CCSP

CLIMATE CHANGE AND SECURITY PROJECT

RESEARCH GUIDE

Annotated bibliography of research on climate change and security

Leanne Smythe

UPDATE: MARCH 2010

SECURITY AND DEFENCE FORUM PROGRAM

LIU INSTITUTE FOR GLOBAL ISSUES

CLIMATE CHANGE AND SECURITY PROJECT

Project Overview:

The projections from the world's scientists are clear. The climate is changing in dramatic ways and no region of the world is untouched. Average temperatures and sea levels are rising, precipitation patterns are changing, and severe weather events are becoming more frequent.

Many national governments, international organizations and think tanks have concluded that climate change has the potential to stress domestic or homeland security capabilities and to disrupt the international security environment -- simultaneously. Canada is a laggard internationally when it comes to identifying and addressing climate change as a security challenge of unprecedented scope and seriousness.

A research team in the Liu Institute for Global Issues is exploring the potential security implications of climate change for Canada, with a particular focus on the anticipated challenges for Canadian organizations with responsibilities and accountabilities in the areas of public safety, national security and international security.

Project Team:

- ***Dr. Brian Job*** (bjob@interchange.ubc.ca), Faculty Associate at the Liu Institute for Global Issues, provides overall direction to the project.

- ***Margaret Purdy*** (margaret.purdy@ubc.ca), a former federal deputy minister with extensive experience in national security and public safety matters and now a Research Associate in the Liu Institute for Global Issues, is the Principal Investigator.

- ***Leanne Smythe*** (leanne.smythe@hotmail.com), a PhD candidate in Political Science at UBC, is the Principal Researcher.

Recent Project Outputs

- Workshop: "The Climate Change and Security Nexus: Implications for Defence Policy and Operations 2010-2030". Ottawa, ON; January 2010.
    - Workshop Program, Backgrounder and Report
- Journal Article (forthcoming Spring 2010 in *International Journal*): Purdy, Margaret and Leanne Smythe. "From Obscurity to Action: Why Canada must tackle the security dimensions of climate change".

For more information or to discuss collaboration opportunities, contact Margaret Purdy at margaret.purdy@ubc.ca or Leanne Smythe at leanne.smythe@hotmail.com

RESEARCH GUIDE[1]

AUSTRALIA

Government

- Australian Defence Force, *Joint Operations for the 21ˢᵗ Century,* Government of Australia, May 2007 http://www.defence.gov.au/publications/FJOC.pdf
  - ○ This report sets out a vision for the 21ˢᵗ Century use of the Australian Defense Force. It notes that the present and future contains both seen and unseen dangers, some of which can be considered "traditional" but many of which must be seen as new challenges for security experts. Climate Change is considered to be one of these "new" challenges, along with natural disasters and other possible global threats. Innovation—and a new vision for the military—is necessary in order to effectively meet this broadening range of national security threats.

Rudd, Kevin. "The First National Security Statement to the Australian Parliament," Address by the Prime Minister of Australia, December 4, 2008 http://www.iseas.edu.sg/aseanstudiescentre/ascdf3_Rudd_NatSec_041209.pdf
  - ○ The intent of this speech is to outline a national security policy framework that can be used to guide future policy development in the area of national security. Based on the increasing complexity and interconnectedness of the global environment, this statement indicates that changes must be made to the priorities and procedures that are used to determine national security interests and responses in Australia. It lists the principles that should guide this determination, as well as the kinds of threats that are and will impact the national security of Australia, including climate change. Climate change is considered to be a "most fundamental challenge" over the long term which will lead to unregulated population movements, a decline in the production of food, violent weather patterns and catastrophic events. Therefore, as one of the government's future priorities, climate change and energy security will be incorporated into the formal national security decision-making framework.

Think Tanks/Research Institutes

- **Australian Strategic Policy Institute: http://www.aspi.org.au/**
  - ○ Bergin, Anthony and Ross Allen. "The thin green line: Climate change and Australian policing." Special Report: Australian Strategic Policy Institute. Issue 17, October 2008. http://www.aspi.org.au/publications/publication_details.aspx?ContentID=185
    - ▪ This report sets out reasons for why law enforcement agencies should be concerned about climate change:
      - More involvement in complex emergencies—i.e. working to reduce community vulnerability, provide a safe environment for emergency responders to work
      - Enforcement of new environmental legislation—i.e. enforcing compliance to carbon market, reducing incentives for fraud
      - Increase in climate crime—i.e. water theft, social problems after disasters, militant protesting
      - Impact on working conditions—i.e. exposure to new diseases, fatigue, trauma; changing budgetary priorities

      The report also looks at the following issues: the need to be self-sustaining during times of crisis; cooperation with other agencies including the military; adaptation and protection of infrastructure; and the need for better energy efficiency to reduce the environmental impact of policing.

  - ○ Major General Michael G Smith (Rtd) AO, "More Relevant than a Deputy Sheriff" Australian Strategic Policy Institute, Feb 20, 2007: http://www.aspi.org.au/research/spf_article.aspx?aid=10#
    - ▪ Commentary on a proposal by Anthony Bergin to develop an Australian academy that would conduct coordinated training for humanitarian interventions and peacebuilding

---

[1] Compiled by Leanne Smythe, Liu Institute for Global Issues, University of British Columbia: Last Updated March 10, 2010

efforts within the region. Notes that this would help Australian emergency responders and military personnel to better meet the challenges of complex emergencies that will likely increase in the future due to processes such as climate change.

- Ungerer, Carl. "A New Agenda for National Security." Australian Strategic Policy Institute, Issue 15, April 2008 http://www.aspi.org.au/publications/publication_details.aspx?ContentID=161&pubtype=10
    - The goal of this report is to move policy-makers beyond their focus on terrorism in establishing national security priorities for Australia. To do this, it looks at the increase in non-traditional security issues and notes that to become a national security priority an issue must meet three benchmarks: scale, proximity and urgency. The report defines Australian national interest as prosperity and security, both of which rest upon national resilience, or the ability to survive and recover from various disasters or disruptions. Climate change is a national prosperity concern already, but should not be considered a core national security problem since its effects do not necessarily meet these benchmarks (although the potential is there). Therefore social and economic policy spheres are currently adequate to deal with the changes. Something that does need to happen, however, is to increase the capacity of national security agencies to discern when these issues may become security threats and to build the capacity to prevent and to deal with the threats as they emerge.

- Yates, Athol and Anthony Bergin. "Hardening Australia: Climate change and national disaster resilience" Australian Strategic Policy Institute: Special Report Issue 24, August 2009. http://www.aspi.org.au/publications/publication_details.aspx?ContentID=221

    - "This *Special Report*, authored by Athol Yates and Anthony Bergin, warns that as a result of climate change, disasters are likely to become larger, more complex, occur simultaneously and in regions that have either not experienced the natural hazard previously or at the same intensity or frequency. The report recommends that emergency services will need to undertake a comprehensive assessment of the impact of climate change on the risks they are responsible for. COAG should develop a National Partnership Agreement on Disaster Resilience with the states that would provide $150 million to reward the states' measurable improvement in disaster outcomes." (publication summary)

- **Institute of Policy Studies**
    - o Boston, Jonathan, Philip Nel, and Marjolein Righarts. "Climate Change and Security: Planning for the Future." IPS, Wellington. http://ips.ac.nz/publications/publications/show/266
        - [Need membership to access]

- **Lowy Institute: http://www.lowyinstitute.org/**
    - o Dupont, Alan and Graeme Pearman. "Heating up the Planet: Climate Change and Security." Lowy Institute for International Policy, Paper 12, 2006. http://www.lowyinstitute.org/Publication.asp?pid=391
        - The purpose of this report is to broaden our understanding of the impact of climate change by looking at it from the angle of security, to find the links between climate change and human survival, and to make a case for the prioritizing of climate change above other security threats. It addresses the data that informs the research on climate change impacts, noting several kinds of security threats, and looking at "wild cards" that, if they were to occur, would show that predictions of the impact of climate change on the world were underestimated rather than exaggerated. This report is particularly concerned with the potential impact of abrupt climate change on states and citizens, particularly in the Asia-Pacific region. It notes that the emerging security threats are non-military in nature, and includes chapters that deal with threats such as food and water scarcity, natural disasters, and climate change refugees. It concludes with conclusions and recommendations that are Australia-centric.

- **Tyndall Centre for Climate Change:** http://www.tyndall.ac.uk/

- o Barnett, Jon. "Security and Climate Change." Tyndall Centre for Climate Change Research, Working Paper 7, October 2001
  http://waterwiki.net/images/4/4e/Security_and_Climate_change.pdf
    - ▪ This working paper is a precursor to Jon Barnett's 2003 article by the same name (see below).

<u>Journal Articles</u>

- Barnett, Jon. "Security and Climate Change." *Global Environment Change* (13) 2003: pp 7-17
  http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6VFV-48B5KTX-1&_user=10&_rdoc=1&_fmt=&_orig=search&_sort=d&view=c&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=a8343cd7a0a5f6f5b34af4f18d96fee5
    - o This is an overview article that is intended to review the various aspects of "security" that can be connected with climate change. It includes a definition of security, the relation of national security goals to climate change, the inclusion of human security concerns, and points out a number of ways in which the military can be connected to various climate change angles. This article ends with a caution against over-securitizing the issue of climate change: the concern here is that climate change will end up militarized, with a focus on reactionary rather than pro-active policies, and will lead to a co-optation of the issue by politicians looking for new ways to bolster state security to the detriment of individuals affected by climate change.

