RESTORE Council Monitoring and Assessment Program (CMAP)

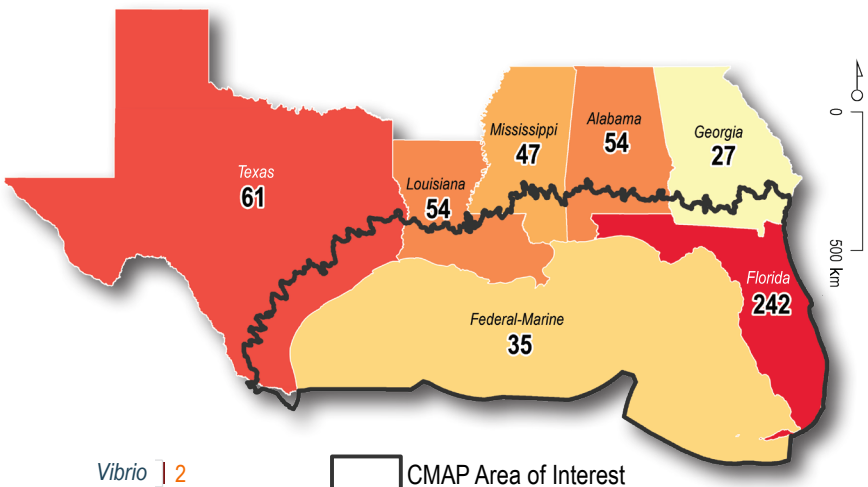
Water Quality Monitoring | Exploring CMAP Products

What is CMAP?

The RESTORE Council Monitoring and Assessment Program (CMAP), administered by the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Geological Survey (USGS), spatially and temporally inventoried programs in the Gulf of Mexico focused on water quality and habitat monitoring and mapping.

The Inventory

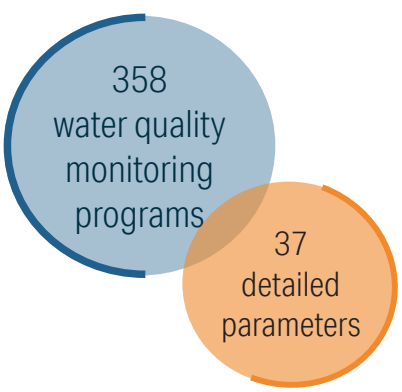
Over **12,500** program and project records were evaluated for inclusion in the Inventory. A total of **544** monitoring and mapping programs met the CMAP criteria (e.g., located in the Gulf of Mexico region, established since 1980, minimum data record of five years) and are cataloged in the Inventory. For more information, please see the Inventory report (NOAA and USGS, 2019).

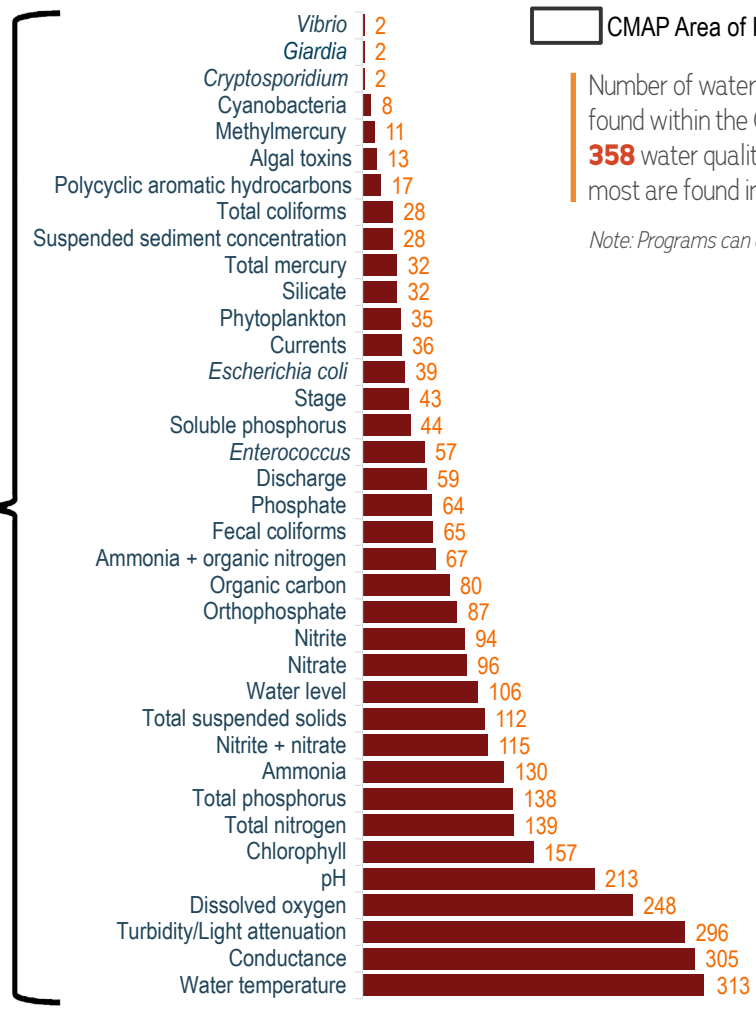


Number of water quality monitoring programs found within the CMAP Area of Interest. Of the **358** water quality programs in the Inventory, most are found in the state of **Florida** (n= **242**).

