

Resilience and Climate Change Adaptation for the Department of Defense



AECOM has a full understanding of the future DoD planning requirements and expectations for mission resilience and sustainment planning. Our teams use the best available climate science and adaptive management practices.

Areas of Expertise

- Resiliency Planning
- Modeling and Risk Assessment
- Visualizations and Simulations
- Data Collection and Monitoring
- Nature Based Solutions
- Design Solutions
- Lidar Data Capture and Analysis
- Cost Benefit Analysis
- Planning Tools and Processes
- Identification of Course(s) of Action (COA)

Overview

The effects of a changing climate create a national security issue with potential impacts to DoD missions, operational plans, and installations. Climate change is a threat multiplier that will continue to increase over time, resulting in impacts to DoD activities; including training, testing, and mission readiness. These impacts will be caused by:

- Rising global temperatures
- Changing precipitation patterns
- Increasing frequency/intensity of extreme weather events
- Rising sea levels and associated storm surge

Resulting in increased risk to DoD missions and installations from events such as:

- Recurring Flooding – which result in loss of coastal training infrastructure/interrupt operations at low-lying bases
- Extreme Weather - which significantly impacts existing infrastructure and ranges and disrupts operations and training
- Desertification
- Drought/Wildfires – which endanger lives, destroy valuable habitat, and damage infrastructure
- Thawing Permafrost

Our Approach

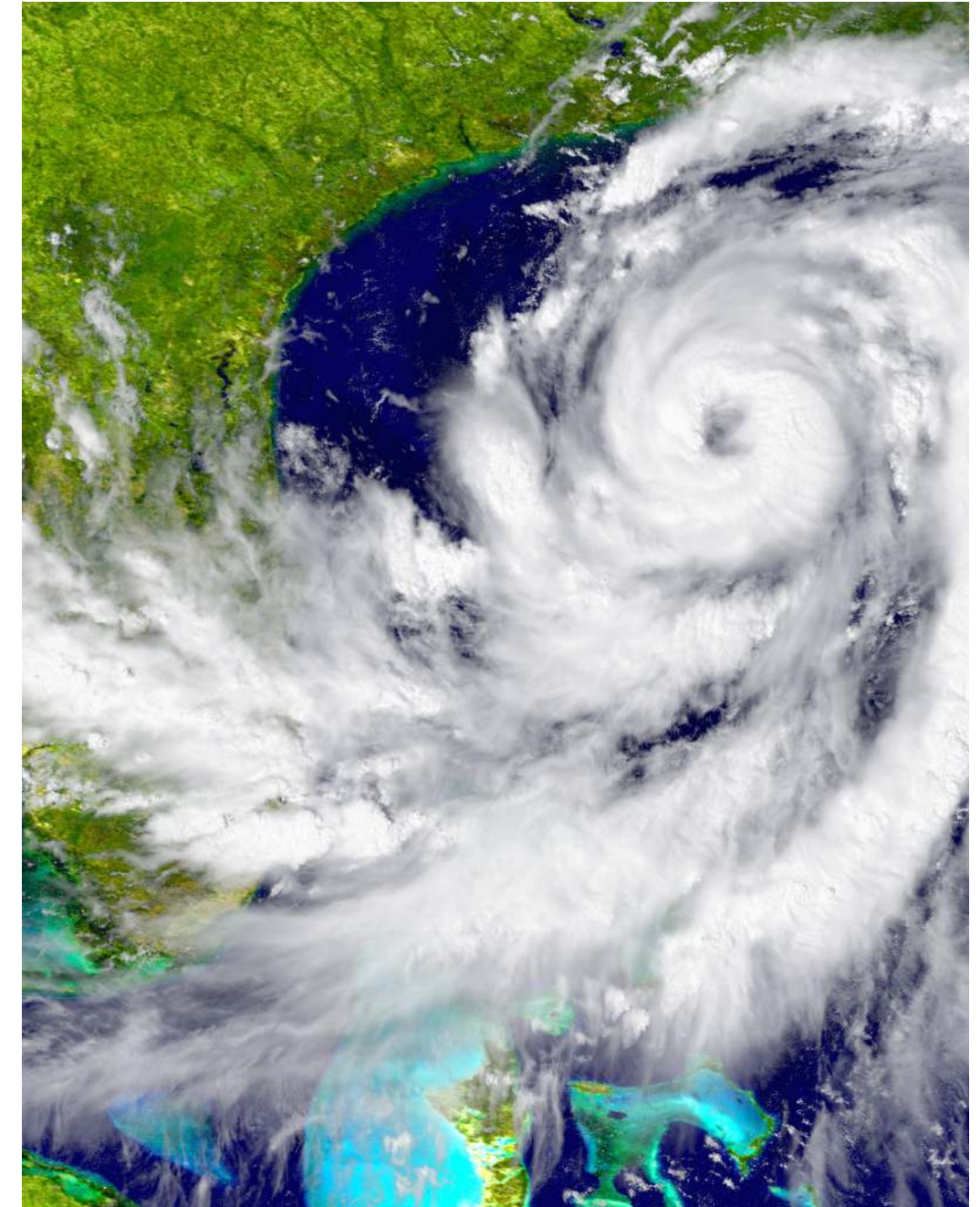
AECOM understands that resilience and climate change adaptation planning requires an interdisciplinary team of planners, scientists, engineers, military planners, economists, and biologists because of the unique and all-encompassing challenges extreme weather and other climate-related phenomena bring to the DoD. Climate change is a threat multiplier which poses a variety of risks to the DoD’s ability to maintain mission readiness.

