Notes

HYDROSPATIAL
UPDATE AND PROGRESS IN THE DEFINITION OF THIS TERM

It is all about the Blue of our Blue Planet and...
It is not replacing Hydrography!

By Denis Hains[1*], Lars Schiller[2], Rafael Ponce[3*], Michael Bergmann[4*], Hayley C. Cawthra[5,6*], Karen Cove[7*], Paola Echeverry[8*], Latia Gaunavou[9*], Seong-Pil Kim[10*], Ana Carolina Lavagnino[11*], John Maschke[12*], Maria Emanuela Mihailov[13*],Victoria Obura[14*], Parry Oei[15*], Pearlyn Y. Pang[16*], Geetha P. N. Plackal[17*] and Shereen L. Sharma[18*]

[1] H2i, Ottawa, Canada, dhains@h2i.ca
[2] ZINDEL AG, Hamburg, Germany, lars.schiller@dhyg.de
[3] Esri, The Hydrographic Society of America, Redlands, California, USA, rponce@esri.com
[4] BM Bergmann-Marine, Grosskrotzenburg, Germany, Michael.bergmann@bergmann-marine.com
[5] Geophysics and Remote Sensing Unit, Council for Geoscience, Cape Town, South Africa, hcawthra@geoscience.org.za
[6] African Centre for Coastal Palaeoscience, Nelson Mandela University, South Africa
[7] Teledyne Geospatial, Fredericton, Canada, karen.cove@teledyne.com
[8] General Maritime Directorate, Bogota, Colombia, paolechhe@gmail.com
[9] Maritime Boundaries and Pacific Community – SPC, Fiji, litiag@spc.int
[10] Korea Institute of Geoscience and Mineral Resources, Daejeon, Republic of Korea, spkim333@gmail.com
[11] Marine Geoscience Laboratory, UFES, Brazil, anacarolinalavagnino@gmail.com
[12] Australasian Hydrographic Society, Cairns, Australia, maschkejw@gmail.com
[13] Maritime Hydrographic Directorate Constanta, Romania, mihailovme@gmail.com
[14] Kenya National Hydrographic Office, Nairobi, Kenya, ob.victoria@gmail.com
[15] Maritime and Port Authority of Singapore, parryoei@gmail.com
[16] Maritime and Port Authority of Singapore, pearlynp@hotmail.com
[17] World Alliance for Planetary Health (USA), Kochi, Kerala, India, geethajoby70@gmail.com
[18] Independent Consultant, Perth, Australia, shereen.l.sharma@gmail.com

[*] Member of the “Hydrospatial Movement Club”

Abstract

The term hydrospatial first emerged in the early 2000’s in the UK. Since February 2020, the term hydrospatial has been reenergized, promoted and mentioned in many fora such as: International Hydrographic Conferences virtual and in person; and in international publications including the *International Hydrographic Review (IHR)* in its six last volumes. This note is intended to provide an update on where this term stands with respect to its usage, endorsement and meaning.

1. Introduction

The term hydrospatial has now reached a level of common usage and maturity in the global ocean and water science community. The fact that the Hydrospatial Movement Club and Community (HMCC), established at the end of 2020, has grown to over 4,700 members by September 2022 and is continuously growing, notably supports this. It also formalizes how the term is used and what it really means. There is no debate on the term hydrospatial itself. It refers to “all the Blue of our Blue Planet and its contiguous zones” (Hains et al., 2022, 2021). However, we

https://doi.org/10.58440/ihr-28-n14

acknowledge that clarification is still needed with respect to terminological aspects such as the part of speech (noun vs. adjective) and a clearer definition. In particular, with respect to the initially proposed definitional approach (Hains, 2020), there has been some dissent (e.g., Jonas, 2021), most recently voiced by Lars Schiller from the perspective of a terminologist in an extensive Paper in the *IHR* Volume 27 (Schiller, 2022). Schiller joins the authors of the current note.

2. A critical look back

When we first commented on the term hydrospatial in May 2020, our initial approach was to define the new term similarly to hydrography (Hains, 2020). This was based on the IHO definition of hydrography: “a branch of applied sciences which deals with (…)”. In hindsight, this was perhaps not such a good idea, and it was misleading, suggesting that we wanted to replace or re-define hydrography. There has never been an intent to replace hydrography. We did recognize that using the definition of hydrography to first define the hydrospatial space was not adequate. But it was a starting point for a conversation and further develop the definition.

