Data Documentation

Dataset Information

Dataset Title:

NCCOS Assessment: Acute Turbidity Exposures with Port of Miami Sediments Impact *Orbicella faveolata* Tissue Regeneration, 2019-02-13 to 2022-09-30

Description:

Preliminary experiments were conducted to determine optimal turbidity dosing systems for coral fragments and the parameters and results of each experiment (10) were reported. Three coral challenge experiments were performed on *Orbicella faveolata* fragments with varying durations: 48 h, 96 h and 13 days between 2/18/2020 and 3/22/2020. Tissue regeneration (wound healing) was measured on fragments during the exposure periods. Wound images were collected and ImageJ analyses of the wound size were recorded. Sediment particle sizes were measured on 9/28/2022 and a sea urchin embryo development toxicity test (9/1/2022-9/3/2022) was used to evaluate potential toxicity in the sediment used for the coral exposures.

Purpose:

The purpose of this study was to investigate how short-term (< 2 week) turbidity exposures (reported as NTU) using a simulated dredge sediment might affect tissue regeneration in *O. faveolata*. A Port of Miami sediment homogenate was used to simulate turbid conditions during dredging. We observed that low turbidity levels (≤ 4 NTU) have negative effects on *O. faveolata* tissue regeneration following a 96-h exposure. A 48-h turbidity exposure (maximum 30 NTU) followed by placement in fresh seawater had no effect on *O. faveolata* tissue regeneration, demonstrating that short term turbidity exposures may not be detrimental to coral health. In a 13-day test, treated coral fragments (maximum 30 NTU) exhibited significant delays in tissue regeneration. Additionally, the sea urchin embryo development assay (SUETOX), a standard method used to gauge toxicity of sediment interstitial waters to early life stages was employed to estimate potential toxicity of the sediment mixture. This assay was slightly modified by using sediment mixed with artificial seawater at the same concentrations as the coral exposures to gauge toxicity. No toxic effects were observed in developing *Lytechinus variegatus* embryos, indicating pollutants in the sediment were not a factor inhibiting coral tissue regrowth. The results presented here can be used to inform management decisions for proposed dredging activities proximal to coral reef habitats.

This project encompassed preliminary experiments to optimize a relatively low-cost turbidity exposure system for stony corals, followed by three acute turbidity exposures described above. We partnered with the Habitat Conservation Division, Southeast Region of the National Marine Fisheries Service to determine exposure scenarios that would be most helpful in ESA and Essential Fish Habitat consultations.

Methods:

- **Manuscript reference:** May, L.A., Miller, C.V., Moffitt, Z.J., Balthis, L., Karazsia, J., Wilber, P. and Woodley, C.M. Acute Turbidity Exposures with Port of Miami Sediments Impact *Orbicella*

faveolata Tissue Regeneration. Marine Pollution Bulletin, 193:115217. https://doi.org/10.1016/j.marpolbul.2023.115217

Sediment source and particle size analysis

The Port of Miami sediment samples used in this study were collected at 20 discrete sites in April 2016 by the NOAA National Marine Fisheries Service, and used for mineralogy and stable isotope analysis. Approximately two years after analysis (samples held at room temperature), the remaining samples were transferred to NCCOS CHS, for use in coral turbidity challenge experiments. Sample subsets were pooled, mixed thoroughly by hand, cryomilled and dried. A treatment sample in was subjected to particle size analysis (n = 10).

Sea urchin embryo development toxicity assay

Lytechinus variegatus (green sea urchin) embryos were used to evaluate the innate toxicity of the Port of Miami test sediment (ASTM, 2006). Sea urchin embryos were exposed to 50, 100 and 150 mg/L concentrations of the cryomilled, dried sediment homogenate mixed in artificial seawater in a static test.

Coral challenge experiments

Turbidity system optimization

In the optimization experiments (10) we included three methods for sediment agitation (aquarium pump, 250 rpm stir plate, 300 rpm stir plate), three methods for suspending coral in the treatment beakers (custom-manufactured polypropylene sheeting with silicone support, egg crate louver with silicone support and egg crate louver without support) and three methods for preparing sediment (wet homogenate, wet cryomilled homogenate and dry cryomilled homogenate.

