INTERNATIONAL GEOGRAPHICAL UNION
(IGU / UGI)

COMMISSION ON LAND DEGRADATION AND DESERTIFICATION
(COMLAND)

REPORT OF ACTIVITIES: 2013 - 2014

Paul F. Hudson (Chair) and Owen Graham (Secretary)

December 2014

www.comland.org

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The Commission on Land Degradation and Desertification (COMLAND) is a Commission of the International Geographical Union (IGU). See http://igu-online.org/ for further information on the IGU.

0 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 (2013-2014)

Chair:

Associate Prof. Paul F. Hudson, The Netherlands
Honours College
Leiden University
The Hague
p.f.hudson@luc.leidenuniv.nl

Members:

Co-Secretary:
Prof. Takashi Oguchi, Japan
Center for Spatial Information Science
University of Tokyo
oguchi@csis.u-tokyo.ac.jp

Co-Secretary:
Mr. Owen P. Graham, Australia
Sydney Metropolitan Catchment Management Authority (retired)
Sydney, Australia
owen.comland@gmail.com

Prof. Guðrún Gísladóttir, Iceland
Department of Geography
University of Iceland
Reykjavik
ggisla@hi.is

Prof. Greg Okin, USA
Dept. of Geography
University of California – Los Angeles
Los Angeles, California
okin@ucla.edu

Dr. Gregor Ollesch, Germany
Helmholtz Centre for Environmental Research - UFZ
Dept. of Soil Physics
Magdeburg
gregor.ollesch@ufz.de

Prof. Hugo Romero, Chile
Department of Geography
University of Chile
Santiago
hromero@uchilefau.cl

Prof. Kate Rowntree, South Africa
Department of Geography
Rhodes University
Grahamstown
k.rowntree@ru.ac.za

Associate Prof. Xavier Úbeda, Spain
GRAM (Environmental Mediterranean Research Group)
Department of Physical Geography and Regional Analysis
Faculty of Geography and History
Universitat de Barcelona
Barcelona
xubeda@ub.edu

Associate Prof. Lea Wittenberg, Israel
Dept. of Geography and Environmental Studies
University of Haifa
Haifa
leaw@geo.haifa.ac.il

Dr. Andrea Vacca, Italy
Department of Earth Sciences
University of Cagliari
Cagliari, Sardinia
avacca@unica.it

Associate Prof. Pawel Prokop, Poland
Polish Academy of Sciences
Krakow
pawel@zg.pan.krakow.pl

Completed tenure on Steering Committee (as of 2014 Krakow IGU Regional Congress):

- Prof. Silvio Rodrigues, Brazil
- Prof. Xiaoping Yang, China

II COMLAND MEMBERSHIP

COMLAND MEMBERSHIP BY COUNTRY (as at December 2014)

Australia	33
USA	29
Poland	21
China	18
(country unknown)	18
United Kingdom	17
Iceland	12
Germany	11
Israel	11
Italy	8
France	7
Japan	7
South Africa	7
India	6
Netherlands	6
Spain	6
Argentina	5
Brazil	5
Portugal	5
Hungary	4
Korea, Rep.	4
Mexico	4
Sweden	4
Belgium	3
Finland	3
Slovenia	3
Thailand	3
Armenia	2
Canada	2
Ireland	2

New Zealand	2
China, Rep. (Taiwan)	2
Austria	1
Bangladesh	1
Chile	1
Greece	1
China (Hong Kong)	1
Kuwait	1
Mongolia	1
Morocco	1
Oman	1
Russia	1
Singapore	1
UAE	1
Total:	282

People may join COMLAND by sending their name, affiliation, country and email via the "Contact" page on the www.comland.org website. Members will be sent emails on an irregular basis advising of meetings and other relevant matters.

III INFORMATION ON MEETINGS

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 (2013-2014):

In this reporting period COMLAND has organized formal field meetings in Poland and Tasmania, Australia and co-sponsored paper sessions with IAG.

(1) Krakow, Poland: August 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.

