GLP – a joint research agenda of IGBP and IHDP

GLP newsletter

Newsletter of the Global Land Project
International Project Office

June 2007 Issue No. 2

Editorial

Welcome to this second Newsletter of the Global Land Project. After establishing the International Project Office (IPO) in Copenhagen in September 2006 and a meeting of the Scientific Steering Committee (SSC) in Beijing (November 2006), the GLP begins to take shape. In the past months we have focused on networking and planning for activities such as workshops.

GLP has no budget to contract and conduct research as such. GLP lives almost exclusively through the efforts and cooperation of individuals and (endorsed) projects that have funding from other sources, but who see a mutual interest in placing their project (or part of it) in the context of the Global Land Project.

We hope to be able to demonstrate the added value and synergies that GLP will provide in return. Workshops and other activities organized by GLP could lead to new cooperation's and networking and open new venues for publications. In a more general sense, being part of GLP could enable scientists to place their local or regional studies in a global context. GLP also hopes to initiate a stronger integration between the natural and the social sciences, not only in its synthesis activities, but also among existing and planned projects.

In this second GLP newsletter we provide you with an overview of the emerging GLP network by presenting the projects, activities and networks we have endorsed so far. The 3 nodal offices that GLP has set up in Japan (Sapporo), China (Beijing) and the UK (Aberdeen) will take a lead in initiating GLP activities in the form of workshops and educational activities and will be introduced in more detail in the next newsletter.

Contents of this issue:

NEWS - summary

- **Nodal offices:** Sapporo Nodal Office hosted the first GLP workshop in February 2007. Tobias Langanke from the GLP IPO took part in the workshop and visited the Office in Sapporo. The Beijing and Aberdeen Nodal Offices are also established and will start activities soon**.** The Aberdeen Nodal Office is recruiting an Executive Officer and plans two workshops in late 07/early 08.

- **Endorsement:** The endorsement process is ongoing and we started working on practical cooperation ideas for the various projects. We had about 20 applications total (May 2007), including networks and PhD projects. 17 projects/networks have been endorsed so far. For an overview and more details about the currently endorsed projects see page 8 or follow the links provided on our webpage.

- **Activities and networking: A** number of workshops and conferences were either initiated by GLP or endorsed**.** Extensive networking activities of the GLP IPO with individual projects and other networks were the focus of the first months of the IPO in operation. For more details see page 3.

- **GLP network:** More than 530 scientists from more than 55 countries have signed up on the GLP homepage since mid-November 2006. Most interest so far comes from the USA (117 individuals), China (72), Japan (39), Germany (27) and UK (22).

- **Website:** An updated version of the GLP homepage including the "GLP Science Plan and Implementation Strategy" is available under www.globallandproject.org.

New Faces

A warm welcome to Dr. Cheikh Mbow, the latest member of GLP's Scientific Steering Committee. Cheikh Mbow is attached to the *Institut des Sciences de l'Environnement, Faculté des Sciences et Techniques, Laboratoire d'Enseignement et de Recherche en Géomatique (LERG/ESP)* at the *Cheikh Anta Diop de Dakar* University in Dakar, Senegal, where he is working in the field of land system science. Cheikh has a strong interdisciplinary profile (biology – geography – and recently also human adaptation to global change), is well connected in the francophone Africa and working closely with relevant communities in US, Canada and Europe.

IPO networking activities

- February 1-2th: IARU (International Alliance of Research Universities) International Symposium *"The Evolution of Sustainability Science, Energy, Resources and Environment"* hosted by Tokyo University. Anette Reenberg with presentation on "*Land Systems Research - Understanding Dynamics of coupled human-environmental systems.*"
- February 14th: visit by Helmut Haberl at IPO.
- February 21th: visit at IPO by Karl Chang (PI for GLP-endorsed "*Aquaculture in Taiwan" project*").
- February 24th-28th: visit by Tobias Langanke at Sapporo Nodal Office and Sapporos workshop on "*Institutions and land Systems Sustainability*". Presentation on "*Institutions in the coupled human-environmental system"*. The workshop was used to start discussing GLP's interest in institutions and first steps towards an institutions research agenda for GLP. Please see detailed report on page 5.
- March 10-18th: Participation of Anette Reenberg and Tobias Langanke in IGBP/IHDP SC meeting in Brazil. Participation in "*First Brazilian Symposium on Global Environmental Change"*. Rio de Janeiro, March 11-12.
- April 3-6th: Annual team meeting of the NASA funded LCLUC (Land Cover-Land Use Change). Present from the GLP-SSC: Billie Turner II (with presentation) and Dennis Ojima. Encouragement by Garik Gutman (head of programme) for LCLUC projects to seek endorsement by GLP! Please see detailed report on page 6.
- May 2-4th: NEESPI "Summit" in Helskini and iLEAPS workshop. NEESPI is endorsed by GLP, the aim of the meeting (for the IPO) was to establish a strategy regarding possible cooperation with NEESPI. Please see detailed report on page 7.
- May 7-8th: Conference on "*Climate Change and Sustainable Development in less developed countries"* (joint activity of the University of Copenhagen 'Rio-initiative', the International Alliance of Research Universities (IARU) and the GLP). Please also see http://www.geogr.ku.dk/projects/rio/index.shtml for more details.
- June 2-4th: Anette Reenberg senior speaker at the 3rd AIMES young scholars network workshop on "*Modelling Land-Use Decision making"*. Presentation on "*Decision making and land use trends"* http://www.aimes.ucar.edu/activities/YSN/2007_UK/YSN_BRISTOL.shtml
- June 4-5th: Anette Reenberg "*Geographical research on land use - Global Environmental Change in the coupled socio-environmental System"*. Presentation at Biofuel Assessment Conference "*Modelling Global Land Use and Social Implications in the Sustainability Assessment of Biofuels"*, Copenhagen, Denmark. Organized by Technical University of Denmark, University of Southern Denmark, Danish Institute for Product Development and OECD. http://www.biofuelassessment.dtu.dk/
- June 7th: Tobias Langanke (IPO) visit Aberdeen Nodal Office.
- Late 2007/early 2008: 2 modelling workshops Aberdeen?
- October 22-26th: SSC meeting Copenhagen followed by workshop on "*Globalisation and land use*" (1 day) and LaSyS Conference. http://www.lasys.dk/

GLP network and database

More than 530 individuals from more than 55 countries have signed up on the GLP webpage since November 2006. We will use this database to send out our bi-annual newsletter and occasional email-updates.

