

War and famine. Peace and milk. —Somali proverb

## Climate and the Military Issue

The ‘severe’ and ‘extreme’ scenarios paint visions of state meltdown, civil conflicts, a scramble for resources, and mass migration in the kind of dystopian colors you would expect to see in a bad Hollywood movie.

But the dominant theme that emerges is that climate change is a “threat multiplier” that “will aggravate stressors abroad such as poverty, environmental degradation, political instability, and social tensions – conditions that can enable terrorist activity and other forms of violence.”

### TABLE OF CONTENTS

|                                                                  |    |
|------------------------------------------------------------------|----|
| Letter from the Director .....                                   | 2  |
| Climate Change: Does it Pose Real Global Security Concerns ..... | 4  |
| The US Military on the Front Lines of Rising Seas.....           | 7  |
| Sea Level Rise and the US Military’s Mission.....                | 9  |
| Upcoming Events.....                                             | 11 |
| EPS at the ASSA 2017.....                                        | 12 |

### Andrew Holland

The climate is changing. The shift in global climate has been scientifically proven, though the extent of the projected change is a subject of debate. But predictions of weather and climate only tell us part of the story. The geopolitical consequences of climate change will be determined by how it affects and interacts with local political, social, and economic conditions as much as by the magnitude of the climatic shift itself.

At first glance, a rise of two degrees Celsius in average temperature does not appear to be intrinsically harmful. That is the difference between the average temperature of New York and of Boston. A four degree Celsius rise, widely seen as a harbinger of global disaster, is still only the difference between the average annual temperatures of Boston and Washington.

Problems such as a lack of economic growth, endemic disease, hunger, and fresh water availability pose a greater challenge to human security, just as terrorism, nuclear proliferation, and resource wars pose a greater threat to global security, than a difference of a mere two to four degrees in average temperature.

But climate change is what we call a “ring road” issue, meaning that climate change affects all of these other threats. Unchecked, a warming of only two degrees Celsius will have significant impacts on water, food, and energy security. It will change disease vectors. It will drive migrations. These changes, in turn, could affect the stability of nations and compromise global security.

Climate change is usually termed by defense planners as a “threat multiplier” or an “accelerant of instability” because of how it influences a range of other, already existing threats. For example, a food shortage exacerbated by increased temperatures and population could lead to

conflicts over resources, which could drive human migrations to a more resource-rich area. This could increase stress on food and water resources in that region, thus instigating a chain reaction. Although climate change is just one variable in the chain, it is a critical one.

As an example of the ‘ring road’ effect, we can look to Bangladesh, which faces a diverse set of challenges in the coming years: Its economic development is intertwined with workers’ rights and garment manufacturing; there is a growing threat of terrorism as Bangladeshi nationals return from war in Afghanistan; and there are great power rivalries in the Bay of Bengal between China, India, and the United States. Each of these challenges becomes more threatening with climate change. Rising sea levels could make the homes of over 20 million people in Bangladesh uninhabitable. Ice melts from the Himalayas are increasing the flow of water down the Brahmaputra and Ganges rivers, resulting in greater floods in the monsoon season and drought in the dry season. These changes will lead to migrations, both within and from the country.

It is not quite accurate to say that global warming is the planet’s biggest problem; it is the effects of global warming, and the effects of the effects, that make it truly a threat. If we do not effectively address climate change, then we won’t be able to address the many other challenges of the 21st century.

**Andrew Holland**

*Director of Studies and Senior Fellow for  
Energy and Climate  
American Security Project*

**EPS QUARTERLY**  
is published by  
**ECONOMISTS FOR**  
**PEACE AND SECURITY**

EPS promotes economic analysis and appropriate action on global issues relating to peace, security, and the world economy.

Newsletter articles are based on the views of the authors and do not necessarily represent the views of the Directors, Trustees, or members of EPS.

Contact us:

**EPS at the Levy Institute**  
**Box 5000**  
**Annandale-on-Hudson, NY**  
**12504**  
**USA**

Tel: +1 845.758.0917  
Fax: +1 845.758.1149  
Email: [info@epsusa.org](mailto:info@epsusa.org)

**Thea Harvey**  
Executive Director

**Ellie Warren**  
Communications Director

**Jayne Illien**  
**Jennifer Olmsted**  
UN Representatives

**Contact the editor:**  
[info@epsusa.org](mailto:info@epsusa.org)

© Economists for Peace  
and Security 2016

## Letter from the Director

As I worked on putting together this issue, I was thinking about the intersection of the military and climate change. While many in government are choosing to put their heads in the sand, the Department of Defense, as a large institution with a global mission, has its eyes wide open, looking ahead for potential threats. For some time they have been responding to present-day and preparing for future effects of global warming.

In a report sent to Congress on July 29, 2015, the DoD stated, "Global climate change will aggravate problems such as poverty, social tensions, environmental degradation, ineffectual leadership, and weak political institutions that threaten stability." This forward thinking may have positive and negative consequences.

On the one hand, the US military, one of the largest single consumers of energy in the world, is switching to alternative energy sources whenever possible. For instance, in remote locations, they are replacing generators needing a constant supply of fossil fuels with solar power. Switching to renewable energy sources and more efficient consumption will save money, even out the supply chain; and, reduce carbon emissions. As a result we can probably look forward to great crossover products available for civilian use in the not-too-distant future.

However, with the increasing instability we're now seeing around the world, we're also likely to see more local conflicts and more climate refugees. The 2010 Quadrennial Defense Review (QDR) noted that, "while climate change alone does not cause conflict, it may act as an accelerant of instability or conflict, placing a burden to respond on civilian institutions and militaries around the world. In addition, extreme weather events may lead to increased demands for defense support to civil authorities for humanitarian assistance or disaster response both within the United States and overseas."

