Tennenbaum Marine Observatories Network and MarineGEO Program Strategic Plan

2026-2035

MarineGEO
THE TENNENBAUM
MARINE OBSERVATORIES NETWORK

Smithsonian Institution

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Foreword

The importance of the marine environment, in particular nearshore ecosystems that support incredible biodiversity and underpin the economies and well-being of hundreds of millions of people globally, cannot be overstated. However, these ecosystems face significant threats. Understanding how, where, and why these critical systems are being impacted is fundamental to supporting their conservation, management, and restoration, and a primary reason for the creation of the Tennenbaum Marine Observatories Network (TMON) and the MarineGEO network with the Smithsonian Institution.

The network was started in 2013, and of particular importance has been the development of standardized protocols for a range of nearshore ecosystems that are applicable globally. Furthermore, the collaborations and mentorship of the next generation of marine scientists have been an integral part of the last decade of work, and I look forward to seeing this continue as the network expands in the coming years.

The development of a ten-year plan for the TMON and the MarineGEO network is an important step in setting clear goals and priorities that will guide the decision-making, will strengthen impact, and will position the network for long-term success. The co-development of this strategic plan is key for achieving the shared vision: *To be a global leader in monitoring and investigating nearshore marine ecosystems to advance science, inform decision-making, and to sustain coastal systems.* The focus on clear metrics provides a useful way to increase the impact and success of the network. I look forward to seeing how new partnerships and collaborations unfold that strengthen the network and increase our understanding of nearshore ecosystems. Also, how data collected by this network can be used to promote the oceans conservation, management, and restoration through science-based decision-making.

Thanks to those devote scientists who will bring this about.

Michael Tennenbaum

The ocean supports a significant portion of the Earth's biological diversity and provides livelihoods and food security to billions of people globally. However, the ocean environment is changing rapidly, especially in nearshore areas where both marine- and land-based stressors are driving change at unprecedented rates. Globally, critical nearshore habitats have declined by a third or more since the 1950s, with losses continuing to accelerate. These losses have significant implications for coastal ecosystem resilience and functioning, affecting biodiversity and the well-being of coastal communities that depend on the ecosystem services they provide. A coordinated network of marine earth observatories is required to tackle these challenges across local, regional, and global scales. Setting baselines and monitoring trends is a foundational step in understanding how ecosystems are responding to both anthropogenic and environmental drivers of change, and subsequently how to co-develop solutions for their effective restoration and management at different spatial scales.

The Marine Global Earth Observatory (MarineGEO) is a coordinated network of monitoring partners and a platform for collaborative, large-scale field research and projects. MarineGEO was made possible by a generous founding gift from Michael Tennenbaum. The network was established in 2013 as a pan-Smithsonian Institution initiative, the Tennenbaum Marine Observatories Network, utilizing the research stations of the different science units, and has institutional observatory and monitoring partnerships around the world. MarineGEO increases our understanding of how and why nearshore marine habitats are changing at local, regional, and global scales, to inform science-based decision making.

Our Vision

To be a global leader in monitoring and investigating nearshore marine ecosystems to advance science, inform decision-making, and sustain coastal systems.

Our Mission

To build a global network of partner organizations that fosters the next generation of marine scientists who advance our understanding of nearshore marine ecosystems at local, regional, and global scales through standardized, accessible monitoring to inform science-based decision making.

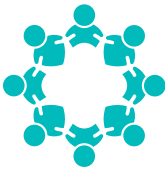
Our Guiding Principles

Advance scientific understanding of how nearshore marine habitats are changing using standardized, user-friendly, low-cost monitoring protocols combined with coordinated projects.

Strengthen capacity across career stages, institutions, and geographies through hands-on training, mentorship, and sustained engagement.

Foster diverse, cross-disciplinary and international partnerships that integrate long-term monitoring and experimental research into science-based decision-making.

Increase data usability and impact by committing to open, standardized, and well-curated datasets that translate data into knowledge that supports science-based solutions and conservation strategies.



Build an inclusive community of practice that lowers barriers to participation, strengthens long-term monitoring, enhances institutional capacity, and creates meaningful opportunities for collaboration and growth.

