# THE INTERNATIONAL SOCIETY FOR PHOTOGRAMMETRY AND REMOTE SENSING



# 2022-23 Biennial Report

# ABOUT ISPRS - WWW.ISPRS.ORG

ISPRS is an international 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 umbrella organization in its field, which may be summarized as addressing "information from imagery". ISPRS achieves 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 on less developed countries,
- promoting public recognition of the contributions from the photogrammetry, remote sensing and spatial information sciences for the benefit of humankind and the sustainability of the environment.

# **ISPRS MISSION**

• To advance the photogrammetry, remote sensing and spatial information sciences through international cooperation in research, development and education for the benefit of society and for environmental sustainability.

# **ISPRS VISION**

- To be the foremost scientific organization in its field,
- to speak for all people working in the field,
- to provide the necessary resources to develop the field.

# XXIV ISPRS CONGRESS 2026

## ISPRS2026TORONTO.COM

LOCATION: Toronto, Canada, 4 – 11 July 2026 HOST: Canadian Remote Sensing Society (CRSS-SCT) CONGRESS DIRECTOR: Derek Lichti

# GEOSPATIAL WEEK 2025

## GSW2025.AE

LOCATION: Dubai, United Arab Emirates, 6 – 11 April 2025 HOST: Mohammed Bin Rashid Space Centre GSW DIRECTOR: Saeed Hussain Al Mansoori

# INTERNATIONAL SOCIETY FOR PHOTOGRAMMETRY AND REMOTE SENSING

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# **ISPRS CHALLENGES AND FUTURE**

ISPRS is a unique society. Simply put, the three main ISPRS disciplines, photogrammetry, remote sensing and spatial information sciences, provide data, tools, and 3D information about objects and the Earth's surface, a wide range of thematic data, and unlimited options in acquisition, management, analysis, modelling, and visualisation of all existing digital data. This means that our experts provide services for individuals and humankind as well as industrial, commercial, public, and private organisations, according to their needs, and share their data and products as necessary.

ISPRS members have been dealing with these tasks for more than one hundred years. Everything has its development trajectory: the last few years have witnessed important advances, among them exciting developments of new sensors and platforms – for example, unmanned aerial vehicles or spaceborne radar systems - and the introduction of artificial intelligence (AI) into all aspects of spatial and nonspatial data processing. Deep learning (DL), machine learning (ML), and computer vision (CV) have become commonplace in all our algorithms, allowing for unprecedented precision in geometry and image interpretation as well as for the discovery of new relationships – all this has not been possible before.

Photogrammetry is of course about 3D, not only the 3D environment (city models, digital terrain models), but also the 3D measurement industry (documenting a car crash in the lab with a high-speed camera or determining the size of an airplane to sub-cm accuracy), in archaeology, in medicine (stereo imaging is the standard technique used by dentists to fabricate implants for repairing our teeth), and in many other areas. Photogrammetry is also about which objects are depicted in the images: object detection, scene and action understanding, etc.). Today's approaches combine classical geometric and thematic processing and are virtually all based on the AI approaches developed in the CV community over the last decade or so.

Remote sensing and its image data play an irreplaceable role in Earth observation and even in analyses that do not seem to be spatially dependent. The application of DL, ML and CV in remote sensing 'upgrades' our knowledge about the Earth and its surface by incorporating many additional data and processing, for example, in water sources and water supply, health status of crops, forests, humankind, and many other topics, and their importance in prevention of droughts and hunger, as highlighted in the Sustainable Development Goals of the UN. The "Earth's surface" is just two words, but there are thousands of words to describe the Earth's state and its diverse development. Alone, AI has the power to find solutions and results by implementing hitherto unused detailed data and experience from experts in given topics, such as biologists or hydrologists. Considerable, urgent research is needed.

GIS dealing with any digital spatially localised data contributes to a multitude of applications relevant for everyday life. For example, human health significantly depends on food, environment, and lifestyle, and thus on spatial as well as nonspatial data. Spatial and non-spatial analysis of medical data for existing and new health problems anywhere in the world can detect at least some of the underlying causes. Is it only a combination of global warming and local air pollution that causes changes in human breathing and has a chemical impact on vegetables, fruits, meat, and cereals? Or are health problems also due to social conditions related to changes in environment or land cover due to water shortages that have impacts on the human psyche? Should we include more variables in our analysis? What is the importance of individual causes, and where? The results of such complex analyses need spatial information and, thus, the expertise available through ISPRS.

Life today heavily depends on travel. On a daily basis, we hear about accidents and the number of victims. Do we have explanations for the behaviour of the offenders? These explanations should comprise not only various statistical data, data about the accident locations, the roads' surroundings, but also spatio-temporal models combining the drivers' social behaviour, air pollution, weather conditions, shadow vs. direct sun conditions, and the use of mobile phones etc. Again, spatial data and non-spatial data processed by GIS experts from ISPRS play a major role in the development and application of these models.

Both examples require spatio-temporal analyses. Such analyses are complex iterative problems, i.e., they find causes first and evaluate their individual importance afterwards. The application of AI enables us to bring new results after verification.

There are many challenges in front of ISPRS experts involved in topics such as autonomous driving, the stability of the Earth's surface, natural and man-made hazards and early warning systems, public health, and human behaviour. The construction sector, in particular BIM and digital twins, as well as visualisation, e.g. in terms of virtual and augmented reality, are further exciting areas of interest to ISPRS. One important challenge is spreading awareness of these tools in spheres where the tools would be useful, yet many of the domain experts are not familiar with them.

ISPRS tackles these challenges by developing, implementing, and testing new ideas. ISPRS does not do this in isolation but is supported by other communities such as computer science, navigation, and geography, to mention only a few – together, we provide benefits for human-kind and our Earth.

ISPRS cannot solve the problems, but we can identify them, describe the results of such exploration and insight, and provide advice. Our findings should become warnings to society. They enable decision makers to make the world better for our children.

Lena Halounová ISPRS President 2022-26

# Message from the President

ISPRS has been publishing Biennial Reports since 2012, unlike the years before when Annual Reports were compiled. However, the beginning of 2020 changed the lives of most people and countries in the world. Covid-19 stopped or changed many activities, including ISPRS events and their preparations. XXIV ISPRS Congress, planned to be held in person in Nice in 2020, was cancelled. This was decided shortly before its begin, but after submitted papers were reviewed. To allow their presentations, Council was grateful that the Congress Director and his team organised the First Edition of the XXIV ISPRS Congress digitally. A similar situation was repeated in 2021 with the Second Edition of the ISPRS Congress as the pandamic continued.



The world was slowly recovering from the Covid years, but things had changed. The on-site XXIV ISPRS Congress took place in Nice in June 2022. There were countries which still applied many restrictions, including travel, such as China and Japan, and participants from these countries could not attend the Congress. This was the reason why this Congress was the first to use remote presentations and streaming, also during the General Assembly.



The General Assembly elected a new Council as well as the Ordinary Members to host the commissions, represented by Technical Commission Presidents and Vice-Presidents.

Our scientists and experts did not interrupt their work. Many events planned for 2020 and 2021 were held virtually; some of them were postponed. I thank the organisers who were able to quickly adapted to the changed conditions. The world evolved more or less stable in 2022, and in-person meetings became the standard again.



ISPRS held the second most important ISPRS event, Geospatial Week (GSW), in Cairo in September 2023. It was the largest ISPRS event ever held in Africa. The Week was carefully organised by Naser El-Sheimy, from the University of Calgary, in cooperation with the Arab Academy of Science, Technology and Maritime Transport in Egypt.

The proceedings of ISPRS events are open access publications, and archived by Copernicus in *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences* and in the *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences*.

Scientific events form an important part of ISPRS scientific and also social ISPRS activities. Publications in three ISPRS journals are the second important area of scientific activities of ISPRS.



The ISPRS Journal of Photogrammetry and Remote Sensing (left) reached an imact factor of 12,7. The impact factor of the ISPRS International Journal of Geo-Information (middle) is equal to 3,4. The ISPRS Open Journal of Photogrammetry and Remote Sensing issued its first volume in 2021 and in 2023 was accepted in the Scopus database. All journals are under the excellent leadership of the ISPRS Editors-in-Chief who work with Associate Editors, all top level scientists.

The ISPRS Student Consortium, created by ISPRS in 2004, is an independent organisation representing the young generation of ISPRS. Its members represent a very good future for ISPRS, organising its events, helping ISPRS when needed, and assisting organisers of ISPRS Summer Schools.

ISPRS is active in international relations within the United Nations Office for Outer Space Affairs (UN OOSA) and the United Nations Committee on Peaceful Uses of Outer Space (UN COPUOS), the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) and the International Science Council (ISC). ISPRS is also a member of groups of these societies: ISC GeoUnions and UN-GGIM Geospatial Societies, together with sister organisations focused on geosciences. ISPRS also maintains bilateral relations with many other organisation such as the African Association of Remote Sensing of Envornment (AARSE), Open Geospatial Consortium Inc. (OGC), Sociedad Latinoamericana en Percepción Remota y Sistemas de Información Espacial, etc. This cooperation is very important for global exchange of experience and knowledge, and for a wider involvement in scientific and technological development.



Lena Halounová ISPRS President 2022-26

# Message from the Secretary General

Since the XXIV ISPRS Congress held in June 2022, ISPRS officers have made great efforts to promote the development of the Society. More than 45 conferences and summer schools were organized by ISPRS working groups and the student consortium, some of them coorganized with other sister organizations to enhance the inter-organization cooperation. The Geospatial Week 2023 was successfully organized in Cairo, Egypt, with 29 workshops and 4 tutorials co-organized by 30 working groups, which also demonstrated the advantages of the cooperation between ISPRS technical commissions.

