


IPL-ICL Session in Global Platform 2011 Round Table Discussion  
- Towards a dynamic and global development of the International Programme on Landslides (IPL) -

**How to develop the newly extended  
UNESCO-DPRI/KU-ICL  
UNITWIN Cooperation Program:  
Landslide and Water Related Disaster Risk  
Management for Society and the  
Environment**

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Professor,  
Disaster Prevention Research Institute  
Kyoto University

2011/05/09



  
United Nations Educational,  
Scientific and  
Cultural Organization

**UNI  
TWIN**

**UNITWIN Cooperation Programme  
UNESCO / Kyoto University / International  
Consortium on Landslides**

**"Landslide Risk Mitigation for Society and the Environment  
Cooperation Programme"**

The joint network for landslide risk mitigation of **UNESCO/Kyoto University/ICL** is to perform the education, research and capacity building in the field of landslide risk mitigation.

The core of this network is Kyoto University, and the activity is conducted with the cooperation of the other high education organization all over the world.

**Initiated in 2003**




**Opening ceremony of  
the UNITWIN Headquarters Building**




**September 12-25, 2004**



442721 Volume 1 - Number 1 - January 2004

  
Journal of the  
International  
Consortium on  
Landslides

**Landslides**



**IPL 100 Publication**  
"Landslides": Journal of the  
International Consortium on Landslides


The Journal was indexed in Science Citation Index Expanded at Thomson ISI since 2005.

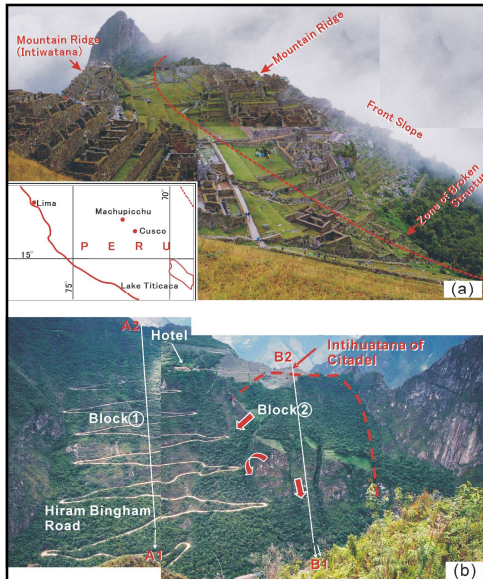
Full color; No contribution fee is required for full color print

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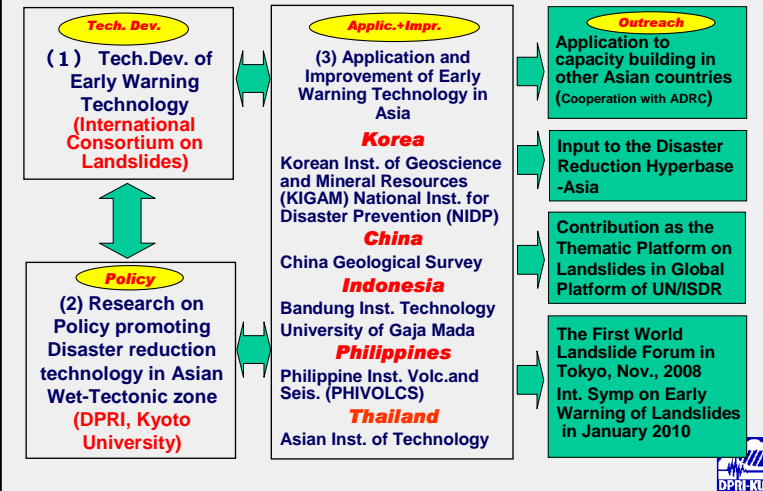
**Example of IPL Project**

**Landslide risk at Cultural and Natural Heritage sites**

(a) Machu Picchu Citadel and a line crossing the Plaza as noted taken by Sassa (2000);  
 (b) Machu Picchu slope with interpretation of Block No.1 (Hiram Bingham area) and Block No.2 (Citadel area) (from Sassa 2005, UNESCO brochure)