- Barnett, Jon and W. Neil Adger. "Climate Change, Human Security and Violent Conflict" *Political Geography* 26 (2007): pp639-655.
  http://waterwiki.net/images/7/77/Climate_change,_human_security_and_violent_conflict.pdf
    - o This paper explains the implications of climate change for human security by connecting the security of people to access to natural resources, resources that are often used to sustain the livelihoods of these people. It suggests that subsequent insecurity may become a trigger for conflict, including violent conflict, and that states may be unequipped to deal with the social problems that may result. It concludes by outlining a research program that may be useful to uncover empirical data that may help researchers to move beyond these theoretical connections and better link climate change to human insecurity and conflict.

- Elliot, Lorraine. "Environment and Security: What's the Connection?" *Australian Defence Force Journal*, Issue 174, 2007: pp 39-52.
  http://www.adfjournal.adc.edu.au/UserFiles/issues/174%202005%20Sep_Oct.pdf
    - o This article provides an overview of the linkages between environmental degradation and issues of security, noting that although the debate surrounding climate change is its most recent manifestation, this discussion has been occurring for decades. It lists nine specific linkages which are being currently studied, spanning a range of links from the more traditional idea that resource scarcity may provoke armed conflict between states, to non-traditional ideas that emphasize the human security concerns of environmental degradation, and the security of resources and the environment directly. The article concludes with a look at efforts by the international community to address this issue through the development of international law regarding the environment and possible associated conflicts.

- Soderblom, Jason D. "Climate Change: National & Regional Security Threat Multiplier for Australia." *Security Solutions,* Mar/Apr 2008: pp58-68. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1101961
    - o This report focuses on the reasons why climate change should be (and is) a national security issue for Australia. It looks at three broad categories of ways that climate change will pose problems for Australia's security architecture, including through forced migration, weakened neighboring states, and trade challenges, and looks at how Australian capacity may be stressed in trying to respond.

CANADA

Government

- Bruce, James P, Ian Burton and I.D. Mark Egener. "Disaster Mitigation and Preparedness in a Changing Climate." Synthesis paper prepared for Emergency Preparedness Canada, Environment Canada, and the Insurance Bureau of Canada. Global Change Strategies International Inc. 1998. http://dsp-psd.pwgsc.gc.ca/Collection/D82-50-2000E.pdf
  - o This document provides an overview of the scientific information available regarding climate change and the potential impacts of extreme weather events in Canada. It outlines some of the costs associated with these events in Canada, including costs to the federal government and nation-wide insurers. It gives some suggestions for mitigation and adaptation to a changing climate, and ways in which the country can be prepared for the associated impacts. Includes a list of sources used.

- Chief of Force Development. "The Future Security Environment 2008-2030 Part 1: Current and Emerging Trends." Department of National Defense, Canada, 27 January 2009.
  - o http://www.cfd-cdf.forces.gc.ca/documents/publications/Signed_Eng_FSE_10Jul09_eng.pdf
  - o This report analyzes the current and future security trends around the world in order to help prepare the Department of National Defense to understand and plan for future action. It includes a section on Environmental and Resource trends, which addresses the impacts that climate change may have on the developing world and also on competition for resources globally.

- Department of National Defence, "*Canada First" Defence Strategy,* Government of Canada, May 12, 2008 http://www.dnd.ca/site/pri/first-premier/June18_0910_CFDS_english_low-res.pdf
  - o The CFDS analyzes the current security context from a Canadian point of view, and indicates how the government will respond to these threats in terms of modernizing and equipping the Canadian Forces. While "climate change" is not specifically discussed, this report includes a discussion of how the CF will be required to deal with threats to Arctic security, as well as be called upon to assist civil authorities with domestic emergencies such as natural disasters. It also indicates a role for the CF in responding to humanitarian crises overseas—climate-changed induced crises could be considered part of this as well.

- Judd, Jim. "Remarks by Jim Judd, Director of CSIS, at the Global Futures Forum Conference in Vancouver", Canadian Security Intelligence Service, April 15, 2008 http://www.csis-scrs.gc.ca/nwsrm/spchs/spch15042008-eng.asp
  - o Speech regarding the drivers and implications of change within the intelligence community. Judd lists the "Top Ten" significant changes, with #2 being the broadening of the national security agenda to include (among other things) climate change, environmental degradation, resource depletion and natural disasters.

- McLeman, Robert and Barry Smit. "Commentary No. 86: Climate Change, Migration and Security." Canadian Security Intelligence Service, March 2004 http://www.csis-scrs.gc.ca/pblctns/cmmntr/cm86-eng.asp
  - o This report focuses on the risks associated with climate change, looking at the impact of changes in human migration patterns in particular. It looks at the vulnerabilities of communities, as exacerbated by climate change. Vulnerability is determined both by exposure to climatic events (the nature of natural systems), and the capacity of each community to adapt (the nature of human social, political, and economic systems). It connects these vulnerabilities to patterns of migration around the world through the use of examples.

- Privy Council Office. *Securing an Open Society: Canada's National Security Policy*. Government of Canada, April 2004 http://www.pco-bcp.gc.ca/docs/information/Publications/natsec-secnat/natsec-secnat-eng.pdf
  - o This report was intended to provide a comprehensive analysis and policy framework to help the Canadian Government to respond to the post-9/11 security environment. It focuses the analysis around three core national security interests: Protecting Canada and Canadians at home and abroad, ensuring that Canada is not a base for threats to our allies, and contributing to international

security. Climate change is not specifically addressed; however, associated threats such as natural disasters, threats to critical infrastructure, and the potential for pandemics are listed.

- Seguin, Jacinthe (ed) "Human Health in a Changing Climate: A Canadian Assessment of Vulnerabilities and Adaptive Capacity." Health Canada, 2008. http://www.hc-sc.gc.ca/ewh-semt/climat/eval/index-eng.php#guide
    - o   Climate Change will affect the health of Canadians through food (contaminants and scarcity), air pollution, water (contaminants and scarcity), and exposure to disasters and diseases. By understanding the vulnerabilities and risks that are inherent in our society, we can act to minimize and prevent the threats to the health of Canadians. This report looks at both the direct and indirect effects of climate change on issues of health—i.e. both the heat waves caused by an increase in temperatures, as well as the favorable conditions created that support outbreaks of infectious diseases. This report is not strictly oriented towards the idea of security but rather the impact of climate change on the health sector. The focus is on regional and community-level planning, program implementation, and individual assessment and prioritization of the risks at hand. The goal of the report is to increase awareness of the dangers and promote the engagement of different organizations and community groups in the adaptation and mitigation process. The report also offers a separate regional analysis for the North and Quebec.

- Plows, C.W. "Maritime Humanitarian Operations in Canada" Canada Command, National Defence, 14 June, 2007. http://centreforforeignpolicystudies.dal.ca/pdf/msc2007/Plows-Maritime_Humanitarian_Brief.pdf
    - o   This document consists of a power point presentation, providing an overview of domestic Canadian humanitarian operations conducted or assisted by the Canadian Forces. Situations include flooding and forest fires in BC throughout the latter half of the 20th century, the 1997 flood in Manitoba, the 1998 Ice Storm in Central Canada, and Hurricane Juan relief in 2003. Indicates policies that guide CF involvement, as well as tasks the CF may be called upon to undertake.

- Lemmen, D.S., F.J.Warren, J. Lacroix and E. Bush (eds). "From Impacts to Adaptation: Canada in a Changing Climate 2007" Government of Canada (Natural Resources Canada), Ottawa, ON, 2008 http://www.adaptation.nrcan.gc.ca/assess/2007/pdf/full-complet_e.pdf
    - o   This report looks at how Canada will need to adapt to the many impacts of climate change. It seeks to do this by first exploring the kinds of changes and vulnerabilities that Canada will be faced with, and then suggesting ways in which adaptation can take place. It does a region by region analysis and includes a section on the international impacts that may affect Canada. This report does not focus directly on the issue of security; rather, it focuses on environmental changes, the socio-economic impacts that can be expected to follow, and the adaptations that may be necessary.

- --"Emergency Preparedness in Canada: Executive Summary." The Standing Senate Committee on National Security and Defence, 2 September , 2008. http://www.parl.gc.ca/39/2/parlbus/commbus/senate/Com-e/defe-e/press-e/02sep08a-e.htm
    - o   This report analyzes the level of preparedness exhibited by various levels of first-responders should there be an emergency, disaster, or crisis requiring coordinated action led by government agencies. The overall conclusion of the report is that the amount of progress made in preparing first-responders to respond to such situations is discouraging.

Think Tanks/Research Institutes
- **Canada Institute: Woodrow Wilson International Center for Scholars: http://www.wilsoncenter.org/index.cfm?fuseaction=topics.home&topic_id=1420**
    - o   Canada Institute. *Canada and the Arctic: The Issue of Northern Sovereignty.* Summary of event held December 11, 2007 http://www.wilsoncenter.org/index.cfm?topic_id=1420&fuseaction=topics.event_summary&event_id=278388
        - ▪   A summary is available of a panel discussion with Rob Huebert (U Calgary) and Michael Byers (UBC). The discussion took place around the issue of the Canadian government's

policy aimed at the reassertion of sovereignty in the Arctic and included a discussion of the impact of the melting ice on Canada's northern populations, as well as the economic and security issues associated with gaining access to the oil and gas reserves in the region. This panel is also available on video from the Wilson Center website.

