



GECHS

GLOBAL ENVIRONMENTAL CHANGE
AND HUMAN SECURITY

ANNUAL REPORT 2003

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GLOBAL ENVIRONMENTAL CHANGE & HUMAN SECURITY PROJECT ~ ANNUAL REPORT FOR 2003 ~

1 INTRODUCTION

This annual report summarizes GECHS project activities and the individual contributions of the Scientific Steering Committee throughout 2003. During the past year, GECHS has made significant progress and several research projects are up and running. Assuming a project life span of plus ten years, GECHS has begun to move out of its formative years and is entering a period where the project should be able to sustain a higher level of research activity that will eventually lead to a synthesis phase and consolidation of research findings. During the last year, GECHS has also made substantial contributions to advancing research agendas in the global environmental change and human security communities. The IPO and the SSC have maintained existing links with other projects and contributed to research-related activities including strong participation in the Open Meeting of the Human Dimensions Programme in Montreal in October 2003. Another important development throughout 2003 has been the consolidation of the GECHS International Project Office at Carleton University in Ottawa Canada. In addition, to core funding from IHDP and its funding from Procter & Gamble, the Project and its SSC members were able to raise significant funds to advance research in the two broad areas that comprise the GECHS research mandate:

- Social vulnerability to global environmental change, and
- Environment, conflict and cooperation.

This report reviews research progress, conference and workshop activities, links with other projects, publication activities and other contributions from the GECHS team in 2003.

2 RESEARCH ACTIVITIES

The GECHS Science Plan presents six scientific themes and related research activities which are distilled into three themes for the purposes of this summary report:

- Social vulnerability and global environmental change,
- Conflict, co-operation and environment and
- Policy briefings and communications.

Research publications and presentations are presented in Appendices A and B. Summary statements for each research area follow.

Social Vulnerability and Global Environmental Change

Southern Africa Vulnerability Initiative (SAVI)

SAVI is GECHS-led initiative that commenced in 2003 and is presently supported by ICSU and IHDP. SAVI aims to incorporate multiple stressors into a framework that can be used to assess how and why different regions and sectors of society in southern Africa are vulnerable to global environmental change. Its first major event was a workshop (SAVI-1) held in Maputo, Mozambique (June 19-21, 2003). Key findings that emerged from or were reinforced in SAVI-1

include:

- Vulnerability was viewed as being ‘generated’ in a specific context by a variety of multiple stressors that interact over time and can eventually reach a critical threshold, which can be a breaking point for livelihoods.
- Current vulnerability represents an outcome generated and accumulated over time, with chronic or long-term vulnerability tied to a series of failures (e.g.: institutional, economic, environmental, health, & human security).
- The delinking of economic reforms and social policy associated with neoliberal economic policies, which in addition to the debt burden have diverted money away from education, health care, and other types of social safety nets.
- While women are often the most vulnerable to multiple stressors in southern Africa, there is a need to rethink how vulnerable regions and populations are identified (e.g.: socially marginalized, the impoverished).

Key papers from the SAVI-1 are to be published in a regional journal. A paper outlining the SAVI multi-stressor vulnerability framework is being prepared and will be fleshed out at SAVI-2 in October 2004.

For further information, contact Karen O'Brien and Mike Brklacich

Vulnerability in Coastal Communities

Rural communities on Canada's east and west coasts have suffered greatly from the stress on and closure of fish stocks. Economic and environmental pressures including high unemployment, dependency on declining primary resources and a reduced public sector involvement, plague both coastal regions. The goal of this project is to build an understanding about the vulnerabilities and adaptations within Canada's rural coastal communities, draw lessons from best adaptive practices and develop guidelines for coastal community-based approaches to achieve future sustainability. During the past year, two workshops were held. The first workshop, ***Examining Best Practices in Coastal Zone Planning Lessons and Applications***, was convened in Alert Bay, British Columbia in April 2003 and brought together First Nations, coastal community residents, fishermen, industry representatives, federal and provincial agencies, academics, non-government organizations and others from across Canada and the US. This was followed up by a 2nd workshop in Change Islands, Newfoundland in August 2003 which focused on ***Vulnerability in Coastal Communities, Adaptation to Change and Planning for the Future***. The workshop brought together approximately 75 people including residents of Change Islands, people from other coastal communities, fishermen, industry representatives, federal and provincial agencies, academics, non-governmental organizations and others, from across Canada, the US, Iceland and Norway. Key findings from the workshops are available at <http://www.sfu.ca/coastalstudies/linking/changeislands.htm>. Reports from both workshops are in preparation and tasks for 2004 include consolidating results from the 2 workshops and further develop an understanding of the structures and institutions that will promote sustainable livelihoods in coastal communities.