30 Observatories

400+ Project Partners

34 Countries

55 Eco-Regions

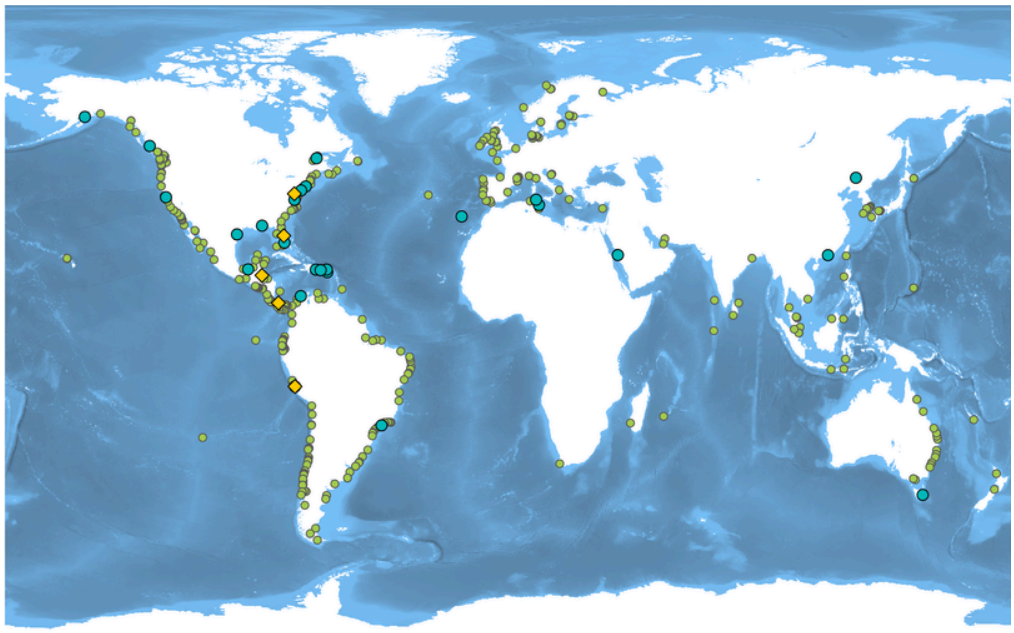


Figure 1. Distribution of MarineGEO partners. Teal circles indicate Observatory Partners, green circles indicate Project Partners, and yellow diamonds indicate the Tennenbaum Marine Observatories Network.

Organizational Structure

The MarineGEO network is a consortium of units from across the Smithsonian and partner organizations worldwide (Figure 1). The organizational structure (Figure 2) is designed to support daily operations while integrating data and project management, and to effectively address the diverse needs of its partners.

MarineGEO Central: The network is coordinated by the Smithsonian Institution, with the central team located at the Smithsonian Environmental Research Center (SERC), USA. This group is responsible for the day-to-day running of the network.

MarineGEO Executive Committee: The Executive Committee is composed of the leads of the four Tennenbaum Marine Observatory Network sites, and the leads of up to six non-Smithsonian observatories from across the network. The roles and responsibilities of the Executive Committee are guided by their charter, with their main duty being to provide guidance to MarineGEO Central.

Working Groups: Working Groups are composed of partners who guide the network's scientific priorities, facilitate coordination, communication, and community feedback, and help define strategies that advance the MarineGEO vision and mission. Current Working Groups are structured around MarineGEO's focal habitats and are primarily responsible for the development, refinement, and maintenance of standardized sampling and analytical protocols for each habitat. In addition, Working Groups identify and articulate priority research questions, including both synthesis efforts and larger, coordinated network-wide research initiatives.

Pan-Smithsonian Approach: Tennenbaum Marine Observatory Network: The Smithsonian Tennenbaum Marine Observatory Network (TMON) implements the standardized MarineGEO monitoring protocols across multiple habitats in combination with network research projects to track vital signs of biodiversity and ecosystems and diagnose the causes of changing abundance, diversity, and distribution of coastal marine life and habitats. The TMON sites are in the Chesapeake Bay (Maryland, USA), managed by SERC; the Indian River Lagoon (Florida, USA) and the Carrie Bow Cay field station (Belize), both managed by the National Museum of Natural History - Smithsonian Marine Station (NMNH-SMS); and the Bocas del Toro Field Station (Panama), managed by the Smithsonian Tropical Research Institute (STRI).

Observatory Partners (long-term): Observatory sites are responsible for implementing the core elements of the standardized MarineGEO monitoring protocols (optional components are encouraged) across one or more habitats in combination with network research projects to track vital signs of biodiversity and ecosystems and diagnose the causes of changing abundance, diversity, and distribution of coastal marine life and habitats. MarineGEO Central and the partner institution(s) establish an observatory through a signed agreement which is a long-term commitment to the collection of monitoring data and participation in network projects. Observatory partners can hold a position on the MarineGEO Executive Committee and serve on Working Groups.

Monitoring Partners (long-term): Monitoring sites include institutions, such as universities within the *Connecting Coastlines to Campuses* program, that are focused on utilizing the monitoring protocols as part of annual field courses and therefore do not adopt the network projects on a regular basis. This group implements the core elements (not the optional components, although encouraged) of the standardized MarineGEO monitoring protocols in one or more habitats to track vital signs of biodiversity in nearshore coastal ecosystems.

Project Partners (short-term): Project partners make up a flexible network of external partners who participate in collaborative network projects that address specific questions. Project partners do not commit to the implementation of long-term monitoring.

