Title	NSW seabed landforms derived from marine lidar data 2022

Abstract	Seabed landform features were classified from the New South Wales statewide marine lidar dataset, acquired in 2018 by Fugro Pty Ltd on behalf of the Department of Planning and Environment (data available for download on SEED, see below). Seabed features were extracted from the marine lidar data and classified into seabed landform classes. Classified landform features include reefs, plains, peaks, scarps, depressions and channels. These landforms capture variation in the shape and structure of reef outcrops along the NSW coastal and nearshore environment. Features were classified using the Seabed Landforms Classification Toolset developed for ArcGIS by the Coastal and Marine Unit, DPE (Linklater et al. 2023) which are publicly available on SEED (https://datasets.seed.nsw.gov.au/dataset/seabed-landforms-classification-toolset) and GitHub (https://github.com/LinklaterM/Seabed-Landforms-Classification-Toolset/).

The statewide dataset is provided as ArcGIS shapefiles divided into 9 segments along the coast. The data covers 4060 km2, extending from the coastline (0 m AHD) to a maximum of 50 m depth, reaching an average depth of 35 m. Data coverage extends a maximum distance of 9 km offshore, with coverage extending on average 3 km offshore.

This dataset provides an understanding of the extent and distribution of submerged reefs along the NSW coast, which contributes fundamental baseline information for managers, users and custodians of the marine environment.

This dataset was funded by the Marine Estate Management Authority and NSW Climate Change Fund through the Coastal Management Funding Package.

Please cite this dataset as: Linklater, M., Morris, B., Kinsela, M., Ingleton, T. and Hanslow, D. (2022), Exploring patterns of reef distribution along the southeast Australian coast using marine lidar data. Manuscript in preparation.

NSW statewide marine lidar data – available for download on SEED: https://datasets.seed.nsw.gov.au/dataset/marine-lidar-topo-bathy-2018

Linklater, M., Morris, B.D. and Hanslow, D.J. (2023), Classification of seabed landforms on continental and island shelves. Frontiers in Marine Science, 10, https://www.frontiersin.org/articles/10.3389/fmars.2023.1258556/full.

Linklater, M., Ingleton, T. C., Kinsela, M. A., Morris, B. D., Allen, K. M., Sutherland, M. D., & Hanslow, D. J. 2019. Techniques for classifying seabed morphology and composition on a subtropical-temperate continental shelf. Geosciences, 9(3), 141.

Resource locator

Show on SEED Web Map	Name: Show on SEED Web Map
	Protocol: WWW:DOWNLOAD-1.0-http--download
	Description:
	Display dataset on SEED's map
	Function: download
Data Quality Statement	Name: Data Quality Statement
	Protocol: WWW:DOWNLOAD-1.0-http--download
	Description:
	Data quality statement for NSW seabed landforms derived from marine lidar data 2021
	Function: download
Download Package Seabed landforms derived from marine lidar data - 01 - Tweed to Yamba	Name: Download Package Seabed landforms derived from marine lidar data - 01 - Tweed to Yamba
	Protocol: WWW:DOWNLOAD-1.0-http--download
	Description:
	Data (Shapefile)
	Function: download

[Download Package Seabed landforms derived from marine lidar data - 02 - Yamba to Arakoon](#)

Name: Download Package Seabed landforms derived from marine lidar data - 02 - Yamba to Arakoon

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

Description:

Data (Shapefile)

Function: download

[Download Package Seabed landforms derived from marine lidar data - 03 - Arakoon to Forster](#)

Name: Download Package Seabed landforms derived from marine lidar data - 03 - Arakoon to Forster

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

Description:

Data (Shapefile)

Function: download

[Download Package Seabed landforms derived from marine lidar data - 04 - Forster to Newcastle](#)

Name: Download Package Seabed landforms derived from marine lidar data - 04 - Forster to Newcastle

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

Description:

Data (Shapefile)

Function: download

[Download Package Seabed landforms derived from marine lidar data - 05 - Newcastle to Broken Bay](#)

Name: Download Package Seabed landforms derived from marine lidar data - 05 - Newcastle to Broken Bay

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

Description:

Data (Shapefile)

Function: download

[Download Seabed landforms derived from marine lidar data - 06 - Broken Bay to Cronulla](#)

Name: Download Seabed landforms derived from marine lidar data - 06 - Broken Bay to Cronulla

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

Description:

Data (Shapefile)

Function: download

[Download Package Seabed landforms derived from marine lidar data - 07 - Cronulla to Jervis Bay](#)

Name: Download Package Seabed landforms derived from marine lidar data - 07 - Cronulla to Jervis Bay

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

Description:

Data (Shapefile)

Function: download

[Download Package Seabed landforms derived from marine lidar data - 08 - Jervis Bay to](#)

Name: Download Package Seabed landforms derived from marine lidar data - 08 - Jervis Bay to Batemans Bay

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

Description:

Data (Shapefile)

Batemans Bay	Function: download
Download Package Seabed landforms derived from marine lidar data - 09 - Batemans Bay to Cape Howe	Name: Download Package Seabed landforms derived from marine lidar data - 09 - Batemans Bay to Cape Howe
	Protocol: WWW:DOWNLOAD-1.0-http--download
	Description:
	Data (Shapefile)
	Function: download
Storymap for seabed landforms	Name: Storymap for seabed landforms
	Protocol: WWW:DOWNLOAD-1.0-http--download
	Description:
	ArcGIS Storymap for NSW seabed landforms derived from marine lidar data 2022
	Function: download
Mapservice - NSW seabed landforms derived from marine lidar data 2022	Name: Mapservice - NSW seabed landforms derived from marine lidar data 2022
	Protocol: WWW:DOWNLOAD-1.0-http--download
	Description:
	ESRI REST Mapservice for NSW seabed landforms derived from marine lidar data 2022
	Function: download

