From Regional Scientific Seabed Mapping to a Pan-European Digital Terrain Model

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During worldwide expeditions, conducted with German research vessels (RVs), an enormous amount of bathymetric data is acquired. For most of the cruises of the larger RVs unprocessed data is stored and available through the BSH (German Federal Maritime and Hydrographic Agency) or at PANGAEA. The World Data Centre PANGAEA (*https://www.pangaea.de/)* is member of the ICSU World Data System. Nevertheless, products like Digital Terrain Models (DTM) are often not accessible or just in relation to the project where they had been acquired. Blue growth, ocean governance or simply the preparation of a new scientific cruise – updated composite DTMs of the European Seas are essential for all these duties. One option to make local bathymetry available is the EMODnet Bathymetry Project (*http://portal.emodnet-bathymetry.eu/*), where bathymetric datasets across the European seas are compiled from different hydrographic and research institutes and metadata is accessible for every single grid-cell. A quality index as part of the metadata allows creating composite DTMs with the most valuable regional DTMs in case of overlapping each other. Data gaps are covered by integrating the global GEBCO dataset (General Bathymetric Chart of the Oceans, *http://www.gebco.net/*). The EMODnet project has adopted and developed different standards like the Open Geospatial Consortium (OGC), International Organisation for Standardisation (ISO) and the World Wide Web Consortium (W3C) that are maintained by SeaDataNet to achieve an equal basis for public availability throughout the project. Therefore different approaches and tools are necessary to create DTM's with underlying metadata.

We established a workflow from processing (with open source software package MB-System) to publishing. Metadata are summarized in the Common Data Index (CDI), an XML Schema based upon the ISO 19115 and INSPIRE compliant. The software Mikado and Ends & Bends are utilized to create the CDIs including spatial objects (coverage or track line). The java based post-processing software GLOBE is used to generate DTM's out of xyz files with the CDI as a layer identifier. While the single DTM products for each survey or a whole cruise are published through PANGAEA the DTMs including the integrated CDI layer identifier are sent to the regional coordinators of EMODnet and contributes to the composite Pan-European DTM.