For more information, contact Maureen Woodrow

Vulnerability to Global Environmental Change and Economic Globalization

This research focuses on vulnerability to climate change, particularly how it is changing as a result of economic globalization. A collaborative research project on agricultural vulnerability in

India maps indicators of exposure, sensitivity, and adaptive capacity to identify the districts that are highly vulnerable to both climate change and trade liberalization. Qualitative case studies carried out in "double exposed" districts provide an understanding of how the two processes interact to influence vulnerability. The results show that trade liberalization is making it more difficult for many farmers to adapt to climate variability, just as climate variability limits the ability of farmers to adapt to changing market conditions in a globalizing Indian economy. In the cases where globalization opens up new opportunities, for example through the production of gherkins for export to European markets, there are questions concerning long-term production sustainability under conditions of increasing water scarcity. The interactions between global environmental change and globalization are being explored in more detail in a book titled ***Double Exposure: Global Environmental Change in an Era of Globalization*** (R. Leichenko and K. O'Brien, forthcoming, Oxford University Press).

For more information, contact Karen O'Brien.

Vulnerability of Food Systems

This set of research activities includes basic research into food systems vulnerability and applied research which seeks to understand causes of current vulnerability of farming systems in central Canada to climatic variability and climatic change. Research into food system vulnerability concepts is in conjunction with the Global Environmental Change and Food Systems (GECAFS) project and preliminary findings from this research include:

- Conceptual frameworks should be based on a vulnerability to security spectrum with adaptation and resilience as processes which promote either vulnerability or security,
- Vulnerability is generated by the convergence and interactions amongst multiple stressors,
- The historical and political contexts are critical to understanding vulnerability, and
- There is an urgent need to expand the agenda beyond identifying vulnerability to include options for improving security.

This work was complimented by applied research in Central Canada. This research involves collaboration with the local farm community and preliminary findings indicate that the cumulative effects of declining agricultural communities are heightening farm vulnerability to global climatic change.

For additional information, contact Mike Brklacich.

Environment, Conflict and Co-operation

Resource Rights, Livelihoods and Conflict in South Asia

This US AID funded projects is a partnership amongst GECHS office at the University of California at Irvine and researchers in Bangladesh, India, Pakistan and Nepal. It is a community-based project involving four sites that have experienced high levels of violent conflict and where livelihoods for a large proportion of the local community relies on direct access to natural resources. Rights to these resources are however complicated by competing legal systems, inadequate documentation, adjudication processes that are costly and/or not trusted, low levels of enforcement and official corruption. The research focuses on two central questions.

- Can violent conflict in these communities be explained as a result of inadequate legal protection for those whose livelihoods depend on direct access to resources?
- Are there viable strategies for improving legal protection?

The research builds on work the 2002 Matthew, Halle and Switzer book *Conserving the Peace: Resources, Livelihoods and Security*. Results of the research summarized above will be presented at the IUCN World Congress (Thailand 2004) and published in an edited volume by Matthew and Najam.

For additional information, contact Richard Matthew.

Environmental Conflicts and Regional Cooperation in the Lempa River Basin: The Role of the Trifinio Plan as a Regional Institution

Current research focuses on how the creation of a regional regime such as the Trifinio Plan – which was formulated as an answer to economic and environmental problems in the international basin of the Lempa River (embracing Guatemala, El Salvador, and Honduras) – can foster transborder cooperation and regional integration. This research also attempts to investigate how the Trifinio Plan can be conceptualized as one of the most important tools for conflict prevention in the area encompassed by the Lempa river basin. It is argued that the Trifinio Plan has contributed to change the manner in which its stakeholders interact. Coordination and communication between the three governments has increased substantially. The Plan has also resulted in a higher level of integration among the various border communities. In sum, this research provides insight into how regional arrangements can address cross-border environmental problems and reduce political tensions, while respecting national and ecological boundaries.