We are also exploring approaches to make the GLP webpage more interactive in the future, with a moderated forum and the possibility to contact other members of the network.

The country of origin of the scientists in our network is currently strongly biased towards a small number of countries. Most members come from the USA (117), China (72), Japan (39), Germany (27) and the UK (22), to mention only the top-five.

At this stage the low level of participation from south and central America, central Asia, the middle East and Africa is very obvious and needs to be addressed.

Country of residence	Number	Country of residence	Number
USA	117	Philippines	3
China	72	Russia	3
Japan	39	Thailand	3
Germany	27	Uganda	3
United Kingdom	26	Algeria	2
The Netherlands	19	Argentina	2
Spain	18	Brazil	2
Australia	15	Burkina Faso	2
Belgium	13	Ethiopia	2
France	13	Israel	2
Sweden	11	Lao PDR	2
Canada	10	Peru	2
India	10	Uzbekistan	2
Switzerland	10	Zimbabwe	2
Unknown	10	Belarus	1
Austria	7	Bulgaria	1
Denmark	6	Egypt	1
Nepal	6	Estonia	1
Italy	5	Finnland	1
Kenya	5	Ghana	1
Taiwan	5	Indonesia	1
New Zealand	4	Ireland	1
Portugal	4	Malaysia	1
Sri Lanka	4	Morocco	1
Botswana	3	Nigeria	1
Colombia	3	Poland	1
Greece	3	Syria	1
Norway	3	Togo	1
Pakistan	3		

If you would like to be part of the GLP network and receive our newsletters (bi-annual) and email-updates (max. every two months):
Please visit www.globallandproject.org

Under "**Getting Involved**" you find our "**Newsletter Registration**".

Report: Sapporo Workshop "Institutions and land Systems Sustainability"

February 27-28th 2007, Sapporo, Japan

Not only was the GLP Nodal Office in Japan the first of our nodes (i.e. offices established, staff in place), it was also the first to start GLP activities in the form of a workshop held in February in Sapporo.

This was made possible by the dedication and hard work of Dr. Ademola Braimoh and the great support of the University of Hokkaido, not least the local advisory committee with Professor Noriyuki Tanaka, Professor Takashi Koyama and Professor Mitsuru Osaki.

The first day of the workshop with 5 presentations was held as an open workshop with participation of the interested public, while the second day was a closed working session with the smaller group of invited speakers.

The first days presentations ranged from overview presentations on "*Mismatches in land systems governance*" (Sirkku Juhola, United Nations University, Japan) and "*Institutional interactions and land systems sustainability*" (Claudia TenHave, United Nations University, Japan) to presentations with a more regional focus. Kazuhiro Ueta from Kyoto University talked about "*Environmental Governance for Land Management in Japan*" and Taisuke Miyauchi gave a talk on "*Legitimacy and environmental governance: a case study of Kitakami River in Japan*", while Rajesh Daniel (Chang Mai University, Thailand) presented on "*Governance at multiple scales for land systems sustainability*". The last presentation of the first day was delivered by Franz Gatzweiler from the University of Bonn, on "*Designing Institutions for land systems sustainability*".

Some of the workshop participants in front of the Sapporo Nodal Office

In its work on the institutional dimensions of land system change the GLP can build on the rich foundation of research conducted under the IDGEC (Institutional Dimensions of Global Environmental Change) project that is currently publishing it's synthesis results from a decade of research.

From the perspective of the GLP the second day of the workshop was a brainstorming that helped define GLP's interest and approach to the issue of institutions.

More information on the workshop and the presentations of the participants can be found on: http://www.glp.hokudai.ac.jp/

More information and a wealth of synthesis documentation on the IDGEC project: http://www2.bren.ucsb.edu/~idgec/science/synthesis.html

Report: NASA LCLUC Science Team Meeting

April 4-6th 2007, University of Maryland, USA

Research funded by the NASA LCLUC (Land Cover and Land Use Change) program http://lcluc.umd.edu/ has over the years closely cooperated with GLP's predecessor project LUCC (Land Use/Cover Change). As soon as GLP had set up its International Project Office in September 2006 we were approached by the program director Garik Gutman with an invitation and encouragement to continue this cooperation.

Not only do the aims of GLP and LCLUC correspond very well, but we also have a close connection through the fact that two current GLP SSC members have LCLUC funded projects (Dennis Ojima and Billie Turner II), and some of the scientists active in LCLUC were contributing greatly in the writing of GLP's science plan.

Tobias Langanke from the GLP IPO therefore attended the last LCLUC Science Team Meeting, which was held at the University of Maryland, April 4-6th 2007. LCLUC currently holds two annual Science Team Meetings to provide an opportunity for PI's to present their research findings, to learn about new NASA, USGCRP (US Global Change Research Program), and international program developments, and also to provide feedback to the program management on future missions and research directions.

GLP SSC member Billie Turner II (right) and NEESPI Project Scientist Pavel Groisman

A number of overview presentations, summarizing the work of several projects on a certain topic were supplemented by a large poster exhibition in which the individual projects were introduced in more depth. A short slot was made available for a GLP presentation and Garik Gutman encouraged all projects to consider GLP endorsement. One of the LCLUC funded projects (FLAMES) is endorsed by GLP already, and a number of individuals were approached during the meeting and promised to submit projects in the near future.