- **Canadian Defense and Foreign Affairs Institute: http://www.cdfai.org/**
  - o Granatstein, J.L., Gordon Smith and Denis Stairs. "A Threatened Future: Canada's Future Strategic Environment and its Security Implications." *Canadian Defence and Foreign Affairs Institute*. Fall 2007 http://www.cdfai.org/PDF/A%20Threatened%20Future.pdf
    - ▪ This assessment looks at the strategic context of Canada for the next 20-25 years, identifying security threats and vulnerabilities that Canadian policy-makers will need to understand in order to prepare and protect Canadians, and offering some measures that may be helpful in meeting this challenge. The authors focus on security threats that require a military response, although the range of security threats is considered to be quite broad. In addition to state instability and the growth of powerful and violent non-state actors, the authors consider the kinds of incentives that may lead certain groups to engage in conflict. These incentives include environmental decay, disease, and resource scarcity/depletion. While Canada has, in the recent past, focused on dealing with the "root causes" of such problems, the authors note that this approach comes with its own hazards and is not a substitute for adequate military capacity and preparation.

- **International Institute for Sustainable Development**
  - o Brown, Oli, Alec Crawford, Christine Campeau. "Environmental Change and the New Security Agenda: Implications for Canada's Security and Environment." International Institute for Sustainable Development, June 2008. http://www.iisd.org/pdf/2008/env_change_security_canada.pdf
    - ▪ "This paper investigates how environmental change and Canadian security are interlinked. First, it attempts to chart the ways in which global environmental change (such as climate change and environmental mismanagement) affect Canada's domestic security and the welfare of Canadian interests overseas. Three particular challenges stand out: the first is the struggle for control of shipping routes across a warming Arctic; the second is the hunt for new sources of energy; and the third is environmental security in regions of diplomatic, economic and military importance to Canada. Second, the paper analyzes the links between environment and security from the opposite direction. We assess the environmental implications of Canada's current national security focus on the prevention of terrorism. This approach to Canadian security, which we call 'the new security agenda', has been evolving in response to the growing threat of international terrorism since the early 1990s." (1)

  - o Brown, Oli and Alec Crawford. "Rising Temperatures, Rising Tensions: Climate change and the risk of violent conflict in the Middle East". International Institute for Sustainable Development, 2009. http://www.iisd.org/pdf/2009/rising_temps_middle_east.pdf
    - ▪ This report examines the implications of climate change for regional security in the Middle East. It argues that although climate change may seem only a secondary concern in a regional where violence and conflict have become the norm, it actually has the potential to greatly exacerbate this conflict through, for example, the changing availability of water and food, or the movement of populations over already disputed borders. The report advocates the development of a culture of conservation, to be placed alongside mitigation and adaptation measures, and increasing regional cooperation and international engagement.

Books
- Dyer, Gwynne. *Climate Wars.* Random House Canada. 2008
- Simpson, Jeffrey, Jaccard, Mark and Rivers, Nic**.** *Hot Air: Meeting Canada's Climate Change Challenges.* McClelland & Stewart, 2008
- Weaver, Andrew. *Keeping Our Cool: Canada in a Warming World.* Viking Canada, 2008

Journal Articles

- Byers, Michael. *On Thinning Ice.* London Review of Books. January 6, 2005
  http://www.lrb.co.uk/v27/n01/byer01_.html
  - o This is a review of the book *Impacts of a Warming Arctic: Arctic Climate Impact Assessment.* In the review, Byers highlights the implications of "feedback loops", noting that the result will be an exacerbation of the effects of climate change and will lend a greater amount of unpredictability to scientific projections of expected change. In addition to a review of this book, Byers also provides some commentary on US, UK, and Canadian policy regarding climate change and the Kyoto Protocol.

- Griffiths, Franklyn. "Towards a Canadian Arctic Strategy", Canadian International Council: Foreign Policy for Canada's Tomorrow No.1, June 2009.
  - http://www.canadianinternationalcouncil.org/research/foreignpol/towardsaca~2
  - This article begins to set out a strategy for Canada to pursue in the Arctic region, a strategy that would encourage collaboration and cooperative stewardship in the area.

- Homer-Dixon, Thomas, *On the Threshold: Environmental Changes as Causes of Acute Conflict,* International Security 16, Autumn 1991 http://www.library.utoronto.ca/pcs/thresh/thresh1.htm
  - o This Paper looks at the links between environment and security, noting that there are two questions that need to be asked: how can the environmental contribute to conflict, and where are these conflicts likely to occur. Homer-Dixon focuses on the "how" by creating an analytical framework through which the connections can be studied. He begins by outlining previous research done on this subject and noting the variety of difficulties faced by researchers (notably the complicating impact of intervening factors when trying to determine cause and effect). After elaborating on the analytical framework he has created, he then looks at first and second stage interventions and the ability for developing countries to cope with environmental problems. He finally examines the difference between the optimist and pessimist responses to changes in the environment, noting that while the optimists have often been correct about the ability of humanity to adapt to global changes, there are currently greater reasons to be pessimistic than optimistic about the future.

- Huebert, Rob. "Canadian Arctic Sovereignty and Security in a Transforming Circumpolar World." Canadian International Council: Foreign Policy for Canada's Tomorrow No. 4, July 2009.
  - http://www.canadianinternationalcouncil.org/research/foreignpol/canadianar
  - This article reviews the importance of the Arctic for Canadian sovereignty and security, noting that these two concepts are interdependent and need to be addressed simultaneously. The article also suggests ways in which the Canadian government can act to preserve and enhance Canadian sovereignty and security in the Arctic region.

- Purdy, Margaret. "Does Climate Change Qualify as a National Security Issue? A Canadian Perspective." In *Climate Change and Security: Planning for the Future.* Jonathan Boston, Philip Nel and Marjolein Righarts (Eds), Institute of Policy Studies, University of Victoria, Wellington New Zealand, October 2009.
  http://www.ligi.ubc.ca/?p2=modules/liu/publications/view.jsp&id=2171
  - This is one chapter of an edited volume which resulted from a symposium held in Wellington in November 2008. This chapter assesses Canada's progress on the issue of climate change and security, noting the lack of attention to this issue in Canada and analyzing the reasons for this inattention.

- Purdy, Margaret. "From Obscurity to Action: Why Canada must tackle the security dimensions of climate change." Presentation for the Canadian Association for Security and Intelligence Studies, October 29, 2009.
  http://www.ligi.ubc.ca/sites/liu/files/GlobalFocus/2009_Nov_GlobalFocus_Purdy.pdf
  - o This presentation reviews Canada's inaction on the issue of climate change and security and compares Canada's reaction with neighbouring states. It also looks at kinds of scenarios that

may impact Canada in the future and the steps Canada should take to prepare and to mitigate these potential disasters.

UNITED KINGDOM

<u>Government</u>
- Beckett, Margaret, *The Case for Climate Security,* Lecture by the Foreign Secretary at the Royal United Services Institute, May 10, 2007
  http://www.rusi.org/events/past/ref:E464343E93D15A/info:public/infoID:E4643430E3E85A/
  - In this speech, Beckett notes that there have been changes to the climate throughout history, leading to conflict and wars between various people groups over resources. The difference between then and now, however, is that we have the scientific knowledge to know what is happening and the ability to do something about it. Beckett explains that although "hard" security issues remain an important part of her job, she intends to look at the "broadest and deepest possible understanding of what drives the agenda and what tools we can employ" so that the underlying global insecurities of the more traditional security threats can be addressed effectively.

- Cabinet Office UK. "National Risk Register." Aug 2008.
  http://www.cabinetoffice.gov.uk/media/cabinetoffice/corp/assets/publications/reports/national_risk_register/national_risk_register.pdf
  - The National Risk Register is intended to capture the range of risks and potential emergencies that could be faced by the United Kingdom. Also, it is intended to provide information for the public to ensure that individuals, corporations, etc are aware of local vulnerabilities and prepared for such emergencies. It includes information on accidents, natural events (hazards) and malicious attacks (threats).

- Cabinet Office UK. "The National Security Strategy of the United Kingdom: Security in an interdependent world." March 2008
  http://interactive.cabinetoffice.gov.uk/documents/security/national_security_strategy.pdf
  - This report was written in the context of a comprehensive national security review of the threats and risks to the United Kingdom. It focuses on a wide array of threats (including terrorism and trans-national crime) and on a number of "driving factors" that cause insecurity (including climate change). It takes a comprehensive view of the role of public and private agencies in identifying and addressing the security threats to the country. Chapter 4 outlines how the British government has chosen to respond to each of the threats and drivers identified. The perspective on security that this report uses is that the threats and risks to the UK are interconnected and driven by underlying factors: a change in one can impact the others. This report focuses on non-traditional security threats, noting that while a state-sponsored attack is not impossible, it does not seem likely in the near future and therefore it is time to focus on other potential risks and threats.

