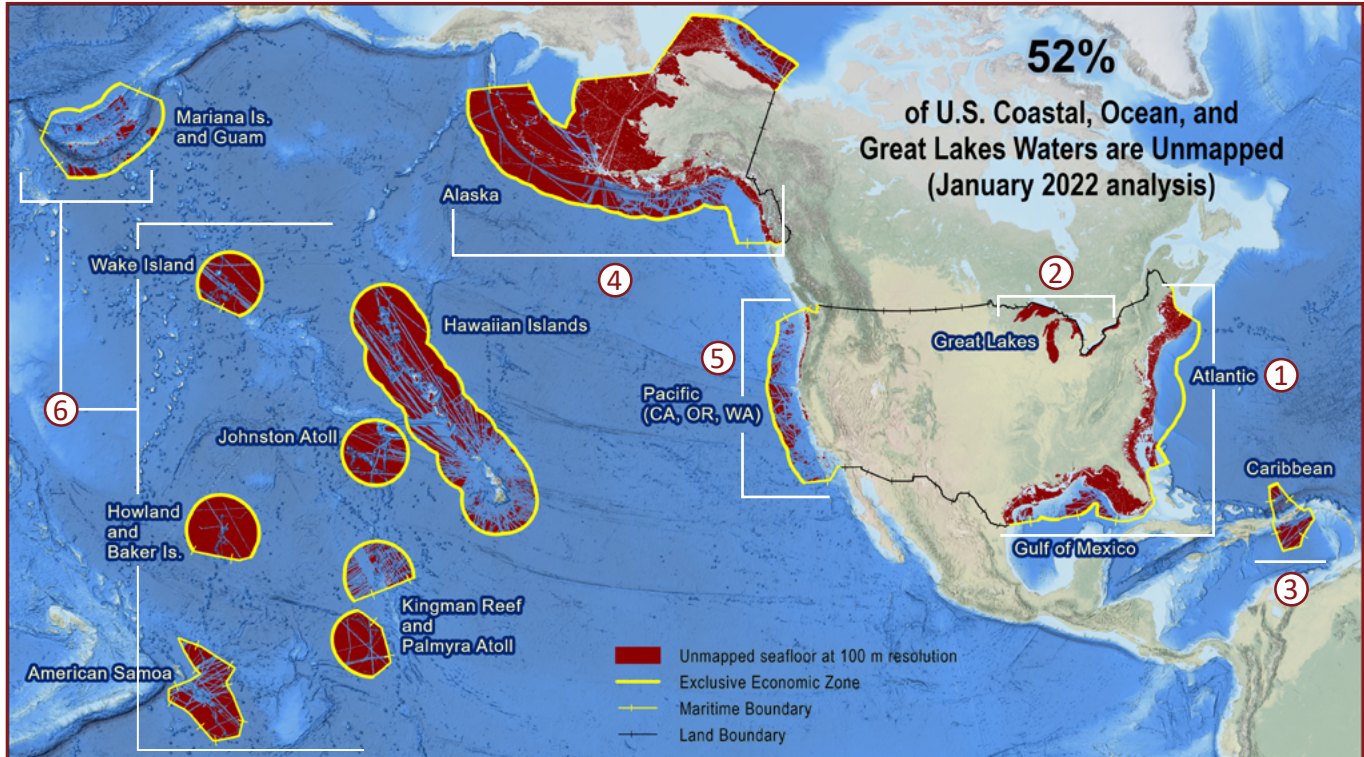
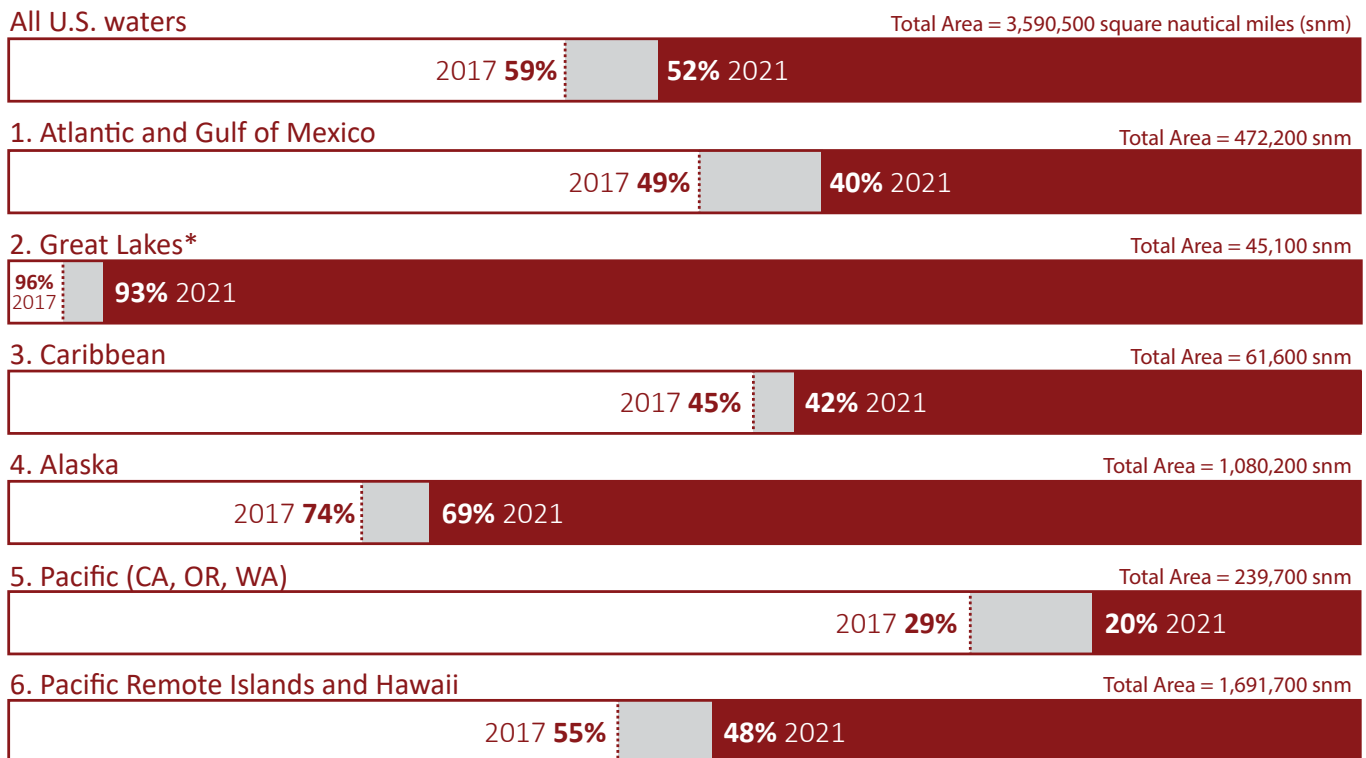


