

The Impacts of Climate Change on Virginia Military Installations

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USA (ret)

BG J. Robert Barnes,
USA (ret)

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USN (ret)

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USMC (ret)

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USA (ret)

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USAF (ret)

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USMC (ret)



"I attended a briefing by the Naval Academy here recently and they were looking out 30 years at the flood plains and the sea wall associated with the Chesapeake Bay and the Severn River. It was a pretty stark demonstration of what could happen if we don't take some action in the next 30 years to address that rise in water level. As you know, General Walters and I, we share bases, pretty much waterfront property all over the world, so if the oceans are going to rise we're going to be impacted everywhere. So, it does demand kind of a comprehensive look at all of our bases, especially in those areas that you already cited, in Hampton Roads, Florida, on the West Coast in San Diego, etc, so we are going to look at that very hard in the next several years..." - Admiral William F. Moran, USN, Vice Chief of Naval Operations, United States Navy, February 14, 2018

Rising Sea Levels: Risk to Readiness, Military Infrastructure, and Missions

- **Flooding frequency is on the rise:** Sea level rise is occurring faster in Hampton Roads than the global average. At present, tidal flooding affects low-lying areas of Naval Station Norfolk; by 2050, these areas may be underwater for over a month out of every year.
- **Significant amounts of military and civilian infrastructure in the surrounding community is at risk:** Each military branch has facilities in Hampton Roads, with over 100,000 military and 40,000 civilian personnel serving in the area. In the next 20 years, rising sea levels will significantly impact the transportation infrastructure surrounding installations, disrupting personnel from being able to arrive at their jobs.
- **Disruption of military missions:** Both storm surge and tidal flooding threaten the missions of forces stationed at Joint Base Langley-Eustis. Flight operations are highly dependent on good weather and adverse conditions can significantly disrupt operational and training requirements. Flooding from Hurricane Isabel crippled the operational mission on the airfield and there may be significant similar flooding on a daily basis within the next two decades.

Extreme Weather: More Frequent, More Damaging, and More Missions at Home

- **The impact of extreme weather is growing in scale and expense:** Hurricanes and other extreme weather events are becoming more frequent and more intense; Virginia's coastal and inland military facilities will be affected. Delays in training due to flooding or extreme heat can carry secondary costs to unit readiness, have the potential to disrupt the flow of new personnel into vital positions throughout the force, and strain budgetary resources.
- **Storm surges:** All of Naval Station Norfolk is exposed to flooding from a Category 3 or 4 hurricane today. At current rates of sea level rise, 95 percent of the base would potentially be exposed to flooding 10 feet deep in the next 50 years. Additionally the coastal community surrounding Virginia's military installations will be affected, with more than 400,000 homes in Virginia at risk from storm surge.
- **Precipitation is becoming heavier:** In the last half century, Virginia has experienced a 33 percent increase in heavy rainstorms and snowstorms and an 11 percent increase in precipitation from the largest storms.
- **Wildfires elsewhere impact VA National Guard readiness:** Last summer, 1,200 Virginia National Guard personnel were deployed to fight wildfires in Oregon, Montana, and California.
- *"The climate is changing, and I do think that it is becoming more severe...storms are becoming bigger, larger, more violent."* - National Guard Bureau Chief General Joseph Lengyel



HIGHLIGHT: Mulberry Island, Fort Eustis, Joint Base Langley-Eustis, Virginia



- At-Risk Sites
- Installation Boundaries (MIRTA)
- Sea Level Rise at 2070 (Average Daily Sea Level)
- Minimum Annual Flood Event at 2070 (99% Annual Exceedance Level)

Source: Military Expert Panel Report, "Sea Level Rise and the U.S. Military's Mission, 2nd Edition," The Center for Climate and Security, February 2018

