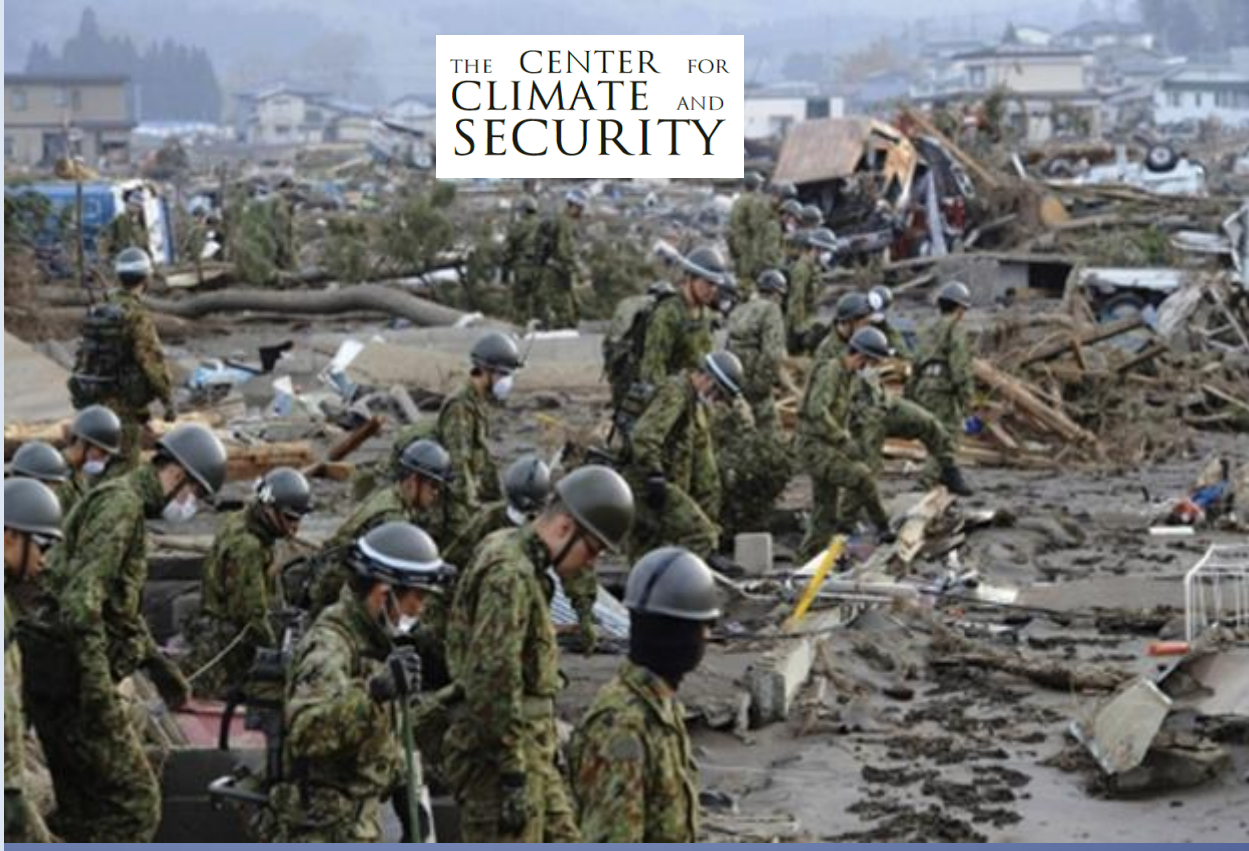

THE CENTER FOR CLIMATE AND SECURITY

Course Syllabus

Climate Change

For Security Professionals & Military Practitioners

THE CENTER FOR CLIMATE AND SECURITY

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Background

1. Climate change has emerged as a defining security issue for the 21st century. Increased frequency and intensity of extreme weather events (wild-fires, drought and cyclones) have seen a rise in humanitarian and disaster relief operations. Desertification, drought and altered rainfall patterns under changed climatic conditions are known factors in societal disruption and conflict around the world. Sea level rise is impacting coastal communities, civil and military infrastructure and even threatening the very sovereign existence of small island states. Climate "wild-card" events such as the cessation of the North-Atlantic Thermohaline current, rapid melt of the Arctic and Antarctic, Amazon die-back and mass methane release from melting Euro-American tundra belts pose grave strategic risks.