96-h experiment

Port of Miami sediment loads (50, 100 and 150 mg/L) were used to determine turbidity effects (~5-30 NTU) on Orbicella faveolata fragments. Control beakers contained no added sediment. Turbidity and temperature measurements were collected every 4 h during the course of the experiment. Turbidity was measured using a Hach model 2100P turbidimeter, calibrated with Hach StablCal® formazine standards once daily. Salinity and pH were measured every 24 h. Total ammonia nitrogen was measured in preliminary 96 h sediment tests to ensure no toxicity occurred from that source.

48-h turbidity exposure with recovery period

A pulse-chase experiment was devised to determine effects of an acute short-term (48-h) exposure of coral to turbidity (100 mg/L sediment load) and to evaluate coral recovery for one week following the exposure. Water quality measurements (turbidity, temperature, pH and salinity) were performed as in the 96-h challenge experiment. Corals (controls and treatments) were dosed for 48 h, then transferred to fresh ASW. Water changes (100 %) were performed every 96 h thereafter, to maintain salinity. following the water change up to 13 d post treatment initiation.

13-day turbidity exposure

A third experiment was conducted to determine the effects of a 13-day turbidity exposure on coral tissue regeneration using a 100 mg/L sediment load. We based the duration of this experiment on the wound healing process observed for the control fragments, factoring in an expected lag time for the dosed fragments.

Coral tissue regeneration analysis

Prior to experiment initiation, *O. faveolata* fragments (1 cm x 1 cm x 1cm) were wounded using a Dremel rotary tool fitted with a 2.0 mm diamond hole saw bit. Tissue slurry was removed by gentle application of an ASW stream. The coral was placed in a 500 mL clean glass jar filled with ASW and wound images were collected under bright field and narrow violet fluorescence illumination next to a centimeter ruler. Corals were imaged either daily or at experiment termination and skeletal area and perimeter were determined using a modified ImageJ macro.

Cited Publications:

- May, L.A., Miller, C.V., Moffitt, Z.J., Balthis, L., Karazsia, J., Wilber, P. and Woodley, C.M. Acute Turbidity Exposures with Port of Miami Sediments Impact *Orbicella faveolata* Tissue Regeneration. Marine Pollution Bulletin, *in revision*.
- ASTM, 2006. "Standard Guide for Conducting Static Acute Toxicity Tests with Echinoid Embryos", E 1563–95, *American Society for Testing and Materials*, West Conshohocken, PA, pp. 1-22. Available from: https://www.astm.org/e1563-98r12.html
- Fisher, E.M., Fauth, J.E., Hallock, P., Woodley, C.M., 2007. Lesion regeneration rates in reef-building corals *Montastraea* spp. as indicators of colony condition. Mar. Ecol. Prog. Ser. 339:61-71. https://doi.org/10.3354/meps339061
- Gorin, D.R., Cordts, P.R., Lamorte, W.W., Menzoian, J.O., 1996. The influence of wound geometry on the measurement of wound healing rates in clinical trials. J. Vasc. Surg. 23:524-528. https://doi.org/10.1016/S0741-5214(96)80021-8
- Wentworth, C.K., 1922. A scale of grade and class terms for clastic sediments. J. Geol. 30(5):377–392. http://www.jstor.org/stable/30063207

People & Projects

Dataset Authors:

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Partners:

- NOAA National Marine Fisheries Service, Southeast Region, Habitat Conservation Division

Funding:

- US DOC; NOAA; NOS; National Centers for Coastal Ocean Science (NCCOS)
- NOAA Coral Reef Conservation Program, Coral Disease and Health Consortium, Project #1133
- NOAA National Marine Fisheries Service

Extents

Start Date: 2019-02-13
End Date: 2022-09-30

Northern Boundary: 25.7812019
Southern Boundary: 25.7660664
Western Boundary: -80.1818346
Eastern Boundary: -80.1449857

Keywords

Sea Areas, Water Bodies, Marine Protected Areas:

- Atlantic Ocean
- Caribbean Sea
- Gulf of Mexico

NCCOS Keywords:

- NCCOS Research Priority > Stressor Impacts and Mitigation
- NCCOS Research Topic > Biological Effects of Contaminants and Nutrients
- NCCOS Research Location > Region > Atlantic Ocean
- NCCOS Research Location > Region > Caribbean Sea
- NCCOS Research Location > Region > Gulf of Mexico
- NCCOS Research Location > U.S. States and Territories > South Carolina
- NCCOS Research Data Type > Laboratory Experiment