For more information, contact Alexander Lopez.

Resource Abundance and Civil Conflict

There has been considerable research on the contribution of resources to armed conflict over the past decade with much of this research focusing on how resource scarcity can either prompt war by itself or at least be another causal factor. This project expands upon this research foundation in several ways including a focus on civil rather than interstate conflict, investigating the role of resource abundance rather than scarcity as a causal factor, and is developing data sets that will facilitate quantitative evaluations of resource-conflict relationships. A recent case study has suggested abundant “lootable” resources (i.e. resources such as alluvial diamonds that are easily exploited, transported and have a high value to weight ratio) can play a central role in funding war efforts by either rebel or government forces. Future work will investigate resource-civil war conflict issues at subnational levels as well as the role of institutions in combination with resource abundance as factors contributing to conflict and peace. In addition, to developing data sets relating to resources and civil conflict, the PRIO team has also compiled and published data sets on shared rivers and interstate conflict.

For additional information, please contact Nils Petter Gleditsch.

Modeling Environmental Change and Conflict

This research project builds upon the environment and conflict research where most conceptual models include a set of mediating social variables such as governance and ethnic structure, arguing that environmental factors have seriously negative social effects under certain fairly common social conditions. This work extends the time frame of previous assessments which

typically covered less than a decade to 60 years or longer (depending on data availability). These longer timelines revealed an environment-conflict linkage is usually evident for only a brief period within a longer process of social adaptation to environmental change, suggesting that policies and programs for addressing immediate security concerns need to be cognizant of a broader context in order to either bolster or undermine larger adaptive processes. “The Elusive Quest: Linking Environmental Change and Conflict.” by Matthew, Gaulin and McDonald in 2003 in the *Canadian Journal of Political Science* summarizes findings from this research activity.

For additional information, contact Richard Matthew.

Policy Briefings and Communications

AVISO continues to be the main vehicle for providing policy bulletins. It is currently supported by Canada’s International Development Research Centre and the US Woodrow Wilson Center’s Environment and Security Project with supplemental support from Procter and Gamble (Canada). May Chazan is now the new managing editor and coordination for the bulletin is provided the GECHS IPO. Two new issues were published in 2003. *Gender, Global Environmental Change and Human Security* by Monika Rahman and a special double issue on *Urbanisation* by Jutta Gutberlet and Josef Leitmann. An issue on *Vulnerability and Global Environmental Change: Rhetoric or Reality*, co-authored by Karen O’Brien and Coleen Vogel, is in print and another issue on Measuring Vulnerability is in preparation. An issue focusing on the Southern Africa Vulnerability Initiative is planned for 2004.

For more information, contact the GECHS IPO.

3 CONFERENCES, WORKSHOPS, MEETINGS

SSC members have represented GECHS and presented papers at a number of conferences and workshops, such as the Open Human Dimensions meeting in Montreal in mid-October and the IAI-IGBP Research Forum in Mendoza, Argentina in January 2003. A full listing of contributions are presented in Appendix A and short summaries of selected contributions are presented below. Summaries of GECHS-related workshops presented Section 1 are not repeated here.

Contributions to the Open Meeting of Human Dimensions of GEC Community: Montreal, Canada October 2003

GECHS contributions to the Open Meeting included:

- Participation on the National Organizing Committee (M. Brklacich),
- Organization of panels on *Measuring Vulnerability And Adaptability: Conceptual And Methodological Challenges* by Karen O’Brien and *Global Environmental Change and Coastal Systems: A Microcosm of Coupled Human-Environmental Systems* by Mike Brklacich in conjunction with IDGEC, LOICZ, GECAFS and GLOBEC
- A keynote address by Karen O’Brien on *Vulnerability to Multiple Stressors: Globalization and Climate Change*.
- Paper and poster presentations by Karen O’Brien, Maureen Woodrow, Mike Brklacich, Elena Nikitina and Kwasi Nsiah-Gyabaah, and

- Chris Cocklin serving as a discussant to *The Interaction between Global Environmental Change and Urban* panel.