Under these circumstances we're at risk of coming to rely on the military as the only possible tool for responding to climate crises. As the QDR pointed out, in many countries, including the US, there is not much infrastructure outside of the military for responding to disasters, natural or manmade. If the military is the only large-scale institution able to deal with moving large numbers of people and/or materials quickly and efficiently under adverse conditions, then clearly it will be the military that we call upon. Imagine armed guards at every border to stop the hordes of refugees. Or martial law imposed to control internally displaced people.

As the maxim goes, if the only tool you have is a hammer, everything looks like a nail.

The US constitution provides checks and balances for the use of military force, requiring the President to request and Congress to approve an authorization of use of military force or declaration of war. Since the Rwandan genocide in the 1990s, there has been an ongoing discussion of whether humanitarian intervention is appropriate, or must we only use the military for defense of ourselves and our allies. Is turning out an oppressive dictator a good enough reason? When does oppression cross the line to something requiring outside intervention?

These are important questions, and I believe we now need to add to the question of when to send our military to assist in the recovery from natural disasters. Are we to become infrastructure builders, as well as peacekeepers, in other countries? As a hegemon with nearly 800 military bases distributed in more than 70 countries, the US will be called upon more and more frequently to assist in emergencies outside our own borders. Might it be possible to build policies and institutions that will assist while preventing and mitigating violence, rather than potentially contributing to it?

Climate change is not some future threat. It's here now. Flooding, drought, increased severity of storms, and melting ice caps are already impacting all life on our planet. It seems critically important that we extend the discussion of the appropriate use of our military to include the possible costs and consequences of climate change.

## From the Journal of Diplomacy

November 10, 2016

### Climate Change: Does it Pose Real Global Security Concerns?

There is no denying the overwhelming fact that climate change is real. Critics may argue otherwise, but the evidence speaks for itself. Nations around the world have recognized the dangers inherent in our changing global weather patterns. On Friday, November 4th, 96 UN member states put pen to paper and formally joined the Paris Climate Agreement, enabling it to become international law. While the Paris Conference of the Parties (COP) did not specifically address the security implications posed by climate change, it is obviously a crucial step forward in addressing the world's growing concerns about it.

The question to be asked next is: Do these tectonic shifts in climate patterns require an even greater focus on this problem from an international security standpoint? The answer to this query is unequivocally yes. From a human security point of view, extreme droughts in Africa and the effects of intense heat, massive flooding, and disease in South Asia place previously fragile states in greater peril by increasing their level of poverty. Already impoverished nations must now deal with an even greater burden. Several consequences result that affect the basic needs of people in these countries: shortages of food as the result of a decrease in agricultural production; the inability to access clean drinking water due to the frequency of flooding and droughts; and the unsettling of energy supplies occurring due to massive sea ice and excessive storms.

Such climate-altering events promote instability and increased political tensions in regions of the world that already suffer from unsound political institutions and inadequate leadership. On the continent of Africa, numerous civil wars continue unabated, and the threat posed by a changing climate compounds the problem. States in Africa and South Asia do not possess the funding or the resources to properly address the needs of their populations, which has the effect of only heightening their already extreme financial tensions.

At the U.S. Department of Defense, officials have strategies and plans in place to mitigate the security risks climate change presents. As in any preparation for battle, there must be contingencies put in place to prepare for whatever lies ahead. Climate change is no different in this respect; one cannot predict what specific weather patterns will occur. In this respect, the Pentagon prepares for all possible scenarios. The DoD refers to the sum of these problems as "threat multipliers" because of the ways they add to the host of issues already confronting the world, particularly international terrorism. The security challenges of today require the military and policymakers alike to adapt and innovate with new solutions to problems arising from a constantly warming world.

The National Intelligence Council (NIC), in its report in September 2016 titled "Implications for US National Security of Anticipated Climate Change," adds to the growing evidence that a changing climate presents significant security threats. The report looks out over a twenty-year time period and foresees acute problems related to shortages of water and rising sea levels in the US directly attributable to intense weather events.

The NIC cites several examples in its report of how a changing climate has had

a direct effect on the stability and security of certain states. Yemen is an Arab country in Western Asia that has been hit hard with conflict, causing a humanitarian crisis and severe water shortages. In 2015, the Arab state was rocked by two tropical cyclones that significantly added to their troubles, making it increasingly difficult for Yemen to service the needs of its populace. Heavy rains have caused an outbreak of locusts threatening its agriculture, and the Yemeni Civil War has greatly limited the ability of officials to eliminate the locusts.

The NIC report asserts that, over the course of the next 20 years, hotspots created by water scarcity as the direct result of climate change could present more significant security challenges for the international community. The report cited an example from 2012 in which violence occurred in Nouakchott, Mauritania, due to shortages of water. A mass migration of 70,000 refugees had fled Mali placing added stress on resources already weakened by drought and desertification.

The unpredictability of a changing climate will continue to prompt the sudden and severe weather events we have witnessed in recent times, placing additional burdens on already fragile resources. Despite climate deniers, the majority of the nations of the world recognize that the problems are real and not imagined. The Paris Climate Agreement affirms these nations' willingness to tackle this problem, and this is a very good sign.

*Michael Curtin is a graduate student at the School of Diplomacy and International Relations, specializing in International Organizations and International Security. He is also an associate editor with the Journal of Diplomacy and International Relations. This piece was originally published on the blog of the Journal of Diplomacy.*

## Support EPS as you Shop

There are two ways you can donate to EPS by doing what you are already doing, and it won't cost you a thing! We are registered with Amazon Smile and Good Shop. Once you register, every purchase you make sends a percentage to EPS. There's no easier way to support EPS.