CoRIS Keywords:

- CoRIS Discovery Thesaurus:
  - Numeric Data Sets > Water Quality
- CoRIS Theme Thesaurus:
  - EARTH SCIENCE > Biosphere > Zoology > Corals > Coral Condition
- CoRIS Place Country/Territory Keywords:
  - OCEAN BASIN > Atlantic Ocean
- CoRIS Place Ocean/Seas Keywords:
  - OCEAN BASIN > Atlantic Ocean

File Information

Total File Size: 2.10 GB total, 479 files in 45 folders (unzipped)
Data File Format(s): .csv, .pdf, .tif, .xlsx, .jpg
Data File Compression: N/A
Data File Resolution: N/A
GIS Projection: N/A

Data Files:

- 01_Images_0_h_Tissue_regeneration (folder with .tifs)
- 01_Images_44_h_Beaker (folder with .tifs)
- 01_Images_96_h_Tissue_regeneration (folder with .tifs)
- 01_Data_Tissue_regeneration.xlsx
- 01_Data_Water_quality.xlsx
- 02_Images_0_h_Tissue_regeneration (folder with .tifs)
- 02_Images_48_h_Tissue_regeneration (folder with .tifs)
- 02_Images_72_h_Tissue_regeneration (folder with .tifs)
- 02_Images_96_h_Tissue_regeneration (folder with .tifs)
- 02_Images_120_h_Tissue_regeneration (folder with .tifs)
- 02_Images_144_h_Tissue_regeneration (folder with .tifs)
- 02_Images_168_h_Tissue_regeneration (folder with .tifs)
- 02_Images_192_h_Tissue_regeneration (folder with .tifs)
- 02_Images_216_h_Tissue_regeneration (folder with .tifs)
- 02_Images_240_h_Tissue_regeneration (folder with .tifs)
- 02_Images_264_h_Tissue_regeneration (folder with .tifs)
- 02_Images_288_h_Tissue_regeneration (folder with .tifs)
- 02_Images_312_h_Tissue_regeneration (folder with .tifs)
- 02_Data_Tissue_regeneration.xlsx
- 02_Data_Water_quality.xlsx
- 03_Images_0_h_Tissue_regeneration (folder with .tifs)
- 03_Images_24_h_Tissue_regeneration (folder with .tifs)
- 03_Images_48_h_Tissue_regeneration (folder with .tifs)
- 03_Images_72_h_Tissue_regeneration (folder with .tifs)
- 03_Images_96_h_Tissue_regeneration (folder with .tifs)
- 03_Images_120_h_Tissue_regeneration (folder with .tifs)
- 03_Images_144_h_Tissue_regeneration (folder with .tifs)
- 03_Images_168_h_Tissue_regeneration (folder with .tifs)
- 03_Images_192_h_Tissue_regeneration (folder with .tifs)
- 03_Images_216_h_Tissue_regeneration (folder with .tifs)
- 03_Images_240_h_Tissue_regeneration (folder with .tifs)
- 03_Images_288_h_Tissue_regeneration (folder with .tifs)
- 03_Images_312_h_Tissue_regeneration (folder with .tifs)
- 03_Data_Tissue_regeneration.xlsx
- 03_Data_Water_quality.xlsx
- Particle_Size_Analysis.pdf
- Preliminary_experiments_and_results.docx
- Turbidity_exposure_supplies_and_equipment.xlsx
- Lytechinus_variegatus_representative_images (folder with .jpgs)
- Sea_urchin_embryo_development_toxicity_test_datasheet.xlsx

Documentation Files:

