

Mid-Atlantic Ocean & Coastal Acidification Monitoring Inventory

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MACAN Coastal & Ocean Acidification Workshop, 9/11/2023

OCA Monitoring Inventory

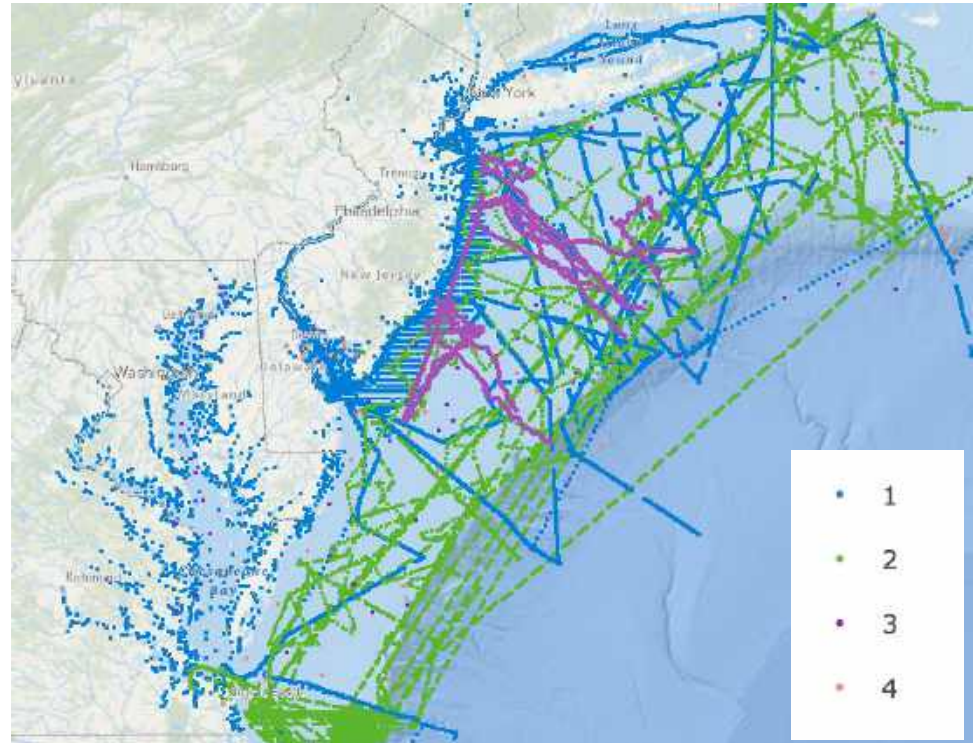
Goal: Build a comprehensive inventory of the biological, chemical, and physical OCA monitoring efforts in the Mid-Atlantic region



- Survey: Collected monitoring data via Qualtrics survey from June 2022 - June 2023
- Collated data from publicly available sources (NCEI, VECOS, etc.)

Number of Parameters

- Monitoring Priority: Measure 2+ carbonate system parameters
- 53% of sites measure 2+ parameters
- Spatial discrepancy
 - 4% of sites that monitor 2+ carbonate system parameters are coastal/estuarine



