

THE ROBERT S. STRAUSS CENTER™  
FOR INTERNATIONAL SECURITY AND LAW



# Climate Change and National Security

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February 2013

Course Module No. 1

## About the Strauss Center

The Robert S. Strauss Center for International Security and Law at The University of Texas at Austin is a nonpartisan research center that engages the best minds in academia, government, and the private sector to develop unique, policy-relevant solutions to complex global challenges.

## About the CCAPS Program

The Climate Change and African Political Stability (CCAPS) program conducts research in three core areas, seeking to investigate where and how climate change poses threats to stability in Africa, identify strategies to support accountable and effective governance in Africa, and evaluate the effectiveness of international aid to help African societies adapt to climate change. The CCAPS program is a collaborative research program among the University of Texas at Austin, the College of William and Mary, Trinity College Dublin, and the University of North Texas.

The CCAPS program is funded by the U.S. Department of Defense's Minerva Initiative, a university-based, social science research program focused on areas of strategic importance to national security policy. Through quantitative analysis, GIS mapping, case studies, and field interviews, the program seeks to produce research that provides practical guidance for policy makers and enriches the body of scholarly literature in this field. The CCAPS team seeks to engage Africa policy communities in the United States, Africa, and elsewhere as a critical part of its research.

## About the Author

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## Acknowledgements

This material is based upon work supported by, or in part by, the U.S. Army Research Office contract/grant number W911NF-09-1-0077 under the Minerva Initiative of the U.S. Department of Defense.

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# Background

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## Does climate change constitute a national security threat to the United States?

Answers to this question are contingent upon answers to a series of other questions.

### *First, do we accept that climate change is happening?*

Climate change is shorthand for significant, long-term changes in weather patterns, such as temperature or precipitation, among others. According to scientific experts, climate change is caused by increases in greenhouse gases like carbon dioxide in the atmosphere, which is causing warming of global temperatures as well as more extreme and less predictable weather patterns. While this issue is debated in political circles, scientists overwhelmingly agree that human-induced or anthropogenic climate change is real. Given the complexity of the issue, there is still considerable scientific discussion about the likely consequences, some of which – like temperature increases – are more certain than others. Best estimates for temperature increases by the end of this century range from a 3.2°F increase assuming the largest reduction in emissions rates, up to 7.2°F at the current rate of emissions growth.<sup>1</sup> The more likely scenario that the World Bank reported in 2012 is an increase of 5.4°F, which takes into account that all pledges made at Copenhagen and Cancun to reduce emissions are kept.<sup>2</sup>

### *Second, what do we mean by security?*

We often think of security in terms of preventing an armed external attack by another state. In the age of terrorism and pandemic flus, it is increasingly clear that events other than armed external attack can create consequences so severe that they can be called security problems. Security threats can be understood as such grave challenges to our existence and way of life that we would be willing to use force to prevent them from happening (even if military means are not the only or best way to deal with the problem).

### *Third, can climate change on its own or in conjunction with other drivers lead to consequences that rise to the level of a threat to U.S. national security?*

There are two kinds of security problems that we can think about. Direct threats to the homeland and indirect threats to our overseas international interests.

Direct threats to the homeland related to climate change potentially include Arctic sea ice melt, rising sea levels and storm surge, and extreme weather events. The threats would include any changes in the country's borders and navigable waterways that might prompt interstate competition over resources and boundaries. Direct threats might involve destruction of and high damage to critical infrastructure, food supplies, and major population centers, prompting diversion of national assets, including potential military resources, for domestic humanitarian relief and recovery. Threats could also emerge from how other nations decide to respond to climate change, such as geoengineering (active efforts to alter the weather), coercive measures to keep fossil fuels in the ground, policies to tax or alter the price of carbon-based fuels, bans or phaseout of materials that produce emissions, or diversion of food exports to support local markets.

