



REPORTS OF ACTIVITIES: 2008 - 2012

**INTERNATIONAL GEOGRAPHICAL UNION (IGU / UGI)
COMMISSION ON LAND DEGRADATION AND DESERTIFICATION (COMLAND)**



Paul F. Hudson (Secretary) and Guðrún Gísladóttir (Chair)

Purpose and Scope of COMLAND

Most environments are affected by common factors that favour and increase land degradation processes. Two main topics are widely responsible: a) climatic conditions and changes, and b) anthropic impacts through land use. There is an urgent need to achieve a better practical and theoretical understanding of land degradation processes which affect the world's landscapes. In order to achieve these objectives, the working plan of the Commission is as follows:

- to promote and coordinate interdisciplinary research on land degradation and desertification in our changing global environment;
- to study the effects of environmental change, both natural and human induced, and their implications for land degradation and desertification;
- to conduct regional case studies under different climatic regimes and environmental risks (forest fires, floods, river channel changes, soil-erosion, water depletion, water quality), study the planning and design of conservation measures and the potential conflict between ecological sustainability and economic viability;
- to alert authorities as to the importance of adequate surveillance of land degradation processes;
- to develop and communicate the best techniques for monitoring changes and collecting data, and
- to sponsor and support activities leading to exchange of information regarding land degradation and desertification.

I. STEERING COMMITTEE (2012-2016)

Chair (elect):

Prof. Paul F. Hudson, USA
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Members:

Co-Secretary (elect):

Prof. Takashi Oguchi, Japan
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Prof. Greg Okin, USA
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Dr. Gregor Ollesch, Germany
Helmholtz Centre for Environmental Research - UFZ
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Prof. Hugo Romero, Chile (proposed)
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Prof. Kate Rowntree, South Africa
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Prof. Xavier Úbeda, Spain
GRAM (Environmental Mediterranean Research Group)
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Prof. Lea Wittenberg, Israel
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Prof. Xiaoping Yang, China
Institute of Geology and Geophysics
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Completed tenure on Steering Committee (as of Cologne Congress)

- Michael Stocking, UK
- Anna Tengberg, Sweden

II. COMLAND MEMBERSHIP

- 242 members (from e-mail list)

III. INFORMATION ON MEETINGS (since 2008 IGU Tunis – Congress)

COMLAND continues to be an active IGU Commission, and since the 2008 IGU Congress in Tunis has been productive from the standpoint of the organization of meetings, publications, awards, and in the addition of new Members and Steering Committee Members.

Meetings:

Since the 2008 IGU Congress COMLAND has organized or co-sponsored seven meetings.

1, Kuwait: March 14-18, 2009:

International Conference on Desertification
COMLAND Field Conference
Organizer: Jasem Al-Awadhi, Kuwait University

Title: Conference on Land Degradation in Dry Environments

Organizers: Professor Jasem Al-Awadhi, Kuwait University (e-mail: jawadhi@kuc01.kuniv.edu.kw), Professor Mohammed Al-Sarawi, Earth and Environmental Dept., Prof. Mohammed Khozami – Geography Dept, Professor Jasem Al-Ali– Geography Dept.

Description:

Drylands cover about 41% of Earth's land surface and are home to more than 38% of the total global population of 6.5 billion. Some form of severe land degradation is present on 10 to 20% of

these lands, the consequences of which are estimated to affect directly some 250 million people in the developing world, an estimate likely to expand substantially in the face of climate change and population growth. Population increases in semi-arid and arid regions and changes in regional climate have often led to degradation of the land, and sometimes to the collapse of societies in these regions. The problem is as old as civilization. Nowadays Mongolia and China, parts of the middle east and the US Southwest face such problems. Showing these examples will be one of the goals of this coming Conference on Land Degradation.