See APPENDIX A for "Overview of COMLAND Pre-Congress Fieldtrip and Paper Sessions IGU Regional Congress, Krakow 2014" and the "Pre Congress Fieldtrip".

(2) Tasmania, Australia: October 2014

Field trip organizer: Mr Owen Graham, Sydney Australia

See APPENDIX B for "Report on the COMLAND Meeting and Field Trip in Tasmania, Australia 25 - 29 October 2014"

Meeting Outcomes:

Consistent outcomes from the COMLAND Meetings were:

- strong support for collaborative meetings and activities,
- promoting the participation of younger people in Commission activities and or related,

- proposing that conference paper sessions have a dedicated stream for contributions by students,
- extending Commission activities to consider the more “applied” aspects of land degradation whilst continuing to support research, and
- reminders that 18 months lead time is usually required for many potential conference and field trip attendees because of scheduling and budget allocation.

Further information on these and previous COMLAND meetings is available at: www.comland.org/past-meetings.html

FUTURE MEETINGS

Moscow 2015:

COMLAND has deferred a decision on whether to hold a meeting and field trip during the IGU Moscow Congress in 2015. This is because COMLAND does not have a local contact that can undertake logistics and other arrangements.

Slovenia 2016:

A COMLAND Meeting and Field Trip will be held in association with the 2016 Carpatho-Balkan-Dinaric Conference on Geomorphology that will take place in Postojna (Slovenia). Advice is being progressively updated on the COMLAND web site.

Other Meetings:

COMLAND is exploring opportunities for meetings and field trips during 2015 and 2016 and will publish details on its website when these are confirmed.

IV COMLAND COLLABORATION WITH OTHER ORGANIZATIONS:

International Association of Geomorphologists (IAG):
Co-Sponsored paper sessions with the Human Impacts on Landscapes Working Group at the IAG Congress in Paris (August 2013).

Polish Academy of Sciences:
Co-Sponsored field trip and paper sessions at IGU Congress in 2014. Further details in APPENDIX A.

Environment Institute of Australia and New Zealand (EIANZ):
Collaborative support with the COMLAND Tasmanian Meeting and Field Trip (October 2014). Brought similar numbers from each organisation together for the field trip as well as additional participants for the subsequent annual EIANZ Conference. Further details in APPENDIX B.

Other IGU Commissions:
COMLAND Members are developing associations with individuals from other IGU Commissions with the view to program and project development. This association is from attendance at respective field trips and meetings organised by Commissions.

V PUBLICATIONS (2013 – 2014)

COMLAND continues to publish papers from its sponsored sessions and conferences, with most appearing in international peer reviewed journals. COMLAND published one special issue, has one special issue “in press” and co-published two fieldtrip guidebooks.

Hudson, P.F. and LaFevor, M. (Eds.), 2014 Management and Monitoring Human Impacts on Landscapes for Environmental Change and Sustainability. Journal of Environmental Management 138 (refereed special issue from sponsored sessions held at the IGU Congress in Cologne, DL 2012 and the IGU Regional Congress held in Santiago, Chile, 2011).

Hudson, P.F., Goudie, A. and Asrat, A (Eds.). 2015 (in press). Human Impacts on Landscapes: Geomorphology, Environmental Change, and Sustainability. Zeitschrift für Geomorphologie (refereed special issue from co-sponsored sessions held at the International Association of Geomorphology Congress in Paris, France 2013).

VI RECENT AWARDS:

Several important contributors to land degradation research have been awarded by COMLAND. The COMLAND Award is intended to express appreciation to individuals or groups for their special contributions to COMLAND and land degradation science. COMLAND’s Premier Award is for Distinguished Research on Land Degradation and is open to both individuals and institutions.