Indirect threats include the security consequences of climate change in places strategically important to the United States. These include countries that are allies, sources of raw materials, important transit hubs, areas where risk of blowback to the homeland is high, and locations of American embassies and bases. Inter-state and intra-state conflict are frequently discussed as potential security consequences of climate change (though the academic community has found mixed results to date about this risk). State failure, international migration, and the dislocation and destruction wrought by extreme weather events are also invoked.

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<sup>1</sup> Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report* (Geneva: IPCC, 2007).

<sup>2</sup> World Bank, *Turn Down the Heat: Why a 4°C Warmer World Must Be Avoided*, A report for the World Bank by the Potsdam Institute for Climate Impact Research and Climate Analytics (Washington: World Bank, November 2012), p. 23.

## How do we define climate security vulnerability?

When it comes to understanding climate change vulnerability, the first step is to define “vulnerability.” Vulnerability is often identified as susceptibility to losses, and most studies of climate change focus on the potential effects on people’s livelihoods. In security circles, climate vulnerability is most often identified with the risk of violent conflict. While in the mold of the security tradition, CCAPS research on climate security vulnerability focuses on the potential for large-scale loss of life from exposure to climate-related hazards. Such situations may or may not involve or escalate to situations involving violent conflict.

Not all places are equally vulnerable to such climate security consequences. What contributes to vulnerability? First, a place has to be physically exposed to climate-related hazards such as droughts, floods, storms, hurricanes, and wildfires. However, physical exposure alone does not determine whether a location is especially vulnerable to negative consequences. If few to no people live in a given location, then large-scale loss of life is, by definition, impossible. Beyond physical exposure and population, people in some places are better able to protect themselves at the household or community level. They are more resilient because they are better educated, healthier, and have better access to resources. However, in some cases, the effects of climate-related hazards are so severe that they exceed the capacity of communities to protect themselves. Whether those people face severe negative consequences, including loss of life, depends on the willingness and ability of their governments to assist them in their time of need. Governments that are ineffective, unwilling to hear the concerns of their people, unstable, and historically prone to violent conflict are less likely to be able or willing to protect their people. CCAPS’ mapping work on climate security vulnerability groups these four dimensions – physical exposure, population, household and community resilience, and governance and political violence – into a combined measure.

For more information on CCAPS mapping work and how to think about vulnerability, see *Locating Climate Insecurity* in the CCAPS Resources section at the end of this course module.

## How do U.S. security and academic communities describe the security implications of climate change?

CNA Corporation Military Advisory Board, *National Security and the Threat of Climate Change*, authored by retired admirals and generals (April 2007)

*“Climate change acts as a threat multiplier for instability in some of the most volatile regions of the world.”* (p. 6)

*“Projected climate change poses a serious threat to America’s national security. The predicted effects of climate change over the coming decades include extreme weather events, drought, flooding, sea level rise, retreating glaciers, habitat shifts, and the increased spread of life-threatening diseases. These conditions have the potential to disrupt our way of life and to force changes in the way we keep ourselves safe and secure.”* (p. 6)

Testimony of Dr. Thomas Fingar, Chairman of the National Intelligence Council, *National Security Implications of Global Climate Change to 2030* (June 25, 2008)

*“We judge global climate change will have wide-ranging implications for U.S. national security interests over the next 20 years. Although the United States will be less affected and is better equipped than most nations to deal with climate change, and may even see a benefit owing to increases in agriculture productivity, infrastructure repair and replacement will be costly. We judge that the most significant impact for the United States will be indirect and result from climate-driven effects on many other countries and their potential to seriously affect US national security interests.”* (p. 4)

*“We assess that climate change alone is unlikely to trigger state failure in any state out to 2030, but the impacts will worsen existing problems—such as poverty, social tensions, environmental degradation, ineffectual leadership, and weak political institutions. Climate change could threaten domestic stability in some states, potentially contributing to intra- or, less likely, interstate conflict, particularly over access to increasingly scarce water resources.”* (p. 4-5)

U.S. Navy, *Climate Change Roadmap* (April 2010)

