

Data Documentation

Dataset Information

Dataset Title:

NCCOS Assessment: US underwater vehicle activity in the Western Atlantic, 1964 to 2019

Description:

This data resource provides information on the vessel, location, date, institution of origin, purpose, and objective of submersible operations (including Human Occupied Vehicles [HOV], Remotely Operated Vehicles [ROV], and Autonomous Underwater Vehicles [AUV]) conducted in the Western Atlantic in the years 1964 - 2019. Dive logs from 23 different US-based underwater vehicles were collected to create this layer, available in both tabular comma-separated value (.CSV) and geospatial shapefile (.SHP) formats.

Purpose:

This layer was created to identify the general location of all submersible operations conducted by teams based in the United States. The goal of this layer was any activity that resulted in a vehicle being underwater collecting footage was ultimately captured, and the position of those activities denoted. While this layer contains dives from the entire Northern Atlantic, it is primarily intended to focus on operations in the Western Atlantic (West: -97.00, East: -59.00, North: 37.00, South 11.00). This layer was created with funding and support from NOAA's Deep Sea Coral Research and Technology Programs (DSCRTP) South East Deep Coral Initiative (SEDCI).

Methods:

Dive logs from 23 different US-based underwater vehicles, which operate in the Northern Atlantic, were collected to create this layer. The information from those dive logs was formatted for consistency and dive logs were reviewed to identify the focus of the operation, type of survey, and purpose of the specific dive. Once plotted the coordinates were also reviewed for accuracy of location and errant locations were flagged.

This layer represents underwater activities that have occurred in the Atlantic from 1964 to 2019. This layer includes operations with a range of objectives. It includes scientific surveys focused on individual organisms as well as those focused on habitat characterizations. It also includes operations focused on recovery of items; those items could range from wreckage/debris, to scientific instruments.

Data Sources:

Original input datasets are identified by cruise information within the attribute table. These original input datasets were compiled by combining published data and direct requests to fill gaps in order to obtain all data points within this shapefile.

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People & Projects

Dataset Authors:

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Collaborators:

- Andrew Shuler, US DOC; NOAA; NOS; National Centers for Coastal Ocean Science (NCCOS)

Partners:

- HBOI: Harbor Branch Oceanographic Institute
- Lehigh University
- NOAA-FGBNMS: National Oceanic and Atmospheric Administration –Flower Garden Banks National Marine Sanctuary
- NOAA-OER: National Oceanic and Atmospheric Administration-Office of Exploration and Research,
- NOAA-NMFS: National Oceanic and Atmospheric Administration- National Marine Fisheries Service
- NOAA-SEFSC: National Oceanic and Atmospheric Administration-Southeast Fisheries Science Center
- NOPP: National Oceanographic Partnership Program
- NURTEC: University of Connecticut's Northeast Underwater Research, Technology and Education. Center
- OET: Ocean Exploration Trust
- SOI: Schmidt Ocean Institute
- Temple University
- UNCW-UVP: University of North Carolina Wilmington Underwater Vehicle Program
- UPRM; University of Puerto Rico Mayagüez
- WHOI: Woods Hole Oceanographic Institute

Funding:

- US DOC; NOAA; NOS; National Centers for Coastal Ocean Science (NCCOS)
- US DOC; NOAA; NMFS; Deep-sea Research and Technology Program (DSCRTP)
- US DOC; NOAA; NOAA Ocean Exploration; South East Deep Coral Initiative (SEDCI)

Associated Online Resources:

- NCCOS Project, [Southeast Deep Coral Initiative (SEDCI): Exploring Deep-Sea Coral Ecosystems off the Southeast U.S.], <https://coastalscience.noaa.gov/project/southeast-deep-coral-initiative-sedci-exploring-deep-sea-coral-ecosystems-off-the-southeast-u-s/>

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Extents

Start Date: 1964-06-26

End Date: 2019-11-19

Northern Boundary: 74.5017

Southern Boundary: 11.232

Western Boundary: -96.5287

Eastern Boundary: -6.6

Keywords

Sea Areas, Water Bodies, Marine Protected Areas:

- North Atlantic
- Western Atlantic
- Great Lakes
- Caribbean Sea
- International waters

NOAA Ships, Other Ships, Platforms:

- Atlantis R/V
- Brooks McCall R/V
- Cape Hatteras R/V
- Carolyn Chouest M/V
- Edwin Link R/V
- Falkor R/V
- Freedom Star M/V
- Gordon Gunter R/V
- Holiday Chouest M/V
- Knorr R/V
- Liberty Star M/V
- Manta R/V
- Maria S. Merian R/V
- Nancy Foster NOAA Ship
- Nautilus E/V
- Nekton Rorqual
- Ocean Inspector DSV
- Okeanos Explorer NOAA Ship
- Oregon II R/V
- Pisces NOAA ship
- Revelle R/V
- Ronald H Brown NOAA Ship
- Seward Johnson II R/V
- Seward Johnson R/V
- Spree M/V
- Sultana R/V
- USS Kittiwake
- Walton Smith R/V

