

# National Security Significance of a Changing Climate

## Operationalizing Climate Security

How does climate affect planning and operations?

**AFRICOM**

**CENTCOM**

**EUCOM**

**INDOPACOM**

**NORTHCOM**

**SOUTHCOM**

J-4 and J-5 experts collaborate from each  
Geographic Combatant Command.

## Conference Program

with Slides & Session Recording Links

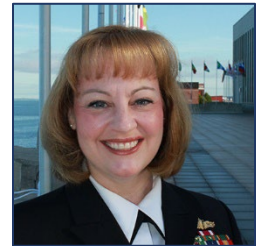
**Online Conference**

March 18, 2022, 0830 - 1430 EST



## Letter from the Host

On behalf of the U.S. Naval War College, we welcome you to this virtual conference about the **"National Security Significance of a Changing Climate: Operationalizing Climate Security."**



Last year, the Naval War College hosted our first climate security conference—a call to action meant to inspire thought and explore solutions about what a changing climate means for your country, your service, your career field, and each of you personally. Over the past year, the national security apparatus has rapidly mobilized to answer the myriad of ways climate change affects national security. The Department of Defense (DoD) has released the [DoD Climate Risk Analysis \(DCRA\)](#) and [DoD Climate Adaptation Plan \(DCAP\)](#) as the initial steps toward charting future DoD actions regarding climate security considerations.

Today we take the next step after a year that has prioritized climate change like never before. As the regional leadership for conducting joint military operations around the world, geographic combatant commands (GCCs) are on the front lines of "Operationalizing Climate Security." While climate is mainstreamed across the DoD, this conference seeks to ask how geographic combatant commands are integrating climate change into their mission, strategy, planning, and operations. Each GCC has organized differently—as you will see—but the general format of the event is that a J4 representative describes the climate risks to the area of responsibility and a J5 representative discusses how this shapes future thinking on plans, exercises, and operations. We are excited that so many of you are joining us for this initial exploration into how military operations around the world will transform because of climate change.

We are proud to continue our tradition of hosting open and free events exploring the national security significance of a changing climate. This event is made possible through the generous funding of the William B. Ruger Chair of National Security Economics, Professor Peter J. Dombrowski, and the Naval War College Foundation. Thanks to all for their support of this event..

Sincerely,

CDR Andrea H. Cameron, Ph.D., Ed.D.

Permanent Military Professor  
National Security Affairs Department  
Director, Climate & Human Security Group  
U.S. Naval War College



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This is an interactive PDF.

All navigation links are active.  
Speaker names on agenda link to speaker bios with return links.

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 = USNWC Alumni |  = USNWC Faculty



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## Agenda

### 8:30 – 9:10 AM EDT (1230 – 1310 UTC)

#### Welcome

Slides: CHSG | YouTube: <https://youtu.be/LYgAXVaV2U0?t=0>

**Commander Andrea H. Cameron, Ph.D., Ed.D.**, Permanent Military Professor, National Security Affairs Department; Director, Climate & Human Security Studies Group, U.S. Naval War College

#### Opening Remarks

YouTube: <https://youtu.be/LYgAXVaV2U0?t=533>

**Rear Admiral Shoshana S. Chatfield, Ed.D.**, President, U.S. Naval War College

#### Keynote Speaker

YouTube: <https://youtu.be/LYgAXVaV2U0?t=854>

**Ms. Kristina M. O'Brien**, Principal Deputy Director for Logistics, Joint Staff, J4

### 9:10 – 9:40 AM EDT (1310 – 1340 UTC)

#### Panel 1: Central Command

Slides: CENTCOM | YouTube: <https://youtu.be/LYgAXVaV2U0?t=2040>

*Moderator:* **Commander Andrea H. Cameron, Ph.D., Ed.D.**, Permanent Military Professor, National Security Affairs Department; Director, Climate & Human Security Studies Group, U.S. Naval War College

*Panelists:*

- **Mr. Michael T. Wolford**, Environmental Program J4, CENTCOM
- **Colonel Michael F. Arnone**, Division Chief, Strategy and Policy Division, J5, CENTCOM

### 9:40 – 9:50 AM EDT (1340 - 1350 UTC) – Break –

### 9:50 – 10:50 AM EDT (1350 – 1450 UTC)

#### Panel 2: European Command and Africa Command

Slides: EUCOM | AFRICOM | YouTube: <https://youtu.be/vrqufmDpDnc>

*Moderator:* **Dr. Naunihal Singh**, Associate Professor, National Security Affairs Department, U.S. Naval War College

*Panelists:*

- **Mr. Gary Russ**, J44, EUCOM
- **Commander Jacob Cass**, J5/8, EUCOM
- **Mr. Garth Anderson**, Environment and Operational Energy, J441, AFRICOM
- **Ms. Swathi Veeravalli**, J5, AFRICOM

🕒 10:50 – 11:00 AM EDT (1450 - 1500 UTC) – Break –

🕒 11:00 AM – 12:00 PM EDT (1500 – 1600 UTC)

## Panel 3: Southern Command and Northern Command

**Slides:** [SOUTHCOM](#) | [NORTHCOM](#) | 📺 **YouTube:** <https://youtu.be/wseHVKxDp7Q>

*Moderator:* **Dr. Christopher Faulkner**, Postdoctoral Fellow, National Security Affairs Department, U.S. Naval War College

*Panelists:*

- **Mr. Jeff Hughes**, Deputy Director, J5, SOUTHCOM
- **Ms. Linda Woestendiek**, Environmental Specialist, J45, SOUTHCOM
- **Dr. Jeth A. Fogg**, Engineer Operations and Environmental Chief, J42, NORTHCOM
- **Rear Admiral Daniel L. Cheever**, Director of Plans, Policy and Strategy, NORTHCOM

🕒 12:00 – 12:10 PM EDT (1600 - 1610 UTC) – Break –

🕒 12:10 – 12:55 PM EDT (1610 – 1655 UTC)

## Panel 4: Indo-Pacific Command

**Slides:** [INDOPACOM](#) | 📺 **YouTube:** <https://youtu.be/SQjWIIcRcc8?t=0>

*Moderator:* **Dr. Hayat Alvi**, Associate Professor, National Security Affairs Department, U.S. Naval War College

*Panelists:*

- **Mr. Joseph Martin**, Director, Center for Excellence in Disaster Management and Humanitarian Assistance

🕒 12:55 – 1:00 PM EDT (1655 – 1700 UTC)

## Closing Remarks

📺 **YouTube:** <https://youtu.be/SQjWIIcRcc8?t=2901>

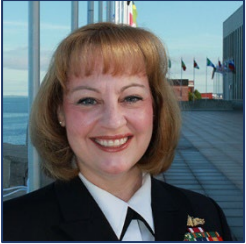
**Commander Andrea H. Cameron, Ph.D., Ed.D.**, Permanent Military Professor, National Security Affairs Department; Director, Climate & Human Security Studies Group, U.S. Naval War College

## Biographies

### Event Chair

#### Commander Andrea H. Cameron, Ph.D., Ed.D.

Chair



Permanent Military Professor, National Security Affairs Dept.; Founding Director of the Climate and Human Security Studies Group, U.S. Naval War College

Commander Andrea H. Cameron is a Permanent Military Professor teaching policy analysis in the National Security Affairs Department at the U.S. Naval War College and the founding director of the Climate and Human Security Studies Group. She also teaches on climate change and national security. Her academic interests explore non-traditional and transnational security threats and their impact on U.S. strategic, national security and economic interests. These research interests include climate change and security, climate and energy policy, human security topics, and civil-military coordination during humanitarian assistance/disaster relief. Andrea Cameron holds a B.A. degree in Political Science from Marquette University, a M.A. in Human Resource Development from The George Washington University, a M.S. in Military Operational Art and Science from the Air Command and Staff College, an Ed.D. in Educational Technology from Pepperdine University, and a Ph.D. in Security Studies from the Naval Postgraduate School.

Andrea Cameron is selected as a Fulbright Scholar in NATO Security Studies in Belgium for academic year 2022-2023. She will be teaching at the College of Europe and continuing her research in climate security.



[andreahcameron.com](http://andreahcameron.com)

### Opening Remarks

#### Rear Admiral Shoshana S. Chatfield, Ed.D., USN

Opening Remarks



President, U.S. Naval War College

Rear Admiral Shoshana S. Chatfield is the fifty-seventh President of the U.S. Naval War College and a career naval helicopter pilot. A native of Garden Grove, California, she graduated from Boston University in 1987 with a Bachelor of Arts in International Relations and French Language and Literature. She received her commission through the Naval Reserve Officers Training Corps in 1988 and earned her wings of gold in 1989. Chatfield was awarded the Navy's Political/Military Scholarship and attended the Kennedy School of Government, receiving a Master of Public Administration from Harvard University in 1997. In 2009, the University of San Diego conferred upon her a doctorate of education in leadership studies.

Operationally, she flew the SH-3, CH-46D and MH-60S and deployed in helicopter detachments to the Western Pacific and Arabian Gulf supporting carrier strike group and amphibious ready group operations.

Ashore, she participated in the Joint Staff/OSD Internship Program, augmenting the Joint

Staff, Plans and Policy (J-5) Directorate, Central & Eastern European Branch; was assigned as deputy executive assistant to the chief of naval operations; was senior military assistant to the supreme allied commander Europe; and was the United States deputy military representative to the NATO Military Committee.

She served as assistant professor of political science at the United States Air Force Academy from 2001-2004.

Chatfield commanded at all levels to include squadron and type wing commander and commander of a joint provincial reconstruction team in Farah Province, Afghanistan. Most recently, Chatfield commanded Joint Region Marianas from January 2017 to August 2019.



[usnwc.edu](https://usnwc.edu)

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### Keynote Speakers

#### Ms. Kristina M. O'Brien

Keynote



Principal Deputy Director for Logistics, Joint Staff, J4

Ms. Kristina M. O'Brien was appointed to the Senior Executive Service on November 12, 2019 as Principal Deputy Director for Logistics, Joint Staff, The Pentagon, Washington D.C. In this role she supports the Director for Logistics, J4 in integrating logistics planning and execution in support of global operations.

Prior to her SES appointment, Ms. O'Brien supported the U.S Department of Commerce, where she led a multi-organizational team to coordinate, integrate, test and deploy the Remote Alaska Operational Delivery supporting the 2020 Decennial Census System of System architecture.

Ms. O'Brien previously served in the United States Air Force as a Logistics Readiness Officer, commanding at the group and squadron levels and serving in multiple joint positions. Her military awards include the Defense Superior Service Medal, Legion of Merit, Bronze Star and Defense Meritorious Service Medal.

Ms. O'Brien's academic credentials include a Bachelor of Business Administration from the Illinois Institute of Technology, a Master of Science in Operations Management from the University of Arkansas, a Master of Science in Logistics Management from the Air Force Institute of Technology, and a Master of Arts in Strategic Studies from the Air War College. She is also a certified Program Management Professional.



[jcs.mil](https://jcs.mil)



## Panel 1: Central Command

*Moderator:*

### **Commander Andrea H. Cameron, Ph.D., Ed.D.**

Panel 1

Permanent Military Professor, National Security Affairs Dept.; Founding Director of the Climate and Human Security Studies Group, U.S. Naval War College

Photo and Bio are listed as [Event Chair](#).

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[andreahecameron.com](http://andreahecameron.com)

*Panelists:*

### **Mr. Michael T. Wolford**

Panel 1



Environmental Program Manager, J4, CENTCOM

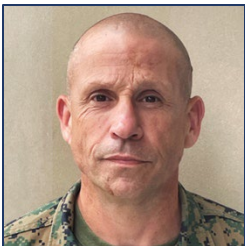
Mr. Wolford retired from the US Army in 2014 and started working at the US Army Engineer School, Directorate of Environmental Integration. He has served as the environmental program manager at USCENTCOM from November 2010 to May 2015 and again from April 2018 to present. He has also served as the environmental program manager for US Air Force Central Command, US Army Africa Command, and US Forces Afghanistan. Mr. Wolford graduated from Drury University with a Bachelor's degree in Environmental Science and from Webster University with a Master's Degree in Environmental Management.

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[Michael.T.Wolford.civ@mail.mil](mailto:Michael.T.Wolford.civ@mail.mil)

### **Colonel Michael F. Arnone**

Panel 1



Division Chief, Strategy and Policy Division, J5, CENTCOM

Colonel Arnone graduated from Frostburg State University Maryland and was commissioned in 1997. He is a career infantry officer who has served in numerous operational billets within the Fleet Marine Force. He has also served as the Deputy J52, Strategy Plans and Posture, U.S. Special Operation Command, Director of Future Plans 5th FLEET/NAVCENT, and the Division Chief for Strategy and Policy U.S. Central Command. He is a graduate of the Marine Corps Expeditionary Warfare School, U.S. Army's Infantry Captain's Career Course, the Marine Corps Command and Staff College, and the U.S. Army War College.