ISPRS members are the foundation of the society and we have attached great importance to sustainable development of membership. The number of Ordinary Members, Associated Members and Regional Members remain the same as last term, while 3 new Sustaining Members joined us. We have made efforts to promote the activities in Africa, Latin America, Asia and the Arab States, by coordinating with our Regional Representatives. In 2023, Council Members attended important meetings in Africa and Asia. The GSW 2023 was held in Africa, and the GSW 2025 is planned in Dubai. There has been consistent growth in the individual members, especially from India, Nigeria, and Malaysia, indicating the recognition of the Society by the younger generation in these areas.

We have been working hard on the promotion and publicity of the Society by maintaining the website, publishing the eBulletin and articles in GIM journal, distributing ISPRS brochures and flyers, and liaising with other organizations.

The website is the first point of entry for people to learn about ISPRS. We are constantly checking the website content and updating related documents approved by the General Assembly and Council to provide current information. We have increased the frequency of website news releases to provide users with the latest information from the Society. Past events are also now available on the Calendar page which is convenient for users to query previously held conferences. We have edited and published 8 eBulletins since June 2022. Each issue contains an editorial and a President's Message to highlight key issues. News and reports from ISPRS related activities and members, job opportunities, etc. are also included. The eBulletins are published via the website and are sent to all members and subscribers. ISPRS has a long-term collaboration with the GIM journal, and has published 8 short articles introducing key ISPRS issues since June 2022. The newly designed version of the ISPRS flyer has been translated into English, Chinese, Spanish, Portuguese, Russian and Arabic. Both the digital and hardcopy versions have been distributed to various related activities all over the world. What is more, considering social media is widely used for information dissemination and interaction, deeply influencing our Society, we have recently appointed a social media manager to increase the awareness of, and interest in, ISPRS through postings on Facebook, LinkedIn, WeChat and X platforms. We have also started to share event-lists with members of UN-GGIM Geospatial Society, to expand our presence and enhance our cooperation.

We are facing a diverse changing world and shoulder heavy responsibility. Achieving high quality development of the Society remains an uphill battle.

I would like to thank all my colleagues from Council for their kind support to me, and the Secretary of the Secretary General, Annette Radtke, for her experienced and effective work.



JIANG Jie ISPRS Secretary General 2022-26

## Message from the Congress Director

The XXV Congress will take place 4-11 July 2026 in Toronto, Ontario, Canada and will be hosted by the Canadian Remote Sensing Society–Société canadienne de télédétection (CRSS-SCT). This event represents a long-awaited return of the ISPRS Congress to the Americas and will be held jointly with the 47<sup>th</sup> Canadian Symposium of Remote Sensing.

As the largest city in Canada and fourth largest in North America, Toronto is an ideal location to host the Congress. Toronto is a well-connected air transportation centre with direct flights to many international destinations with accommodation options for all budgets. Recognized as the most diverse city in the world, Toronto offers a wide range of dining and cultural experience opportunities. Travel within the city is very easy thanks to the dedicated train service between Pearson International Airport and Union train station downtown as well as the city's extensive transit network of subways (metro), streetcars (tram) and buses. Situated on the shore of Lake Ontario, the city is located close to many other attractions such as Niagara Falls and the wine region of the Niagara Peninsula that makes for an ideal day trip.

The Congress venue is the state-of-the-art Metro Toronto Convention Centre (MTCC). Located in the heart of downtown Toronto, the MTCC is the largest facility of its kind in Canada. The Congress has exclusive use of the South Building of the MTCC. Up to 23 000  $m^2/250\ 000\ sq$  ft of exhibition space available.

Our top priority for the Congress is to host a high-quality scientific event of interest to academia, industry and the public sector. The Congress theme "From Imagery to Understanding" captures very well the role of ISPRS activities. Imagery, in its many forms, is our primary data source. This distinguishes us from other disciplines and greatly defines how we work. Understanding can be interpreted as the end goal of the work we do: achieving greater awareness about the planet and its diverse peoples, to meet the many challenges we face.

The Congress will feature international experts presenting their latest research in photogrammetry, remote sensing, and spatial information sciences. Attendees will be privy to leading edge developments in artificial intelligence and machine learning, sensor fusion, autonomous sensing systems, digital construction and health analytics, robotics for mapping and SLAM, high-definition maps, 3D smart cities and digital twins, UAV mapping, intelligent autonomous systems, Earth observation for environmental and climate monitoring, planetary mapping, mixed reality, and innovative technologies for education and training and many more. Changes come quickly and without warning in our fast-moving field. With our robust and agile Technical Program Committee we expect to be able to react to whatever new technologies and approaches present themselves between now and the time of the Congress.

Highly engaged sponsors and exhibitors are essential for a successful Congress. The exhibition will be the centre of activities to maximize the visibility of sponsors and exhibitors and to facilitate the all-important networking. Attendee experience is an important part of any large event, so we plan a comprehensive social program with many options to allow full enjoyment of what Toronto and the surrounding region have to offer.

Planning for the Congress is well underway with the production of promotional materials, appointment of a professional conference organizer, development of our sponsorship and exhibition prospectus and promotion at many international events. We look forward to welcoming you to Toronto in 2026!



Derek Lichti ISPRS Congress Director 2022-26



# **COMMISSION I - SENSOR SYSTEMS**

ISPRS Technical Commission I focuses on the prototyping, modelling, calibration, validation and applications of various advanced sensors and systems. With the traditional sensors being improved through different methods, new-type tracks are emerging in various ways. Aerospace telescopes, beam laser altimetry, Ka/P-band InSAR sensors, micro cameras, high accuracy thermal sensors, mobile perception etc., are growing rapidly. More and more models and algorithms accelerate the development from prototype to practical use. Low-cost miniaturization, integration, especially intelligence, lead the trend of sensor systems. TC I keeps a close watch on the sensor technology. It provides a platform for scientists and specialists to discuss and communicate research progress. The themes cover the concepts, methods, designs, and standards of conventional and innovative sensors systems, including optical, hyperspectral, thermal, LiDAR, SAR and their integration. It also brings the opportunity for the applicants to use new technology.

TC I has been working actively in the field of sensor systems. 8 working groups and 3 intercommission working groups have organized 15 workshops, with 3 ISPRS Annals and Archives published. The following activities can be highlighted:

### WORKSHOPS

15 workshops about sensor systems were organized by TC I, including:

2022RSIIPAC - International Remote Sensing Image Intelligent Processing Algorithm Contest (WG I/4 in Aug 2022)

 Joint Session of "Satellite program session" in ACRS2022 - The 43<sup>rd</sup> Asian Conference on Remote Sensing (WG I/1 in Oct 2022)

- The  $12^{\rm th}$  International Conference on Mobile Mapping Technology (WG I/7, WGI/6, WGI/2 in May 2023)

- MMT and HDMaps Mobile Mapping Technologies and HDMaps (WG I/2 in GSW 2023)
- SpACE-Spectral Remote Sensing in the Era of AI, Cloud and Edge Computing (WG I/3 in GSW 2023)
- AI-PC: AI-based Point Cloud and Image Understanding (WG I/4 in GSW 2023)
- SARcon 2023-SAR Constellations and Applications (WG I/5 in GSW 2023)

• SO&C: Sensor Orientation and Calibration for Mapping and Navigation Purposes (WG I/6 in GSW 2023)

• Smart Forests-Forest Ecosystem Assessment and Monitoring Using Remote Sensing, Artificial Intelligence, and Robotics (WG I/7 in GSW 2023)

• Semantics3D-Semantic Scene Analysis and 3D Reconstruction from Images and Image Sequences (WG I/7 in GSW 2023)

• UAV-based Mapping with Imaging and LiDAR Systems: Challenges, Data Processing, and Applications (WG I/7 in GSW 2023)

• 3DS Smart Cities-3D Sensing for Smart Cities (WG I/8 in GSW 2023)

• Robotics for Mapping-SLAM Approaches for Mobile Mapping and Robot Intelligence (ICWG I/IV in GSW 2023)

- IAMS-intelligent and Autonomous Mapping Systems (ICWG II/Ia in GSW 2023)
- Digital Construction (ICWG II/Ib in GSW 2023)

#### **ISPRS Scientific Initiatives 2023**

Two scientific initiative proposals were submitted, and all have been approved by ISPRS, including:

• Benchmarking of absolute and relative positioning solutions under GNSS denied environments for mobile geomatics, proposed by WG I/7, carry out a comprehensive benchmarking based on comparing different positioning technologies.

• Publishing dataset guidelines: gaps and trends in research data management in the ISPRS community, proposed by ICWG I/IV, focuses on applying the FARI principle to the ISPRS and developing a guideline to help with the publication of new datasets.

#### TRAINING

Training course on satellite remote sensing technologies and applications (TC I in October 2022). In total, 91 participants from 11 countries showed interest and registered for the courses.

Satellite Remote Sensing Application Technology Training for ASEAN (TC I in December 2023). A total of 62 technical personnel from satellite remote sensing and geographic information agencies participated in this training.



### DATASETS

SMARS-A Simulated Multimodal Aerial Remote Sensing dataset. WG I/1 and WG I/3 published SMARS benchmark dataset. SMARS is a large synthetic dataset containing pairs of scenes with simulated urban changes aimed at training and validating change detection applications, as well as urban segmentation and building extraction tasks.

GaoFen-7(GF-7) satellite remote sensing data verification. TC I organized GF-7 satellite data verification in 8 countries. The two-line stereo camera of GF-7 satellite can effectively obtain 20 km-width panchromatic stereo images with a resolution better than 0.8 m and 3.2 m-resolution multispectral images. The GF7 satellite can achieve 1:10000 stereo mapping through a combination of stereo cameras and laser altimeters.

In the future, TC I will provide a platform for scientists and specialists to discuss and communicate the research progress of sensor systems. One of the main events is the Midterm Symposium of TC I on intelligent sensing and remote sensing applications. It will be held in Changsha, China, from 13 to 17 May 2024. An international remote sensing image

interpretation contest and a one-day tutorial will be arranged during the symposium. Over 700 experts are expected to participate in the symposium to share the latest researches, advanced technologies, application experience, discuss future developments, and seek all kinds of international cooperation opportunities.



