Dr Andrew (Anaru) Kliskey
Center for Resilient Communities
Department of Forest, Rangeland & Fires Sciences / Landscape Architecture
University of Idaho
Moscow, Idaho, USA

Email: akliskey@uidaho.edu

Curriculum Vitae

OVERVIEW

I am a mid-career interdisciplinary scientist with training, teaching, and research experience in landscape ecology, behavioural and perceptual geography, geographic information systems (GIS), planning, policy analysis, and surveying. I have strong credentials in teaching, research and leadership, and strive to balance these facets of my work. I have considerable experience in project management, including personnel and fiscal oversight, and science leadership for large interdisciplinary teams.

I approach my teaching and research from an interdisciplinary perspective directed at integrated methodologies toward humans and the ecosystem, that is, social-ecological systems. The hallmark of my research is in rigorous interdisciplinary science that has relevance to society and particularly to communities at the local-level. My current focus is on the understanding of community response, resilience, and adaptation to environmental change. This is informed by geographical, ecological, landscape, anthropological and systems theories including complex systems and resilience frameworks using a combination of quantitative and qualitative approaches.

TRAINING & EDUCATION

1992-1996 **Postdoctoral scientist.** Resource Management Science, University of British Columbia, Canada.

1989-1992 **Doctor of Philosophy.** Geography, University of Otago, New Zealand.
Dissertation: Wilderness Perception Mapping – Behavioural and perceptual geography of wilderness in Kahurangi National Park, NZ.

1987-1988 **Master of Regional and Resource Planning**. University of Otago, New Zealand.

1984-1986 **Bachelor of Surveying**. University of Otago, New Zealand.

APPOINTMENTS

2013-present **Professor**, Forest, Rangeland & Fires Sciences; Landscape Architecture, and; Bioregional Planning, University of Idaho, Idaho

2014-present **Co-Director**, Center for Resilient Communities, University of Idaho

2011-2013 **Professor**, Biological Sciences, UAA, Alaska

2004-2013 **Co-Director**, Resilience & Adaptive Management Group, UAA

2006-2011 **Associate Professor**, Biological Sciences and Geography & Environmental Studies, UAA, Alaska.

2003-2006 **Assistant Professor**, Biological Sciences and Environmental Studies, UAA, Alaska.

2000-2003 **Senior Lecturer (~Associate Professor)**, Department of Geography, University of Canterbury, New Zealand.

1996-1999 **Lecturer (~Assistant Professor)**, Department of Geography, University of Canterbury, New Zealand.

1992-1995 **Postdoctoral Research Scientist**, Institute for Resources, Environment, and Sustainability, University of British Columbia, Vancouver, Canada.

1992-1995 **Postdoctoral Landscape Ecologist**, Arctic Institute of North America, Kluane Lake Research Station, Yukon, Canada.

MANAGEMENT & LEADERSHIP EXPERIENCE

2013 – present: Co-Director of the Center for Resilient Communities, UI, Idaho
2011 – 2015: Testcase lead for Alaska EPSCoR Southcentral Testcase
2004 – 2013: Co-Director of the Resilience and Adaptive Management Group
1999 – 2003: Chair of the Standing Committee (Fiscal and Personnel Oversight), Department of Geography, University of Canterbury, NZ

I have over twelve years of experience co-leading and leading academic programs. I have considerable experience in strategic planning applied to research centers, with a strong track-record in personnel, fiscal, and program management. I have made and continue to make particularly strong leadership contributions in interdisciplinary team-based science where I have led and currently lead teams of 20-25+ undergraduate students, graduate students, early – late-career faculty, and stakeholders in social-ecological systems science projects (NSF EPSCoR; NSF Dynamics of Coupled Natural and Human Systems; and NSF Innovations at the Nexus of Food, Energy, and Water Systems). I take a facilitative approach to program and unit leadership whenever possible and have experience at troubleshooting programmatic and personnel issues when they arise. With respect to personnel and fiscal management I approach these matters methodically and view transparency and established process as a necessity.

I have ten years of experience co-leading and leading a range of NSF EPSCoR programs, projects and workshops in Alaska and Idaho. I have also served on external review panels of NSF EPSCoR Track-1 proposals for the American Association for the Advancement of Science (AAAS).

TEACHING & ADVISING

Teaching experience

1996-present	Undergraduate courses in biology, biogeography, GIS, human geography, landscape ecology, resource and environmental management, resources and sustainability.
1996-present	Graduate courses in GIS, natural resource management, landscape architecture, and landscape ecology.
1996-present	Supervision of undergraduate, MS, MA and PhD research. Mentorship of postdoctoral scientists.

Courses taught

Course code	Course title	Credits	Enrol.
University of Idaho			
FOR / CSS 235	Society & Natural Resources	3	153
FOR 310	Indigenous Ecology and Culture	3	4
FOR 490	The Resilient Landscape	3	4
FOR 502	Indigenous Methodologies	3	3
LARC 480	The Emerging Landscape	3	16
LARC 503a	SES Training & Education Program I	2	8
LARC 503b	SES Training & Education Program II	2	6
University of Alaska Anchorage			
BIOL 102	Introduction to Biology	3	120
BIOL 271	Principles of Ecology	3	70
BIOL 394	Landscape & Geographic Ecology	3	16
BIOL 490	GIS applications in ecology and environ. science	3	12
BIOL 498	Directed Research	1-3	1
BIOL 690	Advanced GIS applications environmental science	3	12
BIOL 698	Directed Research	1-4	1
BIOL 699	Biology Thesis	3	1
ENVI 211	Living on Earth: Earth as an ecosystem	3	36
ENVI 470	Environmental Planning and Problem-solving	4	10
ENVI 492	Proseminar in Environmental Studies	3	6
LSSS 311	Human ecology: People, Places & Ecosystems	3	32
University of Canterbury			
GEOG 108	Resources & Sustainability	3	240
GEOG 201	Physical geography – biogeography	4	100
GEOG 202	Human geography – behavioural geography	4	100
GEOG 205	Introduction to GIS	4	75
GEOG 206	Resource & Environmental Management	3	75
GEOG 631	GIS Concepts	4	24
GEOG 632	GIS Applications	4	18

