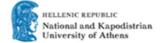# SEA BASIN CHECKPOINT
LOT4: BLACK SEA

CHALLENGE 10 – Bathymetry
Expert evaluation of Targeted Products

Total number of pages: 6

Workpakage:	CH10	Bathymetry	
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Please use your own judgement to describe for each Targeted product of the assessment of the "fitness for purpose and use". For each Targeted product please comment on the following points:

1. Assign an overall product quality score with respect to scope (fitness for purpose) and explain why, according to the scale in **Table 1**.
2. Identify the most important characteristic(s) for the Targeted Product quality (if all characteristics are important, please say so).
3. Identify which quality element(s) the most important characteristic(s) affects the Targeted Product quality.
4. Identify the limitations of the quality of the Targeted products due to the input data set used.
5. Explain which of the characteristics "most fails" to meet the scope of the Targeted Product.
6. Provide an expert judgement of the most important **gaps in the input data sets** for each Targeted Product.

SCORE	MEANING
1	EXCELLENT → completely meets the scope of the Targeted Product
2	VERY GOOD → meets more than 70% of the scope of the Targeted Product
3	GOOD → meets less than 50% of the scope of the Targeted Product
4	SUFFICIENT → does not adequately meet the scope but is a starting point
5	INADEQUATE → does not fulfill the scope and is not usable

Table 1. Targeted Products quality scores and their meaning.

Expert evaluation of Target Product quality

BLACKSEA_CH10_Product_1

1) The product quality score is **very good** (2). The GIS layer in ESRI shapefile format was produced based on Landsat 7 Enhanced Thematic Mapper Plus (ETM+) images, pixel size 14.25-meter, panchromatic, Band 8. The product covers Black Sea and the Sea of Azov. It is expected, to obtain a more precise coastline in case VHR satellite images (e.g. 0.6-4.00 m) are used.

2) Using a single data source (Landsat 7 ETM+images) to digitalise the coastline is the most important characteristic of this product.

3) The product's quality is limited by the horizontal (14.25 meter) spatial resolution of the Landsat 7 ETM+ images.

4) All characteristics contribute to the quality of the analysis. One of the weakest places is that the data source is from the 1999-2002 periods, suggesting that there are no reflections on the shoreline changes resulting from natural processes and human activity.

5) The characteristic used to generate this product does not fail to meet the scope of the Targeted Product.

6) The biggest data gap is the large resolution (14.25 m) of the Landsat 7 images. Other important gaps of the input data sets are that, the used satellite images were acquired in the interval 1999-2002.

BLACKSEA_CH10_Product_2

1) The result for product quality is **very good (2).** The ESRI shapefile GIS layer is based on Landsat 7 Enhanced Thematic Mapper Plus (ETM +) images, and EMODNET bathymetry DTM with a grid size of .125 minute * .125 minute. The main drawback of the product is the coarse resolution of the EMODNet's bathymetry dataset used to draw contour bathymetric map with intervals of 100 meters. The product covers the Black Sea and the Sea of Azov.

2) All characteristics are important. The coastline positions from the EMODnet database portal is very rough, so the use of LANDSAT 7 somewhat corrects this omission. EMODNET bathymetry DTM, because of the large pixel size, on the places where the sea depth is rapidly changing, and the biggest errors are shown. This applies mostly to the shallow waters and continental slope.

3) The product, contour bathymetric map with intervals of 100 meters, covers the whole Black Sea and the Sea of Azov.

4) The product's quality is limited by the (horizontal) spatial resolution of the EMODNET bathymetry DTM, with a grid size of .125 minute * .125 minute.

5) All of the characteristics contribute to the quality of the analysis, but the properties of the EMODNet's bathymetry dataset represent the weakest among all upstream data sets used for producing this particular product.

6) There are no serious gaps in the input data sets. The coarse resolution of the basin-scale bathymetry data set used (i.e., the EMODNet bathymetry dataset) remains the weakest component of the Product 2 (contour bathymetric map for the Black sea basin with intervals of 100 meters).

BLACKSEA_CH10_Product_3

1) The product quality score is **very good (2).** The GIS layer in ESRI shapefile format is produced based on real-time data on heavy-traffic marine areas in the Black Sea and the Sea of Azov, provided by the AIS Marine Traffic (www.marinetraffic.com) online system. However, a main drawback represents the coarse resolution of the EMODNet's bathymetry dataset used to delineate the shallow-water priority areas for surveying outside the Bulgarian coastal waters.

2) All characteristics are important, both in the positive (i.e. quality and regular update of the real-time data on heavy-traffic marine areas) and negative (i.e. coarse resolution of the EMODNet's bathymetry dataset used) aspect.

3) The (horizontal) spatial resolution combined with the accuracy of the EMODNet's bathymetry dataset are the crucial elements that influence the quality of the GIS-based spatial analysis performed in order to identify (and subsequently produce the ESRI shapefile of) the priority areas for surveying for safer navigation. The statement is particularly valid for the shallow marine parts outside the Bulgarian coastal waters.

4) The product's quality is limited by the (horizontal) spatial resolution of the bathymetry data set used.

5) All of the characteristics contribute to the quality of the analysis, but the properties of the EMODNet's bathymetry dataset represent the weakest among all three upstream data sets used for producing this particular product.

6) There are no serious gaps in the input data sets, but as already mentioned above, the coarse resolution of the basin-scale bathymetry data set used (i.e., the EMODNet bathymetry

dataset) to delineate the priority shallow-water areas for surveying for safer navigation remains the weakest component of the GIS-based spatial analysis carried out.

BLACKSEA_CH10_Product_4

1) The product quality score is **sufficient (4).** The GIS layer as ESRI GRID format is produced based on four upstream data sets: Bathymetry and Elevation/Sea-floor depth (below mean sea level) {bathymetric depth}/Global Land Cover Facility; Bathymetry and Elevation/Sea-floor depth/BATHDPTH/Bulgarian Oceanographic Data Centre, Institute of Oceanology - Bulgarian Academy of Sciences/2012_MN-GeoHazard; Bathymetry and Elevation/Sea-floor depth (below mean sea level) {bathymetric depth}/EMODnet Secretariat/EMODNET Bathymetry; Bathymetry and Elevation/Sea-floor depth/BATHDPTH/Bulgarian Oceanographic Data Centre, Institute of Oceanology - Bulgarian Academy of Sciences/2013_MOSW. The main reasons for this score are that the bathymetric survey data sets cover less than 5% of the sea basin area.

2) All characteristics are important. That includes the bathymetric survey data sets, EMODNet's bathymetry dataset and positions of the coastline.

3) Data from the bathymetric surveys are critical for this product. The horizontal spatial resolution combined with the accuracy of the EMODNet's bathymetry dataset is the crucial elements that influence the quality of the GIS-based spatial analysis. The statement is particularly valid for the shallow waters.

4) Data from the bathymetric surveys are critical for this product, but they cover only 5% of the sea basin area.

5) All of the characteristics contribute to the quality of the analysis, but the properties of the EMODNet's bathymetry dataset represent the weakest among all four upstream data sets used for producing this particular product.

6) The most important gaps in the input data sets are related to geographical coverage, as the data from the bathymetric surveys cover only 5% of the sea basin area.