Report NEESPI summit

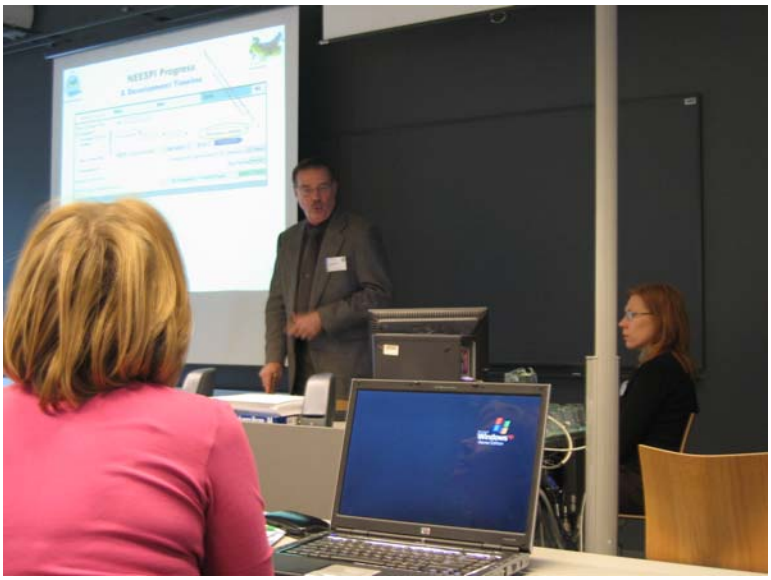
May 3-4th 2007, Helsinki, Finland

The Northern Eurasia Earth Science Partnership Initiative (NEESPI) is growing fast and currently includes about 400 scientists, 200 institutions, active in about 100 projects in 30 countries. The NEESPI "Summit" (May 3-4th) was hosted by the iLEAPS IPO at the University of Helsinki in Finland.

The Summit brought together the representatives of the Earth System Science Partnership Programs and Projects, members of the NEESPI Steering and Coordinating Committee, and program managers and representatives from contributing organizations who have vested interests in Northern Eurasia climatic and environmental studies. Prior to the Summit (on May 2, 2007), a joint NEESPI-iLEAPS Scientific Symposium on "*Research in Northern Eurasia on Land-Atmosphere Interactions, Water and Biogeochemical Cycles*" was held at the Finnish Meteorological Institute.

The presentations from the NEESPI "Summit" are available from the NEESPI webpage (http://neespi.org/).

The presentations from the NEESPI-iLEAPS Scientific Symposium on "Research in Northern Eurasia on Land-Atmosphere Interactions, Water and Biogeochemical Cycles" are available from the iLEAPS homepage http://www.atm.helsinki.fi/ILEAPS/index.php?page=pres_neespi_symp)



Donald Deering (NASA), NEESPI ex-officio Project Manager

The NEESPI science team leaders presented the range of research within the different science teams of the program (Land Cover, Water Cycles, Biogeochemical Cycles, Cold Land Processes, Dry Land Processes, Atmospheric Aerosols and Air Pollution and Education and Human Dimension).

This was followed by statements of a number of programmes and ESSP projects associated with NEESPI, such as WCRP, IGBP, IHDP, iLEAPS, GLP, GWSP, GCP, and GEWEX. These projects and programs discussed ideas on how to cooperate with NEESPI. Considering the large size and complexity of the NEESPI network GLP suggests to base any cooperation on close contact with the relevant NEESPI Focus Research Centers (FRC), which themselves coordinate and facilitate a large number of individual projects. Of specific interest for GLP would be for example the NEESPI Center for Land Cover Studies, and Center for Land Use Studies (based at the University of Jena and University of Colorado respectively). The close spatial proximity of the GLP Nodal Office in Beijing with the NEESPI Beijing Regional Focus Research Center for Dry Land Processes Studies should also lead to synergies.

Overview: Endorsed Research Projects and Programmes

The following list of projects reflects a wide ranging interest in contributing to the GLP. These projects, networks, programmes or PhD projects have applied for endorsement status within the last months and after a short review process have been granted GLP endorsement by GLP. This formal recognition of mutual interest in cooperation is a first step in establishing the practical details of a real cooperation. Some of these projects introduce themselves with a short summary of their work below.

- **Rationalising Biodiversity Conservation in Dynamic Ecosystems (RUBICODE).** *Paula Harrison, Environmental Change Institute, Oxford University, UK.*
- **North American Land Change: Decision Making in Coupled Human-Environment Systems.** *Steven M. Manson, Department of Geography, University of Minnesota, Minneapolis, USA.*
- **Fire-Land-Atmosphere Modeling and Evaluation for Southeast Asia (FLAMES).** *Darla K. Munroe, Department of Geography, Ohio State University, Columbus, USA.*
- **Sustainable Aquaculture Project.** *Kang-tsung (Karl) Chang, Department of Geography, National Taiwan University, Taipei, Taiwan.*
- **The Boston-Area Climate Experiment.** *Jeffrey Dukes, Department. of Biology, University of Massachusetts, Boston, USA.*
- **Refining plant functional classifications for earth system modelling.** *Sandra Lavorel, Colin Prentice, Sandra Diaz, Paul Leadley.*
- **Sustainable resource use or imminent collapse? Climate, livelihoods and production in the Southwest Pacific (CLIP).** *Department of Geography and Geology, University of Copenhagen and the Danish Meteorological Institute.*
- **History Database of the Global Environment (HYDE).** *Kees Klein Goldewijk, Netherlands Environmental Assessment Agency (MNP).*
- **The southern Yucatan peninsular region (SYPR) project. Landscape Vulnerability-Resilience in the SYPR**. *B. L. Turner II, Geography, Clark University***.**
- **Monitoring Land Use/Land Cover Changes and its Envionmental Impacts in Karst Mountain Ecosystem: a spatial analysis integrating RS, GIS, social survey and climate data.** *Huang Qiuhao, Department of Resources, Environment & Geography, Peking University, Beijing, China.*
- **A Political Ecology of Postsocialist Land Use Change.** *Johannes Stahl, Institute for Agricultural Economics and Social Sciences, Humboldt University, Berlin, Germany.*
- **Tools for management and Sustainable Use of Natural vegetation in West Africa (SUN).** *Anne Mette Lykke, Department. of Systematic Botany, Aarhus University, Denmark.*