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- Alvin DSR/V
- Arc ROV
- Clelia DSR/V
- Deep Discoverer ROV
- Global Explorer ROV
- Hela ROV
- Hercules ROV
- Jason II ROV
- Johnson Sea Link I DSR/V
- Johnson Sea Link II DSR/V
- Kraken2 ROV
- Little Hercules ROV
- MiniRover MKII ROV
- Mohawk 18 ROV
- NR-1 Submarine
- Odysseus ROV
- Phantom DS4 ROV
- Phantom S2 ROV
- SeaBED AUV
- Seabotix LBV200 ROV
- SeaEye Falcon ROV
- Sentry AUV
- Shilling UHD ROV
- Yogi ROV

NCCOS Keywords:

- NCCOS Research Priority > Marine Spatial Ecology
- NCCOS Research Topic > Ecological and Biogeographic Assessments
- NCCOS Research Topic > Habitat Mapping
- NCCOS Research Topic > Assessing Human Use
- NCCOS Research Location > Region > Atlantic Ocean
- NCCOS Research Location > Region > Caribbean Sea
- NCCOS Research Location > Region > Great Lakes
- NCCOS Research Location > Region > Gulf of Mexico
- NCCOS Research Location > Region > International
- NCCOS Research Data Type > Geospatial
- NCCOS Research Data Type > Derived Data Product

File Information

Total File Size: 40 MB total, 13 files, 1 folder (unzipped), 1.13 MB (zipped)

Data File Format(s):

- Comma-separated value (.CSV)
- ShapeFile .SHP (and ancillary files .CPG, .DBF, .PRJ, .SBN, .SBX, .SHX)

Data File Compression: zip

Data File Resolution: 1 km

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GIS Projection: NAD 1983 (WKID 4269)

Data Files:

- Tabular: SEDClgd_DiveLayer_021121.csv
- NCCOS-Underwater-Vehicle-Activity_GIS_Data:
 - SEDClgd_DiveLayer_021121.cpg
 - SEDClgd_DiveLayer_021121.dbf
 - SEDClgd_DiveLayer_021121.prj
 - SEDClgd_DiveLayer_021121.sbn
 - SEDClgd_DiveLayer_021121.sbx
 - SEDClgd_DiveLayer_021121.shp
 - SEDClgd_DiveLayer_021121.shp.xml
 - SEDClgd_DiveLayer_021121.shx

Documentation Files:

- NCCOS-Underwater-Vehicle-Activity_BrowseGraphic.JPG
- DataDocumentation.PDF

Table 1: Data Dictionary

Column	Variable	Definition	Units	Range
1	Source	The university or organization that provided the data about these operations as an Acronym	Text	N/A
2	CruiseID	Alphanumeric code used by the institution, organization, vehicle team, or principle investigators to identify the cruise or expedition during which the reported dive occurred.	Text	A common example is NF1804 notes the NOAA ship Nancy Foster the year 2018 and the fourth cruise for that vessel of the year. Other naming schemes include the name of the project DFH33, Deep Fisheries Habitat and the "33"denotes the 33rdcruise of this long term project.
3	EventID	A unique alphanumeric identifier for the individual dive being represented.	Text	This was a combination of the CruiseID and a Dive number or the Source and Dive number when a Cruise ID was not present. In all cases unique identifiers provided by the vehicle team were maintained if possible.
4	VehicleName	The full name of the underwater vehicle conducting the reported operation	Text	N/A
5	Vessel	The full name of the vessel from which the underwater vehicle was operating	Text	N/A
6	Locality	A general descriptor of the area of operation for the reported dive.	Text	Localities reported included information ranging from underwater features to nearest body of land. In some cases a station id was used. If no information was included NA was assigned
7	Date	The date reported in the dive log for a given operation in MM/DD/YYYY format.	MM/DD/YYYY	06/26/1964; 11/19/2019 Note on Missing Dates: Some historical dates were not provided in the original datasets. Missing dates are represented as NULL within this dataset.
8	Year	The year the reported operation occurred in YYYY format	YYYY	1964; 2019

