very excited about the new opportunities for collaboration with the GGCE as well as new members of the Steering and International Advisory committees. This new center will improve the visibility of geodesy and will challenge for adopting new techniques and technological development and participation in the work of SCoG and GGCE. For IAG and FIG it will be the main interests in the coming period.

The whole societies are willing to contribute actively to the **UN Global Geospatial Innovation and Knowledge Centre in Deqing, China** in which, the ICA is represented through membership on the International Advisory Committee.

#### The One UN Geospatial Situation Room for people, places and planet

In the "One UN Geospatial Situation Room for people, places and planet" the Geospatial Societies will:

- Define their role in coordination with the groups of the private companies and with the academic networks to improve the building capacity of the whole networks;
- Intensify the involvement of their communities in particular in the education aspects and in the reflections on spatial knowledge and ethics in the SDGs and I4R;
- Coordinate the education and scientific workshops and meetings specifically toward developing countries.



## REPORTS BY SOCIETY

### The International Science Council (ISC)

Seven of the nine UN-GGIM Geospatial societies belong and actively participate to the **International Science Council (ISC)**. The ISC has a unique global membership across 140 countries and 40 international unions organizing and representing the natural and social sciences within a single organization. The ISC maintains an active role at the **intersection of science and policy**. Much of this work focuses on policy processes related to the UN's broader post-2015 development agenda, including the 2030 Agenda for Sustainable Development, the Sendai Framework for Disaster Risk Reduction, the Paris Agreement on Climate Change and the New Urban Agenda. In addition to directly collaborating with UN bodies (including UNEP, UNDP, UNDRR and WHO) in joint activities, the Council's roles within the UN system range from representing science and enabling scientific participation in UN events and processes to preparing independent scientific input and advice.

In the coming years, the Council's work at the global science–policy interface will be informed by the recommendations of the Steering Group that is leading the project on **'Science in and for the intergovernmental system'**. It will also be strengthened by closer alignment and active collaboration with the International Network for Government Science Advice (INGSA), which operates under the auspices of the ISC.

The seven UN-GGIM Geospatial societies actively participate to ISC's permanent commissions like:

- **CODATA** building standards on scientific ethics and practices of DATA, like FAIR principles (Findable, Accessible, Interoperable and Reusable), CARE Principles of Indigenous Data Sovereignty (Collective benefit, Authority to control, Responsibility, Ethics), JUST Principles (Judicious, Unbiased, Safe and Transparent). Notably, the [CODATA](#) committee of ISC collaborates closely with the UN and UNESCO on initiatives such as the [Global Open Science Cloud Initiative](#), among [others](#). The ISC is elaborating a new program of **Data Knowledge Action Network (DAKAN)**, as part of collaborative systems modelling. DAKAN elaborates a virtuous circle of Data, knowledge, Action, impact and evaluation to improve the use and the relevance of data, in particular for urban health, considering not only cities and health, but the interactions between several SDGs in evolving multi-level systems. Ongoing efforts are being made to clarify the specific actions of the UN GGIM Geospatial Societies Thematic Group, complementing their engagement with the ISC. Enhancing the clarity of the extensive network of relationships among Geospatial societies will foster the efficiency of their involvement in the GGIM-IGIF, its actions, platforms, and new centers.
- **URBAN HEALTH AND WELL-BEING IN A SYSTEM APPROACH (UHWB)** collaborates with the WHO, UN-Habitat and the ISUH (International Society of Urban Health) to develop international collaborations and support actions. For example, they work on standards of Health with Latin America (**SALURBAL project**) and they are elaborating together with the University of Lausanne, IGU, WHO, ISUH and UNU a large **MOOC on Healthy Urban systems** with more than 30 experts from all over the world and from diverse disciplines and public/private positions of science, planning or governance. This MOOC will be available for free on COURSERA next fall 2023.
- **FUTURE EARTH** is a long-standing program of ISC to join scientists in the fight against climate change and disaster risks, like the IPCC. The six UN-GGIM societies are particularly engaged in this action.
- **COMMISSION ON SPACE RESEARCH (COSPAR)** includes IAG.
- **ISC-STANDING COMMITTEE FOR GENDER EQUALITY IN SCIENCE (SCGES)** was established in September 2020 to mitigate the continuing unbalance of gender in science. The Commission on Gender geography of IGU participates actively to this committee.



## **IEEE Geoscience and Remote Sensing Society (GRSS)**

The Geoscience and Remote Sensing Society (GRSS) is a technical Society of the Institute of Electrical and Electronics Engineers (IEEE). GRSS fosters engagement of its members for the benefit of society through science, engineering, applications, and education as related to the development of the field of geoscience and remote sensing. The Geoscience and Remote Sensing Society (GRSS) is a community of researchers and practitioners collaborating and designing tools to understand our interaction with Earth's ecosystems, to monitor its environments, oceans and ice caps, and to characterize potential risks.

### **GRSS & IEEE**

GRSS is one of the 39 societies of IEEE, the largest academic and professional Society with about 430,000 members in 160 countries. GRSS has more than 4200 members in 94 countries. It has currently 79 chapters all over the world (16 of them are student chapters), and 11 ambassadors.

### **GRSS Members**

Members of GRSS come from a wide variety of scientific and engineering backgrounds. Members with engineering backgrounds often support scientific investigations with the design and development of hardware and data processing techniques, requiring them to be familiar with geosciences such as geophysics, geology, hydrology, meteorology, etc. Conversely, scientists find in GRSS a forum for the evaluation and dissemination of remote sensing related science. This fusion of geoscience and engineering disciplines gives GRSS a unique interdisciplinary character and an exciting role in advancing remote sensing science and technology.

### **Fields of Interest**

The fields of interest of GRSS span science and engineering, and include theory, concepts, and techniques of remote sensing of the Earth, oceans, atmosphere, and space, as well as the processing, interpretation, and dissemination of this information:

- Remote Sensing of Land and Surface Processes
- Remote Sensing of the Atmosphere and Oceans
- Remote Sensing of the Cryosphere
- Remote Sensing of Solid Earth and Geodynamic Processes
- Remote Sensing and Mitigation of Natural Disasters
- Remote Sensing Data Processing Techniques
- Electromagnetics and Radiative Transfer
- Sensors, Platforms, and Instruments for Remote Sensing
- Education, Standards and Policy

*No report of events was delivered by IEEE-GRSS for 2023, waiting for more precision on the aims and reorganization of the group of Geospatial Societies.*

## **International Association of Geodesy (IAG)**

### **Activities and Areas of Work**

The activities in the period were gradually recovering from the COVID-19 pandemic. Regular in-person meetings were organized with the possibility participate also online. The IAG General Assembly, the Council of National Delegates, the Executive Committee (EC), and the Office carry out the administration of IAG. The IAG Council consists of the delegates appointed by the Adhering Bodies of the IUGG member countries and is responsible for governance, strategic policy and direction of the IAG. The Council meeting is organized at the General Assembly every four years, the last time in 2019 in Montreal with the election of IAG Officers for the period 2019-2023 and a Review of the Statutes and Bylaws. The next meeting will be in July 2023 at the IUGG General Assembly in Berlin.

The IAG Executive Committee (EC) had two hybrid meetings in 2022-2023. The IAG Bureau consists of the IAG



President, the Vice President and the Secretary-General. It meets monthly via teleconferences to administer the day-to-day affairs.