- DataDocumentation.PDF

Table 1: Data Dictionary – Experiment_1_96_h_Water_Quality.xlsx

Column	Variable	Label	Definition	Units	Range
Turbidity - 1	Time	Time elapsed (Eastern Standard Time)	Hours post time 0 when measurement was recorded.	hours	0-96 h
Turbidity - 2	Control	Control	Turbidity measurement of treatment solution (artificial sea water with no sediment)	nephelometric turbidity units (NTU)	0-0 NTU
Turbidity - 3	0.05 g/L sediment treatment	0.05 g/L	Turbidity measurement of treatment solution (0.05 g/L sediment in artificial seawater)	nephelometric turbidity units (NTU)	0-5 NTU
Turbidity - 4	0.10 g/L sediment treatment	0.10 g/L	Turbidity measurement of treatment solution (0.10 g/L sediment in artificial seawater)	nephelometric turbidity units (NTU)	4-27 NTU
Turbidity - 5	0.15 g/L sediment treatment	0.15 g/L	Turbidity measurement of treatment solution (0.15 g/L sediment in artificial seawater)	nephelometric turbidity units (NTU)	5-37 NTU
pH - 1	Time	Time elapsed (Eastern Standard Time)	Hours post time 0 when measurement was recorded.	hours	0-96 h
pH - 2	Control	Control	pH measurement of treatment solution	pH	8.15-8.30

Column	Variable	Label	Definition	Units	Range
pH - 3	0.05 g/L sediment treatment	50 mg/L	pH measurement of treatment solution	pH	8.16-8.29
pH - 4	0.10 g/L sediment treatment	100 mg/L	pH measurement of treatment solution	pH	8.00-8.29
pH - 5	0.15 g/L sediment treatment	150 mg/L	pH measurement of treatment solution	pH	8.00-8.31
Salinity - 1	Time	Time elapsed (Eastern Standard Time)	Hours post time 0 when measurement was recorded.	hours	0-96 h
Salinity - 2	Control	Control	Salinity measurement of treatment solution	parts per thousand (ppt)	36-36 ppt
Salinity - 3	0.05 g/L sediment treatment	50 mg/L	Salinity measurement of treatment solution	parts per thousand (ppt)	36-36 ppt
Salinity - 4	0.10 g/L sediment treatment	100 mg/L	Salinity measurement of treatment solution	parts per thousand (ppt)	36-37 ppt
Salinity - 5	0.15 g/L sediment treatment	150 mg/L	Salinity measurement of treatment solution	parts per thousand (ppt)	36-37 ppt
Temperature - 1	Time	Time elapsed (Eastern Standard Time)	Hours post time 0 when measurement was recorded.	hours	0-96 h
Temperature - 2	Control	Control	Temperature measurement of treatment solution	degrees Celcius (°C)	25.3-27.1 °C

Column	Variable	Label	Definition	Units	Range
Temperature - 3	0.05 g/L sediment treatment	50 mg/L	Temperature measurement of treatment solution	degrees Celcius (°C)	25.4-27.5 °C
Temperature - 4	0.10 g/L sediment treatment	100 mg/L	Temperature measurement of treatment solution	degrees Celcius (°C)	25.0-27.2 °C
Temperature - 5	0.15 g/L sediment treatment	150 mg/L	Temperature measurement of treatment solution	degrees Celcius (°C)	25.6-27.6 °C

Table 2: Data Dictionary - Experiment_1_96_h_Tissue_Regeneration.xlsx

Column	Variable	Label	Definition	Units	Range
1	Image file name	Sample photo ID	T0 data = data collected at experiment initiation T96 data = data collected at experiment termination	n/a	n/a
2	Camera pixels per mm of image	Pixels/mm	Camera pixels per mm in each image	Pixels/mm	97.1933-102.1471 pixels/mm
3	Wound area	Wound area (mm^2)	Wound area in each image	mm^2	1.0665-6.3667 mm^2
4	Wound perimeter	Wound perimeter (mm)	Wound perimeter in each image	mm	30.1011-51.3328 mm
5	Tissue regeneration %	Calculated tissue regeneration (%)	(Area T0- Area T96)/ Area T96*100	%	22.76-79.38 %

Table 3. Data Dictionary – Experiment_2_ 48_h_Water_Quality

Column	Variable	Label	Definition	Units	Range
1	Treatment type	Control 1	No sediment control for 48 h exposure	mg	0
1	Treatment type	100 1	Sediment treatment for 48 h	mg	100
2	Treatment replicate	Replicate	Treatment replicate	n/a	A-D
3	Experiment date	Date	Date of experiment	n/a	3/9/2020-3/22/2020
4	Time of data collection	Time	Eastern Standard Time	EST	6:00 AM-10:00 PM
5	Turbidity	Turbidity	Turbidity measurement of treatment solution	Nephelometric turbidity units (NTU)	0-23
6	Temperature	Temperature	Temperature of treatment solution	°C	25.0-26.7
7	Salinity	Salinity	Salinity of treatment solution	Parts per thousand (ppt)	36-39
8	pH	pH	pH of treatment solution	pH	8.08-8.40