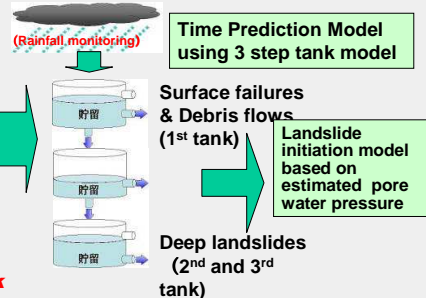


**Asian Joint Project “Early Warning of Landslides” (2007-09)**



**Tec. Dev. “Landslide Susceptibility Mapping” and “Time Prediction”**

- Topographical data (SRTM30m)
- FAO Digital soil map
- Geological Map
- Landslide distribution map
- Vegetation and land-use map
- Shear Characteristics



**Landslide Type and Risk**

	Rapid ↔	Slow
Deep ↑	(Rapid and Deep) Deep-sheared Rapid Landslides	(Slow and Deep) Reactivated Landslides
Shallow ↓	(Rapid and Shallow) Liquefied failures and Debris Flows	(Slow & Shallow) Surface Layer

- Landslide Risk is affected by Velocity and Depth.
- Risk is different in areas (Urban or Rural)
- Landslide risk should be evaluated for each type of Velocity, Depth and Area.



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**UNITWIN Cooperation Programme**  
**UNESCO / Kyoto University / International Consortium on Landslides**  
**“Landslide and Water-related Disaster Risk Management for Society and the Environment”**

The United Nations Educational, Scientific and Cultural Organization (UNESCO) and Kyoto University represented by its Disaster Prevention Research Institute (DPRI), and The International Consortium on Landslides (ICL) have agreed as follows:

**I. Purpose**  
 UNESCO and the University and the Consortium will create a “Landslide and Water-related Disaster Risk Management for Society and the Environment” Cooperation Programme in the framework of the UNITWIN/UNESCO Chairs Programme.





United Nations Educational,  
Scientific and  
Cultural Organization

**UNI  
TWIN**

## II. Main Objectives

The principal objectives of the Cooperation Programme will include:

- establishing research and education for landslide and water-related disaster risk management;
- helping members of the Network in developing methods of global landslide and hydro-meteorological monitoring;
- enhancing landslide and water experiments;
- contributing to development of a landslide and water-related disaster database and digital library as well as of a world digital inventory such as Disaster Reduction Hyperbase (DRH).



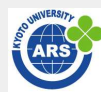
## How to develop UNITWIN

- Use the existing networks through ICL-IPL, UNESCO-IHP, AUN/SEED-Net, AUEDM, ICSU-IRDR, IDRiM Society, etc.
- Collaborate with the Landslide School Network (LSN)
- Promote interdisciplinary GCOE-ARS Graduate School Program “Sustainability/Survivability Science for a Resilient Society Adaptable to Extreme Weather Conditions
- Promote the DRH Project and use the contents for Education for DRR

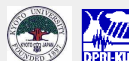


## Sustainability/Survivability Science for a Resilient Society Adaptable to Extreme Weather Conditions

*a new inter-graduate school program at Kyoto University*



A Global COE Program supported by MEXT  
(Ministry of Education, Culture, sports, Science and Technology)



## A New Inter-Graduate School Educational Program Sustainability/Survivability Science for a Resilient Society Adaptable to Extreme Weather Conditions