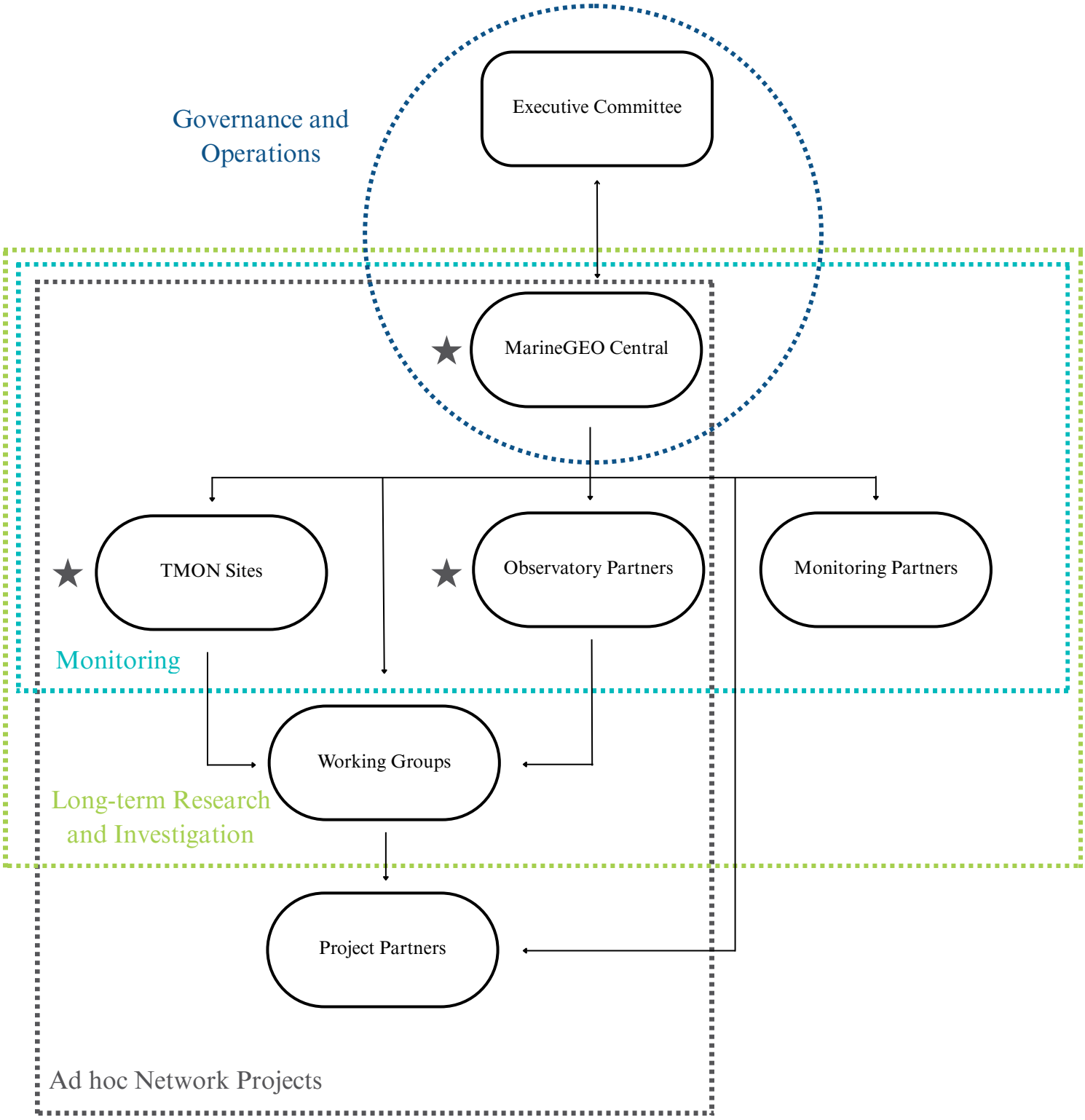


Figure 2. MarineGEO organizational structure. Stars indicate groups that are eligible to serve on the Executive Committee.

Core Science Activities

Long-term Monitoring: Measuring a suite of biological variables, long-term monitoring provides a shared, cross-network empirical foundation for detecting ecological change and informing experimental design. All observatories and monitoring sites collect comparable ecological data using standardized protocols in representative nearshore habitats, at least annually, with data curated and disseminated through the MarineGEO data system. Integrated analyses of these time-series data generate indicators of ecosystem condition and resilience, support consistent accounting of local and regional biodiversity, enable detection of trends and thresholds through time, and facilitate diagnosis of the drivers and consequences of ecological change.

Knowledge Synthesis: Data analysis, integration, and interpretation are central to transforming observations and experiments into actionable knowledge. MarineGEO's distributed observatory design spans broad environmental, biogeographic, and anthropogenic gradients enabling quantification of large-scale patterns in biodiversity, ecosystem processes, and human impacts. These spatial and temporal contrasts are used to test hypotheses about the drivers of change, identify emerging risks, and project future ecosystem trajectories. Long-term standardized monitoring, targeted cross-regional research campaigns, coordinated experiments, and integrated remote sensing products collectively provide the empirical basis for synthesis outputs that inform ecological theory, conservation planning, and management.

Network Projects: Coordinated network projects provide mechanistic tests of hypotheses about the causes and consequences of ecological change and increase inferential power by leveraging replication across environmental gradients and spatial scales. MarineGEO develops these efforts as discrete, hypothesis-driven research projects that integrate monitoring observations with standardized experimental manipulations deployed by partners throughout the network. Network projects vary temporally and thematically and are explicitly designed to address priority questions identified by the MarineGEO community, primarily by the Working Groups. Project selection follows a recurring, bottom-up process in which MarineGEO members articulate research needs, propose study designs, and pitch them to the respective MarineGEO Working Group, followed by the Executive Committee, and then MarineGEO Central. MarineGEO Central facilitates implementation by providing coordination, modest material resources, and technical and staff support to the partner leading the project.