Topic 1: Earth Surface Processes

Topic 2: Ecotourism, Urbanization, Sustainable Development, and Management Policy

Topic 3: Provisional Tools and Methodologies for Land Degradation Assessment

Topic 4: Climate Change and Land Degradation

Topic 5: Rehabilitation and Soil Conservation

A post-conference field trip is being organized to the United Arab Emirates (March 12-14, 2009)

Cooperating Organizations:

International: IAG- International Association of Geomorphologists (Prof. Andrew Goudie) (To be confirmed)

Regional / Local: Kuwait University, Kuwait Institute for Scientific Research (Professor Abdullah Al-Enezi: email;- aenezi@safat.kisr.edu.kw), and Professor Ali Al-Dousari: email: adousari@safat.kisr.edu.kw, UAE University - Professor Ahmed Murad, Head of Geology Department (email-Ahmed.Murad@uaeu.ac.ae)

2, Melbourne, Australia: July 6-11, 2009

COMLAND sessions at the IAG meeting

Organizer: Arthur Conacher and Gregor Ollesch

Title: Adaptation to Global Change, Dates - COMLAND sessions at the 7th Meeting of the IAG / AIG, Melbourne, Australia

Dates: July 7-12, 2009

Organizers: Arthur Conacher and Gregor Ollesch

Description:

Papers will be considered that focus on the ambiguity of the role of land degradation as both a cause and a consequence of global change in a broad sense. The question is to adapt to and prevent or avoid the adverse consequences of global change (although the title of the session only includes adaptation). A related topic may link to the questions of risk and resilience or vulnerability of landscapes and land use systems to land degradation, which is in turn linked to global change.

A wide range of field trips is planned by the IAG / AIG, as well as an intensive three-days course for young geomorphologists. Notice of publication of accepted papers in a leading journal will be announced in due time.

Cooperating Organizations:

International Association of Geomorphologists

3, Magdeburg, Germany: September 5-9, 2009:

International Conference on Land and Water Degradation Processes and Management

COMLAND Field Conference

Organizer: Gregor Ollesh

Description:

There is an urgent need to improve our practical and theoretical understanding of land and water degradation processes; in particular the physical, chemical and biological deterioration of soils and water bodies in various regions of the world. This conference will bridge the gap between land and water and will bring together scientists from various disciplines with different methodological backgrounds. Specific topics include: nutrient dynamics in the land-sediment-water system function of buffer strips and floodplains for catchment health physical, chemical and biological processes of soil degradation methodological approaches to estimate and regionalise nonpointsource pollution spatial heterogeneity, variation and prediction of land degradation methods to review outcomes of mitigation strategies and catchment management regional studies of land and water degradation, especially in industrialised and urbanised areas, cold climates and Mediterranean regions. The symposium includes keynote talks by Rattan Lal (Ohio State University, USA) and John Quinton (Lancaster University, UK), with a mid-symposium field trip focusing on land and water management issues within the surrounding locales of Magdeburg.

Cooperating Organizations:

German Federal Ministry of Education and Research

Helmholtz Centre for Environmental Research – UFZ (Magdeburg, Germany)

4, Murcia, Spain, September 16-19, 2009:

International Conference on Desertification in memory of John Thornes

Co-sponsor with the Spanish Society of Geomorphologists (main sponsor).

Organizers: Prof. Francisco López Bermúdez. Universidad de Murcia (España); Prof. Asunción Romero Díaz.(arodi@um.es) Universidad de Murcia (España); Dr. Francisco Alonso Sarria. Universidad de Murcia (España); Dr. Francisco Belmonte Serrato. Universidad de Murcia (España); D. Ramón García Marín. Universidad de Murcia (España)

Description:

The Area of Physical Geography at Murcia University and the Geomorphology Spanish Society invite you to participate in a special meeting entitled International Conference on Desertification in memory of Professor John B. Thornes.

Professor Thornes (1940-2008), professor of Physical Geography and head of the Geography Department at King's College, University of London, was an exceptional researcher and Physical Geographer. He had a very special relationship with Spain throughout his life. In 1967 he developed his Doctoral Thesis in the Upper Duero, and since then carried out numerous research projects, especially in the Mediterranean area. Several institutions and universities from different

countries have distinguished him with honours, including scientific societies, universities and research centres in Spain. In 1998 the Geomorphology Spanish Society named him "Honor member" and in 2006 the University of Murcia also named him "Doctor Honoris Causa". With this conference we offer a very deserved tribute to this scholar of enormous human qualities, as a serious, rigorous and innovative researcher, which is reflected in numerous publications and in the memories of those that met and worked with Prof. Thornes. We invite all persons, whether you directly worked Prof. Thornes or were influenced by his scholarship, to participate in this tribute. Papers and poster submissions are welcome within the following topics. Please see the conference web site, or contact Prof. Asunción Romero Díaz (arodi@um.es) for queries and abstract submission.