- Government of the United Kingdom, Ministry of Defence, "Climate Change Strategy" Safety, Sustainable Development and Continuity Division, December 2008. http://www.mod.uk/NR/rdonlyres/73ED201B-CC03-41B4-8936-6BED49469D6E/0/ClimateChangeStrategy2009.pdf
  - Climate Change Vision: "Effective delivery of Defense capability that is robust to climate change and does not substantially contribute to its causes" This report sets out MoD's commitment to adapt its defense planning to reflect the realities and implications of climate change, both domestically and globally. At the same time, MoD has committed to addressing and reducing its own emissions. Includes chapters on mitigation, adaptation, and delivery of the strategy.

- Government of the United Kingdom, Ministry of Defence, *Climate Change – Politics vs. Economics,* speech by Sir Jock Stirrup, Chief of the Defence Staff, Chatham House, June 25, 2007
  http://www.chathamhouse.org.uk/news/view/-/id/382/
  - Transcripts of the speech can be ordered through Chatham House. This link opens a media release that gives an overview of the speech and quotes Stirrup as saying that climate change in areas of

instability is like "pouring petrol onto a burning fire".

- Ministry of Defence Green Paper. "Adaptability and Partnership: Issues for the Strategic Defence Review." Presented to Parliament by the Secretary of State for Defence, United Kingdom: February 2010. http://www.mod.uk/NR/rdonlyres/790C77EC-550B-4AE8-B227-14DA412FC9BA/0/defence_green_paper_cm7794.pdf
  - o This green paper is intended to open discussion on key issues for defence, particularly to build consensus where possible, in order to inform the next Strategic Defence Review to be held after the next UK general election. Climate Change is described as an international trend impacting the defence context in the coming decades

- Ministry of Defence. "Strategic Trends Programme: Future Character of Conflict." Development, Concepts and Doctrine Centre (DCDC), United Kingdom: February 2010
  - o http://www.mod.uk/NR/rdonlyres/3E38C6EC-4A76-402F-9E28-C571EAB9929F/0/fcoc_final_revised_12Feb10.pdf
  - o This paper describes "what military forces are likely to experience in future conflicts, and provides pointers to those areas which will be essential to their success."(1) Climate change is described as a "dominant threat driver" and "strategic trend".

- Ministry of Defence. "Strategic Trends Programme: Global Strategic Trends—out to 2040" United Kingdom, Fourth Edition, January 12, 2010.
  - o http://www.mod.uk/NR/rdonlyres/38651ACB-D9A9-4494-98AA-1C86433BB673/0/gst4_update9_Feb10.pdf
  - o This paper is intended to provide a comprehensive analysis of the future strategic context out to 2040. Climate change as one trend shaping the strategic context, bringing non-linear change and complex challenges. Refers to climate change as a "ring road" issue.

Think Tanks/Research Institutes
- **Chatham House**
  - o Paskal, Cleo. "How climate change is pushing the boundaries of security and foreign policy". Chatham House, Briefing Paper, June 2007. http://www.chathamhouse.org.uk/files/9250_bp0607climatecp.pdf
    - • This report looks at how climate change is and will affect the foreign policies of states, specifically addressing the legal, resource, and infrastructure implications. It provides international examples/scenarios for each of these implications. It also prefaces the article by positioning climate change as one component of a larger phenomenon of environmental change, noting that even if climate change is addressed in significant ways, a lack of city planning and efficient development of land means that we will still experience the catastrophic results of a changing environment.

  - o Paskal, Cleo. "The Vulnerability of Energy Infrastructure to Environmental Change" Chatham House: Briefing Paper, July 2009.
    - • http://www.chathamhouse.org.uk/publications/papers/view/-/id/737/
    - • The key argument in this report is the need to understand that energy infrastructure does not only impact the environment but that the environment, and changes to the environment, can have a large impact on the infrastructure itself. In the context of climate change, the lifespan of current energy infrastructure means that many of the climate change projections may come to fruition before the infrastructure can be replaced with updated or climate-resilient versions. Therefore, there is a need for greater attention to be paid to this problem.

- **Institute for Public Policy Research:** http://www.ippr.org/
  - o Kearns, Ian and Ken Gude. "The New Front Line: Security in a Changing World." Institute for Public Policy Research Commission on National Security, Working Paper No.1, February 2008. http://www.ippr.org.uk/publicationsandreports/publication.asp?id=588

- The goal of this report is to analyze the context within which a national security policy for the UK should be created, taking into account new actors and the more complex issues that have come to characterize the security domain in recent years. It includes an analysis of contemporary security "drivers" including the threat of climate change, and argues that a much broader strategy and set of policies will be needed to deal with the new security "terrain". In the climate change section, the report focuses on problems of water scarcity and environmental damage in countries of the Middle East, Africa and Asia. It also looks at the potential for increased international migratory pressure on all states, including the UK.

- Paskal, Cleo. "UK National Security and Environmental Change" A policy brief for the IPPR Commission on National Security for the 21st Century, April 2009.
  http://www.ippr.org/publicationsandreports/publication.asp?id=657
  - This paper discusses the global upheaval caused by environmental change, noting that infrastructure in the UK and elsewhere is constructed and engineered based on the expected environmental conditions of the location. If this changes unexpectedly, the ensuing result is almost always negative. The report argues that climate change is only one part of environmental change: rather than focusing simply on climate change, policy-makers need to be aware of how humans have intentionally changed the environmental landscape through things like deforestation, the building of dams and irrigation systems, the exhausting of farmlands, and uncontrolled population growth. Environmental change has reduced the margin of error for climate change, making local areas less resilient and therefore more vulnerable to the negative impacts of climate change.

  - o Retallack, Simon. "A Stern Warning on Climate Change" *Guardian* 26 June, 2008 reprinted on the IPPR website: http://www.ippr.org/articles/index.asp?id=3188

    - This editorial refers to Sir Nicholas Stern, author of the "Stern Review", and his announcement that tackling climate change is going to cost more than he originally predicted (2% of GDP rather than 1%). Retallack argues that it will cost even more than this, and that it is important to have an honest account of the cost so that adequate investment is made into meeting the threats of climate change.

  - o --"Shared Responsibilities: A National Security Strategic for the United Kingdom" The Final Report of the IPPR Commission on National Security in the 21st Century. Summary and Recommendations: 2008. http://www.ippr.org/publicationsandreports/publication.asp?id=676
    - This report sets out an overview of observations regarding the current security context, principles that should shape the UK's security response, conclusions of the report and recommendations for action. Climate change is addressed in this report as an exacerbating factor in the current global growth of state disorders and fragility; and a contributing factor in increasing cross-border interdependence and diluting the concentration of power within state governments. It is also attributing with exacerbating tension and conflict within states, leading to many human rights violations that are not being addressed by national governments or the international community. Full report is available for purchase from the website.

- **International Alert**
  - o Smith, Dan and Janani Vivekananda. "A Climate of Conflict: The links between climate change, peace and war" International Alert, November 2007 http://www.international-alert.org/pdf/A_Climate_Of_Conflict.pdf

    - This report concerns itself with "consequences of consequences": the environmental impacts of a changing climate that then become political and economic problems. This report looks particularly at political instability, economic weakness, food insecurity, and large-scale migration. These consequences limit the ability of governments to adapt to

the physical effects of climate change, thereby allowing for situations to degenerate into times of conflict and even violence. The key to this problem is found in increasing state capacity to adapt to climate change.

- **International Institute for Strategic Studies**
  - o Dyer, Gwynne. "Climate Change and Security: Risks and opportunities for business". Lloyd's 360˚ Risk Insight, International Institute for Strategic Studies, 2009. http://www.lloyds.com/NR/rdonlyres/0C6F0662-5B98-49E1-A224-2D3E830947B6/0/Climatechangeandsecurity_200904.pdf
    - This paper is focused on the implications of climate change for the conduct of business, noting that although there are uncertainties regarding the severity and timing of climate change impacts, the risk is high enough that it can no longer be "business as usual". Businesses must build strategies into their business plans that help them to prepare for a number of impact-scenarios. Impacts on water availability, food production, migration, and energy consumption will extend to affect international trade and markets, as well as create new challenges for the every-day staffing requirements and current applications of technologies. Businesses must therefore be prepared to help national governments meet mitigation and adaptation obligations.

- **Oxford Research Group: http://www.oxfordresearchgroup.org.uk/**
  - o Abbot, Chris. "An Uncertain Future: Law Enforcement, National Security and Climate Change." Oxford Research Group, Briefing Paper, January 2008 http://www.fride.org/publication/354/an-uncertain-future:-law-enforcement,-national-security-and-climate-change
    - This report seeks to take a closer look at the links between climate change, socio-economic concerns, and future security challenges. It focuses particularly on the security implications and attempts to provide a clearer picture of how these changes may interact with other global processes to increase domestic and international insecurity, instability, and conflict. The report states that since this is such a new area of study, the analysis to date has been vague and unsophisticated. Therefore, it is trying to fill the gap by linking the security implications to areas of security policy that policymakers need to consider and act upon—including the areas of law enforcement and military capacity. While it admits that the conclusions and future effects are uncertain, the report states that policymakers and governments have the opportunity to implement prevention, mitigation and adaptation measures that would be able to mitigate the foreseen and unseen consequences.

- Abbot, Chris, Paul Rogers and John Sloboda. "Global Responses to Global Threats: Sustainable Security for the 21st Century." Oxford Research Group, Briefing Paper, June 2006 http://www.fride.org/publication/64/global-responses-to-global-threats
  - o This report centers its analysis on the belief that international terrorism is a minor threat to security compared to a list of other global trends, including climate change. It examines the current "control paradigm," which is defined as the use of force to regain control (or an appearance of control) over threats to international security, and argues that policy-makers need to move to a "sustainable security paradigm" that attempts to address the roots of the threats rather than simply the symptoms. This is an inherently preventative approach and will require a large amount of support from NGO's and civil society to put pressure on national governments.