Knowledge Sharing: The co-creation of knowledge is a critical component of the network. We facilitate the exchange of information, skills, and experiences among partners through meetings, scientific and non-scientific conferences, trainings, and workshops. These opportunities allow network partners to learn from one another, strengthen collective expertise, and enhance monitoring, research practices, and methodologies. By sharing knowledge across disciplines and sectors, the network helps translate science into practical applications that can support more informed conservation and management decisions. This collaborative approach increases the impact of our work by ensuring that research findings, local knowledge, and innovative practices contribute directly to effective resource stewardship and sustainable solutions.

Our Goals

To advance the vision and mission of MarineGEO, we have established four key goals. Each goal is supported by specific objectives and strategies designed to guide the growth, coordination, and impact of the network. Together, these goals provide a clear framework for achieving MarineGEO's scientific, capacity-building, and decision-support priorities.

Goal 1: Expand MarineGEO monitoring globally

Objective 1.1: Strengthen and increase the number of observatory and monitoring partners

Prioritize the fostering of current partners, and the deliberate expansion of MarineGEO in regions where MarineGEO provides the greatest value-add, including high-biodiversity areas, institutions with limited resources, and underrepresented geographies to improve global coverage (Figure 3). Growth will be incremental to facilitate standardized training in protocols and data pipelines, ensure data quality and integrity are maintained, and that data management and storage infrastructure can adequately support network expansion. One way expansion will be championed is through the *Connecting Coastlines to Campuses* program.

Objective 1.2: Develop and implement protocols for additional habitats

Identify ecosystems that are located within the MarineGEO network, but underrepresented, and assess where new or refined standardized protocols would provide a value-add (Table 1). Emphasis will be placed on simple, low-cost, user-friendly protocols that facilitate adoption by partners and enable monitoring in accessible nearshore ecosystems. Priority will be given to habitats that strengthen a seascape (multi-ecosystem) approach, improving our ability to understand ecological connectivity. The development of new protocols will require: (1) A clearly identified protocol champion within the network; (2) Support from a dedicated Working Group; (3) Commitment from a minimum of three sites to multi-year engagement; and (4) A pilot project, when feasible, to test protocol implementation, feasibility, and data workflows prior to broader adoption.

Objective 1.3: Enhance monitoring capabilities through emergent technologies

Assess and deploy emerging technologies to strengthen monitoring capabilities, with scalable solutions ranging from low- to high-tech applications. Priority technologies include environmental DNA (eDNA) and geospatial systems, which can generate complementary biodiversity and spatial datasets. Implement pilot projects to evaluate feasibility, ensuring sufficient staff capacity for protocol implementation, data ingestion, management, and timely delivery of outputs. These pilots will inform best practices for broader deployment at regional and global scales. In parallel, evaluate technological advances that enhance data processing and analytical capacity. In particular, the application of artificial intelligence (AI) to tasks such as automated scoring of benthic photoquadrats offers significant potential to accelerate analysis and increase consistency across large digital datasets.

North America and the Caribbean (NAC):

- High number of ecoregions, good for studying species range expansions.
- Good connections and partners with other institutions and countries to support management and policy.
- Focal region of the Smithsonian, and of interest to the State Department.

Europe (EU):

- Underrepresented area that would increase representation of temperate ecosystems.
- Concentration of scientific hubs with connections to countries outside of this region.
- Potential funding opportunities for EU institutions.