*The structure of IAG 2019-2023*

The scientific structure of IAG comprises four Commissions (Reference Frames, Gravity Field, Earth Rotation and Geodynamics, Positioning and Applications), three Inter-Commission Committees, one project, 12 International Scientific Services, the Global Geodetic Observing System (GGOS), and the Communication and Outreach Branch (COB). The Services generate scientific products through Operation, Data and Analysis Centers. The GGOS is IAG's observing system to monitor the geodetic and global geodynamic properties of the Earth as a system. GGOS works with the IAG Services to facilitate the production of geodetic products and to promote their use to the scientific community, policymakers, and the public. The COB provides communication, public information and outreach links, in particular via the IAG Website (<http://www.iag-aig.org>) and the monthly Newsletters.

There were several meetings of Commissions, GGOS and Services. One of the main activities was the preparations for the next IUGG General Assembly in Berlin on July 11-20, 2023. A total of 5000 participants are expected, with IAG-related more than 550.

The contribution of IAG to the Global Geodetic Reference Frame (GGRF) within the United Nations Global Geospatial Information Management (UN-GGIM) has been an essential activity, in particular, given IAG's involvement in the UN-GGIM Subcommittee on Geodesy and planning for the Global Geodetic Center of Excellence.

### **Partnerships and Regional and International Collaboration**

Besides the close cooperation with the other IUGG Association and the UN-GGIM relation, the official liaisons of IAG include:

- Advisory Board on the Law of the Sea (ABLOS)
- Group on Earth Observation (GEO)
- International Science Council (ISC) Commission on Space Research (COSPAR)
- International Astronomic Union (IAU) Commission A2 "Rotation of the Earth"
- International Standards Organization (ISO) TC 211
- UN-GGIM: Geospatial Societies (previously Joint Board of GIS, JBGIS)
- United Nations Office for Outer Space Affairs (UNOOSA)
- UNOOSA Space-based Information for Disaster Management and Emergency Response (UN-SPIDER)
- UNOOSA International Committee on Global Navigation Satellite Systems (ICG)



Representatives of the IAG will participate in the meetings of these bodies and will report to the IAG EC. The reports of all IAG components (Commissions, Inter-commission Committees, Global Geodetic Observing System (GGOS), IAG Office and Communication and Outreach Branch will be published in the IAG reports.

### Priority Issues, Challenges and future plans

A continuing priority is the IAG's involvement in the Global Geodetic Reference Frame (GGRF) Subcommittee on Geodesy (SCoG) of the United Nations Global Geospatial Information Management (UN-GGIM). IAG's contribution to the SCoG and the Global Geodetic Center of Excellence (GGCE) will be one of the central targets in the coming years. Priority issues in this respect are the improvement and sustainability of the geodetic infrastructure that underpins all geodetic reference products provided by IAG Services.

The common research with other IUGG Associations is another priority issue, e.g. in joint (sub) commissions. Research in marine geodesy, climate change, and a Project on New sensors and technologies (e.g. optical and atomic clocks, quantum sensors) shall be intensified, e.g. in the new inter-commission committee adopted in the General Assembly. IAG Study and Working Groups are dedicated to addressing clearly defined well-focused scientific topics of limited scope within the field of the IAG's Commissions, Services and the Global Geodetic Observing System (GGOS).

The technical and scientific development of geodesy is continuing in the next decade. Space techniques are improving in quantity and quality. New sensors (e.g. optical and atomic clocks, quantum sensors) allow measurements of new parameters, and powerful computers extend the horizon of processing huge amounts of data. The objective of geodesy expanded to the observation and quantification of global change (climate and dynamics of the solid, fluid and gaseous Earth). Increased demands for accuracy and real-time applications will cast new challenges in the future.

One of the challenges in the coming year is to recover and re-establishment of several lost opportunities due to the COVID-19 pandemic. Improving the visibility of geodesy, challenges to adopting new techniques and technological development and participation in the work of SCoG and GGCE will be the main interests in the coming period. The IUGG General Assembly will be the major event in 2023.

## International Cartographic Association (ICA)

**Activities, Areas of Work** - The International Cartographic Association (ICA), founded in 1959, promotes cartography and GIScience internationally. Its activities happen through the work of its 28 Commissions and 5 Working Groups.

The principal focus for the ICA was preparing for the 19<sup>th</sup> General Assembly and 31<sup>st</sup> International Cartographic Conference (ICC) in Cape Town, South Africa August 14-18, 2023 (<https://icc2023.org/>). Endorsed two significant regional cartographic conferences: EuroCarto 2022 held in Vienna Austria and AutoCarto 2022 held in Redlands, California.

The **ICA Executive Committee created a new working Group on Ethics in Cartography** and worked collaboratively with the International Map Industry Association on this topic. The ICA promoted its recent ICA-UN book "*Mapping for a Sustainable World*" at meetings and conferences. Translation of the book into French is now complete with other languages underway. Lastly, the ICA continued recent publications of the *International Journal of Cartography*, the *ICA News*, eCarto News on the ICA website, and articles in GIM and ArcNews.

**Partnerships and Regional and International Collaboration** - The ICA collaborated with the UN Secretariat of UN-GGIM, leadership of the UN-GGIM Africa Region, the UN-Economic Commission for Africa and the Government of South Africa to align the ICC in Cape Town with the UN-GGIM Africa Region for their 9<sup>th</sup> annual meeting August 15-17 as well as with the SDG Data Alliance (<https://www.sdg.org/>) which will conduct workshops on African experiences in developing UN-IGIF based Country-level Action Plans and SDG Data Hubs using Esri technology.

The ICA contributed to efforts by the International Advisory Committee on the program anchored in the UN IGIF for





the Second UN World Geospatial Information Congress in Hyderabad, India. Participated in the 10th Plenary Meeting of the UN-GGIM Arab States on integrating statistical and geospatial information. Conducted a two-day workshop on the UN-IGIF. Participated in the 2023 Geospatial World Forum on brainstorming the Vision and Strategy for Long-term Development and Adoption of Geospatial Knowledge Infrastructure: moving 'geospatial' from data to knowledge; and participated in collaborative development of integrated national strategy and policy frameworks for knowledge-centric infrastructure.

Signed a Memorandum of Agreement between the ICA and EuroGeographics representing Europe's National Mapping, Cadastral and Land Registration Authorities. Participated in meetings of GeoUnions of the International Science Council. The ICA is represented through membership on the International Advisory Committee for the UN Global Geospatial Innovation and Knowledge Centre in Deqing, China.

### Priority Topics and Challenges

Actionable cartography and actionable GIScience are needed to address the increasing challenges that face the world today. These will be a focus for our future.

## International Federation of Surveyors (FIG)

### Activities, Areas of Work – Achievements

In 2022 FIG activities went back to a more normal after several Covid-19 affected years with only online activities. In June 2021 FIG organized for the first time ever together with the local organizers from the Netherlands a Working Week which was entirely virtual and online. With 1300 participants it was a big success but showed at the same time that people would like to meet in person again. With the opening of the world FIG Council made the decision to organise an on-site event in 2022 however adding the possibility to access some of the sessions online. Originally the large FIG Congress 2022 should have been held in May 2022 in Cape Town, South Africa, but the destination was changed to Poland and our local Polish organisers took up the challenge to organise a congress in less than a year. To gain time both for the preparations and also to ensure a better opening of the world after the Covid-19 close-down, the Congress was held in September 2022. Instead, the FIG Congress 2026 will be held in Cape Town. The participants that were able to attend onsite were pleased to be back in person appreciating the advantages an onsite event has. During the General Assembly there were elections for two new Vice Presidents and the President for the term 2023-2026. Elected were Diane Dumashie (United Kingdom) as President and Winnie Shiu (USA) and Daniel Steudler (Switzerland) as Vice Presidents.