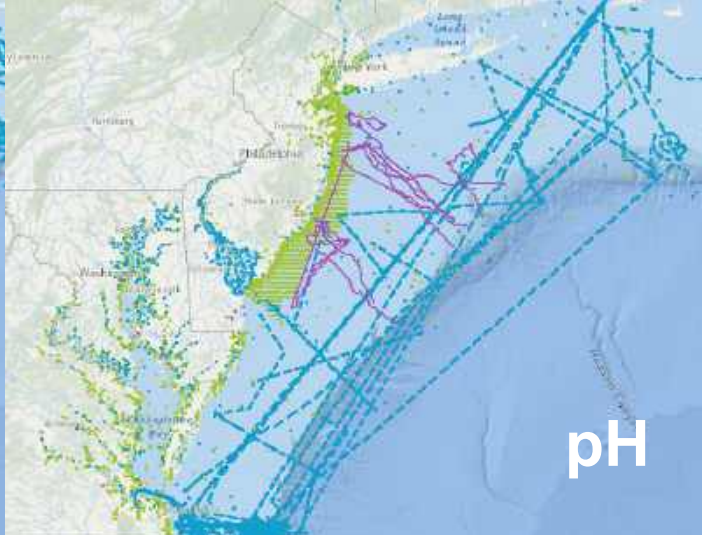
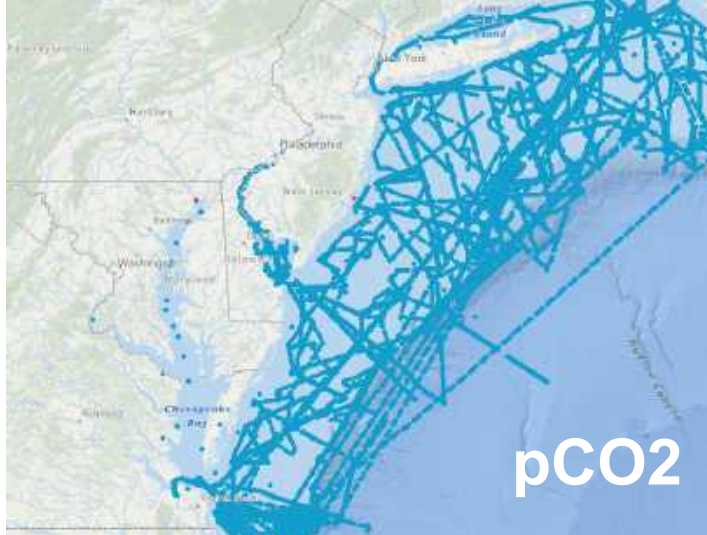
pH

