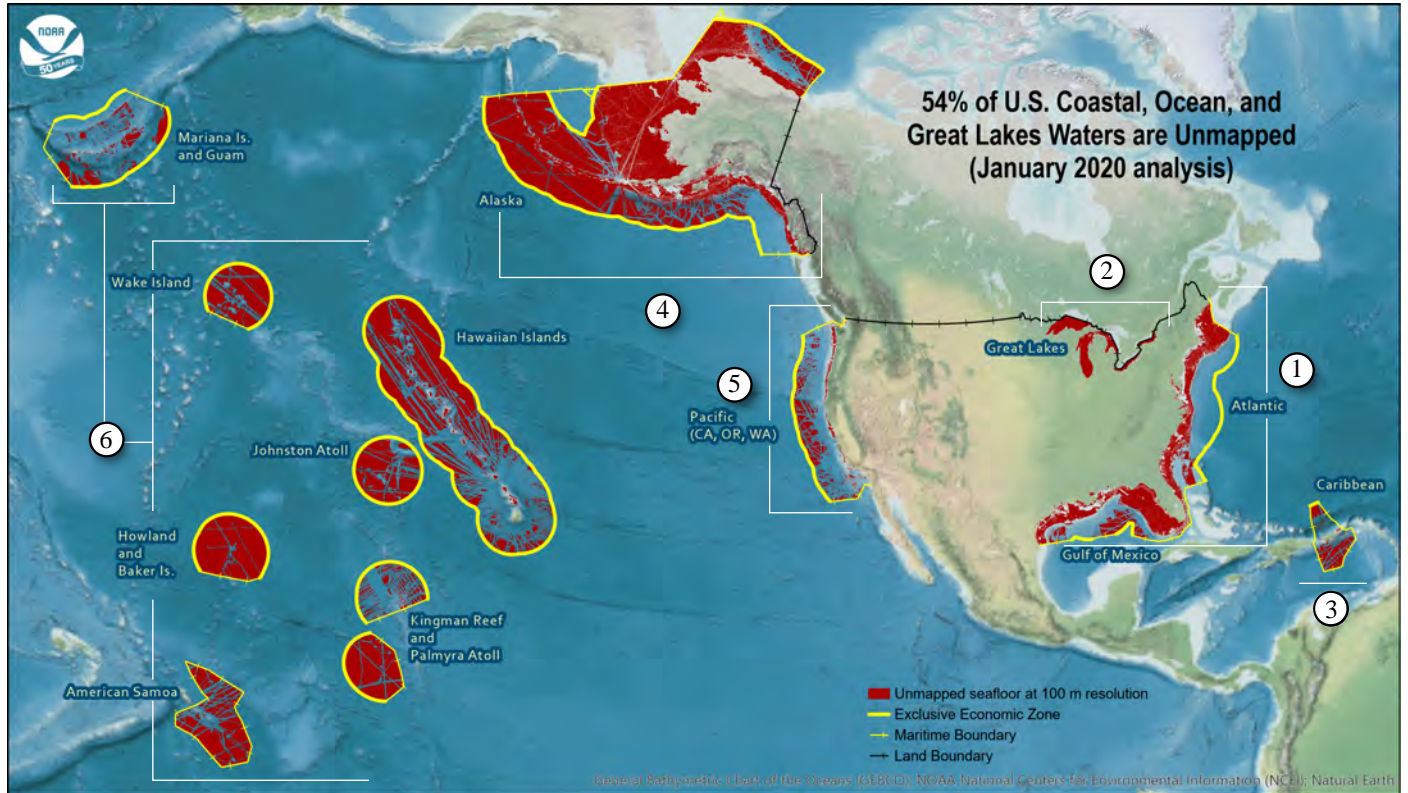


PROGRESS REPORT: Unmapped U.S. Waters

Knowledge of the depth, shape, and composition of the seafloor are foundational data elements necessary to explore, sustainably develop, understand, conserve, and manage our coastal and offshore natural resources. The 2019 **Presidential Memorandum on Ocean Mapping of the United States Exclusive Economic Zone and the Shoreline and Nearshore of Alaska** and the global **Seabed 2030** initiative make comprehensive ocean mapping a priority for the coming decade. This report, updated annually, will track our progress to this important goal.



Percent of U.S. Waters Still Unmapped in 2019

U.S. waters	Total Area = 3,592,000 square nautical miles (snm)
54%	57% - 2018 59% - 2017
1. Atlantic and Gulf of Mexico	Total Area = 472,200 snm
43%	48% - 2018 49% - 2017
2. Great Lakes	Total Area = 46,600 snm
95%	96% - 2017 2018
3. Caribbean	Total Area = 61,600 snm
42%	44% - 2018 45% - 2017
4. Alaska	Total Area = 1,080,200 snm
72%	73% - 2018 74% - 2017
5. Pacific (CA, OR, WA)	Total Area = 239,700 snm
24%	29% - 2018 29% - 2017
6. Pacific Remote Islands & Hawaii	Total Area = 1,691,700 snm
50%	53% - 2018 55% - 2017



Mapping the Seafloor

primary sources of bathymetry

Multibeam and LIDAR surveys

by trained hydrographers and other personnel from government, academia, and private sector

Coastline

Representing ~0-40 meters water depth, mapping in this area is ideal for aircraft using LIDAR technology and autonomous systems using multibeam sonar technology. Concerns about safe navigation require a high level of data accuracy.

Shallow water

Representing ~40-200 meters water depth, mapping this area is ideal for ships using multibeam sonar technology alongside autonomous systems as a force multiplier. Conditions are not usually suitable for aerial survey methods. Concerns about safe navigation require a high level of data accuracy.

Deep water

Representing water depths >200 meters, mapping this area is ideal for ships using multibeam sonar technology. Conditions are not suitable for aerial survey methods and navigation safety is not a primary concern in this area.

■ unmanned

other sources

Unmanned aerial vehicles



Satellite-derived bathymetry



Sidescan sonar



Single beam bathymetry



Crowdsourced bathymetry



Strategies for Filling Gaps

Partnerships and technology innovations are key to fulfilling seafloor mapping goals. As technology improves, there are two primary ways to contribute: (1) participate in U.S. mapping coordination activities, and (2) share your data. Publicly accessible bathymetry benefits numerous communities of users and the coordinated collection of new data promotes the integrated ocean and coastal mapping goal to "map once, use many times." For the latest status on these efforts, visit <http://iocm.noaa.gov/seabed-2030.html>.



Crowdsourced bathymetry is the collection of depth measurements from vessels with standard navigation instruments during routine maritime operations. It is a powerful source of information that helps to fill gaps where data is sparse, especially in places where government survey vessels do not have the resources to go in the next ten years.

