



Royal Netherlands Navy

**To:** NSHC members  
**Copy:** IHB, Director G. Bessero

Netherlands Ministry of Defence

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**Our reference**  
CZSK/2015001208

**Enclosed**  
Letter N° 014 SHOM/DMI/NP 13 Feb 2015  
*Please quote date, our reference and  
subject when replying.*

**Date:** 11 March 2015

**Subject:** Baltic Sea Bathymetry Database concept

### **NSHC CIRCULAR LETTER No 03/2015**

Dear NSHC colleagues,

As chair of the NSHC, I have received a letter from the Chair of the IHO-EU NETWORK WG (attached). In this letter he invites the NSHC to initiate a process for adapting the Baltic Sea Bathymetry DataBase (BSBD) concept for our region. Such a North Sea Bathymetry Database (NSBD) would provide a suitable DTM for our sea basin. Details are in enclosed letter.

This welcome initiative merits to be an agenda item for the NSHC, however we are pressed for time. For instance the EMODNET III tender is expected by the end of this year. I would therefore suggest not to wait until the next planned meeting, but adopt a phased approach with the aim to demonstrate our competence and capability to make a NSBD work.

1. MS to confirm their interest and their willingness to deliver data.
2. BSH to build the infrastructure to host the NSBD as part of the new NSHC website.
3. When the technical infrastructure is in place, MS to start data delivery by using e.g. EMODNET II data, but with an established update regime and if possible with a higher accuracy.
4. MS to evaluate the process at the next planned meet in Dublin; future developments are likely to be dependent on the outcome of the EMODNET III tender.

At this stage I invite you to confirm your active support in terms of data delivery before 17 April this year. Your positive answer is a precondition for the next phase: BSH's most generous offer to build and host the technical infrastructure for a NSBD. For this offer I heartily thank our colleague Dr. Mathias Jonas.



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I fully realize that different MS have different ambitions and business models. This might effect future roles and funding regimes. All this can and must be part of discussions next year in Dublin. Until then no irreversible steps are made. For now, let's not exclude ourselves from the proceedings because we did not start in it. If you have any questions please don't hesitate to contact me.

Yours sincerely,

*Captain RNLN M.C.J. (Marc) van der Donck*  
Hydrographer of the Royal Netherlands Navy  
Chairman, North Sea Hydrographic Commission

Netherlands Ministry of Defence  
The Netherlands  
Hydrographic Office

Date  
11 March 2015

Our reference  
CZSK/2015001208



Paris, February 13<sup>th</sup>, 2015

N° 014 SHOM/DMI/NP

SERVICE HYDROGRAPHIQUE  
ET OCÉANOGRAPHIQUE  
DE LA MARINE

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L'ingénieur en chef de l'armement Michel Even,  
chair of IHO-EU Network WG

à

Destinataires in fine

Subject : Baltic Sea Bathymetry Database (BSBD) concept  
Enclosure : Annex : The Baltic Sea Bathymetry Database approach.

Dear Chairs of the Regional Hydrographic Commissions assigned to European Waters,

I am writing to you in my capacity as Chair of the IHO-EU NETWORK WORKING GROUP. This group conducted its second meeting in Saint Mandé, France, on 28 & 29 January 2015. We enjoyed participation of representatives from Denmark, France, Germany, Norway, Spain, Sweden, United Kingdom, the IHB (Gilles Bessero) and DG Mare (Iain Shepherd and Cristina Amil Lopez). According to our objectives, the group considered ways and channels to interface with EU policies, activities and processes (mechanisms) through Regional Hydrographic Commissions (RHCs) initiatives, through the IRCC or through the IHO in general.

Two main issues were on our agenda: the update on projects initiated by DG Mare in relation to hydrographic themes (with special emphasis on the Coastal Mapping Project (JECMAP) and the future EMODNET Phase III) and EU initiatives and national activities on Maritime Spatial Planning.