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[centcom.mil](http://centcom.mil)

## Panel 2: European Command and Africa Command

*Moderator:*

### Dr. Naunihal Singh

Panel 2



Associate Professor, National Security Affairs Dept., U.S. Naval War College

Dr. Naunihal Singh is a scholar of African Politics, Civil-Military Relations. Author of “Seizing Power: The Strategic Logic of Military Coups” (2014) a book on the dynamics and outcomes of military coups based on 300 hours of interviews and a statistical analysis of 471 coup attempts. Dr. Singh holds a Ph.D. from Harvard University.



[Seizing Power \(John Hopkins University Press\)](#) | Twitter: [@naunihalpublic](#)



*Panelists:*

### Mr. Gary Russ

Panel 2



Real Estate & Environmental Partnerships Specialist, J44, EUCOM

Mr. Gary Russ is a native of Arizona. He holds an MS from University of Kansas and a BS from Kansas State University. His military education includes Engineer basic and training up through the Air War College.

Mr. Russ assignments included combat engineer squad member up through his final assignment as the Commander of 2502nd Liaison Detachment to 2ND Operational Command in the Republic of Korea. His operational deployments include Operation Desert Shield/ Desert Storm Kuwait, Iraq; Operation Iraqi Freedom, Iraq; and Operation Enduring Freedom, Afghanistan.

His civilian career began at Dames & Moore in 1994 as a regulatory compliance specialist followed by Manager of Environmental Services for Ninyo & Moore in January 2000 through July 2003. In between two military deployments, Mr. Russ was employed by Kellogg Brown & Root and Jason Associates. Next, he was employed by USAREUR as an engineer project manager and an environmental engineer. Next, he served as J4 Director, for Engineering, Logistics and Housing supporting U.S. Military Training Mission, Saudi Arabia followed by Chief of Operations & Maintenance for the Okeechobee Waterway and Herbert Hoover Dike, Florida.



[eucom.mil](#)

### Commander Jacob Cass, USCG

Panel 2



J5/8, EUCOM

CDR Cass currently serves as an Arctic Strategist at the U.S. European Command in Stuttgart, Germany. Previous assignments afloat include the Executive Officer in Coast Guard Cutter (CGC) JAMES in Charleston, SC, Operations Officer in CGC HEALY in Seattle, WA, Weapons Officer in CGC CHASE in San Diego, CA, and Deck Watch Officer in CGC RUSH in Honolulu, HI. His previous assignments ashore include the International Port

Views presented by faculty do not reflect official positions of the USNWC, DON or DOD.

Security Program Coordinator at Activities Europe in Schinnen, the Netherlands, French language training at the State Department's Foreign Service Institute in Arlington, VA, Information Officer at the International Ice Patrol in New London, CT, and the Law Enforcement Staff at the Coast Guard District Fourteen Office in Honolulu, HI. He received a Bachelor of Science in Marine and Environmental Science from the U.S. Coast Guard Academy and a Master's of Science in Physical Oceanography from the University of Hawaii at Manoa. Commander Cass is a permanent Cutterman and is a licensed Merchant Mariner.



[eucom.mil](mailto:eucom.mil)

### Mr. Garth Anderson

Panel 2



Environment and Operational Energy, J441, AFRICOM

Mr. Garth Anderson is the Chief of Environmental Security at US Africa Command, responsible for policy and oversight for environmental compliance of deployed forces in theater, implementation of climate and environmental considerations in security cooperation and campaign planning, and integration of operational energy practices and technologies. Mr. Anderson previously served in the Army Corps of Engineers, leading environmental research and remediation projects. He also served 30 years as an Army Engineer Officer in both the active and reserve components. He is a graduate of the US Army War College.



[africom.mil](mailto:africom.mil)

### Ms. Swathi Veeravalli

Panel 2



J5, AFRICOM

Ms. Swathi Veeravalli joined United States Africa Command (USAFRICOM) in August 2019 as a Foreign Affairs Specialist. As the desk officer for Benin, Ghana, and Togo, she shapes, synchronizes and assesses USAFRICOM's priorities in West Africa. She currently serves as the Command's Climate Security subject matter expert and is on the Diversity and Inclusion Steering Committee. Prior to joining USAFRICOM, Ms. Veeravalli led the Strategic Integration Office's development of national security objectives on contingency operations to ensure force protection and readiness for the Combat Engineer Regiment, while at the U.S. Army Corps of Engineers. She holds a Master of Science in Water Science, Policy & Management from the University of Oxford and a Bachelor of Arts in International Affairs concentrating in African Politics and Development from the George Washington University. She has served as an adjunct faculty member at Georgetown University's Walsh School of Foreign Service. Swathi is a dedicated civil servant who is committed to addressing domestic and global challenges and core systemic risks to security in the Anthropocene.



[africom.mil](mailto:africom.mil)

## Panel 3: Southern Command and Northern Command

*Moderator:*

### Dr. Christopher M. Faulkner

Panel 3



Postdoctoral Fellow, National Security Affairs Dept., U.S. Naval War College

Christopher M. Faulkner is a Postdoctoral Fellow in the National Security Affairs (NSA) Department at the United States Naval War College where he teaches courses on Foreign Policy Analysis. Previously, he served as a Postdoctoral Researcher with the University of Central Florida (May-July 2021) and as a Visiting Assistant Professor in International Studies at Centre College (August 2019-July 2021) where he instructed courses in Comparative Politics, International Relations, Research Design, National and International Security, African Politics, Human Rights, Child Soldiering, and Global Health. He earned his PhD in Security Studies in August 2019 from the School of Politics, Security, and International Affairs at the University of Central Florida. During the 2018-2019 academic year he served as a Minerva-Jennings Randolph Peace and Security Scholar with the United States Institute of Peace (USIP). His primary research focuses on human security in armed intrastate conflict with specific attention on rebel recruitment strategies, militant financing and tactics, and foreign policy in combatting non-state armed groups. He also researches and writes about private military and security companies (PMSCs) in civil war, civil-military relations and democratization, maritime terrorism, and counterterrorism.

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[christophermfaulkner.wordpress.com](http://christophermfaulkner.wordpress.com) | Twitter: [C\\_Faulkner\\_UCF](https://twitter.com/C_Faulkner_UCF)

*Panelists:*

### Mr. Jeff Hughes, SES, CEM, MEP

Panel 3



Deputy Director, Strategy, Policy, and Plans, J5, SOUTHCOM

Mr. Jeff Hughes is a member of the Senior Executive Service serving as US Southern Command's Deputy Director for Strategy, Policy, and Plans (J5). In this capacity, he leads the combatant command's, strategy development, policy recommendations, security assistance programs, and contingency and theater campaign plans for the Caribbean, Central American, and South American regions. Mr. Hughes is a member of cohort V of the National Emergency Management Executive Academy, a 2010 Department of Homeland Security Senior Fellow, a Master Exercise Practitioner, and a Certified Emergency Manager.

Mr. Hughes graduated from the U. S. Coast Guard Academy in 1985. He is a 2000 graduate of the U. S. Naval War College Command and Staff College. A Permanent Cutterman he served on active duty in USCGC UNIMAK, as Commanding Officer of USCGC POINT KNOLL, and as Operations Officer USCGC ESCANABA. His final assignment on active duty was as a Strategic Planner, Operational Plans and Joint Force Development Directorate, the Joint Staff (J-7) in 2007. Mr. Hughes joined federal civilian service following a 23 year career as an active duty officer in the U. S. Coast Guard.

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[southcom.mil](http://southcom.mil)

## Ms. Linda Woestendiek

Panel 3



Command Environmental Specialist, J45, SOUTHCOM

Linda Woestendiek is an Army veteran with a degree in Environmental Science. She has over 20 years' experience in environmental planning, infrastructure development, and regulatory compliance. She's HAZWOPER certified, PMP trained, and well-versed in a broad range of environmental programs. While her career has been primarily spent with the DoD, she also spent time with the Department of the Interior coordinating NEPA and regional emergency response activities. Through this assignment, she was a member of two Regional Response Teams, with participation on plans and exercises for coordinated emergency response between the US and Mexico – which were implemented during the Deepwater Horizon oil spill of 2010. She managed the Environmental Planning section of the Luke AFB Range Management Office and coordinated the development of the 'Barry M Goldwater Range Legislative Environmental Impact Statement (LEIS) for Renewal of Public Lands for Military Use,' which resulted in an unprecedented Congressional decision for a 25-year withdrawal of public lands. She's also been involved in NEPA coordination for two military base closures, multiple other military activities, and several decision documents. She came to SOUTHCOM from the Army Reserves, where she was the sole locally stationed environmental coordinator for reserve activities and facilities throughout Florida.

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[southcom.mil](mailto:southcom.mil)

## Dr. Jeth Fogg

Panel 3



Engineer Operations and Environmental Chief, J42, NORTHCOM

Dr. Jeth Fogg is the Engineer Operations and Environmental Chief in the Directorate of Logistics and Engineering at North American Aerospace Defense Command (NORAD) and United States Northern Command (USNORTHCOM) with science and technology, environmental and climate security, homeland defense, and defense support of civil authorities included in his portfolio. Dr. Fogg has over 30 years of civil engineering design, operations, public works, construction management, environmental compliance, hospital life safety, critical infrastructure and homeland security/defense, education and research experience. Dr. Fogg has been a key member of the More Situational Awareness for Industrial Control Systems (MOSAICS) team communicating the importance of cyber protection of industrial control systems supporting our nation's critical infrastructure. He is also a Combatant Command co-lead for RECESS, (Resource Competition, Environmental Security, and Stability). He holds a B.S., M.E., and Ph.D. in Civil Engineering, a Graduate certificate in Homeland Defense, and Professional Engineer licensure in Colorado and Florida.

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[jeth.a.fogg2.civ@mail.mil](mailto:jeth.a.fogg2.civ@mail.mil)



## Rear Admiral Daniel L. Cheever, USN

Panel 3



Director of Strategy, Policy and Plans, J5, NORAD and USNORTHCOM

Rear Admiral Dan “Undra” Cheever is the Director of Strategy, Policy & Plans (J5), NORAD and USNORTHCOM. He is responsible for North American Aerospace Defense Command strategy, policy, plans and requirements development for the safeguarding of the United States and Canada via assigned missions of aerospace warning, aerospace control, and maritime warning. For the U.S. Northern Command, he leads development of strategy, policy, deliberate plans, and security cooperation with Canada, Mexico and The Bahamas, to accomplish primary missions of homeland defense and support to civil authorities.

Rear Adm. Cheever is a native of Downers Grove, Illinois and is a 1986 graduate of Western Illinois University with a Bachelor of Business degree. After college, he worked for a Fortune 500 corporation and attended the University of Hawaii. He joined the Navy in 1988 and was designated a Naval aviator in 1990. He has accumulated over 5,000 flight hours and over 1,100 carrier-arrested landings. His decorations include the Legion of Merit (3), Defense Meritorious Service Medal, Meritorious Service Medal (3), Air Medal Strike/Flight and various campaign, unit and service awards.

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[northcom.mil](http://northcom.mil)

## Panel 4: Indo-Pacific Command

*Moderator:*

### Dr. Hayat Alvi

Panel 4



Associate Professor, National Security Affairs Dept., U.S. Naval War College

Dr. Alvi is an Associate Professor (civilian) in the National Security Affairs Department at the US Naval War College. She has served as the Director of International Studies at Arcadia University, and she taught political science at the American University in Cairo, Egypt (2001-2005). She also spent a year in Damascus, Syria, as a Fulbright Fellow (1993-1994). She is proficient in Arabic and Urdu.



Her specializations include International Relations, Political Economy, Security and Strategic Studies, Terrorism and Counterterrorism, Conflict Resolution, Genocide Studies, Middle East and North Africa (MENA), South Asian Studies, and Islamic Studies.

She has published numerous books, articles, and chapters, including her latest books, *Nonviolent Activism in Islam: The Message of Abul Kalam Azad* (Rowman & Littlefield, 2021); and *The Political Economy and Islam of the Middle East: The Case of Tunisia* (Palgrave, 2019). She is a Fulbright Fellow (Syria) and a recipient of the Faculty Service Award at the Naval War College (June 2019).