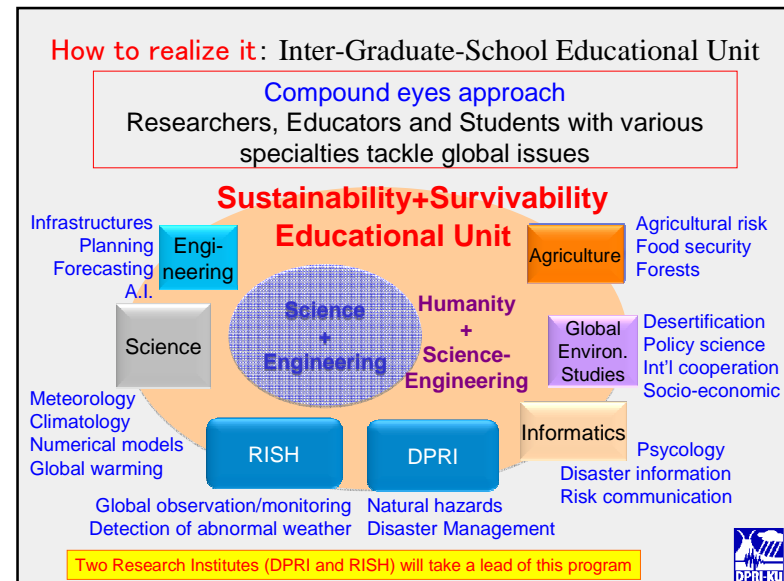
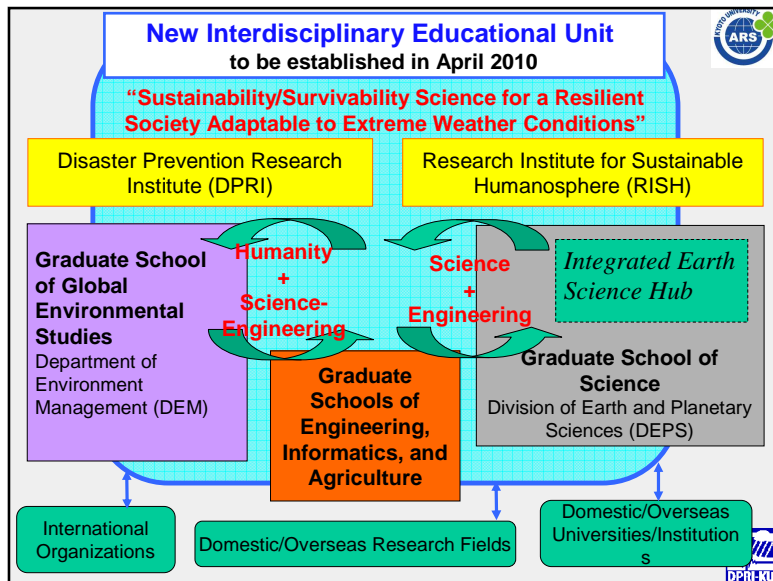
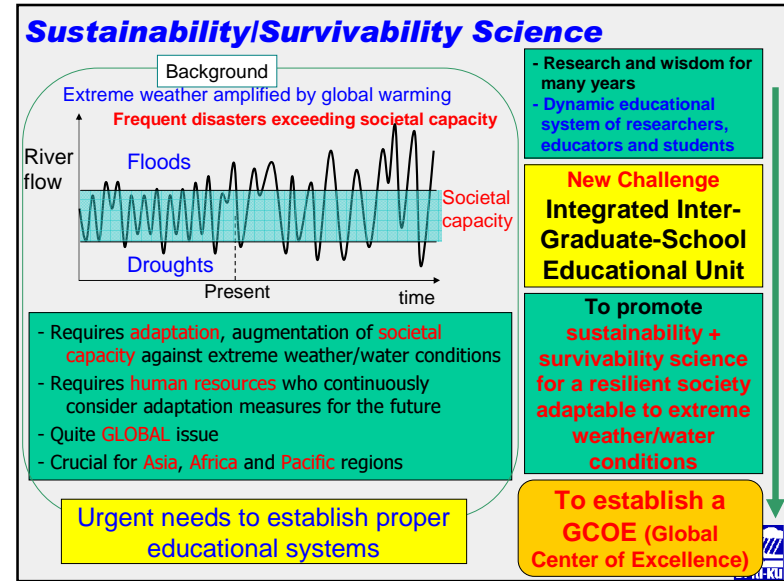
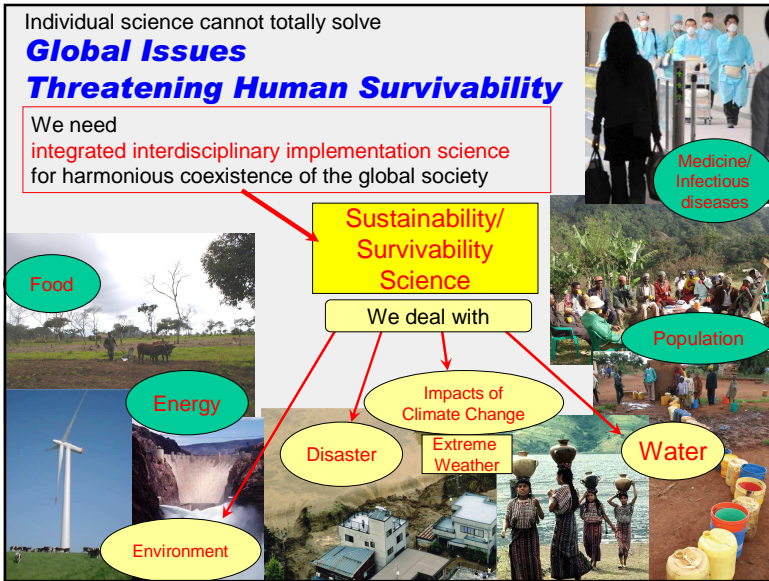
2009-2014