2. National Security agencies, Defense Departments, emergency-service providers and military forces around the world are now responding to the security challenges posed by climate change. These include climate adaptation and mitigation strategies that craft a climate-aware and climate-resilient national security sector capable of meeting the risks posed by climate change. However, climate change is unlike any previous problem confronted by security professionals: it is ubiquitous, slow moving, strategic in nature, and will require new ways of thinking.

3. The Center for Climate and Security (CCS) is at the forefront of raising awareness for security professionals on the risks and opportunities presented by climate change. Accordingly, CCS has developed a two-day introductory course that addresses the fundamentals for security professionals. It assembles a cadre of internationally recognized experts in climate change science, policy and security planning and condenses a wide-array of complex and dispersed knowledge into a readily accessible yet comprehensive package. This course is essential for all security sector professionals seeking to make a difference and have broader policy perspectives on the geo-political and strategic security landscape of the 21st century.

Target Audience and Learning Objectives

4. **Target Audience**. This course has been specifically designed for professionals working in the national security sector. It is particularly aimed at military and security professionals and is suited to the following courses and areas:

- Junior military officers posted to individual training and joint educational establishments;
- Intermediate military staff officers, such as Command and Staff College;
- Senior military officers undertaking higher level strategic studies and conflict courses;
- Peace keeping learning institutions, civil-military courses and the United Nations; and
- Civil-servants and industry professionals working in Defense industry, national ministries, provincial and state departments and local authorities.

5. **Learning Objectives (LO)**. On completion of this elective participants will have the skills and knowledge to:

- **LO 1:** Demonstrate knowledge of the physical science underpinning anthropogenic climate change and an understanding of IPCC projections.
- **LO 2:** Demonstrate knowledge of international climate policy frameworks and responses.
- **LO 3:** Evaluate and assess the global, regional and national security risks, threats and opportunities of climate change.
- **LO 4:** Apply multi-disciplinary approaches to addressing the risks, threats and opportunities of climate change confronting security and military forces.

- **LO 5:** Develop and implement organizational-wide policies and approaches that reduce defense / security sector exposure to climate risk, increase institutional adaptation & resilience, and promote national mitigation efforts.

Course Structure

6. The course runs for two days and is structured around six modules and three syndicate learning sessions:

- **Day 1: Contextualizing Climate Change–Science, Policy and Solutions**
  - **Module 1.** The Fundamentals of Climate Change Science.
  - **Module 2.** Legal and Policy Framework for Climate Change (2017 update).
  - **Module 3.** Global Mitigation and Adaptation initiatives (2017 update).
  - **Syndicate Discussion.** Security and military policy options for mitigation & adaptation.

- **Day 2: The Security Implications and Opportunities of Climate Change**
  - **Module 4.** Voice of experience: Perspectives on climate security risk.
  - **Module 5.** International dimensions of climate security risks.
  - **Module 6.** Climate risks and opportunities for security forces.
  - **Syndicate Discussion.** Identifying and analyzing host country national climate security risks.
  - **Syndicate Discussion.** Opportunities for regional co-operation on climate security matters.

Course Content and Format

7. **Content.** Each module is personally attended and delivered by a Center for Climate and Security Visiting Fellow and provides an interactive experience with internationally recognized

climate science, policy and security professionals affiliated with the Center for Climate and Security.

- **Module 1: The Fundamentals of Climate Change Science.** Module 1 provides an introduction to the science of climate change and is personally delivered by live teleconference from an internationally distinguished climate scientist. It covers the carbon cycle, greenhouse effect, the key anthropogenic drivers of climate change as well as Intergovernmental Panel on Climate Change (IPCC) scenarios, projections and carbon budgets. Importantly for security planners, it also includes a description of the biophysical impacts of climate change including land and ocean temperature increases, ocean acidification, sea level rise and projections, cryospheric melt (Arctic and Himalayan), altered rainfall patterns and extreme weather events.

- **Module 2. Legal and Policy Framework for Climate Change (2017 Update).** Module 2 provides an overview of the international legal and policy framework to address climate change. It traces the historical evolution of climate policy and the emergence of the United Nations Framework Convention on Climate Change (UNFCCC) as the key convening institution. The module examines the key agreements, outcomes and issues arising from the UNFCCC Conference of the Parties (CoP) meetings and includes a post-Paris (COP 21) update as well as climate regimes beyond 2020. Importantly, for security planners, it also includes an overview of the key climate security meetings held by the UN Security Council in 2007, 2009 and 2013 and contending points of difference.

