

**POLICY GUIDANCE  
OFFICE OF NATIONAL MARINE SANCTUARIES**

**CLIMATE CHANGE**

**Updated March 2009**

**PURPOSE**

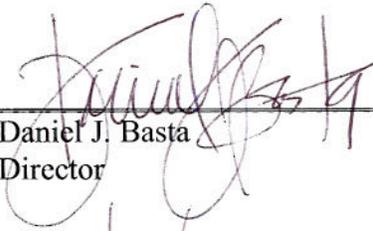
The purpose of this policy is to present how the Office of National Marine Sanctuaries (ONMS) will address the issue of climate change impacts on marine life, given the ONMS's best understanding of the issue and availability of response options. It is made to provide direction and/or guidance for conservation management actions for the ONMS, and will be updated as necessary.

**DEFINITION**

For the purpose of this policy, climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity. This definition is consistent with the Intergovernmental Panel on Climate Change (IPCC) usage as stated in the Contribution of Working Group I to the Fourth Assessment Report of the IPCC – Summary for Policymakers.

**POLICY**

The ONMS is mandated by Section 301 of the National Marine Sanctuaries Act (NMSA), to protect biological communities and natural habitats within sanctuaries, promote scientific research, enhance public awareness, and cooperate with global programs. The ONMS, therefore, will strive to address, to the best of our ability, and in cooperation with NOAA and other partners, the potential effects of global climate change on sanctuary resources.

  
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Daniel J. Basta  
Director

3/17/09  
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Date

## BACKGROUND

Climate is generally defined in terms of the probability distribution of weather conditions. More specifically, it relates to the probability of specific events both historically and in the future. Earth's climate has varied across timescales, ranging from seasons to years, from decades to centuries, and beyond. Short-term climate events (e.g. those that occur on seasonal-to-interannual timescales) have been clearly recognized and documented by scientists, historians, and the general public. Examples of modern climate events include the powerful 1997-1998 El Niño-Southern Oscillation (ENSO) and the drought in the southwest United States over the past several years. While these and other climatic fluctuations have had a significant impact on humans and ecosystems in the shorter term, scientists are now monitoring and striving to understand and project the impact of larger scale, longer-term changes in climate. These changes are likely to have cascading impacts on regional conditions that, in turn, will affect the humans and ecosystems that inhabit them. The Summary for Policymakers of the Working Group II Contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report entitled *Climate Change 2007: Climate Change Impacts, Adaptation and Vulnerability* identifies several potential impacts of climate change on the people and natural systems of coastal regions as a result of rising sea levels, coastal erosion, changes in sea surface temperature, and increased flooding. The impacts of climate change on coastal ecosystems can render them more vulnerable to damage caused by other stressors both natural and anthropogenic. In order to increase the resilience of coastal marine sanctuaries in the face of climate change, interdisciplinary research conducted in partnership with stakeholders is an important step in the development of an enhanced understanding and the associated decision support products and tools. As the research involved in studying global climate change and its impact on ecosystems requires decades of data collected throughout the world, NOAA will continue to work with the global community, as well as to conduct research within the national marine sanctuaries.

NOAA's Climate Program Office (CPO) spearheads the agency's mission to understand and describe climate variability and change to enhance society's ability to plan and respond. Through its Sectoral Applications Research Program, the CPO is funding several projects focused on the impact of climate change on coastal ecosystems and communities, and the development of decision support tools and resources ([http://www.climate.noaa.gov/cpo\\_pa/sarp/](http://www.climate.noaa.gov/cpo_pa/sarp/)). ONMS will work with CPO and other partners to assess the extent of climate change impacts on sanctuary resources and how NOAA and ONMS might help mitigate these impacts.

Specific research projects are currently being conducted at many national marine sanctuaries that either directly or indirectly relate to the issue of climate change. Monterey Bay National Marine Sanctuary uses a program called Sanctuary Integrated Monitoring Network (SIMON) to study El Niño, upwelling, California current, etc. This long-term monitoring project is important to the sanctuary for surveying and

characterizing habitats, and assessing the impact of natural processes or human activities on specific resources. Monterey Bay also conducts research on the changes associated with global change through the Monterey Bay Ocean Time Series Observations. Although more research may be needed, current ideas support that ocean temperature is rising; subsurface nitrate concentration, chlorophyll and primary production are decreasing; and there has been a noted shift in species assemblages.

The Gulf of the Farallones National Marine Sanctuary uses a collection of four arrays to measure water column temperature, providing information used to track water mass movements affecting the recruitment of key species to coastal habitats. Water column temperature information, especially collected steadily over a long period of time, can be used to study global climate change.

The Florida Keys National Marine Sanctuary (FKNMS) has issued a long list of research permits for projects relating to global climate change, such as: *The Effect of Climate Change and Rising Nutrient Levels on the Health of Selected Reefs in the Eastern Caribbean*, and *Global Climate Change and Coral Recruitment*. Other projects permitted for the FKNMS deal more specifically with coral bleaching and other coral reef issues, which much of the time directly relate to rising water temperatures and ocean currents, caused by changes in global climate.

The ONMS is developing a long-term initiative with scientific, education and outreach, management, and operational aspects that will move the program forward in addressing the issue of climate change impacts at individual sanctuaries, in the regions, and on national and global scales.