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Twitter: [@hayatalvi](https://twitter.com/hayatalvi)

*Panelists:*

**Mr. Joseph Martin, SES**

Panel 4



Director, Center for Excellence in Disaster Management and Humanitarian Assistance | INDOPACOM Lead on Climate

Mr. Martin is the Director of the Department of Defense Center for Excellence in Disaster Management and Humanitarian Assistance (CFE-DM) on Ford Island, Pearl Harbor, Hawaii. He directs training, education, applied research, plans and analysis, and crisis support during disasters in support of U.S. Indo-Pacific Command, while retaining worldwide support responsibilities under Section 182 of Title 10, U.S.C. Mr. Martin also serves as the Climate Change Impact (CCI) program director for Indo-Pacific Command. He was appointed to the Senior Executive Service in October 2016 upon resuming duties as the Center's Director; he previously served as the Director of CFE-DM from May 2014 to June 2016 while on active duty as a U.S. Air Force colonel.

Prior to his current position, he was the Director of Pacific Outreach (J9) at U.S. Indo-Pacific Command, part of a nearly 27 year Air Force career as logistics planner, supply/fuels officer, and logistics readiness officer. He commanded five times at the Flight, Squadron (x3), and Group level, and deployed for Operations Deny Flight, Southern Watch, Iraqi Freedom, and Enduring Freedom. Additionally, he served on the Logistics Staff at Pacific Air Forces and the Air Staff, and completed joint positions with the Defense Logistics Agency, U.S. Forces Korea, and U.S. Indo-Pacific Command. Mr. Martin received multiple joint and service awards, and holds graduate degrees from Troy State University, the Air Force Institute of Technology, Air University, and National Defense University.

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[cfe-dmha.org](http://cfe-dmha.org)

## Recommended Resources

### Naval War College (NWC) Climate Change Library Guide

<https://usnwc.libguides.com/climatechange>

This research portal available to all—organizing materials in over ten subpages focused on categories like international climate change and DOD Climate Resources as well as human security issues like water security, food security, and migration. The guide features countless open-source resources from U.S. Government, international, and academic organizations and books, journals, and databases accessible to those with NWC credentials.

### Climate Security Think Tanks and Centers:

- Center for Climate and Security <https://climateandsecurity.org>
- International Military Council on Climate and Security <https://imccs.org>
- Wilson Center—Environmental Change and Security Program (ECSP)  
<https://www.wilsoncenter.org/program/environmental-change-and-security-program>
- American Security Project (ASP) Climate Security  
<https://www.americansecurityproject.org/issues/climate-security>
- Center for a New America Security—Climate Change  
<https://www.cnas.org/research/energy-economics-and-security/energy-exports/climate-change>
- Stimson Center Climate Security <https://www.stimson.org/project/climate-security>
- International Institute for Strategic Studies (IISS)—Environmental and Climate Change  
<https://www.iiss.org/topics/environmental-and-climate-change>
- Stockholm International Peace Research Institute (SIPRI)—Climate Change and Security  
<https://www.sipri.org/research/peace-and-development/climate-change-and-risk/climate-change-and-security>
- Stockholm International Peace Research Institute (SIPRI)—Climate Change and Risk  
<https://www.sipri.org/research/peace-and-development/climate-change-and-risk>
- Planetary Security Initiative <https://www.planetarysecurityinitiative.org>
- Center for Climate and Energy Solutions (C2ES) <https://www.c2es.org>

### Climate Science Research Organizations:

- NASA Climate Change and Global Warming <https://climate.nasa.gov>
- NOAA Climate <https://www.noaa.gov/climate>
- Woods Hole Oceanographic Institution—Climate & Ocean  
<https://www.whoi.edu/know-your-ocean/ocean-topics/climate-ocean>
- Woodwell Climate Research Center <https://www.woodwellclimate.org>
- World Resources Institute Climate <https://www.wri.org/our-work/topics/climate>
- Union of Concerned Scientists (UCS)—Climate Change  
<https://www.ucsusa.org/climate>
- American Meteorological Association—Climate Change  
<https://www.ametsoc.org/ams/index.cfm/about-ams/ams-and-climate-change>
- Center for Climate Systems Research (Columbia University Earth Institute)  
<https://ccsr.columbia.edu>
- The Energy and Resources Institute (TERI) <https://www.teriin.org>

### Thank You

Thank you to the U.S. Naval War College staff and faculty who helped support this event:

**President RADM Shoshana Chatfield, Ed.D.**

U.S. Naval War College

**Prof. Peter Dombrowski, Ph.D.**

William B. Ruger Chair of National Security Economics

**The Naval War College Foundation**

**Prof. Michael H. Bush, Ed.D.**

College of Distance Education, Instructional Innovation

**CDR Gary Ross** – Public Affairs Office

**Christin Redding** – Office of Alumni Programs

**Karen Sellers** – Director, Special Events

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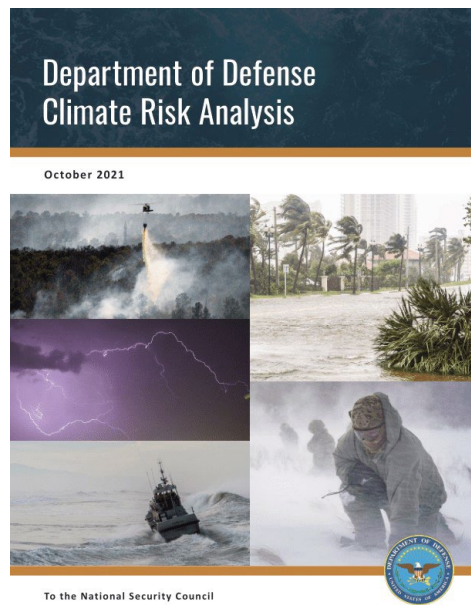
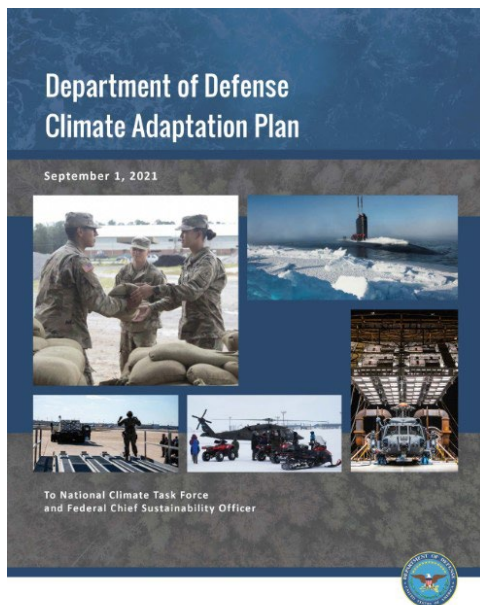
**Isabel Lopes** – Librarian

And many thanks to the speakers and moderators who worked so hard to make this an incredibly successful event!



## Presentation Slides

### Climate & Human Security Group



**CHSG**  
Climate & Human Security Group

Slides intended for classroom use, not as a standalone product.  
Views expressed are those of the instructor and do not represent the views of the NWC, DON, or USG.

Figure 2 illustrates some representative climate change hazards and potential impacts on DoD missions around the world.

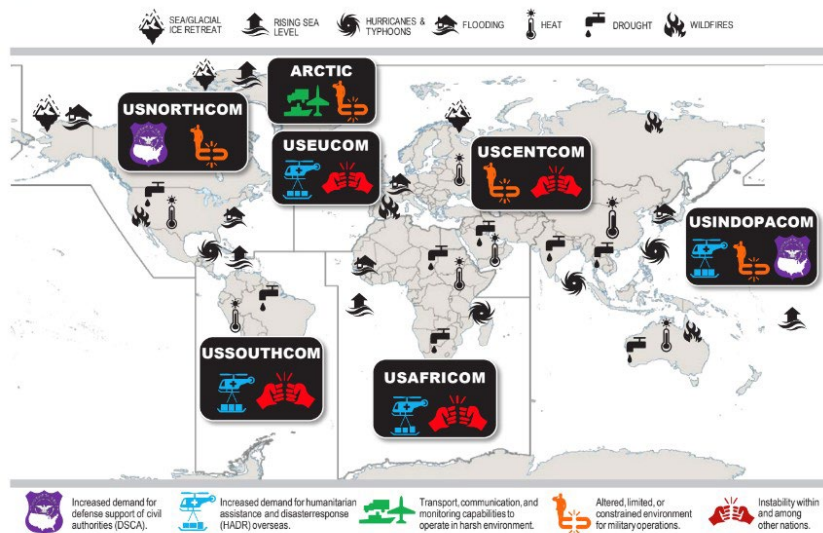
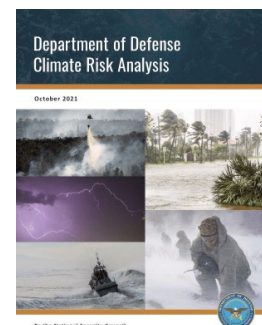


Figure 2. Selected regional hazards worsened by climate change (key to symbols on the top row above map) and identified security implications (key to symbols on the bottom row below the map). This map illustrates some of the key risks by region, but is not comprehensive of all risk.

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**CHSG**  
Climate & Human Security Group

DoD Climate Risk Analysis (DCRA) Figure represents how climate change hazards and potential impacts on DoD missions around the world. (DCRA Figure 2)



## DoD Climate Risk Analysis

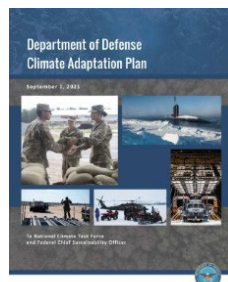


Figure 3. Examples of DoD documents in which climate will be incorporated.

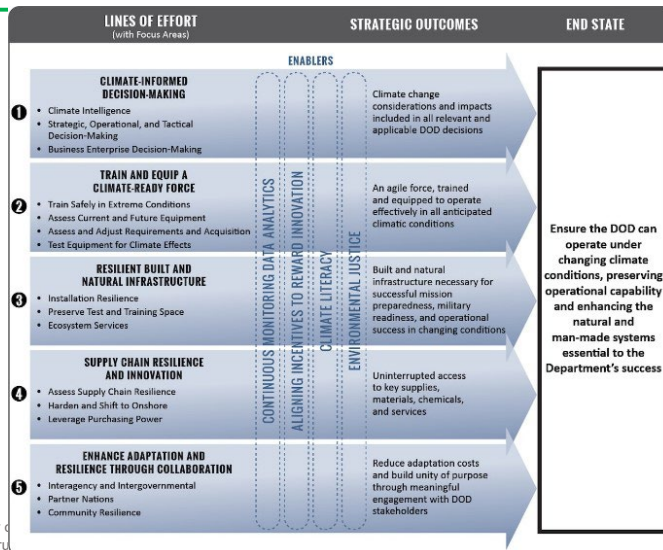
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## DoD Climate Adaptation Plan

**END STATE: "Ensure the DoD can operate under changing climate conditions, preserving operational capability and enhancing the natural and man-made systems essential to the Department's success"**



Slides intended for classroom use, not as a standalone product.  
Views expressed are those of the instructor and do not represent the views of the NWC, DON, or USG.



## Climate Security

- “The effects of climate change on U.S. national security and related infrastructure, on political stability at national and sub-national levels, on the security of allies and partners, and on ongoing or potential political violence and unrest.”

**-NDAA FY2020**

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Views expressed are those of the instructor and do not represent the views of the NWC, DON, or USG.

### Definitions of Climate Security

<b>EU/UN/adelphi</b>	“Climate-related security risks” are understood as the adverse impacts of climate change on human security - the freedom from fear and want, but also as they relate to the security of the state, and the maintenance of international peace and security, under the United Nations Charter.
<b>Clingendael</b>	Climate Security Practices (CSPs) are tangible actions implemented by a (local or central) government, organisation, community, private actor or individual to help prevent, reduce, mitigate or adapt (to) security risks and threats related to impacts of climate change and related environmental degradation, as well as subsequent policies
<b>SIPRI</b>	Climate-related security risks are multifaceted (i.e. involve different consequences, such as drought, floods and sea-level rise) and can simultaneously undermine the security of different reference objects (e.g. humans, communities, states, the international system, the environment and ecology). Moreover, climate-related security risks span different policy areas, such as foreign, military, development, economy and environment.
<b>Mercy Corps</b>	The result of the interaction between the effects of climate change (e.g. rising temperatures, shifting rainfall patterns), macro level trends (e.g. population growth), environmental impacts, and socio-economic tensions and fragility.
<b>NATO</b>	Climate change is becoming a threat multiplier. It is likely to accelerate resource scarcity and global food and water insecurity. As ocean levels rise, and the world's habitable landmass is reduced, migration flows could accelerate towards NATO territory.