- **Royal United Services Institute: http://www.rusi.org/climate**
  - o Feakin, Tobias. "Climate Change and the Threat to Global Security." Royal United Services Institute, 12 April, 2007. http://www.rusi.org/go.php?structureID=articles_monitor&ref=A461E3DA464EF5
    - (must have membership to access)

- Mabey, Nick. *Delivering Climate Security: International Security Responses to a Climate Changed World,* Whitehall Paper 69, Routledge Journals, 2008
  http://www.rusi.org/publications/whitehall/ref:I480E2C638B3BC/
  - o
    - Climate change is currently driving significant changes in the strategic security environment of today: changes that are already long-lasting and will become more catastrophic and irreversible if the international community continues to act slowly with mitigation policies. Economic analysis has significantly underestimated the potential impacts of climate change and therefore it is the job of security analysts to communicate the security implications and costs of uncontrolled climate change to governments and publics. Climate change will fundamentally impact how international relations are conducted in terms of trade and industrial relations, energy policies, territorial and resource disputes, and responses to traditional security problems such as nuclear proliferation. Climate change will also impact the current international order and forms of governance, through extremism and growing rifts between developed and developing nations, and an increase in states that are fragile or unstable. The appropriate response will be coordinated and pro-active, incorporating strategic risks and the management of a complex network of tensions. It will also need to reframe the climate change debate, from one of technical and environmental importance, to one of political and diplomatic importance. The key is that action is necessary now, before crucial tipping points are reached that may overwhelm the global capacity to respond to the impacts.

Journals
- ***Forced Migration Review***
  - o --"Climate Change and Displacement" *Forced Migration Review* 31 (October 2008)
    http://www.fmreview.org/climatechange.htm
    - This journal is run by the Refugee Studies Centre of the University of Oxford, in partnership with the Norwegian Refugee Council. This issue focuses on the impact that climate change will have on the displacement of populations around the globe. It includes articles on the human security aspects of climate change, the definition of environmental migrants, various regional reports, and policy implications.

- Dodds, Felix, Andrew Higham and Richard Sherman (eds). "Climate Change and Energy Insecurity: A Challenge for Peace, Security and Development" *Stakeholder Forum for a Sustainable Future*, London UK, 2009.
  - "Climate change is now recognised as one of the greatest challenges facing the international community and when coupled with energy production and use – the most significant contributor to climate change – and the related security problems, the double threat to international security and human development is of the highest order. This wide-ranging book brings together leading thinkers from academia, government and civil society to examine and address the global insecurity and development challenges arising from the twin thrust of climate change and the energy supply crunch. It lays out the solutions available to the international community to address and avert climate change and energy instability via the multilateral framework under the United Nations." (from the book release)
  - http://www.stakeholderforum.org/fileadmin/files/SF_General/CCES_Book_Order_Form.pdf

Conferences

- Climate Change, Conflict and Fragility: Understanding the linkages, shaping effective responses
  Presented by International Alert and Chatham House
  - Report Launch, November 30, 2009. [not yet released]
    http://www.chathamhouse.org.uk/events/view/-/id/1386/
  - "This event will launch International Alert's groundbreaking new report which examines the growing risk of armed conflict as a result of climate change now being experienced by some of the most fragile regions of the world. The report updates the scene since International Alert's widely quoted 2007 publication, *A Climate of Conflict*, and reveals the alarming consequences of continued inaction to

enable affected countries to adapt to the consequences of climate driven changes on their populations." (From Event Description)

UNITED STATES

Government

- Blair, Dennis. "Annual Threat Assessment of the Intelligence Community for the Senate Select Committee on Intelligence." Office of the Director of National Intelligence, USA: 12 February, 2009. http://intelligence.senate.gov/090212/blair.pdf
  - o This report contains the annual Intelligence Community Threat Assessment, as presented by the new DNI, Dennis Blair. Many threats are covered, including international terrorism, the impact of the economic crisis, and recent nuclear developments with Iran and North Korea. Climate change is discussed starting on pg 42, under the heading of "Environmental Security", where it states that the US is expected to adapt relatively well to the changing climate and therefore the greatest concern regarding climate change is the uncertainty surrounding the results of climate change impacts on other, weaker, states in the global system.

- Blair, Dennis C. "Annual Threat Assessment of the US Intelligence Community for the Senate Select Committee on Intelligence." Office of the Director of National Intelligence: February 2, 2010.
  - o http://www.dni.gov/testimonies/20100202_testimony.pdf
  - o Pg39: Assesses the "wide-ranging impacts" that global climate change will have on US national security interests over the next 20 years, including its potential ability to aggravate existing world problems such as poverty, social tensions, ineffectual leadership and weak political institutions. Also indicates climate change impacts by region (including China, India, Russia, South Asia and Northern Africa).

- Department of Defense. "Quadrennial Defense Review Report". February 2010.
  - o http://www.defense.gov/qdr/QDR%20as%20of%2029JAN10%201600.pdf
  - o "…the 2010 Quadrennial Defense Review advances two clear objectives. First, to further rebalance the capabilities of America's Armed Forces to prevail in today's wars, while building the capabilities needed to deal with future threats. Second, to further reform the Department's institutions and processes to better support the urgent needs of the warfighter; buy weapons that are usable, affordable, and truly needed; and ensure that taxpayer dollars are spent wisely and responsibly."(iii)
  - o Key climate change impacts: geopolitical effects; acceleration of instability; impact on military facilities and capabilities; DoD's approach to the Arctic. Climate change will intersect with other global trends, including the demand for energy security.

- Fingar, Thomas. "National Intelligence Assessment on the National Security Implications of Global Climate Change to 2030." Statement for the Record. House Permanent Select Committee on Intelligence House Select Committee on Energy Independence and Global Warming, 25 June, 2008. http://www.dni.gov/testimonies/20080625_testimony.pdf
  - o Using the IPCC climate forecasts, the NIA reviewed the impact of climate change on US national interests up to 2030 and, in some cases, beyond. The report states that the most significant threat to the US will be the indirect threat caused by climate change-induced problems in other states, particularly those that are closely connected to American interests overseas. It includes a brief region-by region assessment of the potential effects of climate change.

- Homeland Security. "Quadrennial Homeland Security Review Report: A Strategic Framework for a Security Homeland". February 2010.
  - o http://www.dhs.gov/xlibrary/assets/qhsr_report.pdf
  - o Report (the first of its kind) addresses threats to US homeland security and the framework for strategic response.
  - o Climate Change: depicted as a threat or hazard challenging US interests

Think Tanks/Research Institutes
- **Brookings Institution**
  - o Campbell, Kurt M. (ed). *Climatic Cataclysm: The Foreign Policy and National Security Implications of Climate Change,* Brookings Institution Press, 2008 http://www.brookings.edu/press/Books/2008/climaticcataclysm.aspx
    - This book is written by climate change experts from a variety of disciplines, and utilizes three scenarios to illustrate the potential impacts of climate change—expected, severe, and catastrophic. The goal of these scenarios is to provide planners with concrete examples of the kinds of future contingencies that will need to be prepared for now.

- **Center for Strategic and International Studies http://www.csis.org/**
  - o Campbell, Kurt M, Jay Gulledge, J.R. McNeill, John Podesta, Peter Ogden, Leon Fuerth, R. James Woolsey, Alexander T.J. Lennon, Julianne Smith, Richard Weitz, and Derek Mix. "The Age of Consequences: The Foreign Policy and National Security Implications of Global Climate Change." Center for Strategic & International Studies and Center for a New American Security, November 2007. http://csis.org/files/media/csis/pubs/071105_ageofconsequences.pdf
    - This is a look at the general types of problems that climate change could cause around the world. It looks at 3 kinds of scenarios and indicates the types of problems each region may encounter based on the changes described in each scenario.
      1. Expected (30yrs): this scenario outlines what we should expect and at the very least be prepared for
         a. It includes things like resource shortages, weather fluctuations, and increased migratory movements
      2. Severe (30yrs): this scenario outlines things that may happen as a result of non-linear climate change, and is based on established trends being intensified in an "unexpected" way
         a. It includes regional destabilization resulting from the lack of minority integration and situations of developed countries becoming "fortresses" or quarantining their developing country neighbours
      3. Catastrophic (50-100yrs): this scenario outlines things that may happen as a result of exponential change produced through environmental feedback loops that have either been underestimated or unaccounted for
         a. It includes developed nations being too busy with their own problems to help their neighbours, the lack of fuel to launch aid missions, and increased terrorism due to energy disputes.

  - o Podesta, John and Peter Ogden. "The Security Implications of Climate Change." The Center for Strategic and International Studies, *The Washington Quarterly* 31:1, Winter 2007-8: pp115-138 http://www.twq.com/08winter/docs/08winter_podesta.pdf
    - This report focuses on the most threatening geo-political implications of climate change, looking at the global implications and the role of the international community to respond to the challenges effectively. Challenges include migration, water competition, disease, and the problems for China. It puts the onus on policy-makers to identify the "first dominoes" of the climate change chain reaction, and to devise policies that would address these problems.

