Geological Survey of Sweden

Description – data sets in the scope of the Net Zero Industry Act

Date:
2025-12-18

Dataset: Multibeam Echo Sounder

Version History

This section lists the changes in the dataset or description.

Change Log

Document Version	Dataset Version	Approved data	Change
1.0	1.0	2025-12-18	Original version

Abstract

The dataset contains products processed from multibeam echo sounder data collected during 2023, 2024, and 2025. The measurements cover the sea area south of the south coast of Skåne out to the border of Sweden's Exclusive Economic Zone (EEZ) and west of the coast of Skåne out to the territorial border with Denmark. The dataset contains bathymetry (depth), bottom backscatter intensity (hardness), and surficial geology interpreted from available backscatter information. Observations of gas seep-like anomalies from the multibeam echo sounder's water column information collected during 2024 are provided as points with associated metadata and an image showing each anomaly individually as it appears in the FMMidwater software used for processing and interpreting water column data.

Collection of multibeam echo sounder data in the Southeastern Baltic was performed in 2024. The data collected consisted of bathymetry, bottom backscatter intensity (hardness), and water column information. The purpose was to map areas along bedrock faults and investigate potential gas seeps. In this specific dataset, only tracklines are included showing where the vessel was located (i.e., where data exists), but processed and interpreted data are not included in this dataset.

Processed and interpreted raster data are presented at a resolution of 300x300 m based on the dissemination permit granted by the Swedish Maritime Administration (SGU ref. no.: 316-566/2025, 316-567/2025). A selection has been made to make data available that is interesting for the exploration of conditions for Carbon Capture and Storage (CCS) in the bedrock. Data is made available in accordance with the EU Net Zero Industry Act (NZIA), where the dissemination of data is not hindered by the Geographic Information Protection Act.

The types of information delivered in an area may vary and potentially be supplemented retroactively.

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Licence	CC0 1.0 universell
Coordinate System (storage)	SWEREF99TM (EPSG:3006)

Distribution

The dataset is provided via download of pre-packaged files (bulk download) in several different formats depending on the information type. Rasters from multibeam echo sounder data (bathymetry and backscatter) are delivered in GeoTIFF format. Tracklines, surficial geology, and gas seep-like anomalies are vector data and are delivered in OGC GeoPackage format.

Area	URL
mbes_skane_marine (Skane)	https://resource.sgu.se/data/datasets/nettonollteknik/multistraleekolod/mbes_skane_marine.zip
mbes_se_baltic_marine (south-east Baltic Sea)	https://resource.sgu.se/data/datasets/nettonollteknik/multistraleekolod/mbes_se_baltic_marine.zip

Information types per sub-area

Area	Raw data (incl. water column data)	Trac-lines	Bathymetry (300x300m)	Backscatter (300x300m)	Surficial geology (300x300m)	Gas Seep-like anomalies
mbes_skane_marine	No (no)	Yes	Yes	Yes	Yes	Yes
mbes_se_baltic_marine	No (no)	Yes	No	No	No	No

Content of Delivery

When downloading the dataset as a zip file, data, product description, and simple symbolization for presentation in ArcGIS Pro and QGIS are included.

Files included

Filename	File format	Content
multistraleekolod-beskrivning.pdf	PDF	Description (Swedish version)
multibeam-echosounder-description.pdf	PDF	Description (this document)
1_Tracklines/<area>_tracklines.gpkg	OGC GeoPackage	<area>_tracklines (lines)
1_Tracklines/<area>_tracklines.lyrx	ArcGIS Pro layer file	Symbolization for ArcGIS Pro
1_Tracklines/<area>_tracklines.qlr	QGIS layer file	Symbolization for QGIS
2_Bathymetri/<area>_bathymetri_300m.tif	GeoTiff	Bathymetry grid 300x300m
2_Bathymetri/<area>_bathymetri_300m.lyrx	ArcGIS Pro layer file	Symbolization for ArcGIS Pro
2_Bathymetri/<area>_bathymetri_300m.qlr	QGIS layer file	Symbolization for QGIS
3_Backscatter/<area>_backscatter_300m.tif	GeoTiff	Backscatter grid 300x300m
3_Backscatter/<area>_backscatter_300m.lyrx	ArcGIS Pro layer file	Symbolization for ArcGIS Pro
3_Backscatter/<area>_backscatter_300m.qlr	QGIS layer file	Symbolization for QGIS
4_Surficial_geology/<area>_surficial_geology.gpkg	OGC GeoPackage	<area>_surficial_geology (surfaces)

4_Surficial_geology/<area>_surficial_geology.lyrx		ArcGIS Pro layer file	Symbolization for ArcGIS Pro
4_Surficial_geology/<area>_surficial_geology.qlr		QGIS layer file	Symbolization for QGIS
5_Gas_seep_like_anomalies/<area>_gas_seeps.gpkg	OGC GeoPackage	<area>_gas_seeps (points)	
5_Gas_seep_like_anomalies/<area>_gas_seeps.lyrx	ArcGIS Pro layer file	Symbolization for ArcGIS Pro	
5_Gas_seep_like_anomalies/<area>_gas_seeps.qlr		QGIS layer file	Symbolization for QGIS
5_Gas_seep_like_anomalies/report_figures/*.png	png	Image files used in report	

Maintainance

Further processing and interpretation of data may be done upon extension of the CCS assignment, on the already collected data as a supplement to additional material for carbon storage in the area.

Data Quality

The data quality is generally good and is positioned using RTK. However, since the sensor was not the primary one during measurement, the quality varies. The angles for the measurement are set to provide as wide a coverage of the seabed as possible, which occurs as a compromise with the quality in the outer parts of the coverage.

Tables Included

Attribute tables in GeoPackage are described below.

Tracklines

Navigation data with lines where measurements and observations were made.

Table Name: <area>_tracklines

Kolumn	Beskrivning	Kommentar
objectid	Primary key	Generated serial number (not persistent)
line	Identifier for survey line	
geom_length	Length of geometry in meters	
geom	Geometry	Line geometry

Surficial Geology

Interpretation of superficially occurring substrates on the bottom.

Table Name: <area>_surficial_geology

Column	Description	Comment
objectid	Primary key	Generated serial number (not persistent)
interpretation	Interpretation of surface substrate	
geom_area	Area of geometry in square meters	
geom_length	Length of geometry in meters	

geom	Geometry	Surface geometry

Gas seep-like anomalies

Anomalies in the water column data that potentially represents a gas seep. However, they have not been verified by other data sources.

Table Name: <area>_gas_seeps

Column	Description	Comment
objectid	Primary key	Generated serial number (not persistent)
line	Identifier for survey line where observation was made	
gas_seep_id	Identifier for the observation	Representation in the form of <gas_seep_id>.png file can be found in directory /report_figures
depth	Bottom depth	All have value n/a (withheld)
height_rh2000	Height according to RH2000 at top observed level	
time	Time of observation	
magnitude	Estimated magnitude of the anomaly	1 - Weak gas seep 2 - Medium-strong gas seep 3 - Strong gas seep 4 - Very strong gas seep 5 - Giant gas seep
confidence	Estimated confidence in the interpretation as gas seep	Stated in percent
n_sweref99tm	North coordinate SWEREF99TM (EPSG:3006)	
e_sweref99tm	East coordinate SWEREF99TM (EPSG:3006)	
n_sweref99ll	North coordinate SWEREF99 Lat/Long (EPSG:4619)	Decimal degrees
e_sweref99ll	East coordinate SWEREF99 Lat/Long (EPSG:4619)	Decimal degrees
geom_length	Length of geometry in meters	
geom	Geometry	Surface geometry