

International Programme on Landslides (IPL)

The International Programme on Landslides (**IPL**) is a joint programme established by the International Consortium on Landslides (**ICL**), United Nations Educational, Scientific and Cultural Organization (UNESCO), World Meteorological Organization (WMO), Food and Agriculture Organization of the United Nations (FAO), United Nations International Strategy for Disaster Risk Reduction (UNISDR), United Nations University (UNU), International Council for Science (ICSU), and the World Federation of Engineering Organizations (WFEO). It was established by the **2006 Tokyo Action Plan** “Strengthening Research and Learning on Landslides and Related Earth System Disasters for Global Risk Preparedness, the output of the Tokyo Round Table Discussion “Strengthening Research and Learning on Earth System Risk Analysis and Sustainable Disaster Management within UN-ISDR as Regards Landslides” held at the United Nations University, Tokyo, from 18th to 20th January, 2006.

The IPL is managed by the **IPL Global Promotion Committee**, Chair: Salvano Briceno (Director of UNISDR), and deputies: Badaoui Rouhban (Director for Disaster Reduction of UNESCO), Paolo Canuti (President of ICL) and Kyoji Sassa (Executive Director of ICL). The Secretariat of IPL is the IPL World Centre, hosted by ICL.

The IPL Global Promotion Committee consists of ICL member organizations, and five UN organizations (UNESCO, WMO, FAO, UNISDR, UNU) and two global stakeholders in Science and Technologies (ICSU and WFEO). They exchanged memoranda of understanding with ICL to promote the 2006 Tokyo Action Plan. The photo shows the exchange ceremony between ICL and UNESCO in 2006.



The activities of IPL include **IPL projects** (37 ongoing projects in 2010), editing and publication of *Landslides: Journal of the International Consortium on Landslides*, identification and coordination of **World Centres of Excellence on Landslide Risk Reduction (WCoEs)** (12 Centres in 2010), organization of a **World Landslide Forum (WLF)** every three years (WLF1 at UNU in Tokyo, 2008, WLF2 at FAO in Rome, 2011), and a **Landslide School Network**, which was proposed in a meeting held at UNESCO in November 2009. This activity is linked with the UNESCO-Kyoto University-ICL UNITWIN Cooperation Programme “Landslide and Water-related Disaster Risk Management for Society and the Environment”.

The International Consortium on Landslides (**ICL**) is a non-profit and non-governmental organization which consists of 49 member organizations from 29 countries in 2010. The **logo of ICL** (top-left) presents I: a building at landslide risk, an Inclined C: a moving landslide, and L: a retaining wall to stabilize the slope.



The **logo of IPL** (top-right) is a combination of ISDR and eight member organizations (top-right)

UNITWIN Cooperation Programme is a University Twining and Networking Programme of UNESCO. It was established by UNESCO, Kyoto University (Disaster Prevention Research Institute: DPRI) and ICL for landslide-risk reduction in 2003 and is being increased in scope to include water-related disasters and disaster risk management in 2010. The **logo of UNITWIN** Cooperation Programme is a combination of those three partners (bottom).

2006 Tokyo Action Plan

Strengthening Research and Learning on Landslides and Related Earth System Disasters for Global Risk Preparedness

The Tokyo Action Plan was adopted at the Tokyo Round Table Discussion “Strengthening Research and Learning on Earth System Risk Analysis and Sustainable Disaster Management within UN-ISDR as Regards Landslides” organized at UNU in Tokyo in 2006. It identified the global cooperation fields of IPL at the initial phase as follows:

(1) Technology Development

A. Monitoring and Early Warning

- Use of various on-site, in-situ technologies, as well as satellite observations in monitoring landslide effects and contributing factors for early-warning purposes
- Development of automated monitoring methods covering large spatial extent and real-time data communication, as well as low-cost monitoring devices
- Development of early-warning methodologies, in particular for rain-induced landslides
- Applications linking meteorological, hydrological and landslide models

B. Hazard Mapping, Vulnerability and Risk Assessment

- Hazard Mapping at local and global scales
- Vulnerability assessment, considering human life, land resources, structures, infrastructure, and cultural heritage
- Risk assessment and communicating risk in an easily understood manner