Get started using AmazonSmile: <https://smile.amazon.com/ch/13-3429488>, Good Shop: <https://www.goodsearch.com/about>

## Securing Whose Future?

### Militarism in an Age of Climate Crisis

For anyone concerned with militarism, news of a terrorist atrocity brings a familiar sense of dread. We ache as we hear the stories of more innocent lives lost, and we feel foreboding with the knowledge that the bombings will predictably fuel new cycles of violence and horror in targeted communities at home and abroad. It creates the binary world that neocons and terrorists seek: one of permanent war absorbing all our attention and resources, while the real crises of poverty, inequality, unemployment, social alienation, and climate crisis are ignored.

It was unusual, therefore, in March 2016 to hear President Obama in an interview with the *Atlantic* magazine, repeat his warning that “Isis is not an existential threat to the United States. Climate change is a potential existential threat to the entire world if we don’t do something about it.” While predictably ridiculed by the reactionary US right, it seems to epitomize Obama’s seemingly more strategic approach to foreign policy, the so-called ‘Obama Doctrine’ that seeks to entrench imperial power by firstly, in his own words, “not doing stupid shit” and secondly, not ignoring the long-term challenges to US interests.

President Obama’s emphasis on climate change has been a feature of his foreign policy priorities during his final term in office. While initially couched in lofty rhetoric of ‘healing’ the planet, Obama now more consistently frames climate change in terms of ensuring US national security. Addressing Coast Guard cadets in Connecticut in May 2015, Obama argued: “Climate change constitutes a serious threat to global security, an immediate risk to our national security, and, make no mistake, it will impact how our military defends our country. And so we need to act—and we need to act now.” With these words Obama set a precedent that has been picked up by US allies worldwide. UK Prime Minister David Cameron has also said that climate change is “not just a threat to the environment. It is also a threat to our national security.”

- **Climate Change Security as Political Tactic**

Within the US, the framing of climate change as a national security issue is typically understood as a political tactic. As one Washington insider told me, it’s one of the few ways to get policy in the corridors of US power moving faster than glacial speed. It has also been seen as a way of getting Republicans in denial to stop blocking action on climate change, a tactic that has clearly failed. (The most enthusiastic US supporters of climate as a security issue have been progressives. Leftist Democrat hopeful Bernie Sanders has been vocal in defining climate change as the number one security threat to the US.)

Regardless of its advocates and detractors, climate change is being integrated into US military policy; a process that will almost certainly continue no matter who is elected in the next US presidential elections. Ultimately the military’s concern with climate change is about ensuring its future ‘operationability’, rather than because it has become enlightened and decided to ‘go green’. A Department of Defense directive, agreed upon in January 2016, requires climate change considerations to be at the heart of all military strategic planning: “The DoD must be able to adapt current and future operations to address the impacts of climate change in order to maintain an effective and efficient US military.”

- **How Military Planning Incorporates Climate Change**

For the US, integration of climate change into military planning is being enacted in three significant ways: The first is in ensuring that US’ vast military infrastructure, made up of at least 800 bases in more than 70 countries, continues to function in the face of hotter temperatures, rising seas, and more extreme weather. A US Government Accountability Office (GAO) report in 2014 showed that climate change is already affecting military assets. One Alaskan radar station faced issues of accessibility after roads and runways were destroyed when the coastline receded by 40 feet due to a combination of melting permafrost, disappearance of sea ice, and rising oceans.

The second is the US development of ‘green’ fuels to power its vast military arsenals. This is often sold as evidence of the military’s environmental commitment; but again, it is ultimately rooted in concerns about operationability. The Pentagon is the world’s single largest organizational user of petroleum. One of its jets, the B-52 Stratocruiser, consumes roughly 3,334 gallons per hour, about as much fuel as the average driver uses in seven years. The transport of fuel to keep its hummers, tanks, ships, and jets running is one of the biggest logistical headaches for the US military and was a source of major vulnerability during the military campaign in Afghanistan, as oil tankers supplying US forces were frequently attacked by Taliban forces.



U.S. Army Sgt. Mark Phiffer stands guard duty near a burning oil well in the Rumaylah Oil Fields in Southern Iraq.



US Coast Guard Petty Officer 2nd Class Shawn Beaty looks for survivors in the path of Hurricane Katrina as he flies in a Jayhawk helicopter over New Orleans.

Alternative fuels, solar-powered telecommunication units, and renewable technologies in general hold the prospect of a less vulnerable, more flexible military. As US Navy Secretary Ray Mabus stated, “We are moving toward alternative fuels in the Navy and Marine Corps for one main reason, and that is to make us better fighters.”

The third and probably most significant way in which the US is preparing for climate change is by planning responses to security threats. This typically is done through war-gaming scenarios, the most famous of which is described in *The Age of Consequences: The Foreign Policy and National Security Implications of Global Climate Change*. Published in 2007 by a coterie of former defense ministers, security analysts, and establishment think tank researchers, the report sketched out three potential climate scenarios. The ‘severe’ and ‘extreme’ scenarios paint visions of state meltdown, civil conflicts, a scramble for resources, and

mass migration in the kind of dystopian colors you would expect to see in a bad Hollywood movie. But the dominant theme that emerges is that climate change is a “threat multiplier” that “will aggravate stressors abroad such as poverty, environmental degradation, political instability, and social tensions – conditions that can enable terrorist activity and other forms of violence.”

#### • *Preparing for Conflict*

These scenarios have been followed up with evermore detailed plans by the many different arms of US military and intelligence. The US European Command, for example, is making preparations around potential conflict in the Arctic as sea ice melts and oil and shipping in the region increase. In the Middle East, US Central Command has factored water scarcity into its campaign plans for the future. And where the US leads, its allies tend to follow.

