

Editorial

Welcome to the 28th Volume of *The International Hydrographic Review* (IHR). I am writing this editorial on my way to the Hydro22 Conference, hosted by the Francophone Hydrographic Society (AFHy) on behalf of the International Federation of Hydrographic Societies (IFHS).



Hydro is coming home – this year's venue is Monaco, the seat of the Secretariat of the International Hydrographic Organisation (IHO). More crucially, *Hydro*, an important symposium for our hydrographic community, is finally back as an in-person event after a two-year absence. With the COVID-19 pandemic, our habits of communicating and collaborating changed significantly. In many offices around the world, severe restrictions on on-site work and business travel led to video conferencing becoming central to the way we work. Let us not forget, that not only office jobs were affected, but also and quite significantly the work of ship crews and suppliers. Crew changes could not be made and ship cruises were reduced or stopped altogether. It is very inspiring to see in the last months of 2022, that many of these restrictions can be lifted. Yes, of course, digital communication tools can transport technical content very well. However, they cannot replace, or only with great difficulty, a personal exchange with colleagues, let alone offer a reasonable platform for establishing new relationships. The resonance of past events this year, be it conferences, meetings, manufacturer demonstrations, and symposia such as Hydro22 shows that this has been sorely missed. This year's Hydro22 program and exhibition cover a wide range of topics ranging from conventional and new measurement techniques and platforms, smart data processing and management to environmental and economic issues up to research and education. These topics are as colourful and multifaceted as the eight peer-reviewed articles and nine notes in this IHR edition.

Hydrography is not limited to shipborne echosounders. Hydrography uses all available measurement technologies and platforms at hand to effectively achieve an accurately, reliably and up-to-date description of our marine environment. Optical techniques of photogrammetry and remote sensing have been playing an increasingly important role in this context for years. In this edition's first article, Gottfried Mandlbürger gives an excellent review (with almost 250 literature references) of the optical methods used today. He distinguishes between passive and active techniques and categorizes according to the carrier platform and the sensor location, above and below the water level. The discussion of a huge variety of applications puts Mandlbürger's work in a practical hydrographic context. In a second article, the use of optical measurement techniques becomes quite concrete. Knut Hartmann *et al.* show that spectrally derived bathymetry methods have found their way into our toolboxes. The authors present study results on the potential and feasibility of a cloud-based solution for extracting bathymetry from satellite imagery at various locations around the globe.

The following three articles focus on information technology. Daniel Wehner *et al.* introduce their idea on Marispace-X, a digital maritime data space based on data sovereignty, security, interoperability, and modularity of the European Federated Data Infrastructure Gaia-X. New directions in maritime big data processing and analysis of sensor data will be exemplified for applications for hydrographic surveys, among others. Also, Jean-François Beaupré *et al.* deal with data models. The authors developed an approach to managing maritime limits and boundary information of coastal states under the IHO S-100 framework, and they provide recommendations for the upcoming practical implementation of the new IHO S-121 standard. Giuseppe Masetti *et al.* are investing in advanced student programs to prepare the next generation of ocean mappers for the increasing

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demand for timely ping-to-public data workflows. They present the design and implementation of an e-learning Python for Ocean Mapping (ePOM) project.

Hydrographic challenges can only be successfully met using precisely georeferenced data. Be it surveyed depths, water levels and tides for chart production, *currents*, temperature and salinity for oceanographic modelling or marine habitat mapping for environmental monitoring. The following two articles give an insight into the geodetic infrastructure and related developments necessary for global, cross-border positioning. Gunter Liebsch *et al.* explain the need for gravimetric surveys to determine and improve precise models of the height reference surface for GNSS-aided height determinations. That consistent geodetic reference surfaces are of fundamental importance in this context is also demonstrated by the unprecedented agreement on the unified Baltic Sea Chart Datum 2000 (BSCD2000), initiated by the Baltic Sea Hydrographic Commission (BSHC) Chart Datum Working Group (CDWG). Cord-Hinrich Jahn *et al.* deal with the potential of new innovative technology to achieve highly accurate and reliable 3-D positioning, and present their works on the development and realisation of a real-time high precision positioning service in the German North Sea.

We conclude our series of articles with the work of Barry Grinker *et al.* on the evaluation of a crowdsourced bathymetry approach. Their study shows how a host of non-survey vessels can contribute to harbour mapping in routine maritime operations and using standard navigation instruments.

This edition also contains nine interesting and exciting notes. Mina Foroutan *et al.* reflect on an international workshop on community views and expectations for the capabilities of a multidisciplinary Hydrographer of the Future. Sonja Bhatia *et al.* complete their series of notes on the IHO Empowering Women in Hydrography (EWiH) initiative with a paper on the structural conditions, challenges, and lack of support in the profession that cause women to leave their career paths. João Paulo Delgado Vicente from the Portuguese Hydrographic Institute informs about Portugal's cartographic responsibility in Africa that aims to produce new nautical charts, improve hydrographic surveys, and support capabilities in marine science and technology. The two notes by Julia Bräker *et al.* and Frank Niemeyer *et al.* present the promising results of two still ongoing research and development projects on the potential of augmented reality to assist the helmsman in hydrographic surveys as well as on the development of a test platform for underwater sensor technology and material testing. The next note is an update from Denis Hains *et al.* on the definition of the term *hydrospatial*. This edition closes with three notes under the umbrella topic "filling the gaps in the hydrographic grid". Esmee M. van Wijk *et al.* investigate whether data from free-drifting, autonomous profiling floats can be used to map the topography of the ocean basins. Benjamin Evans and Jeremy Weirich highlight achievements of NOMECS, a national strategy to map, explore and characterize waters of the United States Exclusive Economic Zone. René Chénier *et al.* present a tool developed to prioritize survey gaps in Canadian waters that pose the highest risk to navigation.

In conclusion, please allow me to say a few words on my own behalf. When I accepted the IHR Chief Editor role, I announced that we would make the IHR more attractive for publishing. Since then, we have already been able to implement the first aspects:

- An orderly double-blind review process for articles was introduced.
- A coordinated, structured correspondence with the authors was introduced – from submission via revision via proofread to publication.



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- Starting with IHR Vol. 27, all articles and notes will be registered with persistent interoperable identifiers (so called *Digital Object Identifier*, DOI).
- Every article and note can now be downloaded as a single PDF directly from the IHR website.
- Online readers now have the option to automatically generate a reference list entry of every individual paper.
- IHR's social media presence was significantly increased.

While these may seem small achievements, there are definitive stepping stones in our goal of creating something of substance and permanence. I would like to take this opportunity to thank in particular my colleagues in the IHO Secretariat, the Directorship and Secretary General, as well as all Member States, represented by the Editorial Board, for their support and trust. Together we will continue to develop the IHR!

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

Patrick Westfeld
Chief Editor, IHR