

Preface: DMGIS 2025

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The advent of ICT (Information, Communication, and Technology) has opened a new era, which greatly increases the demand for capturing, integration, and analysis complex spatial and temporal data in multiple dimensions for various applications, ranging from urban planning and environmental monitoring to disaster response and smart city development. Furthermore, as the world becomes increasingly interconnected and data-driven, we need sophisticated models that can represent and simulate the dynamic interactions between physical, social, and economic systems over time and across different geographical scales, so to predict the behavior of systems within a multidimensional spatial-temporal framework becomes crucial for decision-making, resource allocation, and risk management. Some countries have already initiated National 3D Mapping programs, and the demand for related methodologies and technologies has become more urgent.

Modelling the changing world has been the challenge of the geospatial society for years. International Society for Photogrammetry and Remote Sensing (ISPRS) initiated the workshop series on ‘Dynamic and Multi-dimensional Geographic Information System (DMGIS)’ in 1997 and 8 workshops with this title have been organized in different places of the world since then.

The 9th International Workshop on Dynamic and Multi-dimensional Geographic Information System (DMGIS 2025), organized by the ISPRS and proudly hosted by Beijing University of Civil Engineering and Architecture, was held in Beijing, China, from 22-24 August 2025. This event gathered leading scholars, professionals and participants from Italy, Canada, Malaysia, Mongolia, South Africa, and China in the fields of remote sensing, geospatial information science, and satellite navigation, fostering international collaboration and knowledge exchange in cutting-edge developments in dynamic and multi-dimensional geospatial data processing, analysis and applications. Chaired by Professor Jie JIANG and with the strong support by a distinguished Scientific Committee, DMGIS 2025 served as a premier platform for discussing emerging trends and innovative methodologies in photogrammetry, remote sensing, AI-enhanced geospatial analysis, 3D modeling, and multi-scale geographic information systems.

The workshop featured 11 thematic programs for oral presentation, covering a broad range of topics:

- Intelligent Geospatial Modelling
- Planetary, Marine, Underground Modelling
- Advances in 3D Modelling
- AI-Enabled Low Altitude and Ground Modelling
- Grid-based Spatial Modeling
- Geospatial Applications
- Complex Scenes Modelling
- 3D Modelling
- Modelling of Environment
- Information Extraction
- Data Processing and Applications

A total of 63 high-quality papers were accepted for publication in this proceedings volume following a rigorous peer-review process conducted by an international panel of experts. These contributions represent the latest advances in both theoretical research and practical applications, showcasing the vibrant progress in geospatial science and technology.

We would like to express our sincere gratitude to all authors, reviewers, session chairs, and members of the organizing committee for their invaluable contributions to the success of DMGIS 2025. Special thanks are also due to the ISPRS Council, the scientific committee, and the local organizing team for their strong support and dedication. Finally, we gratefully acknowledge Beijing University of Civil Engineering and Architecture for providing excellent facilities and logistical arrangements.

It is our hope that this collection of papers will serve as a valuable reference for researchers, practitioners, and policymakers, and will inspire future innovation and collaboration in the dynamic and ever-evolving field of geospatial information science.

Scientific Committee

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