Unique resource identifier

Code	3f00d173-aa85-4e58-8dda-97948d772700

Presentation form	Map digital
Edition	1
Dataset language	English

Metadata standard

Name	ISO 19115
Edition	2016

Dataset URI	https://datasets.seed.nsw.gov.au/dataset/3f00d173-aa85-4e58-8dda-97948d772700
Purpose	To support coastal and marine research, planning and management
Status	Completed

Spatial representation

Type	vector

Spatial reference system

Code identifying the spatial reference system	4283

Spatial resolution	5 m

Topic category

Keyword set

keyword value	MARINE-Coasts
	MARINE
	MARINE-Reefs
	PHOTOGRAPHY-AND-IMAGERY-Remote-Sensing
	GEOSCIENCES-Geomorphology
	WATER
	ECOLOGY-Habitat
	ECOLOGY-Landscape

Originating controlled vocabulary

Title	ANZLIC Search Words
Reference date	2008-05-16

Geographic location

West bounding longitude	150.17
East bounding longitude	153.73
North bounding latitude	-37.55
South bounding latitude	-28.13

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	2018-07-01
End position	N/A

Dataset reference date

Resource maintenance

Maintenance and update frequency	Not planned

Contact info

Contact position	Data Broker
Organisation name	NSW Department of Climate Change, Energy, the Environment

	and Water
Telephone number	131555
Email address	data.broker@environment.nsw.gov.au
Web address	https://www.nsw.gov.au/departments-and-agencies/dcceew
Responsible party role	pointOfContact

| Lineage | Statewide marine lidar data was collected along the NSW coast in 2018, with elevation data collected down to an average of 35 m depth. This dataset represents a classification of seabed landforms derived from this marine lidar data, which delineates the prominent seabed features observed. This classification defines areas of reefs, peaks (uppermost part of the reef surface), plains, depressions and channels (within the reef surface), and scarps (areas greater than 10 degrees slope). The statewide dataset is provided as ArcGIS shapefiles divided into 9 segments along the coast, covering 4060 km2 of NSW coastal waters. Features were classified using the Seabed Landforms Classification Toolset (ArcGIS), developed by DPE (Linklater & Morris, 2022) which applies the methodological framework presented in Linklater et al. (2019). In this classification approach, ruggedness (VRM, Walbridge et al. 2018), slope, finescale and broadscale Bathymetric Position Index (Slope Position, Evans et al. 2014) variables were derived from the marine lidar bathymetric dataset and used to characterise prominent features within the seascape. Procedures were implemented to reduce potential noise within the dataset and identify the full extent of reef outcrops. Manual editing was performed to separate inferred reef outcrops from soft sediment bedforms, with the resulting classification focused on identifying the presence, extent and character of submerged reef outcrops within the marine lidar dataset. The classification output was reviewed and edited by the data creator to capture observed and interpreted seabed features. The resulting layer was externally reviewed to ensure scientific rigour and data integrity.

Please cite this dataset as: Linklater, M., Morris, B., Kinsela, M., Ingleton, T. and Hanslow, D. (2022), Exploring patterns of reef distribution along the southeast Australian coast using marine lidar data. Manuscript in preparation.

NSW statewide marine lidar data – available for download on SEED: https://datasets.seed.nsw.gov.au/dataset/marine-lidar-topo-bathy-2018

Linklater, M. and Morris, B. (2022), Classification of seabed landforms on continental and island shelves. Manuscript in preparation.

Linklater, M., Ingleton, T. C., Kinsela, M. A., Morris, B. D., Allen, K. M., Sutherland, M. D., & Hanslow, D. J. 2019. Techniques for classifying seabed morphology and composition on a subtropical-temperate continental shelf. Geosciences, 9(3), 141.

Walbridge, S., Slocum, N., Pobuda, M., Wright, D.J., 2018. Unified geomorphological analysis workflows with Benthic Terrain Modeler. Geosciences, 8(3), 94.

Evans, J., Oakleaf, J., Cushman, S., 2014. An ArcGIS Toolbox for Surface Gradient and Geomorphometric Modeling, Version 2.0-0. Available online: https://github.com/jeffreyevans/GradientMetrics. |
|---|---|

Limitations on public access

Scope	dataset

DQ Topological Consistency

Explanation	ArcInfo was used to do a topological consistency check to detect flaws in the spatial data structure. No polygon overlaps were detected.

DQ Absolute External Positional Accuracy

Explanation	This dataset represents seabed features classified from 5 m cell size input bathymetry data, with no ground-truthing undertaken. Polygons smaller than 100 m2 were eliminayed. Due to the variability in sediment movement, precise feature boundaries can be variable over time.

Responsible party

Contact position	Data Broker
Organisation name	NSW Department of Climate Change, Energy, the Environment and Water
Telephone number	131555
Email address	data.broker@environment.nsw.gov.au
Web address	https://www.nsw.gov.au/departments-and-agencies/dcceew
Responsible party role	pointOfContact

Metadata point of contact

Contact position	Data Broker
Organisation name	NSW Department of Climate Change, Energy, the Environment and Water
Telephone number	131555
Email address	data.broker@environment.nsw.gov.au
Web address	https://www.nsw.gov.au/departments-and-agencies/dcceew
Responsible party role	pointOfContact

Metadata date

2024-09-16T23:41:50.902638

Metadata language