(2) Targeted Landslides: Mechanisms and Impacts

A. Catastrophic Landslides

- Catastrophic landslides induced by natural and anthropogenic factors such as rainfall, earthquakes, volcanic activity, river erosion, and human activities, and their combinations
- Landslides threatening human lives and high societal values
- Gigantic coastal landslides and marine landslides causing tsunamis

B. Landslides Threatening Heritage Sites

- Studies for protection of cultural heritage, cultural landscape, and the natural heritage from landslides using non-invasive technologies and appropriate mitigation strategies (e.g. Machu Picchu, Bamiyan, Lishan, Cordillera Blanca)

(3) Capacity Building

A. Enhancing Human and Institutional Capacities

- Building human capacities and expertise in landslide management
- Institution building at national and local levels through Centers of Excellence
- Enhancing implementation and action at local level

B. Collating and Disseminating Information/ Knowledge

- Developing a culture of awareness on landslide risks
- Developing model policy frameworks, standards, guidelines/checklists, and training modules.

(4) Mitigation, Preparedness and Recovery

A. Preparedness

- Strengthening disaster preparedness of all stakeholders
- Strengthening capacities of communities and local institutions to cope with landslide hazards
- Forecasting and providing early warning of adverse conditions likely to lead to landslide activity
- Preparing contingency recovery plans, including pre-positioning of technical and material resources for likely landslide events

B. Mitigation

- Development of innovative, low-cost, and ecologically appropriate landslide mitigation techniques.
- Mountain conservation methods, including soil conservation, forest and watershed management, and appropriate land-use techniques
- Appropriate civil engineering works, including construction and urban and coastal development;
- Restricting inappropriate development in landslide prone areas
- Development of appropriate policy and planning mechanisms, such as land-use management (including zoning)
- Promotion and strengthening of monitoring and warning systems

C. Recovery

- Post-landslide recovery and rebuilding efforts should integrate landslide mitigation measures
- Prevention of secondary risks of landslides resulting from inappropriate re-building efforts in response to any disaster (for example, earthquakes, volcanic eruptions, extreme weather events, etc.)
- Implementation of landslide recovery efforts and programmes (including psycho-social and health aspects) with the participation of affected communities and local authorities
- Providing long-term support to ensure sustainable recovery

The Action Plan decided to establish the **IPL Global Promotion Committee (IPL-GPC)** for its management, to create a global information platform for future joint activities of the world-wide landslide community, named the **World Landslide Forum** that shall be convened every 3 years, and to identify and promote **World Centres of Excellence (WCoE)** every 3 years within eligible organizations, contributing to “Risk Reduction for Landslides and Related Earth System Disasters”. An independent Panel of Experts was set up by IPL-GPC to endorse the CoEs.

Activities of International Programme on Landslides (IPL)

Activities of the IPL include IPL projects proposed by ICL members, a global information and cooperation platform “World Landslide Forum”, the identification and promotion of the World Centres of Excellence on Landslide Risk Reduction, a Landslide School Network to promote capacity development and landslide risk reduction in various regions, and publication of the ICL journal “Landslides” as a core activity to disseminate information.

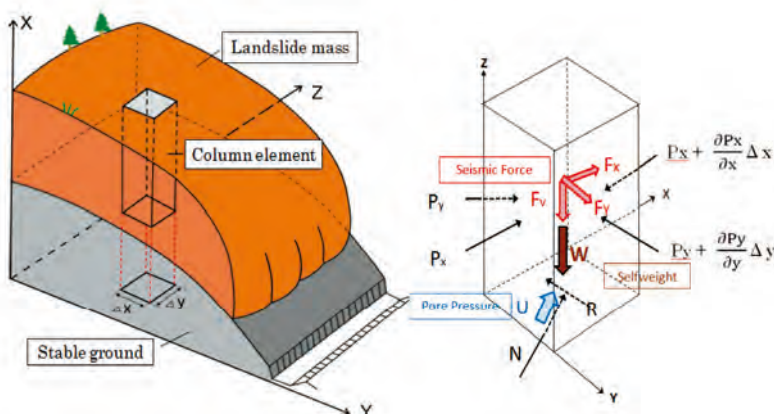
1. **Landslides: Journal of the International Consortium on Landslides** was founded as a quarterly journal in April 2004 with cooperation from Springer. It is the first full color scientific journal in the world without a contribution fee. It includes articles on both the science and technological aspects of landslides. Full color images of landslides convey information which may be understood by landslide researchers with different backgrounds. The cover of the journal (below) shown is the latest issue of *Landslides* Vol.7, No.3 published in September 2010, which is a thematic issue on Early Warning of Landslides.
2. **IPL projects** are proposed by ICL members with joint researchers on a specific topic. The proposal and annual report are evaluated each year and approved by the IPL Global Promotion Committee. The meeting is mostly organized at the UNESCO Headquarters in Paris. Some IPL projects continue from year to year while some are completed.