- **Module 3. Global Mitigation and Adaptation Initiatives (2017 Update).** Module 3 provides an overview of global mitigation and adaptation initiatives. It begins by defining what mitigation and adaptation are, before conducting a global overview of key mitigation and adaptation initiatives (Africa, Middle-East, Europe, Asia, Pacific and the Americas). The focus of this presentation is to inform security

planners on the latest initiatives by industry and civil-society to reduce greenhouse gases and to adapt their economies, infrastructure, energy grids and agriculture to climate change.

- **Module 4. Voice of experience: Perspectives on climate security risk.** Module 4 provides participants to listen and learn from a globally recognized and distinguished expert on climate security affairs from the CCS Advisory Board. The CCS Advisory Board is the leading voice on climate security matters in the United States, delivering an authoritative and clear message on climate security from military practitioners who have risen to the highest ranks of the United States military. This module offers participants to interact with an Advisory Board member through a live question and answer session hosted by the Visiting Fellow.

- **Module 5. International dimensions of Climate Security Risks.** Module 5 examines climate change as a security risk. It commences by placing climate change in historical and civilizational context before tracing the contemporary emergence of climate change as an accelerating threat to human, national and international security, with a focus on the geostrategic dimension. The module then examines real-world climate security through regional case studies, including: Asia-Pacific, Middle-East and North Africa, the Arctic and the Americas. Lastly, it provides security planners an insight into 'unimagined events' with the potentially catastrophic security consequences of a climate 'wild-card'.

- **Module 6. Climate risks and opportunities for security forces.** This module examines the military and security implications of climate change. It focuses exclusively on how climate change can impact security forces in terms of force structure; basing, infrastructure and training; energy systems and critical infrastructure; preparedness and readiness; operations and strategy; scenario planning; domestic and regional humanitarian relief missions as well as the potential for regulatory impacts from government policies. Tools that may aid

security planners in grappling with climate change in their workplace are identified.

- **Syndicate Discussion 1. Security and military policy options for mitigation & adaptation.** Syndicate Discussion 1 examines how security forces might develop effective mitigation and adaptation policies. This interactive lesson requires the audience to think "outside-the-square" to propose realistic, enterprise-wide policy options that are cost effective, enhance force resilience and operational capacity whilst reducing emissions. A climate change planning methodology is described for participant awareness and future consideration.

- **Syndicate Discussion 2. Identifying national climate security risks**. Syndicate Discussion 2 is an interactive lesson that draws on the knowledge and experience of participants to identify the key climate security risks confronting the host country. Once identified, strategies to address these risks are proposed, discussed and analyzed.

- **Syndicate Discussion 3. Opportunities for regional co-operation on climate security matters**. Syndicate Discussion 3 is an interactive lesson examining the prospects of regional cooperation on climate security issues. It adopts a regional approach to solutions and examines how military diplomacy may be effective in mitigating the varied transnational threats posed by climate change.

8. **Format.** Presentation length is 1.5 hours. This includes a 50 min presentation, a 10 min break and 30 mins for questions and answers. Syndicate discussions are 30mins in length.

Technical Requirements, Assessment Methodology and Feedback

9. **Technical Requirements**. For an optimal learning experience, the host institution is recommended to have the following IT infrastructure:

- Power-point and projector facilities;
- Video-teleconferencing facility such as "Skype" or "Facetime"; and
- Internet access.

10. **Assessment Methodology**. Participants have the ability to complete CCS quizzes on each module covered by this course. All assessments will be made available online at the website: https://climateandsecurity.org/.

11. **Feedback**. Given the rapid developments in climate science and nature of the changing security risk, participants are encouraged to provide feedback on the merits of this course via the website: https://climateandsecurity.org/.

Cost, Administration and Contact Details

12. **Cost**. The cost of this course is US$5,775 payable to The Sustainable Markets Foundation, (Attn: The Center for Climate and Security). Fees must be paid prior to the commencement of the course. Course fees do **not** include the travel and accommodation costs incurred by the Visiting Fellow to attend the host institution (more information below).