NEW AMERICA

USG.

Ref: “[Climate Security: Building a Community of Practice](#),” New America, 2021.



## Climate Security?

- **Understand risks and adverse impacts to stability**
  - To own state
  - To allies and partners
  - To adversaries
- **Create, accelerate, amplify, or compound threats**
- **Affects infrastructure, and therefore training and readiness**
- **Need for adaptation and improve resiliency**
- **Need for mitigation—role in energy transformation**
- **Leads to migration**
- **Affects to battlefield and warfighting environment**

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## Central Command



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## USCENTCOM Agenda

- *Area of Responsibility*
- *AOR Characteristics*
- *Strategic Importance of CENTCOM*
- *Climate Change Challenges*
- *Engagements and Challenges*



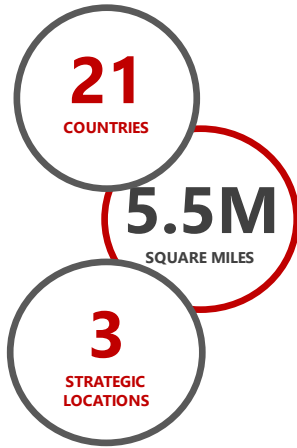
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## USCENTCOM Area of Responsibility



### Strategic Locations

- Bab al Mandab
- Suez Canal
- Strait of Hormuz



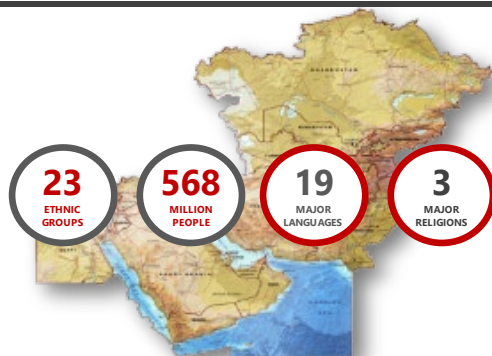
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## USCENTCOM AOR Characteristics



### 19 out of 21

Countries' population between ages of 15 -29 (over 40%)

**64%**

of world's petroleum reserves

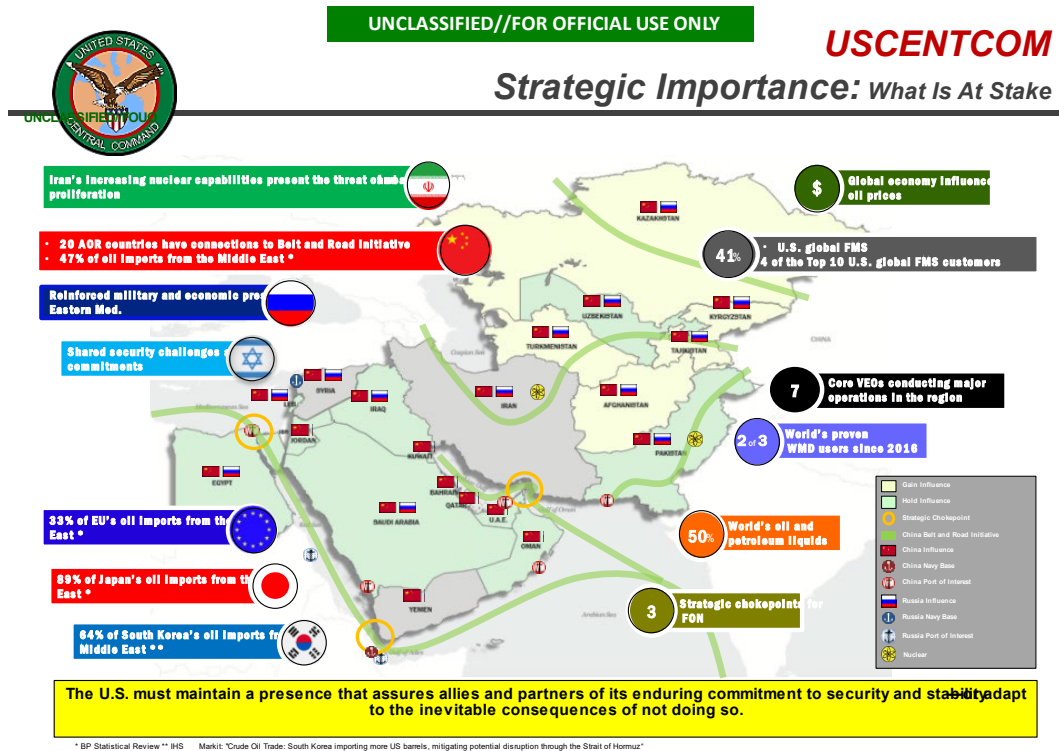
**46%**

of natural gas reserves



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### Strategic Challenges and Landscape

- Instability
- State Aggressors
- Weapons of Mass Destruction
- Understand Strategic Impact of Resource Insecurity



### Impact to USCENTCOM



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**USCENTCOM**

## Engagements and Challenges

### Way Forward:

- Military support to diplomacy and development.
  - Environmental expertise
  - Development assistance
- Become the partner of choice
  - Leader on global and regional environmental issues
  - Counter influence of Global competitors and malign actors
- Build partner capacity to respond to environmental risks
  - Assist in developing resiliency and ability to respond to other security threats

### Tools:

- State Partnership Program
  - Agriculture development teams
  - Better manage water resources
- Exercises
  - Include environmental scenarios to exercises
  - Opportunity to highlight response capability and resilience
- Engagements
  - Mil-to-mil engagement that include ministries and civilian/educational entities
  - Introduce best management practices for water conservation, water extraction, prevention of soil erosion, etc.
  - Introduce new technologies
  - Foster internal communications within partner countries (military -civilian)
  - Opportunity to collaborate between COCOMs

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# EUCOM Efforts to Operationalize Climate Security

U.S. Naval War College Briefing  
18 March 2022

Mr. Gary Russ & CDR Jake Cass  
U.S. European Command



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## Key Leader Statements

- “Our European Allies and Partners will be directly affected by instability, resource competition, humanitarian and migration crises caused by climate change. These threats add to the security challenges in Europe. Maintaining peace on the European continent is USEUCOM’s purpose and we must complement the whole of government approach to combating climate change. Addressing climate change together provides an even greater opportunity to bring the U.S. and our European Allies and Partners into closer alignment. USEUCOM operates by, with, and through Allies and Partners to better understand how climate change will continue to alter the strategic environment and how to best respond.”

- General Tod Wolters, 13 Apr 21

- Principle #3 of NATO’s renewed work on climate change is for “NATO to adapt to the changing climate by better assessing the impacts of climate change on Allies’ and NATO’s deterrence and defense posture and civil preparedness. Allies decided to develop action plan setting out specific tasks and timelines ahead of 2021 NATO Summit.”

- 7 Apr 21 NATO Scene setter for Sec Def by Charge’s d’ Affaires



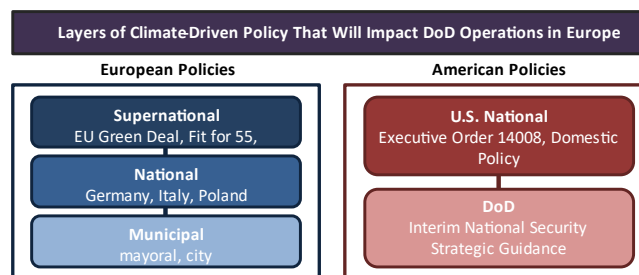
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## Anticipate a range of policy responses at differing levels



### Policy Key Takeaways

Potential near-term direct impacts to DoD:

- Anticipate the possibility of set limits—potentially by NATO—on emissions by 2030 and **net zero emissions by 2050**
- Carbon emissions regulations applicable to local DoD contractors may **increase the cost of operations in Europe**
- Reduced transportation times and greater route flexibility** as more rail and highway infrastructure is developed

Broader impacts to DoD:

- Electrification of infrastructure may lead to **increased technical vulnerabilities** that a malicious actor could exploit
- Increased use of smart technologies to improve efficiency may also increase the **potential for digital surveillance**



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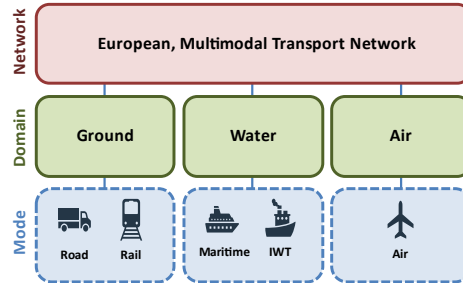
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## Logistics infrastructure in Europe will also be impacted

Logistics infrastructure is expected to remain overall resilient and increasingly connected, however climate impacts, technological adaptation, and regulatory responses will drive changes to cost, transport modes, and network risk



### Network-Wide Key Takeaways

- Planned development of multimodal, European -wide transport corridors will provide **greater connectivity and climate resilience**
- Transport **costs may increase greatly** due to regulations, but can be offset with green technologies and shifts in transport modes
- Transport infrastructure digitalization and electrification may introduce **new cyber and surveillance risks**

### Domain-Wide Key Takeaways

- Ground* transport will continue to dominate freight and passenger transport with an **increasing shift to rail**
- Water* will experience shorter total maritime shipping times, but **more frequent delays and disruptions**
- Air* transport will likely **expand its role time-sensitive transport** but may contract in remote and coastal areas



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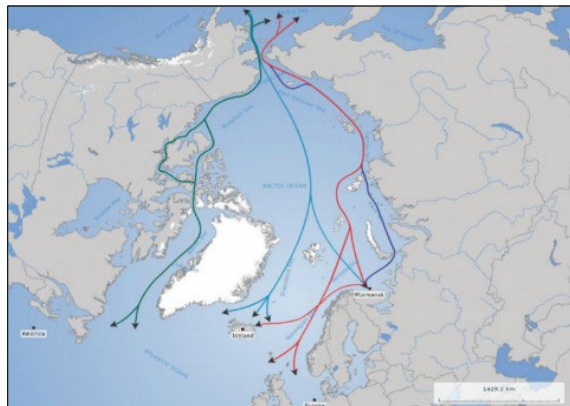
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## Impacts in the Arctic represent a key risk – or opportunity

Melting ice in the Arctic may expose new shipping lanes and create expanded opportunities for resource extraction, challenging norms, complicating maritime security, and escalating regional tensions.

Potential Arctic Shipping Routes by 2040



Source: Langanesbyggð Municipality, Iceland

### Heating up

- 44% reduction in Sept ice since 1979
- Substantial summertime access by 2040

### Reduced shipping times

- China to Europe shortened by 10 - 15 days

### Resource rich

- 30% of worlds undiscovered natural gas
- 13% of world's undiscovered oil
- Resource extraction will be costly



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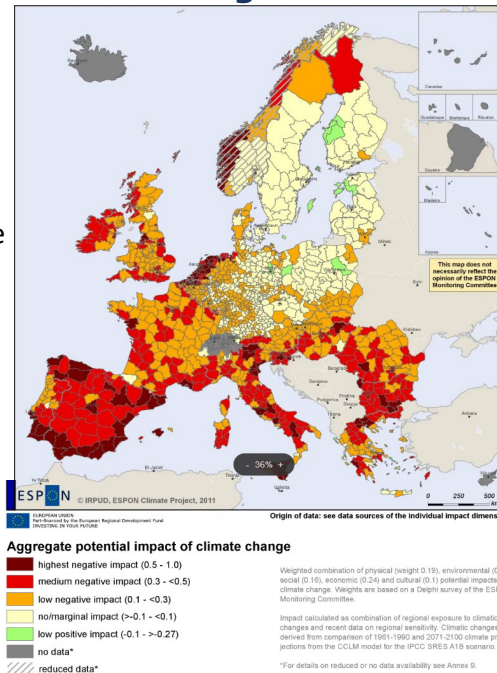
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## EUCOM Operational Climate Change Affects

- 200 million European population affected by climate change
- Stability of former Yugoslavia countries
- Escalated heat affecting agriculture
- Violent weather events (HADR)
- Migration



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## Recent Responses to 2021 Climate Change Events in EUCOM AOR

- **Spain** → 8,000 migrants breached the Morocco border of Ceuta in just 48 hours (18 May 21)
- **Germany** → US sent 2x bridges to support transportation post flooding (16 Jul & 17 Aug 21)
- **Turkey** → US sent 2x chinooks and fire team to quell forest fires (13 Aug 21)
- **Greece** → US sent 2x chinooks and fire team to quell forest fires (13 Aug 21)
- **Spain** → mobilized military to quell forest fires (10 Sep 21)
- **Germany** → Northern city of Kiel hit by tornado (29 Sep 21)

*...these are just a few examples*



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## Security Implications of Climate Change

- Climate change is reshaping the geostrategic, operational, and tactical environments.
- Increasing temperatures, changing precipitation patterns, and more frequent, intense, and unpredictable extreme weather conditions exacerbate existing risks and create new challenges for U.S. national security and defense.
- Without adaptation, the impacts of climate change are likely to degrade readiness, threaten the homeland, and contribute to destabilizing effects abroad.