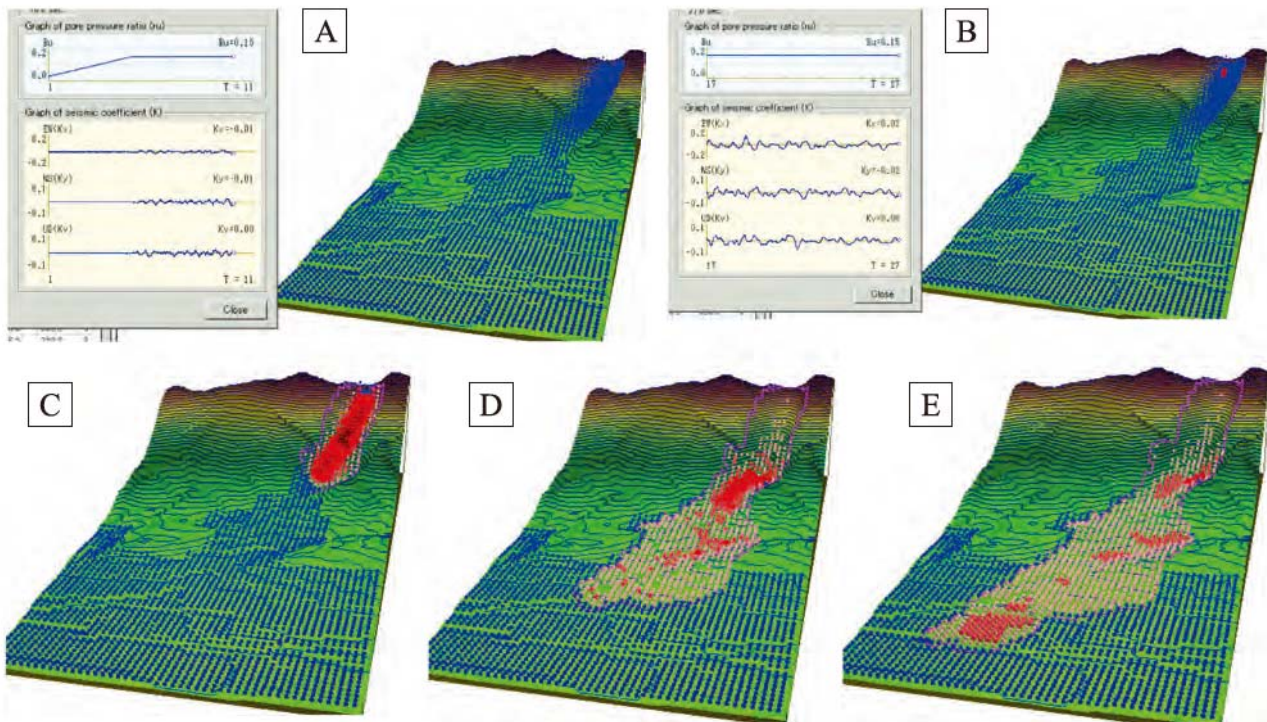


The IPL programme was initially developed from IGCP-425 “Landslide hazard assessment and cultural heritage”). Therefore, the initial project C101 was Landslide risk evaluation and mitigation in cultural and natural heritage sites which included “Landslide investigation in Inca’s world heritage Machu Picchu”, “Investigation of instability of Budda Niches in Bamiyan, Afganistan” and others. Project M106 “A best-practice handbook for landslide hazard assessment” published “The Landslide Handbook - A guide to Understanding Landslides” in 2008. This book has been translated into Chinese, Japanese and Spanish. The landslide community contributed to the International Decade for Natural Disaster Reduction of the United Nations by organizing a Working Party on World Landslide Inventory. They proposed internationally accepted terminology for types of landslides, landslide features, velocities etc. The handbook is used as a reference by authors contributing to “World Reports on Landslides” in a new IPL WEB under construction. Project M101: “Areal Prediction of earthquake and rain-induced rapid and long-travel flow phenomena” (APERITIF project) developed a new undrained dynamic loading ring-shear apparatus to study the dynamics of rapid landslides induced earthquakes and rainfall. The project has been developed “for the IPL-105 Asian Joint Project “Early Warning of Landslides”

which was proposed by ICL and implemented using funds from the Japan Science and Technology Agency and contributions from the China Geological Survey, Gaduja Mada University, Indonesia, and others from Korea, Philippines and Thailand. A thematic issue on “**Early Warning of Landslides**” (Vol.7, No.3) includes the results of projects and other papers on this theme.

3. **A new integrated model simulating the initiation and motion of earthquake and rain-induced rapid landslides (LS-RAPID)**
A new computer simulation was developed through Projects M-101 and IPL-105. It is an integrated model which can simulate the both the initiation and movement processes. Key parameters are based on the results of undrained dynamic loading ring shear apparatus tests of soils from landslides.