US climate security planning has

encouraged similar efforts elsewhere, particularly in the UK, the EU, and Australia. All have adopted the same framing of climate change, seeing it as a catalyst of conflict and also a potential cause of further terrorism. Notably they are all Western countries with significant militaries. Attempts to make climate change the framing for security at the UN have met with short shrift from developing countries that rightly see climate change as an issue of responsibility, one in which the most polluting nations owe an historic debt to the Global South.

Increasing numbers of national risk strategy assessments, critical infrastructure protection planning, and emergency power planning are also being implemented, in part in response to climate change, and also in response to increasingly complex emergencies and awareness of the systemic vulnerabilities of a hyperconnected globalized order. Major corporations are also in on the game, developing risk and

resilience strategies, notably long-term scenarios that in some cases mirror the dystopian visions of the military.

- **Threats to Civil Liberties**

Suddenly risk is everywhere and control is everything. The UK Civil Contingencies Act of 2004, drawn up in the aftermath of 9/11, the fuel crisis of 2000, and the outbreak of foot-and-mouth disease in 2001, allows the UK government to declare a state of emergency without a parliamentary vote. It grants executive powers to “give directions or orders” of virtually unlimited scope, including the destruction of property, prohibiting assemblies, banning travel, and outlawing “other specified activities.” The UK emergency powers review and many elements of subsequent legislation were mirrored in Australia and Canada and share much in common with US emergency powers statutes.

In the wake of the War on Terror and in military plans for a climate-changed world, what we see emerging is a maximum security state, one that goes beyond Eisenhower’s warning of a military-industrial complex to a broader military-industrial-security complex, producing what security expert Ben Hayes calls a “new kind of arms race, one in which all the weapons are pointing inwards.” Certainly Blacks Lives Matter protestors in Ferguson or indigenous protestors in Peru, along with many other frontline communities worldwide, recognize this arms race as they face off against increasingly heavily armed police.

- **Corporate Profiteering in the Maximum Security State**

For some the new arms race is proving very lucrative indeed. As if the record heights of global military spending (\$1.8 trillion in 2014) weren’t enough, they have been accompanied by a massive expansion of the

homeland security industry, which, since 2008, has grown at 5% annually despite a worldwide recession. Those involved include the familiar arms dealers: US defense contractor Raytheon openly proclaims its “expanded business opportunities” arising from “security concerns and their possible consequences” due to the “effects of climate change” in the form of “storms, droughts, and floods.”

The merging (and blurring) of military, police, state, and corporations, along with the emerging dominance of security as the framework for so many issues nowadays—think food security, energy security, water security, and so on—carries its own logic and consequences. It soon becomes clear from studying security strategies that, while protecting human lives and supporting social needs are the declared objectives, some needs and some lives are clearly valued more than others. Migrants, frequently characterized as threats, are understood as disposable people, as we can see so visibly in Europe today. The frequent references to shipping routes and supply chains in defense strategies also reveal that ensuring the smooth flow of commerce and capital is an overriding priority. Moreover, the expanded search for threats all too easily aims at any group that seeks to resist injustice. It is hard, for example, to envisage that a US Department of Defense Minerva Initiative, which funds US academics to uncover “the conditions under which political movements aimed at large-scale political and economic change originate,” is anything other than an attempt to block such necessary radical social change.

- **Security for the Rich**

Of course, it is the reality of nearly all security policies, particularly national security policies, that they seek to secure those who

already have wealth, and in the process often dispossess those without it, characterizing victims as threats. In this light representing climate change as a security issue is deeply disturbing. It creates a double injustice. Not only are those who had the least to do with causing climate change suffering the most from its consequences, but they are being targeted as threats in proposed security responses to those climate impacts. Thus it becomes critical that peace, civil liberty, and climate justice activists and movements join together to oppose the “securitization” of our future. A climate-just world will not be possible if our response to climate change is based on security, and a peaceful world will not be possible without climate justice. For a long time, there has been a tendency for our movements for change to operate in independent arenas, but this is starting to change as movements realize the need to link our struggles and confront the same power structures. At the Paris climate meetings in December 2015, where environmental activists were swept up under the state-of-emergency laws in the wake of the bombings, the beginnings of a network emerged bringing climate and peace activists together. As environmental and peace activist Tim DeChristopher cogently argues, “Our challenge has changed. It is no longer about just reducing emissions. We have to work out how to hold on to our humanity as we head into increasingly difficult times.”

*Nick Buxton is a communications consultant, working on publications, online learning and support of activist scholar communities for TNI. He works actively on issues of climate change, militarism and economic justice and is co-editor of “The Secure and the Dispossessed—How the Military and Corporations are Seeking to Shape a Climate-changed World” (Pluto Press, November 2015).*

## PLEASE JOIN US

EPS’s efforts depend heavily on the support of its members. By joining today, you unite with individuals committed to reducing dependence on military power, who search for political and institutional change through peaceful democratic processes. Our members contribute not only financially, but also with research, articles, and as speakers at events. Your membership helps to ensure that reasoned perspectives on essential economic issues continue to be heard.

For more information, please visit [www.epsusa.org/membership/membership.htm](http://www.epsusa.org/membership/membership.htm)

## The US Military on the Front Lines of Rising Seas (2016)

Sea levels are rising as global warming heats up the planet. Many military bases along the US East Coast and Gulf of Mexico are at risk of permanently losing land to the ocean in the decades ahead.

As the seas rise, high tides will reach farther inland. Tidal flooding will become more frequent and extensive. When hurricanes strike, deeper and more extensive storm surge flooding will occur.

The US Armed Forces depend on safe and functional bases to protect the national security of our country. We must prepare for the growing exposure of our military bases to sea level rise.