- **ARIDnet** (A Research Network for Studies of Global Desertification).
- **TERACC (**Terrestrial Ecosystem Response to Atmospheric and Climatic Change).
- **NEESPI** (Northern Eurasia Earth Science Partnership Initiative).
- **MRI** (Mountain Research Initiative).

Details: Endorsed Research Projects

Rationalising Biodiversity Conservation in Dynamic Ecosystems (RUBICODE)

Paula Harrison, Environmental Change Institute, Oxford University, UK.

The RUBICODE project (www.rubicode.net) will review and develop concepts of dynamic ecosystems and the services they provide. Those components of biodiversity which provide specific services to society are being defined and evaluated in order to increase our understanding of the value of biodiversity services and, consequently, of the cost of losing them. This will give decision-makers a more rational basis on which to prioritise conservation strategies and will improve the understanding of the need for adequate conservation policies, which are essential to halting biodiversity loss.

North American Land Change: Decision Making in Coupled Human-Environment Systems

Steven M. Manson, Department of Geography, University of Minnesota, Minneapolis, USA.

The NALC project centers on the continued development of a multiscalar, dynamic, and spatially-explicit computer model, HELIA or Human-Environment Land Integrated Assessment. This model examines the interactions among individuals, social structures, and environmental systems that define deforestation in the Southern Yucatan of Mexico and urbanization in the Twin Cities of the United States. In the first half of 2007, our prime research foci are scaling agent-based models to handle thousands of agents in a landscape comprised of millions of grid cells and deriving a single method to represent decision makers that range from urban home seekers to rural agriculturalists.

In terms of outreach, we are at the prototype stage of the Minnesota Interactive Internet Mapping (MIIM) initiative. Similar to popular internet mapping services such as Google Maps that place digital maps and imagery online, MIIM offers two key advantages for outreach and instruction. First, MIIM hosts data ranging from census information and street networks to protected wetlands and aerial photography. These data can be used to teach subjects ranging from urban studies to environmental science. Second, MIIM allows students, faculty and the public to upload their own data and observations via onscreen digitizing, global positioning system (GPS) hand sets, or third-party digital maps available over the internet.

For more information, see www.hegis.umn.edu/nalc.htm

Fire-Land-Atmosphere Modeling and Evaluation for Southeast Asia (FLAMES)

Darla K. Munroe, Department of Geography, Ohio State University, Columbus, USA.

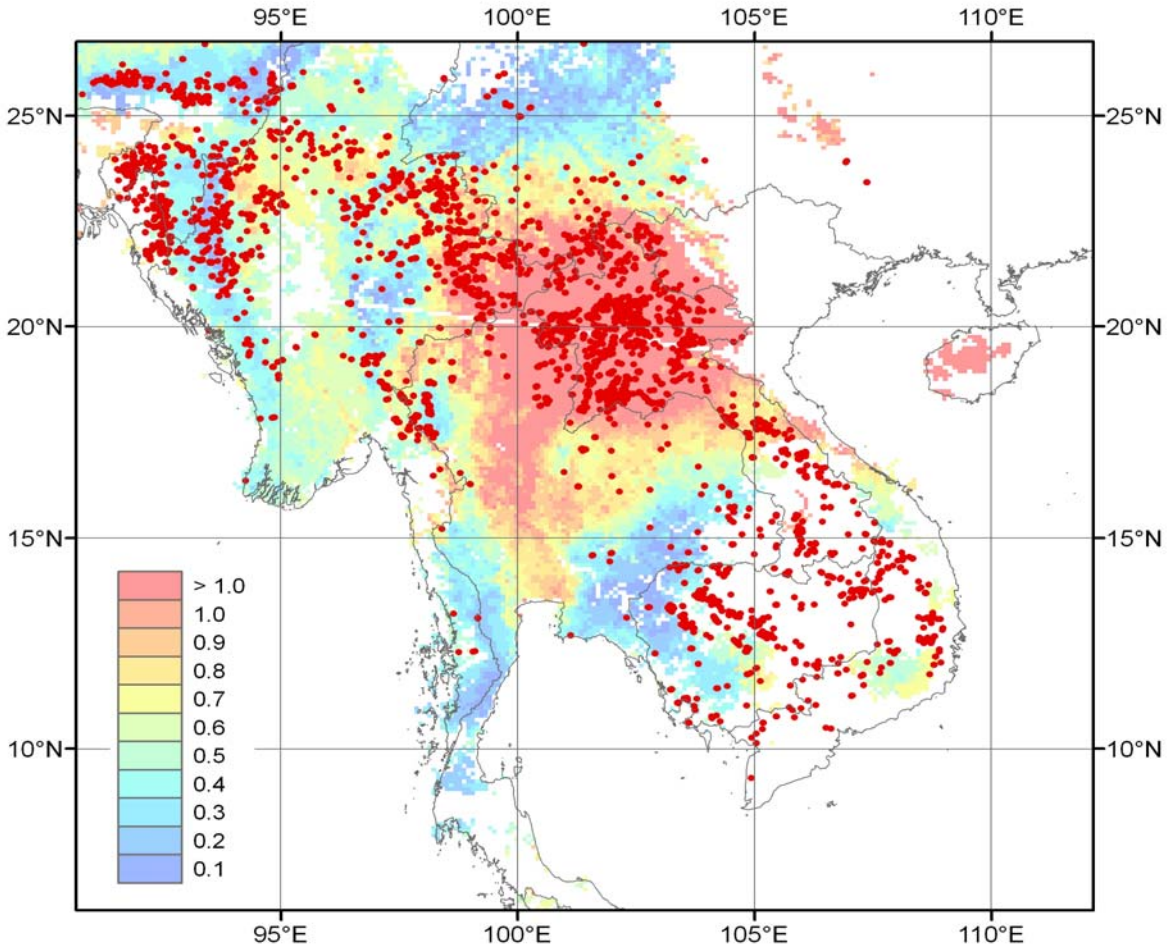
The Fire-Land-Atmosphere Modeling and Evaluation for Southeast Asia (FLAMES) Project is a collaboration between researchers in the Departments of Geography and Statistics at The Ohio State University.

