

The methodology of geo-referencing the research data on Chemical Munitions dumped in the Baltic Sea with utilization of GIS Software

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Abstract

The Chemical Munitions Search and Assessment (CHEMSEA) is a multinational research project, part financed by the EU under the Baltic Sea Region programme. One of the most significant results of the CHEMSEA project is a creation of multiple information layers that may be rendered and visualized by any GIS compatible system.

The data concerning Chemical Warfare Agents dumped in the Baltic Sea has been collected with the ArcMAP software and encompasses both an official chemical munitions dumping site of Gotland Deep and an unofficial one – that of Gdańsk Deep. The exact positions of small sea bottom objects have been measured and mapped using hydroacoustic techniques. Vast number of these objects has been verified with Remotely Operated Vehicle in order to visually confirm the character of munitions-like objects. Additionally, samples of sediments in direct vicinity of suspected objects have been collected to detect the type and concentration of Chemical Warfare Agents. The visual ROV inspections confirmed the state of corrosion of munitions containers.

All the collected data have been geo-referenced and created a coherent picture of Chemical Munitions Dumping Sites. The resulting GIS layers include updated bathymetric data, sonar images, photos and videos delivered by ROV inspections, as well as results of laboratory analyses of concentration levels of multiple types of CWA's and their degradation products. Finally, the results of marine biota caging experiments have been mapped.

The paper presents the methodology of collection and geo-referencing the research data and shows examples of created GIS layers.