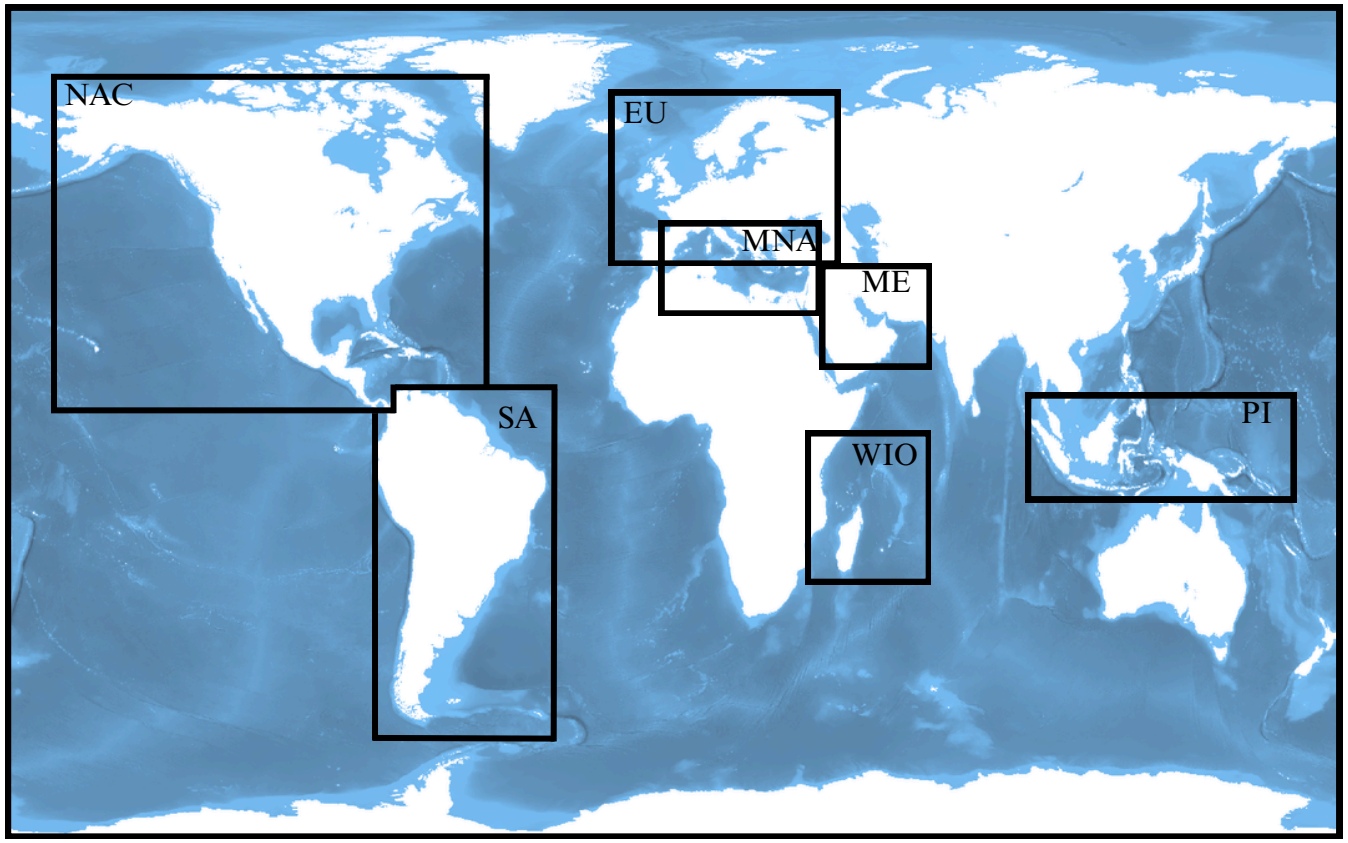


Figure 3. Potential areas of MarineGEO partnership expansion and a summary of the opportunities within each region.

Mediterranean and North Africa (MNA):

- Underrepresented area.
- Regional agreements across countries that are working together to manage marine resources.

Middle East (ME):

- Underrepresented area with very high biodiversity.
- Natural laboratory for studying ecosystems under significant environmental stress.

Pacific Islands (PI):

- Underrepresented area with very high biodiversity.
- Natural laboratory for studying ecosystems under significant environmental stress.
- A region of interest to the State Department.

South America (SA):

- High number of ecoregions, good for studying species range expansions.
- Good connections and partnerships with other institutions and countries to support management and policy.
- Focal region of the Smithsonian, and of interest to the State Department.

Western Indian Ocean (WIO):

- Underrepresented area.
- Regional agreements across countries that are working together to manage marine resources.
- Several collaborating organizations have good connections in these countries.

Habitat	NAC	SA	EU	MNA	ME	WIO	PI	Opportunities
Sandy beaches	X	X	X	X	X	X	X	• Sandy beaches are ubiquitous, easy entry points for different partners. • There is a champion within the EC, and interest from partners. • A protocol exists, would need vetting prior to adoption.
Rocky shores	X	X	X	X	X	X	X	• Rocky shores are ubiquitous, easy entry points for different partners. • Potential champion within the EC. • Protocols exist, would need vetting prior to adoption.
Kelp forests	X	X	X	X			X	• Found in around one third of coastal ecosystems globally. • Protocols exist, would need vetting prior to adoption. • Kelp monitoring network exists, potential for collaborations.
Mangrove forests	X	X			X	X	X	• There is a champion within MarineGEO Central, and interest from some partners. • A protocol exists, would need vetting prior to adoption. • Connections with other networks; Global Mangrove Alliance and the Coastal Carbon Network.
Tidal marshes	X	X	X	X	X	X	X	• Tidal marshes are ubiquitous, easy entry points for different partners. • Protocols exist, would need vetting prior to adoption. • Potential for collaborations with the Coastal Carbon Network.

Table 1. Examples of nearshore habitats which could be adopted into MarineGEO's annual monitoring. Current and potential geographies: North America and the Caribbean (NAC), South America (SA), Europe (EU), Mediterranean and North Africa (MNA), Middle East (ME), Western Indian Ocean (WIO), Pacific Islands (PI).

Goal 2: Bridge the gap between research, implementation, and policy

Objective 2.1: Improve our understanding of drivers of ecosystem change

Partner with resource practitioners to embed manipulative experiments (e.g., management and restoration interventions) within existing and newly established long-term monitoring sites. Integrating experimental manipulations with sustained observational data will improve causal attribution and quantification of interacting biotic and abiotic drivers of ecosystem change. Comparative analyses across sites and regions will identify generalizable response patterns, thresholds, and context dependencies, informing the design, scaling, and evaluation of effective management, conservation, and restoration strategies under future environmental change.