TANG Xinming ISPRS Commission I President



Antonio Maria Garcia Tommaselli ISPRS Commission I Vice President

# **COMMISSION II - PHOTOGRAMMETRY**

ISPRS Technical Commission II (TCII) focuses on geometric, radiometric, and multi-temporal modeling for making accurate three-dimensional measurements of objects and environments from images and 3D measurements. More specifically, TC II highlights image orientation and fusion, point cloud generation and processing, 3d scene reconstruction for modeling and mapping, ai/ml for geospatial data, and temporal geospatial data understanding. An important differentiating factor and uniqueness of the TC II-focus areas is the requirement to ensure that the methods introduced, used, and deployed provide highly precise and accurate 2D/3D infomation with applications in cultural heritage data acquisition and processing, underwater data acquisition and processing, environmental and infrastructure monitoring, vision metrology, autonomous sensing systems and their applications, and digital construction.

## **O**RGANIZED WORKSHOPS

TCII working groups have been active organizing workshops, supporting scientific events and editoring special issues for journals.

- WG1: Photogrammetric Computer Vision at CVPR2023 19 June 2023, Vancouver, Canada
- WG1: Photogrammetric 3D Reconstruction for Geo-Applications (PhotoGA 2023) at ISPRS Geospatial Week Sep 2023, Cairo, Egypt
- WG2: Semantic3D workshop at Geospatial Week 2023, September 2-7, Cairo Egypt
- WG2: Laser Scanning 2023 workshop at Geospatial Week 2023, Sep, Cairo (Egypt)
- WG2: First Italian Workshop on GeoAI. Online. December 14, 15 2023
- WG2: 2023 Benchmark on Semantic Segmentation of High-Resolution 3D Point Clouds and Meshes
- WG2: EuroSDR Educational Service course "3D Point Cloud Classification for Mapping Purposes" 6-17 March 2023
- WG3: Semantic Scene Analysis and 3D Reconstruction from Images and Image Sequences (Semantics3D) at ISPRS Geospatial Week Sep 2023, Cairo, Egypt
- WG4: IGARSS 2023: Tutorial on ML in Remote Sensing Theory and Applications for EO
- WG4: Workshop on Machine Vision for Earth Observation and Environment Monitoring at BMVC, Aberdeen, November 24 2023
- WG4: Pattern Recognition in Remote Sensing Workshops at ICPR, Montreal, August 2022
- WG5: Semantic3D workshop at Geospatial Week 2023, September 2-7, Cairo Egypt
- WG5: EarthVision workshop at CVPR 2023, June 18, Vancouver (Canada)
- WG5: Workshop on Multimodal Learning and Applications at CVPR 2023, June Vancouver
- WG5: EarthVision workshop at CVPR 2022, June 19, New Orleans
- WG5: Workshop on Multimodal Learning and Applications at CVPR 2022, New Orleans
- WG5: Pattern Recognition in Remote Sensing Workshops at ICPR, Montreal, August 2022
- WG6: Tutorial "Low-cost photogrammetry for metric documentation of cultural heritage"
- WG7: "Underwater photogrammetry for mapping, documenting, and preserving submerged heritage" workshop at CIPA 2023, Florence, Italy
- WG7: "Geospatial techniques for underwater documentation, mapping and monitoring" workshop at ISPRS Geospatial Week Sep 2023, Cairo, Egypt
- WG7: ISPRS TC II/7 and NAUTILUS online user meeting, 15 January 2024

- WG8: The International Conference on "Geospatial Information Science Education, Innovation and Application". Organizers: Wuhan University, China
- WG8: Int. Workshop Photogrammetric and computer vision techniques for environmental and infraStructure monitoring, Biometrics and Biomedicine, 24-26 2023, Moscow, Russia
- WG9: Laser Scanning 2023 Workshop, Cairo, Egypt, 6-7 September 2023
- WG9: 3D Metrology Conference 2023, Basque Country, Spain, 26-28 September 2023
- ICWG II/Ib: Digital Construction 2023, organized as part of Geospatial Week in Cairo, Egypt.

## SUPPORTED SCIENTIFIC EVENTS AND SPECIAL ISSUES

- WG1: ISPRS TCII online talk series: Federica Arrigoni, Politecnico di Milano, Technical Talk on Sep/20/2023
- WG1: 45th Canadian Remote Sensing Symposium, 11-14 June in Halifax, Canada
- WG1: SPIE Remote Sensing 2024
- WG4: Special issue on Advancing deep learning for time series analysis, Remote Sensing of Environment, deadline: December 31, 2023
- WG5: Deep learning approaches for multi-temporal and multi-modal data processing and analysis for urban areas at JURSE 2023, 17-19 May, Heraklion (Crete, Greece)
- WG5: Special issue on Advancing deep learning for time series analysis, Remote Sensing of Environment, deadline: December 31, 2023
- WG5: Special issue on Lidar Sensing for 3D Digital Twins, Remote Sensing, Dec. 15 2023
- WG5: Special issue on Advances in Deep Learning Techniques for the Analysis of Remote Sensing Time Series, Remote Sensing, November 30 2022
- WG6: Sepcial issue on From UAS to BIM: Methods and Design for the Multiscale Metric and Spatial Documentation and Representation of Built Heritage and Infrastructures deadline March 2024
- WG6: Special issue on UAS for Protecting the Historical Built Environment: Monitoring, Damage Detection, and Diagnostics of Heritage Infrastructure Supported by Aerial Systems 31 October 2023
- WG7: Session on "Underwater Mobile Mapping" at MMT2023, Padua, Italy
- WG7: SUNRISE (Seashore and UNderwater documentation of aRchaeological heritage palimpSests and Environment) summer school, Marina di Ragusa, Slcily, Italy. 20 international students from Europe, Asia and America
- WG7: Special issue: Advances in Positioning, Navigation and 3D Mapping of Underwater Environments
- WG8: Special Issue on Imaging to Understanding: Methods and Application for Environment, Infrastructure and Human Monitoring. J. Imagining
- WG8: Special Issue on "Short-Range Optical 3D Scanning and 3D Data Processing", Sensors, deadline: 1 March 2024
- WG9: LowCost 3D and Optical 3D Metrology Workshops, Würzburg, Germany, 15-16 December 2022
- WG9: The Netherlands Conference on Computer Vision (NCCV), The Hague, Netherlands, September 14-15, 2023
- WG9: Sensing Mountains 2024: Innsbruck Summer School of Alpine Research Close Range Sensing Techniques in Alpine Terrain", Obergurgl, Austria, 22-28 September 2024
- WG9: Joint International Symposium on Deformation Monitoring, Karlsruhe, Germany, April 2025
- WG9: Special Issue on Multi-Modal and Multi-Task Learning in Photogrammetry and Remote Sensing, Remote Sensing, deadline: 15 March 2023
- ICWG II/Ib: Laser scanning 2023 Workshop organized as part of Geospatial Week 2023 in Cairo, Egypt

 ICWG II/Ib: Int. Conf. on Computer Vision, ICCV 2023, 2-6 October 2023, Paris, France.

## FUTURE PLANS

TCII is preparing for the midterm symposium. The symposium's theme is 'The Role of Photogrammetry for a Sustainable World', emphasizing machine learning and mixed reality. The event is organized in collaboration with ASPRS (American Society of Photogrammetry and Remote Sensing) and SGPF (Swiss Society of Photogrammetry and Remote Sensing). The venue for the event will be the historic Flamingo Hotel on the Las Vegas Strip. The event will be held between 11 and 14 June 2024. The confirmed keynote speakers include Dr. Hannah Kerner from Arizona State University, Andrea Fusiello from University of Udine, Tanya Birch from Google Earth, Dalton Lunga from Oak Ridge National Labs, and Konstantinos Kranzalos from National Technical University of Athens. The symposium website is https://www.isprs.org/tc2-symposium2024/.

The WGs have arranged a number of special issues not listed above for the 2024 and planned workshops at various venues including at CVPR 2024.



Alper Yilmaz ISPRS Commission II President



Jan Dirk Wegner ISPRS Commission II Vice President

# COMMISSION III - REMOTE SENSING

Technical Commission III is hosted by Brazil and France, and consists of 9 WGs and 3 IC-WGs whose activities are devoted to remote sensing methods and their applications:

- 1. Remote sensing data processing and understanding
- 2. Spectral and thermal data processing and analytics
- 3. Active microwave remote sensing
- 4. Land use and land cover change detection
- 5. Remote sensing and inclusive development to leave no one behind
- 6. Remote sensing of the atmosphere
- 7. Hydrosphere and cryosphere
- 8. Remote sensing for agricultural and natural ecosystems
- 9. Geospatial environment and health analytics
- ICWG III/II : Planetary remote sensing and mapping
- ICWG III/IVa : Disaster management
- ICWG III/IVb : Remote sensing data quality

## ACTIVITIES

In agreement with the terms of reference, the working groups dedicated to remote sensing methods (WG III-1, 2, 3, III/IVb) contribute to understanding data from measurements and modelling of electromagnetic radiation, to develop algorithms for classification, change detection, data fusion, pattern recognition and other methods of processing images and point clouds, and to assessing the data quality and application potential of new Earth Observation systems in liaison with thematic user communities and space agencies. The working groups dedicated to remote sensing applications (WG III-4, 5, 6, 7, 8, 9, III-IVa, III-II) contribute to developing and promoting applications of remote sensing for environmental research, monitoring and management, for the study of land surfaces, oceans, atmosphere, and planetary bodies, for the prevention of disasters, epidemics and poverty, in support of research and public policies and in liaison with spatial agencies and relevant international organizations.

