

MARINE ECOSYSTEMS RISK TEAM

CLIMATE SCIENCE FOR THE NATIONAL MARINE SANCTUARIES |

CPO.NOAA.GOV/MERT

Each sanctuary is uniquely and significantly sensitive to climate variability and change.

The national marine sanctuaries (NMS) represent over 2 million km² of underwater park area, managed by the Office of National Marine Sanctuaries (ONMS), and are a strong public access point for NOAA science and products. ONMS is interested in longer climate timescales and is highly motivated to address climate change, which is one of, if not the major, risk factor for each sanctuary.

Climate change is currently addressed in a heterogeneous manner across the NMS System. Some sanctuaries have climate change deeply integrated into their activities and Management Plans, and some are not yet significantly focused on climate change.



Greater Farallones National Marine Sanctuary

There is a limited body of research to inform sanctuaries climate work.

Only 1,200 journal articles with a focus on sanctuaries have been published since 1979, and most are focused on species biology or oceanography. Only 166 articles are focused on climate and the majority of those are about ocean acidification.

This leaves gaps in understanding of other climate influences on the sanctuaries system.

What are sanctuaries climate needs?



Assessable Research



Human Capacity



Monitoring & Projections



Climate Outreach

CPO's strengths are relevant to sanctuaries needs and gaps.

NOAA's Climate Program Office (CPO) has limited investment and engagement with the stewardship side of NOAA's mission. CPO's strengths in Earth System Science, Climate and Societal Interactions, and Communications and Education are relevant to:

- sanctuaries science needs (e.g. climate change vulnerability; assessment; physical, chemical, and biological change),
- existing sanctuaries-relevant research and development structures,
- capability and applied research gaps (e.g. applied modeling, monitoring), and
- outreach needs (climate messaging).



The map shows the 14 national marine sanctuaries and 2 marine national monuments in the sanctuaries system. These underwater parks protect iconic cultural sites, such as the Civil War ironclad USS Monitor shipwreck, and key natural resources, such as humpback whale habitat.

How will the Marine Ecosystems Risk Team address sanctuaries climate needs?

Integrated activities to address sanctuaries needs and build new relationship

CPO’s Marine Ecosystems Risk Team (MERT) proposes to reinforce and expand the **application of climate science** in national marine sanctuaries activities to support NOAA’s **stewardship mission**.

Through a set of four integrated activities, MERT will create and support a **strong two-way relationship** with the Office of National Marine Sanctuaries (ONMS), which has **clearly identified climate needs** that are in CPO’s wheelhouse to address, and increase collaboration between CPO and other NOAA partners in support of this effort.

1. Research and Information Needs



Channel Islands National Marine Sanctuary

CPO will focus a research investment to better understand, monitor, and simulate integrated and cascading climate effects on sanctuaries. This activity will primarily center around the identification of climate science and information needs of national marine sanctuaries and the ways that these intersect with the capacity, products, and expertise of NOAA Research (OAR) labs and programs.

A series of focus groups will bring together sanctuary research and climate leaders from each ONMS region (East Coast and Great Lakes, West Coast, Pacific Islands) to identify climate research and information needs and priorities. The identified priorities and needs will serve as the focus of discussion for a workshop that will bring together research and climate staff from sanctuaries and OAR labs and programs to further hone and develop climate research priorities, products, and partnerships.

2. Visiting Climate Scientist



Monitor National Marine Sanctuary

CPO will co-support a Visiting Climate Scientist with OMNS for greater sanctuaries engagement on climate, to provide additional support for other activities in this proposal, and to help continue developing the ONMS-CPO relationship. The Visiting Scientist will help extend CPO’s efforts and provide a critical backbone for climate across sanctuaries.

3. Communication & Education



Hawaiian Humpback Whale Sanctuary

Due to limited capacity to integrate climate messaging into sanctuaries outreach, CPO will increase collaboration between its Communication, Education, & Engagement Division and the National Ocean Service/ONMS. This will help provide a capability to communicate the important role of climate in sanctuaries management for improved public awareness and understanding.

4. Monitoring & Indicators



Flower Garden Banks National Marine Sanctuary

CPO will provide support for the National Marine Ecosystems Status platform and connect it with the National Climate Assessment (NCA) to provide an outlet for sanctuaries climate monitoring and data products. This will be a foundational component of an Oceans Report Card and provide marine ecosystem and socioeconomic indicators for the NCA.

MERT works with NOAA and non-NOAA partners to achieve these goals.