Current graduate supervision, advising, and postdoctoral mentoring

David Griffith	Postdoctoral fellow, UIdaho (Mentor and supervisor)
Grace Villamor	Postdoctoral fellow, UIdaho (Mentor and supervisor)
Arika Virapongse	Postdoctoral fellow, UIdaho (Mentor and supervisor)
Sarah Gilmore	MS, Water Resources (Major supervisor)
Audrey Martinez	MS, Environmental Science, UIdaho (Major supervisor)
Dawn Davis	PhD, Natural resources (Committee member)
Lucy Samuels	MS, Natural Resources (Committee member)

Previous graduate supervision and advising

Mark Clytus	MS, Environmental Science. GRADUATED 2018
Jordan Amoth	ART; IH research project. GRADUATED 2015.
Nate Beck	LARC; RA research project. GRADUATED 2016.
Josh Hightree	BIOP; RA research project. GRADUATED 2016.
Sarah Roop	LARC; RA research project. GRADUATED 2016.
David Griffith	PhD, Environmental Science, UIdaho (Committee member). GRADUATED 2016.
Kim Jochum	PhD, Human-wildlife interactions in Bering Sea region, UAF Wildlife Biology PhD Program (Co-supervisor). GRADUATED 2014.
Bill Overbaugh	PhD, Placed-based recreation outcome approach for improving community resilence and adaptive capacity, UAF Interdisciplinary Studies PhD Program (Co-supervisor). GRADUATED 2014.
Brad Barr	PhD, Ocean Wilderness in Theory and Practice, UAF Interdisciplinary Studies PhD Program (Major supervisor). GRADUATED 2013.
Paula Williams	PhD, The role of values on behaviour with respect to the environment, UAF Interdisciplinary Studies PhD Program (committee member). 2009.
Rob Ewers	PhD, Forest fragmentation and arthropod diversity using GIS, University of Canterbury.
Hans Eikaas	PhD, Spatial modeling and habitat quantification for two diadromous fish in New Zealand streams: a GIS-based approach with application for conservation management, University of Canterbury.
Glenn Waterland	MSc, GIS delivery of bioclimatic information, University of Canterbury.
Dave Krolick	MSc, Sustainable energy strategies supported by GIS, University of Canterbury.
Bruno de Passille	MSc, Avalanche atlas and prediction using GIS, University of Canterbury.

Teaching evaluations

During my teaching career I have continuously assessed, evaluated, and when necessary modified my teaching in order to improve my ability to help students learn. I do this through formal course evaluations and through peer-review assessments. Both indicate that my teaching ability is of a very high quality. Through external- and self-assessment I continually work to improve the learning experience of the students I teach and to maintain excellence in the courses I deliver. My teaching is notable for the diversity of courses I teach (disciplinary and interdisciplinary; freshman, junior and senior and graduate), the interdisciplinary approach I take in many of my courses, and the student-centred approaches I utilize.

SCHOLARSHIP & CREATIVE ACTIVITY

Research experience

2009-present Human response and adaptation to environmental change

a) INFEWS – Innovations at the Nexus of Food, Energy, and Water Systems
b) CONAS – Community-based Observation Network for Adaptation and Security: continues 7-year Arctic Observation Network program in the Bering Sea supporting Indigenous community observations of environmental change and the development of adaptive capacity indices in response to change.
c) CNH – Dynamics of Coupled Natural Human Systems: Understanding the consequences of water-use decisions in a dynamic environment
d) SCTC – Alaska Southcentral Test-case for examining adaptation to hydrological change, landscape change, and socio-ecological change in Kenai River watershed social-ecological system.

2002-2009 Community response and resilience to change – the understanding and management of the environment informed by integrated human-ecosystem approaches to the environment as social-ecological systems:

a) Bering Sea Community-based Observation Network for Adaptation and Security.
b) Community response to climate change effects on water resources of Seward Peninsula – examines the effect of changing hydrological regimes under climate change scenarios on local communities in the Arctic
c) Pan-arctic study of humans and hydrology at high latitudes: regional to sub-global scale study of relationship between precipitation, river runoff, human water use, and human values of water.
d) Forecasting environmental resilience of arctic landscapes – social modelling supported by agent-based models linked to hydrological and other physical process models for understanding human response to change and thresholds in physical variables.
e) Alaska-NZ Indigenous values and perceptions of wilderness – seeks to understand how indigenous people view natural environments that they are familiar with, and to identify components of similarity and difference with views of non-indigenous people toward the same environments.
f) Kenai Peninsula integrated values mapping study – examines the relationship between individual / community values of special places and biophysical characteristics to assist ecotourism management.
g) Pacific Rim depreciative behaviours study – examines the relationship between visitors' depreciative behaviours and their attitudes and perceptions of ecosystem resilience.

1997-2003 Spatial approaches to predator-prey interactions – developed and applied GIS and GPS methodologies for examining predation of native bird species in braided riverbed habitat in South Island, New Zealand. Collaboration with Department of Conservation and Landcare Research.

a) Australasian harrier (Circus approximans) – examines the impact of the Australasian harrier on native prey species in a semi-arid riverbed ecosystem involving field-based monitoring alongside the development of geographic tracking and analysis techniques, using global positioning systems (GPS) and geographic information systems (GIS).
b) Spatial approaches to introduced mammalian predators – developed GIS-based techniques for landscape-level analysis of spatial interactions

between predators, prey and habitat, and; GIS-based techniques for fine-scale spatial analysis of predator movements.

1993-1995 GIS-based approaches to alternative resource use strategies in British Columbia – examined multiple resource use strategies for resolving forestry, wildlife and recreation conflicts in the North Columbia Mountains, British Columbia.

1992-1996 Kluane Boreal Forest Ecosystem project – large collaborative project aimed at understanding population dynamics in an ecosystem.

1989-1993 Wilderness perception mapping – examined the integration of questionnaire survey data with GIS to map the spatial extent of backcountry visitors perceptions of wilderness, and developed this as a tool for protected area management.