Regarding the processing and applications of optical and thermal sensors (WG III-2) and radar sensors (WG III-3), overlaps have been identified with Commission I and have led to a cooperation between the WGs dedicated to these imaging systems in the two commissions, given that Commission I WGs focus on the sensor and Commission III WGs on processing algorithms and their applications. This synergy enabled two joint workshops in the Geospatial Week 2023 and it will lead to joint sessions in the mid-term symposia of the two commissions.

The mid-term symposium is currently being prepared to be held in Belém, Brazil, from 4 to 8 November 2024.

Two projects were selected as scientific initiatives by WGs of Technical Commission III :

- Benchmarking of publicly available software solutions for close-range point cloud processing of forest ecosystems, by Carlos Cabo & Xinlian Liang (WG III-1);

- Geospatial data base for exposomics, by Kamel Boulos (WG III-9).

Commission III was at the initiative or partner of several workshops in the Geospatial Week 2023 (Cairo, September 2023) :

- WG III-9, ICWG III-IVa, WG III-6 in "Geospatial Data Analytics for Physical Geography Impact Assessment";

- WG III-1, III-8 in "Smart Forests – Forest ecosystem assessment and monitoring using Remote Sensing, Artificial Intelligence, and Robotics";

- WG III-1, III-2 in "SpACE – Spectral Remote Sensing in the era of AI, Cloud and Edge Computing";

- WG III-3 in "SARcon 2023 - SAR constellations and applications".

Working groups of Technical Commission III participated in several other events : 2nd International Conference on Advanced Remote Sensing (China), 2023 Wuhan Remote Sensing Week (China), 39th International Symposium of Remote Sensing of the Environment (Turkey), SAR workshop 2023 (Japan), SELPER (Mexico), Mobile Mapping 2023 (Italy), 43rd EARSeL Symposium (UK), Asian Conference on Remote Sensing 2024 (Sri Lanka), among others.

WG III-1 launched the RSIIPAC (International Remote Sensing Image Intelligent Processing Algorithm Contest) on the topic of "Fine-grained Forest Scene Segmentation". The award presentation will take place during the mid-term symposium in November 2024.

Open resources and data sets are available to the scientific community on the web page of some WGs.

These activities are helping to strengthen links between ISPRS and other scientific societies, through joint initiatives on specific topics, in particular GRSS (radar remote sensing), EARSeL (agriculture), SELPER (disaster management), etc. and the mid-term symposium will be a joint event with the Latin American remote sensing society SELPER.

The activities of Commission III should lead to an up-to-date state of the art on the potential and limitations of remote sensing, and the WGs are invited to discuss the misleading nature of the scientific literature, which tends to publish successes and hide failures, in accordance with the well-known "survivor bias". Indeed, it is the role of a scientific society to take a critical look at the technologies it is studying and at the actual possibilities of transferring research results to operational users.

At the time this report is being written, activities are being prepared for the next period. The WGs of Commission III will participate in events such as 8th EOEC and 10th GiT4NDM (India), GI4DM (Brazil), and APSAR (Japan). Proposals have been submitted in response to the GSW2025 call for workshops and to the ISPRS Educational and Capacity Initiatives call for projects. A series of remote sensing webinars are being launched at the beginning of 2024. The first webinar is organized by WG III-9 on "Earth observation systems (EOS) for population health management". Others will follow.

All these meetings and activities will help to promote the work of the scientific community and to inform space agencies and institutions responsible for environmental and climate issues about the expected contribution of new space missions and new processing methods.



Laurent Polidori ISPRS Commission III President



# COMMISSION IV - SPATIAL INFORMATION SCIENCE

Commission IV directs research efforts toward enhancing spatial modeling and interoperability for geospatial data fusion, with a focus on open data and software exploration. Intensive activities encompass spatial analysis, data quality, uncertainty modeling, and AI, resulting in advanced tools. The members of the Commission are committed to high-performance geocomputation, crowdsourced data, IoT, and community-driven intelligent systems. Advancements in indoor/outdoor services, spatial data management, visual analytics, and virtual/augmented reality align with TC IV's goal of human-centered applications. Moreover, the Commission's research significantly contributes to urban modeling, sustainable decision-making, and the application of spatial information across diverse fields, aligning with UN SDGs for global impact.

## Spatial Information to Empower the Metaverse

In a rapidly changing world, digital twin models of reality are crucial for governments and businesses to address environmental and socio-economic issues and to promote sustainable development. The demand for effective decisions in evolving spaces highlights the necessity of complex, multi-dimensional geospatial data. Digital twins and the metaverse emerge as pivotal technologies, allowing testing and analyzing intricate systems, overcoming challenges like data discovery, visualization, sharing, fusion, analysis, and simulation, as well as managing big multidimensional data with geoAI models.



The Commission's activities are organized into 11 working groups (WG), and 2 inter-commission working groups (ICWG) under the responsibility of the Commission.

WG 1 (Spatial Data Representation and Interoperability) focuses on spatial data representation and interoperability, emphasizing international standards, good practices for data management, and collaboration with standardization organizations. WG 2 (Artificial Intelligence and Uncertainty Modeling in Spatial Analysis) delves into artificial intelligence and uncertainty modeling in spatial analysis, covering data mining, machine learning, spatial statistics, and uncertainty visualization. In WG 3 (Geo-computation and Geo-simulation), geo-computation and geo-simulation take center stage, exploring high-performance techniques, knowledge-based methods, and effective integration into spatial decision support systems. WG 4 (Data Management for Spatial Scenarios) concentrates on data management for spatial scenarios, addressing interfaces, standards, and strategies for managing big and heterogeneous geospatial data. WG 5 (Extended Reality and Visual Analytics) explores human factors, geo-visualization evaluations, and novel tools for exploring phenomena. WG 6 (Human Behaviour and Spatial Interactions) delves into understanding human behavior and spatial interactions, addressing models, uncertainties, spatial analysis technologies, and strategies for handling geo-privacy and ethical issues. WG 7 (Intelligent Systems in Sensor Web and IoT) focuses on intelligent systems in sensor web and IoT, covering data fusion from sensors and new analysis methods. WG 8 (Digital Twins for Mobility and Navigation) focuses on digital twins for mobility and navigation, with an emphasis on conceptual frameworks, algorithms, standards, and solutions for sustainable and resilient mobility. Spatially enabled Urban and Regional Digital Twins are the focus of the homonym WG 9, where Al-based methods, BIM/GIS integration are also addressed. WG 10 (Applied Spatial Science for Public Health) covers spatial technologies, citizen science, Al for hotspot detection, and multidimensional data handling for health. In WG 11 (Cultural Heritage Visualization and Virtual Restoration) topics include cognition, data integration,

deterioration monitoring, deep learning, digital storytelling, and sustainable development. **ICWG IV/III (Global Mapping for SDGs)** addresses challenges, geospatial information use, and innovative methods for SDG monitoring. Finally, the collaborative efforts **under ICWG IV/III/II (Openness in Geospatial Science and Remote Sensing)** revolve around openness in the domain of interest of ISPRS, covering reproducibility, good practices, and communication between stakeholders.

The Commission aims to amplify the visibility of spatial information research through initiatives such as facilitating the exchange of data and open software, acknowledging achievements, and promoting collaboration among its Working Groups and with other international scientific organizations.

Every Working Group actively contributed to the ISPRS Geospatial Week in Cairo by organizing workshops and significantly improving the quality of ISPRS scientific publications on geospatial topics, actively participating in the entire review process.

In the past two years, Working Groups have provided support to events such as 3DGeoinfo in 2023 (Munich) and 2024 (Vigo), SDSC in 2024 (Athens), Gi4DM in 2024 (Belém), the Second International Digital Building Permit Conference in 2024 (China), the Academic Track of FOSS4G Europe 2024 (Estonia), and GeoVisions2025 in 2025 (Turkey). Moreover, two projects presented by the Commission, together with Commission I (Publishing dataset guideline: gaps and trends in research data management in the ISPRS community) and Commission II (Integrating IndoorGML with outdoors: Automatic routing graph generation for indoor-outdoor transitional space for seamless navigation) have been approved and funded as ISPRS Scientific Initiatives 2023.

Additionally, the primary focus of the working groups is currently directed towards organizing the Mid-Term Symposium titled "Spatial Information to Empower the Metaverse," scheduled to take place from October 22 to 25, 2024, in Fremantle, Perth, Australia.



ISPRS Commission IV President

Sisi Zlatanova



Maria Antonia Brovelli ISPRS Commission IV Vice President

# COMMISSION V - EDUCATION AND OUTREACH

The International Society for Photogrammetry and Remote Sensing (ISPRS) Technical Commission V (TC V) on Education and Outreach focuses on fostering education, training, and outreach initiatives in the geospatial domain. Over the past two years, TC V has made substantial strides in advancing its objectives through collaborative efforts of its Working Groups (WGs) and Intercommission WG.

TC V's six theme-based WGs address diverse challenges in education and outreach within the geospatial field. These include curriculum development, regional and international education programs, promotion of open-source tools, disaster risk management, blue economy, innovative technologies in civil engineering and architecture, and spatial information science education. Key scientific challenges revolve around enhancing learning practices, fostering awareness, and building capacity in these thematic areas.

## HIGHLIGHTS 2022-2023

Each WG within TC V has made significant contributions to advancing education and outreach in the geospatial domain.

Working Group 1 (WG 1) played a pivotal role in advancing education and training within the geospatial domain. Throughout the biennium, WG1 co-organized two prominent conferences: Surveying and Geomatics Educators' Society (SaGES) 2023 meeting in Calgary and Comité International de la Photogrammétrie Architecturale (CIPA) 2023 meeting in Florence. These conferences provided platforms for experts to exchange knowledge and discuss emerging trends in the field. Some members of WG 1 were actively engaged in paper reviews, technical session organization, and gave two presentations in SaGES 2023. They also made significant contributions, including a conference publication at CIPA 2023. Additionally, WG 1 members showcased their expertise at the International Federation of Surveyors (FIG) Working Week in Orlando and participated in the CIPA Summer School, further enhancing their contributions to capacity building and education. Looking ahead, WG 1 is set to focus on securing the Educational and Capacity Building Initiative grant in 2024/25, demonstrating their commitment to advancing education and training initiatives.