COMLAND Award

Hiroshi Suwa, Japan, 2013
Pawel Prokop, Poland, 2014
Renata Dulias, Poland, 2014

COMLAND Distinguished Research on Land Degradation Award

Arthur Conacher, Australia, 2012

VII WEB SITE

COMLAND has recently completely updated and revised its own website, which contains information on its structure, activities, past and future meetings. The website was revamped in 2013 and is now maintained by Owen Graham (Co-Secretary of COMLAND). The address is: www.comland.org

The COMLAND website contains information that includes upcoming and past meetings, the Steering Committee, awards, reports and publications.

APPENDIX A

Overview of COMLAND Pre-Congress Fieldtrip and Paper Sessions IGU Regional Congress, Krakow 2014

The 2014 IGU Regional Congress in Krakow, Poland afforded COMLAND to sponsor special thematic sessions and also a pre-congress field trip.

Paper Sessions

The IGU - COMLAND sponsored papers sessions (C12.24) entitled Land Degradation and Environmental Change, chaired by Dr. Pawel Prokop (Polish Academy of Sciences, Krakow) and Dr. Paul Hudson (Leiden University, The Netherlands). The three sessions included a total of 13 oral presentations with research from a range of international settings and land degradation themes, and especially which concerned the impact of historic land use change. A complete list of the speakers and paper titles (hyperlinked to abstracts) is hereby included:

Session 1:
Analysis of archaeological, historical and modern interactions between human and nature using digital geospatial data
Takashi Oguchi, Yasuhisa Kondo
- The University of Tokyo

Land degradation in South African dryland margins; problems and prospects
Peter Holmes
- University of the Free State

Rainstorm control of landslides with a reference to Kii Mountains, Japan
Hiroshi Suwa
- University of Tokyo

Biophysical and socioeconomic investigations related to landslides in the Himachal Himalaya
Punyatoya Patra, Aditi Mahavidyalaya
- University of Delhi

The human impact on environmental processes in the Gorce Mountains (Western Polish Carpathians) in the past 50 years
Anna Bucała, Maciej Kozak
- Polish Academy of Sciences
- Jagiellonian University in Krakow

Session 2:
Characterization of floodplain lakes along the Lower Mississippi River
Paul Hudson and Dax Boot

- Universiteit Leiden
- Universiteit Utrecht

Human impact on suspended sediment transport in Polish Flysch Carpathians over the last 40 years
Małgorzata Kijowska-Strugała
- Polish Academy of Sciences

Impact of Indira Gandhi Irrigation Project (IGNP) on desert ecology of Thar Desert, India
Ram Kumar Gurjar, Ajay Kumar
- University of Rajasthan
- University of Delhi

Ecological changes and environmental management in Aravalli Hilly Range: A case study of Tonk District, Rajasthan, India
Rama Prasad
- University of Rajasthan

Destination sustainability: A maze muddled in inter-disciplinary discord
Edmore Kori
- University of Venda

Session 3:
Antimony occurrence and mobility in an area impacted by a former stibnite mine in Sardinia (Italy)
Rosa Cidu, Riccardo Biddau, Elisabetta Dore, Andrea Vacca
- University of Cagliari

Ecological knowledge and daily practices of Hausa cultivators to land degradation in Sahelian Niger
Shuichi Oyama
- Kyoto University

Impact of tea and rice cultivation on soil carbon loss of the Sikkim Himalayan piedmont
Pawel Prokop, Dominik Płoskonka
- Polish Academy of Sciences
- National Research Institute of Poland

The three sessions extended over much of the first day of the meeting, and were followed by the COMLAND Business Meeting (see minutes posted to web site).

Pre-Congress Fieldtrip

A COMLAND pre-congress field trip was organized by Dr. Paweł Prokop (Polish Academy of Sciences, Krakow) and Dr. Renata Dulias (University of Silesia) and included a detailed guidebook. The four day field trip spanned a range of familiar human-environment themes appreciated by COMLAND Members, while providing exposure to fascinating regional case studies and impressive physical and cultural landscapes of Southern Poland. The fieldtrip included two distinct segments, two days in the Silesian Uplands and two days in the Carpathian and Tatra Mountains.

