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Mapping marine sediments in the Romanian sector of the Black Sea

Abstract

The marine environment, mainly the shelf area, is in general the place that sustains large human communities and provides them many kinds of resources and natural services. The human society is more and more interested to exploit and protect the oceans and seas; accordingly, the mapping of the continental shelves is more important as ever. The advances in the development of new or enhanced equipments, able to map larger areas, with better resolution and to bring new information, previously impossible to obtain, opened a new era in mapping the continental shelves. It is the case of the Romanian sector of the Black Sea, where new equipments and methodologies are employed to study the shallow sediments, from many points of view: detailed bathymetry, grain size distribution, habitat mapping, capacity to properly sustain the marine life, marine aggregates, suitability to host submarine infrastructure such as oil and gas pipelines, offshore wind farms, telecommunication or power cables, but also to envisage the status of sediment pollution. We currently use several methods that provide us with results that are correlatable and complementary, as follows: multibeam echosounding (MBES), high and very high reflection seismics, side scan sonar, water column recording to search for seepages, sea bottom sampling with Van Veen grabs or box corer, gravity coring, but also photo and video recording. In this work we present results regarding the detailed mapping of the sea floor in terms of its very detailed morphology (Digital Terrain Models – via multibeam echosounding), detailed structure of shallow sediments (via sub-bottom profiling and sparker seismics), the physical mapping of the water/sediment interface and fluids seepage detection and mapping, via MBES and side scan sonar. We mapped and characterized specific submarine structures as: physical habitats, relic coasts, dune fields, structures specific for differential compaction, canyons, and pockmarks.

Biography

Constantin Lazar is a geological engineer with expertise in the acquisition, processing, and interpretation of bathymetric data, using single-beam and multibeam sonars. A graduate of the Faculty of Geology and Geophysics, University of Bucharest(2021) and the Master's program in Evaluation of Sedimentary Basins and Mineral Resources (2023), he continues his professional development through doctoral studies. His thesis, 'Quaternary geological evolution of the NW Black Sea continental platform: palaeogeographical and palaeoecological implications', reflects his interest in palaeonvironmental and palaeogeographical reconstructions. His areas of expertise include benthic habitat mapping and sedimentology, demonstrating a passion for exploring and understanding marine geological processes.

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