Working Group 2 (WG 2) has been instrumental in promoting education and capacity building through organization and/or participation in international conferences and involvement in collaborative initiatives. Over the past two years, WG 2 co-organized the International Conference on Metrology for Archaeology and the Cultural Heritage conference, that provided platforms for researchers and practitioners to exchange insights and explore innovative means to promote educational outreach. Additionally, WG 2 participated in the Geospatial Week in Cairo and co-organized a Summer School in Beijing that focussed on building smart cities, further fostering interdisciplinary collaborations and knowledge exchange. Future plans for WG 2 include participation and collaborating on initiatives for the upcoming Mid-Term Symposium in Manila in 2024 and Geospatial Week in Dubai in 2025, thereby continuing their efforts to advance education and capacity building in the geospatial domain.

Working Group 3 (WG 3) has been actively involved in organizing events aimed at promoting open-source development tools and fostering knowledge exchange within the geospatial community. In collaboration with Open Source Geospatial Foundation (OSGeo), WG 3 organized sessions on open data and tools during the Free and Open Source Software for Geospatial (FOSS4G) ASIA 2024 meeting, providing a platform for experts to share insights and best practices. Additionally, WG 3 launched a webinar series named POST, tailored for PhD students and FOSS developers, to train and foster knowledge exchange and collaboration in geospatial data analysis. These initiatives underscore WG 3's commitment to promoting open-source technologies and fostering collaboration within the geospatial community.

Working Group 4 (WG 4) has been actively engaged in promoting education and awareness in disaster risk management through various initiatives and events. WG 4 members actively participated in Geosmart India in 2023 and delivered lectures on geospatial technology applications in disaster management. Future plans for WG 4 include hosting workshops on disaster risk reduction and collaborating on joint workshops for disaster risk management, further enhancing their contributions to education and awareness in the field.

Working Group 5 (WG 5) organized a webinar series on Geospatial Science and Technology for Blue Economy and Coastal Marine Environments in 2023, featuring research and technical projects focused on sustainable marine resource management. These webinars provided platforms for experts to share insights and best practices, fostering collaboration and knowledge exchange within the geospatial community. Future plans for WG 5 include conducting webinars every two months until the Symposium in August 2024, providing ongoing opportunities for knowledge dissemination and collaboration.

Working Group 6 (WG 6) has been promoting education and capacity building in mining, architecture, civil engineering, and related fields through organization and/or participation in international conferences, workshops, and educational training programs. WG 6 prepared a scientific monograph that won the ISPRS ECBI2024 award, highlighting their significant contributions to education and capacity building in the geospatial domain. Future focus for WG 6 includes enhancing their impact in the field through further capacity building and knowledge dissemination initiatives.

The Inter-commission Working Group V/IV (ICWG V/IV) has been actively engaged in promoting education and capacity building in spatial information science through various initiatives and events. ICWG V/IV members presented papers at conferences, conducted workshops, and hands-on training sessions, contributing to education and capacity building in spatial information science. These initiatives underscore ICWG V/IV's commitment to advancing education and capacity building initiatives within the geospatial community.

The reports from each Working Group provide a comprehensive overview of their recent role in education and outreach. In the future, TC V plans to maintain its momentum and broaden its influence through various initiatives: prioritizing educational and capacity-building programs, fostering collaborations through joint workshops and conferences, sustaining webinar series for knowledge dissemination, publishing scientific materials to share insights, and enhancing international partnerships to amplify its global impact.

In conclusion, ISPRS Technical Commission V has made significant strides in advancing education and outreach in the geospatial domain over the past biennium. With continued collaboration, innovation, and dedication, TC V is poised to do more and further enhance capacity development and promote awareness of geospatial technologies and applications worldwide.



Gay Jane Perez ISPRS Commission V President



Josefino C. Comiso ISPRS Commission V Vice President

# XXIV ISPRS CONGRESS – NICE, FRANCE

The XXIV Congress is now over after a 6-year long preparation!

As you may know or have experienced, the 2022 ISPRS physical meeting in Nice was the third edition of the XXIV ISPRS Congress after the 2020 and 2021 digital events which were organised in place of the postponed physical meeting. Indeed, we have done everything possible to ensure scientific continuity during the pandemic, enabling our researchers and especially our PhD and master students to disseminate new knowledge, and get some feedback from discussions with experienced colleagues. To encourage this continuity, we have kept each registration alive for the 3 editions, thus one single registration giving access to up to 3 editions. We also wanted this event to be inclusive. Indeed, we have offered very early bird rates and quite a number of fee waivers to allow many colleagues and especially young colleagues across the world to attend the Congress.

For many of us, this Nice meeting was the first large geospatial physical event since the beginning of the pandemic. We thoroughly enjoyed networking again and meeting our colleagues from all over the world, although many colleagues could not join because of their national travelling policies.

The Nice meeting had a rich programme with, of course, science at the centre, but not just limited to science. Indeed, one of ISPRS' main missions, beyond extending the frontier of knowledge, is to address both science and technology together, and to keep a strong link between academia, agencies and industry. Besides the scientific tracks and sessions of the five ISPRS commissions and the plenary sessions, featuring the keynote and the award ceremonies, we also enjoyed the exhibition, allowing us to meet our colleagues from Industry, a new technology track, allowing our sponsors to present their latest technologies, and also a very exciting forum track with ten half-day sessions over the 6 days of the Congress, where hot topics were discussed to better enable our community to respond to the challenges that our world is currently facing.

Some quick numbers on this Congress : 3 editions, one General Assembly in the 2022 edition with 29 Ordinary members represented in person and around 25 participants remotely, 2700+ participants, 3400+ submitted contributions from over 80 countries, 16 keynote speakers from all the continents, 7000+ reviews performed, 1800+ oral or poster presentations and 2263 papers published in the Annals and Archives which are reference by Web of Science, Scopus and EI. I would like to warmly acknowledge the program chairs (Clément Mallet, Florent Lafarge, Ewelina Rupnik, Loïc Landrieu and Sander Oude Elberink), the ISPRS Commissions Presidents and officers, and all the reviewers who have done a tremendous job.

Throughout these 3 editions, we have experienced a new media complementary to the papers: the 10-minute pre-recorded videos, which were made open access on the ISPRS media library after the Congress. For the 3 editions, we have collected over 1500 videos. I believe they are going to be very useful and valuable for researchers to have a quick overview of the paper content but also for educational purposes. A survey of 2021, with nearly 500 responses, showed that they were much appreciated by our community.

With the experience we have now acquired, one question remains on the future shape and flavour of our large ISPRS events. Hybrid or not hybrid, that is the question. These large events are already very complex to organize. The additional complexity and cost of a hybrid format lead to additional organizational challenges and a necessary change of the economic model. Again, ISPRS is all about networking and sharing, and we believe that this can best be done in a physical meeting. In any case, finding the good settings for our future events is a challenge that the new ISPRS Council is currently working on with new event organisers and with the consent of the community.

At last, I would like to warmly acknowledge our institutional sponsors IGN, CNES, IRD, CNRS, INRIA and OGE, and the Order of French chartered surveyors, who have all been very supportive, but also and above all, our industry sponsors AIRBUS, Thales Alenia Space, esri, HEXAGON, MOMRA, Aerometrex, Agisoft, Piesat, PIX4D, RACURS, RIEGL, Trimble, VEXCEL and YellowScan, for their fidelity to ISPRS and to this XXIV Congress throughout these three editions.



All our wishes and encouragement now go to Derek Lichti, the new Congress Director, to the Canadian Remote Sensing Society, and to our Canadian colleagues and friends who will organise, we are sure, a very successful XXV Congress in Toronto in 2026.

Long live photogrammetry, remote sensing, and spatial information sciences!



Nicolas Paparoditis Vice-President, ISPRS Congress Director XXIV ISPRS Congress, Nice

# ISPRS STUDENT CONSORTIUM (ISPRS SC)

The ISPRS Student Consortium, as the official representation of students and young professionals to the ISPRS, is committed to connecting students, young professionals, professors, scientists and researchers interested in photogrammetry, remote sensing, and geospatial information sciences.

From 2022 to 2023, the ISPRS SC organized a variety of activities, offering a networking and learning platform for the emerging generation. Our regular initiatives included the hosting of ISPRS SC webinar series, the publication of the official ISPRS SC newsletter 'SpeCtrum,' and organizing and the coordination of summer schools. We hosted five webinars featuring esteemed professors, scientists, and researchers on a range of topics. Assistant Professor Roseanne V. Ramos discussed Monitoring Air Quality in the NCR. Philippines through project Airmove; Dr. Jagannath Aryal spoke on Earth Observation and Digital Transformation: an outlook from infrastructure Engineering; Dr. Franz Meyer lectured on Alaska Satellite Facility: Radar-based Earth Observation from the Center of Alaska; Dr. Ayman Habib presented on UAS Imaging and LiDAR Sensing Modalities for Smart Agriculture; and Dr. Martin Brandt rounded out the year with a presentation on Large Scale Individual Tree Mapping. Our newsletter 'SpeCtrum' continues to feature research articles from students, researchers and experience shared by the seasoned researchers, and scientists. The effort has always been to diversify the themes, recent ones covering topics such as the Application of Close-Range Photogrammetry and the Use of Social Media Data in Geospatial Analysis. This publication is freely accessible and enjoys a global readership.