Table 4: Data Dictionary Experiment_2_48_h_Tissue_Regeneration

Column	Variable	Label	Definition	Units	Range
1	Treatment type	Control	No sediment control for 13 day exposure	mg	0
1	Treatment type	Treated	Sediment treatment for 13 day exposure	mg	100
2	Time of data collection	Time point	Hours post time 0 when measurement was recorded.	Hours (h)	0-312 h
3	Camera pixels per mm of image	Pixels/mm	Camera pixels per mm in each image	Pixels/mm	96.2-101.2
4	Wound area	Wound area (mm^2)	Wound area in each image	mm^2	0.01-6.45

Column	Variable	Label	Definition	Units	Range
5	Wound perimeter	Wound perimeter (mm)	Wound perimeter in each image	mm	16.36-40.59
6	Calculated wound area per day	mm^2/day	Wound area per day	mm^2/day	0.034-2.18
7	Percent tissue regeneration	% tiss. reg.	(Area T0- Area T96)/ Area T96*100	%	3.3-99.9
8	Calculated linear healing	Linear healing (mm)	ΔA/mean perimeter	mm	0.002-0.088

Table 5: Data Dictionary [Experiment_3_13_day_Water_quality]

Column	Variable	Label	Definition	Units	Range
1	Treatment type	Control 2	No sediment control for 13-day exposure	mg	0
1	Treatment type	100 2	Sediment treatment for 13 days	mg	100
2	Treatment replicate	Replicate	Treatment replicate	n/a	A-D
3	Experiment date	Date	Date of experiment	n/a	3/9/2020-3/22/2020
4	Time of data collection	Time	Eastern Standard Time	EST	6:00 AM-10:00 PM
5	Turbidity	Turbidity	Turbidity measurement of treatment solution	Nephelometric turbidity units (NTU)	0-46
6	Temperature	Temperature	Temperature of treatment solution	°C	25.1-26.8
7	Salinity	Salinity	Salinity of treatment solution	Parts per thousand (ppt)	36-39
8	pH	pH	pH of treatment solution	pH	8.02-8.41

Table 6: Data Dictionary [Experiment_3_13_day_Tissue_regeneration]

Column	Variable	Label	Definition	Units	Range
1	Treatment type	Control	No sediment control for 13 day exposure	mg	0
1	Treatment type	Treated	Sediment treatment for 13 day exposure	mg	100
2	Time of data collection	Time point	Hours post time 0 when measurement was recorded.	Hours (h)	0-312 h

Column	Variable	Label	Definition	Units	Range
3	Camera pixels per mm of image	Pixels/mm	Camera pixels per mm in each image	Pixels/mm	97.0-101.1
4	Wound area	Wound area (mm^2)	Wound area in each image	mm^2	0.00-6.81
5	Wound perimeter	Wound perimeter (mm)	Wound perimeter in each image	mm	0.0-56.4
6	Calculated wound area per day	mm^2/day	Wound area per day	mm^2/day	0 to -1.45
7	Percent tissue regeneration	% tiss. reg.	(Area T0- Area T96)/ Area T96*100	%	-20.0 to 100.0
8	Calculated linear healing	Linear healing (mm)	ΔA/mean perimeter	mm	-0.032 to 0.071

Table 7: Data Dictionary [Lytechinus_variegatus_Experiment]

Column	Variable	Label	Definition	Units	Range
Water Quality - 1	Treatment	Treatment	Sediment treatment (artificial seawater with 0, 50, 100 or 150 mg/L sediment)	mg/L	0-150
Water Quality - 2	Temperature	Test Temperature (°C)	Temperature of the treatment solution	°C	26 °C
Water Quality - 3	Salinity	Salinity (ppt)	Salinity of the treatment solution	Parts per thousand (ppt)	36-37
Water Quality - 4	pH	pH	pH of the treatments solution	pH	8.32-8.39
Water Quality - 5	Total ammonia nitrogen	Total Ammonia-Nitrogen (mg/L)	Measured total ammonia nitrogen of each treatment solution	mg/L	<0.003-0.142
Water Quality - 6	Ammonia	Ammonia (µg/L)	Calculated ammonia of each treatment solution	µg/L	Not calculated-13.4
Embryo Results -1	Treatment	Treatment	Sediment treatment (artificial seawater with 0, 50, 100 or 150 mg/L sediment)	mg/L	0-150
Embryo Results -2	Vial number	Vial number	Vial number for each treatment replicate	n/a	1-20

