

Abstract

The Seabed Landform Classification Toolset is a GIS toolbox designed to classify seabed landforms on continental and island shelf settings. The user is guided through a series of classification steps within an ArcGIS toolbox to classify prominent seabed features termed 'seabed landforms', which characterise the morphology of the seabed surface. Seabed landforms include reefs/banks, peaks, plains, scarps, channels and depressions. Plain areas can additionally be classified into high and low features at localised and broad scales to capture features within plain surfaces. Common variables for seabed classification are utilised, including slope, bathymetric position index and ruggedness, and a series of procedures are applied to identify reef outcrops and minimise noise. The classification approach applies a whole-seascape classification which is aimed to offer a flexible and user-friendly approach to extract key seabed features from high-resolution shelf bathymetry data.

This toolset was developed using ESRI ArcGIS Desktop 10.8 and requires an Advanced licence with Spatial Analyst and 3D Analyst and extensions. It utilises scripts within the Benthic Terrain Modeler toolset (Walbridge et al. 2018) and Geomorphometry and Gradients Metrics Toolbox (Evans et al., 2014).

Please read the User Guide and supporting documentation for information on how to run the toolset. A web explainer is available at: <https://arcg.is/1Tqmv50>

The Seabed Landform Classification Toolset is also available for download on GitHub (<https://github.com/LinklaterM/Seabed-Landforms-Classification-Toolset/>).

The toolset was developed by the Coastal and Marine Team, NSW Department of Climate Change, Energy, the Environment and Water (formerly NSW Department of Planning and Environment), funded by NSW Climate Change Fund through the Coastal Management Funding Package and the Marine Estate Management Authority.

Please cite this toolset as: Linklater, M, Morris, B.D. and Hanslow, D.J. (2023) Classification of seabed landforms on continental and island shelves. *Frontiers of Marine Science*, 10, <https://doi.org/10.3389/fmars.2023.1258556>.

Other toolsets utilised by the Seabed Landform Classification Toolset include: Benthic Terrain Modeler: Walbridge, S., Slocum, N., Pobuda, M., and Wright, D. J. (2018). Unified geomorphological analysis workflows with Benthic Terrain Modeler. *Geosciences* 8, 94. Geomorphometry and Gradients Metrics Toolbox: Evans, J., Oakleaf, J., and Cushman, S. (2014). An ArcGIS Toolbox for Surface Gradient and Geomorphometric Modeling, Version 2.0-0. <https://github.com/jeffrejevans/GradientMetrics>.

Resource locator

[Data Quality Statement](#)

Name: Data Quality Statement

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

Data quality statement for Seabed Landforms Classification Toolset

Function: download

[Seabed Landforms Classification Toolbox](#)

Name: Seabed Landforms Classification Toolbox

Protocol: WWW:DOWNLOAD-1.0-http--download

Description:

Seabed Landforms Classification Toolbox - ArcGIS Toolbox. This toolset was developed using ESRI ArcGIS Desktop 10.8 and requires an Advanced licence with Spatial Analyst and 3D Analyst and extensions. It utilises scripts within the Benthic Terrain Modeler toolset (Walbridge et al. 2018) and Geomorphometry and Gradients Metrics Toolbox (Evans et al., 2014). Please read the User Guide and supporting documentation for information on how to run the toolset. A web explainer is available at: <https://arcg.is/1Tqmv50>.

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94. Geomorphometry and Gradients Metrics Toolbox: Evans, J., Oakleaf, J., and Cushman, S. (2014). An ArcGIS Toolbox for Surface Gradient and Geomorphometric Modeling, Version 2.0-0. <https://github.com/jeffrejevans/GradientMetrics>.

Function: download

Unique resource identifier

Code 60c4e20f-fbc1-4eea-952c-22e2d1411c16

Presentation form Model digital

Edition 1

Dataset language English

Metadata standard

Name ISO 19115

Edition 2016

Dataset URI <https://datasets.seed.nsw.gov.au/dataset/60c4e20f-fbc1-4eea-952c-22e2d1411c16>

Purpose Coastal and marine management and research

Status Completed

Spatial representation type None

Spatial reference system

Code identifying the spatial reference system 4283

Topic category

Keyword set	
keyword value	MARINE MARINE-Coasts MARINE-Geology-and-Geophysics MARINE-Reefs ECOLOGY-Habitat ECOLOGY-Landscape
Originating controlled vocabulary	
Title	ANZLIC Search Words
Reference date	2008-05-16
Geographic location	
West bounding longitude	-180
East bounding longitude	180
North bounding latitude	-90
South bounding latitude	90
Vertical extent information	
Minimum value	-100
Maximum value	2228
Coordinate reference system	
Authority code	urn:ogc:def:cs:EPSG::
Code identifying the coordinate reference system	5711
Temporal extent	
Begin position	2020-01-01
End position	N/A
Dataset reference date	
Resource maintenance	
Maintenance and update frequency	As needed
Contact info	
Contact position	Data Broker
Organisation name	NSW Department of Climate Change, Energy, the Environment and Water
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Web address	https://www.nsw.gov.au/departments-and-agencies/dcceew
Responsible party role	pointOfContact

Limitations on public access

Responsible party

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