5, Haifa, Israel, July 5-11, 2010: COMLAND field conference in coordination with the IGU Regional Congress in Tel Aviv.

COMLAND Field Conference

Organizer: Moshe Inbar, University of Haifa

Also, COMLAND session at the Tel Aviv meeting

COMLAND meeting in coordination with the IGU Regional meeting in Israel. To include paper sessions and five day field excursions to Northern Mediterranean and Dead Sea Rift regions. Note that the COMLAND meeting is a pre-IGU meeting, and finishes one day prior to the opening of the IGU/UGI meeting in Tel Aviv. Please see second circular for further details, and contact Prof. Moshe Inbar (inbar@geo.haifa.ac.il) for registration information

6, Grahamstown, South Africa: September, 2010

Land Degradation in South Africa

Co-sponsor with South African Association of Geomorphologists (host sponsor)

Organizer: Prof. Kate Rowntree, Dept. of Geography, Rhodes University, Grahamstown, South Africa, (COMLAND Steering Committee member)

Description:

SAAG invites you to attend their biennial conference to be held in Grahamstown in September 2010. We would especially like to extend this invitation to all geomorphologists from overseas who have done research in southern Africa so as to share their findings with the local South African geomorphological community. We would also like to encourage Masters and PhD students to join us for all conference activities and hope to be able to subsidize their costs. Posters presenting their ongoing research will be welcomed. A pre-conference land degradation field trip is planned to the Karoo, as well as a workshop on sediment fingerprinting. Please see first circular for further details and registration information, and contact Prof. Kate Rowntree.

7. Santiago, Chile: November, 2011

Sessions at the IGU Regional Congress, and COMLAND pre-congress field meeting

Organizer: Paul Hudson

Field trip organizer: Prof. Carmen Paz Castro, University of Chile (for COMLAND pre-congress meeting). Title of Field Trip: The Copiapo Valley in the Atacama Desert: Landscape Diversity, Land Use Complexity, and Development

Abstracts are welcome on a range of topics related to land degradation, desertification, soil erosion, climate change, and environmental management and policy. We seek papers that examine land degradation within a variety of subfields that utilize a diverse range of approaches (field, modelling, historic, process, etc...). Depending on the range of paper topics the presentations will be grouped into more specific themes. The format of presentation is a standard 20 minute talk. Participants should register for "**theme 24**" via the official web site for the congress. Please send Paul Hudson (pfh@austin.utexas.edu), Secretary of COMLAND, a note and copy of your abstract to inform of your interest in participating in the official organized COMLAND sessions. All participants will need to submit their abstract and registration according to IGU guidelines via the official IGU web site.

IV. FORTHCOMING MEETINGS

Four new meetings are planned (with COMLAND as organizer or sponsor), for Germany in 2012, Italy in 2012, Japan in 2013, and Poland in 2014.

1. Cologne, Germany: August 22-26, 2012

COMLAND pre-conference meeting and COMLAND paper sessions at the IGU Congress

Field Trip Natural and Anthropogenic Drivers of Land Degradation and Landscapes within a Changing Environment: From the Alps to Dutch Rhine

The focus of the five day field trip includes comparison of natural with anthropogenic rates of sediment redistribution, soil erosion, land degradation styles, late Quaternary landscape evolution, and the design of effective management strategies within a changing environment. These topics are examined along a continuum of settings from the Alps to the lower Rhine within a "source-to-sink" framework. The field trip provides an overview of the impact of historic land degradation processes on soil quality, stratigraphy, and compares sediment fluxes in natural and coupled human-natural systems. The field trip occurs before the IGU Congress, with transportation to Cologne on August 25, the day prior to the start of the Congress. Costs to include travel from Benediktbeuern to Cologne, field trip guide, and accommodation in local hotels with regional cuisine (Aug. 20th to Aug 25th) .

Registration: Registration and payment to be coordinated via the IGU 2012 Cologne Congress web site, with details forthcoming in the second circular.