Column	Variable	Label	Definition	Units	Range
Embryo Results -3	Embryo Counts	Replicate 1	Scoring results for replicate 1 of each treatment: N = normal development, U = underdeveloped, A = arrested development, M = malformed embryos, TOTAL = total number of embryos scored per vial	Number of embryos	0-100
Embryo Results - 4	Embryo counts Replicate 2	Replicate 2	Scoring results for replicate 2 of each treatment: N = normal development, U = underdeveloped, A = arrested development, M = malformed embryos, TOTAL = total number of embryos scored per vial	Number of embryos	0-100
Embryo Results -5	Embryo counts Replicate 3	Replicate 3	Scoring results for replicate 3 of each treatment: N = normal development, U = underdeveloped, A = arrested development, M = malformed embryos, TOTAL = total number of embryos scored per vial	Number of embryos	0-100
Embryo Results - 6	Embryo counts Replicate 4	Replicate 4	Scoring results for replicate 4 of each treatment: N = normal development, U = underdeveloped, A = arrested development, M = malformed embryos, TOTAL = total number of embryos scored per vial	Number of embryos	0-100

Table 8: Data Dictionary – Preliminary_experiments_and_results.xlsx

Column	Variable	Label	Definition	Units	Range
1	Date of data collection	Date	The date of the preliminary test	n/a	2/13/2019-1/27/2020
2	Coral species	Coral species	Coral species included in the test; if no coral species included, then 'none'	n/a	n/a
3	Vessel type	Vessel	The type of vessel used to hold the treatment solution in the test	n/a	n/a
4	Light source	Light source	The light source used in the test	n/a	n/a
5	Mixing	Mixing apparatus	How the treatment solution was kept mixing in the test	n/a	n/a
6	Coral support stand	Coral support	What was used to support the coral fragment in the treatment vessel	n/a	n/a
7	Time	Duration	The duration of the test	h	5-215 h
8	Sediment type	Sediment	How the sediment was prepared for the test	n/a	n/a
9	Test results	Results	Test results and conclusions about the test parameters	n/a	n/a

Table 9: Data Dictionary - Turbidity_exposure_supplies_and_equipment

Column	Variable		Label	Definition	Units	Range
1	Item used in the test		Item	The equipment or supply used in the test	n/a	n/a
2	Source and location		Source (location)	The manufacturer (source) of the supply or equipment and the manufacturer's location	n/a	n/a
3	Product information		Model or Product #	The model or other product information used to purchase the item used in the test	n/a	n/a

Parameter Information

List of major parameters included in this accession:

Parameter Description:

Parameters: Seawater turbidity
Property Type: measured
Units: nephelometric turbidity units (NTU)
Observation Category: laboratory analysis
Sampling Instrument: Hach model 2100P turbidimeter
Sampling and Analyzing Method:

Per manufacturer's instructions for the turbidity meter, collected a sample in a glass sample vial, cleaned the outside of the sample vial and placed the sample vial in the calibrated instrument. Read sample and returned sample to test vessel.

Data Quality Method:

The turbidimeter was calibrated once daily with Hach StablCal formazine standards, per manufacturer's instructions.

Parameters: Coral tissue regeneration (wound healing)
Property Type: measured
Units: square millimeters
Observation Category: laboratory analysis
Sampling Instrument: digital camera for capturing images and ImageJ plug-in tool for analyzing wound area
Sampling and Analyzing Method:

Coral fragments were removed from the treatment solution and any adhering sediment was removed with gentle aspiration of seawater. Coral fragments were imaged as described in the published manuscript and returned to the treatment. This occurred once daily.

Data Quality Method:

The methods are described in the associated manuscript (https://doi.org/10.1016/j.marpolbul.2023.115217)

Document Information

Date: 2023-09-26
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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