PROGRESS REPORT: Unmapped U.S. Waters

Knowledge of the depth, shape, and composition of the seafloor has far-reaching benefits, including safer navigation, hazard mitigation for coastal resilience, preservation of marine habitats and heritage, and a deeper understanding of natural resources for sustainable ocean economies. The 2020 **National Strategy for Ocean Mapping, Exploring, and Characterizing the United States Exclusive Economic Zone** and the global **Seabed 2030** initiative make comprehensive ocean mapping a priority for the coming decade. This third annual report tracks our progress toward mapping the U.S. Exclusive Economic Zone.



Percent of U.S. unmapped seafloor at 100-meter resolution in 2021



* Removing some land features, the total area of the Great Lakes was adjusted from 46,600 snm to 45,100 snm in 2021.

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.

 uncrewed

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. Navigation safety is not a primary concern in this area.

other sources

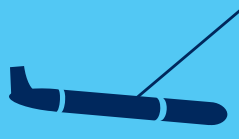
Uncrewed aerial vehicles



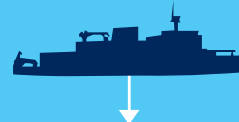
Satellite-derived bathymetry



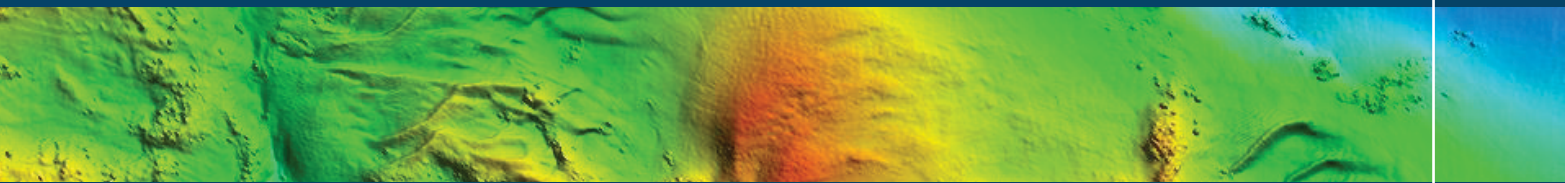
Sidescan sonar



Single beam bathymetry



Crowdsourced bathymetry



Strategies for Filling Gaps

Partnerships and technology innovations are key to fulfilling seafloor mapping goals, because just relying on efficient use of existing resources is insufficient for this monumental task. Current progress is a reflection of 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.” To track our progress, visit <https://iocm.noaa.gov/seabed-2030-status.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. For more information, visit <https://www.ngdc.noaa.gov/iho/#csb>