Scientists and policy makers have become increasingly concerned about the implications of the consistent brown haze covering Southeast Asia and the Indian Ocean. The emergence of this haze is in large part due to increased atmospheric concentrations of carbonaceous aerosols, or small airborne particles, over the region. Changes in atmospheric concentrations of aerosols are believed to impact global climate and human health. A large portion of these carbonaceous aerosols are generated by anthropogenic activities, including agricultural practices of biomass burning (e.g., forest clearing and the burning of agricultural residue) and fossil fuel combustion. Unlike greenhouse gases, aerosols are distributed in a highly dynamic and mobile atmospheric circulatory system. We are developing methodologies to examine the relative contribution of these two types of emissions to the total aerosol burden over the region.

We are currently developing a statistical framework to model the spatio-temporal dependence structure of regional carbonaceous aerosol concentration, given atmospheric circulation processes and observed fire occurrence. This modeling framework will be used to synthesize a variety of types of data including remote sensing imagery from the MISR and MODIS instruments onboard the Terra and Aqua EOS satellites, output from simulation-based weather and aerosol transport models, and estimates of biomass burning emissions for various vegetation types. In terms of outreach, we will use our statistical framework to generate emission scenarios of carbonaceous aerosols due to observed fire activity. These emission scenarios will be integrated into a web-based system that will allow users to forecast aerosol distributions under various environmental and land-use related policy scenarios.

For more information, please refer to the project website:
http://www.stat.osu.edu/~flames/

Collaborators:
Darla Munroe, Geography, Ohio State University
Catherine Calder, Statistics, Ohio State University
Tao Shi, Statistics, Ohio State University
Ningchuan Xiao, Geography, Ohio State University



The spatial distribution of fires and thermal anomalies, and aerosol optical depth across mainland Southeast Asia on 25 March 2004 (Source: Level 3 Fire products for MOD14A (Terra) and MYD41A (Aqua); and MODIS Level 2 Aerosol Optical Thickness [MOD04_L2 and MYD04_L2). Fires and thermal anomalies appear as red dots, and aerosol optical thickness is symbolized in the legend. Areas in white represent missing data.

Sustainable Aquaculture Project

Kang-tsung (Karl) Chang, Department of Geography, National Taiwan University, Taipei, Taiwan.

Taiwan's aquaculture faces economic and environmental threats. Once a lead exporter, Taiwan has gradually lost its competitiveness due to globalization since the early 1990s. It is also confronted with acute aquaculture-related environmental problems such as land subsidence and flooding. This project attempts to tackle these challenges and find sustainable alternatives for Taiwan's aquaculture.

At present, the project is looking at a three-pronged solution: conversion to wetland, adoption of biotechnology, and introduction of ecotourism. Recently, we have used a system of rainfall runoff models, SOBEK, to assess the benefits of conversion of aquaculture area to wetland. We have also analyzed a questionnaire survey of aquaculture farmers to determine the characteristics of farmers who are more likely to accept new technologies.

Taiwan's experience is not unique; we invite aquaculture researchers from other countries to contact us and to participate in this important project.

http://www.geog.ntu.edu.tw/research/SAP/index.htm

Ilan, Taiwan. Harvesting of white shrimp (Penaeus vannamei). Photograph: Karl Chang.

The Boston-Area Climate Experiment

Jeffrey Dukes, Department of Biology, University of Massachusetts, Boston, USA.

To date, experimental studies of climate change have focused on temperature or precipitation, but rarely both. Additionally, warming studies, with one exception, have focused on the effects of a single step increase in temperature. It is not known whether most ecosystem and community variables respond unimodally, linearly or otherwise to temperature increases, or how these responses would be affected by accompanying changes in precipitation. The Boston-Area Climate Experiment (BACE) is designed to address this issue. The BACE, which is currently under construction, is a field experiment with a factorial combination of precipitation and temperature manipulations. The BACE will take place in old fields at the Waltham Educational Center (within 10 miles of Boston; formerly the Agricultural Experiment Station), allowing unusual public access to an experiment of this type. Extensive public education displays are being constructed around the project. The experiment is expected to run for at least four years following the initial year of infrastructure construction. Funding began in spring 2006. Unlike previous experiments, the BACE will have four different temperature treatments and three precipitation treatments, enabling tests of the hypotheses that species- and ecosystem-level responses to warming are parabolic, and that the character of these responses depends strongly on precipitation. The experiment uses infrared heaters to achieve warming, and rainout shelters and sprinklers to alter precipitation amounts (creating wet, ambient, and drought treatments).