Days 1 and 2:

The field trip began outside the historic centre of Krakow, providing an interesting urban landscape with many impressive 19th century buildings in different stages of refurbishment following the end of communism. From the charming city centre the urban landscape changed as the bus crossed the Wisla River and headed north towards the Silesian Uplands. The Silesian Uplands represent one of Europe's oldest major areas for coal mining, in addition to ores and other minerals utilized by industry and manufacturing. Many centuries of mining has resulted in industrial and post-industrial landscapes littered with associated relict and active manufacturing facilities, quaries, and old residential spaces built for the factory workers. This was especially evident in the tour of the old workers quarters for the Tarnowskie Góry silver mine, which was followed by a deep descent into the actual mine. Importantly, this early phase of the fieldtrip afforded an opportunity to review the geologic and Quaternary geomorphic framework in which the subsequent stops related to human impacts drew upon. This included an interesting stop at the Segiet nature reserve, which was then followed by a fascinating stop at a waste heap and subsidence basin. The centuries of mining has resulted in deep local subsidence, which has created a regional landscape pock-marked with sag features and lake basins. In an interesting twist of human-environment relations, new lakes are created – which in themselves require management – as Pleistocene sand is quarried and transported to infill the maze of underlying mining tunnels to mitigate and manage environmental problems associated with land subsidence.

Days 3 and 4:

The second part of the field trip saw the group heading south, from Krakow to the Carpathian and Tatra Mountains, a region where the geology and dynamic human-environment interaction have created a range of fascinating landscapes. The front ranges of the mountains, including the Pieniny and Gorce ranges, undergo considerable landslides because of the inherently unstable parent material. Here the regional geology is dominated by a wide belt of alternating shale-sandstone Flysch bedding. The numerous relict and active mass wasting events create challenges for managing land and transportation infrastructure. An important component of this segment of the fieldtrip was the landscape change related to the collapse of communism, particularly in the Gorce Mountains. Here we observed land abandonment and afforestation, which is reducing rates of soil erosion. While the spread of forests and reduction in soil erosion is generally considered to be positive outcome of land use change, the reduction in riverine sediment loads is associated with downstream incision of river channels, which then requires new management approaches.

A highlite of the fieldtrip was the vista from atop the high ridge (1987 m a.s.l.) along the Polish – Slovak border. Here we were afforded impressive views of classic Quaternary glacial geomorphic features, such as U-shaped valleys, cirques, moraines, talus development, and a discussion of the regional manifestation of the Little Ice Age. At this site the group was also able to view several forms

of landscape management and restoration, which is necessary because of soil degradation caused by grazing and recreational land use associated with tourism, specifically the ski industry. Other stops provided opportunities to discuss the issue of construction of the Klimkówka dam and reservoir from the standpoint of flood control and water management, and more generally the environmental impacts of dams.

Traveling across the region with an international group of geographers provided opportunities to observe many facets of landscapes. Thus, in addition to more traditional physical geographic features, there were also stops which were primarily cultural in nature. This included highliting the environmental change associated with the displacement of civilians post-WW II, which is an important component of the overall landscape. From the standpoint of religious landscapes, the group also enjoyed a visit to an historic Greek Catholic church, which have a distinctive architectural style common to the region, recognized as a UNESCO World Heritage site. The final evening of the trip included an especially nice event, with the highlite being a virtual feast of regional Polish cuisine served in a traditional rustic lodge.

The final stop – as the group departed the mountains to return to Krakow – was the Szymbark Research Station, an experimental field station operated for decades by the Polish Academy of Sciences. Here we were provided a tour of the facilities and provided an overview of the instrumentation and different types of projects conducted by the researchers, especially related to soil erosion, hydrology, and land use change. The facility has been the source of much research and scholary publications by scientists from Poland and other nationalities.

The fieldtrip participants warmly thanked Dr. Prokop and Dr. Dulias for their superb fieldtrip. The organizers deserve special attention for coordinating a comprehensive agenda which coherently linked the diverse thematic, cultural and physical landscapes. Of special note was the support provided by teams of students, research collaborators, and especially a dedicated cadre of Geography students from Universitiy of Silesia and Jagiellonian University. Their understanding of the local settings and issues greatly contributed to the fieldtrip's success.