13. **Administration**. Course delivery is flexible and able to cater for individual institutional requirements. When considering this course, please factor-in the following:

- **8-week lead time**. Due to the high demand of presenters on this course, it is recommended that institutions book the course at least 8 weeks in advance of the start date. This will enable appropriate lead times to arrange appropriate administration.

- **Payment and Bank Account details**. Payment is required prior to the course commencement, in US Dollars and is to be made to the following: The Sustainable Markets Foundation, (Attn: The Center for Climate and Security), 45 West 36th Street, 6th floor New York NY 10018 United States. Bank account details will be made available for direct deposit on request.

- **Visiting Fellow arrangements**. The Visiting Fellow is the convening administrator for the module and is responsible for coordinating presenters, delivering content and convening syndicate discussions. To ensure that participants receive maximum learning opportunity it is highly recommended that institutions pay for travel and accommodation costs of the Visiting Fellow. Depending on location, this can vary between 3 – 6 days in total. To save on costs, and where permissible, the Visiting Fellow is available to stay on the host institution base and be rationed into the host institution Mess.

- **Language**. The course is delivered in English.

- **Course Materials**. All course materials will be made accessible to students once payment has been received by the host institution. Course materials include access to all presentations, quizzes and required readings pertaining to the conduct of the course.

- **Course size**. This course may be delivered to small or large audiences (ranging from as few as 6 or as many as 80 students). The content can be tailored according to the particular seniority of the participants.

14. **Enquiries and Contact Details**. To find out more information, discuss options or to schedule a course, please contact The Center for Climate and Security at:

Dr. Michael Thomas

Senior Fellow Security Sector Education

Asia-Pacific Region

Email: mthomas@climateandsecurity.org

Presenter Biographies

Lieutenant General John G. Castellaw, United States Marine Corps (Retired), Advisory Board, The Center for Climate and Security

John Castellaw is a member of the Center for Climate and Security's Advisory Board. He is also the president of the Crockett Policy Institute (CPI) a non-partisan policy and research organization chartered in Tennessee. Castellaw served in the U.S. Marine Corps for 36 years holding several operational commands and flying more than two dozen different aircraft. His duties included service with the UN during the Siege of Sarajevo, command of a U.S. joint force in a multi-national security and stability operation in East Timor, and as the chief of staff for the U.S. Central Command during the Iraq War. Other service included assignments ashore and afloat in Africa, Europe, the Asia-Pacific and the Middle East. His last tours on active duty were in the Pentagon where he first oversaw Marine Aviation and then the Marine Corps budget creation and execution.

After the Marine Corps, he returned to Crockett County, Tennessee and to the family farm from where he remains involved in national security issues. He is on the National Security Advisory Council of the U.S. Global Leadership Coalition, the board of the American Security Project, and is a teaching fellow in the College of Business and Global Affairs at the University of Tennessee, Martin. In addition to managing his family farm, he is board member of the Bank of Crockett, works with economic development organizations, and advises corporations on management and strategic planning. Castellaw recently completed his final term as the National Commander of the Marine Corps Aviation Association.

General Ron Keys, United States Air Force (Retired)

General Ron Keys is a member of the Center for Climate and Security's Advisory Board, and Chairman of the CNA Military Advisory Board. He is a retired Air Force 4-star General. He retired in November 2007 after completing a career of more than forty years. He is a command pilot with more than 4,000 flying hours in fighter aircraft, including more than 300 hours of combat time. No stranger to energy security challenges, Gen Keys first faced them operationally as a young Air Force Captain, piloting F-4s during the fuel embargo of the 1970s. Later, as Director of Operations for European Command, fuel and logistic supply provisioning were critical decisions during humanitarian, rescue, and combat operations from the Balkans deep into Africa… many driven by floods and famine.

As Commander of Allied Air Forces Southern Europe and Commander of the U.S. 16th Air Force, similar hard choices had to be made in operations for Northern Watch in Iraq as well as for combat air patrols and resupply in the Balkans. Later again, as the Director of all Air Force air, space, and cyber operations in the early 2000's he saw the impact of energy choices on budget execution as well as the emerging threat of climate change on operational tempo, training, and basing. Finally, at Air Combat Command, where he commanded then the Air Force's largest command — comprised of 1,200 aircraft, 27 wings, 17 bases and 105,000 personnel in 200

operating locations worldwide, he faced the total challenge of organizing, training, and equipping in the face of energy challenges and potential climate impacts.