The model is based on the balance of forces acting on the soil column, including gravity, seismic acceleration, and pore pressure as shown in the bottom-left of the left page (Sassa et al. 2010, Landslides Vol.7, No.3, pp: 219-236). This simulation model and the dynamic ring shear apparatus were applied to the 2006 Leyte landslide in Philippines, which killed more than 1000 people and may have been triggered by a small nearby earthquake after rainfall. An areal photo of the landslide and the simulation result are shown above. The left-top figures of A and B show the pore-pressure ratio and the monitored seismic accelerations. When a soil mass moved, the color changes from blue to red. A: no motion yet, B: a small local failure occurred in the upper part of slope, C: local failures developed into a landslide mass, D: the landslide mass entered the flat residential area, where it destroyed houses and increased in volume by entraining the unstable alluvial deposits, E: Movement terminated near the river. The estimated landslide run-out area (E) matches with the areal photo of the landslide in the bottom-right of the left page. The software is commercially available from the Godai Development Cooperation. The ICL wishes this computer programme to contribute to landslide-risk assessments in regions that have suffered from earthquakes and rain-induced landslides.

4. World Centres of Excellence on Landslide Risk Reduction

Twelve Centres of Excellence were identified at the IPL-GPC prior to the First World Landslide Forum. They are from 11 countries and have different objectives and scales of activity in target regions. The status of current Centres are effective until the Second World Landslide Forum at FAO, 2011, when new Centres of Excellence for 2011-2014 will be designated. Current Centres are: 1. China Geological Survey, 2. Faculty of Science, Charles University in Prague, Czech Republic, 3. Department of Earth Science, University of Florence, Italy, 4. Research Centre on Prediction Prevention and Control of Georisks of Rome University "La Sapienza", Italy, 5. The Japan Landslide Society, 6. Slope Engineering Branch, Public Works Department of Malaysia, 7. International Centre for Geohazards (ICG) at NGI, Norway, 8. Institute of Geospheres Dynamics of Russian Academy of Science (IDG RAS) & Kyrgyz Institute of Seismology (KIS), 9. University of Ljubljana, Faculty of Civil and Geodetic Engineering (UL FGG), Slovenia, 10. Engineering Geoscience Unit, Council for Geoscience, South Africa, 11. Asian Disaster Preparedness Center, Thailand, and 12. U.S. Geological Survey, USA.

5. Landslide School Network

A Landslide School Network was proposed and approved at the 2009 IPL Global Promotion Committee and ICL.

The aim is to create a worldwide network contributing to capacity development of young researchers, practitioners, citizens and students with respect to landslide disaster reduction.