Peer-reviewed publications (93 articles)

(†indicates equal contributing first authors) 2018 products

1. Alessa, L., **Kliskey, A.**, Gosz, J., Griffith, D., Ziegler, A. 2018. MtnSEON and social-ecological systems (SES) science in complex Mountain Landscapes. Frontiers in Ecology and the Environment 16(S1): S4-S10.
2. Alessa, L., Moon, S., Griffith, D., **Kliskey, A.** 2018. Operator driven policy: Deriving action from data using the quadrant-enabled Delphi (QED) method. Homeland Security Affairs Journal 14, Article 6. https://www.hsaj.org/articles/14586.
3. Bourgeron, P., **Kliskey, A.**, Alessa, L., Loescher, H., Krauze, K., Virapongse, A., Griffith, D. 2018. Complex human-environmental processes: A framework for social-ecological observatories. Frontiers in Ecology and the Environment 16(S1): S52-S66.
4. Griffith, D., Alessa, L., **Kliskey, A**. 2018. Community-based observing for Social-ecological Science: Lessons from the Arctic. Frontiers in Ecology and the Environment 16(S1): S44-S51. DOI: 10.1002/fee.1798
5. Hightree, J., **Kliskey, A.**, Higgins, L., Alessa, L., Laninga, T., Barrett, J. 2018. Themes in Community Resilience: A Meta-synthesis of 16 years of Idaho Community Reviews. Journal of Community Development 48(1): 65-82. DOI: 10.1080/15575330.2017.1393438.
6. Hunt, T., **Kliskey, A.**, Alessa, L. 2018. MtnSEON and social-ecological systems (SES) science in complex Mountain Landscapes. Frontiers in Ecology and the Environment 16(1): S3.
7. **Kliskey, A.**, Williams, P., Alessa, L., Abatzoglou, J., Trammell, J., McCarthy, M., Rinella, D., Powell, J. In press. An integrated dataset for stakeholder perceptions of environmental change and instrumented measures of change. Data in Brief.
8. **Kliskey, A.**, Williams, P., Abatzoglou, J., Alessa, L., Lammers, R. 2018. Enhancing a community-based water resource tool for assessing environmental change: The Alaska Water Resources Vulnerability Index Revisited. Environment Systems and Decisions. DOI: 10.1007/s10669-018-9712-7
9. †Williams, P., †Alessa, L., **Kliskey, A.**, Krupa, M., Rinella, D., Trammell, J., Powell, McCarthy, M., J., Abatzoglou, J. 2018. The role of perceptions versus instrumented data of environmental change in decision-making: Implications for increasing adaptive capacity. Environmental Science & Policy 90:110-121. DOI: 10.1016/j.envsci.2018.09.018
10. Williams, P., **Kliskey, A.**, McCarthy, M., Lammers, R., Alessa, L., Abatzoglou, J. 2018. Using the Arctic Water Resources Vulnerability Index in assessing and responding to environmental change in Alaskan communities. Climate Risk Management. DOI: 10.1016/j.crm.2018.09.001
11. Williams, P., Alessa, L., Beaujean, G., **Kliskey, A.**, Witmer, F., Rieken, V., Trammell, E. 2018. Community-based observing networks and systems: An assessment of correspondence between human perceptions of environmental

change and instrument-derived data. Regional Environmental Change 18(2): 547-559. DOI: 10.1007/s10113-017-1220-7

12. Grier, C., Alessa, L., **Kliskey, A**. 2017. Looking to the past to shape the future: Using paleodata to address social-ecological change and sustainability. Regional Environmental Change. 17(4): 1205-1215 DOI 10.1007/s10113-016-1096-y
13. Griffith, D., Alessa, L., **Kliskey, A.** 2017. A Typology of Community-based observing. NIMIO Bulletin.12: 32-39.
14. Griffith, D., Larkin, B., **Kliskey, A.**, Alessa, L., Newcombe, G. 2017. Expectations for habitat-adapted symbiosis in an invasive grass. Fungal Ecology 29: 111-115. DOI: 10.1016/j.funeco.2017.07.003
15. Alessa, L., Williams, P., **Kliskey, A.**, Beaujean, G. 2016. Incorporating Community-based Observing Networks and Systems: Toward a Regional Early Warning System for Enhanced Responses to Arctic Critical Events. Washington Journal of Environmental Law and Policy 6(1): 1-27.
16. Johnson, J., Howitt, R., Cayete, G., Berkes, F., Louis, R., **Kliskey, A.** 2016. Weaving Indigenous and sustainability sciences to diversify our methods. Sustainability Science 11(1): 1-11.
17. †**Kliskey, A.,** †Alessa, L., Wandersee, S., Williams, P., Powell, J., Wipfli, M., Grunblatt, J., 2016. A science of integration: Frameworks, processes, and products in a place-based, integrative study. Sustainability Science. DOI: 10.1007/s11625-016-0391-3
18. Smith, A., Kolden, C., Paveglio, T., Cochrane, M., Bowman, D., Mortiz, M., **Kliskey, A**., Alessa, L., Hudak, A., Hoffman, C., Lutz, J., Queen, L., Goetz, S., Higeura, P., Boschetti, L., Flannigan, M., Yedinak, K., Watts, A., Strand, E., van Wagtendonk, J., Anderson, J., Stocks, B., Abatzoglou, J. 2016. The Science of Firescapes: Achieving Fire Resilient Communities. BioScience 66(2): 130-146. DOI: 10.1093/biosci/biv182.
19. Virapongse, A., Brooks, S., Metcalf, E., Zedalis, M., Gosz, J., **Kliskey, A.**, Alessa, L. 2016. A social-ecological systems approach for environmental management. Journal of Environmental Management 178:83-91 doi:10.1016/j.jenvman.2016.02.028
20. Yamin-Pasternak, S., Schweitzer, P., Pasternak, I., **Kliskey, A.,** Alessa, L. In press. A cup of tundra: Ethnography of water and thirst in the Bering Strait. In: A. Rosenholm and J. Costlow (eds.). Meanings and Values of Water in Russian Culture. Ashgate Books.
21. Alessa, L., Beaujean, G., Bower, L., Campbell, I., Chemenko, O., Copchiak, M., Fidel, M., Fleener, U., Gamble, J., Gundersen, A., Immingan, V., Jackson, L., Kalmakoff, A., **Kliskey, A.**, Merculief, S., Pungowiyi, D., Sutton, O., Ungott, E., Ungott, J., Veldstra, J. 2015. Bering Sea Sub-Network II: Sharing Knowledge, Improving Understanding, Enabling Response – International community-based environmental observation alliance for a changing Arctic. Conservation of Arctic Flora and Fauna: Akureyri, Iceland.
22. Alessa L, **Kliskey A**, Altaweel M, et al. 2015. Best Practices for Integrating Social Sciences into Social Ecological Systems Science: Future Directions for Building a More Resilient America. Moscow, ID: Center for Resilient Communities, University of Idaho.
23. Alessa, L., **Kliskey, A.**, Gamble, J., Fidel, M., Beaujean, G., Gosz, J. 2015. The role of Indigenous science and local knowledge in integrated observing systems: Moving toward adaptive capacity indices and early warning systems. Sustainability Science11(1), 91-102. DOI: 10.1007/s11625-015-0295-7.
24. Altaweel M., Virapongse, A., Griffith, D., Alessa L., **Kliskey, A**. In press. A Typology for Complex Social-Ecological Systems in Mountain Communities. Sustainability: Science, Practice and Policy.
25. Johnson, N., Alessa, L., Behe, C., Danielsen, F., Gearhead, S., Gofman, V., **Kliskey, A.**, Krummel, E., Lynch, A., Mustonen, T., Pulsifer, P., Svoboda, M. 2015. The contributions of community-based monitoring and traditional knowledge to Arctic observing networks: Reflections on the state of the field. Arctic 68(5). DOI: http://dx.doi.org/10.14430/arctic4447.
26. Murphy, J. Ozik, J., Collier, N., Altaweel, M., Lammers, R., Prusevich, A., **Kliskey, A.**, and Alessa, L. 2015. *Simulating Regional Hydrology and Water Management: An Integrated Agent-Based Approach.* Proceedings of the 2015 Winter Simulation Conference. Huntington Beach, CA.