  - o Wigbels, Lyn, G. Ryan Faith and Vincent Sabathier, *Earth Observations and Global Change: Why? Where Are We? What Next?* Center for Strategic and International Studies, July 2008 http://www.csisbookstore.org/index.asp?PageAction=VIEWPROD&ProdID=208
    - This book reviews the importance of Earth observations (long-term data regarding the planet and environment) for the understanding and management of global changes. It contains an analysis of this system that points out current gaps and vulnerabilities, and suggests ways in which the system can be enhanced for better data collection and dissemination.

- **Center for a New American Security** http://www.cnas.org
    - o Burke, Sharon. "Natural Security" Working Paper, Center for a New American Security, June 2009. http://www.cnas.org/node/2712
        - This is a concept paper intended to outline the idea of "natural security" or national security concerns that are related to the consumption of and access to natural resources: "Natural security ultimately means sufficient, reliable, affordable, and sustainable supplies of natural resources for the modern global economy" (6). The report emphasizes that natural security, while considered a security threat, should not be considered a military threat—although there may be times where a military response is necessary and appropriate. Climate Change is included as a factor affecting natural security.

    - o Burke, Sharon and Christine Parthemore. "Climate Change War Game: Major Findings and Background" Working Paper, Center for a New American Security, June 2009. http://www.cnas.org/node/956
        - This working paper outlines the framework in which the Climate Change War Game was played in July 2008. The start date of the scenario is 2015, with the players formed into four teams representing China, United States, European Union, and India and a control "International" team representing the interests of other possible stakeholders during negotiations or consultations. The players were tasked with the job to negotiate an agreement regarding the reduction of emissions and necessary adaptation to climate change effects. Using a security context, the players had to negotiate this agreement taking into account four specific climate change challenges that each contained a high risk of conflict: mass migration, resource scarcity, natural disasters, and emissions reductions. In the end, no agreement was reached; however, many lessons regarding challenges and obstacles to such agreements were learned. Note: All game materials are available to the public on the website.

- **Council on Foreign Relations: http://www.cfr.org/**
    - o Busby, Joshua W. "Climate Change and National Security: An Agenda for Action" Council on Foreign Relations, CSR No. 32, November 2007. http://www.cfr.org/publication/14862
        - This report focuses on the impact of extreme weather events, both domestically and internationally. It looks at key vulnerabilities on US territory (coastal military bases and populations, cities located in extreme weather zones, damage to infrastructure) as well as the vulnerability of other countries that are strategically important to the US and will require an American response if emergencies arise. It focuses on climate policy that allows for both mitigation and adaptation, particularly policies that will be effective whether or not the effects of climate change are severe. It also mentions briefly the need for the US to move to a "decarbonized energy future" before the end of the century, and discusses ways that the US can encourage mitigation strategies internationally.

    - o Kerry, John "Climate Change and American Foreign policy: Security Challenges, Diplomatic Opportunities" Speech at the Council on Foreign Affairs, New York: June 15, 2009 http://www.cfr.org/publication/19639/climate_change_and_american_foreign_policy.html
        - This speech and subsequent discussion (moderated by Tom Brokaw) centers on the urgency of addressing climate change within American foreign policy and globally, as well as being prepared to deal with its effects around the world. He advocates for strong American leadership on this issue, and cooperation among global leaders to ensure that the global climate change regime succeeds. It includes a Q & A period where Senator Kerry discusses climate change and other foreign policy topics.

- **CNA Corporation: www.cna.org**
    - o Military Advisory Board. "National Security and the Threat of Climate Change." The CNA Corporation, 2007 http://securityandclimate.cna.org/report/

- This report has been written in order to contribute a military perspective to the debate surrounding climate change and national security. It focuses on three key areas: geostrategic implications (i.e. international instability), regional impacts (region-specific possibilities), and the direct impacts on US military systems (vulnerabilities and potential setbacks/challenges). A key conclusion of this report is that the potential consequences of climate change are so severe that the US government cannot risk ignoring it when assessing threats to national security. The findings that are presented at the end are "first-order solutions" that are fairly general and can be used to guide future policy-making.

- **Columbia University**
  - o Levy, Marc A. et al. *Assessment of Select Climate Change Impacts on U.S. National Security.* Center for International Earth Science Information Network, Working Paper, July 1, 2008 http://www.ciesin.columbia.edu/documents/Climate_Security_CIESIN_July_2008_v1_0.ed.pdf
    - This paper uses a quantitative approach to assess select climate change impacts at the national level, and uses this analysis to suggest which countries are at the greatest risk for climate impacts and instability. The three impacts being studied are global sea level rise, water scarcity, and the aggregate impacts of temperature change.

- **Strategic Studies Institute**
  - o Pumphrey, Carolyn (ed). *Global Climate Change: National Security Implications.* United States Army War College, Strategic Studies Institute. May 2008 http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA480984&Location=U2&doc=GetTRDoc.pdf
    - This paper represents the proceedings of a conference held in North Carolina in March 2007. It discusses national security in terms of American interests, and pays special attention to the role of the US Armed Forces in addressing the implications of climate change.

- **United States Global Change Research Program**
  - o *--Global Climate Change Impacts in the United States*. Cambridge University Press, 2009. http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts/download-the-report
    - This report summarizes the science of climate change as it relates to the various regions of the United States. In addition to the science, this report assesses the implications of climate change on social and environmental concerns within each region. It includes some mitigation and adaptation measures.

Journal Articles

- Ackerman, John T. "Climate Change, National Security and the Quadrennial Defense Review: Avoiding the Perfect Storm"*, Strategic Studies Quarterly*, Spring 2008: pp56-96 http://www.au.af.mil/au/ssq/2008/Spring/ackerman.pdf
  - (if link doesn't work, internet search the report title)
  - o This paper was written in response to the 2006 Quadrennial Defense Review. The author argues that while the QDR is right to identify terrorism as an important security concern, climate change cuts across all of the issues and concerns listed in the report and is therefore a similarly crucial national security concern that the United States must deal with in their long-term security strategy planning. The author advocates the creation of a "sustainable security", one that combines democracy, economic cooperation, and the utilization of international institutions while incorporating environmental concerns and long term strategies.

- Busby, Joshua. "Who Cares about the Weather?: Climate Change and U.S. National Security." *Security Studies* Vo1, No.4; 1 July, 2008: pp468-504.
  - o http://www.informaworld.com/smpp/content~content=a902475776~db=all~jumptype=rss
  - o Climate change poses a direct threat to US homeland and overseas security, particularly due to the effects of extreme weather events. Therefore, this issue deserves serious attention by the American security community.

- Dabelko, Geoffrey D. "Avoid hyperbole, oversimplification when climate and security meet" *Bulletin of the Atomic Scientists*, 24 August, 2009.
  - http://thebulletin.org/web-edition/op-eds/avoid-hyperbole-oversimplification-when-climate-and-security-meet
  - This article warns against aggressively selling climate change as a security issue—that the cause and effect relationships are not as simple to determine as some like to portray, and that exaggeration may induce credibility problems for the future.

- Detraz, Nicole and Michele M. Betsill. "Climate Change and Environmental Security: For Whom the Discourse Shifts." *International Studies Perspectives* (10), 2009: pp303-320. http://www.allacademic.com/meta/p_mla_apa_research_citation/2/5/2/5/9/p252596_index.html
  - This article examines three discourses that bring together climate change and security: environmental conflict discourse, environmental security discourse, and ecological security discourse. It argues that the issue is not new, but the current kinds of discourse show how the current political context is choosing to define security and prioritizing projected problems caused by climate change.

- Faris, Stephan. "The Last Straw." *Foreign Policy: Failed States Index 2009.* http://www.stephanfaris.com/?p=49
  - o This short article looks at the problem of failed states today, noting that climate change will increase the problems of these states and, in turn, increase the difficulty of the international community in dealing with them. The author begins with a discussion of the water-sharing agreements in place between India and Pakistan, noting that although the literature tends to emphasize the cooperation that results from tense neighbours sharing water, the reality is that no one knows what will happen if a situation of water scarcity puts stress on an already-fragile Pakistani government. Includes a note on the role of the military in being ready to respond to global instability exacerbated by a changing climate.

- Parsons, Rymn J. "Taking Up the Security Challenge of Climate Change" Strategic Studies Institute: Carlisle Papers, August 6, 2009.
  - o http://www.strategicstudiesinstitute.army.mil/pubs/display.cfm?pubID=932
  - o "Climate change, in which man-made global warming is a major factor, will likely have dramatic and long lasting consequences with profound security implications, making it a challenge the United States must urgently take up. The security implications will be most pronounced in places where the effects of climate change are greatest, particularly affecting weak states already especially vulnerable to environmental destabilization. Two things are vitally important: stemming the tide of climate change and adapting to its far-reaching consequences. This project examines the destabilizing effects of climate change and how the military could be used to mitigate global warming and to assist at-risk peoples and states to adapt to climate change, thereby promoting stability and sustainable security. Recommendations are made on the importance of U.S. leadership on the critical issue of global warming, on defining and dealing with the strategic dimensions of climate change, and, as a case in point, on how Sino-American cooperation in Africa would not only benefit areas where climate change effects are already pronounced, but also strengthen a crucial bilateral relationship." ("Brief Synopsis")

- Schwartz, Peter and Doug Randall. "An Abrupt Climate Change Scenario and Its Implications for United States National Security" October 2003. http://www.edf.org/documents/3566_AbruptClimateChange.pdf
  - o This report "imagines the unthinkable" in order to create a catastrophic climate change scenario. Its purpose is to showcase the vulnerabilities of American policy and current preparations using a plausible, if not probable, narrative of global events. In order to be adequately prepared for the effects of climate change, the authors argue that policy-makers need to stop thinking about climate change as a slow and gradual process, one that is overall predicable; rather, they should see the process as unpredictable, slow and gradual at times but with the potential to be non-linear and abrupt in change. The report concludes with some recommendations for policy-makers.