The study system, an old field that will be planted with selected tree seeds and seedlings, will allow researchers to test responses relevant to early-successional forest. The small size of most individuals in these fields/young forests allows for manageable plot sizes (4 m2), adequate replication (3x), and enough time to observe changes in community composition (4+ years). Response variables that will be measured include primary production, soil respiration, N mineralization, plant phenology, soil moisture, and species composition. Investigators hope the research will prove useful in validating models of global change responses, because the study will characterize climate response functions for many species- and ecosystem-level processes. Preliminary work is underway to model how the old-fields will respond to the various climate treatments.

Contact: http://www.ecosystems.umb.edu/bace.html

Refining plant functional classifications for earth system modelling

Sandra Lavorel, Colin Prentice, Sandra Diaz, Paul Leadley. Joint IGBP-DIVERSITAS Fast Track Initiative.

Background

Plant functional classifications were proposed by GCTE in the early-mid 1990's as a tool to model vegetation dynamics and ecosystem functioning (esp. biogeochemical cycles) in response to climate and CO2. Since then, plant functional type (PFT) research has been a flourishing field, well beyond the realm of global change research However a disconnect remains between modellers, working at the regional scale or beyond, who still tend to use rather coarse classifications, with few PFTs that are based on a small number of plant traits (e.g. life form, phenology, photosynthetic pathway), and experimental scientists who focus on a greater range of plant traits, and nowadays tend to prefer continuous descriptions rather than classifications into discrete PFTs.

Goal

To re-consider plant functional classifications used for dynamic vegetation models, based on recent progress of fundamental work on plant functional traits.

Specific objectives

1. To design a new basis for plant functional classifications to be used in the new generation of large-scale dynamic vegetation models
2. To identify existing data and data gaps for its implementation
3. To conduct a first test, at least for one or a few regions where suitable data and models are currently available

Products

1. An outline (structure, rules for implementation and data needs) for new plant functional classifications for large-scale dynamic vegetation models, published in a high-visibility journal
2. At least one paper presenting a test of the classification, e.g. in Global Change Biology
3. A compilation of links to data bases and other sources for the regional implementation of classifications, to be made available on the internet
4. A strategy to fill data gaps, to be made available on the internet and published in an international journals

Interactions with stakeholders/user community

This Fast Track Initiative (FTI) will deliver an improved plant functional classification scheme for the improvement of the large-scale vegetation models that are needed for global and regional assessments (e.g. IPCC and future biodiversity assessments). These models are also those needed for improved earth system modelling.

Key scientific areas of the FTI Plant functional ecology, biodiversity, biogeochemistry, biogeography, large-scale vegetation modelling, palaeo-ecology.

Contact: www.igbp.net/page.php?pid=369

Sustainable resource use or imminent collapse? Climate, livelihoods and production in the South-west Pacific (CLIP)

Department of Geography and Geology, University of Copenhagen and the Danish Meteorological Institute.

Small island communities in the Pacific Ocean can be generic examples of well-defined systems where population growth, global market forces and climate change all exert pressure on the fragile production systems.

Will the increasing population cause land management systems to collapse? Will income opportunities elsewhere cause islands to be deserted and production systems to be abandoned? Will future sea level rise and climatic changes, e.g. drought or tropical hurricanes, threaten agriculture and survival on the islands? Building upon new simulations of regional climate change, analyses of migration and agricultural and economic change as well as classical geographical and anthropological studies, this project will try to uncover whether island communities are indeed collapsing or perhaps doing well against all odds.

Researchers from different disciplines work together in order to ascertain whether it is climate change, soil degradation, migration, employment opportunities, world market dynamics - or a combination of these - which are the most important for survival and production on the islands. Modelling and state of the art knowledge and technology applied in the study to understand the persistence or collapse of civilizations living in confined spaces with limited resources.

Field sites and timing: Three Polynesian 'outliers' of the Solomon Islands: Bellona (Rennell and Bellona Province), Ontong Java (Malaita Province) and Tikopia (Temotu Province). Project period 1 July 2006 to 30 June 2007. Main field work period in November 2006 – January 2007, but some field activities until May 2007.

Partners: University of Copenhagen, Denmark; Danish Meteorological Institute; University of the South Pacific, Fiji and Solomon Islands Campuses; Meteorological Service Centre, Solomon Islands.

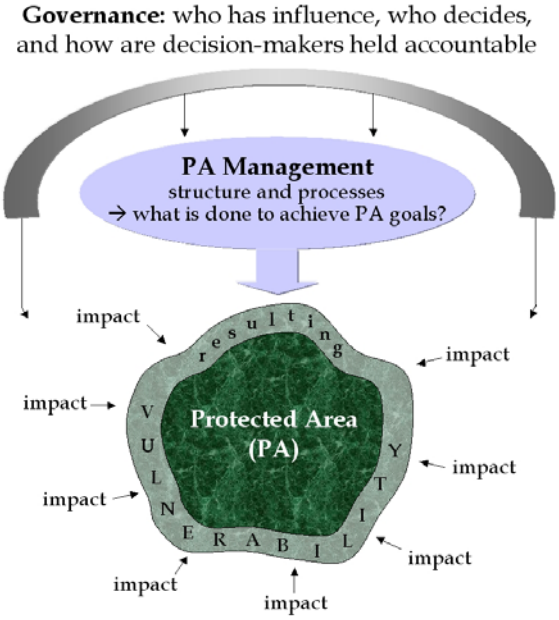
Changing livelihoods – from shifting cultivation to increasing use of imported food. Bellona, Solomon Islands. Photograph: Torben Birch-Thomsen

Assessing Biodiversity Governance and Management Approaches – The Case of Biosphere Reserves (GoBi)

Associate Prof. Dr. Susanne Stoll-Kleemann; Humboldt University of Berlin.

