Title

NSW nearshore wave buoy parameter time series data (active deployments)

Abstract

In-situ ocean wave measurements have been collected at nearshore locations along the NSW coast. Wave data are collected using GPS wave buoys that are deployed by NSW DCCEEW scientists on moorings in shallow coastal waters (< 35 m water depth) adjacent to beaches or rocky shores. The program currently uses Sofar Spotter wave buoys (https://www.sofarocean.com/products/spotter). During 2016-2017, Datawell DWR-G4 wave buoys (https://www.datawell.nl/Products/Buoys.aspx) were used, while in 2018 and 2019 both Datawell and Spotter wave buoys were used. A buoy comparison experiment was carried out in 2018, which found that wave data measured by Datawell and Spotter buoys at the same location could be considered equivalent.

The wave buoys are tethered to moorings at deployment locations and float on the water surface, measuring the height, period and direction of passing waves by tracking the motion of the buoy through time using GPS. The deployments are temporary, and the duration of each wave buoy deployment varies with operational needs, ranging from several months to years. Deployment locations are chosen to support scientific research carried by NSW DCCEEW and partners on coastal dynamics along the NSW coastline and to develop nearshore wave modelling tools and data. Wave data and research support the development of Coastal Management Programs (CMPs) under the Coastal Management Act (2016).

The real-time wave data from live buoy deployments includes time-series charts of key parameters describing wave height, period and direction over a rolling seven-day window. The parameters are derived on board the buoy using wave spectra analysis and include significant wave height (Hm0), mean wave period (Tm01), peak wave period (TP), mean wave direction (DirM) and peak wave direction (DirP). Wind speed and direction estimated from the measured wave spectra are also provided. Parameters are plotted at half-hour intervals in local time - Australian Eastern Standard Time (AEST) or Australian Eastern Daylight Time (AEDT) - and the data time series are updated once every hour as new data points are received. The data are received directly from deployed wave buoy instruments via satellite transmission and are not quality assessed or controlled in any way. Various factors may cause erroneous data points and users are advised to exercise caution when using the data. The data are provided for general information purposes only and should not be relied upon for coastal hazard advice or to guide operational activities.

Processed wave data that has passed quality assurance and control tests are also available on SEED, and could be used for coastal hazard advice or assessments: https://datasets.seed.nsw.gov.au/dataset/nsw-nearshore-wave-buoy-parameter-time-series-data-completed-deployments.

For more information on wave buoy data collection and processing, please see: Kinsela, M.A., Morris, B.D., Ingleton, T.C., Doyle, T. B. et al. (2024) Nearshore wave buoy data from southeastern Australia for coastal research and management. Scientific Data. https://doi.org/10.1038/s41597-023-02865-x

Wave buoy equipment and deployments have been primarily funded by NSW DCCEEW with equipment grant funding from the NSW Office of the Chief Scientist and Engineer's Research Attraction and Acceleration Program (RAAP) awarded to the NSW Node of the Integrated Marine Observing System (IMOS) and administered by the Sydney Institute of Marine Science (SIMS). The Water Research Laboratory (UNSW Sydney) also provided wave buoys used in the program. For more information on the NSW Nearshore Waves program please visit: https://www.environment.nsw.gov.au/research-and-publications/our-science-and-research/our-research/water/ocean-and-coastal-waves

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 nearshore wave buoy parameter time series data (live deployments) Function: download
Website	Name: Website Protocol: WWW:DOWNLOAD-1.0-http--download Description: For more information on the NSW Nearshore Waves program Function: download

Unique resource identifier

Code	5f91774d-69db-4f65-a2b7-e5ec6264c0d2

Presentation form	Diagram digital
Edition	1
Dataset language	English

Metadata standard

Name	ISO 19115
Edition	2016

Dataset URI	https://datasets.seed.nsw.gov.au/dataset/5f91774d-69db-4f65-a2b7-e5ec6264c0d2
Purpose	Coastal Hazard Management
Status	On going
Spatial representation type	None

Spatial reference system

Code identifying the spatial reference system	4283

Topic category

Keyword set	
keyword value	OCEANOGRAPHY-Physical MARINE-Coasts
Originating controlled vocabulary	
Title	ANZLIC Search Words
Reference date	2008-05-16
Geographic location	
West bounding longitude	149.501953
East bounding longitude	153.984375
North bounding latitude	-37.746396
South bounding latitude	-27.870161
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	2021-12-02
End position	N/A
Dataset reference date	
Resource maintenance	
Maintenance and update frequency	Continual
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
Limitations on public access	

Responsible party

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Metadata language