Critical Dates:

- “Early bird” registration ends: February 15, 2012
- Regular Registration ends: April 15, 2012
- Arrival and meet-and-greet in Benediktbeuern, Germany: August 20, 2012
- Fieldtrip departure from Benediktbeuern, Germany: August 21, 2012
- Return to Cologne: August 25, 2012

More information: Dr. Peter Houben (phatgoethe@em.uni-frankfurt.de) or Dr. Paul Hudson (pfh@austin.utexas.edu)

Main Congress (themed paper sessions): August 26 - 30, 2012

COMLAND Paper Sessions:

COMLAND is pleased to announce the call for abstracts for three distinct sessions at the 2012 International Geographical Union Congress in Cologne, Germany.

1. *Land Degradation and Desertification in the context of Global Environmental Change: Management, Vulnerability, and Policy*
2. *Land Degradation and Geomorphology: Monitoring, Assessment, and Theory Development*
3. *Forest fire effects on soil-vegetation dynamics, erosion and land degradation*

The format of presentation is a standard 20 minute talk. Participants should register in "**theme 24**" via the official IGU Congress web site. Online registration for the IGC 2012 will open on **2 November 2011**. Please send Paul Hudson (pfh@austin.utexas.edu), Secretary of COMLAND, a note and copy of your abstract to inform of your interest in participating in the official organized COMLAND sessions.

1. Land Degradation and Desertification in the context of Global Environmental Change: Management, Vulnerability, and Policy

Chair(s): Guðrún Gísladóttir (Univ. of Iceland) & Paul F. Hudson (Univ. of Texas at Austin)

Description:

Managing land degradation and desertification is a pressing issue in the context of global environmental change. Developing effective policy and management strategies requires knowledge of a comprehensive range of physical and social processes and how they may be modified and adjust to anticipated global environmental change scenarios, including different manifestations of climatic change or sea level rise. The goal of this session is to bring together researchers interested in the management of specific types of landscape environments to cope with different forms of global environmental change along the lines of several interrelated questions: How is management being approached and what are the lessons learned? What types of physical modifications (engineering and earth works) are undergoing to cope with land degradation and/or desertification? What are the obstacles to effective policy for managing land degradation and desertification? We

welcome a comprehensive range of topics including academic and applied scientists from universities and government agencies who work at the interface of land degradation and desertification, including land use management, agricultural policy and food security, soil erosion, change, flooding, risk analysis, and river and coastal zone management. The presentations will be further organized into appropriate themes depending on the range of topics represented within submitted abstracts. Publication of papers will be sought in an appropriate peer reviewed academic journal. Please contact Paul Hudson (pfh@austin.utexas.edu) or Guðrún Gísladóttir (ggisla@hi.is) with questions.

2. Land Degradation and Geomorphology: Monitoring, Assessment, and Theory Development

Chair(s): Paul F. Hudson (Univ. of Texas at Austin) & Guðrún Gísladótti (Univ. of Iceland)

Description:

Geomorphology and land degradation science have a long and distinguished history of integrated scientific inquiry. Geomorphology, as a distinct scientific discipline, provides academic and applied scholars of land degradation with theoretical frameworks and methodological tools for understanding the origin, magnitude, and controls on land degradation and desertification. Geomorphologists increasingly play important roles in landscape restoration strategies, including conceptual and applied roles. This session seeks presentations that address the study of land degradation from all sectors of geomorphology, including hillslope (runoff and soil erosion), fluvial, coastal, and aeolian processes. We welcome contributions based on field, experimental, as well as theoretical modeling. Presentations will be further organized into appropriate themes depending on the range of topics within submitted abstracts. Publication of papers will be sought in an appropriate peer reviewed academic journal. Please contact Paul Hudson (pfh@austin.utexas.edu) or Guðrún Gísladóttir (ggisla@hi.is) with questions.

3. Forest fire effects on soil-vegetation dynamics, erosion and land degradation

Chairs: Lea Wittenberg (Univ. of Haifa) & Paul F. Hudson (Univ. of Texas at Austin)

Description:

Fire is a vital control on the development of vegetation and soil characteristics, and influences processes of land degradation and desertification. This session seeks presentations that address the effects of fire on soil-vegetation dynamics, including hydrology, the development of physical and chemical soil quality, as well as soil erosion. We welcome contributions based on field studies, experimental results, as well as theoretical modeling. Presentations will be further organized into appropriate themes depending on the range of topics within submitted abstracts. Please contact Lea Wittenberg (leaw@haifa.geo.ac.il) or Paul Hudson (pfh@austin.utexas.edu) with questions.