by

**Kyoto University**

Disaster Prevention Research Institute (DPRI)  
Research Institute for Sustainable Humanosphere (RISH)  
Graduate School of Science  
Graduate School of Global Environmental Studies  
Graduate School of Engineering  
Graduate School of Agriculture  
Graduate School of Informatics





### Field investigations for Implementation science

- for education of implementation science
- On the Job Training, in the field training
- Forming international research and educational networks through research sites and neighboring fields

fields  
Human networks to be continuous

◆: DPRI's research fields  
◆: RISH's MU radar system  
◆: Graduate School of Science's research fields

Uji-gawa Hydraulics Lab. MU Radar in Shigaraki

MoU  
 ■ DPRI 28  
 ■ RISH 12  
 Overseas res. fields  
 ▲ DPRI  
 ▲ RISH  
 ▲ DEPS  
 ▲ Others

Research sites at Niger, Kenya (or Tanzania), India, Thailand, Indonesia and Fiji

### Sustainability/Survivability Science for a Resilient Society Adaptable to Extreme Weather Conditions

#### Basic concept of education

Producing **leading researchers, international elites and local elites** who have a mission and moral sense to overcome threats that humans are (will be) facing, to bring happiness and welfare and to contribute to sustainable/survivable society.

Growing **specialists with generalist's views (generalists with specialist's views)**, who can consider disasters environmental changes as consequences of interaction between natural and social phenomena through inter-graduate-school educational system.

Producing such elites with **obligatory field research**, advanced observations, experiments and investigations, practical prediction and impact assessment, who can be policy-making, have **relevant judgment at disaster sites**, and have a **wide range of activities**.

### Global links with many overseas organizations

UNESCO (United Nations Educational, Scientific and Cultural Organization) MoU

UNITWIN Program (2003-)

ICL (International Consortium on Landslides)

UN-ISDR (UN-International Strategy for Disaster Reduction) Participating

AIT (Asian Institute of Technology) G.S. for Disaster Management Master Program, 2008~ Ph.D. Program, 2009~ MoU

Networks of Asia-Pacific Universities  
 AUEDM  
 APRU  
 AEARU  
 AUN/SEED-Net

DPRI 28 MoUs RISH 12 MoUs

21st Century COE Project (2003-2007)

ITB (Bandung Institute of Technology, Indonesia) International Summer School: 180 students from 18 countries

G.S. of Global Env. Studies MoU

G.S. of Science MoU

G.S. of Engineering MoU

G.S. of Informatics MoU

International Innovation Center (IIC)

G.S. of Agriculture To be linked

UNU (United Nations University, Tokyo) UNU-EHS (Env. and Human Security, Bonn) MoU

ICSU (International Council for Science) Integrated Research on Disaster Reduction (IRDR, 2008-) MoU

