

Climate Change Impacts on North Carolina's Coastal Military Communities



"Flash flooding because of rainfall is just the first phase. Once the rain gets back to the rivers, heading back to the Atlantic, there is another set of flooding."

Major General Greg Lusk, Adjutant General of the North Carolina National Guard

"I do think that the climate is changing, and I do think that it is becoming more severe...I do think that storms are becoming bigger, larger, more violent."

General Joseph Lengyel, Chief of the National Guard Bureau

Rising Sea Levels: Geography Matters and NC's Protective Barrier Islands Are At Risk

- **Flooding of barrier islands will threaten Camp Lejeune as well as other nearby military facilities:** By 2035 Onslow Beach, and other key barrier islands protecting the New River, may be overcome, allowing storm surges and tidal flooding to impact the housing, logistics, training, ammunition storage, and ranges along the estuary, especially concerning to Military Ocean Terminal Sunny Point, the nation's largest ammunition and weapons transport hub.
- **Riverine flooding, combined with more extensive storm surges can dissect the state:** Record amounts of rainfall, such as that which fell during Hurricane Florence, pushes riverine flooding to levels which can isolate entire regions from the rest of the state. These events devastate vital coastal transportation networks used by military forces and responders, such as those connecting Jacksonville and Wilmington.
- **More frequent disruption of military missions:** By 2100 flood events could permanently inundate barrier islands up to 90% of the year, exposing Camp Lejeune to potential tidal inundation and extensive flooding of 25% of the base from a Category 1 Hurricane.

Extreme Weather: More Frequent, More Damaging, and More Complex

- **The impact of extreme weather is growing in scale and expense:** Hurricanes and other extreme weather events are becoming more frequent and more intense; North Carolina's coastal and inland military facilities will be affected. Delays in training due to flooding, extreme heat, or drought can carry secondary costs to unit readiness and have the potential to disrupt the flow of new personnel into vital positions throughout the force.
- **More military resources are required here at home:** During Hurricane Florence, every brigade command of North Carolina National Guard was activated, and over 500 active duty soldiers were called to support operations in the first week, 28 other states contributed teams of National Guard members to the immediate response.
- **Extreme rainfall threatens inland bases and surrounding communities:** During recent storm events extreme rainfall and follow-on riverine flooding caused devastation across the eastern part of the state, while military installations were spared the worst, the communities surrounding Fort Bragg, Seymour Johnson Air Force Base, and Marine Corps Air Station Cherry Point experienced extensive flooding, and on base operations were disrupted due to dangerously flooded base access roads.
- **Infrastructure and personnel are ultimately DOD's most vulnerable assets:** While the F-15's and KC-135's at bases such as Seymour Johnson Air Force Base can be "Hurivaced", base housing for military personnel on the Neuse River is tragically susceptible to devastating levels of flooding (as experienced after Hurricanes Fran, Floyd, and Matthew).

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HIGHLIGHT: US Marine Corps Camp Lejeune's low lying protective barrier islands are vulnerable to sea level rise

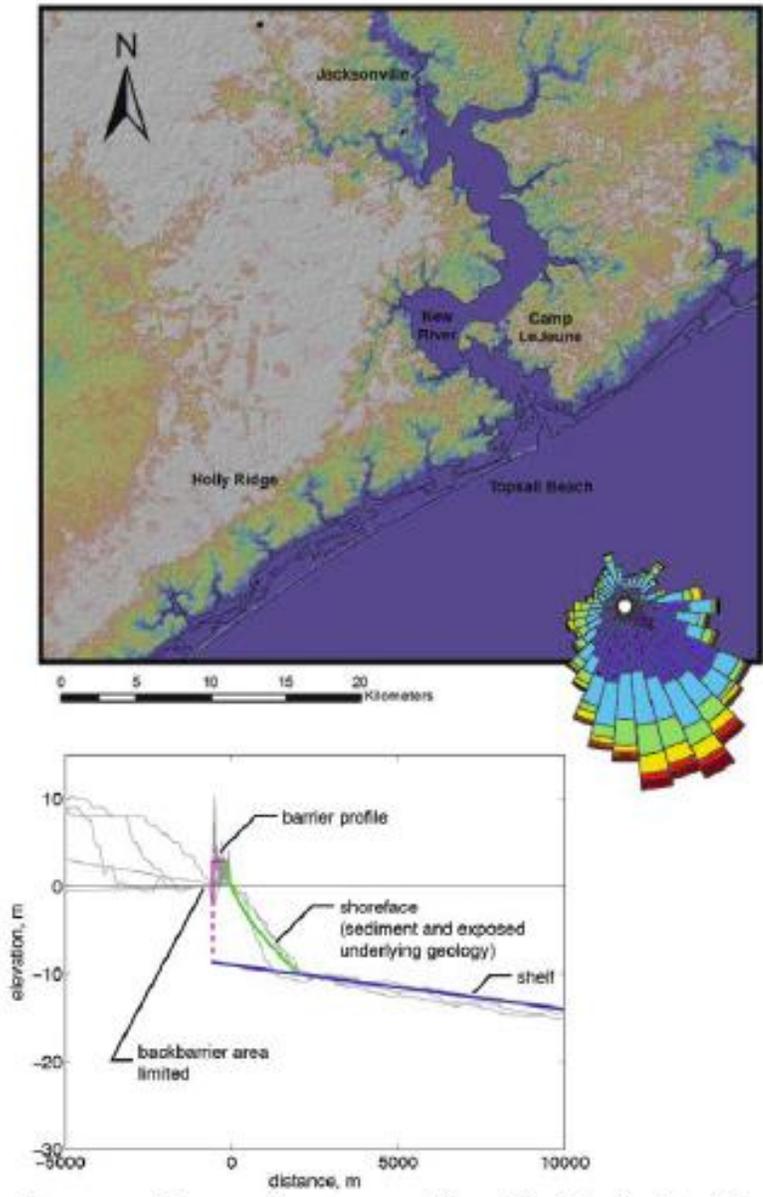


Figure 4. A map of the region surrounding CL, North Carolina. Also shown is the windrose diagram for the region showing a prevailing wind from the south-southeast. The lower panel shows the representative cross section through the barrier system used in modeling. In contrast to EAFB, the barrier at CL is quite narrow, has a smaller vertical extent of the active shoreface and has a much more limited backbarrier region.

Source: 'Shoreline Evolution and Coastal Resiliency at Two Military Installations: Investigating the Potential for the Loss of Protecting Barriers,' Strategic Environmental Research and Development Program, U.S. Department of Defense, pg 10, May 2014