- To invite participation of the existing schools by integrating their existing programs in education, such as summer schools, training, courses, etc. into one network of capacity development units under ICL-IPL coordination.
- To invite the participation of groups, departments of universities and institutes, departments of national or provincial governments, national or regional societies and other NGOs that have a potential to contribute to landslide risk mitigation.
- To collect and create a common resource of PowerPoint presentations, videos, text books and field guides, manuals and case studies for the Landslide School Network that can be used in each school.
- To facilitate the transfer and exchange of knowledge, technology, and experiences, etc., to promote cross-cultural understanding.

The activities and outputs will be reported and circulated through IPL WEB and *Landslides*.



International Programme on Landslides (IPL)

*An international programme established by 2006 Tokyo Action Plan strengthening research and learning on landslides and related earth system disasters for global risk preparedness.
IPL is managed by IPL Global Promotion Committee.*

IPL Global Promotion Committee:

Chair: Salvano Briceno (Director of UNISDR). Deputy Chairs: Badaoui Rouhban (Director for Disaster Reduction of UNESCO), Paolo Canuti (President of ICL), Kyoji Sassa (Executive Director of ICL)

Member Organizations::

The International Consortium on Landslides (ICL)* / The United Nations Educational, Scientific and Cultural Organization (UNESCO) / The World Meteorological Organization (WMO) / The Food and Agriculture Organization of the United Nations (FAO) / The United Nations International Strategy for Disaster Reduction Secretariat (UNISDR) / The United Nations University (UNU) / International Council for Science (ICSU) / World Federation of Engineering Organizations (WFEO) / International Union of Geological Sciences (IUGS)



*International Consortium on Landslides (ICL)

An international non-government & non-profit scientific organization promoting landslide research and capacity building for the benefit of society and the environment

President: Paolo Canuti (Prof. Emeritus, University of Firenze, Italy)

Vice Presidents: Peter Lyttle (U.S. Geological Survey, USA) / Claudio Margottini (National Institute for the Protection and Environmental Research, Italy), Kaoru Takara (Kyoto University, Japan), Yueping Yin (China Geological Survey),
Executive Director: Kyoji Sassa (Prof. Emeritus, Kyoto University)

ICL Members:

University of Buea, Cameroon / Geological Survey of Canada / Chinese Academy of Sciences, Chengdu Institute of Mountain Hazards and Environment / Northeast Forestry University, China / Xian Municipal Government, Lishan Landslide Prevention and Control Office, China / Northeast Forestry University, China / Xi'an Jiaotong University, Department of Civil Engineering, China / China Three Gorges University, Institute of Geological Hazard Mitigation, China / China Geological Survey / Universidad Nacional de Columbia, Columbia / Charles University, Faculty of Science, Czech Republic / Technische Universität Darmstadt, Institute and Laboratory of Geotechnics, Germany / National Institute of Disaster Management, New Delhi, India / University of Gadjah Mada, Indonesia / Building & Housing Research Center, Iran / International Institute of Earthquake Engineering and Seismology (IIEES), Iran / Agricultural Research and Educational Organization (AREO), Iran / European Commission's Joint Research Centre, IPSC/HSU, Italy / University of Firenze, Earth Sciences Department, Italy / University of Rome "La Sapienza" Research Institute on Prediction, Prevention and Control of Georisk, Italy / National Institute for the Protection and Environmental Research (ISPRA) – Dept. of Geological Survey, Italy / Ehime University, Faculty of Engineering, Japan / Forestry and Forest Product Research Institute, Japan / Japan Landslide Society / Kyoto University, Disaster Prevention Research Institute / Niigata University, Research Center for Natural Hazards and Disaster Recovery, Japan / University of Tokyo (Institute of Industrial Science and Department of Civil Engineering, Geotechnical Engineering Group), Japan / Korea Institute of Geoscience and Mineral Resources (KIGAM) / Mara University of Technology, Malaysia / Slope Engineering Branch, Public Works Department of Malaysia / National Autonomous University of Mexico (UNAM) / International Centre for Integrated Mountain Development (ICIMOD), Nepal / International Centre for Geohazards (ICG) in Oslo, Norway / Grudec Ayar, Peru / Moscow State University, Department of Engineering and Ecological Geology, Russia / Russian Academy of Sciences, Institute of Environmental Geoscience (IEG RAS) / Russian Academy of Sciences, Institute of the Geospheres Dynamics / Unified Energy System of Russia, Open Joint-Stock Company Engineering Centre / Engprotection, Russia / Comenius University, Faculty of Natural Sciences, Department of Engineering Geology, Slovakia / University of Ljubljana, Faculty of Civil and Geodetic Engineering (ULFGG), Slovenia / Engineering Geoscience Unit, Council of Geoscience, South Africa / Central Engineering Consultancy Bureau (CECB), Sri Lanka / Asian Disaster Preparedness Center, Thailand / Ministry of Agriculture and Cooperatives, Land Development Department, Thailand / United Nations University, ITC Schol on Disaster Geo-Information Management (UNU-ITC DGIM) / Institute of Telecommunication and Global Information Space, Ukraine / U.S. Geological Survey, USA / Institute Hydroingeo, State Committee of Geology of Uzbekistan / Institute of Transport Science and Technology, Vietnam