As a result, we developed a simpler definition, which we submitted to the Hydrographic Dictionary Working Group (HDWG) in December 2021 with the objective of including the term in the *IHO Hydrographic Dictionary (S-32)*. However, the proposal was rejected by the HDWG because the definition did not clarify if the term was to be used as an adjective and left rightly so the impression that it was suggested as a noun.

After all, the HDWG presented the term at the 14th IHO Hydrographic Services and Standards Committee (HSSC) in May 2022 in Bali, Indonesia. The HSSC did not consider hydrospatial as a technical term and did not accept the inclusion of the term within the Hydrographic Dictionary at this time.

The goal of this note is to present a new and better articulated definition to the HDWG for further consideration. Furthermore, we aim to be clear again about what the new term is not intended to be. The term hydrospatial is not intended to replace the term hydrography. Nor did we want to call hydrography into question with the newly introduced term. It was not our intention to offend the hydrographic community, of which many of the HMCC members are part of. We are still firmly committed to maintain and to advocate that the new term bolsters today’s and future use of a vocabulary that supports and elevates the relevance that Blue data has among ocean sciences in the geospatial community.

3. Clarifying the concept

After reading Lars Schiller’s Paper (2022), we are able to refine the concept more clearly. In summary, the term hydrospatial is an adjective whose meaning is about data, information and knowledge in the water and contiguous environment that has a spatial and temporal reference. The adjective refers to this water and contiguous data, information and knowledge.

Schiller compared the adjective hydrospatial with the adjective geospatial built on the same pattern. “The differentiation between geospatial and hydrospatial information is much better than that between geographic and hydrographic information or that between topographic and hydrographic information.” Geospatial and hydrospatial could be complementary like dry and wet; referring to emergent and submerged environments in a standardized way. However, it is understood that hydrospatial is a part of geospatial. The hydrosphere with its oceans, lakes and rivers is a part of the whole earth system.

Schiller then introduced the idea of “hydrospatial sciences”. He combined the adjective with a noun and he offered a draft definition of hydrospatial: “Hydrospatial denotes data and information related to hydrospatial sciences.”

It is considered that the hydrospatial sciences are more comprehensive and have a much wider scope than hydrography. However, hydrography will always remain a strong independent science and its definition remains the same.

The hydrospatial sciences are a subset of geospatial sciences. Each of the hydrospatial sciences has water bodies as its object of investigation. In other words: The hydrospatial sciences are focused on all the Blue of our Blue Planet and its contiguous zones. They deal with all the spatio-temporal physical, biological and chemical data, information and knowledge related to their position at a certain time on and in any water body on earth: surface, column, bottom and sub-bottom; of the oceans, the seas, the estuaries, the rivers, the lakes; the coastal zones, wetlands and the flooding areas are also included.

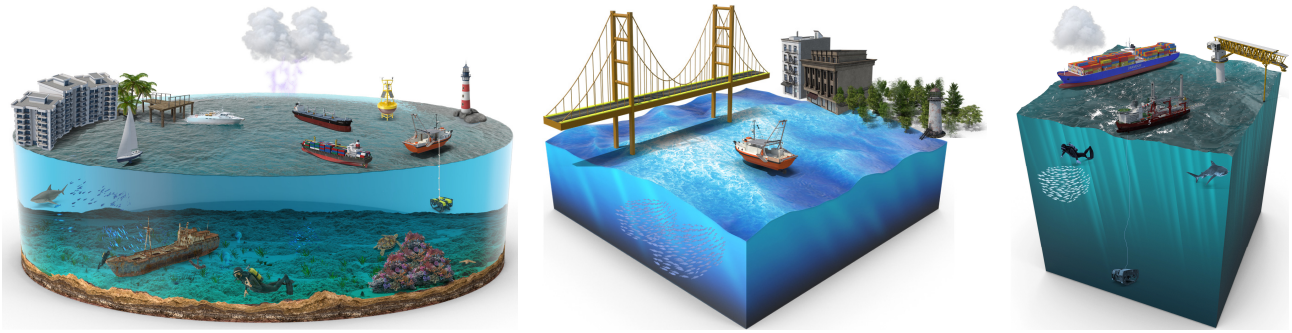

Figure 1. *Some of the Blue of our Blue Planet domain activities. Sources of images: Paola Echeverry, member of the Hydrospatial Movement Club, South American node.*

4. New suggested definitions

The Hydrospatial Movement Club decided to involve a terminologist to help and assist defining more simply and clearly the terms hydrospatial and hydrospatial sciences. This is a work in progress, at this point, this is the result of the considerations:

> **hydrospatial** — *adjective*
> Relating to hydrospatial sciences or denoting data, information and knowledge that is associated with a particular location and time of the earth's waters and their contiguous zones.
>
> **hydrospatial sciences** — *plural-only noun (plurale tantum)*
>
> All sciences dealing with the study of the earth's waters and their contiguous zones.