## Key Questions

- How do you measure a country's stability and their ability to overcome climate change extremes?
- Actions to mitigate?
- Who determines extreme weather caused by climate change?
- How to make the biggest impacts in a resource-constrained environment (people and \$\$)?



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## EUCOM Equities

- Allies & Partners (EU, NATO, PFP, State Partnership Program (SPP) etc.)
- Security cooperation ( *proactive vs. reactive* )
- Arctic warming (effects of) on infrastructure (US and A&P)
- Commercial traffic -- particularly along the Northern Sea Route
- Weather patterns changing
- Lines of communication
- Installation energy: IMCOM, AFIMSC, USACE, NAVFAC, etc.
- Operational energy: field test operational energy project (heat pump)
- Emergency response to weather event (HADR)
- Refugee & Migrant flow



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## EUCOM Climate Change Efforts

- Educate Staff
- Established Climate Change Working Group
- Strategic Documents
- Exercise Integration
- Plans
- Security Cooperation Integration
  - Current ongoing CFRs
  - NATO activities
- Staff Equities:
  - Wargaming
  - Assessments



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## Way Ahead

- Mature Underway Efforts
- Monitor OSD funding priorities
- Monitor DCAT schedule due in APR 23
- Set conditions to meet Executive Order and SecDef requirements due in APR 23

*...and steal great ideas from this conference!*



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## Africa Command



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## US AFRICOM

### Security Implications of Climate Change

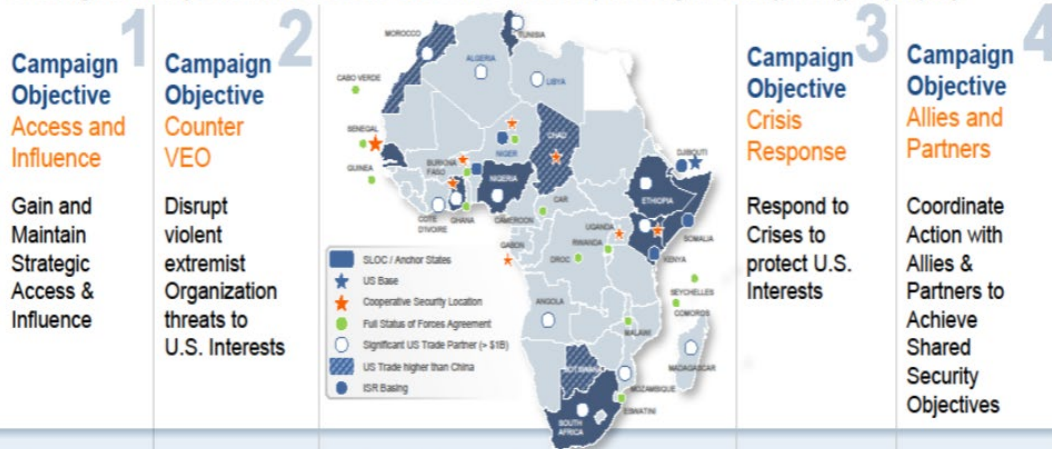
Ms. Swathi Veeravalli, J5  
Mr. Garth Anderson, J4

18 March 2022

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## AFRICOM Campaign Plan

**AFRICOM Mission Statement:** U.S. Africa Command, with partners, counters malign actors and transnational threats, responds to crises, and strengthens security forces in order to advance U.S. national interests and promote regional security, stability, and prosperity.



**End State:** Adversary and competitor activities in Africa are effectively identified, countered, disrupted, or deterred. VEOs no longer pose a threat to the U.S. homeland; AFRICOM retains the strategic and operational access, influence, and partnerships necessary to conduct crisis and contingency operations. AFRICOM actions contribute to DoD and whole of government efforts to enhance regional security, stability, and prosperity.

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## Climate Related Security Threats

- Geo-political Competitors use climate change as an opportunity to increase influence
- Overstretched U.S. and African partner nation military capacities and capabilities
- Expanded influence of VEOs and other malign actors
- Decreased accessibility to ports and airfields
- Competition and conflict over strategic minerals for renewable energy technology



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## Security Implications of Climate Change—Three Vignettes

Climate change is having a disproportionate, adverse impact on Africa, exacerbating instability and conflict.

Horn of Africa	Desertification in the Sahel	Littorals Maritime Security
<p><b>CLIMATE CAUSE:</b> Intensifying drought conditions across Ethiopia, Kenya, and Somalia are causing the worst drought in more than 40 years.</p> <p><b>EFFECT &amp; SECURITY IMPLICATION:</b> Diminishing pasture land, significant crop losses, severe water shortages, livestock deaths and worsening conflict have left 20 million people in the Horn of Africa in need of emergency food assistance in 2022. Increased competition over scarce resources and ensuing conflict is manipulated by al-Shabaab to control large areas in Somalia and along the borders of Kenya and Ethiopia.</p> <p><b>AFRICOM ACTIONS:</b> USAFRICOM's main operating base in this priority area is Camp Lemonnier in Djibouti. In 2021, the Defense Climate Assessment Tool determined this operating base is well-positioned to continue providing tactical operations support to the Horn of Africa as the region struggles to overcome climate and security-related challenges.</p> <p><b>DIPLOMACY/DEVELOPMENT ACTIONS:</b> The United States is the largest humanitarian donor in this region, with USA providing \$1.3B in FY 2021. Diplomacy and development actions require robust defense supporting efforts.</p>	<p><b>CLIMATE CAUSE:</b> Climate risks, food insecurity and violence are correlated and intensifying. 80% of the Sahel's farmland is degraded, exacerbating desertification. Temperatures are rising 1.5 times faster than the global average. More than 1 billion people are food insecure.</p> <p><b>EFFECT &amp; SECURITY IMPLICATION:</b> Surging populations are pushing farmers northward to cultivate more crops. 50 million people depend on livestock for survival. Land available to pastoralists is shrinking. Insurgencies are also creating no-go areas, fueling more competition over scarce arable land and water. Violent extremist organizations thrive on the ungoverned space of the Sahel and destitute populations trying to survive in a landscape of diminishing returns. Population surge in the littoral states increases facility strain.</p> <p><b>AFRICOM ACTIONS:</b> USAFRICOM posture strains to address the evolving security landscape in West Africa. As populations grow toward the littorals, AFRICOM posture must shift to support the climate-driven partner counterterrorism operations, development, and diplomacy efforts.</p> <p><b>DIPLOMACY/DEVELOPMENT ACTIONS:</b> USAID provides more than \$40M in stabilization programming and over \$900M in humanitarian assistance in this region.</p>	<p><b>CLIMATE CAUSE:</b> Maritime security issues including illegal, unreported and unregulated fishing in the Gulf of Guinea have compounded the degradation of marine ecosystems resulting from rising ocean temperatures and ocean acidification.</p> <p><b>EFFECT &amp; SECURITY IMPLICATION:</b> In the last 50 years, Africa lost over \$200B to illegal fishing by vessels linked to foreign nations which reduced 40-65% of the legally reported fish catch in West Africa alone. Due to a massive decline in fish stocks, coastal populations in key AFRICOM anchor states are more food insecure. Ghana has one of the highest rates of dependence on fish for nutrition in Africa, with fish providing 60% of animal protein intake. Ghana's marine fisheries provide livelihoods for 2.5-3 million people, approximately 10% of the population.</p> <p><b>AFRICOM ACTIONS:</b> USAFRICOM support for port assessments, coastal surveillance units and a potential Gulf of Guinea installation could mitigate maritime security threats and compounding effects of marine degradation from illegal fishing.</p> <p><b>DIPLOMACY/DEVELOPMENT ACTIONS:</b> Maritime security in the Gulf of Guinea is a key pillar of the Partnerships for the Atlantic Basin.</p>

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## Top 10 Critical Climate Change Challenges for USAFRICOM

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### USAFRICOM Foundational

1. Adapt USAFRICOM plans, posture, and processes to address climate risks and build resilience.
2. Create a *common operational picture* for climate risk across our C4I, Allies and Partners, and Whole-of-Govt, leveraging existing platforms from DoD, the interagency, academia, and industry.
3. Integrate *climate intelligence* into the Joint Planning Process to inform resourcing, programming, and assessment.
4. Establish the *expertise and staffing capacity* at USAFRICOM to integrate climate security, planning, modeling, programming, and assessment across the staff.

### Theater Shaping

1. Identify the strategic *key terrain* for addressing the security implications of climate change in the near, mid, and long terms. How is this affected by strategic competitors and other actors?
2. Where will the demands of climate induced crises create game changing conditions for U.S. national security in Africa? What are the tipping points?
3. What is the relative effect of ongoing AFRICOM, USAID, and DoS operations, activities and investments (OAs) on addressing the security implications of climate change? What is the relative climate mitigation value of these OAs? What ally and partner efforts are underway, and what is their relative value?

### Keystone

1. What climate phenomena, resource, or condition has global and U.S. national security implications, how are our competitors leveraging it, and why is it important? How do we get appropriate stakeholders to recognize it?
2. What resources will be committed to addressing the security implications of climate change and how predictable will they be in the near, mid, and long terms?
3. What solutions (e.g., adaptive capacity, policies, technology) offer opportunities to accelerate efforts to address the security implications of climate change?

*Foundational* challenges are primarily internal to the command, relating to strategy, plans, a common operational picture, planning processes, and internal staffing/expertise.

*Theater shaping* challenges relate to what is happening in Africa now and into the strategic horizon, involving not only USAFRICOM, but also interagency and African partners and allies, and competitors.

*Keystone* challenges are the most difficult to address or answer, but could be gamechanging, and should continue to be monitored.

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## QUESTIONS

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## Southern Command

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## US Southern Command Considerations to Climate Change



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## Purpose and Agenda



**PURPOSE:** Provide an overview for USSOUTHCOM oversight for climate change, environmental and operational energy programs

### AGENDA:

- The Command
- Environmental Engineering
- Environmental Solutions
- Operational Energy



"No Nation can find lasting security without addressing the climate crisis."

-Secretary of Defense Austin, April

2021

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## USSOUTHCOM Environmental Team



**Name:** Dr. Amir Gamliel  
**Title:** Environmental Compliance Program Manager  
**Education:** Ph.D. Civil Engineering, Univ Michigan  
**Experience:** PE, PG, PMP



**Name:** Ms. Linda Woestendiek  
**Title:** Environmental Specialist  
**Education:** BS, Environmental Science, Univ. Maine  
**Experience:** NAEP, NASP, HAZWOPER

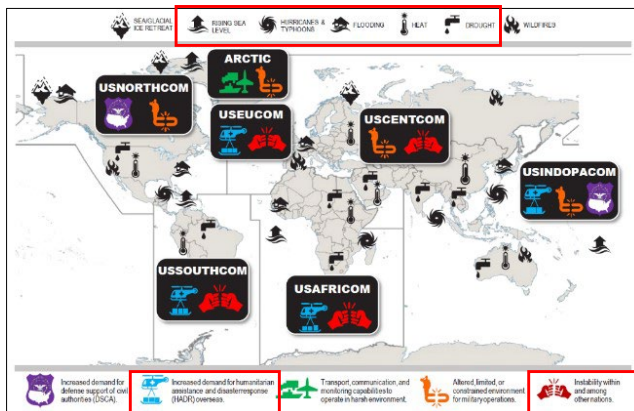


**Name:** Mr. Pedro Borges  
**Title:** Operational Energy (OE) Program Analyst  
**Education:** BS, Civil Engineering, Fl. Intl Univ  
**Experience:** LTC (R), US Army Engineer Regiment (Reserve), PMP

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## Global Challenges



- Drought
- Significant weather pattern increases & disruption events
- Volcanic eruptions
- Wildfires
- Tidal surge
- Erosion
- Flooding
- Glacial retreat
- Rising sea level

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## Leading Causes of Climate Change

### Natural

- Changes in the sun's energy
- Volcanic eruptions



### Man-made

- Agriculture
- Road Construction
- Increases in greenhouse gases
  - Carbon dioxide and chlorofluorocarbons– fossil fuel combustion\*
  - Methane – livestock farms, leaks during fossil fuel extraction, rice agriculture, overfull landfills
  - Nitrous oxide – fertilizer use
- Deforestation