The FIG Working Week 2023 took place in Orlando, Florida with full focus on the onsite participants. At the General Assembly FIG President Diane Dumashie presented the Council Work Plan and the focus areas for the coming four years (see under Priority Issues and challenges). Online meetings are useful as a supplement to meeting in reality, and several online meetings and events were held during the year.

FIG was represented with a stand at Intergeo, which seemed to be back to an almost normal size. DVW, the organisation of the outgoing President, Rudolf Staiger, invited during Intergeo to a hand-over event marking the change in leadership.

FIG Commission 7 on Cadastre and Land Management held its 2022 Annual Meeting as a mixed on-site and online event. The onsite event took place in Spain hosted by El Colegio de Ingeniería Geomática y Topográfica (COIGT), the Spanish institution encompassing geomatics, topographic mapping, and survey engineering, and ran alongside COIGT's TopCart22 conference. The event was used to update delegates and friends of Commission 7 on global developments in land administration over the past year, and to also focusing attention for the next Chair period (2023-26).

FIG Commission 3 (Spatial Information Management) and 8 (Spatial Planning and Development) held a joint event in Athens, Greece with the theme Spatial Information and planning in a world facing multiple crises - a surveyors' perspective. The UNWGIC 2022 offered the opportunity for side events, and FIG organised a session on the Importance of Land Administration for the Implementation of the SDGs.



New Publications

Four new publications have been published in the FIG Publication Series:

<p>FIG Publication no 78:  <u><a href="#">Geospatial Data in the 2020s - Transformative Power and Pathways to Sustainability</a></u>          FIG Commission 3 – Spatial Information Management          FIG Report 2022</p>	<p>FIG Publication no 79:  <u><a href="#">Land Consolidation – The Fundamentals to Guide Practice</a></u>          FIG Commission 8 - Spatial Planning and Development,          FIG Report 2022</p>
<p>FIG Publication no 80:  <u><a href="#">Digital transformation and land administration Sustainable practices from the UNECE region and beyond</a></u>          FAO, UN AND FIG          FIG Guide 2022</p>	<p>FIG Publication no 81:  <u><a href="#">Enhancing Surveying Education through Blended Learning</a></u>          FIG Commission 2 - Professional Education          FIG Report 2023</p>



Partnerships and Regional and International Collaboration

Through our international collaboration with FIG members, the sister professional associations, regional professional bodies as well as UN bodies and the World Bank, FIG aims to transform all surveyors into global surveyors. Surveyors with a global education are more sensitive for the progress of surveying in all its fields and applications everywhere; but also surveyors who will have an understanding of global challenges will be able to develop the profession for the betterment of all parts of our world.

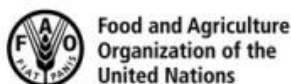
We are working closely together with several UN organizations. In addition, there are diverse relationships with our partner and stakeholders. This allows us to offer our professional expertise in all kinds of projects. At the same time, it gives us the opportunity to amplify not only the voice of our federation but also our entire profession.

A special study on Digital transformation and land administration was undertaken by FAO, UNECE and FIG resulting in two publications:

**FAO Knowledge for Investment Brief: Funding Digital Transformation for Land Administration**

**FIG publication 80: Digital transformation and land administration - Sustainable practices from the UNECE region and beyond.**

Land administration systems are increasingly becoming digitized, making applying for a mortgage, say, or registering a new building or property deed easier. When done responsibly, the digital transformation of land administration systems carries many benefits. It can increase activity and efficiency in land markets, improve land revenues for governments and stimulate economic growth through new data products and services. It can also increase accountability, transparency, and equality for all land sector stakeholders. Yet securing sustainable funding for the digital transformation is still a challenge.





### Priority Issues and Challenges

Currently FIG is in a transformation phase from the leadership 2019-22 and to the new leadership 2023-2026. At the General Assembly 2023, FIG President Diane Dumashie presented Council Work Plan for the coming four years with the vision of: *Serving society, benefitting people and the planet: Tackling the Global Challenges*. The work plan has a special focus on:

- Planet
- People
- Partnership
- Governance and communication

Five Task Forces have been established on:

- FIG and the Sustainable Development Goals
- The role of FIG in international trends and future geospatial information ecosystem
- Diversity and inclusion in the surveying profession
- Reimagining the climate action agenda for the global surveyor community through FIG – FIG Climate Compass Task Force

### Perspectives and Future Plans

Over the last 30 years, FIG has become a globally acting organisation representing the full range of a modern surveying profession. To keep the position as the premier international representation of surveyors, FIG cannot ignore the dramatic changes in technology and society that have occurred in the last decades in order to stay relevant for our profession and society.

FIG will continue to work in the commissions, with sister organizations and with FIG members on the UN Sustainable Development Goals. Surveyors and their products play an essential role in the majority of the 17 SDGs.

Maintaining the significance of the surveying profession remains an important target for FIG. Council will continue to keep and strengthen our partnership with UN agencies, the World Bank, other international agencies, and sister organizations.

The Volunteer Community Surveyor Program (VCSP) is an innovative volunteer programme that intends to be a powerful driver for both social impact and professional development. The VCSP leverages on the skills, experience, talents and education of young surveyors and matches these competences with the needs of GLTN, particularly in GLTN's county-level implementation plans and programmes. The VCSP is run by the FIG Young Surveyors Network, and currently they have partnered with the Global Land Tool Network (GLTN) facilitated by UN-Habitat on internships supporting UN-Habitat projects.

### Matters/Issues for Consideration

FIG will work for a closer cooperation with UN-GGIM on two levels, first through its involvement in the Geospatial societies network and second within the FIG strategic work plan.

The first involves actively participating and collaborating with GS partners to ensure that the working group continues to contribute to enriching the agenda for debate by the UN GGIM members.

It is appreciated that ecosystem geospatial permits intelligent interactions between data and services, a clear thread within FIG strategic work plan. Accordingly, the second level is by leveraging the FIG vision; 'serving society' and implementing the work of FIG by highlighting geospatial information practises that can be articulated in the IGIF framework themes; governance, technology and people and that flows through into the nine pathway sub categories.

Further the FIG Task Force '**The Role of FIG in International Trends and Future Geospatial Information Ecosystem**' is a key pillar of FIG work plan. The geospatial industry and land professions are dealing with major global challenges



such as rapid urbanisation and the effects of climate change. FIG wishes to examine its role, as well as the functions and competencies of surveyors, to make sure they remain aligned with international trends and domain specific drivers which shape our industry. Over the next three years this work will significantly ensure FIG ongoing commitment to UN GGIM. In addition, FIG organised and chaired a discussion with Director Generals and affiliate members at the recent FIG Working Week on 30th May 2023 in the Director Generals Forum.

FIG welcomes the United Nations Global Geodetic Centre of Excellence, opened in March 2023 in Bonn Germany. FIG appreciates the considerable efforts of the UN-GGIM's Sub Committee on Geodesy, its Steering Committee and Working Groups over the last years in taking the GGCE Concept Paper, and realising it in the new centre in Bonn. In particular, Commission 5 looks forward to continued cooperation with the UN-SCoG and is very excited about the new opportunities for collaboration with the GGCE as well as new members of the Steering and International Advisory committees.

