

Editorial

Welcome to the second issue of the 31st volume of The International Hydrographic Review (IHR).

Hydrography is a decisive enabler for the sustainable use of our oceans while ensuring their protection for future generations. In a year when global attention is focused on climate resilience and integrated ocean governance, notably during UN Climate Change Conference in Belém (Brazil), the discipline of hydrography has assumed a central role in shaping strategies that balance economic development with ecological responsibility. Far beyond its traditional remit of charting and navigation, hydrography now underpins critical decisions in coastal zone management, marine spatial planning, and environmental monitoring. Rising sea levels, intensifying storm patterns, and accelerating sediment dynamics demand precise and timely hydrographic data to safeguard infrastructure and ecosystems alike. At the same time, the hydrographic community is increasingly called upon to contribute to global sustainability goals, ensuring that marine operations align with climate adaptation measures and biodiversity conservation. This issue reflects these imperatives by presenting research that not only advances technical capabilities but also addresses the broader challenge of reconciling efficiency, safety, and environmental stewardship. Through innovative methodologies, data-driven risk assessments, and collaborative frameworks, the contributions herein demonstrate how hydrography provides the foundation for resilience and sustainable ocean use in an era of unprecedented environmental change.

The invited article by Hans-Gerd Maas and colleagues offers a detailed review of photogrammetric techniques in hydrographic environmental monitoring (pp. 12–29). By integrating camera and LiDAR systems with advanced image analysis and AI-driven algorithms, the authors present solutions that enable high-resolution, accurate measurements for monitoring dynamic coastal and estuarine environments. These innovations not only enhance hydrographic precision but also provide essential tools for environmental stewardship, supporting long-term strategies to protect vulnerable ecosystems.

The peer-reviewed section begins with Anders Knudby's study on satellite imagery for hazard detection in the Canadian Arctic (pp. 30–43). By applying Sentinel-2 data and satellite-derived bathymetry, this research illustrates how proactive use of remote sensing can prevent groundings and reduce environmental risks in poorly surveyed waters. Lucas Dammert and co-authors advance multibeam bathymetry by integrating robotic total stations with multi-sensor adjustment (pp. 44–62), delivering sub-centimetre accuracy and robust solutions for GNSS-challenged environments – an essential capability for precise data acquisition in inland waters, harbours, and complex coastal zones. Shivani Seepersad & Dexter Davis introduce an economic risk assessment framework for Small Island Developing States (pp. 64–79), addressing the socio-economic and environmental consequences of maritime incidents. Alberto Costa Neves and colleagues tackle the complex issue of nautical depth in fluid mud environments (pp. 80–100), proposing conservative definitions that reconcile port efficiency with environmental safety. A series of papers by Amrika Maharaj and collaborators (pp. 102–121, 122–139 and 140–150) employ geostatistical and AI-driven models to analyse maritime accidents and predict risks in the Caribbean Sea, offering strategies that strengthen resilience and reduce the likelihood of environmentally damaging incidents. Collectively, these contributions underscore the growing importance of data-driven approaches in safeguarding both navigation and marine ecosystems.



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The notes and technical reports not only offer practical insights into specialized hydrographic applications but also highlights initiatives by Member States that strengthen capacity and promote sustainable ocean use. Several contributions emphasize environmental aspects, demonstrating how hydrography supports ecosystem protection alongside technical innovation. Guy Van Rentergem & Sofie de Volder describe innovative methods for conducting bathymetric surveys in caves (pp. 152–156), demonstrating adaptability to extreme environments where groundwater systems play a vital role in global water cycles. Chandana Rathnayake & Huibert-Jan Lekkerkerk present a structured framework for survey system calibration and verification (pp. 158–172), reinforcing professional standards that underpin reliable data for navigation and environmental monitoring. Jacob Inostroza Torres reviews Chile's recent achievements in naming submarine features (pp. 174–180), a contribution that enriches global ocean knowledge and supports the objectives of the UN Decade of Ocean Science for Sustainable Development. Additional notes include Nickolás Roscher and colleagues reporting on the inauguration of the LA-RENC Training Center (pp. 182–185), Mohammad Musa examining Bangladesh's role in hydrography and sustainable blue economy initiatives (pp. 186–197), and Varun Jai evaluating satellite-derived bathymetry for nearshore mapping around Agatti Island, India (pp. 198–208). Each of these contributions reflects the interconnectedness of technology, governance, and environmental responsibility in modern hydrography.

Finally, we extend our sincere gratitude to the peer reviewers whose expertise and dedication ensure the scientific quality of The International Hydrographic Review (p. 210). Their invaluable contributions uphold the standards of excellence that define this publication.

We trust that this issue will inform and inspire your work, and we invite you to share your insights and research with the IHR as we collectively advance the science and practice of hydrography for the benefit of navigation safety, environmental protection, ocean sustainability, and beyond.

On behalf of the Editorial Board, I hope that you will enjoy reading this new issue of the IHR!



Dr Patrick Westfield

Chief Editor, IHR