Link to the fieldtrip: http://www.igu2014.org/index.php?page=trips_academic_excursions

Paul F. Hudson, PhD
Chair of COMLAND
Associate Professor of Physical Geography
Leiden University Honours College
The Hague, Netherlands

APPENDIX B

Report on the COMLAND Meeting and Field Trip in Tasmania, Australia 25 - 29 October 2014

This COMLAND supported Meeting and Field Trip was capably managed by Owen Graham and run in association with the Environment Institute of Australia and New Zealand (EIANZ) as a pre-conference Field Trip of its Annual Conference (Hobart, 30-31 October 2014). EIANZ is a leading professional body in Australia and New Zealand for environmental practitioners, and promotes independent and interdisciplinary discourse on environmental issues.

The Field Trip, with 13 participants, traversed southern Tasmania and focused, every single day, on a different topic: forestry, grazing and land management, mining, wilderness and tourism, high value niche industries. It was generously assisted by personnel from: Forestry Tasmania, University of Tasmania, Copper Mines of Tasmania, EPA Tasmania, Wilderness Woodworks, NRM South, and Redlands Estate. A comprehensive Field Guide was prepared by Owen Graham.

Day 1 focused on forestry sustainability and research (forestry is a very important activity in the country side, strongly supporting the economy and giving rise to local niche industries), with discussion including the history and trends in Tasmanian forest management as well as how research has influenced this management. In Warra, the group had the opportunity to visit an instrumented site which is part of the Terrestrial Ecosystem Research Network (TERN).

Day 2 focused on land degradation and conflicting land uses in the Central Highlands, with discussion about topics including disturbance by burning and by grazing of domestic stock, rabbits, and native vertebrate herbivores on the vegetation cover. Experimental data from field plots with different grazing intensities were presented and discussed.

Day 3 focused on the degradation caused by a historic copper mine in Queenstown, with discussion considering different environmental problems: vegetation/revegetation, mine tailing discharge, acid adit water discharge. Current day management and remediation actions for the future, particularly regarding legacy issues, were presented and discussed as well.

Day 4 focused on wilderness and tourism. A cruise on Macquarie Harbour to the Gordon River gave the possibility to visit some of Australia’s oldest convict ruins on Sarah Island, to see high-tech aquaculture farms, and to walk into the rainforest. Following the cruise, we visited a wood crafting business in Strahan to hear from former forestry workers how they started a niche business producing high quality wood products with high-tech equipment.

Day 5 was a long day on the bus returning eastbound through the Franklin–Gordon Wild Rivers National Park, then through farming land to Hamilton. In the afternoon we visited the Redlands Estate Farm and Distillery to examine the production of barley that is used in whisky distillation. Here, the technology for soil and crop monitoring, as well as environmental issues in the local area (particularly degradation of riparian vegetation from weed species) were discussed.

On the whole, the range of landscapes and land uses shown during the Field Trip allowed the participants to consider the relative levels of degradation and application of various management strategies. Moreover, the collaboration with EIANZ brought together environmental professional participants (EIANZ people) and more research-oriented people (COMLAND people), thereby putting a more "worldly" aspect on discussions during the

Field Trip, as well as bringing a strong practical emphasis to the academic level discussions. These objectives brought mutual benefits to both organizations.

Field trip participants were warmly invited by EIANZ to a welcome reception on the evening of Friday 24 October and to the EIANZ Pre-Conference Reception on the evening of Wednesday 29 October.

Field trip participants greatly appreciated the selected accommodations and the high standard of meals. As usual during COMLAND Field Trips, a camaraderie between participants developed. Owen Graham was formally congratulated on a well organized and enjoyable field trip.

Andrea Vacca
Dept. of Chemical and Geological Sciences
University of Cagliari
Italy

A formal COMLAND Meeting was held during the field trip. See Minutes posted to the www.comland.org website.