Ships docked in 2013 at Naval Station Norfolk. The largest naval base in the world and home to the US Fleet Forces Command, NS Norfolk, like most of the military bases analyzed here, faces steeply rising flood risks. Here, water levels could rise 4.5 to nearly 7 feet this century, depending on the pace of ice sheet loss.

### Military bases at risk

Eighteen military installations are included in this analysis. Each location's changing exposure to flooding is projected through the end of the century:

- Maine:** Portsmouth Naval Shipyard
- New Jersey:** US Coast Guard Station Sandy Hook
- Maryland:** US Naval Academy
- Washington, DC:** Joint Base Anacostia-Bolling and Washington Navy Yard
- Virginia:**
  - Joint Base Langley-Eustis
  - Naval Air Station Oceana Dam Neck Annex
  - Naval Station Norfolk
- North Carolina:** Marine Corps Base Camp Lejeune
- South Carolina:** Marine Corps Recruit Depot Parris Island and Marine Corps Air Station Beaufort
- Georgia:**
  - Hunter Army Airfield
  - Naval Submarine Base Kings Bay
- Florida:**
  - Naval Air Station Key West
  - Naval Station Mayport
  - Eglin Air Force Base

### Key findings

The military is at risk of losing land where vital infrastructure, training and testing grounds, and housing for thousands of its personnel currently exist.

- By 2050, most of the installations in this analysis will see more than 10 times the number of floods than they experience today.
- By 2070, half of the sites could experience 520 or more flood events annually—the equivalent of more than one flood daily.
- By 2100, eight bases are at risk of losing 25 percent to 50 percent or more of their land to rising seas.
- Four installations—Naval Air Station Key West, Joint Base Langley-Eustis, Dam Neck Annex, and Parris Island—are at risk of losing between 75 and 95 percent of their land by the end of this century.
- Flooding won't be confined to the bases. Many surrounding communities will also face growing exposure to rising seas.

### Planning for rising seas

The gap between the military's current preparedness for sea level rise and the threats outlined here is large and growing.

To plan effectively for the long term, military decision makers with authority over these bases need to understand how sea level rise may permanently alter the landscape and where the threat of storm surge may become intolerable.

To take action, however, individual installations will need more detailed analysis and resources to implement solutions.

Congress and the Department of Defense should, for example:

- Support the development and distribution of high-resolution hurricane and coastal flooding models;
- Adequately fund data-monitoring systems such as our nation's tide gauge network;
- Allocate human, financial, and data resources to detailed mapping and planning efforts at military installations;
- As adaptive measures are identified, allocate resources for these projects, many of which will stretch over decades.

Our defense leadership has a special responsibility to protect the sites that hundreds of thousands of Americans depend on for their livelihoods and millions depend on for national security.

### About this analysis

Each base's exposure is calculated based on the National Climate Assessment's mid-range or "intermediate-high" sea level rise scenario (referred to in this analysis as "intermediate"), which projects a global average increase of 3.7 feet above 2012 levels by 2100; and a "highest" scenario based on a more rapid rate of increase, which projects a global average increase of 6.3 feet.

The highest scenario is especially useful when making decisions with a low tolerance for risk. Moreover, recent studies suggest that ice sheet loss is accelerating and that future dynamics and instability could contribute significantly to sea level rise this century.

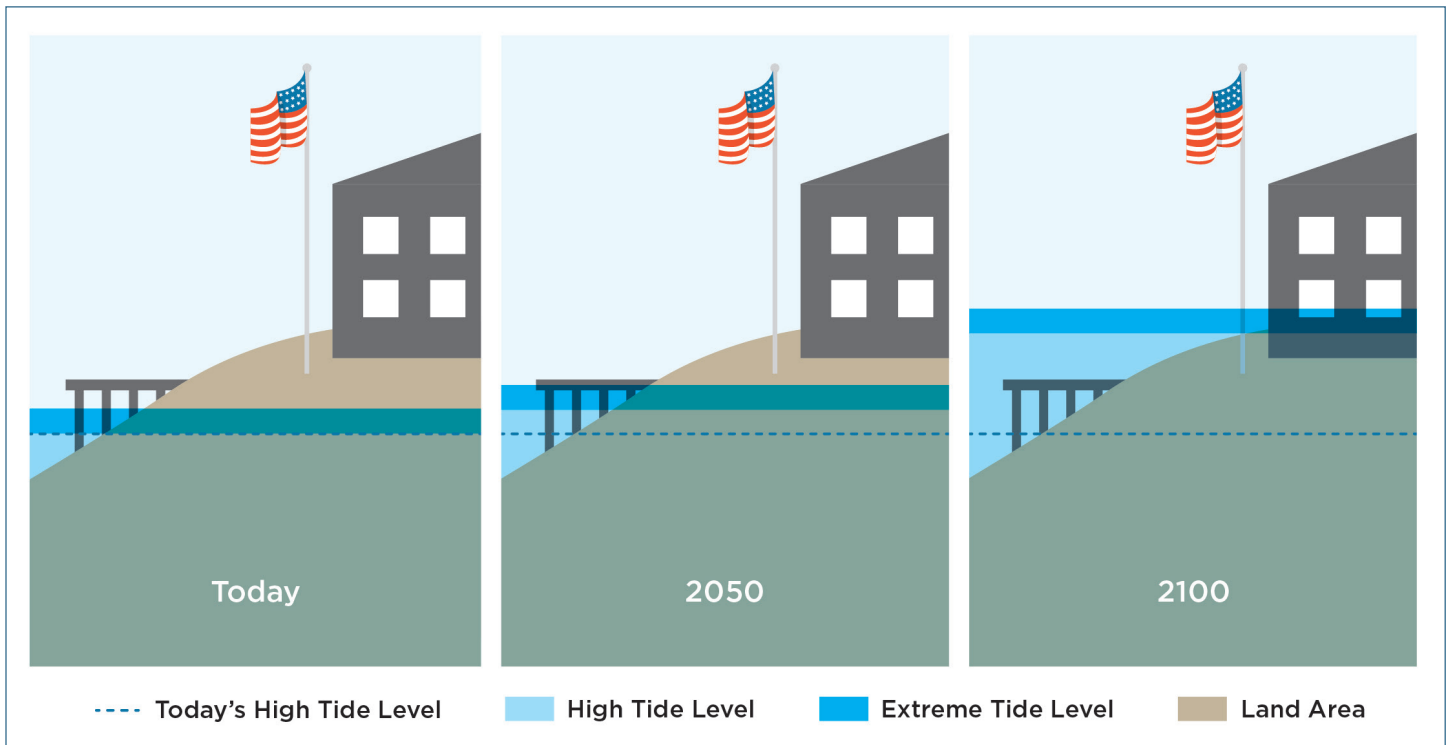
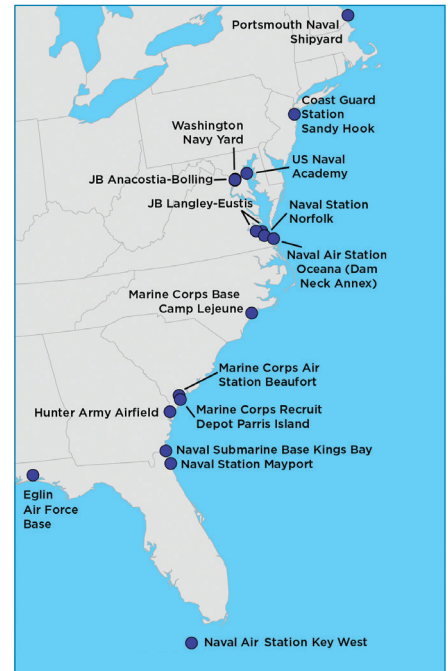
This analysis includes an executive summary, key findings, and fact sheets for each location. You can also download all of the materials as a single PDF. For more detailed information, please see the methodology and key caveats

