Union of Concerned Scientists

KEY FINDINGS

The US Military on the Front Lines of Rising Seas

Growing Exposure to Coastal Flooding at East and Gulf Coast Military Bases

HIGHLIGHTS

At four installations studied, (Langley Air Force Base at Joint Base Langley-Eustis, Virginia; Marine Corps Recruit Depot Parris Island, South Carolina; Naval Air Station Key West, Florida; and Naval Air Station Oceana Dam Neck, Virginia), 35 to 70% of land area could be lost in the intermediate scenario and 75 to 90% in the highest scenario by 2100.

The Department of Defense maintains more than 1,200 military installations in the United States: intelligence centers; training grounds; shipyards; airfields; research hubs; and, often, housing for military personnel and their families. Today, sea level rise threatens many of these installations.

The Union of Concerned Scientists (UCS) has performed a new analysis of 18 East and Gulf Coast military installations. In the absence of preventive measures, these sites face three major risks later this century: more frequent and extensive tidal flooding, land loss as some areas are permanently inundated and others flood with daily high tides, and deeper and more extensive storm surge inundation.

Scenarios

UCS examined the 18 installations' exposure to flooding in 2050, 2070, and 2100 using two scenarios of sea level rise:[1]

1. **Intermediate**—projects a global average rise of 3.7 feet above 2012 levels by 2100
2. **Highest**—projects a global average rise of 6.3 feet above 2012 levels by 2100 (Parris et al. 2012)

2050: The March of High Tide over the Next Few Decades

PROJECTED GLOBAL AVERAGE SEA LEVEL RISE BY 2050

- *1.1 feet in the intermediate scenario*
- *1.7 feet in the highest scenario (recommended for decisions with a low risk tolerance)*

By 2050 in both scenarios, sea level rise drives early instances of land loss—defined in this analysis as land that floods with daily tides, making it unusable.

- All but two of the installations would see more than 100 flood events annually in low-lying areas.
- Those areas would be underwater a median of 10 to 25 percent of the year, depending on the scenario.
- Three sites experience a 15 percent or more loss of total current land area in the intermediate scenario and 20 percent or more loss in the highest scenario.