pCO₂

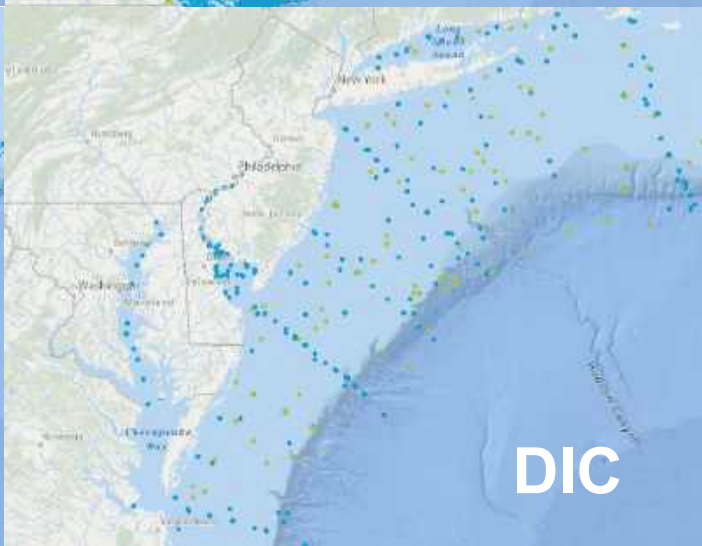
DIC

TA

Parameter Distribution

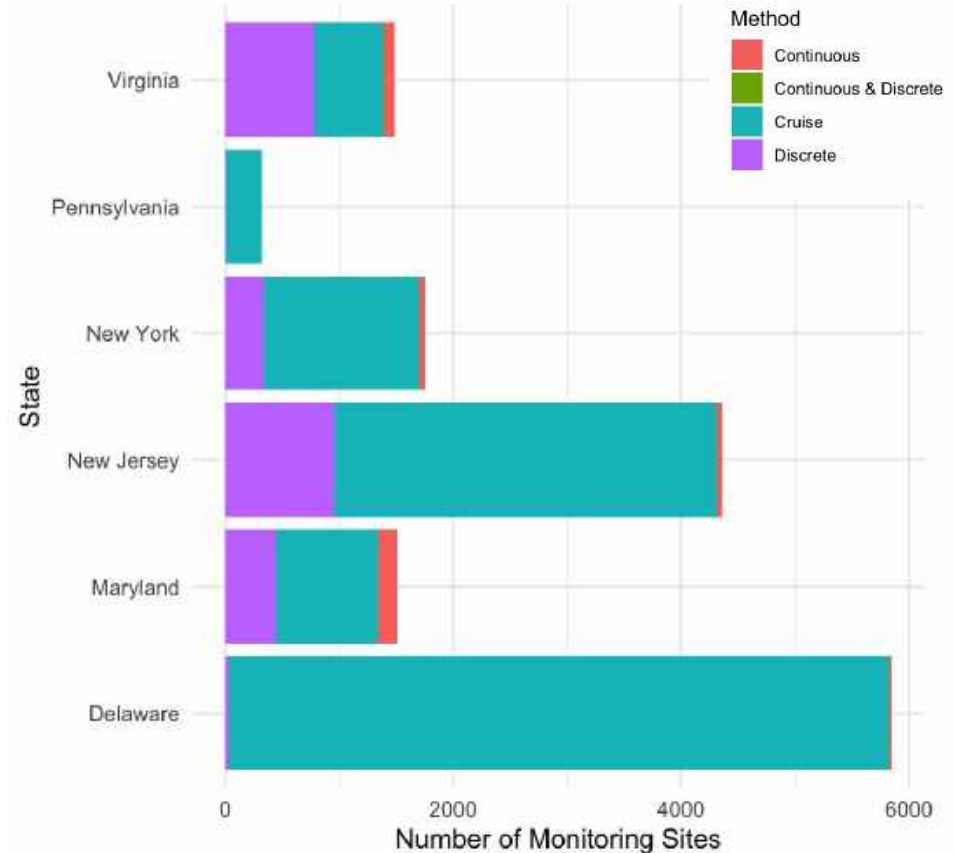


- Cruise
- Continuous
- Glider
- Discrete

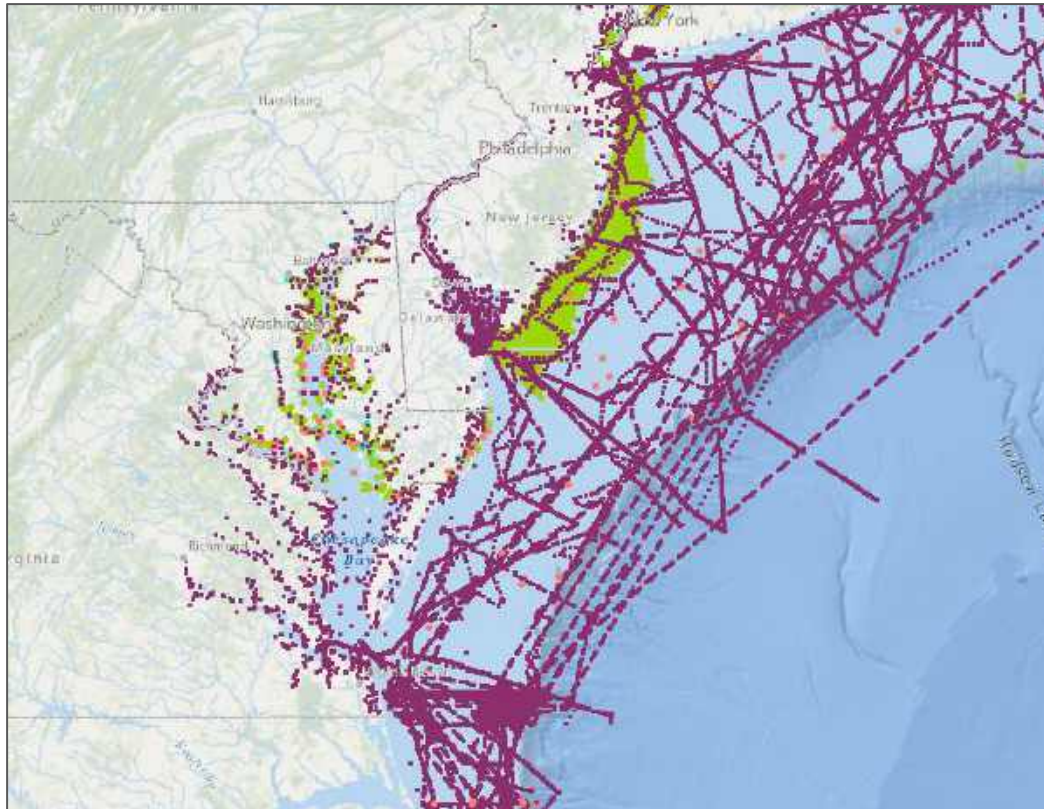


Coastal & Estuarine Monitoring

- Monitoring Priority: Increase spatial resolution of coastal zone and estuarine monitoring
 - Oyster habitats
 - Socio-economic vulnerability
- Collection type:
 - 362 nearshore continuous monitoring stations
 - 2557 nearshore discrete monitoring stations