27. Roop, S., Alessa, L., **Kliskey, A.**, Fidel, M., Beaujean, G. 2015. "We didn't cross the border; the border crossed us": Informal Social Adaptations to Formal Governance and Policies by Communities across the Bering Sea Region in the Russian Far East and United States. Washington Journal of Environmental Law and Policy 5(1): 69-96.
28. Yamin-Pasternak, S., Schweitzer, P., Pasternak, I., **Kliskey, A**., Alessa, L. In press. A Cup of Tundra: Ethnography of Water and Thirst in the Bering Strait. In: Arja Rosenholm and Jane Costlow (eds.). Meanings and Values of Water in Russian Culture. Ashgate Press.
29. Barr, B., **Kliskey, A.** 2014. Perceptions of wilderness and their application to ocean and coastal waters. *Ocean & Coastal Management* 96: 1-11. DOI: 10.1016/j.ocecoaman.2014.04.023.
30. Barr, B., **Kliskey, A.** 2014. "I know it when I see it": identifying ocean wilderness using a photo-based survey approach. *Global Ecology & Conservation* 2: 72-80. DOI: 10.1016/j.gecco.2014.08.002.
31. Fidel, M., **Kliskey, A.**, Alessa, L., Sutton, O. 2014. Walrus harvest locations reflect adaptation: A contribution from a community-based observation network in the Bering Sea. *Polar Geography* 37(1): 48-68.
32. Gofman, V., Alessa, L., **Kliskey, A**., Cochrane, P. 2014. Local observations. *International Innovation* 135: 23-25.
33. Jochum, K., **Kliskey, A.**, Hundertmark, K., Alessa, L. 2014. Integrating complexity in the management of human-wildlife encounters. *Global Environmental Change* 26: 73-86. DOI: 10.1016/j.gloenvcha.2014.03.011
34. Johnson, N., Alessa, L., Behe, C., Danielsen, F., Gearhead, S., Gofman, V., **Kliskey, A.**, Krummel, E., Lynch, A., Mustonen, T., Pulsifer, P., Svoboda, M. In press. The contributions of community-based monitoring and traditional knowledge to Arctic observing networks: Reflections on the state of the field. *Arctic.*
35. Murphy, J., Ozik, J., Collier, N., Altaweel, M., Lammers, R., **Kliskey, A.**, Alessa, L., Cason, D., and Williams, P. 2014. Water Relationships in the U.S. Southwest: Characterizing Water Management Networks Using Natural Language Processing. *Water, 6*. 1601. DOI:10.3390/w6061601.
36. Smith, A., Kolden, C., Tinkham, W., Talhem, A., Marshall, J., Hudak, A., Boschetti, L., Falkowski, M., Greenberg, Anderson, J., **Kliskey, A.**, Alessa, L., Keefe, R., Gosz, J. 2014. Remote sensing the vulnerability of vegetation in natural terrestrial ecosystems. *Remote Sensing of Environment* 154: 322-337. DOI: 10.1016/j.rse.2014.03.038.
37. Stevenson, K., Alessa, L., **Kliskey, A.** 2014. Sustainable circumpolar agriculture: Alaska and beyond Part I. Food Security, History, and Current State. *Arctic* 67: 271-295. DOI: http://dx.doi.org/10.14430/arctic4402.
38. Stevenson, K., Rader, H., Alessa, L., **Kliskey, A.**, Pantoja, A., Clark, M., Smeenk, J. 2014. Sustainable Agriculture for Alaska and the Circumpolar North Part II. Environmental, Geophysical, Biological and Socioeconomic Challenges. *Arctic* 67: 296-315. DOI: http://dx.doi.org/10.14430/arctic4408.
39. Stevenson, K., Alessa, L., **Kliskey, A.**, Rader, H., Pantoja, A., Clark, M., Smeenk, J. 2014. Sustainable Agriculture for Alaska and the Circumpolar North Part III. Sustainable Solutions to Challenges in High Latitude Farming. *Arctic* 67: 320-339. DOI: http://dx.doi.org/10.14430/arctic4410.
40. Yamin-Pasternak, S., **Kliskey, A.**, Alessa, L., Pasternak, I., Schweitzer, P. 2014. The Rotten Renaissance in the Bering Strait: Loving, loathing, and washing the smell of foods with a (re)acquired taste. *Current Anthropology* 55: 619-646. DOI: 10.1086/678305.
41. Alessa, L., **Kliskey, A.** 2013. Sustained debate: Methods to better integrate the social sciences into sustainability science. International Innovation 116: 39-41.
42. Huntington, H., Ortiz, I., Fall, J., Noongwook, G., Fidel, M., Childers, D., Morse, M., Beaty, J., Alessa, L., **Kliskey, A.** 2013. Mapping human interaction with the Bering Sea ecosystem: comparing seasonal use areas, lifetime use areas, and "calorie-sheds". Deep Sea Research II: Topical Studies in Oceanography 94(1): 292-300.
43. Fidel, M., V. Gofman, A., **Kliskey, L**. Alessa, and B. Woelber. 2012. Subsistence Density Mapping Brings Practical Value to Decision Making. In: C. Carothers, K.R. Criddle, C.P.