General Keys resides in Woodbridge, Virginia and owns RK Solution Enterprises, LLC, an independent consultancy advising various DoD and Non-DoD related firms on energy security and climate change, cyber, advanced technologies, strategic planning, policy development, and marketing.

Rear Admiral Jonathan White, United States Navy (Retired), Advisory Board, The Center for Climate and Security

Jon White is a member of the Center for Climate and Security's Advisory Board, the President and CEO of the Ocean Leadership Consortium, and former Oceanographer and Navigator of the U.S. Navy. Prior to this he had a distinguished 32-year career in the U.S. Navy and retired at the rank of Rear Admiral. White's passion for the ocean and science began at a very early age as he grew up near Florida's Gulf coast. He earned a Bachelor of Science degree in Oceanographic Technology from the Florida Institute of Technology in 1981 and holds a master's degree in Meteorology and Oceanography from the U.S. Naval Postgraduate School. After working at sea as a civilian oceanographer on board a seismic survey vessel, he was commissioned through Navy Officer Candidate School in 1983, and served for as a surface warfare officer for four years.

White joined the Navy's Oceanography Community in 1987, and had numerous operational assignments at sea and ashore. White commanded the Naval Training Meteorology and Oceanography Facility, Pensacola, Florida, and was the 50th superintendent of the United States Naval Observatory in Washington, DC. White was selected as a flag officer and honorary chief petty officer in 2009 and served as Commander, Naval Meteorology and Oceanography Command at Stennis Space Center, MS. He was promoted to the rank of rear admiral (upper half) in August 2012 as he assumed his duties as the Oceanographer and Navigator of the Navy, which included duties as director of Navy's Task Force Climate Change, and Navy deputy to the National Oceanic and Atmospheric Administration. White earned numerous personal and unit awards throughput his career, which are all a tribute to the Sailors, Marines, Airmen, Soldiers, Coast Guardsmen, and civilians with whom he served.

Rear Admiral Neil Morisetti

Neil Morisetti is the Director of Strategy for University College London Science, Technology, Engineering and Public Policy, and Vice Dean (Public Policy) Engineering Sciences. Before that he worked for the UK government, both as an officer in the Royal Navy, where appointments included, Commander UK Maritime Forces and Commandant of the Joint Services Command and Staff College and latterly in the Foreign and Commonwealth Office. Between 2009-13 he acted as the UK Government Climate and Energy Security Envoy, and then the Foreign Secretary's Special

Representative for Climate Change. A graduate of the University of East Anglia, he is an Honorary Professor at UCL. Beyond UCL, he is an Advisor to Jenner Renewables, a company that seeks to meet the energy needs of the 21st Century. He also acts, in the UK, as a member of the Advisory Board for the Carbon Disclosure Programme and the Carbon Tracker Initiative, and is a member of the Military Advisory Board of the Washington DC based CNA think tank.

Sherri Goodman, Advisory Board, The Center for Climate and Security

Sherri Goodman is a member of the Center for Climate and Security's Advisory Board, and Public Policy Fellow with the Wilson Center. Prior to this role, she was CEO and President of the Ocean Leadership Consortium, and Senior Vice President, General Counsel and Corporate Secretary of CNA. Known as an innovative and multidisciplinary leader, Ms. Goodman has been recognized for her leadership in creating the CNA Military Advisory Board and leading its projects on *National Security and the Threat of Climate Change (2007), Powering America's Defense: Energy & the Risks to National Security (2009)*, *Powering America's Economy: Energy Innovation at the Crossroads of National Security Challenges(2010)*, and *Ensuring America's Freedom of Movement: A National Security Imperative to Reduce US Oil Dependence (2011).*