GECHS SSC Meeting

The GECHS SSC meeting was held in conjunction with the Open Meeting and therefore the usual process of having research presentations by selected GECHS SSC members and interacting with a local research community was suspended for 2003. Key conclusions¹ from the 2003 SSC meeting included:

- Couple the release of a GECHS book (Appendix B) and convening of a GECHS workshop for mid-2005.
- Recommend to IHDP the IPO remain at Carleton University, Canada through to mid-2007 and that M. Brklacich term as Project Chair be extended from the current mid-2005 to mid-2007.
- To implement a SSC renewal plan that would see all original members appointed in 1999 replaced by mid-2007.

Other Selected Presentations and Activities

Mike Brklacich was called as an expert witness by the Senate of Canada's Standing Committee on Agriculture and Forestry and presented a paper on *Adaptation by Canadian Agriculture Climatic Change: Status and Needs*.

Nils Petter Gleditsch was one of the key organizers for a seminar on *Regional Governance of Oil Resources in Central Africa Rift Region* held in Oslo in November 2003. Its aim was to define a possible training and capacity building formula, which would help the central African countries to master a long term, shared management of their hydrocarbon resources.

Richard Matthew and Mike Brklacich prepared a paper in the December 2003 at the *Conference on Environment, Conflict, and Cooperation: Gaps and Opportunities for Research and Policy Agendas* in Washington DC. This event was co-sponsored by the United Nations Environment Programme's Division of Early Warning and Assessment and the Woodrow Wilson Center's Environmental Change and Security Project.

The GECHS IPO organized a seminar on *Climate Change and Vulnerability* for high school students in the Ottawa region. Over 100 students participated in the daylong event which included presentations by experts, break out sessions and presentations by each group on issues of vulnerability to climatic change in the regions. A grant from Canada's Climate Change Impact and Adaptation Fund covered the cost of this workshop.

¹ A summary of the 2003 GECHS SSC meeting is available from the IPO.

4. LINKS TO OTHER GEC PROJECTS

Fulfillment of the research agenda as presented in the GECHS Science Plan requires that GECHS actively participate in several areas of the research agenda set by the GEC. These contributions have the joint benefits of relating directly to GECHS science themes as well as the development and implementation of the collaborating projects. Summaries of GECHS contributions to other GEC-related projects follow.

Global Environmental Change and Food Systems Project (GECAFS)

Mike Brklacich continues as vice-chair of GECAFS and remains a central part of GECHS-related activities. GECAFS has now identified its science themes and objectives. Funding has been secured for the next two years. Planned activities for 2004 include further development of three regional projects (Caribbean, Indo-Gangetic Plain, Southern Africa) and two cross-cutting themes (Vulnerability, Scenarios).

Global Water Project (GWP)

GECHS has been intermittently involved with GWP and at the 2003 SSC, GECHS decided to play a more proactive role by appointing Nils Petter Gleditsch as its representative on the water project. Both Fred Langeweg and Alexander Lopez will support his efforts.

Urbanization

Chris Cocklin and Kwasi Nsiah-Gyabaah have been and continue to lead for GECHS in the urbanization theme, and played key roles in the development of IHDPs *Scoping Report and Global Environmental Change* released in 2003.

Land-Ocean Interface in the Coastal Zone (LOICZ)

Maureen Woodrow's research projects on vulnerability of Canada's coastal communities to environmental stress converges with several aspects of the LOICZ agenda. GECHS collaborated with LOICZ (and others) to organize a Coastal-GEC panel at the 2003 Open HD meeting and Maureen Woodrow will take on a higher profile in representing GECHS in LOICZ-related activities.

International Human Dimensions Workshop (Young Scientists Workshop)

IHDP and the Inter-American Institute for Global Change Research will jointly sponsor the *Globalization and Food Systems* workshop scheduled for October 2004 in Costa Rica. Karen O'Brien is a workshop co-chair and Alexander Lopez will assist with hosting the event.