Chambers, P.J. Cullenberg, J.A. Fall, A.H. Himes-Cornell, J.P. Johnsen, N.S. Kimball, C.R. Menzies, and E.S. Springer (eds.), Fishing People of the North: Cultures, Economies, and Management Responding to Change. Alaska Sea Grant, University of Alaska Fairbanks. Pp. 193-210. **DOI**:10.4027/fpncemrc.2012.15

44. Stevenson, K., Alessa, L., Altaweel, M., Kliskey, A., Krieger. K. 2012. Minding our methods: How choices of time scales, reference dates and statistical approaches can influence climate reports and policy. Environmental Science & Technology 46(14): 7435-7441. **DOI:** 10.1021/es2044008
45. Alessa, L., †**Kliskey, A**. 2012. The role of agent types in detecting and responding to environmental change. Human Organization 71(1): 1-10.
46. **Kliskey, A.**, Alessa, L. 2011. The role of Fresh Water in Alaska's Communities. In: North By 2020 – Perspectives on Alaska's Changing Social-Ecological Systems. A. Lovecraft and H. Eicken. University of Chicago Press: Chicago, IL. Chapter 3.4.
47. Tidwell, A., White, D, **Kliskey, A**. 2011. Planning for Change Alaska's Water Resources. In: North By 2020 – Perspectives on Alaska's Changing Social-Ecological Systems. A. Lovecraft and H. Eicken. University of Chicago Press: Chicago, IL. Chapter 3.5.
48. The Hi'iaka Working Group (Alessa, L., †Johnson, J., Kealiikanakaoleohaililani, K., Kingston, D., †**Kliskey, A.**, †Louis, R., et al.). 2011. Indigenous knowledges driving technological innovation. AAPI Nexus Journal 9(1&2): 241-248.
49. Mack, S., Mack, L., Alessa, L., Kliskey, A. 2011. The integration of digital terrain visualization in ethnography: The historic village of Belkofski, Alaska. Visual Anthropology 24(5): 455-467.
50. Bone, C., Alessa, L., Altaweel, M., **Kliskey, A**., Lammers, R. 2011. Assessing the impacts of Local Knowledge and Technology on Climate Change Vulnerability in Remote Communities. International Journal of Environmental Research and Public Health 8: 733-761. doi:10.3390/ijerph8030733.
51. †Alessa, L., †Altaweel, M., †**Kliskey, A**., Bone, C., Schnabel, W., Stevenson, K. 2011. Water in Alaska: the next 50 years. Journal of the American Water Resources Association. 47(1):143-157. DOI: 10.1111/j.1752-1688.2010.00498.x.
52. †Bone, C., †Alessa, L., †**Kliskey, A**., †Altaweel, M. 2010. The influence of statistical methods and reference dates on describing temperature changes in Alaska. Journal of Geophysical Research , VOL. 115, D19122, 12 PP., 2010 doi:10.1029/2010JD014289.
53. †Altaweel, M., †Alessa, L., †**Kliskey, A**. 2010. A framework to structure agent-based modeling data for social-ecological systems. Structure & Dynamics: eJournal of Anthropological and Related Sciences 4(1): 1-18.
54. †Altaweel, M., †Alessa, L., †**Kliskey, A**. 2010. Visualizing situational data: applying information fusion for detecting social-ecological events. Social Science Computer Review 28(4). doi:10.1177/0894439309360837.
55. Schweitzer, P., Alessa, L., **Kliskey, A.**, Yamin-Pasternak, S. 2010. Livelihoods on thawing ground: relationships with water resources near the Bering Strait. Anthropology News, February 2010.
56. Stevenson, K.T., Fitzsimmons, K.M., Clay, P.A., Alessa, L., **Kliskey, A**. 2010. Integration of aquaculture and arid lands agriculture for water reuse of and reduced fertilizer dependency. Experimental Agriculture 46(2): 183-190.
57. †Altaweel, M., †Alessa, L., †Kliskey, A. 2010. Monitoring land use: capturing change through an information fusion approach. Sustainability 2(5), 1182-1203; doi:10.3390/su2051182.
58. †Alessa, L., †**Kliskey, A**., Williams, P. 2010. Forgetting freshwater: The effect of modernization on water values in remote Arctic communities. Society and Natural Resources 23: 254-268.
59. †Altaweel, M., †Alessa, L., and †**Kliskey, A**. 2010. Social influence and decision-making: evaluating agent networks in village responses to change in freshwater. Journal of Artificial Societies and Social Simulation 13(1) 15. <http://jassss.soc.surrey.ac.uk/13/1/15.html>.