This underpins and compliments input made by the FIG community in responding to ad-hoc consultations form UNGGIM on matters such as FIG Commission 2 delegates have been encouraged to respond to the Chair of the UN-GGIM Academic Network, our response to the future of Geospatial Ecosystem and finally a FIG Commission 4 delegate response to UN-GGIM Working Group on Marine Geospatial Information considering the development of the Operational Framework for Integrated Marine Geospatial Information Management (UN-IGIF-Hydro) Part Two.

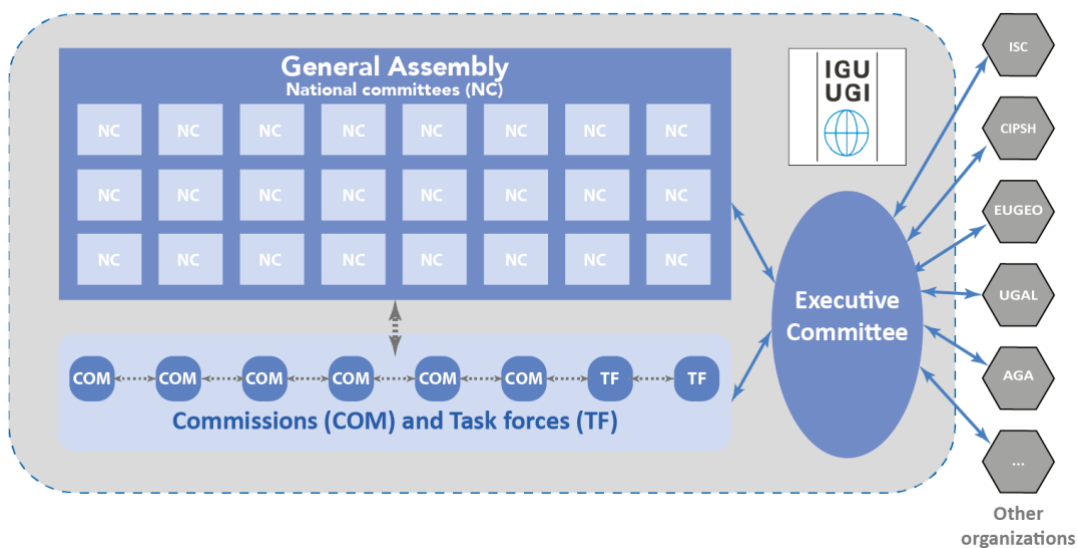
FIG very much looks forward to continuing and active collaborative with GS and to effectively engage with UN GGIM members.

## International Geographical Union (IGU)

### Activities and Areas of Work

The International Geographical Union (IGU) promotes actions of its **120 member countries (National committees – NC)** through its Congresses, Regional Conferences, and Thematic Conferences, publications and awards, and through the activities of its **44 Commissions (COM) and 3 Task Forces (TF)**.

### GOVERNANCE STRUCTURE OF THE IGU



The Executive Committee focuses its attention on three levels of strategic activity:

- actions relating to IGU membership and empowerment of country members, commissions, and task forces.
- actions relating to outreach.
- actions relating to communication.

Increasing the relatively limited geographical footprint of membership among developing world countries, highlighting and further promoting the work of IGU Commissions and Task Forces in relation to key global initiatives, including *inter*



alia, the UN Sustainable Development Goals (SDGs), the UN Decade of Ocean Science for Sustainable Development, UN-DRR, Paris Climate Action and Habitat-III, and ISC Future Earth. Increasing the number and quality of IGU-branded publications to disseminate geographical knowledge to all countries of the world and communicating the work of the IGU to improve decision making through a more structured and accessible website and through greater visibility on relevant social media platforms are some of the core activities of IGU.

The IGU celebrated its 100<sup>th</sup> anniversary in July 2022 in Paris with a meeting of more than 2,300 participants. It is now engaged in the future organization of its International Geographical Congress 2024 in Dublin, which is organized every 4 years only.

Three of the IGU Commissions are exclusively dedicated to the Geospatial technologies and promoting its practices.

#### **C20-13 - Geographical Information Science:**

- Workshop on Digital Twins and GeoAI was hold on Dec. 12, 2022. The workshop was organized by the Laboratory of Resources and Environmental Information System (LREIS) and the International Association of Professionals in Geographical Information Science (CPGIS).
- 2nd International conference of GIScience: Basis and Trans/Interdisciplinary applications was held in Dec 20, 2021.
- The 7th FUM GIS Day and Geography Awareness Week on Dec 13, 2022, with the main them of entrepreneurship in GIS and Remote Sensing: Opportunities and challenges.
- International Symposium on Spatial Data Handling and Geographic Intelligence series (SDH&GI) are planned for 2024.

#### **C20-29 - Land Use and Land Cover Change**

IGU Commission on Land Use and Land Cover Change held 4 sessions during the IGU Centennial Congress 2022:

- Land Use/Land Cover Change Driving Forces and Impacts;
- Long-Term Land Use/Land Cover Changes Evaluation
- Land Use/Land Cover Change Mapping: Data and Methodology
- Land Use/Land Cover Changes and Land Degradation in the Anthropocene;

#### **C20-36 Modeling Geographical Systems**

- 2022 Annual Academic Conference of the Geographic Modeling and Geographic Information Analysis Committee of the Chinese Geographical Society
- The 2022 Annual Academic Conference of the Geographic Modeling and Geographic Information Analysis Committee was held in Nanjing, Jiangsu, China, from September 17 to September 18, 2022. The theme of the conference is "Geographic Information Modeling and Simulation in the New Era of Geography - Exploration and Practice".
- The centennial congress of the International Geographical Union (IGU) was held in Paris from June 18 to 22, 2022. In this congress, the Commission organized a virtual session—Geographic information modelling and simulation in the era of big data—to promote idea exchange and achievement sharing in this field. Several topics, including Substantial Development, Big Data and Climate Change, Plant Nitrogen Content Estimation, Land Value Uplift, Model Sharing and Reuse, Rooftop Solar Potential Evaluation, and Geographic Simulation Reproduction, were discussed by attendees.

IGU Commissions quite frequently publishes book on Geospatial Technologies and Geography Education under two series:

- [IGU Springer series: Advances in Geographical and Environmental Sciences](#)

In 2022-2023 were published in the area of information management:

- **Advanced Remote Sensing for Urban and Landscape Ecology**  
Editors: Sk. Mustak, Dharmaveer Singh, Prashant Kumar Srivastava
- **Remote Sensing and Geographic Information Systems for Policy Decision Support**  
Editors: R. B. Singh, Manish Kumar, Dinesh Kumar Tripathi



- [Edward Elgar series: The International Geographical Union Series on Contemporary Geographies](#)  
In 2023 was published: [Misinformation in the Digital Age: An American Infodemic](#)  
Authors: Monica Stephens (UK), Jessie P.H. Poon (US), and Gordon K.S. Tan, (Singapore).

### Partnerships and Regional and International Collaboration

IGU aims to establish continuous horizontal and vertical engagement with relevant international organizations, especially the International Science Council - ISC (including the GeoUnions, and CODATA, UHWB, Future Earth), UN-GGIM and The International Council for Philosophy and Human Sciences - CIPSH.

The IGU Commissions on Geographical Information Science and Modelling Geographical Systems have consistently cooperated with each other and with Commission II of the International Society for Photogrammetry and Remote Sensing (ISPRS). Annually, both Commissions contribute to GIS Awareness Week and World GIS Day.