The Land Project

Edgar Gutierrez, a past GECHS SSC member, continues to represent GECHS. GECHS role has been to assist with developing a stronger HD perspective including a higher profile for land tenure-conflict issues.

5. GECHS OFFICES

The International Project Office at Carleton University, Canada.

GECHS IPO activities in 2003 were divided amongst two main areas: (i) research support and (ii) organizing conference and workshop activities. Many of these activities have been reported in the Sections 2, 3 and 4 (e.g. supporting SAVI and two workshops on vulnerability of Canada's coastal communities, co-ordinating AVISO, contributions to the 2003 Open Meeting, organizing the SSC meeting, representing GECHS at various GEC meetings) and not discussed further in this section.

For 2003, new revenue in support of the IPO (i.e. this does not include revenue for research projects) approached \$USD90,000¹ with approximately equal amounts from IHDP and Procter & Gamble (Canada). A financial report for 2003 has been prepared and submitted to IHDP. The annual SSC meeting is one of the IPO's major expenses each year and considerable savings were realized by hosting the SSC meeting in conjunction the 2003 Open Meeting in Montreal.

GECHS IPO support from P&G will support the project through to late 2004. Mike Brklacich has entered into a new round of discussions for the post-2004 period and P&G has expressed interest in extending the agreement. Current arrangements have the IPO at Carleton University with Mike Brklacich as the Project Chair through to mid-2005. P&G funds are attached to Carleton University and therefore a shift in IPO location would necessitate new funding sources. Hence, it is necessary to resolve plans for the IPO and Project Chair beyond mid-2005

The GECHS Sub-office at the Peace Research Institute, Oslo (PRIO)

A GECHS project office has been hosted by PRIO since mid-1999 and, in part, this provided the foundation for PRIO being awarded a Centre of Excellence focusing on Study of Civil War (CSCW). The Centre of Excellence programme was introduced in Norway with the intention of bringing more researchers and research groups to higher international standards. CSCW was the only social science-based centre amongst the 14 Centres funded by Norwegian Research Council in 2003. Nils Petter Gelditsch project within the Centre on *Environmental Factors for Civil War* provides the focal point for GECHS-related activities. The work is currently focused on the role of resource abundance and scarcity as contributors to civil war. The office is also involved in major collection efforts to collect and disseminate conflict data and co-sponsors several international workshops each year.

The GECHS Sub-office at the University of California at Irvine (UCI)

In 2003, GECHS-UCI sub-project office was upgraded into the Center for Unconventional Security Affairs (CUSA) at University of California at Irving with Richard Matthew as Director. The new centre addresses the security challenges of the 21st century through innovative research

¹ This does not include Carleton University's in-kind contributions which include approximately 40% of Mike Brklacich's time allocated to GECHS-related activities, two equipped offices allocated to the GECHS Executive Director and GECHS Research Assistants and logistical support.

and education programs that integrate experts from the public and private sectors. GECHS-UCI's research and fieldwork on environmental security issues will be a core project of CUSA.

6. GECHS SCIENTIFIC STEERING COMMITTEE

The GECHS SSC is currently in a period of renewal and regeneration that will be completed in mid-2007 at which time all of the SSC members who were appointed when GECHS commenced in 1999 will have rotated off the SSC. The SSC has implemented a three-year renewal process in order to provide sufficient time for an orderly transition as well as provide an opportunity to develop an SSC with balance in gender, discipline and stage of career.

In 2003, Steve Lonergan resigned from the GECHS SSC to take up a position as Director of UNEPs Division of Early Assessment and Warning and was not replaced, leaving upto two positions vacant. The composition of the GECHS SSC at the end of 2003 was as follows.