*“The Navy acknowledges that climate change is a national security challenge with strategic implications for the Navy. Climate change may influence the type, scope, and location of future Navy missions through its effects on the distribution and availability of natural resources (e.g., water, agriculture, fisheries, coastal areas, etc.). Economically unstable regions will be more vulnerable to the effects of climate change, and climate change will be one of several factors that may increase instability.”* (p. 5)

*“Climate change is affecting, and will continue to affect, U.S. military installations world- wide. Melting permafrost is degrading roads, foundations, and structures on DoD and USCG installations in Alaska. Droughts in the southeast and southwest U.S. are challenging water resource management. Sea level rise and storm surge will lead to an increased likelihood of inundation of coastal infrastructure, and may limit the availability of overseas bases.” (p. 5)*

#### U.S. Department of Defense, Quadrennial Defense Review (February 2010)

*“Climate change will affect DoD in two broad ways. First, climate change will shape the operating environment, roles, and missions that we undertake.” (p. 84)*

*“Assessments conducted by the intelligence community indicate that climate change could have significant geopolitical impacts around the world, contributing to poverty, environmental degradation, and the further weakening of fragile governments. Climate change will contribute to food and water scarcity, will increase the spread of disease, and may spur or exacerbate mass migration.” (p. 85)*

*“While climate change alone does not cause conflict, it may act as an accelerant of instability or conflict, placing a burden to respond on civilian institutions and militaries around the world. In addition, extreme weather events may lead to increased demands for defense support to civil authorities for humanitarian assistance or disaster response both within the United States and overseas.” (p. 85)*

#### U.S. National Security Strategy (May 2010)

*“The danger from climate change is real, urgent, and severe. The change wrought by a warming planet will lead to new conflicts over refugees and resources; new suffering from drought and famine; catastrophic natural disasters; and the degradation of land across the globe.” (p. 47)*

#### Defense Science Board, *Trends and Implications of Climate Change for National and International Security* (October 2011)

*“Climate change is likely to have the greatest impact on security through its indirect effects on conflict and vulnerability. Many developing countries are unable to provide basic services and improvements, much less cope with repeated, sudden onset shocks and accumulating, slow onset stresses. These effects span the spectrum from the basic necessities of livelihood to social conflict, including protests, strikes, riots, inter-communal violence, and conflict between nations. Climate change is more likely to be an exacerbating factor for failure to meet basic human ends and for social conflict, rather than the root cause.” (p. xi)*

#### Office of the Director of National Intelligence, *Global Water Security* (February 2012)

*“During the next 10 years, many countries important to the United States will experience water problems—shortages, poor water quality, or floods—that will risk instability and state failure, increase regional tensions, and distract them from working with the United States on important US policy objectives. Between now and 2040, fresh water availability will not keep up with demand absent more effective management of water resources. Water problems will hinder the ability of key countries to produce food and generate energy, posing a risk to global food markets and hobbling economic growth. As a result of demographic and economic development pressures, North Africa, the Middle East, and South Asia will face major challenges coping with water problems.” (p. iii)*

#### National Research Council (2012)

*“It is prudent to expect that over the course of a decade some climate events—including single events, conjunctions of events occurring simultaneously or in sequence in particular locations, and events affecting globally integrated systems that provide for human well-being—will produce consequences that exceed the capacity of the affected societies or global systems to manage and that have global security implications serious enough to compel international response. It is also prudent to expect that such consequences will become more common further in the future.” (p. 5)*

#### Nils Petter Gleditsch, “Whither the Weather? Climate Change and Conflict,” *Journal of Peace Research* (January 2012)

*“Overall, the research reported here offers only limited support for viewing climate change as an important influence on armed conflict.” (p. 3)*

# Discussion

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The challenge in understanding the security consequences of climate change is partially a function of complexity. It is difficult enough to understand the consequences of climate change for the physical world. It is all the more difficult to anticipate the likely consequences for human systems that will inevitably adapt, adjust, and react to physical consequences.

Physical consequences go through and interact with human systems, beginning at the level of the individual and community but also at the level of the state. Communities and states possess different levels of resilience and capability to adjust to the consequences of climate change. In some cases, these social and political factors will matter as much as, or more than, physical exposure to a climate-related factor.