The [IGU trimester newsletter](#) promotes the IGU community activities but also the neighbor associations and the UN-GGIM. It is distributed to more than 10,000 people, and sustained by a new strategy on social networks (linked-In, Twitter, Instagram).

### Priority Issues and Challenges

The priority issues of the IGU are to work and achieve goals laid down in the strategy document for 2020-2024. Promoting the IGU work in relation to key global initiatives, including:

- UN Sustainable Development Goals (SDGs),
- UN Decade of Ocean Science for Sustainable Development,
- Disaster Risk Reduction,
- Paris Climate Action and Habitat-III,
- ISC Future Earth focusing on challenges of across globe accessibility and usability of Earth Observation (EO),
- GIS, Open Data, Open Source Softwares, Cloud Computing in mapping, monitoring and modeling in order to contribute towards Climate Change, Future Earth and Sustainable Development Goals.

### Perspectives and Future Plans

IGU established Commissions and Task Forces for the study of a specific geographical issue or topic which benefits from international collaboration and encourage the exchange of ideas and organize conferences, meetings and, where appropriate, field excursions, both between Congresses and in association with International Geographical Congresses. Task Forces are established from time to time to pursue specific objectives of the IGU.

Various IGU Commissions will focus on:

- Imparting training on geospatial investigation through capacity building programs for young and early career spatial scientist. Beside the commissions, two of the three task forces are dedicated to Olympiads and Young scholars.
- Investigating spatial dynamics and related issues of COVID 19 pandemic.
- Promoting the use of state of art geospatial technology (artificial intelligence, Internet of Things, Advanced Geospatial Modeling) in achieving goals of UN-DRR, SDGs etc.

### Matters/Issues for Consideration

- Geo-spatial technologies should be linked with formal and informal levels of education.
- Future research focus should be given on emerging areas of sciences linking with disaster risk reduction, food security, air pollution, human health and well-being and biodiversity.
- Lessons learned and best practices should be disseminated at community level using mass media and social-media.
- Preference should be given to geo-spatial technology-based modeling for reducing the gap between conventional methods of approach and dynamic forecasting approach.



## International Map Industry Association (IMIA)

### Activities and Areas of Work

The International Map Industry Association (IMIA) continues to pursue its goal of "Connecting the Business of Maps Worldwide" through educational programs and networking opportunities. Now in the wake of the global Covid pandemic, we have returned to in-person events to bring our membership together and share the varied operational and strategic impacts on our members, partners and communities in recent years. Noting the new business landscape of remote employment and the proliferation of online meeting tools, IMIA continues to offer valuable *virtual* events that quickly connect our global membership and highlight partnerships with a growing list of affiliate organizations.

In 2022 IMIA hosted three in-person events and three virtual events. <https://imiamaps.org/events/>

- [Social Reception hosted by Stanfords London, UK](#) - A friendly gathering on the eve of the London Book Fair in April, highlighted by a guest speaker, in the world's largest map and travel book shop.
- [Where Cartography Meets Industry: Public Mapping](#) - Co-hosted with the British Cartographic Society, a panel of experts discussed the varied treatments of publicly accessible land.
- [Mapping Leaders Forum in Denver, Colorado USA](#) - A one-day gathering of industry leaders to share informative presentations and engaging discussion and Q&A, followed by an evening rooftop cocktail reception. This event marked the beginning of IMIA's involvement in recent Geo Ethics initiatives. Through a collaborative workshop focused on defining the core ethical values shared by our members, we developed [IMIA's Statement on Ethics for the Map Industry](#).
- [Where Cartography Meets Industry: Asia Pacific](#) - Co-hosted with the New Zealand Cartographic Society, this panel of regional experts focused their discussion on cartographic trends and innovative products created to meet consumer demand.
- [Frankfurt Book Fair 2022](#) - We were very glad to return to Frankfurt, Germany in October to host our collective stand for IMIA co-exhibitors at the Frankfurt Book Fair. Our stand serves as a central place for our members to hold business meetings and exhibit their products and services.
- [Annual Year-End Meeting & Social](#) - Our unofficial virtual "holiday party" where we all gather to finish our organizational business for the year, then raise a glass to toast our successes and plan ahead to the future.

IMIA Events in 2023 include:

- [Where Cartography Meets Industry: Geo Ethics in Mapping](#) - On March 29, an expert panel from affiliate organizations British Cartographic Society, International Cartographic Association, and Cartography & Geographic Information Society recapped recent advancements in Geo Ethics and outlined future steps for establishing industry wide ethical standards.
- [Social Reception hosted by Stanfords London, UK](#) - On April 17, our social gathering at Stanfords Travel in Covent Garden, London had double the attendance from last year! The following day many IMIA members also walked the London Book Fair which was very active compared to recent years.
- [June 7-8 Mapping Leaders Forum Denver, Colorado USA](#) - Expanded with a new Partner Day lead by IMIA sponsors to highlight the advantages of leveraging collaborative partnerships to navigate ever-changing markets and achieve organizational goals.
- [October 18-22 Frankfurt Book Fair](#) - This year we are expanding our collective stand to accommodate growing interest from our members.
- [Annual Year-End Meeting & Social](#) - In early December we will reconvene our virtual member gathering to complete our IMIA business and toast to the holidays and new year ahead!

### Partnerships and Regional and International Collaboration

IMIA has focused on growing its Affiliate Partner Program and enhancing the relationship with its current partners. We entered into an agreement in 2021 with the [British Cartographic Society](#), which has proven valuable for both organizations as we leverage each other's distribution channels and members' expertise to create content-rich events for the industry.





IMIA secured two more Affiliate Partnerships in 2022 with the [International Cartographic Association](#) and [Cartography and Geographic Information Society](#). In 2023 we have secured a 4th partnership with the [Open Geospatial Consortium](#). The organizations have agreed to promote the value of each other's associations and events through their vast distribution channels.

### Updates & Future Plans

In January 2023 the IMIA board of directors elected new officers:

- **Bridger DeVille, President** - Bridger is the Sales & Marketing Director for Benchmark Maps, a publisher of recreation atlases and maps of the American West with offices in Santa Barbara, California and Medford, Oregon. Bridger has worked at Benchmark for 13 years, leading their efforts in sales, distribution, e-commerce, marketing, and business development from his remote location in Denver, Colorado.
- **Vivien Godfrey, Treasurer** - Vivien is Chairman and CEO of the Edward Stanford Group (Stanfords) a retailer and wholesaler of travel books, maps, globes and other travel-related products and services located in London, UK. Vivien is also the CEO of Bluewater Books & Charts (BWBC) and co-owner with her husband John Mann.
- **Dave Knipfer, Secretary** - A past president of IMTA (our former organizational identity) Dave is the owner and GM of Mapping Specialists in Madison, Wisconsin USA.

In 2023 IMIA also gained a new Advisory Board member in Ariel Doumbouya of the U.S. Geological Survey. Ariel has worked at USGS for 15 years and currently serves as Cartographic Products Lead.

The IMIA's board of directors and committees are working hard to enhance offerings for our members and the industry for the next 18 months and beyond. Education, networking and collaboration will continue to be top priorities for IMIA.

## International Society for Digital Earth (ISDE)

### Activities and Areas of Work

The International Society for Digital Earth (ISDE) was founded in Beijing, China in 2004. ISDE is an international organization principally promoting academic exchange, science and technology innovation, education, and international collaboration towards Digital Earth. The ISDE Secretariat is hosted by Aerospace Information Research Institute, Chinese Academy of Sciences.

