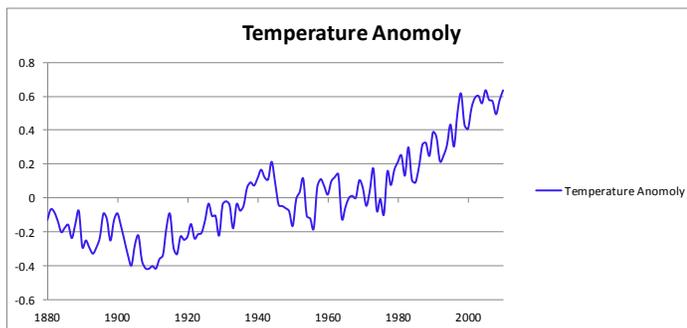


# Adaptation Planning for Climate Change in Integrated Natural Resources Management Plans

## DoD and Climate Change

The U.S. Department of Defense's (DoD) Natural Resources Program supports the military's combat readiness mission by ensuring continued access to realistic habitat conditions, while simultaneously working to ensure the long-term sustainability of our nation's priceless natural heritage. Global mean temperatures have increased significantly over the last century, causing changes in local temperature and precipitation, and resulting in widespread effects on the ~25 million acres of land that DoD stewards. DoD understands that managing these threats against the vulnerabilities of species and ecosystems is a central tenet of climate change adaptation. Impacts that must be considered include shifts in species' ranges and distributions, changes in phenology, rising sea levels, and variations in ecological processes such as drought, fire, and flood. New natural resources guidance from DoD (DoD Instruction [DoDI] 4715.03, March 2011) requires the Military Services to consider climate change in their Integrated Natural Resources Management Plans (INRMPs) to help mitigate impacts on military installations. The 2011 Quadrennial Defense Review and the Council on Environmental Quality's administrative guidance on NEPA documents also provide climate change policy and guidance.



*Global mean annual temperatures (°C) over land and ocean indicate increasing global temperatures over the last century.*

## Addressing Climate Change

One new approach that will help the Military Services identify future climate change priorities on installations involves developing vulnerability assessments. Climate change vulnerability assessments typically determine (1) the sensitivity of a species or system to changes in the climate, (2) the level of exposure to change, and (3) the adaptive capacity of the species or system, in the context of existing threats. This information helps natural resources managers develop effective strategies to promote resilient and sustainable conservation targets, as well as manage for change when conditions exceed a species' or community's ability to recover.

## INRMPs and Climate Change

How to effectively address potential impacts to changing climate conditions in installation INRMPs is covered in Enclosure 8 of DoD Manual 4715.03, November 2013. The steps below can help the Military Services prepare and/or update their installation INRMPs in compliance with DoDI 4715.03, while also leaving room for individual and regional strategies to enact an adaptive management approach.

**Physical Environment:** This section of the INRMP should describe the climate, any available historical regional trends, and a discussion of future climate or sea level rise projections relevant to the region.

**Management Strategies:** This section of the INRMP should discuss sustainability in the context of climate change. This discussion should describe how developing and updating vulnerability assessments supports short- and long-term management decisions.

**Partnerships:** INRMPs should discuss regional partnerships and collaboration to develop joint vulnerability assessments and adaptation strategies.

**Additional Information:** Natural resources managers on military installations should incorporate information and strategies from other programs into their INRMPs (e.g., facilities management, test and training) to assess climate change impacts or develop adaptation strategies.

## Summary

DoD understands that there are many challenges and levels of uncertainty associated with managing for climate change. It is difficult to model the extremely complex processes that constitute climate and species biology. Varied species and ecosystem responses to management practices, ecological processes, and changing climatic parameters all play a role in better understanding climate change impacts on natural resources. To address this wide range of factors, DoD will continue to rely upon adaptive management as a primary tenet of natural resources management to help mitigate climate change impacts on installations in years to come.

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