Books
- Clarke, Richard A. *Your Government Failed You: Breaking the Cycle of National Security Disasters.* HarperCollins, 2008, (Chapter on Energy: pages 261-285)

- Gore, Al. *An Inconvenient Truth: The Planetary Emergency of Global Warming and What We Can Do About It,* Rodale, 2004 http://www.climatecrisis.net/

Conferences
- Theory to Action: the Science, Economics, and Policy of Climate Change
  Presented by the *Fulbright Association National Area Chapter* and the *American Association for the Advancement of Science* http://www.copenhagenclimatecouncil.com/get-informed/events/theory-to-action-the-science-economics-and-policy-of-climate-change.html
  - Monday, November 23, 2009: Washington D.C.
  - Climate change is a topic of increasing importance. Science, for the first time in history, has moved into the public arena with information that is not novel, but of a predictive quality. Yet, many questions remain:
    - What is "climate change"?
    - Does the science support the theory?
    - What are the impacts on national security?
    - How do we tackle it? And who pays?
    - What are the consequences of inaction?

- Delivering Climate Security: Defining a Risk Management Approach to Climate Change
  - 3 November, 2009: E3G Side Event Tuesday -- Climate Change and National Security
  - With Nick Mabey and Dr Jay Gulledge
  - "In recent years security actors around the world have become increasingly engaged in evaluating how climate change impacts will affect a country's ability to deliver stability and security. However despite years of climate security analysis there has been little direct dialogue between climate negotiators and the security community. E3G and its partners have been conducting dialogues on this issue with security actors inside and outside governments in the US, EU and globally over the past 6 months. Join us to discuss:
    - Can the security community offer instructive approaches to managing climate risk and responding to the possibility of extreme events?
    - What does the security community need from a global climate regime?"

- The Role of the Military in Climate Change and Security
  Presented by the Energy Security Initiative at Brookings, the Institute for Environmental Security, CNA, E3G and the Woodrow Wilson International Center for Scholars
  - 29 October, 2009: Washington D.C.
  - http://www.brookings.edu/events/2009/1029_climate_change_military.aspx
  - A discussion on the real dangers for conflicts and disputes resulting from resource shortages, water rights and natural disasters.

INTERNATIONAL

Intergovernmental
- **European Union:**
  http://www.humansecuritygateway.info/documents/EU_Solana_climatechangeandinternationalsecurity.pdf
  - Council of the European Union. "Climate Change and International Security." A report from the Commission and the Secretary General/High Representative to the European Council, 2008.
    - The aim of this report is to examine the threats to international security that are exacerbated by climate change, to examine how these threats may impact EU interests, and to look at various ways the EU can respond. It portrays the EU as in a unique position to give leadership to the international debate, with strengths that correspond with

the challenges that climate change provides. It notes that the EU must continue to have an active role in climate change negotiations, but that it must act together with other states and organizations to create global agreement.

- o Maas, Achim and Dennis Tanzler. "Regional Security Implications of Climate Change: A Synopsis". Paper commissioned by the German Ministry for the Environment, Nature Protection and Nuclear Safety for the DG External Relations of the European Commission; January 2009. http://www.ecc-platform.org/images/CCIS/cc_regional_security_implications_synopsis.pdf
  - ▪ This paper summarizes the findings of a broad range of recent studies regarding the security implications of climate change for a number of regions of the world. The intent is to identify remaining gaps in the research that can be filled in the future with additional studies. Regions studied are Middle East and North Africa, Africa, Latin America and the Caribbean, Asia and the Pacific, Central Asia and the South Caucasus, and the Arctic. Includes a summary of recommendations and the gaps that are identified.

- **MILITARY ADVISORY COUNCIL**
  - o Military Advisory Council. "Climate Change and the Military: First Statement of the Military Advisory Council." *Institute for Environmental Security*, October 2009.
    - ▪ http://www.envirosecurity.org/news/MACStatement.pdf
    - ▪ The statement was released prior to COP15, calling on all governments to come to agreement on climate change mitigation strategies and for the military to be a key part of the solution.

- **NATO**
  - o Nolin, Pierre Claude (Special Rapporteur). "Climate Change and Global Security." NATO Parliamentary Assembly, 2009 Spring Session. http://www.nato-pa.int/default.asp?SHORTCUT=1772
    - ▪ This document provides a substantial overview of the climate change and security issue, outlining the scientific understanding of climate change, reviewing the implications of climate change for security in the Arctic Region, and highlighting several other climate-related problems including migration, water scarcity, and the spread of disease. The report calls on NATO members to increase efforts to mitigate climate change, and to include the consideration of the security implications of climate change on the NATO agenda. It calls on member militaries to increase efforts to develop greener technologies and reduce their carbon footprint. Finally, it calls on member states to provide leadership in negotiating a post-Kyoto deal regarding emissions cuts, one that includes substantial support for developing nations to also address their respective emissions levels.

- **World Bank**
  - o --"Climate Resilient Cities: A Primer on Reducing Vulnerabilities to Climate Change Impacts and Strengthening Disaster Risk Management in East Asian Cities." The World Bank, Washington D.C. June 2008. http://siteresources.worldbank.org/EASTASIAPACIFICEXT/Resources/climatecities_fullreport.pdf
    - ▪ This Primer was written to help governments in the East Asia Region understand the concepts of climate change and to help them prepare for the effects of climate change by understanding local vulnerabilities. It provides information to assist them with risk assessment, capacity building and urban investment. It includes examples of cities or urban programs that are effectively working to deal with effects of climate change.

- **United Nations**
  - o Intergovernmental Panel on Climate Change. "Climate Change 2007." An Assessment of the Intergovernmental Panel on Climate Change, November 2007. http://www.ipcc.ch/

- This link leads to the homepage for the IPCC, offering access to a range of reports produced by a number of their working groups, in addition to AR4, the 4th assessment paper providing a synthesis of climate change science and interpretation for up to 2007. This site also includes a schedule of events for the years preceding the release of the 5th report in 2014.

- o United Nations. *Security Council holds first-ever debate on impact of climate change on peace, security, hearing over 50 speakers,* news release, April 7, 2007
  http://www.un.org/News/Press/docs/2007/sc9000.doc.htm
     - This meeting, called by the UK, was established to discuss the connections between energy, climate change, and security, and included the members of the Security Council as well as interventions from 50 delegations representing small island states and industry. Some members argued that the Security Council was not the right forum for such a discussion, while others argued that the role of the Security Council was to simply keep an eye on the issue but to allow other bodies of the UN to take the front role in discussions and agreements.

- o UNDP. "Fighting Climate Change: Human Solidarity in a Divided World" Human Development Report 2007/2008, Palgrave Macmillan: New York, 2007.
  http://hdr.undp.org/en/reports/global/hdr2007-2008/
     - This report calls climate change the "defining human development challenge of the 21st century. The main concern is that inattention to climate change will prevent or even reverse efforts to deal with other social problems such as global poverty. The lack of a sense of urgency is keeping states from using the resources and knowledge that they already possess to deal with the problems of climate change.

- o Warner, Koko, Charles Ehrhart, Alex de Sherbinin, Susana Adamo and Tricia Chai-Onn. "In Search of Shelter: Mapping the Effects of Climate Change on Human Migration and Displacement" UN University, CARE International, UNHCR, World Bank, Columbia University, May 2009.
  http://www.reliefweb.int/rw/lib.nsf/db900sid/ASAZ-7SVCRB/$file/CARE_May2009.pdf?openelement
     - This report is concerned primarily with the role that environmental change plays in prompting people to leave their homes and in many cases even their own countries, in search of stability and personal security. Environmental disasters on small or large scales can affect the governance structures of a state, causing greater environmental damage, the collapse of social safety nets, and an increase in internal tensions and conflict. The only way to prevent large-scale migration is to help communities and states build "climate-resilient livelihoods", ensuring adequate food and water, protection from natural disasters, and the preservation of economies that are often agriculturally-dependent. Includes an analysis of the situation, recommendations for action, and a variety of regional maps.

Think Tanks/Research Institutes
- **Global Humanitarian Forum**
  - o Annan, Kofi. "The Anatomy of a Silent Crisis" Global Humanitarian Forum. Geneva, 2009.
    http://www.phaa.net.au/documents/humanimpactreport.pdf
     - This report calls climate change the "silent crisis": the use of polar bears and glaciers as the images of climate change problems allows the human face to be forgotten. Rather than focusing on what may happen in 50-100 years, this report looks at the human impact right now: the vulnerability and lack of resilience found in poor communities and countries, which is leading to hunger, disease, and a loss of livelihood. This report is intended to bring the human face of climate change to the forefront in the events leading up to Copenhagen. It argues that justice demands action on the part of polluters, that a

common humanity requires that climate change is aggressively addressed, and that there is a common interest for all nations to come to an effective and binding agreement in December 2009.