### 9th Digital Earth Summit - Report

From 6th to 8th September, 2022, the 9th Digital Earth Summit was successfully held with the theme of "Digital Earth to Bridge Digital Divide for Attainment of Sustainable Development Goals". The Summit was organized by the ISDE and hosted by Institute of Remote Sensing, Anna University, Chennai, India. A total of 6 plenary talks were delivered by eminent researchers and academicians in three plenary sessions conducted on various topics related to Earth observation, Remote Sensing, Big data, Digital resilience, etc. Eight technical sessions on sub-themes including "Water Security", "Food Security", "Early Warning, Causes and Impacts of Geo-Hazards", "Digital earth: Ethics and Governance", "Sustainable Cities and Smart Cities", "Blue Economy", "Drivers and Impact of Climate Change" and "Advancement in Handling Big Digital Earth Data" of the summit were conducted with a total of 45 technical paper presentation by researchers during this 3-days summit. More than 200 participants from various institutes participated during this three-day summit despite the Covid-19 pandemic.

The special attractions of the Digital Earth Summit are a host of intriguing side events, namely Youth Forum Events, Globe Quest, Find Me, GeoPreneur and G - Link. The Youth Forum Events assembled a large number of young people mainly from Bachelors and Masters programs in Geospatial technology. Globe Quest is an event with combination of technical and non-technical rounds, whose winner distinguished himself or herself by taking quizzes in different domains such as Geoinformatics, Movies, Cryptocurrencies etc., answering questions extracted from videos, and solving a jigsaw puzzle. Find me is a technical event which is played like treasure hunt but not physically and it can be played in teams or individually. GeoPreneur aims at inculcating an aptitude for becoming a successful entrepreneur. G - Link is an event that saw 20+ enthusiastic teams contesting over two rounds. These events were found conducive



to the close tie of different delegations.

### **ISDE International Lectures - Report**

The International Society for Digital Earth (ISDE) initiated the ISDE International Lectures with the purpose of bringing international scholars in the relevant research fields of Digital Earth together to exchange academic perspectives, share research results, and disseminate the most cutting-edge and authoritative concept of Digital Earth. Supported by the International Research Center of Big Data for Sustainable Development Goals (CBAS), the ISDE International Lectures is a series of online events which feature invited lectures by well-known international experts in the field of Digital Earth. The event will invite speakers to give lectures every two months.

Since its initiation in November, 2022, four episodes featuring twelve experts specializing in Digital Twin, SDGs, Digital Transformation, Citizen Engagement in Digital Earth, environment monitoring, Human Mobility Analytics, Big Earth Data, Earth Observation Data Cubes and other fields have been released, attracting accumulatively more than 14,000 participants worldwide through several global streaming platforms. The other three ISDE International Lectures of year 2023 will be held as scheduled with an anticipation of appealing more scientists and audience.

<http://www.digitalearth-isde.org/list-34-1.html>

### **ISDE Young Scientist Innovation Network - Report**

ISDE launched the International Society for Digital Earth - Young Scientist Innovation Network (ISDE-YSIN) on May 26, 2023, to empower young scientists in the field of Digital Earth, promote the development of crucial concepts and innovative technologies of Digital Earth, and contribute to the global sustainable development by using digital technologies.

On the same day of the launch ceremony, the 1st Lecture on the Digital Earth Youth Innovation was successfully held online. More than 120 delegates of scientists, technologists, educationists and environmentalists attended the Ceremony and the Lecture, who were from countries worldwide including the United States, Canada, Australia, Germany and China etc. To better expand the Network and make a grand debut, ISDE plans to host the 1st Youth Innovation Forum on Digital Earth in Beijing, China on August 22-23, 2023.

### **ISDE Publication Report**

ISDE continues to publish two international peer-reviewed academic journals – the *International Journal of Digital Earth* (IJDE) and the *Big Earth Data* (BEDJ). The two journals were jointly published by ISDE and Taylor & Francis Group. IJDE is an open access journal, indexed by 15 large databases worldwide. It received an impact factor of 4.606 in 2022, ranking 15/34 in the Remote Sensing category (Q2) and 11/48 in the Geography, Physical category (Q1). It was accepted for coverage in the Science Citation Index Expanded (SCIE) in 2009, 18 months since its publication. With Scopus Citescore 6.7, IJDE is ranked 20/191 in Earth and Planetary Sciences in 2022. BEDJ also progressed remarkably and now is indexed by ESCI, EI, Inspec, Scopus, GEOBASE, DOAJ, etc.

As a major scientific output of the Workshop on Digital Earth Vision towards 2030 held by the International Society for Digital Earth on 20 July 2020, a vision article entitled “Digital earth: yesterday, today, and tomorrow” was published in IJDE in March, 2023. The paper was coauthored by the workshop participants from the ISDE Council and Working Groups with the help of representatives from International Science Council, IEEE Geoscience and Remote Sensing Society and other international organizations. ISDE’s another publication *Manual of Digital Earth*, jointly published by the Springer Group in November 2019, is the first scientific guidance book in the field of Digital Earth and has got more than one million downloads worldwide by now. Its global citations reached 212 times.

### **Partnerships and Regional and International Collaboration**

ISDE attaches great importance to international collaboration with other scientific organizations worldwide. ISDE always functions as an active member of the International Science Council (ISC), Group on Earth Observations (GEO) and UN-GGIM Geospatial Societies. ISDE Honorary President Huadong Guo was appointed as ISC Fellow in December, 2022 for his outstanding scientific performance, which is a sufficient proof of ISDE representative’s contribution.



ISDE highly values the relationship with its partners of GRSS, CODATA, ISPRS and AARSE. On the 6th of June 2022, ISDE signed a Memorandum of Understanding (MoU) with the International Society for Photogrammetry and Remote Sensing (ISPRS) to further develop cooperation in the areas of Digital Earth, photogrammetry, remote sensing, spatial information, data science and other activities that they deem mutually beneficial.

On 10-12 May 2022, ISDE attended and organized a special event during the Geospatial World Forum (GWF) 2022 in Zaandam, Netherlands through a dedicated session entitled “The Platform Economy: Digital Earth as the Billion Dollar Code”. Such a theme, based on a German movie, illustrates perfectly the high-economic value that a Digital Earth Platform will have soon. This session was an extremely important action for ISDE since having a dedicated session during the GWF-2022 enables the ISDE to obtain high visibility within the geospatial industrial and governmental sectors. For detailed information, please see the web page:

<https://geospatialworldforum.org/2022/platform-economy.asp>

On March 23, 2023, ISDE organized a side event with the theme of “**Big Earth Data: A Game Changer to Promote Implementation SDG 6**” on UN 2023 Water Conference at UN Headquarters in New York. The objectives of the event are 1) to discuss and promote recent advances and challenges in big earth data sciences and highlight its potential for supporting research and policy towards implementation of SDG 6; 2) to provide discussion opportunities for promoting engagement and foster multidisciplinary sciences to cooperate in facilitating innovative breakthrough in big earth data implementation for SDG 6 and forming new partnership and collaboration mechanism.

ISDE by now has established six national and regional chapters, namely Chinese National Committee, Australian Chapter, European Chapter, Japan Chapter, Russian Chapter, and a new Indian Chapter, which jointly dedicated to the promotion of Digital Earth in their corresponding countries or regions. For example, in September 6-8, 2021, the Chinese National Committee organized the 2nd China Digital Earth Conference and will continue this series this year as well.