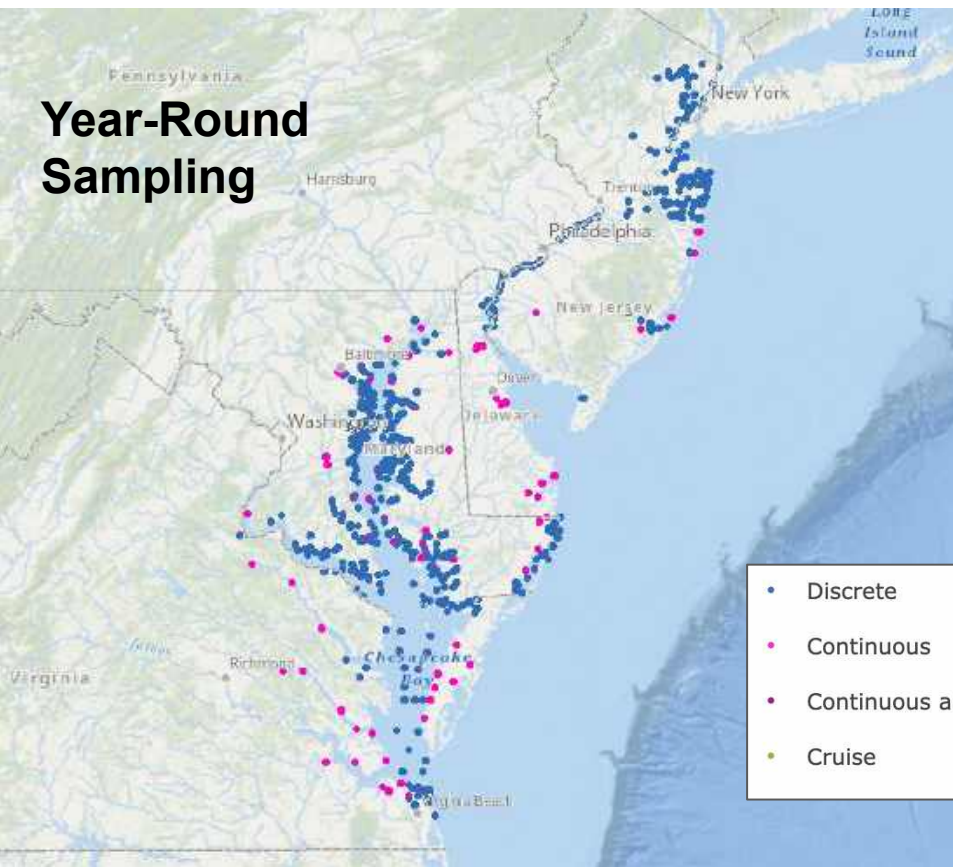
Measurement Depth



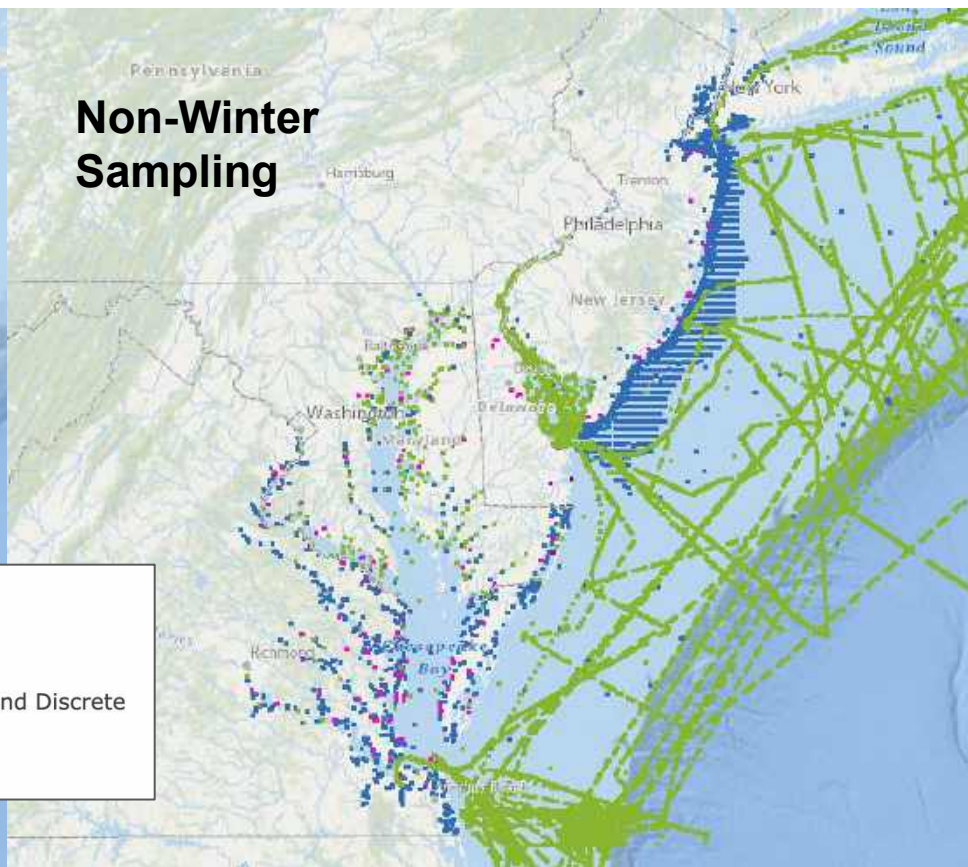
- Surface and Bottom
- Profile
- Surface, Mid-Column, Bottom
- Anchored 0.3 meters above the bottom.
- Anchored 0.5 meters above the bottom.
- Anchored 0.8 meters above the bottom.
- Bottom
- Surface