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Column	Variable	Definition	Units	Range
9	Latitude	Latitude in decimal degrees, if values reported in other formats they were converted to decimal degrees. These data should only be considered accurate to five decimal places in records from 2000 to Present. Records from 1999 and older should only be considered accurate to three decimal places.	dd.dddd	11.232; 74.5017 Note on redacted Latitude values: Some latitude values have been purposefully omitted from this dataset to safeguard sensitive or protected locations. Omitted latitude values are represented as '0' within this dataset.
10	Longitude	Longitude in decimal degrees, if values reported in other formats they were converted to decimal degrees. These data should only be considered accurate to five decimal places in records from 2000 to Present. Records from 1999 and older should only be considered accurate to three decimal places.	dd.dddd	-96.5287; -6.6 Note on redacted Longitude values: Some latitude values have been purposefully omitted from this dataset to safeguard sensitive or protected locations. Omitted longitude values are represented as '0' within this dataset.
11	MaximumDepth	The maximum depth the vehicle reported during the operation reported in meters. These data should only be considered accurate to the nearest meter.	meters	0-4998, -999 denotes no information regarding depth provided
12	PrincipleInvestigator	The name or names of the Principle Investigators that were in charge of the project during which the dive occurred.	Text	All records include a Last name, when available a first name or first initial was included separated from the last name with a comma. When an operation had multiple Principle Investigators they are separated by a semicolon.
13	BOEM_DataSet	Denotes if the dive was ever part of a BOEM data rescue or modelling effort. Field is formatted as yes/no.	Yes/No	Yes,No
14	SEDCI_Funded	Denotes if the survey was funded by the South East Deep Coral Initiative (SEDCI)	Yes/No	Yes,No
15	Focus	Denotes the focus of the operation taking place during the dive. Dives were classified into three categories of focus; Scientific, Logistical, or Search and Recovery.	Text	Scientific was any dive related for scientific surveys or purpose. Logistical were any dive conducting systems testing, pilot training, etc. Search and Recover is any dive looking for wreckage or debris, i.e. Shuttle debris from the Challenger explosion.
16	SurveyType	Denotes if the survey took place on the ocean floor (=benthic) or in the water column (=midwater)	Text	Benthic, Midwater
17	Purpose	Denotes the purpose of the dive derived from information in the notes column. The purpose of a dive was distilled into one of 15 categories.	Text	The categories are defined as follows. Archaeology; any dive related to exploring a ship wreck or some other historical underwater feature. Biology; any dive focused on assessing a specific underwater organism. Chemistry; any dive focused on collected water samples or data on the chemical properties of water, or chemicals dissolved within the water. Demonstrations; any dive focused on illustrating a technology or technique related to underwater vehicles. Deployments; any dive associated with deploying some object or equipment related to underwater activity. Engineering; any dive associated with assessing the status of underwater equipments or vehicles. Geology; any dive associated with exploring, documenting, or collecting underwater geological features. Habitat

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Column	Variable	Definition	Units	Range
				Characterization; Any dive associated with providing information of the underwater environment as a whole collecting information on both biota and its associated environment. NA; any dive where the purpose could not be deduced from the available information. Ocean Energy Exploration; any dive associated with the activities of the oil and gas industry. Photo/Videography: any dive focused on gather underwater footage not for scientific purposes but simply photographing or videoing the underwater environment (ie. National Geographic, BBC). Physical Oceanography; dives focused on collecting information on underwater processes or current. Search and Recovery; dives focused on the activity of recovering lost items or responding to crashes or accidents (ie Challenger Shuttle disaster). Systems Testing; any dive focused on the testing a system of the underwater vehicle or training pilots.
18	Notes	This field was populated with any specific notes or comments provided in the dive logs regarding the objective or goals of the operation. In instances where there were no notes in the dive log regarding goals or objectives, a general assessment of the purpose was derived from available information on the expedition, the PI's listed research interests, or the PI's department within their associated institution.	Text	varying degrees of notes documenting activities
19	Flag	Field is formatted as yes/no. If yes it means there is perceived positional error. Dives were designated as having a positional error, if the coordinate provided was over land, if their maximum depth was not within appropriate isobaths.	yes/no	yes,no
20	FlagReason	Field provides the reason a dive was flagged and believed to have a positional error.	yes/no	yes,no
21	SEDCI_AOI	Field denotes if the dive occurred within the Area of Interest (US EEZ) denote by DSCRTP for the SEDCI initiative.	yes/no	yes = within the SEUS, GOM, Caribbean US EEZ, no = outside of this extent.
22	WithinSEregion	Field denotes if the dive occurred within the greater SEUS region.	Text	yes = within the SEUS, no = outside of this extent.
	RegionCode	Denotes the intended categories for graphic symbolization.	numeric	wherein 1 = SEDCI funded within SEUS extent, 2 = within West Atlantic extent, 3 = within WAtl extent, but flagged, 4 = outside the WAtl extent, but within N Atlantic.

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Parameter Information

Parameter Description:

Parameters: Underwater vehicle dive
Property Type: calculated
Units: n/a
Observation Category: other
Sampling Instrument: digital records

Sampling and Analyzing Method:

Dive logs from 24 different US based underwater vehicles, which operate in the Northern Atlantic, were collected to create this layer. The information from those dive logs was formatted for consistency and dive logs were reviewed to identify the focus of the operation, type of survey, and purpose of the specific dive.

Data Quality Method:

Once plotted the coordinates were also reviewed for accuracy of location and errant locations were flagged.

Document Information

Date: 2022-12-21
Resource Provider: NCCOS Data Manager, nccos.data@noaa.gov, US DOC; NOAA; NOS; National Centers for Coastal Ocean Science (NCCOS)
Comment: This data documentation describes data files archived as a NOAA NCEI data accession, and is intended to provide dataset-level metadata for the purposes of discovery, use, and understanding.
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