ISDE also has built six working groups focusing on subdivisions of Digital Earth including Science and Technology, Industry Engagement, Digital Earth Governance and Ethics, Citizen Engagement and Empowerment, Education and Capacity Building, and Contribution of Digital Earth to SDGs. The ISDE WG3 - Digital Earth Governance and Ethics published a position paper entitled “[AI ethics and data governance in the geospatial domain of Digital Earth](#)” in journal of *Big Data & Society* at the end of 2022.

### Up Coming ISDE Events

On 11-14 July, 2023, ISDE will organize the 13th International Symposium on Digital Earth in Athens, Greece. The Symposium will be hosted by the Geography Department of the Harokopio University of Athens with theme of “Earth Intelligence to Understand and Protect Our Living Planet”. This Symposium will be the grandest event held physically since the outbreak of COVID-19 pandemic. It will cover topics such as Digital Twins, Big Earth Data, Earth Observation & GIS, and extensive applications of Digital Earth technologies and products. For more information about the Symposium, please visit: <https://pcoconvin.eventsair.com/isde23>

Other coming ISDE events include the **10th Digital Earth Summit which will be held in Kigali, Rwanda in 2024** by the Centre for Geographic Information Systems and Remote Sensing (CGIS) of University of Rwanda. It is themed “Geospatial Technologies for Effective and Efficient Resources Management and Services Delivery”. This will bring the Digital Earth event back to Africa after the Digital Earth Summit in Morocco in 2018.

### Other related ISDE activities

ISDE supported the launch of DBAR Professional Training Program on “Utilizing Big Earth Data to Enhance SDG Research, Monitoring and Reporting in Thailand and Southeast Asia” on May 29-31, 2023 in joint hands with The Digital Belt and Road (DBAR) and International Research Center of Big Data for Sustainable Development Goals (CBAS).

ISDE Vice President was invited to the 2023 Mid-term Meeting of ISC Members: Capitalizing on Synergies in Science on May 10-12, 2023 in Paris, France, and stressed the connection between ISDE WG6 - Contribution of Digital Earth to SDGs and the UN SDGs on the session of “Increasing the Global Impact of Science for Societal Transformation Towards Sustainability”, arousing various ISC members’ interest in joining the ISDE SDGs Working Group.



## International Society for Photogrammetry and Remote Sensing (ISPRS)

### 1. Activities, Areas of Work – Achievements

- The International Society for Photogrammetry and Remote Sensing (ISPRS) is a non-governmental organization that promotes international cooperation between the worldwide organizations with interests in the photogrammetry, remote sensing and spatial information sciences. Established in 1910, ISPRS is the oldest international professional umbrella organization in its field, which may be summarized as addressing “information from imagery”.
- During the period from August 2022 to June 2023, the ISPRS Council held 9 Council meetings (6 of them virtual and 2 physical), and one Joint Council and Technical Commission meeting, in Denver, USA. The new Working Groups (WGs) for the term 2022-2026 were established by September 2022. The topics and the Terms of Reference (ToR) of the WGs have been prepared in accordance with the ISPRS Resolutions, which were approved by the General Assembly, and have been reviewed by the International Science Advisory Committee of ISPRS. There is a total of 52 WGs, including 9 Inter-Commission WGs (ICWGs), jointly managed by more than one technical commission. Each WG is led by a WG Chair, a maximum of two Co-Chairs, and a WG Secretary. Detailed information about WGs is available at <https://www2.isprs.org/commissions/>.
- ISPRS continues its existing self-funded Initiatives. The ISPRS Education and Capacity Building Initiatives 2022 supported 4 projects. The titles, principal investigators and reports are available at <https://www.isprs.org/society/ecbi/default.aspx>. In 2023, the ISPRS Scientific Initiative is supporting 7 projects. The titles and principal investigators are available at <https://www.isprs.org/society/si/default.aspx>.
- The ISPRS Foundation (TIF) offers travel grants to deserving applicants, especially from developing countries, to participate in ISPRS events. Since August 2022, TIF has supported 4 participants to attend the Comité International de la Photogrammétrie Architecturale (CIPA) International Symposium 2023, and 3 participants for the 39th International Symposium on Remote Sensing of Environment (ISRSE-39). Detailed information is available at <https://www.isprs.org/foundation/>.
- Since August 2022, twenty-six ISPRS sponsored events were held, including workshops, symposiums, conferences, summer schools. The complete list of proceedings can be found in [The ISPRS Archives](#) and the [ISPRS Annals](#).

### 2. ISPRS Journals

ISPRS publishes three scientific journals. The [ISPRS Journal for Photogrammetry and Remote Sensing](#) (IF 11.774, Cite Score 19.2) is the longstanding official publication of the Society, published by Elsevier on a monthly basis. The [ISPRS International Journal of Geo-Information](#) (IF 3.099, Cite Score 6.2) is the official open access journal on geo-information, published online by MDPI on a monthly basis. And the [ISPRS Open Journal for Photogrammetry and Remote Sensing](#) was established in January 2021 and is published online by Elsevier with currently four volumes per year.

### 3. Partnerships

ISPRS actively co-operates with other geospatial societies and related organizations. ISPRS chaired ISC (International Science Council) Geo-Unions since 2020, organized several virtual ISC GU meetings, and co-initiated the ISC Geo-Unions Standing Committee on Disaster Risk Reduction (<http://iscgdr.com/>). Members of the ISPRS Council attended the International Conference of the African Association of Remote Sensing of the Environment (AARSE 2022) in Rwanda, the Second UN World Geospatial Information Congress in India, the FIG Workshop in Canada, the Geo Week in Denver, 2023 UNOOSA COPUOS in Austria, the 50<sup>th</sup> anniversary of Indian Society of Remote Sensing in India, SBSR in Brazil, and Geospatial World Forum in the Netherlands. ISPRS has also opened the publication of proceedings within its series of [The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences](#) to important world conferences focussed on ISPRS branches such as the American Society for Photogrammetry and Remote Sensing, ISRSE and CIPA.



#### 4. Perspectives and Future Plans

ISPRS will continue to achieve its aims by:

- Advancing knowledge in the areas of interest of ISPRS by encouraging and facilitating research and development, scientific networking and inter-disciplinary activities;
- Facilitating education and training with particular emphasis in less developed countries; and
- Promoting public recognition of the contributions of the photogrammetry, remote sensing and spatial information sciences for the benefit of humankind and the sustainability of the environment.

ISPRS will continue activities which support its members by offering travel grants to important ISPRS events, encouraging and supporting summer schools, and through the [Keynote Speaker Programme](#). ISPRS will also continue to improve and strengthen its cooperation with industry.

The ISPRS Geospatial Week 2023 will be held in Cairo, Egypt during 2-7 September 2023. The five ISPRS Technical Commissions will hold their mid-term Symposium in 2024 in China, USA, Philippines, Australia, and Brazil, respectively. The ISPRS Geospatial Week 2025 will be held in Dubai during 16-21 February 2025. Smaller workshops will be organized by Working Groups throughout the period until the XXV ISPRS Congress in Toronto, Canada during 4-11 July 2026.