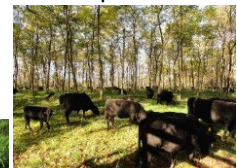
\*Changes the climate more than any other human activity

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## Ways to Combat Climate Change



- Reduce, Reuse, Recycle – the old adage is still important
- Reduce CO<sub>2</sub> emissions
  - Each liter of fuel used, equals 2.5 kilos of CO<sub>2</sub> emitted
  - Ensure vehicles are properly maintained
- Adjust thermostats rather than leaving them on stand-by
- Reduce meat consumption – livestock is one of the biggest contaminators of the atmosphere
  - Obtain silvopastured-raised meats
  - Reduce food wastes
- Avoid imports to reduce emissions in transport
- Avoid packaging and processed foods as much as possible
- Use sustainably obtained wood products
- Plant a tree
- Utilize renewable/clean energy wherever possible
- Support sustainable practices (packaging, transportation, waste management, etc.)
- Promote global restoration of forests and other expansive vegetation



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## How We Contribute

- Environmental Engagement
- Environmental Compliance & Sustainment
- Joint Exercise Programs
- Subject Matter Expert Exchanges
- Cultural Property Education
- Theater Security Cooperation & Military Construction
- Defense Critical Infrastructure Protection
- Operational Energy Oversight
- Energy Resilience
- Integration & Information sharing to US Govt Programs

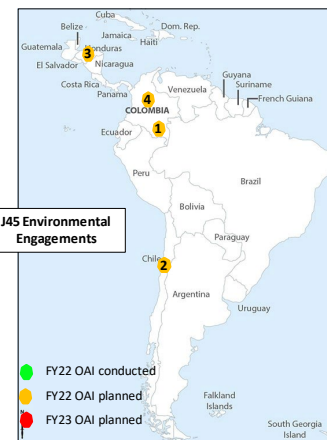


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## Information Sharing & Exchanges

- **Facilitating interagency events for information sharing and exchange**
  - Energy-related technologies, research and development, and related endeavors
  - Mixing participating public and private sectors in events
  - Academia briefs to DoD partners (SERDP -ESTCP Symposium)
  - Participation in AOR SMEEs with Partner Nations (PNs)
- **With Partner-Nations**
  - Information Sharing: Environmental and OE SMEEs
    - Drought and flood mitigation
    - Wildfire response and mitigations
    - Feasibility assessments
    - Deforestation
    - Pine Beetle mitigation
    - Illegal logging, mining, fishing
    - Protection of cultural resources
    - Coral Reef Protection & Rehabilitation



1. Subject matter expert exchanges- Regional illicit Mining
2. Environmental Engagement – IUU Fishing
3. Cultural Properties- JTF Bravo and Govt of Honduras
4. USACE Tolemaida utility coordination

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## Exercises & Disaster Response

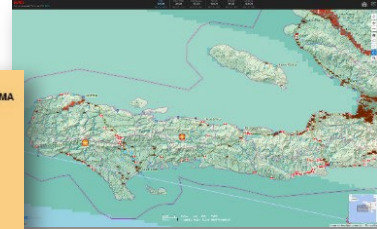
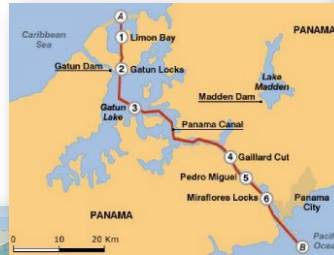


### PANAMAX, Integrated Advance, Fused Response, Tradewinds, etc.

- Integrates and/or provides environmental risk, environmental security, related enabling and target events
  - Aligned with USSOUTHCOM and subordinate commands' mission essential task lists
  - Scenario Integration & Response
  - Training scenario event

### Response to real-time events

- Strategic Entry & Enhanced Mobility
- Expertise to CCMD, USAID, USG response leads
- Cultural recovery & protection
- Flood analysis
- Forward location analysis & repairs
- Post-event Foreign Military Sales opportunities



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## Environmental Security & Compliance



### Compliance

- Regulatory oversight
- Construction
- Assessments & Inspections

### Resource Competition, Environmental Security & Stability (RECESS) Program

### Western Hemisphere Institute for Security Cooperation (WHINSEC)

### Elements in consideration of National Security

- Energy availability
- Clean water/air
- Sufficient food
- Adequate health care
- Protection from violence
- Protection of renewable natural resources
- Secure borders

STRATEGY	PLANNING	FORCE MANAGEMENT, DEVELOPMENT, & EMPLOYMENT	BUDGET, ANALYSIS, & ASSESSMENT	PARTNERED ACTIVITIES & ACQUISITION
<ul style="list-style-type: none"> <li>National Defense Strategy</li> <li>National Military Strategy</li> <li>Combatant Command Theater Strategies</li> </ul>	<ul style="list-style-type: none"> <li>Unified Command Plan</li> <li>Contingency Planning Guidance</li> <li>Joint Strategic Campaign Plan</li> <li>Operation Plans</li> <li>Global/Functional Campaign Plans</li> <li>Service Planning Guidance</li> <li>Combatant Command Campaign Plans</li> </ul>	<ul style="list-style-type: none"> <li>Defense Planning Guidance</li> <li>Global Force Management Guidance</li> <li>Contingency Planning Guidance</li> <li>Global Force Posture Recommendations</li> <li>Guidance for Employment of the Force</li> <li>Joint Warfighting Concept</li> <li>Service Warfighting Concepts</li> </ul>	<ul style="list-style-type: none"> <li>Strategic Portfolio Reviews</li> <li>Analysis of Alternatives</li> <li>Annual Joint Assessment</li> <li>Chairman's Risk Assessment</li> <li>Defense Planning Scenarios</li> <li>Program Objective Memorandum</li> <li>Service and Independent Cost Estimates</li> </ul>	<ul style="list-style-type: none"> <li>Security Cooperation Programs</li> <li>Partnership Plans</li> <li>Acquisition Strategy</li> <li>Major Defense Service and Acquisition Programs</li> <li>State Partnership Program</li> <li>Joint and Service Capability Development Processes and Oversight</li> </ul>

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## OE Contributions with Partner Nations

**Apr 2021 USSOUTHCOM Campaign Plan (Change 1):**  
**Line of Effort #1 – Strengthen Partnerships:**  
 "... We will focus our partnership efforts on shared security challenges and place greater emphasis on achieving measurable outcomes."  
**Line of Effort #2 – Counter Threats:**  
 "We will increase cooperation and information sharing with allies and partners to understand and counter threats."

**Oct 2021 DoD Climate Risk Analysis:**  
 "[DoD can] integrate climate considerations into international partner engagements, including... development initiatives in [PNs]."  
**Aug 2018 DoDD 4180.01 "DoD Energy Policy" – COCOMs shall:**  
 "... Incorporate guidance and analyses in... planning to address energy risks and opportunities across the full range of military operations, from engagement and security cooperation to major operations and campaigns."  
 "Assess energy-related operational risks and identify associated capability gaps."

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## Partnership for the Americas

Linda Woestendiek  
 Command Environmental Specialist  
 US Southern Command Office: 305.437.3441  
[Linda.j.Woestendiek.civ@mail.mil](mailto:Linda.j.Woestendiek.civ@mail.mil)

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Northern Command



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# Overview of the Climate Security Issues Facing USNORTHCOM

18 March 2022

Dr. Jeth Fogg  
Logistics and Engineering Directorate  
719-554-2309  
[jeth.a.fogg2.civ@mail.mil](mailto:jeth.a.fogg2.civ@mail.mil)

NORAD and USNORTHCOM

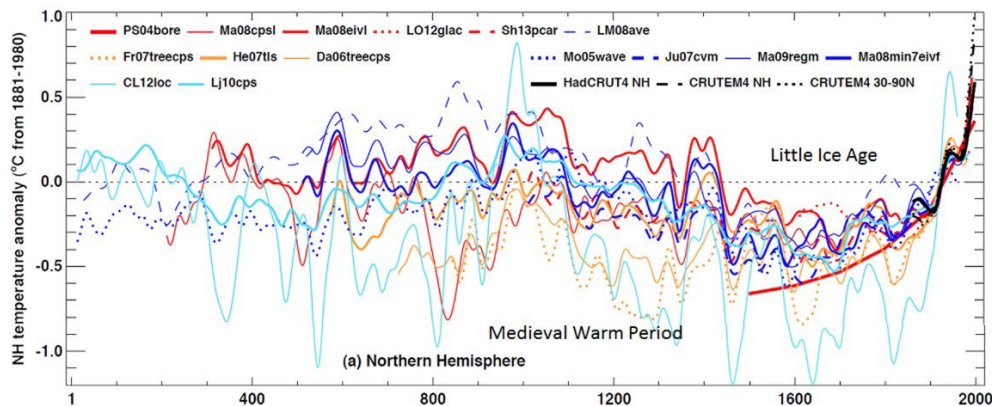
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We Have The Watch 1



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## The Hockey Stick



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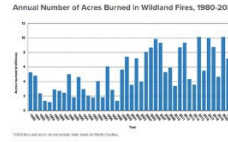
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We Have The Watch 2



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## USNORTHCOM Hazards & Impacts



- Seasonal Ice Retreat
- Rising Sea Levels
- Increased Storm Intensity
- Increased Flooding
- Falling Groundwater

- Heat and Drought
- Wildfires
- Climate Driven Migration
- Adversarial Shift
- Coastal Subsidence

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## Climate Security Challenges within the USNORTHCOM Area of Responsibility

- Increased Demand for Defense Support of Civil Authorities (DSCA)
- Altered, limited or constrained environment for military operations
- Transport, Communications, and Monitoring Capabilities to Operate in Harsh Environments
- Water and food security

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## Infrastructure/Society Resilience

- Climate Education and Developing a Path to Climate Reversal
  - Start practices now for the future (hard to define)
  - 100% Whole of society engagement on the same timeline
- Relocate to safer/smarter areas
  - Climate retreat strategy – what are the triggers?
  - Become more resilient – how can we better survive climate change?
  - Recognize that “Just because you can build something doesn’t mean you should build it”



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This briefing is classified  
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## Operationalizing Climate Security

*How do potential changes in the climate impact planning and operations?*

**RADM Daniel L. Cheever**  
**N&NC Director of Strategy, Policy and Plans**

**18 March 2022**

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## The Changing Homeland Defense Operating Environment

Today's operating environment is the most complex and dynamic in NORAD's and USNORTHCOM's histories.

Our competitors' investments demonstrate the intent to hold Canada and the United States at risk in all domains and from all vectors.

Climate change holds potential to increase operational demands, degrade infrastructure, amplify health risks, and drive new requirements for existing and planned equipment.



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## N&NC Strategic Principles

### Domain Awareness

Domain Awareness is created through a network of sensors and systems that provide persistent and complete battle-space awareness, from subsurface to space and cyberspace.