for this analysis. <http://www.ucsusa.org/global-warming/global-warming-impacts/sea-level-rise-flooding-us-military-bases#.WEHy9-YrJPY>

### Authors and contributors

*Authors:* Erika Spanger-Siegfried, lead author and project manager, is a senior climate analyst in the UCS Climate and Energy Program. Kristina Dahl, lead analyst, is a consulting climate scientist in the program. Astrid Caldas is a climate scientist in the program. Shana Udvardy is a climate preparedness specialist in the program.

*Contributors:* Sarah Pendergast is a legislative assistant with the Climate and Energy Program. Alyssa Tsuchiya is a climate policy analyst with the program. Pamela Worth is a UCS staff writer.



As sea level rises, local flood conditions can happen more often, to a greater extent, and for longer time periods when extreme tides occur. And the daily high tide line can eventually begin to encompass new areas, shifting presently utilized land to the tidal zone. In this analysis, land inundated by at least one high tide each day is considered a loss. This is a conservative metric: in reality, far less frequent flooding would likely lead to land being considered unusable.



## Military Expert Panel Report: Sea Level Rise and the U.S. Military's Mission

### Note from the Military Expert Panel

As military professionals who have spent our adult lives serving the United States, we are concerned about the impact sea level rise is having, and will have, on the ability of our military infrastructure to sustain our nation's operating forces and fulfill strategic objectives. It is clear we must do more to address these risks, and do it soon.

There are a growing number of studies exploring the actual and potential physical impacts of sea level rise on U.S. military installations, and these studies show that the risks are increasing at a faster rate than expected.<sup>1</sup> However, important questions remain only partially answered: How will a changing climate impact our military basing, training, readiness and ability to control and conduct military operations? What are the broader implications for the military's ability to fulfill its mission due to anticipated increases in operations tempo? This report begins to answer those questions and offers a path forward to policy-makers for addressing those risks.

One thing is clear. We cannot wait for perfect information before assessing the risks and impacts, and responding in a way that is commensurate to those risks. The military has long had a tradition of parsing threats through a "Survive to Operate" lens, meaning we cannot assume the best case scenario, but must prepare to be able to effectively operate even under attack. Dealing with climate risks to operational effectiveness must therefore be a core priority.

To get ahead of the risks, this report looks out in time to assess the effects of sea level rise happening simultaneously across a broad range of military infrastructure domestically and globally, and the resulting cascading effects on the ability to train, mobilize, operate and fulfill strategic objectives. The continued strength of the U.S. depends, in large part, on having a clear-eyed assessment of risks and threats to the nation, and addressing them

well before they manifest themselves. This report is an attempt to present a clearer picture of sea level rise risks, what that means for our nation's armed forces, what that means for national security, and what we can do about it. In doing so, we hope to modestly contribute to the effectiveness of our nation's military and to help ensure a strong and resilient United States.