60. †Altaweel, M., †Alessa, L.,† **Kliskey, A.** 2009. Forecasting resilience in arctic societies: creating tools for assessing social-hydrological systems. Journal of the American Water Resources Association 45(6): 1379-1389. DOI: 10.1111/j.1752-1688.2009.00370.x.
61. †Alessa, L.,†**Kliskey, A**., and Altaweel, M. 2009. Toward a typology of social-ecological systems. Sustainability: Science, Practice, & Policy 5, 31-41. http://ejournal.nbii.org/archives/vol5iss1/0811-034.alessa.html.
62. **Kliskey, A**., Alessa, L, and Barr, B. 2009. Traditional ecological knowledge and marine resilience. In: Managing for resilience: new directions for marine ecosystem-based management. K. McLeod and H. Leslie (eds.). Island Press Publishers.
63. †**Kliskey, A.**, †Alessa, L., Lammers, R., Arp, C., White, D., Busey, R., Hinzman, L. 2008. The Arctic water resources vulnerability index. Environmental Management 42, 523-541.
64. Alessa, L., Chapin, F.S., and **Kliskey, A.** 2008. Anthropogenic biomes: a key contribution to earth-system science. Trends in Ecology and Evolution 23, 529-531.
65. †Alessa, L., †**Kliskey, A**., White, D., Busey, B., Hinzman, L. 2008. Freshwater vulnerabilities and resilience on the Seward Peninsula as a consequence of landscape change. Global Environmental Change 18, 256-270.
66. †**Kliskey, A**., †Alessa, L., Brown, G. 2008. Social-ecological Hotspots Mapping: a spatial approach for identifying coupled social-ecological space. Landscape and Urban Planning 85, 27-39.
67. †Alessa, L., †**Kliskey, A.**, Williams, P., White, D., Barton, M. 2008. Memory, water and resilience: Perception of change in freshwater resources in remote Arctic resource-dependent communities. Global Environmental Change 18, 153-164.
68. †Alessa, L., †**Kliskey, A.**, Williams, P. 2007. The distancing effect of modernization on the perception of water resources in Arctic communities. Polar Geography 30, 175-191.
69. Chambers, M., White, D., Hinzman, L., Strang, E., Alessa, L., **Kliskey, A**. 2007. Potential impacts of a changing Arctic on freshwater resources on the Seward Peninsula. Journal of Geophysical Research 112, G04S52.
70. White, D., Hinzman, L., Alessa, L., **Kliskey, A**. et al. 2007. The Arctic freshwater system: changes and impacts. Journal of Geophysical Research 112, G04S54.
71. Ewers, R., **Kliskey, A.,** Walker, S., Rutledge, D., Harding, J.S., Didham, R. 2006. Past and future trajectories of forest loss in New Zealand. Biological Conservation 133: 312-325.
72. Eikaas, H, McIntosh, A., **Kliskey, A**. 2006. A critical review of some abiotic factors and their influence in structuring diadromous fish: new technologies, new advances, and a new variable. Transactions in GIS, 10: 469-483
73. Eikaas, H, **Kliskey, A**., McIntosh, A. 2005. Spatial modeling and habitat quantification for two diadromous fish in New Zealand streams: a GIS-based approach with application for conservation management. Environmental Management 36, 726-740.
74. Eikaas, H, McIntosh, A., **Kliskey, A**. 2005. Catchment and site scale influences on presence of koaro (*Galaxias brevipinnis* Gunther) in New Zealand streams. Freshwater Biology, 50: 527-538.
75. **Kliskey, A.**, and Byrom, A.E. 2004. Development of a GIS-based methodology for quantifying predation risk in a spatial context. Transactions in GIS, 8, 13-22.
76. Alessa, L., **Kliskey, A**., Robards, M. 2004. Ecological impacts of ecotourist visitation on macroalgal beds in Pacific Rim National Park Reserve. In. R. Buckley (ed.). Environmental Impacts of Ecotourism. CAB International; Wallingford, UK. pp. 349-360.
77. Brown, G., Smith, C., Alessa, L., **Kliskey, A**. 2004. A comparison of perceptions of biological values with scientific assessment of biological importance. Applied Geography, 24, 161-180.
78. **Kliskey, A.**, Alessa, L., Robards, M. 2004. Extending the wilderness concept as a cultural resource. In D. Parsons and D. Cole (eds.). Proceedings of the George Wright Society and National Park Service Biennial Conference 2003. George Wright Society, Washington, DC.

79. Alessa, L., Bennett, S., **Kliskey, A.** 2003. Effects of knowledge, personal attribution and perception of ecosystem health on depreciative behaviors in the intertidal zone of Pacific Rim National Park and Reserve. Journal of Environmental Management, 68, 207-218.
80. **Kliskey, A**., and Byrom, A. 2001. A GPS-assisted approach to measuring fine-scale foraging patterns of small mammals. In: *Proceedings of Animal Tracking using GPS*. Macaulay Land Use Research Institute, Aberdeen, Scotland, 2001. pp. 45-49.
81. Higham, J., Kearsley, G., and **Kliskey, A.** 2001. Multiple wilderness recreation management: sustaining wilderness values – maximising wilderness experiences. In Cessford, G. (ed.). The State of Wilderness in New Zealand. Wellington, Department of Conservation. pp 81-94.
82. Higham, J., Kearsley, G., and **Kliskey, A**. 2001. Wilderness perception scaling in New Zealand: an analysis of wilderness perceptions held by users, nonusers and international visitors. In Wilderness Science in a time of change conference – Volume 2: Wilderness within the context of larger systems. S.F. McCool, D.N. Cole, W.T. Borrie, and J. O'Loughlin (comps.). Proceedings RMRS-P-15-Vol-2. Ogden, UT: USDA, Forest Service, Rocky Mountain Research Station
83. **Kliskey, A.** 2000. Recreation terrain suitability mapping: a spatially explicit methodology for determining recreation potential for resource use assessment. Landscape and Urban Planning, 52, 33-43.
84. **Kliskey, A.,** Byrom, A.E. and Norbury, G.L . 2000. Spatial prediction of predation in the landscape: a GIS-based approach to predator-prey interactions for conservation management. In: Proceedings of 4th International Conference on Integrating GIS and Environmental Modelling. Banff, Alberta. http://www.colorado.edu/research/cires/banff/content.html.
85. **Kliskey, A.** 1999. Simulating and evaluating alternative resource-use strategies using GIS-based habitat suitability indices. Landscape and Urban Planning, 45, 163-175.
86. **Kliskey, A.** 1998. Linking the wilderness perception mapping concept to the recreation opportunity spectrum. Environmental Management, 22, 79-88.
87. **Kliskey, A.** 1998. Mapping wild systems: the application of GIS to wilderness and wildlife management. In: Proceedings of International Conference on Modelling Geographical and Environmental Systems with Geographical Information Systems. International Geographical Union - Commission on Modelling Geographical Systems, Hong Kong, 1998. 53-58.
88. **Kliskey, A.** 1995. Wilderness perception mapping: using GIS in wilderness management in New Zealand. New Zealand Geographer, 51, 28-34.
89. **Kliskey, A.** 1995. The role and functionality of GIS as a planning tool in natural resource management. Computers, Environment and Urban Systems, 19, 15-22
90. **Kliskey, A.** Hoogsteden, C. and Morgan, R. 1994. The application of spatial-perceptual wilderness mapping to protected areas management in New Zealand. Journal of Environmental Planning and Management, 37, 431-445.
91. **Kliskey, A.** 1994. A comparative analysis of approaches to wilderness perception mapping. Journal of Environmental Management, 41, 199-236.
92. **Kliskey, A.** 1994. Mapping multiple perceptions of wilderness in New Zealand II: an alternative multivariate approach. Applied Geography, 14, 308-319.
93. **Kliskey, A.,** and Kearsley, G. 1993. Mapping multiple perceptions of wilderness in New Zealand. Applied Geography, 13, 202-223.