### Information Dominance

Future competition, crisis, and conflict will be won or lost based on our ability to achieve Information Dominance by connecting data from all-domain awareness sensors to flexible and responsive decision superiority options

### Decision Superiority

Decision Superiority is about giving senior leaders options – we need to get inside our potential adversaries' OODA loop, so we can message adversaries, posture forces, or use other means to create doubt that they can achieve their objectives

### Global Integration

We need the ability to collaborate globally and across all domains in near real time or real time to present options to our Nation's leaders that have considered global risk, resources, and readiness



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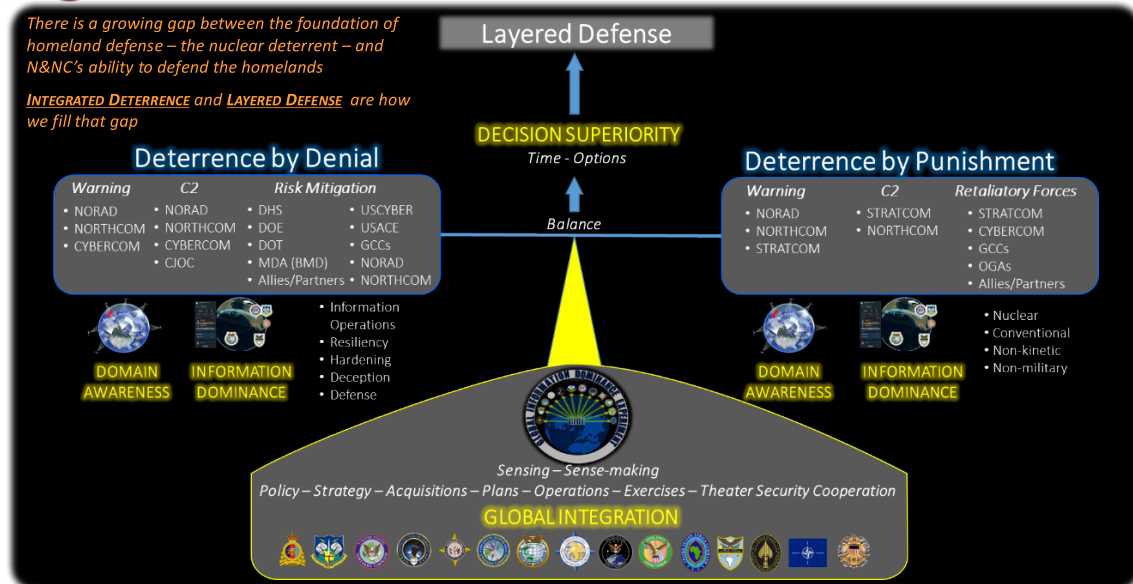




## UNCLASSIFIED Integrated Deterrence

*There is a growing gap between the foundation of homeland defense – the nuclear deterrent – and N&NC's ability to defend the homelands*

*INTEGRATED DETERRENCE and LAYERED DEFENSE are how we fill that gap*



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## UNCLASSIFIED Climate Change and Operational Planning



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**Key Take-Aways**

- Campaign and contingency plans are routinely updated and adjusted to account for changes in the strategic and operational environment
- With respect to climate change, our plans need to focus on its practical defense impacts – instability, resource competition, expanding operating areas, infrastructure resilience, etc.
- N&NC's climate adaptation efforts will not cede military advantages to potential adversaries – our number one priority is to defend the United States and Canada

## Indo-Pacific Command



The graphic features a globe centered on the Indo-Pacific region, showing Asia, Australia, and the Pacific Ocean. Below the globe, the text reads: "US INDO-PACIFIC COMMAND", "CLIMATE CHANGE IMPACT (CCI) PROGRAM", "Operationalizing Climate Security", "Naval War College", "18 March 2022", and "Joseph D. 'Joe' Martin, SES", "Director, CFE-DM and CCI Program". The background consists of stylized blue waves.

US INDO-PACIFIC COMMAND  
CLIMATE CHANGE IMPACT (CCI) PROGRAM

**Operationalizing Climate Security**  
Naval War College  
18 March 2022

Joseph D. "Joe" Martin, SES  
Director, CFE-DM and CCI Program



## Agenda

- **Environmental Impacts of Climate Change**
- **Security Impacts of Climate Change**
- **Implications for Indo-Pacific Security Cooperation:**
  - Case study: Fiji
  - Case study: Mekong River
  - Case study: Bangladesh
- **Future trends and vulnerabilities**
- **U.S. Government Policies and Programs**
- **Road Ahead: Opportunities for Comprehensive Security Cooperation**



## Higher ocean temperatures

- Evaporation
- Precipitation
- Tropical cyclones
- Rising sea levels



**Osaka Airport, Japan, Sept 2018**

Source: [Hiroko Tabuchi, "Many Major Airports Are Near Sea Level. A Disaster in Japan Shows What Can Go Wrong," New York Times, 7 Sep 2018](#)





## Environmental Impacts of Climate Change



### Higher air temperatures

- Ice melt / snow runoff
- More extreme weather

Source: Rachel Baxter, "Australia's Aggressive Bushfires Destroyed Over A Fifth Of The Nation's Forest." [1FLScience](#) 26 Feb 2020



## Environmental Impacts of Climate Change

### Higher ground temperatures

- Desertification
- Permafrost melting



Sources: [Б.АХТЫРАА](#), "Killer Dust Storm Wreaks Destruction in Mongolia," *News.mn*, 16 Mar 2021  
[D. Bressan](#), "Mysterious Craters In Siberia Linked To Melting Permafrost," *Forbes* 16 Sep 2020





## Environmental Impacts of Climate Change



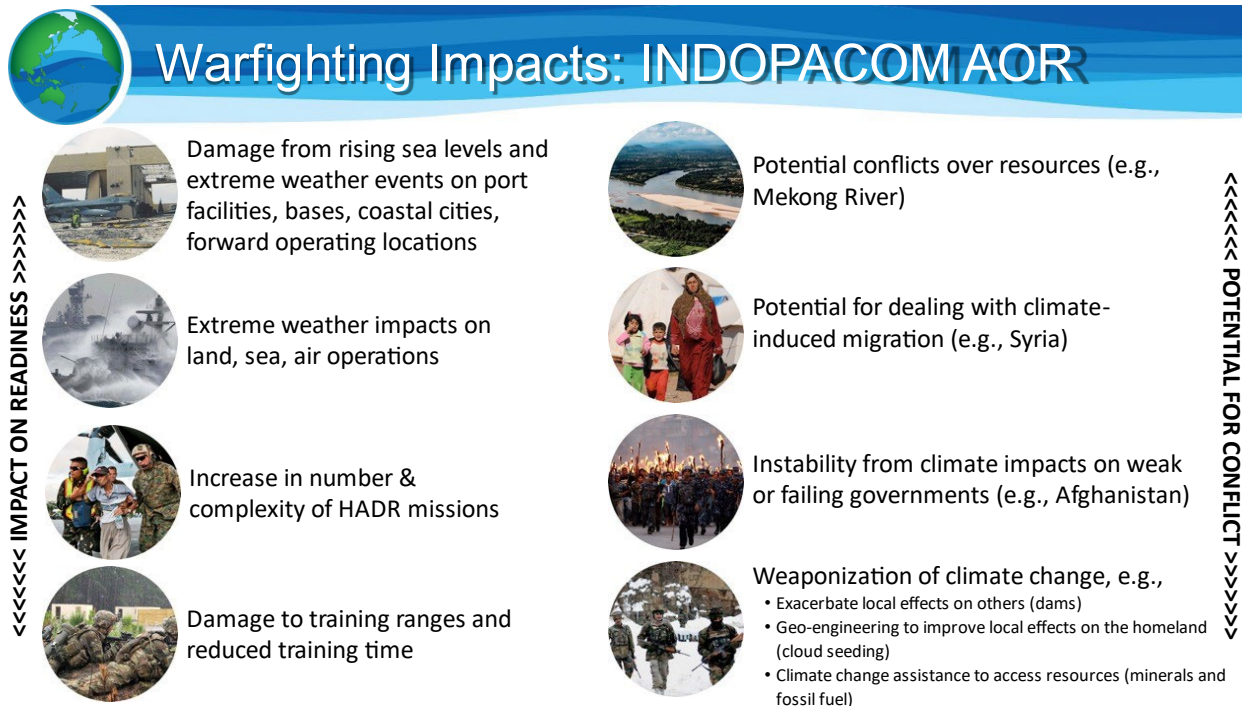
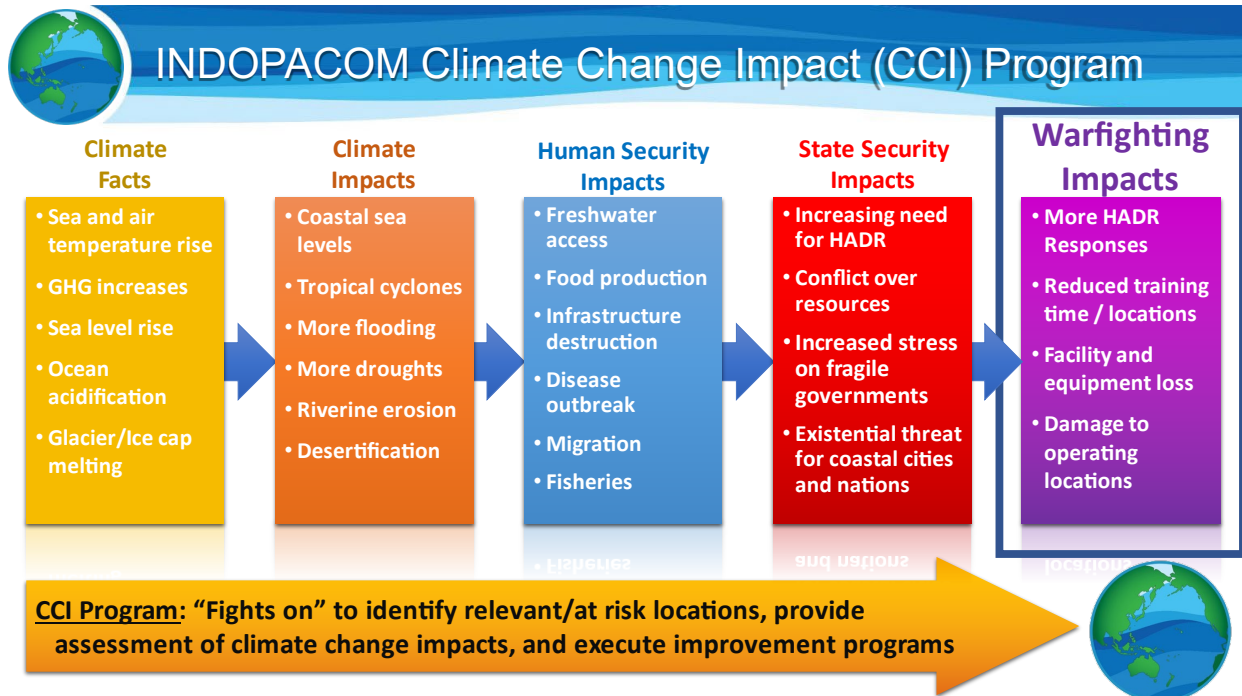
- **Ocean acidification**
  - **Coral reef destruction**
  - **Fisheries stress**

Source: [UC SantaCruz and University of Wollongong, "Climate change poses threat to 'tuna dependent' Pacific Islands economies." News.UCSC.edu , 30 July 2021](#)



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## Security Impacts: US Marine Corps, Kaneohe Bay



## Security Impacts: Oahu Infrastructure







## Case Study: Fiji



### Background:

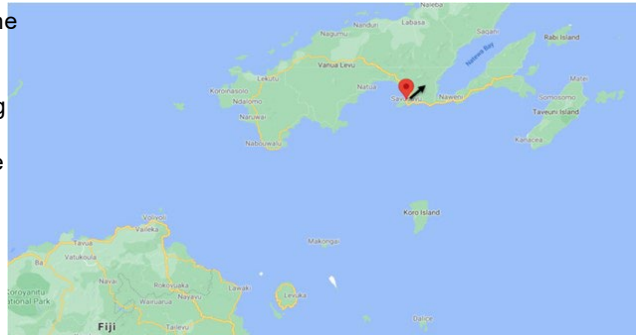
- In 2014, slow onset climate change effects forced the 150-person village of Vunidogoloa, a coastal village on Vanua Levu Island to relocate
- The villagers first tried to move inland before moving to another island. Villagers requested government assistance and Fiji police were primarily responsible for logistics in the move

### Causes:

- Tidal inundation and coastal erosion damaged infrastructure
- Saltwater intrusion damaged agriculture
- Island submergence

### Outcome:

- Villagers belonged to the same clan that had available land and thus were able to move, however, cultural considerations should be kept in mind for relocation

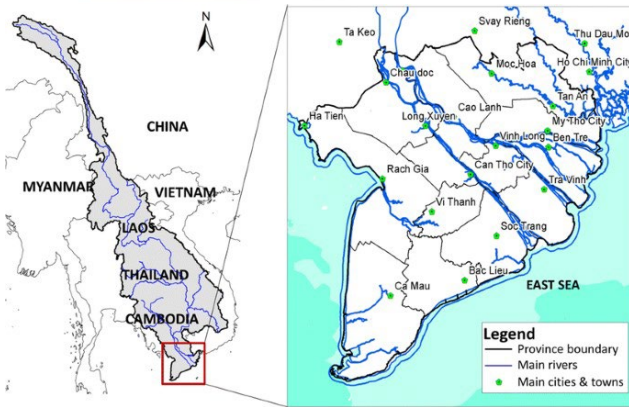


### Challenges:

- Land in Fiji is mostly customarily owned. Only 4% belongs to the government and 6% can be bought and sold
- Communal tensions may arise if land not available



## Case Study: Mekong River Delta



### Mekong Delta Climate Issues

- Sea-Level rise
- Salt-water inundation

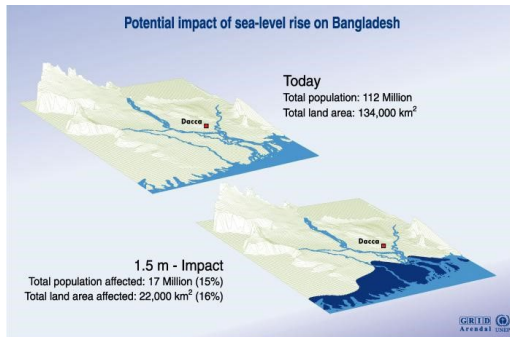
### Mekong Delta Impacts

- 17M people / 80% involved in rice cultivation
- Upstream water supplies (Weaponization?)