In addition, we organized six summer schools and participated in tutorial sessions in collaboration with various universities and organizations. The SUNRISE (Seashore and UNderwater documentation of aRchaeological herltage palimpSests and Environment) Summer School 2022, funded by ISPRS SC and held in Italy in partnership with the Italian Society of Photogrammetry and Topography (SIFET), took place in September 2022. Another summer school, focused on Remote Sensing and entitled Advanced summer school on instruments and methodology for a CAL/VAL site for Optical data, was organized with the University of Cagliari and the Italian Association of Remote Sensing (AIT) in collaboration with the Italian Space Agency (ASI), in July 2023. The Virtual Summer School on Resilient Cities, organized with Beijing University of Civil Engineering and Architecture (BUCEA) in July 2022, and the in-person 2023 summer school on smart cities, a joint effort by ISPRS SC, ISPRS TC V, BUCEA, and the Belt and Road Architectural University International Consortium (BRAUIC) hosted at BUCEA in July 2023 in Beijing, were also notably successful. The positive feedback received from the participants and excellent collaboration among the organizers have motivated us to continue these events in future too.



Figure 1: Glimpses from the ISPRS SC BUCEA Summer School 2023

Moreover, in collaboration with the local chapter of IEEE Geosciences and Remote Sensing (IEEE GRSS) and the IEEE GRSS Young Professionals in Brazil, we have been co-

organizing a hybrid summer school. The recent one we have been engaged in is the 3rd Santa Catarine State Seminar on Education in Disaster Risk Reduction, entitled Understanding Groundwater's Impact on the Environment, held in October 2023. The ISPRS SC Summer School 2023 in Taiwan, focusing on Remote Sensing with the theme: Remote Sensing for Sustainable Environment: From Land to Water, was financially supported by ISPRS SC and took place as a post-conference event in November 2023, hosted by National Cheng Kung University. We were happy to receive positive feedback from the participants as well as organizers with their appreciation for the international networking platform that the summer school has created among the academics and students, along with the cultural exchange environment.



Figure 2: Glimpses from the ISPRS SC ACRS Summer School 2023.

The ISPRS SC Board of Directors (BODs) had a productive and engaging experience at the ISPRS Geospatial Week (GSW) 2023 in Cairo, meeting in person for the first time in over two years. We had our own stall throughout the event where we had the opportunity to actively engage with the attendees of the GSW and discuss about future collaborations, particularly in the Arab and African regions. We also presented our activities and plans to the ISPRS Council. The introduction of Discord as a communication channel and the organization of a youth presentation forum were among the key highlights. Notably, connections were strengthened with regional representatives, and meetings with ISPRS President/Vice

President, Treasurer, and other eminent figures facilitated discussions about future funding, activities and organizational strengthening.

Our engagement extends beyond these regular activities; we have been invited for the talks at different events and have been promoting students' engagements in GIS, Remote Sensing and Photogrammetry while promoting the activities of ISPRS SC. Among such events, we would like to mention here our presentation at ASPRS Diversity, Equity and Inclusion (DEI) session during the 2023 ASPRS Technical Symposium in June 2023. Likewise, we have also partnered with diverse academic institutions and organizations in co-organizing various events. We supported the International Society of Urban Informatics (ISUI) in organizing Smart Cities Innovation Competition (SCIC) in 2022. The most recent event we have supported is the 3rd International Conference on Unmanned Aerial Systems in Geomatics that was organized in Malaysia by the Indian Institute of Technology, Roorkee and Universiti Keebangsaan Malaysia in November 2023. We have been technically supporting ISPRS Technical Commissions in organizing their webinars and virtual events.



Figure 3: Glimpses of the participation of ISPRS SC at the ISPRS GSW 2023 in Cairo, Egypt

We have prioritized the membership renewal and its regular updates through our reconstructed website. Also, we have been using popular social media platform to promote our events. Preparations are underway for the launch of Student Chapters, an initiative to engage students and young professionals at the local level, slated for early 2023. Recognizing the need for more activities to standardize the use of emerging technologies among youth, we are dedicated to organizing more events to immerse young minds in ISPRS and promote activities in GIS, remote sensing, and photogrammetry.



Laxmi Thapa ISPRS SC President

# GEOSPATIAL WEEK 2023

On behalf of The Arab Academy for Science, Technology, and Maritime Transport (AASTMT), it was a great honour to host the International Society for Photogrammetry and Remote Sensing (ISPRS) Geospatial Week 2023 (GSW'2023) at the Semiramis Cairo Hotel, on the magnificent river Nile – under the theme "Remote Sensing



For Better Future". As the first ISPRS Geospatial Week (GSW'2023) in Africa and the Middle East, the conference was chaired by Prof. Naser EL-Sheimy and Prof. Ismail Abdelgafhar as the Honorary Chair and host of the conference, under the Auspices of H.E. Professor Mostafa Madbouly, Prime Minister of the Arab Republic of Egypt.

It took 18 months of hard work from many committees, including an international scientific committee of over 80 scientists from all over the world, and close to 40 local organizing committee members from AAST, chaired by Prof. Alaa Abdel Barry.

With the scientific support of 30 ISPRS Working Groups, the 29 workshops listed below provided excellent opportunities to discuss the latest developments in the fields of sensors, photogrammetry, remote sensing, and spatial information sciences.

- Cultural Heritage Visualization and Virtual Restoration
- SpACE Spectral Remote Sensing in the era of AI, Cloud and Edge Computing
- Youth Presentation Forum
- Openness in Geospatial and Remote Sensing
- Precision GNSS: Technology Advances and Applications for Navigation and Mapping
- Photogrammetric 3D Reconstruction for Geo-Applications (PhotoGA 2023)
- Geospatial Data Analytics for Physical Geography Impact Assessment on Environment, Health and Society
- Intelligent Systems in Sensor Web
  and Internet of Things
- Underwater Mapping Workshop: Geospatial techniques for underwater documentation, mapping and monitoring
- SO&C: Sensor orientation and calibration for mapping and navigation purposes
- Smart Forests Forest ecosystem assessment and monitoring using Remote Sensing, Artificial Intelligence and Robotics
- Satellite Remote Sensing and Its Applications
- MMT and HD Maps Mobile Mapping Technologies and HD Maps
- Indoor 3D

- Advanced Data Preparation and Data Management for Geospatial and Remote Sensing Scenarios
- Laser Scanning 2023
- NGC of AV: Navigation, Guidance and Control of Autonomous Vehicles
- ISSDQ 2023 Artificial Intelligence and Uncertainty Modeling in Spatial Analysis
- Semantics3D Semantic Scene Analysis and 3D Reconstruction from Images and Image Sequences
- GeoHB 2023: Geo-Spatial Computing for Understanding Human Behaviours
- The Geospatial Information and SDG Nexus: GI4SDGs
- SARcon 2023 SAR constellations and applications
- Digital Construction
- CrowdMapping: Crowdsourcing for Global Mapping
- IAMS Intelligent and autonomous mapping systems
- AI-PC: AI-based Point Cloud and Image Understanding
- UAV-based mapping with imaging and LiDAR systems: challenges, data processing, and applications
- 3DS Smart Cities 3D Sensing for Smart Cities
- Robotics for Mapping SLAM approaches for mobile mapping and robot intelligence

- 4 tutorials on UAV, sensor fusion, geospatial in public health, and deep learning in remote sensing, given by the best specialists in the field. About 200 (+50 students offered free registration) attendees joined these 4 tutorials.
- 15 exciting keynote and plenary presentations from leaders in the geospatial technologies.
- In total, 172 full papers and 423 extended abstracts were submitted by authors from 68 countries. The reviewing and decision process was in the hands of the working groups. In total, 1400 reviews have been delivered by 283 reviewers. A total of 137 full papers have been accepted for the volume X-1/W1-2023 of the ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences (ISPRS Annals). Another 260 papers are published in volume XLVIII-1/W2-2023 of The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences (ISPRS Arnals).
- 3 space agencies, 2 major mapping agencies, and 25 major industries in the fields of remote sensing, mapping, navigation, geospatial technologies, and GNSS.

The conference also witnesses the announcement of many awards, including the ISPRS TIF awards, Best Paper awards, Best Presentation awards, and the ISPRS Honorary Membership was handed over to Prof. Chen Jun, the ISPRS Fellowship to Prof. Kohei Cho and the ISPRS Brock Gold Medal Award to Prof. Deren Li.



ISPRS President, Prof. Lena Halounova, GSW'2023 Director, Prof. Naser El-Sheimy, and Prof. Alaa Abdelbarry, Chair of the LOC, with the recipients of the Best Paper Awards

This rich program enabled the participants to remain at the state-of-the-art on the current trends in Geospatial science, technology & business and also give them opportunity to meet and network with a very large number of experts, and to cross-fertilize with colleagues coming from neighbouring fields! The conference also provided a platform for international scholars, graduate students, future scientists, and industrial sectors to learn and exchange knowledge and experiences of applying up-to-date geospatial technologies for sustainable development.

The GSW'2023 Conference was not only about science, but Egypt as a vibrant, fascinating and welcoming country. Home to the best Pharaonic, Coptic and Islamic sights in Egypt, most of the attendees visited Cairo's architectural and cultural treasures which is the dream of every traveller. The mystifying pyramids, the vast sand dunes of the deserts, the oasis, the Nile, it's dazzling capital Cairo, countless temples and tombs on alongside of the river bank makes it amazingly beautiful and a land to be loved by all. The conference attendees enjoyed two social dinners: on the River Nile Crystal Cruising Restaurant, and at the Citadel of Cairo.

It was great to have the ISPRS Geospatial Week organized in Egypt where most probably the first Geospatial mapping systems were developed 1000s of years ago! We are happy that the attendees enjoyed this conference and basked in Egypt's warmth and thousands of years of civilization.