Objective 2.2: Increase the integration of science into management, policy, and decision-making

Foster and develop strategic partnerships that connect MarineGEO science with management and policy needs. Link data syntheses and analyses to the Global Biodiversity Framework and other relevant international and regional conventions. Broaden and strengthen engagement to facilitate sustained dialogue and co-production of knowledge among scientists, resource managers, policymakers, and resource users, ensuring monitoring data are translated into actionable, decision-relevant outputs. Explore the use of Key Performance Indicators (KPIs) as a pathway for including measures of ocean health that can inform public, private, and NGO sectors related to business and management practices.

Objective 2.3: Expand participation of non-academic institutions within the network

Build strategic alliances with implementing partners and resource managers to broaden spatial and thematic data coverage, increase the applied impact of MarineGEO research, and foster actionable conservation and management outcomes. Strengthen communication and capacity through targeted training sessions, webinars, and workshops that build technical skills in ecological monitoring and data use. Facilitate knowledge exchange to co-design research questions that address real-world management challenges.

Objective 2.4: Convene decision-makers and implementors

To accelerate the adoption of evidence-based solutions, we will create structured opportunities for researchers, policymakers, and practitioners to engage in meaningful dialogue, that accelerates the translation of evidence into action orientated outputs for management, restoration, and conservation. Convenings will be designed as platforms to share insights, identify implementation challenges, and co-develop actionable strategies that are both evidence-informed and practically feasible.

Goal 3: Increase data accessibility and usability

Objective 3.1: Improve data delivery to partners
Co-develop standardized, user-friendly informatics pipelines for each habitat protocol with observatory and monitoring partners to streamline data ingestion, validation, and distribution. These pipelines will automate and harmonize quality assurance and quality control processes to reduce turnaround time while ensuring data integrity, consistency, and interoperability across systems.

Objective 3.2: Maintain open-access data repositories
As per the Data Terms of Use, we will ensure all monitoring data are collated in a timely manner to provide annual data updates to an open-access data repository hosted by the Smithsonian Institution. Network project data will be embargoed for up to three years, or until the data underpinning the research have been accepted for publication in a peer-reviewed journal, whichever occurs first. In addition, all data curated by MarineGEO will be submitted to the Ocean Biodiversity Information System (OBIS) managed by the UNESCO's Intergovernmental Oceanographic Commission.

Objective 3.3: Improve data visualizations
Co-design and refine visualization tools that translate delivered data into clear, intuitive, and decision-ready products. In collaboration with partners, tailor visualization approaches to support research, management, and policy decisions, fostering meaningful interpretation and stakeholder engagement across varying technical capacities.

Goal 4: Ensure long-term sustainability

Objective 4.1: Cultivate and secure new and long-term philanthropic funding

Work with the Smithsonian Office of Advancement to understand the funding landscape. Create funders packets that provide compelling stories, quantifiable results and outcomes, and highlight the impact of donor giving. Engage donors through meaningful touchpoints, such as opportunities for first-hand field/site visit experiences and identify the most appropriate formats for recognition of contributions.

Objective 4.2: Increase MarineGEO brand recognition

Enhance awareness of MarineGEO's mission, activities, and achievements to attract a broader and more diverse range of partners. By improving brand recognition, more individuals and organizations will engage with us proactively, reducing the need for active recruitment. This will be achieved by: (1) Amplifying Communication: Ensure that the potential partners understand what MarineGEO does, how they can get involved, and the impact of our work; (2) Strengthening Storytelling: Improve how we tell the MarineGEO story, highlighting the significance of marine monitoring, research outcomes, and the value of our network contributions; and (3) Increase Partner Visibility: Showcase our current partners, their work, and the collaborative achievements, emphasizing the benefits of joining MarineGEO.

Objective 4.3: Implement cross-network projects

Actively develop and support cross-SI and cross-network grant initiatives that enable partner-led teams to pursue funding opportunities across multiple geographies. Provide targeted, flexible funding to cover partner monitoring costs, support shared postdoctoral fellows, and launch coordinated research programs that operate regionally and at a global scale.

Objective 4.4: Expand MarineGEO staffing

Continue to build out the MarineGEO team to ensure that we can meet the needs of our partners and implement the program's mission and vision. Explore the potential for co-funded postdoctoral researchers and technician positions that are shared between MarineGEO partners who facilitate day-to-day operations and foster the network through direct collaborations. Build capacity in strategic areas that facilitate the expansion of the network to new geographies, habitats, and/or research areas that support the goals and objectives of the network.

Metrics of Success

To effectively implement the MarineGEO vision, goals, and objectives, we have compiled a total of 48 Specific, Measurable, Achievable, Realistic, and Time-bound (SMART) indicators. These indicators will allow us to monitor our progress and highlight where greater investment is required if we are to achieve our targets by the end of 2035.