With a long history serving the DOD, we are acquainted with processes and methods developed by the various DoD agencies that are designed to assist military planners and commanders in identifying climate related risks to missions and operations and develop courses of action that result in resiliency.

Areas of Expertise

RESILIENCY PLANNING. DoD commanders must identify the potential impacts to installations and missions from climate scenarios, identify and evaluate possible courses of actions, and make informed decisions to ensure resiliency and the ability to adapt to a changing climate.

MODELING AND RISK ASSESSMENT. Future climate scenarios remain in doubt as these predicted scenarios depend largely on which Representative Concentration Pathway is used for emissions. Modeling is used to identify the potential impacts to mission readiness and operations resulting from likely climate scenarios. The geographies covered by DoD agencies are as diverse as the potential climate hazards, requiring a variety of modeling abilities, such as: storm surge, SLR scenarios, marsh retreat, hydrologic, hydraulic, 3D, stormwater, wildfire, precipitation, wind, temperature.



Resilience and Climate Change Adaptation for the Department of Defense *(continued)*

Key Reference Materials:

- 2019 Climate Adaptation for *DoD Natural Resource Managers Guide*
- 2020 *Commander's Guide to Climate Adaptation for DoD Natural Resource Managers*
- Army's 2020 Climate Resilience Handbook Handbook and corresponding Climate Assessment Tool
- Council on Environmental Quality's *Final Guidance for Federal Departments and Agencies on Consideration of GHG Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews* (and subsequent revisions)
- U.S. Environmental Protection Agency. Climate Leaders Greenhouse Gas Inventory Guidance
- NAVFAC's Climate Change Installation Adaptation and Resilience Planning Handbook, 2017



VISUALIZATIONS AND SIMULATIONS. Critical to understanding the impacts to assets is the ability to visualize future impact scenarios resulting from climate phenomena. This early insight and understanding allows for better mitigation planning for these impacts before they occur. It also allows for the understanding of how effective potential courses of actions to ensure installation and mission resilience to future climate events.

DATA COLLECTION AND MONITORING. Model predictions and simulations are only as good as the data being used and constant refinement is needed as more or better data is available. Monitoring could include meteorological, groundwater, vegetation, species, tidal.

NATURE BASED SOLUTIONS. Living shoreline design, natural breakwaters, marsh replenishment.

DESIGN SOLUTIONS. Stormwater engineering, building designs, sea wall.

LIDAR DATA CAPTURE & ANALYSIS. Post-disaster damage assessment, 3D build out from point cloud, virtual reality modeling.

COST BENEFIT ANALYSIS. Decision makers need to determine when and where to spend money and deploy resources to safeguard important assets or make the decision whether to relocate. To do this, they must be able to make fully informed decisions and understand if costs outweigh benefits.

PLANNING TOOLS AND PROCESSES. Tools and planning processes continue to be developed and refined to assist the DoD with identifying and adapting to climate risks. The Departments of the Air Force, Army and the Navy have all published guidance documents to aid military planners and decision makers with addressing the effects of climate change to identify and mitigate any potential impacts to readiness.

IDENTIFICATION OF COURSE(S) OF ACTION (COA). Using the tools identified above, our team can evaluate and recommend best courses of action, whether it include relocation of mission/assets, nature-based solutions, or mitigating infrastructure. We can also look further into the future for a planning horizon for COAs.

COMPLEMENTARY SERVICES

- Joint Land Use Plans
- Installation Energy Plans
- INRMPs
- NEPA EAs, EISs
- Installation & Area Development Plans

Key AECOM Attributes

- AECOM has been a leader in providing climate adaptation and resiliency planning to the Department of Defense for more than a decade.
- Our teams possess the wide variety of requisite staff expertise needed to predict, identify, and mitigate for climate-related impacts to the DoD's installations, missions, and operations all over the world. Our interdisciplinary team of planners, engineers, and scientists possess the tools and expertise to provide installation commanders and military planners with effective resiliency planning by identifying vulnerabilities and risks to installations, missions, and operations; and providing resiliency solutions to avoid, lessen, or adapt the future climate-related impact scenarios.
- We routinely address climate change in National Environmental Policy Act documents, and incorporate the most recent guidance and best available science into our associated supporting analysis.