Naser El-Sheimy GSW 2023 Director

# ISPRS EDUCATION AND CAPACITY BUILDING INITIATIVES 2022

In accordance with the statutory mission and activities of ISPRS, the Society shall provide funds to support scientific and other initiatives, which will further improve its international status in the field of the photogrammetry, remote sensing and spatial information sciences, and will therefore benefit all ISPRS members. To this end, Education and Capacity Building Initiatives (ECBIs) were established in 2017 to enhance ISPRS's international status in the educational area. The call for ECBI2022s was issued in October 2021 and eight teams of researchers from working groups across all of the five ISPRS Technical Commissions submitted applications. Comments were sought from the relevant Technical Commission Presidents, and a committee of three Council members was convened to review the proposals independently, based on overall benefits to ISPRS and community, merit of the proposal, competence of the team, contribution to education and capacity building, and budget and feasibility. The committee's recommendation to fund four projects to a total of 36,800 Swiss Francs was accepted by ISPRS Council in 2021. The following briefly describes the outcomes of each project, with full reports available on the ISPRS website.

## A CHALLENGE-BASED LEARNING FRAMEWORK DESIGN AND PRACTICE FOR UAV PHOTOGRAMMETRY (CBL4UAV)

(PIs: Farzaneh Dadrass Javan and Francesco Nex, University of Twente, Netherlands)

The massive introduction of UAVs in our society has made these platforms and their data collection a very popular subject for education in a wide number of institutions (universities, life-long learning centres, applied sciences, etc.) all over the World. Experts in agriculture, urban planning, mining, and disaster management, for example, are using UAV photogrammetry for data collection and information extraction. However, these professionals often operate without having any specific education in photogrammetry (and often without being aware of using it). Increasing the awareness of photogrammetry in these communities with some basic but essential concepts would be beneficial for its correct use. To be successful, these education modules would need to be embedded in an educational framework closer to their professional interests, different from traditional teaching methods.

The present study aims to develop a framework and provide guidelines for the integration of Challenge Based Learning into geomatics education. This framework consists of three interconnected phases: engage, investigate, and act. Subsequently, an educational pilot program is created and implemented to apply the designed framework to key topics such as food security and cultural heritage. Finally, the project refines the educational framework based on real pilot attempts and evaluation results, identifying potential issues and making necessary adjustments. The designed framework and the attained results are made publicly available for reference and utilization.

The developed framework, comprising forms, guidance documents, presentations, and tables, has been made openly accessible to anyone interested through the project's dedicated website: <u>https://www.itc.nl/global-impact/itcmajor-projects/!/cbl4uav</u>.

## Capacity building for GIS-based SDG indicator analysis with

### **GLOBAL HIGH-RESOLUTION LAND COVER DATASETS**

(PIs: Daniele Oxoli, Politecnico di Milano, Italy; Sheryl Rose Reyes, United Nations Satellite Centre, Thailand; Shu Peng, National Geomatics Center of China, China)

The support of geospatial data and technologies to the United Nations Sustainable Development Goals (UN SDGs) framework has turned out to be critical for both the assessment and the monitoring of key indicators, revealing the trajectory of our planet and society towards sustainability.

The increasing availability of global open geospatial datasets - above all the global highresolution land cover (HRLC) datasets - opens noteworthy opportunities for the computation and comparison of these indicators across different geographical regions as well as multiple spatial and temporal scales. The added value of these datasets is tangible, especially for developing countries, where often such information is only partially available from local authorities. Nevertheless, there are still several barriers to their proficient use due to the lack of data management and processing capacities using proper geographic information systems (GIS) software tools.

In view of the above, the Capacity Building for GIS-based SDG Indicator Analysis with Global High-resolution Land Cover Datasets project addressed the creation of an open training material covering the complete learning process of discovering, accessing and manipulating global open geospatial datasets for computing SDG indicators, with a focus on those directly connected to marine and terrestrial ecosystems, urban environment, and climate. To ensure the widest possible accessibility, the developed material leverages the Free and Open Source Software (FOSS) QGIS and it is released under a Creative Commons Attribution 4.0 License (CC BY 4.0).

The open online training material was published at <u>https://isprs-gis-sdg.readthedocs.io</u>. A technical note including the state-of-the-art in open and global HRLC suitable for the analysis of SDG indicators and the strategy used for training requirements definition is also provided.

## Collaborative analysis of flooding events with processing of

## EARTH OBSERVATION DATASETS

(PI: Nusret Demir, Akdeniz University, Turkey)

The final report has not been received. There were delays in the transfer of funds to the PI owing to the regulatory environment. There were further delays owing to the earthquake on Turkey on 6 February 2023.

## INTERACT - MULTIMEDIA SUPPORTING MATERIALS FOR SMART EDUCA-TIONAL APPROACHES IN GEOSCIENCES: 360° INTERACTIVE AND EN-RICHED VIDEOS

(PI: Grazia Tucci, University of Florence, Italy)

The InterACT project aims at producing and sharing multimedia content for smart educational applications, leveraging innovative technologies for the development of educational resources that are beneficial for geospatial disciplines training. The project aims to explore the potential of alternative teaching methods and new technologies to engage students in the learning process and enhance their understanding of geosciences.

Amongst multimedia resources, one key focus is on 360° videos, chosen as cost-effective, easy-to-use, flexible, and future-oriented tools to support and enhance the learning process by immersing in real-life scenarios. The project outputs consist of the production of 360° videos, which cover topics typically addressed in geomatics teaching and training.

The primary goal for the use of 360° videos in the geosciences education is to digitally replicate practical activities and experiences that are traditionally conducted in the field. The interactive 360° videos can be used either as substitutes for on-site activities or as preparatory materials before engaging in fieldwork. The didactic materials are versatile and can be applied in various contexts, but particular emphasis has been given to cultural heritage surveying and documentation.

Different approaches to the production of 360° videos were followed, depending on the final target of users and educational purposes, from informative non-interactive content to autoevaluation interactive videos, with the addition of multimedia enrichments. The final step of the project allowed the transfer of the acquired technological and theoretical knowledge on the production of 360 content through a dedicated course to a selected group of participants focused on the documentation of cultural heritage.

> Stewart Walker ISPRS Treasurer

# **ISPRS S**CIENTIFIC INITIATIVES 2023

In accordance with the statutory mission and activities of ISPRS, the Society shall provide funds to support scientific and other initiatives, which will further improve its international status in the field of the photogrammetry, remote sensing and spatial information sciences, and will therefore benefit all ISPRS members. To this end, Scientific Initiatives (SIs) were established in 2014 to enhance ISPRS's international status in the scientific area. The call for SI2023s was issued in October 2022 and fourteen teams of researchers from working groups across all five ISPRS Technical Commissions submitted applications, which were reviewed for adequacy and completeness by the Technical Commission Presidents. Then a committee of three Council members was convened to review the proposals independently, based on overall benefits to ISPRS and community, merit of the proposal, competence of the team, contribution to science, and budget and feasibility. The committee's recommendation to fund seven projects to a total of 58,863 Swiss Francs was accepted by ISPRS Council at the beginning of 2023. The following briefly describes the outcomes of each project, with full reports available on the ISPRS website. Final reports will be available in March 2024.

## BENCHMARKING OF ABSOLUTE AND RELATIVE POSITIONING SOLUTIONS UNDER GNSS DENIED ENVIRONMENTS FOR MOBILE GEOMATICS

(PIs: Yunsheng Wang, Finnish Geospatial Research Institute, Finland; Liang Chen, Wuhan University, China)

## PUBLISHING DATASET GUIDELINE: GAPS AND TRENDS IN RESEARCH DATA MANAGEMENT IN THE **ISPRS** COMMUNITY

(PI: Dorota Iwaszczuk, Technical University Darmstadt, Germany)

## BEBAOI: BENCHMARK AND BASELINE METHODS FOR DETERMINING OVERLAPPING IMAGES

(PIs: Xin Wang, Wuhan University, China; Yu Feng, Technical University of Munich, Germany)

# NAUTILUS UNDER AND THROUGH WATER DATASETS FOR GEOSPATIAL STUDIES

(PI: Erica Nocerino, University of Sassari, Italy)

## BENCHMARKING OF PUBLICLY AVAILABLE SOFTWARE SOLUTIONS FOR CLOSE-RANGE POINT CLOUD PROCESSING OF FOREST ECOSYSTEMS

(PIs: Carlso Cabo, University of Oviedo, Spain; Xinlian Liang, Wuhan University, China)

#### **GEOSPATIAL DATA BASE FOR EXPOSOMICS**

(PI: Kamel Boulos, University of Lisbon, Portugal)

## INTEGRATING INDOORGML WITH OUTDOORS: AUTOMATIC ROUTING GRAPH GENERATION FOR INDOOR-OUTDOOR TRANSITIONAL SPACE FOR SEAMLESS NAVIGATION

(PI: Zhiyong Wang, South China University of Technology, China)



Stewart Walker ISPRS Treasurer

# THE ISPRS FOUNDATION (TIF)

The year 2023 marked a significant change for The ISPRS Foundation (TIF). After many years of service dedicated to successful TIF operation, John Trinder and Marguerite Madden ended their mission. The new TIF Officers, Mario Hernandez, Senthil Kumar and Jeffrey Yates started on 1 January 2023. ISPRS is extremely thankful to John Trinder and Marguerite Madden for their outstanding services.

## TOWARDS A REVIEWED TIF STRATEGY

The ISPRS Foundation (TIF) was legally established in 2003 with the objective to contribute significantly to the efforts of ISPRS in capacity building, international cooperation and technology transfer. TIF is expected to fund travel grants, awards, awareness education, distance learning, exchange programs, fellowships, grants, international workshops, internships, preservation and archiving, research initiatives, scholarships, standards projects, tools and literature.



TIF 26 awardees for ISPRS GSW Cairo, Egypt 2023

The TIF Officers are now working on an overall new strategy in order to:

- Strengthen partnerships with TIF donors so that the financial assistance provided to TIF becomes mutually beneficial.
- Enlarge the scope of activities of TIF, continuing to provide grants for ISPRS events, but searching for new opportunities that can give visibility to ISPRS, mainly in geographical regions not well represented in ISPRS.
- Improve the process of granting by discussing with event organizers on providing to TIF the list of candidates for selection of a TIF grant.
- Request that grant awardees submit feedback reports in order to show to donors the enormous benefits that their financial contribution provide to the awardees.
- Continuously maintain a constructive dialogue with ISPRS Council in order to jointly identify priorities that TIF shall address.