Social scientists have tried to look at historical analogues of the expected consequences of climate change – drought, water scarcity, volatile rains, temperature increases, and other hazards – to see if those are correlated with the onset of conflict. Most of these studies focus on civil wars. Even with better data availability, these findings have largely been inconclusive.

These mixed results have led some scholars to challenge the direct climate-conflict connection, while others have sought to examine other kinds of lower-level conflicts like protests and communal conflicts to test the climate-conflict link. Still others have studied the indirect pathways by which climate change impacts could lead to conflict through effects on economic growth.

Even as scholars vigorously debate the connections between climate and conflict, some in the policy community have characterized climate change as a “threat multiplier” that might, in conjunction with other forces, lead to such consequences as war, state failure, or mass migration, among other concerns.

It is not clear how much of this effort to “securitize” climate change – to use the language of national security – is an effort to elevate the prominence of the issue of climate change and change the politics of the issue that remain mired in partisan disagreement. Despite these concerns, it would be premature to dismiss the climate-security connections for several reasons.

**First, efforts to model the connections between climate and security remain in their infancy and still must rely on poor data and poorly understood causal connections.**

The connections between climate change and conflict are only hazily understood. Most of the studies to date have analyzed the direct connections between climate change and conflict. The indirect pathways between climate and conflict – i.e. climate-related events’ impact on economic growth and food prices that in turn impact conflict – have only recently been explored. We lack good data at fine resolution for much of the world for both physical and socio-political indicators.

**Second, conflicts are not the only potential security consequences of climate change.**

Humanitarian emergencies that require the mobilization of domestic and international militaries are also security consequences of concern and may be more likely and more immediate concerns than conflict.

**Third, and perhaps most important, the future may not be like the past.**

While climate patterns have already changed compared to historical averages, the bulk of the climate changes we expect to see will occur in the future, and historical patterns of the past century may not be instructive in terms of where dangers are located and how severe the climate conditions will likely become. Extremes of temperatures, rainfall, and storms could be much worse than anything we have experienced in the contemporary historical record.

## Early Icebreaker Activity

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Ask participants to answer the following questions on a slip of paper at the beginning of the session before any presentations. Collect and tally the answers to get a sense of the opinion of the room going in to the discussion.

- (1) Do you think climate change is real?
- (2) Do you think humans have caused it?
- (3) Do you think climate change constitutes a national security threat?

## Later Exploration Questions

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These questions are meant to get participants thinking about where they get their information about climate change and to think through ways that their service or people they know may already be affected by weather-related forces.

- (1) What do you know about climate change? The connections between climate and security?
- (2) Where have you learned that information?
- (3) Have you read reports on the topic written by scientists directly?
- (4) Have you ever been deployed for weather-related relief purposes abroad or at home?
- (5) Do you know of someone in the armed forces who was mobilized after Hurricane Katrina? After Hurricane Sandy? After the Pakistani floods of 2010? Other weather-related emergencies?
- (6) Are there any important bases or cities at risk to extreme weather events?

## Scenario 1

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Pakistan experiences a repeat of the 2010 floods with heavy July monsoon rains affecting Khyber Pakhtunkhwa, Sindh, Punjab, and Balochistan regions in the Indus River Basin. 20 million people are affected due to the destruction of homes, livelihoods, and dislocation. 2,000 people are dead and at least 6 million people are temporarily displaced from their homes.

In some areas, law and order disappear. There is widespread looting in the disaster zone. Power outages occur over extensive areas. Ordnance washes downstream from military weapons depots. The Pakistani military is diverted from fighting insurgents in the northwest to carry out humanitarian assistance. The Taliban issues threats to humanitarian workers. The initial Pakistani government response is tepid with rising media condemnation and requests for the resignation of Pakistan's president.