Signed,

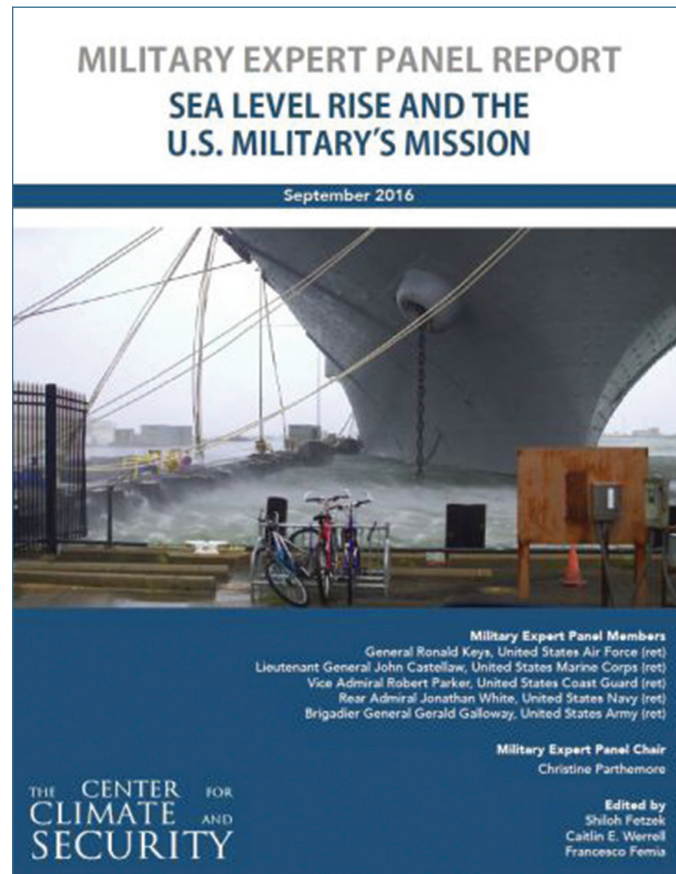
General Ronald Keys,  
United States Air Force (ret)  
Lieutenant General John Castellaw,  
United States Marine Corps (ret)  
Vice Admiral Robert Parker,  
United States Coast Guard (ret)  
Rear Admiral Jonathan White,  
United States Navy (ret)  
Brigadier General Gerald Galloway,  
United States Army (ret)

### Executive Summary

The United States military is the greatest globally-deployed military force in human history. That military force is present in 156

nations, and ready to advance U.S. interests, whether that be on a war-fighting or humanitarian mission. To do so, the U.S. military depends on essential services and infrastructure, both built and natural, to support a trained and ready force.

This capability, however, rests on an assumption of climate stability—including the stability of the 95,471 miles of coastline along which 1,774 U.S. military sites reside across the globe.<sup>2</sup> In the 21st century, the stability of that climate, and the stability of those coastlines from which the military launches its operations, is set to change dramatically due to sea level rise and storm surge. For example, major transportation, command and control, intelligence, and deployment hubs may face unrelenting erratic outages, or curtailment of operations in the future, due to sea level rise and storm surge. In that context, the ability of the Department of Defense (DoD) to fulfill mission requirements will be more costly, take more time, and be hindered by a lack of planned-for assets at critical junctures. As these threats to coastal military



infrastructure play out over this century, they may become strategic vulnerabilities that could affect our ability to deter our enemies, defend our interests, and support our friends. In other words, “at a time and a place of our choosing” may not be our choice in the future.

Essentially, the very geostrategic landscape in which the U.S. military operates is going to be different from what it is today. Since the U.S. military’s numerous military installations live in that changing landscape, it will have to adapt, and adapt quickly. To use military parlance, the theater is, in essence, flooding. Adjusting to that rapidly changing theater will be absolutely critical for the U.S. military to maintain its ability to fulfill its mission, and for the United States to adequately pursue its national security interests. At the center of this adjustment are coastal military installations—their infrastructure and the adjacent supporting communities—that form the backbone of this global military force.

This report is not an exhaustive look at all of the climate risks and vulnerabilities coastal military installations are facing. However, it synthesizes studies by the Department of Defense (DoD), Congress and independent researchers, explores a range of case studies, analyzes what those findings mean for military readiness, operations and strategy, and lays out areas that deserve more attention.

### Findings and List of Recommendations

This report finds that over the course of the remainder of the 21st century, the U.S. military’s coastal military installations, domestically and internationally, face significant risks from climate-driven trends, namely sea level rise and the interaction of sea level rise with an increased frequency and intensity of extreme weather events. This report also finds that these risks, if not sufficiently mitigated, may eventually have wide-ranging effects on the military’s ability to effectively fulfill its mission. This includes effects on military readiness, military operations and military and national security strategy. This report also concludes that policies and plans for addressing these risks will have to be commensurate to a scale of risk that goes beyond infrastructure resilience. Indeed, climate change effects such as sea level rise are not just an installation and facility issue for U.S. military forces. They also present operational and strategic risks, and these broader implications must be both better understood, planned for and prevented. The complex relationship between sea level rise, storm surge and global readiness and responsiveness must be explored down to the operational level, across the Services and Joint forces, and up to a strategic level as well. Given that these conclusions are widely shared

by the DoD, the report authors recommend that policy-makers support comprehensive and preventive measures, in the near term, to address these risks.

In this context, we offer eight specific recommendations for the near-term aimed at addressing sea level rise risks to the U.S. military’s mission.

1. Continuously identify and build capacity to address infrastructural, operational and strategic risks.
2. Integrate climate impact scenarios and projections into regular planning cycles.
3. Make climate-related decisions only after considering the highest risk level projections.
4. Game out catastrophic scenarios in planning.
5. Work with international counterparts at key coastal bases abroad.
6. Track trends in climate impacts as uncertainty levels are reduced.
7. Maintain close collaboration with adjacent civilian communities.
8. Continue to invest in improvements in climate data.

*The complete September 2016 report from the Center for Climate and Security can be found at <https://climateandsecurity.org/militaryexpertpanel/>*

### *The Economics of Peace and Security Journal*

EPSJ is a peer-reviewed publication that raises and debates all issues related to the political economy of personal, communal, national, international, and global peace and security. The scope includes implications and ramifications of conventional and nonconventional conflict for all human and nonhuman life and for our common habitat. Special attention is paid to constructive proposals for conflict resolution and peacemaking. While open to noneconomic approaches, most contributions emphasize economic analysis of causes, consequences, and possible solutions to mitigate and resolve conflict.

