Report of the 9th International Workshop on Dynamic and Multi-dimensional GIS (DMGIS 2025)

The 9th International Workshop on Dynamic and Multi-dimensional GIS (DMGIS 2025) was successfully held in Beijing, China, on 22–23 August 2025. The event was jointly organized by International Society for Photogrammetry & Remote Sensing (ISPRS) Technical Commission IV (Spatial Information Science) and Beijing University of Civil Engineering and Architecture (BUCEA), and supported by a wide range of organizations, including the Commission on 'Spatial Information Management' of International Federation of Surveyors (FIG), the National Geomatics Center of China (NGCC), the Moganshan Geospatial Information Laboratory, the Commission on 'Intelligent Mapping' of Chinese Society for Geodesy Photogrammetry and Cartography (CSGPC), the Commission on 'Low-altitude Economy' of GNSS & LBS Association of China (GLAC), the Commission on 'Global Services' of China Association for Geospatial Industry and Sciences (CAGIS), the ISC GeoUnions Standing Committee on Disaster Risk Reduction (ISC-GU-SC-DRR), the UN-GGIM Academic Network, the 'Belt and Road' Architectural University International Alliance, and the ISPRS International Journal of Geo-Information.

More than 150 experts, scholars, researchers, and student representatives from over ten countries and regions attended the conference, including China, France, Italy, Australia, Canada, Norway, Mongolia, and Malaysia. The workshop received 95 submissions, with 62 papers accepted and published in the ISPRS Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences (https://www.isprs.org/publications/archives.aspx).

The opening ceremony, chaired by Prof. Jie Jiang (ISPRS Secretary General), featured welcome remarks from Prof. Zhaohui Chen (Vice President of BUCEA), Prof. Nicolas Paparoditis (ISPRS Vice President), and FIG representatives. They highlighted the growing importance of dynamic and multi-dimensional geospatial technologies in smart cities, disaster management, environmental monitoring, and the low-altitude economy, emphasizing international cooperation and interdisciplinary integration as key drivers of innovation. Prof. Songnian Li (Chair of the Scientific Committee of the XXV ISPRS Congress) presented the preparation progress for the 2026 Congress in Toronto.

The scientific program commenced with four keynotes by: Prof. Chen Jun (NGCC) on ‘Developing and Providing Global Geo-spatial Public Goods’, Prof. Nicolas Paparoditis (IGN, France) on ‘Trends in Topographic Mapping from the Perspective of a National Mapping Agency’, Prof. Sisi Zlatanova (UNSW) on ‘The Vision and Implementation of Spatial Digital Twins in Australia’, and Prof. Maria Antonia Brovelli (Politecnico di Milano) on ‘Remote Sensing and Machine Learning for Urban Air Quality and Heat Island Monitoring’.

In addition to the keynotes, two high-level panel discussions were convened. The ‘Intelligent Geospatial Modelling’ panel examined how hybrid intelligence and AI-driven methods enhance geoscience, spatiotemporal analysis, and human mobility modelling, with discussions on data fusion, algorithm optimization, and information security. The ‘Planetary, Marine, and Underground Modelling’ panel addressed challenges of data scarcity and environmental complexity, highlighting advances in lunar and planetary exploration, marine multidimensional modelling, and subsurface tunnel detection.

Complementing the panels, four technical sessions further enriched the academic program. The session on ‘Advances in 3D Modelling’ discussed progress ranging from Gaussian splatting and multi-scale terrain modelling to improved reconstruction in complex environments and the construction of geospatial knowledge graphs. The session on ‘AI-Enabled Low Altitude and Ground Modelling’ presented cutting-edge research on UAV swarm sensing and communication, urban air mobility, intelligent airspace management, and AI-enabled environmental perception. The session on ‘Grid-based Spatial Modelling’ addressed methodological frameworks and practical applications, including drone flight path prediction, the correlation between urban morphology and carbon emissions, and the integration of multi-source geospatial data. The session on ‘Geospatial Applications’ emphasized applied research across forestry, agriculture, disaster response, transportation, environmental monitoring, and economic assessment, underscoring the practical value of geospatial technologies in diverse societal contexts.

An important highlight of DMGIS 2025 was the encouragement of young scholars through six student sessions. Nearly 30 students from 11 universities presented their work on complex scene modelling, 3D reconstruction, environmental simulations, information extraction, and geospatial data processing. These sessions provided a lively forum for academic exchange and future collaboration among the next generation of researchers.

Building on its tradition since 1997, DMGIS 2025 once again demonstrated its importance as a global platform for promoting research and cooperation in dynamic and multi-dimensional modelling of the real world, reinforcing both the scientific depth and the practical significance of the series.