SOPAC (Pacific Islands Applied Geoscience Commission)

Assiut University (Egypt) MoU

Jomo Kenyatta Univ. of Agriculture and Technology (Kenya) Exchange programs

University of Dar es Salaam (Tanzania) Exchange programs

Field Research and Education with African countries

ICRIAT-Niamey (International Crop Research Institute for the Semi-Arid Tropics) + Niamey University (Niger)

### Field studies: Social adaptation based on scientific understandings

Theme 1: Scientific understandings  
 Science-Engineering Interdisciplinary Research on Monitoring and Prediction of Extreme Weather, Water Cycle and Disaster Contingency

Theme 2: Social adaptation  
 Integrated Social-Natural Sciences Research Towards the Creation of a Sustainable Society Adaptable to Global Environmental Change

Satellite Observations  
 2009, 01 MAY 2009

Hi-Reso Met. Models  
 WRF-ARW Experimental Weather Forecast

Observation/monitoring systems

Quantitative modeling and forecasting

Possible disaster info. to people

Requirements for better adaptation

Disaster reduction, management measures

Understanding extreme conditions in Asia Africa & Pacific

Policy reflecting scientific & tech. consideration to social adaptation

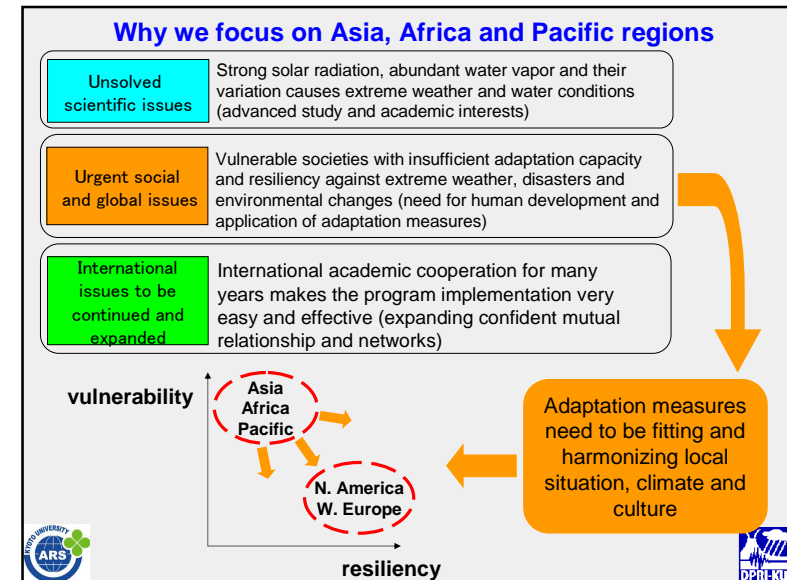
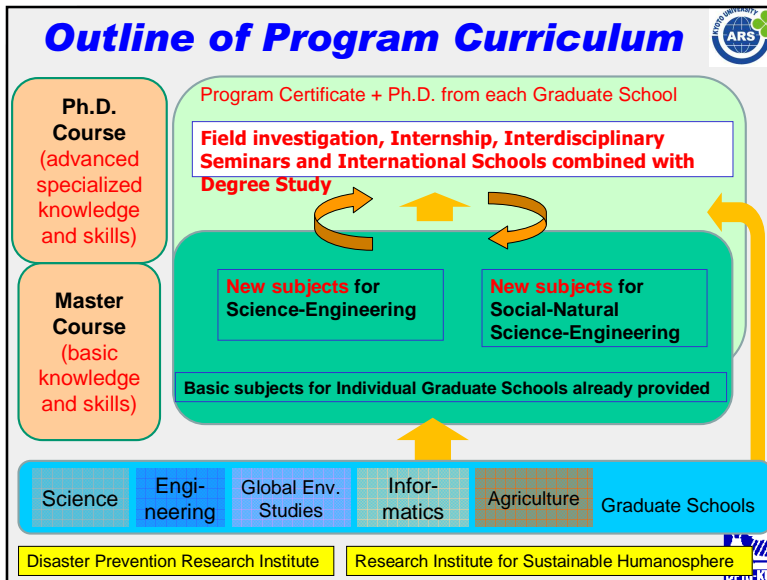
To establish strategic science for adaptation and its application to real world

Interact each other

Flood in Jakarta

Soil erosion in Niger

- Doing research at the same sites together having **common recognition of the problems**.
- Themes 1 and 2 **Joint Workshop** held periodically and exchanges information and views
- An **interdisciplinary paper journal** will be established for dissemination of research outcomes.