You must subscribe to read the two most recent issues. One year subscriptions are US \$50. EPS members receive a 50% discount. To renew or subscribe visit our website at [www.epsjournal.org.uk](http://www.epsjournal.org.uk)

© [www.epsjournal.org.uk](http://www.epsjournal.org.uk) – ISSN 1749-852X

## Upcoming Events

- **June 22-23, 2017** The 21<sup>st</sup> Annual Conference on Economics and Security will be held at the Royal Military Academy in Brussels, Belgium.

The conference aims to provide an opportunity for economists, political scientists and others from around the world to share ideas and discuss the future developments in the following areas:

- Regional security
- Economics of security
- Corruption and military spending
- Globalisation and the restructuring of the MIC
- Militarism and development
- Security sector reform
- Economics of conflict and war
- Post-conflict reconstruction
- Economics of the arms trade
- Procurement and offsets
- Arms races and alliances
- Peace economics and peace science
- Conversion and demilitarisation
- Economics of terrorism

If you would like to present a paper, please send a title and an abstract of maximum 300 words before 1st April 2017 to [cindy.dubois@rma.ac.be](mailto:cindy.dubois@rma.ac.be)

<http://www.defense-realms.com/call-papers-conference-economics-security-2017/>

- 
- **January 3-6, 2017** The Western Economic Association International 13th International Conference will be held in Santiago, Chile  
**More information available here:**  
<http://www.weai.org/PR2017>
  - **January 6-8, 2017** The 2017 ASSA/AEA Annual Meetings will take place in Chicago, IL.  
**More information available here:**  
<https://www.aeaweb.org/conference/>
  - **February 23-27, 2017** The 43rd Annual Eastern Economics Association Conference will be held in New York, New York at the Sheraton Times Square.  
**More information available here:**  
<https://www.qu.edu/eea/conferences/>
  - **June 25-29, 2017** The Western Economic Association International 92<sup>nd</sup> Annual Conference will be held at the Marriott Marquis & Marina, San Diego, California.  
**More information available here:**  
<http://www.weai.org/AC2017>
  - **June 26-28, 2017** The Jan Tinbergen European Peace Science Conference will be held at the University of Antwerp, Prinsstraat 13, Antwerpen, Belgium.  
**More information available here:**  
<http://www.europeanpeacescientists.org/jan.html>

## EPS Quarterly

c/o the Levy Institute  
Box 5000  
Annandale-on-Hudson, NY 12504  
USA  
Tel: +1 845.758.0917  
Fax: +1 845.758.1149  
Email: info@epsusa.org  
www.epsusa.org

Nonprofit Organization  
US Postage  
**PAID**  
Kingston, NY  
Permit No. 917

RETURN SERVICE REQUESTED

### BOARD OF DIRECTORS

*Chair pro tem:* Richard F. Kaufman  
*Secretary:* Lucy Law Webster  
*Treasurer:* Kathleen Stephansen  
*Members at large:*  
Linda Bilmes  
Lloyd J. Dumas  
James K. Galbraith  
Michael Lind  
Richard Parker  
Allen Sinai

### BOARD OF TRUSTEES

Clark Abt  
George Akerlof  
Oscar Arias  
Kenneth J. Arrow  
William J. Baumol  
Robert J. Gordon  
Richard Jolly  
Eric Maskin  
Daniel McFadden  
Roger Myerson  
George A. Papandreou  
Robert Reich  
Amartya Sen  
William F. Sharpe  
Robert Skidelsky  
Robert M. Solow  
Joseph E. Stiglitz

### AFFILIATE CHAIRS

*Australia:* David Throsby  
*Canada:* Kanta Marwah  
*Chile:* Aedil Suarez  
*Egypt:* Nabil Fahmy  
*France:* Jacques Fontanel  
*Germany:* Wolfram Elsner  
*Greece:* Eftychia Nikolaidou  
*India:* Darvesh Gopal  
*Israel:* Alex Mintz  
*Italy:* Raul Caruso  
*Netherlands and Belgium:*  
Joel van der Beek / Matthijs de Jong  
*Spain:* Juan Carlos M. Coll  
*South Africa:* Terry Crawford-Browne  
*United Kingdom:* J. Paul Dunne

## EPS at the ASSA

### Peace Economics from Theory to Practice

Saturday, Jan. 7, 2017 2:30 PM–4:30pm

Hyatt Regency Chicago, Ogden Room

Chair: JURGEN BRAUER, Augusta University

Panelists:

CHARLES ANDERTON—College of the Holy Cross

RAUL CARUSO—Universita Cattolica del Sacro Cuore

JOHN PAUL DUNNE—University of Cape Town

RAYMOND GILPIN—National Defense University

SHIKHA SILWAL—Washington and Lee University

### The Future of Growth

Sunday, Jan. 8, 2017 8:00 AM–10:00am

Hyatt Regency Chicago, Regency D

Chair: JAMES K. GALBRAITH, University of Texas at Austin

Panelists:

JONATHAN OSTRY—International Monetary Fund

ROBERT GORDON—Northwestern University

ANWAR SHAIKH—New School for Social Research

GERALD FRIEDMAN—University of Massachusetts at Amherst

### EPS Dinner in Honor of Sheila Bair

Saturday, Jan. 7, 2017 6:30 PM–10:00pm

Hyatt Regency Chicago, Regency D

Chair: LINDA BILMES

Speakers:

JOSEPH STIGLITZ

LEE PRICE

JAMES GALBRAITH

For dinner registration information please visit our website.



Like us on Facebook and keep up with our latest activities and upcoming events.



On Twitter @epsusa



EPS has a group page on LinkedIn. If this is your preferred social network, check in with us.