MEMBER	APPOINTMENT EXPIRES	HOME INSTITUTION
Mike Brklacich	Jul 2005	Dept. of Geography & Environmental Studies, Carleton University, Canada
Chris Cocklin	Jul 2005	School of Geography and Environmental Science, Monash University, Australia
Nils Petter Gleditsch	Jul 2005	International Peace Research Institute, Oslo, Norway
Alexander Lopez	Jul 2006	Centro mesoamericano de Desarrollo sostenible de Tropico Seco, Universidad nacional Costa Rica.
Elizabeth Hartmann	Jul 2004	Population and Development Program, Hampshire College, USA
Fred Langeweg	Jul 2004	National Institute of Public Health and the Environment (RIVM), The Netherlands
Richard Matthew	Jul 2005	School of Social Ecology, University of California at Irvine, USA
Elena Nikitina	Jul 2005	Institute of World Economy and International Relations, Russia
Kwasi Nsiah-Gyabaah	Jul 2005	Sunyani Polytechnic Institute, Ghana.
Karen O'Brien	Dec 2004	Center for International Climate and Environment Research (CICERO), Norway

The renewal plan invoked by the SSC involves:

- Appointing a senior researcher (as a replacement for Steve Lonergan) for a three-year term commencing mid-2004,
- Extending the appointments of Elizabeth Hartmann and Fred Langeweg for one year,
- Renewing Karen O'Brien's appointment for a 3-year period,
- Extend Mike Brklacich's appointment as Chair to mid-2007,
- In 2005, request that two of the remaining inaugural SSC members (i.e.: Chris Cocklin, Nils Petter Gleditsch, Richard Matthew and Elena Nikitina) be extended until mid-2006 and the others be extended until mid-2007,

- Reviewing the appointments of Alexander Lopez and Kwasi Nsiah-Gyabbah on a routine basis in 2005 and 2004 respectively, and
- Adding 2 or 3 new members in each of 2005, 2006 and 2007.

APPENDIX A. GECHS PUBLICATIONS AND PRESENTATIONS: 2003

PUBLICATIONS

Andersen, Kirsten Hegsvold, 2003. *Resource Conflict and Oil Companies in Angola*. Thesis for the cand.polit Degree. Oslo: Department of Economics, University of Oslo.

Brunborg, Helge, Henrik Urdal and Torkild Lyngstad, 2003. 'Accounting for Genocide: How Many Were Killed in Srebrenica', *European Journal of Population* 19(3): 229–248.

Cocklin, Chris and Margaret Alston, eds., 2003. *Community Sustainability in Rural Australia: A Question of Capital?* Wagga Wagga: Academy of Social Sciences in Australia/Centre for Rural Social Research, Charles Sturt University.

Cocklin, C. 2003 'Water and Human Security'. *APN Newsletter* Oct 2003 pp3-5, www.apn.gr.jp.

Furlong, Kathryn and Nils Petter Gleditsch, 2003. 'The Boundary Dataset', *Conflict Management and Peace Science* 20(1): 93–117, <http://www.prio.no/cwp/datasets.asp>.

Gutberlet, Jutta 2003. Cities, Consumption and the Generation of Waste. *AVISO* Issue No. 11, GECHS IPO, Ottawa, Canada.

Gleditsch, Nils Petter, 2003. 'Environmental Conflict: Neomalthusians vs. Cornucopians', in Hans Günter Brauch, ed., *Security and the Environment in the Mediterranean: Conceptualising Security and Environmental Conflicts*. Berlin: Springer (477–485).

Leitmann, Josef, 2003. Urbanization and Environmental Change: Issues and Options for Human Security. *AVISO* Issue No. 11, GECHS IPO, Ottawa, Canada.

Matthew, Richard, Bryan McDonald, and Kenneth Rutherford, eds., (forthcoming 2004). *War's Hidden Legacy: Human Security and the Mine Ban Treaty*. Albany: SUNY.

Matthew, Richard and Kenneth Rutherford, 2003 'The Evolutionary Dynamics of the Movements to Ban Landmines', *Alternatives* 28(1): 29-56.

Matthew, Richard and Ted Gaulin, 2003 'Time to Sign the Mine Ban Treaty', *Issues in Science and Technology* 19(3): 69-73.

Matthew, Richard, Stefan Brem, and Kenneth Rutherford, eds., 2003. *Reframing the Agenda: the Impact of NGO and Middle Power Cooperation in International Security Policy*. New York: Praeger Press.

Matthew, Richard, Ted Gaulin and Bryan McDonald, 2003. 'The Elusive Quest: Environmental Change, Security and Adaptation', *Canadian Journal of Political Science* 36(4): 857-878.