From 1993 to 2001, Ms. Goodman served as Deputy Undersecretary of Defense (Environmental Security). Ms. Goodman has twice received the DoD medal for Distinguished Public Service, the Gold Medal from the National Defense Industrial Association, and the EPA's Climate Change Award. Ms. Goodman also served on the staff of the Senate Armed Services Committee for Committee Chairman Senator Sam Nunn. Ms. Goodman serves on the boards of the Atlantic Council of the U.S., Blue Star Families, Committee on Conscience of the U.S. Holocaust Museum, Marshall Legacy Institute, National Academy of Sciences' Board on Energy and Environmental Systems, the Woods Hole Oceanographic Institution, the *Alliance Commission on National Energy Efficiency Policy,* the *Joint Ocean Commission Leadership Council*, and the *Responsibility to Protect* Working Group co-chaired by former Secretary of State Madeleine Albright. She is a life member of the Council on Foreign Relations, and serves on the Board of its *Center for Preventive Action,* In 2010, Ms. Goodman served on the *Quadrennial Defense Review Independent Panel* co-chaired by former National Security Advisor Stephen Hadley and former Secretary of Defense Bill Perry. Ms. Goodman has published widely in various print and on line media and in legal and scholarly journals. She has been an Adjunct Lecturer in International Affairs and Security at the Kennedy School of Government and an Adjunct Research Fellow at the Kennedy School's Center for Science and International Affairs.

Francesco Femia, Co-Founder & President, The Center for Climate and Security

Francesco Femia is Co-Founder & President of the Center for Climate and Security, and Co-Chair of the Climate and Security Advisory Group (CSAG). He leads the Center's policy development, analysis and research programs, and facilitates the primary forum for climate and security dialogue in the U.S. national security community. He has written, published and spoken extensively on the security implications of climate change, water stress and natural resource mismanagement in Syria and North Africa, including in the seminal report "The Arab Spring and Climate Change," and in the SAIS Review of International Affairs, among others. He is also a regular commentator on how militaries and intelligence communities address climate change risks. He previously served as Program Director at the Connect U.S. Fund, where he directed programs ranging from international climate policy, to mass atrocity prevention and response. At the Fund, he founded and facilitated the U.S. Climate Leadership Group, a multi-stakeholder effort involving policy institutes and donors in the national security and development sectors. He has over a decade of experience conducting research and policy development on the intersection of climate change, national and international security. Francesco has written for the SAIS Review of International Affairs, the Brown Journal of World Affairs, Angle Journal, Defense News, the Reuters Foundation, the National Journal, the Bulletin of Atomic Scientists, Climate Progress and e-International Relations, and is frequently-cited on climate and security issues, including in the G7-commissioned "A New Climate for Peace" report, the UK Foreign Commonwealth Office's "Climate Change: A Risk Assessment," Fox News, Forbes, Stars and Stripes, the New York Times, the Washington Post, USA Today, CNN, MSNBC, NBC News, the National Review, Foreign Policy, the Christian Science Monitor, the BBC, the New Republic, Slate, the Toronto Star, and the Atlantic, , among others. He holds a master's degree from the London School of Economics and Political Science (LSE), where he explored EU security and defense policy, including a field study on Cyprus's stalemated conflict. Francesco also serves on the advisory board of the Nuclear Security Working Group and the Planetary Security Initiative.

Caitlin Werrell, Co-Founder & President, The Center for Climate and Security

Caitlin Werrell is Co-Founder & President of the Center for Climate and Security, and Co-Chair of the Climate and Security Advisory Group. She leads the Center's policy development, analysis and research programs, and facilitates the primary forum for climate and security dialogue in the U.S. national security community. She has written and published extensively on the security implications of climate change, water stress and natural resource mismanagement in Syria and North Africa, including in the seminal report "The Arab Spring and Climate Change," and in the SAIS Review of International Affairs, as well as the potential for new technologies like additive manufacturing for addressing climate risks. Her primary research interests include climate change, water policy and international security. She has spent over a decade investigating the intersection of security, natural resources, conflict and cooperation. Caitlin has experience in international and domestic climate and water policy, including as co-founder of the MAP Institute for Water & Climate, a Senior Associate at AD Partners, and as Director of International Programs at EDN. Caitlin has written for the SAIS Review of

International Affairs, Angle Journal, Defense News, the Reuters Foundation, the National Journal, the Bulletin of Atomic Scientists, Climate Progress and e-International Relations, and has been cited by the New York Times, the Washington Post, the New Republic, USA Today, CNN's Christiane Amanpour, the Christian Science Monitor, Slate, the Toronto Star and the Atlantic, among others. She holds a master's degree from the University of Oxford, where she focused on transboundary water issues, concluding with a field study on water conflict and cooperation in Cyprus. Caitlin also holds a BA in Environmental Politics from Mount Holyoke College. Caitlin also serves on the advisory board of the Nuclear Security Working Group and the Planetary Security Initiative.