Seasonality

Year-Round Sampling



Non-Winter Sampling



- Discrete
- Continuous
- Continuous and Discrete
- Cruise

Co-location of Biological & Chemical Monitoring

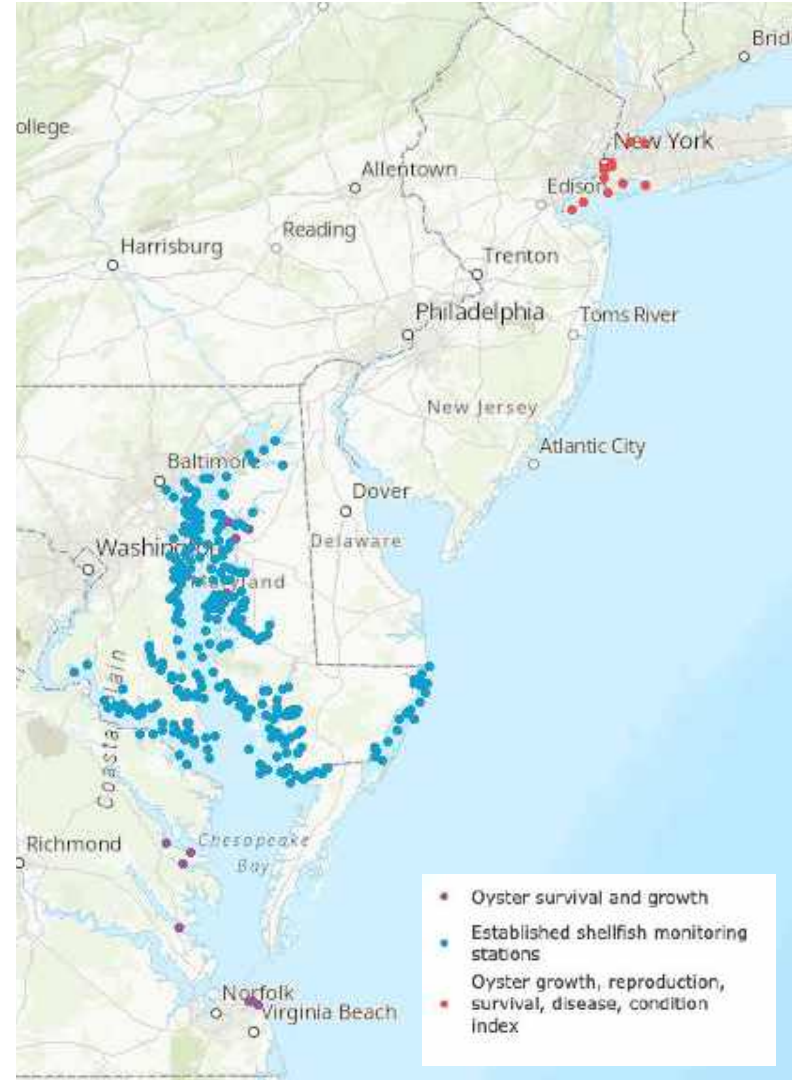
- Monitoring Priority: Pair chemical and biological monitoring temporally and spatially