External research grants received (22 awards or cooperative agreements totaling $60.5M) 2018 activity

Funding Agency	Division	Proposal Number	Proposal Title	Role	Status	Status Date	Amount
NSF	OIA	1757324	GEM3 - RII Track-1: Linking Genome to Phenome to Predict Adaptive Responses of Organisms to Changing Landscapes	Sr-P	Awarded	10/1/2018	$2,881,363.00
NSF	SES	1639524	INFEWS/T3: Innovative SETS solutions to waste reuse in food, energy, and water systems (ReFEWS)	Co-I	Awarded	9/6/2016	$2,998,275.00
NSF	PLR	1642847	RCN: EyesNorth - A Research Coordination Network of Community-Based Observing Initiatives in the Arctic	Co-I	Awarded	8/22/2016	$499,090.00
NSF	EAR	1520873	Hazards SEES: An Integrated Natural-Human Systems Assessment of Wildfire Vulnerability	Sr-P	Awarded	7/27/2015	$2,965,170.00
DHS	S&T OUP		Arctic Domain Awareness Center of Excellence	Co-I	Awarded	1/17/2015	$3,000,000.00
NSF	PLR	1433155	Alaska Community-based Monitoring Best Practices Workshop	Co-I	Awarded	7/23/2014	$40,290.00
NSF	ARC	1355238	AON: Community-based Observation Network for Adaptation and Security	Co-I	Awarded	3/10/2014	$549,997.00
NSF	DEB	1231233	RCN-SEES: The mountain social-ecological observing network (MtnSEON)	Co-I	Awarded	8/12/2012	$749,673.00
NSF	OIA	1208927	Alaska Adapting to Changing Environments (Alaska ACE)	Sr-P	Awarded	7/13/2012	$20,000,000.00
NSF	SES	1142549	Collaborative proposal: Workshop on Best Practices for Integrating the Social Sciences and Natural Sciences for Sustainability	Co-I	Awarded	1/27/2012	$96,943.00
NSF	BCS	1114851	CNH: Understanding the Consequences of Water-Use Decisions in a Dynamic Environment	PI	Awarded	9/13/2011	$1,499,373.00
DoI	USGS		USGS Alaska Climate Science Center	Co-I	Awarded	8/27/2010	$6,100,000.00

NSF	PLR	1044906	Indigenous Ecological Knowledges and GIS: Exploring ontologically compatible techniques and technologies	Co-I	Awarded	8/24/2010	$50,309.00
NSF	EPS	919608	Collaborative Research: Cyberinfrastructure for Climate Change Impacts across Alaska and Hawaii	Sr-P	Awarded	8/28/2009	$3,000,000.00
NSF	PLR	856305	Bering Sea Sub Network: A Distributed Human Sensor Array to Detect Arctic Environmental Change	Co-I	Awarded	8/26/2009	$545,143.00
NSF	EPS	934783	Living on Earth: Alaska NSF EPSCoR Social-Ecological Systems Workshop	Co-I	Awarded	5/7/2009	$155,236.00
NSF	PLR	755966	IPY: Municipal Water Systems and the Resilience of Arctic Communities	Co-I	Awarded	7/30/2008	$888,050.00
NSF	EPS	701898	Resilience and Vulnerability in a Rapidly Changing North: The Integration of Physical, Biological and Social Processes	Sr-P	Awarded	6/13/2007	$9,000,000.00
NSF	PLR	634079	IPY: Bering Sea Sub-Network: International Community-Based Observation Alliance (BSSN)	Co-I	Awarded	5/31/2007	$3,430,566.00
NSF	PLR	531148	Collaborative Research: Humans and Hydrology at High Latitudes	Co-I	Awarded	7/29/2005	$190,450.00
NSF	PLR	328686	The Intersection between climate change water resources and humans in the Arctic	Sr-P	Awarded	9/3/2003	$1,646,687.00
NSF	PLR	327296	Social-Ecological Resilience, Sustainability, and the Future of Remote Resource Dependent Communities	Co-I	Awarded	7/26/2003	$242,371.00
			Total funds awarded as PI, Co-I, or Sr-P 2003 - 2017				***$60,528,986.00***

Integration Products & Tools

1. **Social-ecological Systems Current Practices Archive (SES-CPA)**
   https://sescpa.net

   The SES-CPA helps to articulate and evolve core theories in SES science by collating the most successful and scientifically accurate methods in SES science. The SES-CPA includes the formation processes of interdisciplinary teams as well as the methods used to engage partner communities, collaboratively develop the science, and apply co-produced knowledge to address complex environmental issues. The SES-CPA includes a transparent framework for SES practitioners to upload SES studies, to peer-review methodologies, and to rank practices so that they reflect the assessments of SES researchers and practitioners. The SES-CPA comprises the work and reviews of international practitioners to provide a robust understanding of SES science, reflecting diverse worldviews, contexts, and experiences.

2. **Arctic Water Resources Vulnerability Index (AWRVI)**
   http://www.uidaho.edu/crc

   People in the Arctic face uncertainty in their daily lives as they contend with environmental changes at a range of scales from local to global. Freshwater is a critical resource to people and while water resource indicators have been developed that operate from regional to global scales and for mid-latitude to equatorial environments, no appropriate index exists for assessing the vulnerability of Arctic communities to changing water resources at the local scale. The Arctic Water Resource Vulnerability Index (AWRVI) is a tool that Arctic communities can use to assess their relative vulnerability – resilience to changes in their water resources from a variety of biophysical and socioeconomic processes. AWRVI is based on a social-ecological systems perspective that includes physical and social indicators of change and provides a sound foundation on which to build water policies in the State of Alaska and the North in general.

   Alessa, L., **Kliskey, A.**, Lammers, R.B., White, D.M., Busey, R., Arp, C. and Hinzman, L. 2007. The Arctic Water Resources Vulnerability Index. United Nations Sustainable Development Programme. Environmental Vulnerability Indices, Water Indices, Arctic.

3. **Social-ecological Systems (SES) Hotspots Mapping**
   http://www.uidaho.edu/crc

   We have developed methodologies that can be used to combine social and biophysical information in a temporal and spatially explicit format. Using GIS as a simple tool and spatial analysis techniques we can analyze both the geographic and temporal extent of processes and interactions. An important component of this analysis is to understand areas of perceived value in the environment (e.g., economic) in relation to actual data. Below are some maps for the Kenai and Seward Peninsulas showing "vulnerability hotspots". Vulnerability definitions are derived from community-based data as well as expert consensus. The social- ecological system (SES) may then be visualized as a critical first step for resource management. Our focus is on balanced resource development: from tourism to mining. http://www.youtube.com/watch?v=1XbfL3uzt04

4. **Forecasting Environmental Resilience of Arctic Landscapes (FERAL)**
   http://ram.uaa.alaska.edu/Feral.html

   FERAL represents the first integrated social-hydrological modeling and simulation tool that can be used to assess the use and perceptions of water in the Arctic. The tool integrates multiple modeling methods to allow users to address social and social-hydrological dynamics. Models are made to interact, with the actions of one model affecting the actions of other models and govern the behaviors of social and natural

components addressed in a FERAL scenario. FERAL is the only Decision Support Tool (DST) currently being developed in Alaska which allows managers to 'walk through' policy decision outcomes in a virtual world.