Dr. Troy Sternberg, Advisory Board, The Center for Climate and Security

Dr. Troy Sternberg is a member of the Center for Climate and Security's Advisory Board, and British Academy Post-doctoral Research Fellow in the School of Geography, Oxford University. His research focuses on the interaction of natural hazards with societies and the environment in the Gobi Desert and other arid and semi-arid regions, including hazard identification, social exposure and resilience and the evolving climate and hazard impact on human systems. In particular, he explores how drought, *dzud* (extreme winter) and climate influence human opportunity and security in the Gobi region of northern China and southern Mongolia. His interests center on desert processes – natural hazards, water, drought, climate, degradation, pastoralism, livelihoods, development and expanding dryland knowledge. He has contributed to a number of peer-reviewed journals, including the *International Journal of Climatology* and the *Forced Migration Review*. Troy holds a Doctorate in Philosophy (D.Phil) from Oxford University.

Professor David Karoly, Professor of Atmospheric Science and ARC Centre of Excellence for Climate System Science, University of Melbourne.

David Karoly is a Professor of Atmospheric Science in the School of Earth Sciences and the ARC Centre of Excellence for Climate System Science at the University of Melbourne. He is an internationally recognized expert in climate change and climate variability, including greenhouse climate change, stratospheric ozone depletion and inter-annual climate variations due to El Niño-Southern Oscillation. He was heavily involved in preparation of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) released in 2007, in several different roles, and was a Review Editor of the chapter 'Australasia' in the IPCC Fifth Assessment Report released in 2014. Professor Karoly is a member of the Climate Change Authority which provides advice to the Australian government on climate change policies. He is also a member of the Wentworth Group of Concerned Scientists. Professor Karoly joined the School of Earth Sciences in May 2007 as an ARC Federation Fellow funded by the Australian government.

Lieutenant Commander Oliver-Leighton Barrett, United States Navy (Retired), Senior Research Fellow, The Center for Climate and Security

Oliver-Leighton Barrett is a Senior Research Fellow at the Center for Climate and Security, where he focuses on the impacts of environmental degradation and climate change on the stability and security of states and populations, with an emphasis on Latin America. He is also the founder of Janus Advisory Inc., a company that provides advisory services to federal agencies. Most recently, he led a multi-author effort to draft the Pentagon's Environmental and Energy Issues for Militaries report – a collaborative multi-national assessment of the impacts of climate change on Latin America and Caribbean militaries' operations and installations. A retired naval officer, Oliver began his military career as an enlisted U.S. Marine deploying to Somalia in support of humanitarian assistance operations, and later, flew reconnaissance missions in support of Operation Enduring Freedom. He worked as an advisor to U.S. Southern Command for six years managing partner nation public-private cooperation outreach efforts, technology programs as well as environmental and energy security initiatives. Oliver is also a Contributing Writer for Foreign Policy Association, with published articles on fragile states, environmental security and emerging diplomacy and defense issues. He resides in Miami, Florida.

Dr. Michael Thomas, Senior Fellow for Security Sector Education, The Center for Climate and Security

Dr. Michael Thomas is Senior Fellow for Security Sector Education at the Center for Climate and Security. He is a graduate of the Australian Defence Force Academy, the Royal Military College (Duntroon) and the Australian Capability and Technology Management College. He served for twenty years as an officer in the Australian Army including stints in signals-intelligence, capability management and military instruction. His doctorate examined how military forces have responded to the threat posed by climate change and he has been active in educating global military leaders for six years through his work with the Australian Defence Force Global Change and Energy Sustainability Initiative, as a Visiting Fellow at the Australian Defence College and as

a visiting lecturer at the University of New South Wales and Deakin University. He has completed climate resilience and capacity building studies at the United Nations University Tokyo and, together with his PhD from the University of New South Wales, holds three separate post-graduate degrees in Oceanography, a Masters in International Relations and a Masters of Management (Defense capability and acquisition). He was a co-author on the influential 2015 Australian Climate Council publication *Be Prepared* that addressed climate security risks in the Australian Defense sector. His forthcoming book will be published by Springer in early 2017 titled *The Securitization of Climate Change: Australian and US Military Responses*.