O'Brien, K. and R. Leichenko. 2003. "Winners and Losers in the Context of Global Change." *Annals of the Association of American Geographers* 93(1):99-113.

PRESENTATIONS

Brklacich, Michael. 'The Global Environmental Change and Human Security Project'. Presented at the Workshop on Social Science Perspectives on Sustainable Development, organized by the International Social Science Council and the International Human Dimensions on Global Environmental Change Program, Cuernavaca, Mexico, 1- 3 December 2003.

Brklacich, Michael. 'Positioning Vulnerability Research within the Climatic Change Research:

Voices from the Farm'. Presented to the Open Meeting of the Human Dimensions Community, Montreal QC, Canada, 16-18 October 2003.

Brklacich, Michael. 'Sustaining the Procter & Gamble, Carleton University, Global Environmental Change and Human Security Project'. Presented to Procter & Gamble (Canada), Toronto ON, Canada, 29 September 2003.

Brklacich, Michael. 'Opportunities for Collaborative Research Between Health Canada and the Global Environmental Change and Human Security Project'. Presented to the Climate Change and Health Office, Health Canada, Ottawa ON, Canada, 3 July 2003.

Brklacich, Michael. 'Food Security And Global Environmental Change: Developing A Unified Research Agenda'. Presented to the South Asia Institute, University of Heidelberg, Heidelberg, Germany, 24 June 2003.

Brklacich, Michael, Karen O'Brien and Coleen Vogel. 'The Southern Africa Vulnerability Initiative (SAVI): Inaugural Workshop'. Presented at Maputo, Mozambique, 19-21 June 2003.

Brklacich, Michael. 'Adaptation by Canadian Agriculture to Climatic Change: Status and Needs'. Presented to the Senate of Canada, Standing Committee on Agriculture and Forestry, Ottawa ON, Canada, 20 March 2003.

Brklacich, Michael. 'Opportunities for Joint Research between GECAFS and GECHS'. Presented to the GECAFS Workshop, Bridgetown, Barbados, 24-26 February 2003.

Brklacich, Michael. 'Overview of the International Human Dimensions for Global Environmental Change Program'. Presented to the IAI-IGBP Research Forum, Mendoza, Argentina, 27-28 January 2003.

Buhaug, Halvard, 2003. *Spatial Data on Armed Intrastate Conflict*. Paper presented at the European Consortium for Political Research Joint Session of Workshops, Edinburgh UK, 28 March - 2 April 2003,

<http://www.essex.ac.uk/ecpr/events/jointsessions/paperarchive/edinburgh/ws9/Buhaug.pdf>

Dibden, Jacqui and Chris Cocklin, 2003. *Mixing Oil and Water: Governing Competing Environmental Flows in an Australian Dairying Region*. Paper presented at the conference 'Governing Environmental Flows: Reinventing the State in Global Modernity', Wageningen, Netherlands, 13-14 June 2003.

Furlong, Kathryn and Nils Petter Gleditsch, 2003. *Geographic Opportunity and Neomalthusian Willingness: Boundaries, Shared Rivers, and Conflict*. Paper presented at the 44th Annual Convention of the International Studies Association, Portland OR, USA, 25 February - 1 March 2003, and at the European Consortium for Political Research Joint Session of Workshops, Edinburgh UK, 28 March - 2 April 2003,

<http://www.essex.ac.uk/ecpr/events/jointsessions/paperarchive/edinburgh/ws9/GleditschFurlong.pdf>

Gilmore, Elisabeth and Päivi Lujala, 2003. *The Location of Natural Resources Database*. Paper presented at the European Consortium for Political Research Joint Session of Workshops, Edinburgh UK, 28 March - 2 April 2003,

<http://www.essex.ac.uk/ecpr/events/jointsessions/paperarchive/edinburgh/ws9/Gilmore.pdf>

Hartmann, Betsy. 'Homer-Dixon's Model: Truths and their Consequences'. Lecture to 2003 Watson International Scholars of the Environment, Watson Institute for International Studies, Brown University, Providence RI, USA, 29 January 2003.