Goals	Objectives	SMART indicators
1. Expand monitoring globally	*1.1: Strengthen and increase the number of observatory and monitoring partners*	*1.1A:* Host 4 (four) training workshops (protocols, data carpentry) and at least 1 (one) writing workshop per year.
		1.1B: Hold at least 1 (one) all-hands meeting per year to maintain connections across the network.
		1.1C: Engage Working Group members to contribute towards a protocol of peer-reviewed publication. Working Groups should meet monthly and aim to submit and/or publish 1 (one) paper every 2 (two) years.
		1.1D: Expand the number of observatory partners and monitoring partners by at least 10 (ten) each year, with a focus on underrepresented geographies (Figure 3).
	1.2: Develop and implement protocols for additional habitats	*1.2A:* Develop and implement protocols for up to 3 (three) new habitats over the course of 10 (ten) years (Table 1).
		1.2B: Seek strategic alliances with existing networks to ensure synergies across protocol development and implementation.
		1.2C: Conduct training of at least 30 (thirty) people in each MarineGEO protocol every 2 (two) years.
		1.2D: Train at least 5 (five) professors in MarineGEO protocols and data carpentry through the *Connecting Coastlines to Campuses* program framework, each year.
	1.3: Enhance monitoring capabilities through emergent technologies	*1.3A:* Develop at least 5 (five) projects that increase our data analysis capacities using novel technologies (e.g., scoring of photoquadrats with new AI tools) and implement where successful to promote the scaling of different monitoring protocols, over the course of (ten) years.

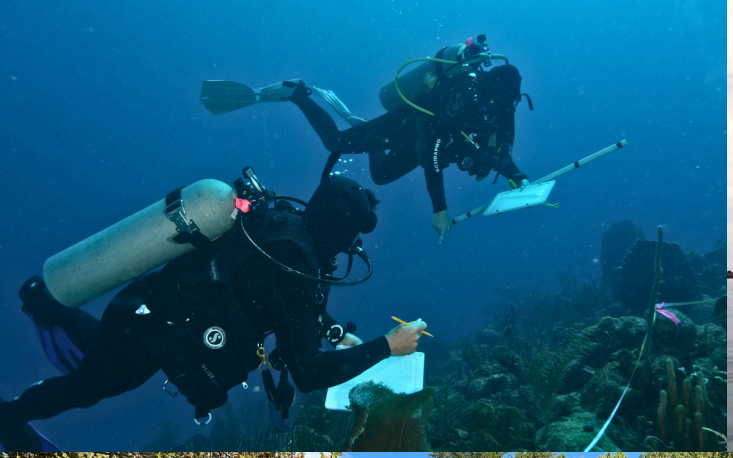
Goals	Objectives	SMART indicators
1. Expand monitoring globally	*1.3: Enhance monitoring capabilities through emergent technologies*	*1.3B:* Develop a soundscape monitoring strategy by the end of 2027 and implement in at least 5 (five) sites across a latitudinal gradient over the course of 10 (ten) years, if deemed viable.
		1.3C: Develop an environmental DNA (eDNA) monitoring strategy by the end of 2028 and implement in at least 10 (ten) sites across environmental gradients over the course of 10 (ten) years, if deemed viable.
		1.3D: Develop a seascape-scale telemetry monitoring strategy by the end of 2032 and implement in at least 5 (five) sites across a latitudinal gradient over the course of 10 (ten) years, if deemed viable.
		1.3E: Develop an approach for 3D structure monitoring and analysis using emergent technologies (e.g., AI), over the course of 10 (ten) years.
2: Bridge the gap between research, implementation and policy	*2.1: Improve our understanding of drivers of ecosystem change*	*2.1A:* Have all partners monitor relevant habitats at least annually and submit data within 12 months to the public data repository.
		2.1B: Engage Working Group members to contribute towards a protocol or peer-reviewed publication. Working Groups should meet monthly and aim to submit and/or publish 1 (one) paper every 2 (two) years.
		2.1C: Produce 4 (four) synthesis publications documenting biodiversity trends across regional and global gradients, by 2035.
	2.2: Increase the integration of science into management, policy, and decision-making	*2.2A:* Attend annual, public events that allow scientists to engage with community stakeholders, managers, and lawmakers (e.g., Capitol Hill Ocean Week).
		2.2B: Co-develop interfaces/dashboards with end users, both academic and non-academic partners, to provide data in formats that are useable for scientific research and for informing management, for each habitat by the end of 2028.
		2.2C: Implement MarineGEO methods at 10 (ten) sites to assess management interventions (e.g., restoration sites) by 2030.