- **Maplecroft and Care International**
    - o *-- Humanitarian Implications of Climate Change: Mapping Emerging Trends and Risk Hotspots for Humanitarian Actors,* Prepared by Dr. Charles Ehrhart, Dr. Andrew Thow and Prof. Alyson Warhurst, August 2008 http://www.reliefweb.int/rw/lib.nsf/db900sid/PANA-7JXCDW/$file/ocha_aug2008.pdf?openelement
        - This report provides an overview of the concerns of climate change for humanitarian actors, with a specific focus on "hotspots"—places of extreme vulnerability to weather changes which will require the most attention over the next 20 years. Primarily composed of maps.

OTHER STATES

GERMANY

- --"Climate Change and Security: Challenges for German Development Cooperation." Federal Ministry for Economic Cooperation and Development, German Technical Cooperation (GTZ), April 2008. http://www.gtz.de/de/dokumente/en-climate-security.pdf
    - o This report was commissioned by the German Technical Corporation with the purpose of studying the impacts of climate change on conflict and security from a development policy perspective. It includes proposals regarding ways in which this issue can be addressed further in German development cooperation. It identifies trends such as urbanization, governance, and water availability that will intersect with climate change to exacerbate its effects. In addition, the report identifies certain regional hotspots that will become areas of greater concern over the next 20 years and beyond.

- **German Advisory Council on Global Change (WBGU)**
    - o Schubert, R., H.J. Schnellnhuber, N. Buchmann, A. Epiney, R. Griebhammer, M. Kulessa, D. Messner, S. Rahmstorf, J. Schmid. "Climate Change as a Security Risk." German Advisory Council on Global Change, 2008 http://www.wbgu.de/wbgu_jg2007_engl.html
        - This report contributes information in three key areas: defining security and climate change, providing "conflict constellations" and narrative scenarios for the future, and examining nine initiatives that, if implemented, can help with increasing international cooperation in the areas of mitigation and adaptation to climate change impacts. This is an in-depth academic report that makes good use of previous studies as well as theoretical research on the subjects related to conflict, security, and climate change. The report dedicates several sections to a review of the current literature regarding security definitions/types, factors in the occurrence of conflict, and the potential effects of climate change. It includes a section on regional hotspots, and recommends subjects for future research to focus on.

NEW ZEALAND

- **Centre for Strategic Studies and Institute of Policy Studies**
    - o Sinclair, Ewan. "The Changing Climate of New Zealand's Security: Risk and Resilience in a Climate Affected Security Environment." Working Paper: Centre for Strategic Studies and Institute of Policy Studies, New Zealand, October 2008. http://ips.ac.nz/publications/files/e0e2bb059aa.pdf
        - This working paper is relatively unique in composition, as it focuses directly on the security implications of climate change for New Zealand, analyzing the security concerns

that are specific to the country, and utilizing scenarios to examine the vulnerabilities of strategic areas of interest, the likelihood of climate-related security problems, and the potential consequences—direct and indirect—for the security of New Zealand. It includes an overview of climate change projections and the links to security issues in a general sense.

NORWAY

- **International Peace Research Institute, Oslo**
    - Buhaug, Halvard, Nils Petter Gleditsch and Ole Magnus Theisen. "Climate Change, the Environment, and Armed Conflict." Centre for the Study of Civil War, International Peace Research Institute, Oslo and Department of Sociology and Political Science, Norwegian University of Science and Technology, ISA: San Francisco, 2008. http://www.allacademic.com/meta/p_mla_apa_research_citation/2/5/4/2/7/p254278_index.html
        - This paper highlights recent research on the links between resource scarcity and armed conflict, noting that direct causal links have not be adequately proved through empirical research and that more work should be done before researchers overemphasize this issue as a major security concern. Includes recent research on general causes of war and the relation of climate change to possible conflict scenarios. The extent to which climate change will cause conflict is determined by the level of vulnerability within each society. Societies affected by climate change are presented with three choices: adapt, conflict, or exit, with adapting being the preferred method. The inability to adapt is the problem that fosters the most concern regarding this issue.

- *Political Geography*
    - Raleigh, Clionadh and Henrik Urdal. "Climate Change, Environmental Degradation and Armed Conflict" *Political Geography* 26 (2007): pp674-694. http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6VG2-4PGXF4V-1&_user=1022551&_coverDate=08%2F31%2F2007&_rdoc=1&_fmt=high&_orig=search&_sort=d&_docanchor=&view=c&_searchStrId=1401854132&_rerunOrigin=google&_acct=C000050484&_version=1&_urlVersion=0&_userid=1022551&md5=27a97a8ad06fda0fade1c1e552cc7667
        - This article approaches the issue of climate change and armed conflict using geographical units of analysis rather than political. The authors conclude that political and economic factors are more likely to lead to armed conflict than environmental pressures on local populations.

SINGAPORE

- **Consortium of Non-Traditional Security Studies in Asia**
    - --"Climate Refugees: a crisis in the making?" NTS Alert, Consortium of Non-Traditional Security Studies in Asia, October 2008/1. http://mlist.ntu.edu.sg/scripts/wa.exe?A2=ind0810&L=rsis_commentaries&F=P&P=2840
        - This "alert" discusses the problem of "climate refugees"—not simply that such a group exists and is expected to grow, but that the very name is contentious within the international community and is currently posing problems for the interpretation of existing international law regarding migration and refugees.

    - --"Population Displacement" NTS Alert, Consortium of Non-Traditional Security Studies in Asia, July 2008/2 http://www.nts-pd.org/admin/affix/1220582271.pdf
        - This "alert" looks at the various factors that cause and contribute to the displacement of populations, as well as the contemporary measures certain countries have taken to try to address this problem.

- **Rajaratnam School of International Studies**
  - o Desker, Barry. "Global Recession, Global Warming: Will Climate Change Negotiations Slow Down?" Rajaratnam School of International Studies (RSIS) Commentaries. 29 October, 2008. http://mlist.ntu.edu.sg/scripts/wa.exe?A2=ind0810&L=rsis_commentaries&F=P&P=2635
    - This commentary argues that the global recession will have a negative effect on climate negotiations since governments will be more concerned about stimulating the economy and cutting costs rather than seemingly more distant problems.

  - o Elliot, Lorraine. "Climate Change and Non-Traditional Security: Beyond Climate Wars?" Consortium of Non-Traditional Security Studies in Asia, May-June 2008 No.11. (Recent Events Update) http://www.rsis.edu.sg/nts/events/lorraine-elliott.html
    - This document summarizes a seminar given by Dr. Elliot at the Rajaratnam School of International Studies. In the seminar she discusses three connections between climate change and conflict: issues that may trigger climate wars (such as resource scarcity or loss of territory); vulnerabilities that may increase the likelihood of conflict (such as vulnerable infrastructure, overstretched adaptation capacity, or a politics of resentment); and the security consequences of these processes (civil disorder, radicalization, state collapse). She concludes with the thought that missing in most state analyses of the security concerns of climate change is a focus on the human security implications. Such a focus would provide a better framework for understanding the kinds of adaptation mechanisms that need to be constructed today.

- Conference on Climate Insecurities, Human Security and Social Resilience
  Presented by The RSIS Centre for NTS Studies
  - 27-28 August, 2009: Singapore
  - "In recent years scientific analysis on climate change has called for the increased adoption of both mitigation and adaptation strategies with mitigation enjoying relatively more attention. compared to adaptation. In response to this gap in knowledge and policy, the Asia Security Initiative (ASI) project on climate change and environmental security led by the RSIS Centre for NTS Studies and funded by the MacArthur Foundation recently held a conference in Singapore aimed at examining the importance of adaptation and building social resilience for those communities and countries most affected by climate change, of which there are many in the Asia Pacific." (from the executive summary)
  - http://www.rsis.edu.sg/nts/Events/Climate_change_conf.html

SWEDEN

- **Stockholm International Peace Research Institute**
  - o Wiharta, Sharon, Hassan Ahmad, Jean-Yves Haine, Josefine Lofgren, Time Randall. "The Effectiveness of Foreign Military Assets in Natural Disaster Response" Stockholm International Peace Research Institute. Solna, Sweden, 2008. http://books.sipri.org/product_info?c_product_id=358
    - This report focuses on the tension between humanitarian responses to crises and the use of the military to help civilians meet the needs of affected populations. It notes that the projected increase in climate variability and incidence of natural disasters means that this tension will not simply disappear with time; rather, that it will become increasingly important to address. The report specifically examines the use of the military in humanitarian situations since 1997, the factors that play into the decision to deploy military resources, and how effective these responses have been for the situation at hand. It concludes with recommendations for states regarding the decision to deploy.

- **Life and Peace Institute**
  - o Halden, Peter. "Climate Change and Security—A Planetary Danger or Military Threat?" *New Routes*, Life and Peace Institute 1 (2009), Sweden. http://www.life-peace.org/sajt/filer/pdf/New_Routes/nr200901.pdf

- The author argues in this article that the links between climate change and security are contingent upon political decisions made by state governments—with the deciding factor being state capacity to adapt to and address the impact of climate change on its people. He draws a distinction between the human security and the traditional security links to climate change, concluding that climate change will have a large human security impact due to weakening governance structures but, as a result of the same phenomenon, a lesser traditional security impact (weakening of the state means less capacity to launch inter-state warfare).