5. Conclusion and next steps

We believe that the above proposed new definitions will lead to a good understanding of the terms. As a result, the terms hydrospatial and hydrospatial sciences will be used even more frequently in the global ocean and water science communities, especially since they underline the importance of this data, information, knowledge and science.

The adoption of the term in the *IHO Hydrographic Dictionary (S-32)* will be a journey, that might take much more time. In any case, the term hydrospatial is well anchored, it is being used in verbal and written communications; it is there to stay and become an important adjective.

We believe hydrographers are clearly one of the best positioned professional group to prepare, manage and present the entirety of hydrospatial data and information – for example in a hydrospatial information system (HIS) commonly called Marine Spatial Data Infrastructure (MSD).

6. Joining the HMCC

The Hydrospatial Movement Club and Community (HMCC) is continuously expanding globally. Established at the end of 2020, the HMCC was first started by a "club" of professionals globally in the water domain. The HMCC is currently a club of sixteen volunteers worldwide interested in promoting and advocating the importance of marine and aquatic geospatial or blue geospatial data, information and knowledge, namely the hydrospatial domain. Some of the Hydrospatial Movement Club members published on the topic (Pang and Oei, 2020; Ponce, 2019).

Since August 2021, the community is continuously growing to more than 4,700 members in September 2022. Activities such as posting relevant information, exchanging knowledge and creating linkages between members on the LinkedIn social media group account; Continental Nodes Virtual Workshops will be scheduled on topics related to the hydrospatial domain, science and technology.

All are encouraged to join the Hydrospatial Movement Community group on the business social media LinkedIn at: https://www.linkedin.com/groups/12556091/. And to visit the hydrospatial story map for more details on the origins, activities, members and more: https://arcg.is/19fiab. Many members of the hydrospatial movement community are hydrographers, but the majority are from other professionals expertise interested in all the Blue of our Blue Planet and its contiguous zones that are part of this group growing continuously.

Figure 2. *Hydrospatial Movement Club & Community Logo*

7. References

Hains, D. (2020). What is Hydrospatial? International Hydrographic Review, (23), pp. 84–93. https://ihr.iho.int/articles/what-is-hydrospatial/

Hains, D., Ponce, R., Oei, P., Gülher, E., Pang, P. Y., Cove, K., Cawthra, H. C., Bergmann, M. and Picard, K. (2021). So … What is hydrospatial? International Hydrographic Review, (25), pp. 115–122. https://ihr.iho.int/articles/so-what-is-hydrospatial/

Hains, D., Mihailov, M. E., Obura, V., Oei, P. and Maschke, J. (2022). Hydrospatial: It's All About the Blue of Our Blue Planet and its Contiguous Zones. ECO-Magazine. https://www.ecomagazine.com/in-depth/featured-stories/hydrospatial-it-s-all-about-the-blue-of-our-blue-planet-and-it-s-contiguous-zones

Pang P. and Oei P. (2020). Singapore's National Marine Spatial Data Infrastructure 'GeoSpace-Sea': Enabling Hydrospatial Context and Applications in a Changing Ocean and Seascape. International Hydrographic Review, (24), pp. 21–36. https://ihr.iho.int/articles/singapores-national-marine-spatial-data-infrastructure-geospace-sea-enabling-hydrospatial-context/

Ponce, R. (2019). Multidimensional Marine Data: The next frontier for Hydrographic Offices. International Hydrographic Review, (22), pp 55–70. https://ihr.iho.int/articles/multidimensional-marine-data-the-next-frontier-for-hydrographic-offices/

Jonas, M. (2021). How to use the Term Hydrospatial? Hydro International Web Site Article posted on 2021/01/26, https://www.hydro-international.com/content/article/how-to-use-the-term-hydrospatial

Schiller, L. (2022). Terminology of hydrography – Relevant terms and concepts. International Hydrographic Review, (27), pp. 75–98. https://ihr.iho.int/articles/terminology-of-hydrography-relevant-terms-and-concepts/