The overall objective of the project is to assess the success or failure of current governance and management approaches used in protected areas/biosphere reserves and identify those factors that lead to success or failure. The aim is to expand this knowledge base whilst contributing to methodological innovations and theoretical and policy understanding. Furthermore, one aim of this study is to explore which best practices are worthy of being further developed. The project is located at the Humboldt University of Berlin and works closely with several other institutions, as the Potsdam Institute for Climate Impact Research (PIK, Germany), the University of Queensland (Australia), the University of East Anglia (UK), and UNESCO (MAB Program) and IUCN (mainly with the World Commission on Protected Areas = WCPA). The starting point of the GoBi Research Group (http://www.biodiversitygovernance.de/) as a mainly socio-economic research project has been that human activities — over-harvesting and overexploitation, increased nitrogen and phosphorus pollution, the introduction of invasive alien species, and activities that have led to habitat change and anthropogenic climate change — have taken the planet to the edge of a massive wave of species extinctions that threatens human well-being. Natural processes are less able to deliver key services such as purification of air and water, protection from disasters, and the provision of medicines. The basic assumption of the GoBi Research Group which is supported e.g. by the results of the Millennium Ecosystem Assessment (MA, 2005) is that to a large degree, significantly reducing the rate of global biodiversity loss depends on managing protected areas.

The research gaps which the GoBi Research Group attempts to close surround the problem that although more than 100,000 protected areas cover about 10 percent of the Earth's terrestrial surface today, success in protected area biodiversity preservation often leaves much room for improvement. Rather, successful biodiversity governance in protected areas depends upon the management's capacity to achieve conservation objectives while navigating an often tangled web of external threats and pressures, supportive policies and practices at all levels of government, and locally specific opportunities for action (see Figure).



A comprehensive scheme of analysing success and failure factors of protected areas developed by the GoBi Research Group

Tools for management and Sustainable Use of Natural vegetation in West Africa (SUN)

Anne Mette Lykke, Institute of Biological Sciences, Aarhus, Denmark

One of Africa's major development challenges is to establish a link between global initiatives and local management actions. SUN aims to broaden the role of scientists as mediators between the world of scientific information, global conventions and the African realities where practical actions are required.

SUN aims to develop new, practical management tools and concrete management actions for improved sustainable use of natural vegetation by combining scientific vegetation data, remote sensing and socio-economic information with local people's knowledge and needs. This takes place through a combination of three types of activities:

- Interdisciplinary research on vegetation dynamics, causal factors and economic instruments and policies to enhance sustainable economic growth.
- Development of new decision support tools for improved natural resource management – by organising scientific data.
- New low-budget management and restoration actions - in collaboration between scientists and local people.

SUN includes 50 West African and European scientists within vegetation-ecology, socio-economy, ethnoecology and remote sensing, all with experience in applied research - 19 African phd students will be educated within the project.

SUN partners:

- University of Aarhus, Denmark
- Danish Institute of Agricultural Sciences, Denmark
- University of Cheikh Anta Diop of Dakar, Senegal
- Johan Wolfgang Goethe University, Germany
- Senckenberg Research Institute, Germany
- University of Ouagadougou, Burkina Faso
- University of Bobo Dioulasso, Burkina Faso
- University of Abomey-Calavi of Cotonou, Benin
- Joint Research Center of Ispra, Italy
- University of Abdou Moumouni of Niamey, Niger

Endorsed Networks and Programmes

Mountain Research Initiative (MRI) – a global land project for mountains

The Mountain Research Initiative (MRI) promotes and coordinates research that addresses global change issues in mountain regions around the world. It is funded by the Swiss National Science Foundation (SNSF) and the Swiss Federal Institute of Technology (ETH Zürich) and has offices at the ETH and the University of Lausanne, Switzerland. Like the GLP, MRI is a joint project of the International Geosphere-Biosphere Programme (IGBP) and the International Human Dimensions Programme (IHDP). Since the MRI focuses on a particular kind of terrestrial environment - mountain regions, it fits conceptually with the GLP as well and for that reason has requested and received endorsement by GLP. The MRI's goals, enunciated in IGBP Report 49, are to foster research that detects the signals of global changes, assesses the impacts of these changes for natural ecosystems as well as for human societies, and contributes to the sustainable management of mountain resources. As MRI is a promotion and coordination effort, it seeks to achieve these goals through three strategic activities: framing research approaches, influencing funding, and developing community cohesion through communication and event management.

MRI builds upon "*The Global Change in Mountain Regions project*" (GLOCHAMORE) funded by the Sixth Framework Programme of the EU from 2003 to 05 focused on framing a global change research agenda for mountain regions worldwide. The objective was the development of a integrated and implementable research strategy to understanding of the causes and consequences of global change in mountains. Critical to the development of the strategy was the participation of 28 UNESCO Mountain Biosphere Reserves (MBRs) and the integration of activities and knowledge from both natural and social sciences. The publication of the GLOCHAMORE Research Strategy in 2005 capped a two year effort consisting of four thematic workshops and a final Open Science Conference. The strategy lays out the rationale, research goals and actions for twelve disciplinary themes, but also advocates an integrated approach both across disciplines (interdisciplinarity) and between science and stakeholders (transdisciplinarity). The strategy uses the GLP Science Plan systems figure as an integrating framework and the maps its research themes to the research issues of GLP, illustrating that MRI is indeed "GLP for mountains".

In 2006 the MRI broadened its focus from strategy development on a global level to include the initiation and support of regional networks of global change researchers. With the GLOCHAMORE Research Strategy the MRI has produced a framework for research, but it is principally through the regional networks that the strategy becomes tangible. MRI started several regional initiatives to tackle this translation. Following the April 2006 conference "*Climate Change: Organizing the Science in the American Cordillera*" held in Mendoza, Argentina, MRI facilitated the launch of the American Cordillera Transect. The advent in December, 2006 of a call in the EU Seventh Framework Programme for research on climate change impacts on vulnerable mountains regions galvanized MRI's European community and greatly accelerated the formation of a Global Change Research Network in

European Mountains. MRI is currently working with the Monsoon Asia Integrated Research Study and with the CGIAR and a host of African institutions to develop networks in Monsoon Asia and Africa, respectively.

