Providing metadata and visualization for 20 years of hydrodynamic model data for the German Bight

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The EU open data policy has strongly enhanced the publication of data. Even though it is difficult to find adequate data which is usable, understandable documented and can be accessed freely. One issue is that numerical models become more complex and their grid resolution increases, which is a great challenge for data management, documentation and visualization. As a consequence, valuable project data quite often are undiscovered or under restricted access only.

Over the last years, many standards such as ISO, OGC and W3C have been established which now provide the basis for interoperable metadata and applications to share data. The consistent usage of metadata and web services to search for these data is a way to make open data initiatives work.

The challenges and requirements for an extensive set of metadata and visualization of data are demonstrated for the EasyGSH-DB project. The data produced within the project originate from a 3D-hydrodynamic-numerical model of the German Bight. The objective is to provide a 20 year hindcast of hydrodynamics applying a dense temporal and spatial resolution. In order to provide the best metadata possible, EasyGSH-DB uses a metadata profile on the basis of ISO 19115 developed by the Federal Waterways Engineering and Research Institute (BAW) and modified with INSPIRE, GDI-DE, ISO 19157 and the GovData standards of the Federal Government of Germany. On this basis, a metadata set is written automatically for each model simulation and completed with a PDF-document. Establishing a THREDDS data server is our solution to manage the great amount of data produced by the numerical model. Furthermore creation of a Web Coverage Services (WCS), a Web Feature Service (WFS) and a Web Map Service (WMS) provides visualization for long-term homogenous quality controlled data. All produced data are freely available on the project website (http://mdi-de.baw.de/easygsh/) or by metadata on mCLOUD, GDI-DE and INSPIRE.

The added value gained from metadata is considerable, because it is possible to transform the produced, extensive amount of Big Data into Smart Data. This gives us and users the opportunity to seek the information of individual variables such as bathymetry, sedimentology and analysis in their complete context. The workflow from numerical model simulations to web based publications is technically and in accordance with regulation demanding, yet a promis-ing way to make complex data accessible freely.