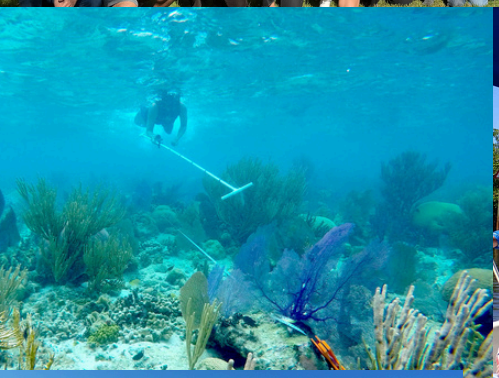
Goals	Objectives	SMART indicators
2: Bridge the gap between research, implementation and policy	*2.3: Expand participation of non-academic institutions within the MarineGEO network*	*2.3A:* Partner with at least 5 (five) non-governmental organizations (NGOs) by 2030.
		2.3B: Have at least 4 (four) NGOs participating in 1 (one) activity each year (e.g., workshops, research projects).
	2.4: Convene decision-makers and implementors	*2.4A:* Host at least 1 (one) session at a high-level conference each year (e.g., World Conference on Marine Biodiversity).
		2.4B: Co-host 1 (one) side event at a major conference or high-level event, every other year.
3: Increase data accessibility and useability	*3.1: Improve data delivery to partners*	*3.1A:* Develop a centralized repository for hosting datasets with uniform formatting.
		3.1B: Develop publicly available tools for quality assurance and quality control (QA/QC) of data collected with MarineGEO protocols.
		3.1C: Establish an access-controlled partner data portal (e.g., SharePoint site) by 2027, where all MarineGEO partners can view and download relevant monitoring and project data prior to public release.
		3.1D: Deliver data visualization reports to partners within a month post-data submission, barring data quality issues, for seagrass, oyster, and fouling protocols (by 2027) and coral reefs and sandy beach habitats (by 2028).

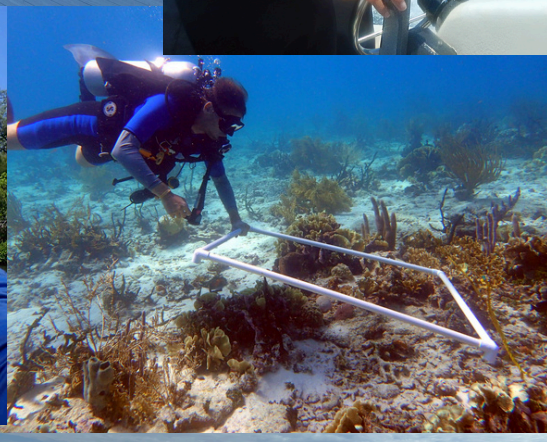
Goals	Objectives	SMART indicators
3: Increase data accessibility and useability	*3.2: Maintain open-access data repositories*	*3.2A:* Leverage existing open-access remote-sensing data (e.g., Copernicus) to bolster synthesis projects.
		3.2B: Publish MarineGEO monitoring datasets following FAIR principles to relevant data repositories, including Smithsonian-maintained repositories where possible.
		3.2C: Update MarineGEO data resources that are ingested by data aggregators such as OBIS/GBIF, using community-developed vocabularies, especially for Essential Ocean Variables (EOVs), annually.
		3.2D: Provide coordination and resources for aligning non-MarineGEO collected data relevant for EOVs to the DarwinCore format and assist in ingestion to GBIF/OBIS.
	3.3: Improve data visualizations	*3.3A*: Integrate all habitat and community types into existing QA/QC and visualization workflows and reports by 2028.
		3.3B: Launch an interactive dashboard integrating all MarineGEO monitoring programs, allowing users to explore where data has been collected and filter by site, habitat, year, and variable, with options for downloads in relevant formats, by 2028.
4. Ensure long-term sustainability	*4.1: Cultivate and secure new and long-term philanthropic funding*	*4.1A:* Host at least 1 (one) donor event every other year.
		4.1B: Secure at least 1 (one) new philanthropic donor every other year.

Goals	Objectives	SMART indicators
4. Ensure long-term sustainability	*4.1: Cultivate and secure new and long-term philanthropic funding*	*4.1C:* Secure at least 2 (two) grants from foundations or other competitive sources every year.
	4.2: Increase MarineGEO brand recognition	*4.2A:* Engage at least 10 (ten) partner organizations in the creation of at least 4 (four) joint content creation or co-promotion of MarineGEO activities through social media or other public outlets, every year.
		4.2B: Create story maps for each habitat with the associated Working Group by 2027; update these as new outputs and outcomes arise.
		4.2C: Achieve 800 followers on each social media platform by the end of 2027 and subsequently increase our social media following by at least 5% each month.
		4.2D: Host at least 1 (one) session at a high-level conference each year (e.g., World Conference on Marine Biodiversity).
		4.2E: Co-host 1 (one) side event at a major conference or high-level event, every other year.
	4.3: Implement cross network projects	*4.3A:* Conduct at least 1 (one) field-based network project each year, led by a Working Group.
		4.3B: Conduct at least 1 (one) synthesis/review project every year, led by one of the Working Groups. Aim to engage graduate students and postdoctoral researchers from across the network to contribute and lead peer-reviewed publications.

Goals	Objectives	SMART indicators
4. Long-term sustainability	*4.4: Expand MarineGEO staffing*	*4.4A:* Hire a Chief Scientist to provide greater coordination for monitoring and research activities.
		4.4B: Work with Smithsonian units to co-fund research scientist positions at each TMON site.
		4.4C: Hire at least 1 (one) post-doc with subject expertise in at least 1 (one) nearshore habitat of interest every 2 (two) years.
		4.4D: Work with partners to co-fund shared post-docs that can be located with observatory Partners around the network.
		4.4E: Ensure all current and newly onboarded technicians are trained in multiple, complementary MarineGEO protocols.





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