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The Second World Landslide Forum

Putting Science into Practice

Date: 3-9 October 2011

Food and Agriculture Organization of the United Nations (FAO), Rome, Italy

Organizer

The Global Promotion Committee of International Programme on Landslides (IPL): International Consortium on Landslides (ICL), United Nations Educational, Scientific and Cultural Organization (UNESCO), World Meteorological Organization (WMO), Food and Agriculture Organization of the United Nations (FAO), United Nations International Strategy for Disaster Risk Reduction (UN/ISDR), United Nations University (UNU), International Council for Science (ICSU), World Federation of Engineering Organizations (WFEO), and International Union of Geological Sciences (IUGS).

Honorary Chairpersons: Irena Bokoba (UNESCO Director General), Catherine Bréchnignac (ICSU President), Jacques Diouf (FAO Director General) (tbc), Michel Jarraud (WMO Secretary General), Maria P. Laffargue (WFEO President), Konrad Osterwalder (UNU Rector), Margareta Wahlstrom (UN Assistant Secretary-General for Disaster Risk Reduction) (tbc)

Chairpersons: Claudio Margottini (ISPRA, Forum Chair), Paolo Canuti (ICL President), Kyoji Sassa (ICL Executive Director)

General themes	Potential sessions
Landslide and global change	Landslide scenarios accounting for the climatic, geomorphological and geotechnical context Landslides, land-use systems and food security Wild fires and slope instability
Advances in landslide mapping and hazard assessment	Landslide inventory and mapping Historical landslides Landslides and extreme weather
Emerging Technologies in landslide research and practice	Landslide monitoring GIS applications Advances in slope modelling
Impact of landslides	Landslides and socio-economic impact Landslides, transportation network and lifelines Landslides and reservoirs Methods and applications of landslide loss modelling
Landslide risk assessment and management	Landslides and land-use planning Landslides and urban risk reduction Instrumentation, warnings and emergency plans Advanced technologies for landslide stabilisation Prevention policies vs. disaster recovery: cost benefit analysis Landslides (and legislation), policies and decision makers Integrated approach to landslide risk mitigation
Landslide awareness	Landslide education and capacity development
Other general themes	Submarine landslides and tsunami Landslides in coastal areas Landslides and cultural heritage Landslides and earthquakes (managing landslides in earthquake-prone areas) Landslides in cold regions Mega-landslides
Special conferences	Climate change Catastrophic events, social impact and mass media

Deadlines:

1. Pre-Registration:
20 December 2010
2. Submission of Abstracts:
20 December 2010
3. Abstract review and invitation for full paper submission:
31 January 2011
4. Submission of draft manuscripts for review (max 6 pages Landslides Journal format):
30 April 2011
5. Notification of acceptance of manuscript:
30 June 2011
6. Full paper submission and contact author registration:
31 July 2011
7. Field trip registration:
31 July 2011

Proceedings

In order to enhance the cooperation between science organizations and stakeholders, a large variety of proceeding are expected. In particular, the following products are expected to be available for all participants:

1. Complete set of proceedings containing all accepted papers, available on web site, memory stick and, possibly, on paper copy;
2. Full color book with papers for key notes and invited speakers and reports by World Centres of Excellence on Landslide Risk Reduction (WCoEs) and IPL projects;
3. Exhibitors book including description of all presented technologies, software, mitigation techniques and case studies; and
4. Leaflet with key messages for targeted stakeholders.

Secretariat

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