Credit: Billion Oyster Project



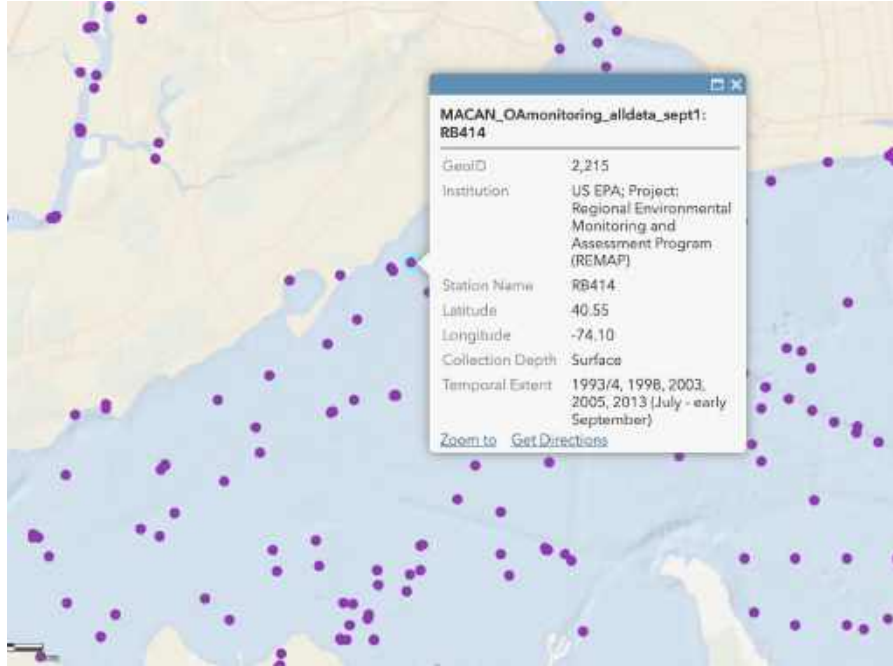
Credit: Gordon Campbell



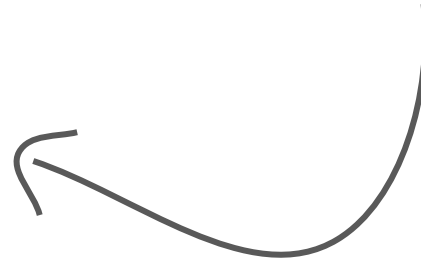
OCA Monitoring Gaps

- Temporal coverage of data
 - High frequency monitoring
 - Year-round monitoring
- Spatial resolution of monitoring
 - Discrepancies between coastal and offshore monitoring
- Co-location of chemical and biological monitoring
 - Hatcheries, oyster reefs
 - Deep sea corals
 - Benthic habitat
- Two or more parameters/ site
 - Especially coastal

MARCO Ocean Data Portal



Check out the OCA
Monitoring Inventory
data on the MARCO
Ocean Data Portal!