2. Caligiari, Sardinia, Italy: October, 2012

Title: *Land Degradation in Mediterranean Environments: Causes, Processes, Management*

Dates: Oct. 8-12 (preliminary)

Organizer: Dr. Andrea Vacca, Department of Earth Sciences, University of Cagliari, Italy (Sardinia)

Description

Land degradation has long been a fundamental issue within Mediterranean environments. Sardinia provides ample opportunities to examine different types of land degradation and associated management strategies, and will be the focus of this COMIAND field meeting. We solicit papers from a range of subfields related to the topic of land degradation or land management within Mediterranean environments, but also more generally across all types of landscapes and physical settings. Papers are welcome which address the topic using any methodological approach, including historical and process based studies. Papers will be further divided according to thematic and/or methodological approaches based on the range of abstract submissions.

Format and Schedule

The meeting begins with a greeting and overview Saturday evening (Oct. 13) in Cagliari. A full day of paper sessions scheduled for Sunday (Oct. 14). The field trip will depart Monday (Oct. 15) for southern and central Sardinia and returns to Cagliari Friday (Oct. 19). A detailed itinerary is included in the first circular. Information on registration costs and accommodations will be included in the second circular.

Cooperating Organizations

International: IGU - COMLAND

Regional/Local: University of Cagliari, LAORE Sardegna, AGRIS Sardegna, IGEA SpA

3. Kyoto, Japan: August 4-9, 2013

Sessions at the IGU Regional Congress, and COMLAND pre-congress meeting with field trip

Dates: to be determined (prior to IGU Congress)

Field Trip Organizer: Prof. Takashi Oguchi, Center for Spatial Information Science, University of Tokyo, Japan

4. Krakow, Poland: 2014

Sessions at the IGU Regional Congress, and COMLAND pre-congress meeting with field trip

Field Trip Organizer: Dr. Pavel Prokop, Polish Academy of Sciences, Krakow, Poland

V. COMLAND COLLABORATION WITH OTHER ORGANIZATIONS:

Murcia, Spain, September 16-19, 2009: Int. Conf. on Desertification in Memory of John Thornes
Co-sponsored with the *Spanish Society of Geomorphologists (main sponsor)*.

Grahamstown, South Africa: September, 2010: Land Degradation in South Africa
Co-sponsor with *South African Association of Geomorphologists (main sponsor)*
Organizer: Prof. Kate Rowntree, Dept. of Geography, Rhodes University, Grahamstown, South Africa, (COMLAND Steering Committee member)

VI. PUBLICATIONS (2008 – 2012)

COMLAND continues to publish papers from its sponsored sessions and conferences, with most appearing in high quality peer reviewed journal outlets. During the four year period since the 2008 IGU Congress in Tunis, COMLAND has published four special issues of international peer reviewed journals from prior meetings, three fieldtrip guidebooks, and has two special issues of journals in progress.

In Progress:

Hudson, PF and LaFevor, M (editors). Geocology and Land Degradation: Monitoring and Managing Environmental Change. *Journal of Environmental Management* (accepted proposal). For papers presented in Santiago, Chile at the COMLAND sessions at the IGU Regional Congress.

Foster, I. and Rowntree, K. (editors). Land Degradation in South Africa. Special issue Land Degradation and Development. Papers presented at the South African Association (SAAG) of Geomorphology Meeting, in Grahamstown (COMLAND was a co-sponsor of the meeting)

Published or in Press:

2012:

Hudson, PF and Inbar, M (editors). "Geodiversity and Land Degradation: Anthropogenic and Natural Drivers of Environmental Change". *Land Degradation & Development*. Special issue of papers presented in Haifa at the COMLAND preconference meeting for the IGU Tel Aviv meeting. Editors: Paul F Hudson and Moshe Inbar (in press for 2012).

2011:

Correa C.P.C., Véliz J.O., Bäuerle M.V.S., Aravena H.R., Arragada J., Smith P., Rodofi, G., Marker M., 2011. IGU/UGI COMLAND excursion Chile 2011. The Copiapó Valley in the Atacama Desert: Landscape Diversity, Landuse Complexity, and Development. Universidad De Chile, Facultad De Arquitectura Y Urbanismo. Departamento De Geografía.

Aravena H.R., Diaz M.M., Guerra P.S., 2011. Guía de terreno Cuenca del Río Copiapó, Noviembre 11 de 2011. Problemas Y Desafíos Geográficos De La Cuenca Del Río Copiapó. Universidad De Chile, Facultad De Arquitectura Y Urbanismo. Departamento De Geografía.