Altaweel, M., Alessa, L. and **Kliskey, A.** 2009. FERAL, an Agent Based Model to Assess Resilience in Rural Communities. OpenABM Archive. Openabm.org.

5. **Community-based Observing Network for Adaptation and Security (CONAS)**
http://www.bssn.net
CONAS is part of the Arctic Observing Network initiative funded by the National Science Foundation. It is the only all-indigenous, regional initiative of community-based organizations in Western Alaska and Northeast Russia. It functions as a distributed human-sensor array for the collection and local management of data CONAS is to improve the scientific knowledge of the environmental changes in the Bering Sea region that have significance for understanding of pan-arctic processes, enabling scientists, arctic communities and governments to predict, plan and respond to these changes.

6. **The Arctic Adaptation Exchange Portal (AAEP)**
http://arcticadaptationexchange.com/
This is an electronic portal that was developed in partnership with the Government of Canada to allow residents in remote Arctic communities to relay their experiences and methods for adapting to changing operating environments in the circumpolar North. It was funded by leveraging several resources including support from the National Science Foundation and the Government of Canada (Natural Resources Canada). The resource is designed to work in low-bandwidth regions, be easy to use and provide different users with different types of information rather than overload all users with data that may not be relevant to their specific needs.

7. **Community Based Observing Networks and Systems (CBONS)**
This is a DHS-funded partnership between remote Indigenous communities on the West Coast who act as high fidelity observers of environmental change. This ensures that infrastructure geared toward disaster resilience can be optimally designed, situated and staffed in ways that are consistent and resonant with human social and cultural values. CBONS is paired with the Field Information Support Tool (FIST). We conducted the first remote test of this capability in August 2016 during the joint Operation Chinook exercise with the Canadian Department of Defense. The After Action Report (AAR) is available upon request.

8. **SalmonSim**,
A Virtual World for Decision Making: Co-founder; University of Idaho (with L. Alessa, J, Anderson, R. Lew).
SalmonSim is the only tool of its kind. It allows for the visualization of entire watersheds that are generated by aggregated and coulpled variable-specific models. You can watch a demonstration of it here:

https://www.youtube.com/watch?v=oijy8e1fw2k
SalmonSim Introduction

UNIVERSITY SERVICE & LEADERSHIP

Recent administrative and service experience

2013 – present: Co-Director of the Center for Resilient Communities
2004 – 2013: Co-Director of Resilience and Adaptive Management Group
2010 – 2013: Co-PI and UAA representative for USGS Alaska Climate Science Center
2009 – 2013: member and trainer on UAA National Coalition Building Initiative (NCBI)
2008 – 2011: College of Arts and Sciences Research Council
2007 – 2013: Coordinator for Geographic Information Network of Alaska (GINA) at UAA
2006 – 2009: Department of Geography & Environmental Studies steering committee
2005 – 2010: Chair - Department of Biological Sciences Resources and Space Committee
2004 – 2013: UAA Technical representative on Collaborative Ecosystem Studies Unit

OUTREACH & EXTENSION

Recent Community Outreach events

Sep 2016 onwards: Magic Valley Stakeholder Advisory Group for Food, Energy, and Water systems.
Feb 2015 onwards: Southern Idaho Economic Development collaboration with CRC.
Dec 2014 onwards: Greater Yellowstone Business Consortium collaboration with Center for Resilient Communities to host and develop the Greater Yellowstone Framework for sustainability.
Apr 2014 onwards: Idaho Rural Partnership collaboration with Center for Resilient Communities on meta-analysis of Idaho community reviews.
Apr 2012 onwards: Alaska EPSCoR Southcentral Testcase collaboration with Kenaitze Indian Tribe to publish "Kenaitze Youth Speaks" setting out youth perspectives on watershed change and adaptation.
Jan 2010 - Nov 2013: Resilience & Adaptive Management Group collaboration with Eklutna Indian Tribe to create a geo-database approach to documenting and representing community knowledge of landscape.

Selected conference and symposium contributions

Jun 2018: DHS Resilience Summit, Washington, DC.
Oct 2014: NSF Mountain Social Ecological Observation Network Annual Meeting, Coeur d'Alene, ID. Presenter.
May 2014: NSF Mountain Social Ecological Observation Network Workshop, Chico Hotsprings, MT. Facilitator.
May 2014: Kenai River Watershed a Research & Outreach Workshop, Soldotna, AK. Organizer and Chair.
Apr 2014: Idaho Community Review Workshop, Moscow, ID. Organizer and Chair.
May 2013: Kenai River Watershed Research & Outreach Workshop, Soldotna, AK. Organizer and Chair.
Feb 2013: Indigenous Science Symposium, Olympia, WA. Co-organizer.
Oct 2012: NSF Workshop in Best Practices for integrating social sciences with sustainability science. Chicago, IL. Co-organizer and facilitator.
Mar 2011: Tempe, AZ. Resilience 2011 Conference. Co-chair and speaker.
Feb 2011: NSF Indigenous GIS Workshop, Kilauea, HI. Co-organizer.
Feb 2011: Alaska EPSCoR Living on Earth II Workshop, Anchorage, AK. Co-organizer.
Sep 2010: Annual meeting of American Association for Advancement of Sciences (AAAS) Arctic Division. Session co-chair and speaker. Anchorage, AK.
Dec 2009: NSF AON National meeting, Boulder, CO. Invited speaker.
Sep 2009: Beringia Days International Meeting, Anadyr, Russia. Speaker.
Aug 2009: Ecological Society of America Annual Meeting, Albuqurque, NM. Invited speaker.

Feb 2008: American Association for Advancement of Sciences (AAAS) National Conference, Boston. Invited speaker.
Nov 2008: NSF EPSCoR Water Dynamics workshop, Burlington, VT. Invited speaker.
Apr 2008: International Resilience Conference, Stockholm. Speaker.