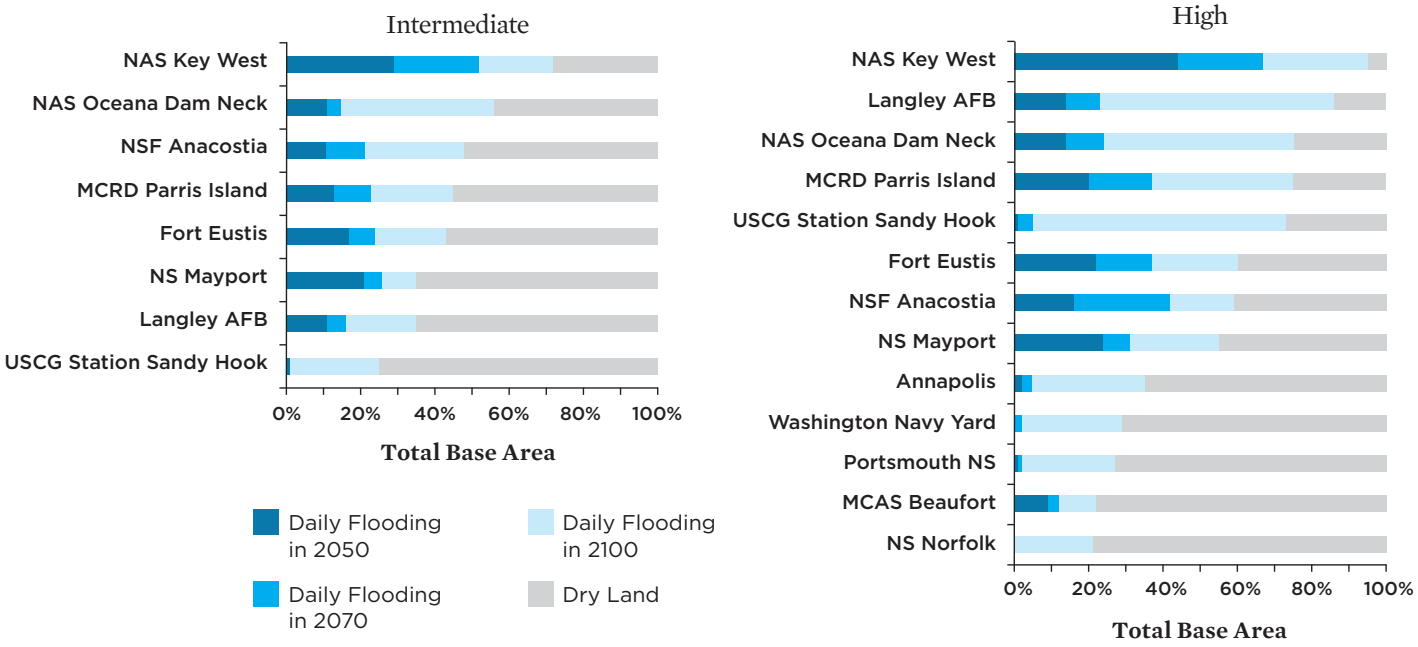
2070: Enhanced Storm Surge

PROJECTED GLOBAL AVERAGE SEA LEVEL RISE BY 2070

- *2.1 feet in the intermediate scenario*
- *3.1 feet in the highest scenario*

Sea level rise increases the military installations' exposure to storm surge—wind pushing ocean water ashore—and strengthens the flooding effects of all storms. In the highest scenario, even Category 1 storms cause extensive flooding:

Most of the 18 Installations Studied Risk Major Land Loss



Above are the 13 (out of 18) military installations that are projected to experience a 20% or greater land loss at some point this century. Some sites face substantial losses under either scenario.

- Exposure of a median quarter of the sites' area to flooding more than five feet deep in 2070, compared to 8 percent of their area today.
- For more than two-thirds of the sites, storm surge flooding in 2070 equivalent to that caused by Category 2 storms today.

2100: Lost Land

PROJECTED GLOBAL AVERAGE SEA LEVEL RISE BY 2100

- *3.7 feet in the intermediate scenario*
- *6.3 feet in the highest scenario*

Both scenarios project substantial land loss at many military installations by the end of this century:

- Half or more of the land at nearly half the installations would become part of the tidal zone—i.e., inundated by daily high tides—in the highest scenario.
- Currently flood-prone areas of most sites would be underwater at all times in the highest scenario.

ENDNOTES

1 *Parris et al. 2012. The intermediate sea level rise scenario assumes ice sheet loss that increases over time, while the highest scenario assumes rapid loss of ice sheets. The latter scenario is particularly useful for decisions involving an especially low tolerance for risk. See: http://scenarios.globalchange.gov/sites/default/files/NOAA_SLR_r3_0.pdf*

Union of Concerned Scientists

FIND FULL ANALYSIS AND METHODOLOGY ONLINE: www.ucsusa.org/MilitarySeasRising

The Union of Concerned Scientists puts rigorous, independent science to work to solve our planet's most pressing problems. Joining with citizens across the country, we combine technical analysis and effective advocacy to create innovative, practical solutions for a healthy, safe, and sustainable future.

NATIONAL HEADQUARTERS
Two Brattle Square
Cambridge, MA 02138-3780
Phone: (617) 547-5552
Fax: (617) 864-9405

WASHINGTON, DC, OFFICE
1825 K St. NW, Suite 800
Washington, DC 20006-1232
Phone: (202) 223-6133
Fax: (202) 223-6162

WEST COAST OFFICE
500 12th St., Suite 340
Oakland, CA 94607-4087
Phone: (510) 843-1872
Fax: (510) 843-3785

MIDWEST OFFICE
One N. LaSalle St., Suite 1904
Chicago, IL 60602-4064
Phone: (312) 578-1750
Fax: (312) 578-1751

WEB: www.ucsusa.org

PRINTED ON RECYCLED PAPER USING VEGETABLE-BASED INKS