Note: Programs can occur in multiple states.

Occurrence of **water quality monitoring parameters** in the **Inventory** (NOAA and USGS, 2019)





NOAA and USGS. 2019. Council Monitoring and Assessment Program (CMAP): Inventory of Existing Habitat and Water Quality Monitoring, and Mapping Metadata for Gulf of Mexico Programs. National Oceanic and Atmospheric Administration and U.S. Geological Survey. NOAA NOS NCCOS Technical Memorandum 262. Silver Spring, MD. 155 pp. doi: 10.25923/gwpx-ff30

Project website | https://restorethegulf.gov/cmap

USGS science for a changing world

Common Monitoring Information

Protocol information from the Inventory programs and guidance documents was synthesized and evaluated to determine which parameters, methods, and units were most commonly measured and implemented within each habitat type. For example, **138** programs in the Inventory are listed as measuring **total phosphorus** in the **water column** habitat type. Of those programs, **132** had prototcol documentation containing information related to total phosphorus monitoring, and specific method information was documented for **68** of those programs.

Total phosphorus methodologies and units identified within the Inventory and additional guidance documents[1].

Method	Units	# programs documenting method
EPA 365.1	mg/L; µg/L	52
EPA 365.4	mg/L	17
SM 4500 P	mg/L; µg/L	13

EPA - U.S. Environmental Protection Agency
SM - Standard Methods

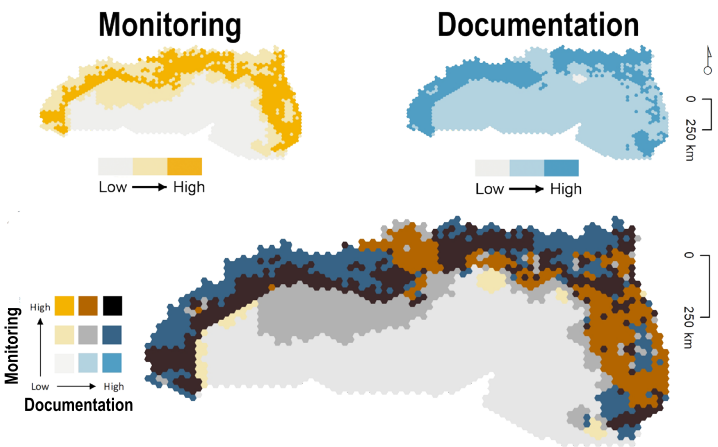
*In order to evaluate each of the programs in the Inventory, documentation level for each program was assessed. Programs are considered having **Complete Documentation** if all **8** Monitoring Program Elements (MPEs) are accessible:*

- ☑ Point of contact
- ☑ Web accessible data
- ☑ Machine readable data
- ☑ Accessible metadata
- ☑ Analytical procedures
- ☑ Collection procedures
- ☑ Quality assurance protocol
- ☑ Units

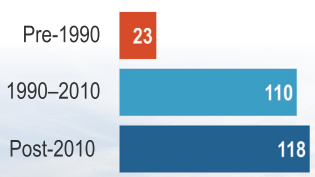
Gap Assessment: A Workflow

Where is water quality monitored in the Gulf of Mexico? → **Parameter(s) of interest?** Total phosphorus → **What is the area of interest and spatial unit?** Gulf-wide, hexagon grid → **Where is this information found?** CMAP reports and Inventory

Spatial and informational distribution of total phosphorus monitoring (n = **132**)[2]:



Temporal monitoring of total phosphorus in the Gulf of Mexico (n = **132**):



Note: Programs can occur in multiple temporal categories

Where do you go for **more information**?
What are **other avenues we can explore** after the initial gap assessment?

Webtool: https://restorethegulf.gov/cmap

Searchable online database providing reports, data releases, and information collected and analyzed by CMAP

1 NOAA and USGS. 2020a. Council Monitoring and Assessment Program (CMAP): Common Monitoring Program Attributes and Methodologies for the Gulf of Mexico Region. National Oceanic and Atmospheric Administration and U.S. Geological Survey. NOAA NOS NCCOS Technical Memorandum 285. Silver Spring, MD. 87 pp. doi: 10.25923/vxay-xz10

2 NOAA and USGS. 2020b. Council Monitoring and Assessment Program (CMAP): A Framework for Using the Monitoring Program Inventory to Conduct Gap Assessments for the Gulf of Mexico Region. National Oceanic and Atmospheric Administration and U.S. Geological Survey. NOAA NOS NCCOS Technical Memorandum 284. Silver Spring, MD. 55 pp. doi: 10.25923/mrdd-h727

Image credit : N. Enwright (USGS)

Project website | https://restorethegulf.gov/cmap