## Case Study: Bangladesh



**India- Bangladesh Border Fence**  
Source: [The Hindu Feb 27, 2021](#)



### Bangladesh Impacts

- Sea Level Rise -- 1.5 meters?
- Human migration – 17 million?
- Salinity and food security



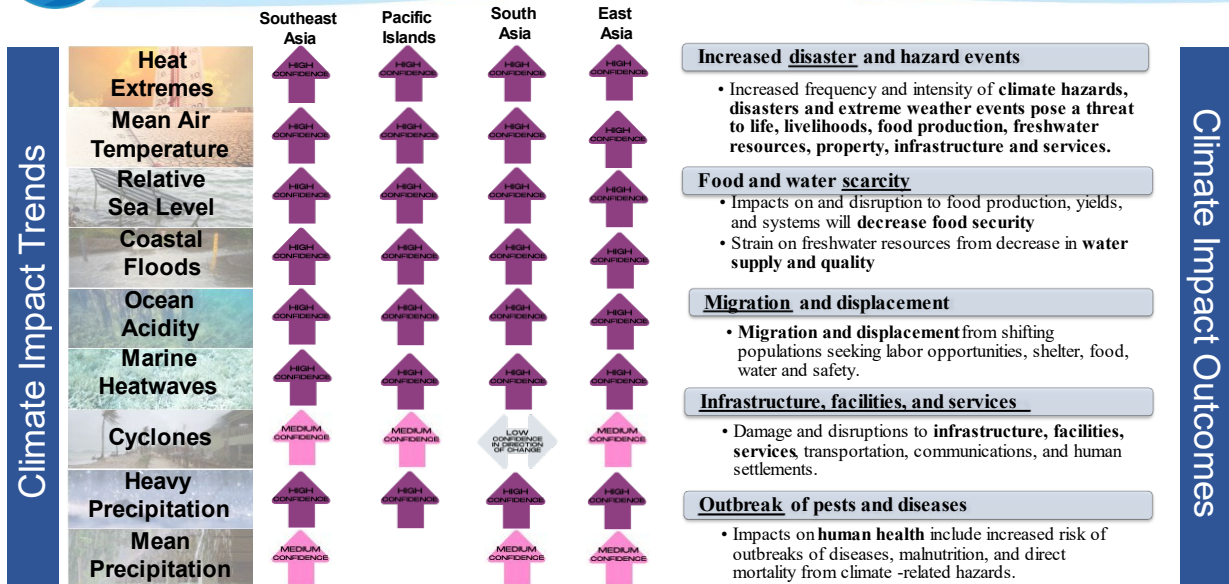
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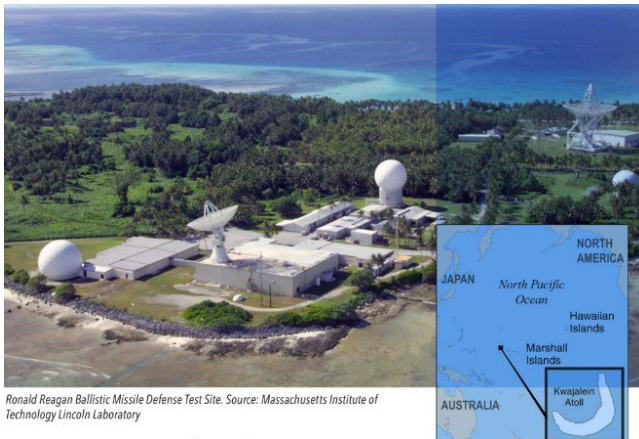




## Future Trends: Indo-Pacific Climate Change Impacts Scorecard



## Vulnerability: Sea Level Rise



Ronald Reagan Ballistic Missile Defense Test Site. Source: Massachusetts Institute of Technology Lincoln Laboratory

### Asia-Pacific coastal zones

A new report by Asian Development Bank says coastal zones in the region are among those most vulnerable to climate-change related sea-level rise



Source: ADB/World Bank

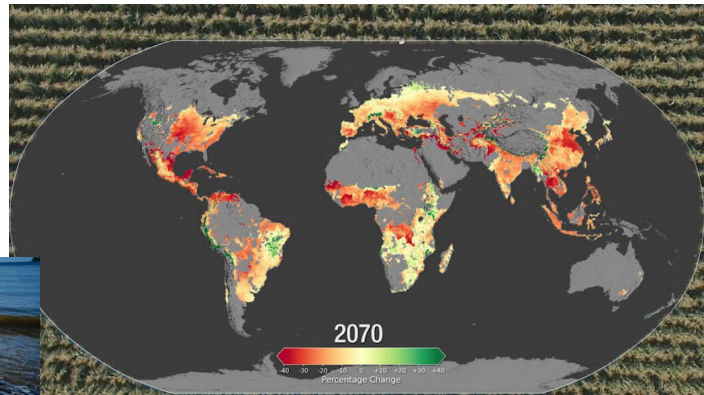
© AFP



## Vulnerability: Food Insecurity



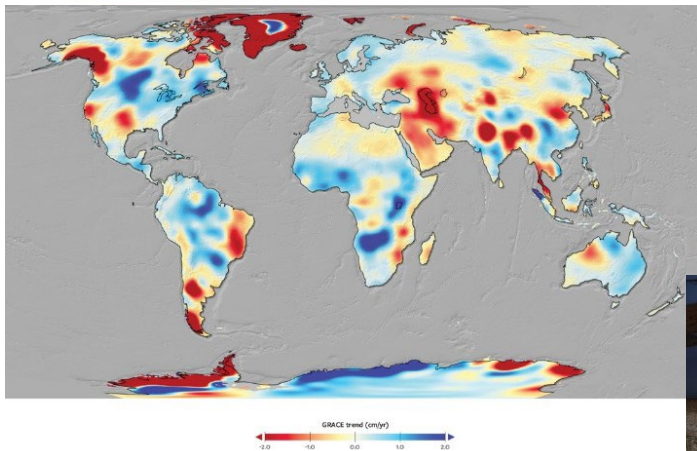
Bringing in catch in Gentuma Raya,  
Gorontalo, Indonesia



Map of the world showing in red where decreases in corn yields are projected to occur in 2071. Credit: [NASA/Katy Mersmann](#)



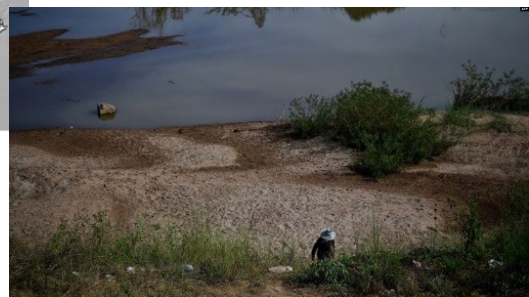
## Vulnerability: Fresh Water



Source: [Jay Famiglietti. 2019. "A Map of the Future of Water" Pew Trend Magazine \(March 3\)](#)

Fisherwoman walking on an embankment of the drought-stricken Mekong river in Pak Chom district in the northeastern Thai province of Loei.

Source: [Luke Hunt. 2022. "Mekong Drought Enters Fourth Year; Worst Conditions in 60 Years." VOA News \(Feb 11\).](#)





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## Key U.S. Climate Security Policy Documents

### EXECUTIVE ORDER 14008, TACKLING THE CLIMATE CRISIS AT HOME AND ABROAD (January 27, 2021)

- Put the climate crisis at the center of the country's foreign policy and national security.
- Elevated climate change across the federal government.
- Declared immediate actions to confront climate change

### FACT SHEET: PRIORITIZING CLIMATE IN FOREIGN POLICY AND NATIONAL SECURITY (October 21, 2021)

- Suite of analyses fulfilling EO 14008
- Analyses will be a foundation for work on climate and security
- Analyses released included reports from the DOD and ODNI

### Department of Defense Climate Adaptation Plan

September 1, 2021



- Climate-informed decision making;
- Train and equip a climate-ready force;
- Resilient built and natural infrastructure;
- Supply chain resilience and innovation;
- Enhance resilience through collaboration.

### Department of Defense Climate Risk Analysis

October 2021



- Strategic risks of climate change.
- Security implications of climate to missions.
- Integrating climate change considerations at every level of the DoD enterprise.



### NATIONAL INTELLIGENCE ESTIMATE

Climate Change and International Responses Increasing Challenges to US National Security Through 2040

NOVEMBER 2021-2023 A

#### Areas of risk to national security:

- Tension over who should be doing more, how quickly, and energy transition competition;
- Cross-border flashpoints from the physical effects of climate change; and
- Climate effects straining stability.





## USINDOPACOM Climate Change Impact Program

- A program of the U.S. Indo-Pacific Command, est. July 2021
- Managed by the Center for Excellence for Disaster Management (CFE - DM) in Honolulu, Hawaii, Mr. Joseph D. Martin, SES, Director
- Four dedicated staff members
- Access to CFE-DM research and training functions
- A network of security professionals across the Department of Defense, the U.S. Government and partner nations concerned with managing the security impacts of climate change



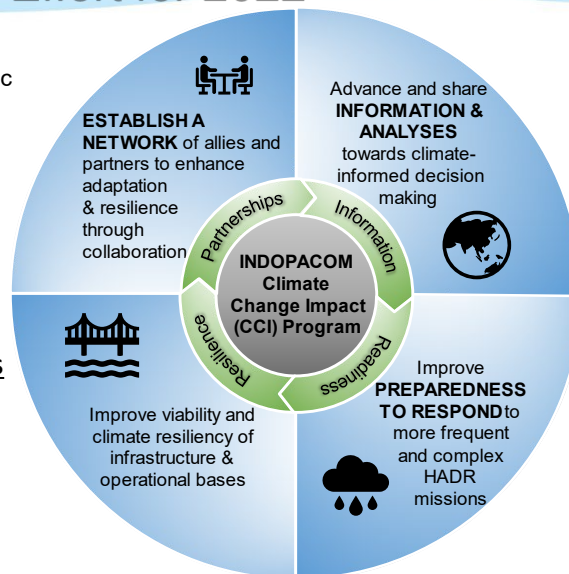
## Climate Change Impact (CCI) Program Lines of Effort for 2022

### ESTABLISH A NETWORK

- ✓ Community for Indo-Pacific Climate Security (CIPCS)
- ✓ First INDOPACOM Climate Security Conference

### INFRASTRUCTURE & POSITIONS

- ✓ Vulnerability Analysis
- ✓ Construction Program
- ✓ Mission Assurance Projects
- ✓ Allies & Partner Climate Resilience Development



### INFORMATION & ANALYSIS

- ✓ Best Practices
- ✓ Data Repository
- ✓ Original Research
- ✓ Technology Insertion

### PREPAREDNESS TO RESPOND

- ✓ HADR Training
- ✓ HA-Related Exercises
- ✓ Bilateral discussions



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## An Invitation to Work with us

***“Cooperation with international partners to address the security implications of climate change can strengthen alliances and partnerships. Building awareness of how other nations are preparing for climate change is critical to understanding the risks and opportunities across strategic, operational, and tactical environments.”***

-- U.S. Department of Defense. 2021. Climate Risk Analysis, (October) p.6.





### An Invitation to Work with us

**CCI is reaching out to military and civil sector agencies in Indo-Pacific nations to work in cooperation and collaboration as we undertake these plans and program to better manage the security impacts of climate change.**

To establish a liaison, or for further information, please contact:

Mr. Stephen Frano, Program Manager, Climate Change Impacts Program

Address: 456 Hornet Ave, JBPHH, HI 96860

Telephone: (+1) 808 -472-0501 / 0518

Email: [stephen.frano.ctr@pacom.mil](mailto:stephen.frano.ctr@pacom.mil)



### Mahalo!



Mr. Joseph (Joe) Martin, SES, Director

Center for Excellence in Disaster Management and Humanitarian Assistance (CFE-DM)

456 Hornet Avenue , Building 76, Ford Island, JBPHH, HI 96860-3503 USA

Email: [joseph.d.martin2@pacom.mil](mailto:joseph.d.martin2@pacom.mil)