Due to poor harvests in Russia, Argentina, the United States, and Australia because of drought, global food prices for wheat are high. The World Food Programme (WFP) food reserves have declined and, in the face of high prices and low international assistance, the WFP cannot afford to provide humanitarian assistance to all of the 20 million Pakistanis who need assistance.

Questions:

- (1) Is this a national security problem for the United States?
- (2) What should the U.S. do if anything to support relief and contain the crisis?
- (3) What should the U.S. do to help prevent future such crises?

For more background on the 2010 Pakistani floods:

[www.trust.org/alertnet/crisis-centre/crisis/pakistan-floods-2010](http://www.trust.org/alertnet/crisis-centre/crisis/pakistan-floods-2010)

[www.cfr.org/pakistan/costs-pakistans-floods/p22784](http://www.cfr.org/pakistan/costs-pakistans-floods/p22784)

## Scenario 2

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Drought in South Africa and the U.S. leads to higher prices of corn. Increased food prices lead to a disgruntled urban population in Kenya who take to the streets in protest. Kenyans react negatively to the presence of Somali refugees in their midst, as the refugees are seen as competing for limited foodstuffs and carrying out violent attacks in urban areas and in the northeastern part of the country. Protests against the government are marred by violence against refugees in Nairobi.

The Kenyan government orders 100,000 Somali refugees in urban areas to travel to the major refugee camp in Dadaab in the North Eastern Province of the country near the Somali border. Dadaab already houses 500,000 refugees and is completely dependent on imported food donations administered by the World Food Programme and non-governmental organizations. The high price of corn leads to a decline in food donations, resulting in a shortage of supplies for Dadaab. During the March to May rainy season, heavy rainfall creates flooding, increasing the risk of disease and malnutrition.

Kenya blames attacks in and around Dadaab on remnants of Somalia's Al-Shabaab militant group that was finally marginalized in 2012. Kenya warns Somali's fledgling government that it might recommence military operations inside Somalia, as both Kenya and Ethiopia did in 2012, if Somalia's government cannot control the resurgent Al-Shabaab.

Questions:

- (1) Is this a national security problem for the U.S.?
- (2) What actions should the U.S. take, if any, to support relief and contain the crisis?
- (3) Should the U.S. help prevent future such crises? If so, how?
- (4) Does climate change potentially play a role in this crisis?

For more background on Dadaab:

[www.bbc.co.uk/news/world-africa-20768955](http://www.bbc.co.uk/news/world-africa-20768955)

[www.voanews.com/content/refugees\\_fear\\_insecurity\\_in\\_kenya\\_return\\_to\\_somalia/1581256.html](http://www.voanews.com/content/refugees_fear_insecurity_in_kenya_return_to_somalia/1581256.html)

## Science Resources

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Center for Climate and Energy Solutions, *Climate Change 101 Series*, 2011  
[www.c2es.org/science-impacts/climate-change-101](http://www.c2es.org/science-impacts/climate-change-101)

National Academies, *Climate Change: Evidence, Impacts, and Choices*, 2012  
<http://nas-sites.org/americasclimatechoices/more-resources-on-climate-change/climate-change-lines-of-evidence-booklet>

Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: Synthesis Report*, 2007  
[www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf)

IPCC, *Special Report: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*, 2012  
[www.ipcc-wg2.gov/SREX](http://www.ipcc-wg2.gov/SREX)

World Bank, *Turn Down the Heat*, 2012  
<http://climatechange.worldbank.org/content/climate-change-report-warns-dramatically-warmer-world-century>

## U.S. Military and Intelligence Community Resources

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National Intelligence Council, Testimony of Dr. Thomas Fingar, Chairman of the National Intelligence Council, *National Intelligence Assessment on the National Security Implications of Global Climate Change to 2030*, 2008  
[www.fas.org/irp/congress/2008\\_hr/062508fingar.pdf](http://www.fas.org/irp/congress/2008_hr/062508fingar.pdf)

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U.S. Navy, *Climate Change Roadmap*, 2010  
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U.S. Department of Defense, *Quadrennial Defense Review*, 2010  
[www.defense.gov/qdr/images/QDR\\_as\\_of\\_12Feb10\\_1000.pdf](http://www.defense.gov/qdr/images/QDR_as_of_12Feb10_1000.pdf)