2010:

Xiaoping Yang and Louis A. Scuderi (Eds.) 2010. Environmental Changes in Arid and Semi-arid Regions. *Quaternary Research* 73, 1, 162 pp.

Papers published from the COMLAND meeting held in Left Banner, Inner Mongolia, China, 2007.

Inbar, M. 2010. Abstracts and fieldtrip guide book, Pre-IGU Congress Field Conference on Land Degradation and Environmental Management in Central and Northern Israel, Haifa, Israel.

2009:

Xiaoping Yang and Arthur Conacher (Eds.) 2009. Land Degradation and Rehabilitation in Ecologically Fragile Areas. *Geographical Research* 47, 1, 94 pp. DOI: 10.1111/j.1745-5871.2008.00562.x. Papers published from the COMLAND meeting held in Left Banner, Inner Mongolia, China, 2007.

Gregor Ollesch 2009. Abstracts and field trip guide. International Conference on Land and Water Degradation Processes and Management, Magdeburg, Germany September 6-9, 2009.

2008:

Steffanie Scott and Arthur Conacher (Eds.), 2008. Land Degradation and Poverty, Geographical Research, 46 (1), Published papers presented at the COMLAND meeting in Nghe An Province, Vietnam, in February 17 – 27, 2006.

VII. Recent Awards:

COMLAND has awarded six awards since the 2008 IGU Congress in Tunis, including its COMLAND Award for contributions to the Commission and COMLAND's Distinguished Land Degradation Research Award.

COMLAND Award

- Jasem Al-Awadhi, Kuwait 2009
- Gregor Ollesch, Germany 2009
- Moshe Inbar, Israel 2010
- Carmen Paz Castro Correa, Chile 2011
- María Victoria Soto Bäuerle, Chile 2011
- Hugo Romero Aravena, Chile 2011

COMLAND Distinguished Land Degradation Research Award

- Rattan Lal, USA 2009

VIII. Web Site

COMLAND has its own website, containing information on its structure, activities, past and future meetings. The website was revamped in 2007 and is maintained by Dr. Paul Hudson (Secretary of COMLAND) and hosted at the University of Texas at Austin. The address is:

<https://webspace.utexas.edu/hudsonpf/comland>

IX. Proposed Themes for Continuation of COMLAND for 2012-2016 IGU Period

Our proposed themes for the IGU / UGI 2012 – 2016 build on the foundation of accomplishment that COMLAND has attained over the past sixteen years, with a sharpened focus on several key themes.

1. Climate Change – Vulnerability Sensitivity of Landscape Processes

As a major driver of land degradation and desertification processes, it is essential that COMLAND be squarely engaged with the topic of climate change, particularly the vulnerability and sensitivity of landscape processes (geomorphic and pedogenic) to climate change. This is a more explicit (stronger) recognition of what COMLAND already does. While COMLAND should be seen at the leading edge of the topic, this should not occur at the expense of our traditional pursuits. Indeed, a strength of COMLAND in this regard is that its tradition of Quaternary and historical research provides perspective, scope, and insight for understanding the implications of modern and future

climate change. An additional rationale for this theme is that COMLAND has always included a strong emphasis on geomorphology and soil erosion research. These two complementary themes are not as strongly represented within the IGU as in past decades. Thus, this assures that the IGU remains a major contributor to the discipline of geomorphology and soil science.

2. Global Environmental Change and Local Adaptation – Policy, Management, and Society

Land management and policy are locally implemented in different ways because of economic, political, and cultural differences. Thus, global environmental change potentially has diverse landscape consequences with variable societal implications. By engaging with social scientists COMLAND is well poised to make substantial theoretical contributions that concern the relations of global environmental change with land management, with applied relevance to regional policy makers and local stakeholders.

3. Lesser Developed Nations

COMLAND has previously emphasized the importance of considering land degradation and desertification in lesser developed nations. This has been a successful formula for our organization (meetings, representation, collaborations, publications...) and it is quite logical that this should continue to be a major thrust of COMLAND's efforts, particularly in the context of #s 1 and 2.

Themes #1 and #2 are well represented in COMLAND's special sessions organized for the Cologne IGU-Congress in August 2012.