The regional networks initiated and supported by MRI have several purposes:

- increased exchange between global change scientists,
- regional coordination of scientific information, and
- initiation of integrative and comparative studies.

The actual scientific work is carried out by thematic subgroups. For instance, the CORFOR (Cordillera Forest Dynamics Network) group which belongs to the larger American Cordillera Transect for Global Change Research is pursuing these objectives with respect to mountain forests in the American Cordillera.

The MRI concurs with the GLP emphasis on partnerships. As shown in the GLP Science Plan system figure, complex suites of social and environmental factors operate simultaneously. In any given region. Only broadly conceived research in targeted regions can discern the multiple and interactive effects of these factors. MRI intends that its regional networks become vehicles for the conception and implementation of such broad, integrated research projects in mountains, and in this way, to achieve the goals of the GLP. The MRI greatly hopes that GLP scientists will consider contribution to and participation in the regional networks as well as the on-going global initiatives of MRI. While the interests of the MRI and GLP communities are aligned, the communities themselves overlap very little and therefore the potential synergies abound. If you are interested in the MRI's activities please subscribe to the MRI Newsletter on the MRI website.

If you are looking for experts on global change in mountain topics (or if you want to enter your data into the MRI database) go to the MRI Experts Database (see links below).

MRI links:

MRI webpage: http://www.mri.scnatweb.ch

GLOCHAMORE: http://mri.scnatweb.ch/content/category/3/10/31/

The American Cordillera Transect for Global Change Research: http://mri.scnatweb.ch/content/category/3/45/67/

Global Change Research Network European Mountains: http://mri.scnatweb.ch/content/category/3/47/30/

MRI Experts Database: http://mri.scnatweb.ch/index.php/content/view/40/44/

A Research Network for Studies of Global Desertification (ARIDnet)

http://www.biology.duke.edu/aridnet/

The goal of ARIDnet is to provide leadership for developing and testing a new synthetic paradigm for desertification. This paradigm, which ARIDnet call the Dahlem Desertification Paradigm, is based on the simultaneous roles of the meteorological and ecological dimensions of desertification (the biophysical factors) and the human dimensions of desertification (the socio-economic factors). ARIDnet aims will provide the leadership to support on-going international discussions and strengthen recruitment of researchers, including under-graduate students, to study the principles, criteria, and policies related to global desertification, especially as outlined under the UN Convention to Combat Desertification.

Terrestrial Ecosystem Response to Atmospheric and Climatic Change (TERACC)

http://www.umaine.edu/teracc/main.html

TERACC is an international research coordination network of global change scientists representing over 100 individual research sites worldwide. The central goals of TERACC are to: (1) integrate and synthesize existing research on ecosystem responses to individual global change drivers; (2) foster new research on whole-ecosystem responses to the combined effects of elevated atmospheric CO2, warming, and other aspects of global change, and (3) promote better communication and integration between experimentalists and modellers.

Northern Eurasia Earth Science Partnership Initiative (NEESPI)

http://neespi.org/

The NEESPI has as its goal to "Establish a large-scale, interdisciplinary program of funded research aimed at developing a better understanding of the interactions between the ecosystem, atmosphere, and human dynamics in northern Eurasia in support of international science programs with particular relevance to Global climate change research interests and government agency funding priorities."

"The long range goal is to develop a comprehensive understanding of the Northern Eurasian terrestrial ecosystem dynamics, biogeochemical cycles, surface energy and water cycles, and human activities and how they interact with and alter the biosphere, atmosphere, and hydrosphere of the Earth."

The NEESPI initiative currently consists of about 400 scientists working in 200 institutions and about 100 projects. Members of the NEESPI network come from 30 countries. Please see also report from IPO participation in NEESPI "Summit" on page 7.

Endorsed PhD Projects

Monitoring Land Use/Land Cover Changes and its Envionmental Impacts in Karst Mountain Ecosystem - a spatial analysis integrating RS, GIS, social survey and climate data.

Huang Qiuhao, Department of Resources, Environment & Geography, College of Environmental Sciences, Peking University, Beijing, China.

A Political Ecology of Postsocialist Land Use Change

Johannes Stahl, Institute for Agricultural Economics and Social Sciences, Junior Research Group on Postsocialist Land Relations, Humboldt University, Berlin, Germany.

http://www.agrar.hu-berlin.de/struktur/institute/wisola/fg/plr/Research/ms

GLP (or GLP endorsed) Conferences and Workshops

Man in the landscape across frontiers: Landscape and land use change in Central European border regions

IGU/LUCC Central Europe Conference 2007, 28th August-4th September 2007 in Slovenia, Austria, Slovakia and Czechia. http://www.luccprague.cz/

Integrated Analysis of Local Socioecological Systems: Combining Agent-Based and Stock-Flow Modelling Approaches

Part of the International Conference of the Society for Human Ecology, Rio, Brazil, 4th-7th of October 2007 http://www.societyforhumanecology.org/SHEXV.html

Land system science: Handling complex series of natural and socio-economic processes

3rd Workshop of the Danish Network for Land System Science (LaSyS), 25-26th October 2007, Tune Kursuscenter, Denmark http://www.lasys.dk/workshop03.shtml

Globalisation and Land Use

One-day workshop (24th October 2007, University of Copenhagen, Denmark) connected to the GLP SSC Meeting (Scientific Steering Committee) with a small number of invited international speakers. The morning session is open to the public. More information on the GLP webpage soon.

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