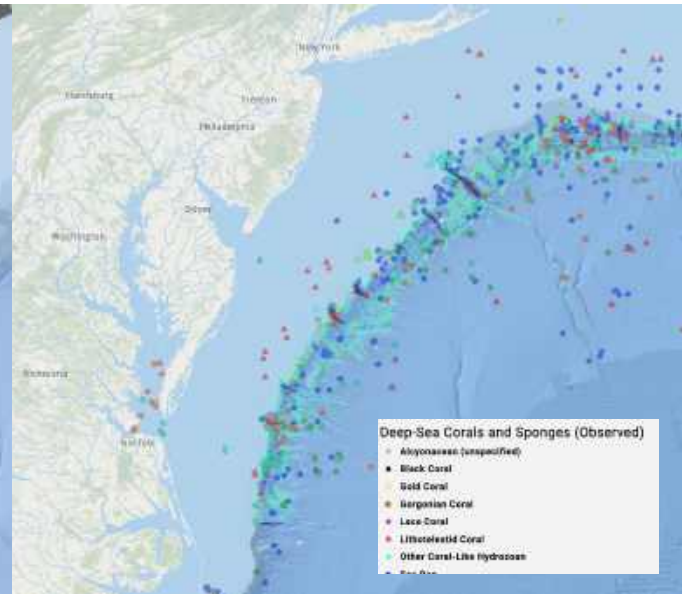
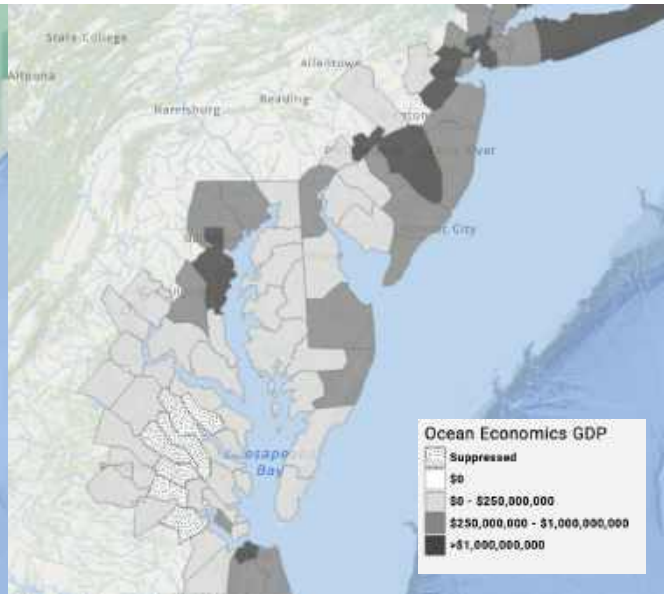
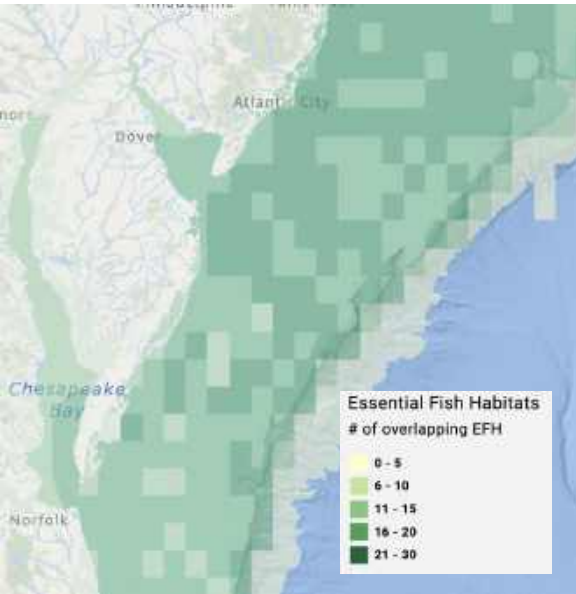
MARCO Ocean Data Portal



Temporal Extent	1993/4, 1998, 2003, 2005, 2013 (July - early September)
Collection Type	Discrete
Sensor/Station Status (as of Summer 2023)	Inactive
Sampling Frequency	Continuous: NULL ; Discrete: Every 5 years (if possible)
Carbonate System Parameters Measured	pH
Number of Carbonate System Parameters Measured	1
pH	Yes
pH Methods	Discrete: Handheld Meter
pCO2	No
pCO2 Methods	NA
TA	No
TA Methods	NA
DIC	No
DIC Methods	NA
Additional Parameters	Dissolved Oxygen, pH, Water Temperature, Salinity, Transparency (secchi), Metals in Sediment, Benthic Index of Biotic Integrity
Biological Parameters	Benthic Index of Biotic Integrity
Publicly Available?	Yes
Website	More info
Contact	NULL
Sector	Federal Agency
Season	Summer
Quality Assurance	NULL

[Zoom to](#) [Get Directions](#)

Integrations with the MARCO Data Portal



Essential Fish Habitats

Ocean GDP

Deep Sea Coral Habitat

Next Steps...

- Incorporate real-time OA data into MARACOOS OceansMap
- Visualizing data in an ArcGIS StoryMap
- OCA Decision Support Tool



Acknowledgements:

- Kirstin Wakefield, Janet Reimer, and the rest of the MACAN team
- MACAN Science Steering Committee
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- Mary Ford, Sheri Schwartz, and the rest of the MARACOOS OceansMap team
- Finally, thanks to those of you who are monitoring OA in the Mid-Atlantic!

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Thanks for listening!