Hartmann, Betsy. 'Is Fiction Stranger than Truth, or Truth Stranger than Fiction?' Panel presentation, National Writers Union Conference *WriteAngles 2002*, Mt. Holyoke College, South Hadley MA, USA, 7 December 2003.

Hartmann, Betsy. 'Political Multi-Tasking'. Presented to the Peace and World Security Studies (PAWSS) Public Forum on 'The War with Iraq,' Hampshire College, Amherst MA, USA, 24 March 2003.

Hartmann, Betsy. 'Strategic Scarcity: The Politics of Population, Environment and Security'. Invited seminar presentation, Harvard Center for Population and Development Studies, Cambridge, MA, USA, 12 February 2003.

Langeweg, Fred and Georg Frerks. 'Dealing with Scarcity and Violent Conflict' Workshop, Clingendael, Den Haag, The Netherlands, 3 July 2003.

Langeweg, Fred. 'Assessing the Dynamics of European Sustainable Development' Presented at the Workshop 'A better SD Governance: Indicators and Other Assessment Tools', organized by the European Commission, Rome, Italy, 24-26 September 2003.

Langeweg, Fred. 'Sustainability and the Quality of Life' Presented at UNEP Meeting, Nairobi, Kenya, 20 August 2003.

Lujala, Päivi and Halvard Buhaug, 2003. *How to Deal with the Spatial Dimension: GIS Data on Intrastate Conflict and Natural Resources*. Paper presented at the 44th Annual International Studies Convention, Portland OR, USA, 25 February - 1 March 2003.

Lujala, Päivi, 2003. *Classification of Natural Resources for Conflict and Growth Research*. Paper presented at the European Consortium for Political Research Joint Session of Workshops, Edinburgh UK, 28 March - 2 April 2003,
<http://www.essex.ac.uk/ecpr/events/jointsessions/paperarchive/edinburgh/ws9/Lujala.pdf>

Lujala, Päivi, Nils Petter Gleditsch and Elisabeth Gilmore, 2003. *Diamonds in Civil War: A New Dataset and a First Test*. Paper presented at the Conference on Political Violence and Primary Commodities, Montreal QC, Canada, 12-14 September 2003,
<http://www.mcgill.ca/rgchr/workshop/>

Nikitina, Elena, Michael Brklacich and Maureen Woodrow. 'Global Environmental Change and Vulnerability to Natural Disasters'. Presented to the Monitoring and Assessment System for Socio-economic and Environmental Situation in the Siberian Federal District Round Table, Department of Indian Affairs and Northern Development, Hull QC, Canada, 18 February 2003.

Nikitina, Elena, Valdimir Kortov and Fabien Nathan *Human Security: Building Institutional Frameworks for natural Disaster Risk Reduction*, Poster Session, Presented to the Open Meeting of the Human Dimensions Community, Montreal QC, Canada, 16-18 October 2003

Nsiah-Gyabbah, Kwasi, *Urbanisation, Environmental Change and Food Security in Sub-Saharan Africa*, Poster Session, Presented to the Open Meeting of the Human Dimensions Community, Montreal QC, Canada, 16-18 October 2003

O'Brien, Karen, *Vulnerability to Climate Change*, Plenary Paper, Presented to the Open Meeting of the Human Dimensions Community, Montreal QC, Canada, 16-18 October 2003

O'Brien, Karen, Coleen Vogel *Vulnerability to Multiple Stressors in South Africa*, Presented to the Open Meeting of the Human Dimensions Community, Montreal QC, Canada, 16-18 October 2003

O'Brien, Karen, *Are Vulnerability and Adaptability Two Sides of the Same Coin? A Critical*

View of Climate Impacts , Presented to the Open Meeting of the Human Dimensions Community, Montreal QC, Canada, 16-18 October 2003

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APPENDIX C. GECHS BOOK: PROPOSED TABLE OF CONTENTS

GLOBAL ENVIRONMENTAL CHANGE AND HUMAN SECURITY¹

Edited by: Matthew, Brklacich and Giannikopoulos

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ABOUT THE CONTRIBUTORS

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¹ Richard Matthew has contacted Springer, SUNY Press, Rowman and Littlefield and CQ Press. All have expressed interest and RM anticipates a contract will be signed by July 2004.