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Defense Science Board, *Trends and Implications of Climate Change for National and International Security*, 2011  
[www.fas.org/irp/agency/dod/dsb/climate.pdf](http://www.fas.org/irp/agency/dod/dsb/climate.pdf)

Office of the Director of National Intelligence, *Global Water Security*, 2012  
[www.dni.gov/files/documents/Newsroom/Press%20Releases/ICA\\_Global%20Water%20Security.pdf](http://www.dni.gov/files/documents/Newsroom/Press%20Releases/ICA_Global%20Water%20Security.pdf)

National Research Council, *Climate and Social Stress: Implications for Security Analysis*, 2012  
[www.nap.edu/catalog.php?record\\_id=14682](http://www.nap.edu/catalog.php?record_id=14682)

## Think Tank Resources

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Council on Foreign Relations, *Climate Change and National Security*, 2007  
[www.cfr.org/climate-change/climate-change-national-security/p14862](http://www.cfr.org/climate-change/climate-change-national-security/p14862)

Center for a New American Security / Center for Strategic and International Studies, *The Age of Consequences: The Foreign Policy and National Security Implications of Climate Change*, 2007  
[www.cnas.org/node/126](http://www.cnas.org/node/126)

CNA Corporation Military Advisory Board, *National Security and the Threat of Climate Change*, 2007  
[www.cna.org/reports/climate](http://www.cna.org/reports/climate)

Center for a New American Security, *Uncharted Water: The U.S. Navy and Navigating Climate Change*, 2009  
[www.cnas.org/node/849](http://www.cnas.org/node/849)

## Academic Resources

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Joshua W. Busby, "Who Cares About the Weather? Climate Change and U.S. National Security" *Security Studies*, 2008  
[www.utexas.edu/lbj/faculty/busby/wp-content/uploads/securitystudies.pdf](http://www.utexas.edu/lbj/faculty/busby/wp-content/uploads/securitystudies.pdf)

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<http://jpr.sagepub.com/content/49/1/35.abstract>

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<http://jpr.sagepub.com/content/49/1/51>

World Bank, *Implications of Climate Change for Armed Conflict*, 2007  
[www.engagingconflict.it/ec/wp-content/uploads/2012/05/Feron-Buhaug-Implications-of-Climate-Change-for-Armed-Conflict.pdf](http://www.engagingconflict.it/ec/wp-content/uploads/2012/05/Feron-Buhaug-Implications-of-Climate-Change-for-Armed-Conflict.pdf)

Wilson Center, *New Research on Climate and Conflict*, 2011  
[www.wilsoncenter.org/event/new-research-climate-and-conflict-links](http://www.wilsoncenter.org/event/new-research-climate-and-conflict-links)

## CCAPS Resources

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*Locating Climate Insecurity*, Policy Brief No. 3, 2011  
<http://strausscenter.org/ccaps/publications/research-briefs.html?download=97>

*The Brewing Storm*, Policy Brief No. 2, 2011  
<http://strausscenter.org/ccaps/publications/research-briefs.html?download=99>

*Can Political Institutions Avert Violence from Climate Change*, Research Brief No. 1, 2011  
<http://strausscenter.org/ccaps/publications/research-briefs.html?download=28>

*Climate Shocks and Political Violence*, Research Brief No. 3, 2012  
<http://strausscenter.org/ccaps/publications/research-briefs.html?download=49>

*What to Do? The Climate Security Policy Conundrum*, 2012  
[www.e-ir.info/2012/03/21/what-to-do-the-climate-security-policy-conundrum/](http://www.e-ir.info/2012/03/21/what-to-do-the-climate-security-policy-conundrum/)

CCAPS Mapping Tool  
<http://strausscenter.org/ccaps/mapping-tool.html>

CCAPS Conflict Dashboard  
<http://ccaps.aiddata.org/conflict>