During 2023, the number of candidates for TIF grants significantly increased. For the GSW, TIF received 106 applications which was twice as many as in previous years. This creates excessive administrative work. A methodology to pre-filter candidates is under discussion.

Following the worldwide pandemic, air fare costs significantly increased. The consequence is that TIF funds need to be increased in order to be able to satisfy the growing demand.

In order to start evaluating the impact that the TIF contribution might have into the professional career of the awardees, each candidate has been requested to provide an associated report. Some of the reports received are encouraging. They clearly reflect the enormous benefits that the awardees obtain by attending the ISPRS partnership events.

ISPRS Nice Congress June 6 – 11 2022		51 grants	37,100 USD
	White Elephants Club "Torlegard" Travel Grants	3 grants	3,750 USD
	Students Consortium	4 grants	5,495 USD
	Students with Visa problems	5 grants	53,100 USD
Summer School, Ra- gusa, Italy Sept. 3-9, 2022		1 grant	4,097 USD

#### TIF support in 2022

#### TIF support in 2023

ISRSE 39 24-28 April, Antalya, Turkey	4 grants	5,000 USD
CIPA 2023 25-30 June, Florence, Italy	4 grants	4,150 USD
GSW 2-7 September, Cairo, Egypt	18 grants	21,750 USD
ACRS Summer School		2, 500 USD

As stated initially, TIF has a larger mandate than only providing grants. Throughout the years of operation TIF has become only a grant provider. Work with various partners is on-going, providing assistance for capacity building, exchange programmes and learning events.



TIF awardees for CIPA, Florence, Italy 2023

At GSW2023 in Cairo, TIF Operations Officer, Dr. Senthil Kumar made a presentation to the

ISPRS Council related to the new strategy that TIF is developing. The exchange of ideas between ISPRS Council and TIF was very valuable. The main goal and objective of TIF to further promote the aims of ISPRS continue to be largely fulfilled. An improved relation with donors is required, and continuous presence at ISPRS Council meetings is desired. A stronger dialogue with donors may hopefully increase the financial possibilities of TIF.



Mario Hernandez, TIF Chair

# ISPRS MIDTERM SYMPOSIA 2024

COMMISSION I - SENSOR SYSTEMS INTELLIGENT SENSING AND REMOTE SENSING APPLICATION 13-17 May 2024 Changsha, China <u>https://www.isprs2024tc1.net/</u>

COMMISSION II – Photogrammetry The Role of Photogrammetry for a Sustainable World 11-14 June 2024 Las Vegas, USA <u>https://www.isprs.org/tc2-symposium2024/index.html</u>

COMMISSION III - REMOTE SENSING BEYOND THE CANOPY: TECHNOLOGIES AND APPLICATIONS OF REMOTE SENSING 4-8 NOVEMBER 2024 BELÉM, BRAZIL <u>HTTPS://SELPERBRASIL.ORG.BR/EVENTS/BELEM-2024-TC3-SYMPO-</u>SIUM/

COMMISSION IV - Spatial Information Science Spatial Information to Empower the Metaverse 22-25 October 2024 Fremantle, Australia <u>https://www.isprs.org/tc4-symposium2024/index.html</u>

COMMISSION V - EDUCATION AND OUTREACH INSIGHT TO FORESIGHT VIA GEOSPATIAL TECHNOLOGIES 6-8 AUGUST 2024 MANILA, PHILIPPINES <u>HTTPS://WWW.ISPRS.ORG/TC5-SYMPOSIUM2024/INDEX.HTML</u>

# ISPRS PUBLICATIONS SINCE THE XXIV ISPRS CONGRESS IN NICE

## THE INTERNATIONAL ARCHIVES OF THE PHOTOGRAMMETRY, REMOTE SENSING AND SPATIAL INFORMATION SCIENCES

Year	Event/Title	Date/Place	Volume
2023	2nd GEOBENCH Workshop on Evaluation and BENCHmarking of Sensors, Systems and GEOspatial Data in Photogrammetry and Remote Sensing	23-24 Oct Krakow, Poland	XLVIII-1/W3-2023
2023	ISPRS ICWG IV/III/II Free and Open Source Software for Geo- spatial (FOSS4G) 2023 – Academic Track	26 Jun - 2 Jul Prizren, Kosovo	XLVIII-4/W7-2023
2023	29th CIPA Symposium "Documenting, Un- derstanding, Preserving Cultural Heritage. Humanities and Digital Technologies for Shaping the Future"	25-30 Jun Florence, Italy	XLVIII-M-2-2023
2023	ISPRS TC V (WG V/6) "PHEDCS 2023 Almaty" – Geoeducation for Mining, Architecture, and Civil Engi- neering	15-16 Jun Almaty, Kazakhstan	XLVIII-5/W2-2023
2023	ISPRS TC I, WG I/2 12th International Symposium on Mobile Mapping Technology (MMT 2023)	24-26 May Padua, Italy	Volume XLVIII-1/W1-2023
2023	ISPRS TC V International Conference on Geomatics Ed- ucation – Challenges and Prospects (ICGE22)	10-12 May Hong Kong SAR, China	XLVIII-5/W1-2023
2023	39th International Symposium on Remote Sensing of Environment (ISRSE-39) "From Human needs to SDGs"	24-28 Apr Antalya, Türkiye	XLVIII-M-1-2023
2023	ISPRS WG II/8 International Workshop "Photogrammetric and computer vision techniques for environ- mental and infraStructure monitoring, Bio- metrics and Biomedicine" – PSBB23	24-26 Apr Moscow, Russia	XLVIII-2/W3-2023

2023	ISPRS WG IV/3 ISPRS GeoSpatial Conference 2022 Joint 6th Sensors and Models in Photo- grammetry and Remote Sensing (SMPR) and 4th Geospatial Information Research (GIResearch) Conferences	19-22 Feb Tehran, Iran (virtual)	XLVIII-4/W2-2022, 2023
2023	ASPRS 2023 Annual Conference	13-15 Feb Denver, Colorado, USA & virtual 12-15 Jun	XLVIII-M-3-2023
2022	ISPRS TC II Optical 3D Metrology (O3DM)	15-16 Dec Würzburg, Germany	XLVIII-2/W2-2022
2022	ISPRS TC II 7th International Workshop LowCost 3D - Sensors, Algorithms, Applications	15-16 Dec Würzburg, Germany	XLVIII-2/W1-2022
2022	ISPRS WG IV/7 Geoinformation Week 2022	14-17 Nov Johor Bahru, Malaysia (online)	XLVIII-4/W6-2022, 2023
2022	ISPRS TC III & TC IV Urban Geoinformatics 2022	1-4 Nov Beijing, China	XLVIII-3/W2-2022
2022	ISPRS TC III & TC IV 14th GeoInformation for Disaster Manage- ment (Gi4DM 2022)	1-4 Nov Beijing, China	XLVIII-3/W1-2022
2022	ISPRS TC IV 7th International Conference on Smart Data and Smart Cities (SDSC)	19-21 Oct Sydney, Australia	XLVIII-4/W5-2022
2022	ISPRS TC IV 17th 3D GeoInfo Conference	19-21 Oct Sydney, Australia	XLVIII-4/W4-2022
2022	ISPRS TC IV (WG IV/1) The 7th International Conference on Smart City Applications (SCA)	19-21 Oct Castelo Branco, Portugal	XLVIII-4/W3-2022
2022	ISPRS WG IV/4, III/10, IV/7, V/1 & ICWG IV/III Free and Open Source Software for Geo- spatial (FOSS4G) 2022–Academic Track	22-28 Aug Florence, Italy	XLVIII-4/W1-2022

## ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences

Year	Event/Title	Date/Place	Volume
2023	ISPRS Geospatial Week 2023	2-7 Sep Cairo, Egypt	X-1/W1-2023
2023	29th CIPA Symposium "Documenting, Under- standing, Preserving Cultural Heritage. Humani- ties and Digital Technologies for Shaping the Future"	25-30 Jun Florence, Italy	X-M-1-2023
2023	ISPRS TC V International Conference on Geomatics Education – Challenges and Prospects (ICGE22)	10-12 May Hong Kong SAR, China	X-5/W1-2023
2023	ISPRS WG IV/3 ISPRS GeoSpatial Conference 2022 Joint 6th Sensors and Models in Photogrammetry and Remote Sensing (SMPR) and 4th Geospatial Information Research (GIResearch) Conferences	19-22 Feb Tehran, Iran (virtual)	Volume X-4/W1-2022, 2023
2022	ISPRS TC III & TC IV 14th GeoInformation for Disaster Management (Gi4DM 2022)	1-4 Nov Beijing, China	X-3/W1-2022
2022	ISPRS TC III & TC IV Urban Geoinformatics 2022	1-4 Nov Beijing, China	X-3/W2-2022
2022	ISPRS TC IV 17th 3D GeoInfo Conference	19-21 Oct Sydney, Australia	X-4/W2-2022
2022	ISPRS TC IV 7th International Conference on Smart Data and Smart Cities (SDSC)	19-21 Oct Sydney, Australia	X-4/W3-2022

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PRESIDENT: LENA HALOUNOVÁ (CZECH REPUBLIC)

isprs-pr@isprs.org

VICE PRESIDENT: NICOLAS PAPARODITIS (FRANCE) isprs-vp@isprs.org

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## **ISPRS Headquarters:**

Jiang Jie, Secretary General Leibniz Universität Hannover Institute of Photogrammetry and GeoInformation Nienburger Str. 1 Hannover 30167 GERMANY Tel: +49 511 762 2486 Fax: +49 511 762 2483 Email: isprs-sg@isprs.org

For more information on ISPRS go to www.isprs.org