Both issues are of vital strategic importance for the future stance of Hydrographic Services in their respective national and regional context. In reflection to this, IENWG took already action last year and formed a consortium consisting of fifteen European Hydrographic Offices plus Academia partners to bid to the JECMAP tender. The acceptance of our bid is still pending. DG Mare indicated at our meeting that a decision should be announced by mid-March.



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Because of the undecided situation with the coastal mapping tender, the group found it difficult to describe precisely how to proceed in view of the announced EMODNET III call for tender. The discussion turned out that our community of European Hydrographic Offices organised in RHC's should not simply wait for EU-tenders but take proactive action in order to establish ourselves as the competent network for EU-waters bathymetry. This is the reason for this letter to you.

Magnus Wallhagen from Sweden inspired us with a very instructing presentation about the set up and the operation of the Baltic Sea Bathymetry Database BSBD (for your own impression, please visit [www.bshc.pro](http://www.bshc.pro) under 'Services'). The BSBD basically delivers bathymetric data in form of a Digital Terrain Model (DTM) of the Baltic Sea for display and download. The respective national data sets made available are – even though not consistent in their resolution – harmonized along their seams in such a way that they provide a seamless model. The associated metadata are available as well. Gaps are filled with GEBCO data. The model is due to be regularly updated with new survey data delivered by the Member States in the region, approximately once per year.

A longer follow up discussion at Saint Mandé resulted into the idea to motivate other Regional Hydrographic Commissions to adapt the BSBD concept for their particular region. Such initiative was regarded as the best preparation for future requests for European wide bathymetry in relation with projects and permanent services subsidised by the European Commission and its General Directorates.

The group concluded that the technology and the way the BSBD was made operational constitute a blueprint for a comparable activity in other European sea basins under the auspices of the respective RHCs. A brief description of the technicalities of the BSBD is attached as Annex to this letter. Sweden stands ready to provide more detailed explanations in response to individual requests.

Considering that local conditions in terms of personal, technical, operational and - not the least - geopolitical matters vary from RHC to RHC, it is clear that the Baltic solution cannot be simply duplicated in any region. In this regard it is also worth noting that there is currently no specific budget assigned to this activity. As a consequence, it will be up to the particular regional arrangements and the capacity of the Member States to allocate appropriate resources or to identify in kind support for this important activity.

Therefore, I invite you, the Chairs of the respective Regional Hydrography Commissions, by means of this letter, to initiate the following process within your Commission:

- Present the idea of adapting the BSBD concept to the sea basin under the auspices of the Commission you are currently chairing.
- Investigate options for the setup of a suitable DTM either for the whole sea basin or parts of, subject to the availability of data and the willingness of the members to contribute.
- Identify members who might potentially take over the technical implementation and operation of such a regional bathymetric database.
- Motivate members to seek for allocations of national financial, technical and personal resources for the implementation and operation.
- Contact the operators of the BSBD to learn about practical steps towards a comparable database in your area of responsibility.

This project should definitely become an agenda item of the upcoming meeting of your RHC. However, prior communication with the members of your Commission about the above described activities would be the best preparation. The European Commission is pushing its activities with regard to maritime geoinformation ambitiously under its HORIZON 2020 programme. If we, as the European Hydrographic Services community, wish to remain relevant as competent bodies for bathymetric data products we have no time to loose. So, please take appropriate action.

I hope to receive your positive reply about the initiation of this important activity within your RHC before the third meeting of IENWG which is scheduled for the end of May 2015 in Brussels, Belgium.