#### 5. Matters/Issues for Consideration

UN-GGIM Geospatial Societies need to develop their strategies and implementation plans for further promotion of geospatial information to address key global challenges, especially the challenges facing the 2030 Agenda. One issue, which should be considered, is a greater emphasis on open science technology and policies for disaster reduction and sustainable development.

### **International Union of Geodesy and Geophysics (IUGG)**

The International Union of Geodesy and Geophysics (IUGG), established in 1919, such as the International Research Council (IRC), is the international organization dedicated to advancing, promoting, and communicating knowledge of the Earth system, its space environment, and the dynamical processes causing change. Through its constituent Associations, Commissions, and services, IUGG convenes international assemblies and workshops, undertakes research, assembles observations, gains insights, coordinates activities, liaises with other scientific bodies, plays an advocacy role, contributes to education, and works to expand capabilities and participation worldwide. IUGG is committed to the principle of free exchange of data and knowledge among nations, and encourages unreserved scientific participation by all people.

**IUGG is comprised of eight semi-autonomous International Associations, each responsible for a specific range of topics or themes within the overall scope of Union activities.** Owing to the interactive nature of the subject fields managed by the Associations, six Union Commissions and the Working Group on History have been established which serve the Union and the international geophysical community by promoting the study of particular interdisciplinary problems. The Union Commissions are reviewed and renewed at each IUGG General Assembly. In addition, IUGG establishes inter-Association Commissions, and relationships with other scientific bodies with similar interests.

Due to the COVID-19 pandemic, the year 2022 was another remarkable one in the IUGG's history.

#### **IUGG Business Meetings 2022**

After more than three years, the IUGG Bureau Members and the Chair of the Finance Committee met again in person on 20 and 21 September 2022 in Berlin and Potsdam, Germany, to discuss the administration and finance of IUGG, to visit the venue of the IUGG General Assembly 2023 ([IUGG2023](#)), and to meet with representatives of the Local Organizing Committee ([LOC](#)), the Scientific Program Committee ([SPC](#)), and the German Research Centre for Geosciences ([GFZ](#); the host of IUGG2023) to discuss the preparations for IUGG2023. In addition, the Memorandum of Understanding between IUGG and GFZ was signed.

#### **IUGG Secretariat 2012-2022**

The IUGG Bureau, on behalf of the IUGG community, congratulates and thanks Franz Kuglitsch, IUGG Executive



Secretary, for his tireless efforts and extremely effective performance over the last decade. Franz joined the IUGG as Executive Secretary in November 2012 when the IUGG Secretariat was established at the German Research Centre (GFZ) in Potsdam, Germany. The IUGG Secretariat is the information centre of IUGG, it implements the organisation plans, oversees the daily management of the Union, prepares business meetings, represents the Union at conferences, publishes documents, and supports the engagement of National Members in the Union's and Associations' activities. More information about Franz can be found [here](#) (pages 3-4).

On this occasion, the IUGG thanks GFZ and the German Research Foundation (DFG) for their generous and continuous support.

### IUGG Grants Program 2022-2023

IUGG continues its Grants Program for 2022-2023, which will complement the Union program of funding symposia and workshops organised or co-sponsored by Union Associations and Union Commissions. Key priority areas are defined for the Grants Program in line with IUGG overall scientific strategies:

- Creation of new knowledge in Earth and space sciences
- Dissemination of knowledge, data and information on geophysics and geodesy
- Geoscience for sustainable development
- Geoscience and policy interface
- Geoscience education and outreach in developing countries

For 2022-2023, IUGG awarded grants to the following projects:

- **Implementing IUGG 2015 Resolution #4: Organization of the GNSS Tsunami Early Warning (GTEWS) Consortium** (a joint project between GRC, IAG, IAGA, IAPSO, IASPEI, and IAVCEI);
- **Kyoto Landslide Commitment 2020** (a joint project between GRC, IAGA, IASPEI, and IAVCEI);
- **2nd IAG Commission 4 Symposium "Positioning and Applications"** (a joint project between IAG and IAGA); and
- **Discovering Patascoy, an unknown Holocene volcano** (a joint project between IAVCEI and IASPEI).

In July 2022, the IUGG decided to issue the IUGG Grants Program 2022-2023 (Special Call) which is dedicated to the International Year of Basic Sciences for Sustainable Development (IYBSSD2022). The program aims to support projects which address international cooperation in Earth and Space Sciences and that highlight the importance of basic science for sustainable development.

The IUGG awarded grants to the following projects:

- **Geosciences for Sustainable Development** (a joint project between CCEC and IAPSO)
- **2023 Glacial Isostatic Adjustment (GIA) Training School** (a joint project between IACS and IASPEI)
- **Workshop in Geodesy and SAR** (a joint project between IAG and IASPEI)
- **Sixth Meeting of ITU/WMO/UNEP Focus Group on AI for Natural Disaster Management** (a joint project between IAMAS and IAG)
- **Heat Flow Summer School & Workshop** (a joint project between IAPSO, IASPEI, and IAVCEI)
- **Towards creating and launching the Network for African Volcanologists (NAV)** (a joint project between IASPEI and IAVCEI)
- **Celebrating the 80th anniversary of Parícutin volcano (Michoacán, Mexico): Preserving our heritage and preparing for future eruptions; February 19-24, 2023** (a joint project between IAVCEI and IASPEI)
- **Improving earthquake preparedness through geoscience education in the Himalaya** (a joint project between SEDI, IASPEI, and ILP)

The total funding is USD 110,000.

### Scientific Meetings selected for IUGG Support in 2022

IUGG co-sponsors symposia and workshops appropriate to Union disciplines of study. In 2022, IUGG supported a total of 13 scientific meetings as listed below (the IUGG Association that endorsed the meeting is indicated in brackets):



1. 2nd World Conference on Meteotsunamis, Maó and Ciutadella, Menorca, Spain, 18-20 May (IAPSO)
2. 1st Workshop on Data Science for GNSS Remote Sensing, Potsdam, Germany, 13-15 June (IAG)
3. Cermak7 – 7th International Meeting on Terrestrial Heat Flow and the Thermal Structure of the Lithosphere, Potsdam, Germany, 20-22 June (IASPEI)
4. International Radiation Symposium 2022, Thessaloniki, Greece, 4-8 July (IAMAS)
5. 8th IAGA/ICMA/SCOSTEP Workshop on Vertical Coupling in the Atmosphere-Ionosphere System, Sopron, Hungary, 11-15 July (IAGA)
6. 44th COSPAR Scientific Assembly, Athens, Greece, 16-24 July (IUGG)
7. 3 ECEES – 3rd European Conference on Earthquake Engineering and Seismology, Bucharest, Romania, 4-9 September (IASPEI)
8. International Mountain Conference 2022, Innsbruck, Austria, 11-15 September (IUGG)
9. 100th Anniversary of German Geophysical Society (DGG), Berlin and other cities, Germany, 19-25 September (IUGG)
10. 8th SOLAS Open Science Conference, Cape Town, South Africa, 25-30 September (IAMAS)
11. International School of Space Science - Course on Radiation Belt Dynamics and Remote Sensing of the Earth's Plasmasphere, L'Aquila, Italy, 26-30 September (IAGA)
12. 4th Regional Assembly Latin American and Caribbean Seismological Commission (LACSC-2022), Quito, Ecuador, 3-5 October (IASPEI)
13. 14th General Assembly of the Asian Seismological Commission, Egypt, 20-21 October (IASPEI)

#### **Cooperation with International and Intergovernmental Organizations**

*IUGG and Partners – Joint Earth Day Statement*