Best regards,

*Signé : Michel Even*

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Destinataires : Chairs of EatHC, MBSH, NHC, NSHC, SAIHC  
Copies intérieures : Chair of BSHC - DG – DMI – Archives (DMIDSD/4.530)

PM

Date

10 February 2015

## **Collaborative bathymetry:**

### **The Baltic Sea Bathymetry Database approach**

1. Gather all hydrographic offices for the region in one working group [BSDB: Sweden, Finland, Estonia, Latvia, Poland, Germany, Denmark actively participate. The working group is also in contact with Russia, Lithuania and Norway.]
2. Assign clear areas of responsibility [*BSDB: Area split according to ENC responsibility, as no official digital EEZ borders are available.*]
3. **Pragmatically set realistic goals based on common denominators.** Focus on what can be achieved now, and postpone any nice-to-have features for future improvements. This includes parameters such as:
  - Spatial resolution [*BSDB: 500m due to commercial and military interest in higher resolution bathymetry in some countries*]
  - Vertical datum [*BSDB: EVRS2000 (EPSG:5730), but we presently don't care about the various different chart datums, as the errors/differences are negligible (<20cm) for the envisioned kind of applications in the current resolution.*]
  - Projection [*BSDB: Primarily ETRS89-LAEA (EPSG:3035), which works for all of Europe. The nationally important projections are supported through re-projecting from ETRS89-LAEA.*]
  - Licensing of the data set [*BSDB: licensed under a Creative Commons Attribution 3.0 Unported License. Additional restrictions apply (generally: the data, or any derived products, is not to be used in any way for navigation). For possible high-resolution areas in the future, also different licenses could be possible.*]
  - Update frequency/policy [*BSDB: Whenever enough new source data has been collected so that an update becomes significant enough. In practice that means once or twice a year.*]
  - ...
4. Find one hydrographic office that is willing to do the actual work. It is much easier to have the work done (mostly) in one place, as compared to sharing the work. Let the coordinator act freely towards the common goals, instead of micro managing them from the working group [*BSDB: SMA in Sweden coordinates and carries out most of the work*]

Datum

10 February 2015

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5. All hydrographic offices deliver the most appropriate source data, preferably in as XYZ data points without any interpolation/gridding applied. Spatial resolution should ideally be somewhat better (2 to 5 times) than the final product, but much higher resolution is not necessary (and harder to handle). Higher resolutions of the source data might be needed if more than one depth is to be presented per grid cell (example: min, max, average, median and standard deviation). *[BSBD: Mostly extracts from the national depth databases. Charted soundings extracted from ENC's are a low-quality fallback when absolutely necessary.]*
6. Data is harmonized at the coordinating office with regard to format, projection, vertical datum (if needed).
7. Add additional data sources to fill gaps or constrain edges *[BSBD: GEBCO\_08 in the North Sea, land elevation data to aid gridding along the coast line...]*
8. Run source data through a gridding process, to down sample too dense data and interpolate between sparse data. This also smoothens any border effects between different countries or areas of responsibility. *[BSBD: Block median filtering followed by Stacked Continuous Curvature Splines in Tension interpolation]*
9. Make final grid available for end users *[BSBD: Map centered web site with download functionality, OGC services]*
10. Actively reach out to the end users!

In summary, points 3 and 4 have been the keys for our success with the Baltic Sea. Of course, data delivery (5) is also very important. Even though 8 and 9 required quite a lot of work, one should not focus on them too early.

The Swedish Maritime Administration welcomes any visitors from Hydrographic Offices, undertaking the work to coordinate a bathymetry portal for another Hydrographic Commission, to get a more detailed insight of the setup of the BSBD in Sweden (both technical and organisational). Please contact: Hans Öiås ([hans.oias@sjofartsverket.se](mailto:hans.oias@sjofartsverket.se)) or Benjamin Hell ([benjamin.hell@sjofartsverket.se](mailto:benjamin.hell@sjofartsverket.se))

For a more in-depth description of the BSBD and its background, please refer to our IHR article:

*Hell and Öiås (2014). A new bathymetry model for the Baltic Sea. International Hydrographic Review (12): 21-31.*  
[http://www.iho.int/mtg\\_docs/IHReview/2014/IHR\\_Novemberspecial2014.pdf](http://www.iho.int/mtg_docs/IHReview/2014/IHR_Novemberspecial2014.pdf)