- ## This program calls for
- **International students to Kyoto University: Graduate Schools of Science, Engineering, Agriculture, Informatics and Global Environmental Studies**
  - **Excellent overseas professors/researches invited as adjunct professors (3/year)**
  - **Young educators/researchers: hired as Associate/Assistant Professors, Post-Doctoral Fellows (4-8/year)**
  - **Internship sites/institutions (overseas, in Japan)**
  - **Research proposals from students/young researchers**

- ## Program's significance and perspectives
- Creation of New Scientific and Educational Discipline  
**Sustainability + Survivability Science**  
= Implementation Science for Harmonious Co-existence of Global Societies
- This program for **adaptation** is located in Kyoto, which is also very famous for global warming **mitigation** (Kyoto Protocol).
- Features and future: the GCOE program
- Produces **outstanding and humane researchers** and **international and local elites** who will contribute to the sustainable and survivable future of the earth.
  - Promotes **top-level international research and education activities** and contribute to international society, especially focusing on Asia, Africa and Pacific regions
  - Continues and develops possibly to **incorporate other areas** such as **medicine/infectious diseases, energy, population and food problems.**

**GCOE-ARS Inaugural Symposium and Workshop**  
 Uji Campus, Kyoto University, January 12-14, 2010

**196 participants from 27 countries  
 (82 non-Japanese)**



Inaugural Symposium of GCOE Program on Sustainability /Survivability Science for a Resilient Society Adaptable to Extreme Weather Conditions  
 Kyoto University

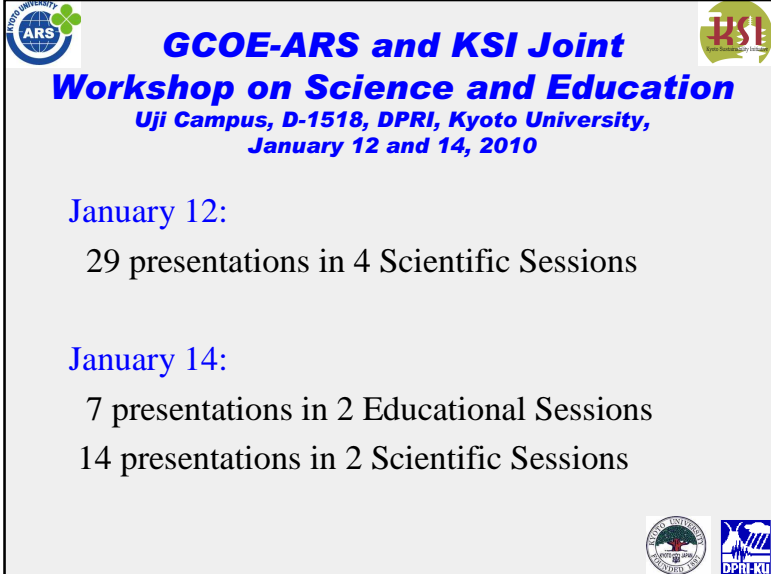
**Symposium Opening Session at Kihada Hall, Uji Campus on January 13, 2010**




**GCOE-ARS and KSI Joint Workshop on Science and Education**  
 Uji Campus, D-1518, DPRI, Kyoto University, January 12 and 14, 2010

**January 12:**  
 29 presentations in 4 Scientific Sessions


**January 14:**  
 7 presentations in 2 Educational Sessions  
 14 presentations in 2 Scientific Sessions



**GCOE-ARS + AUN/SEED-Net International Symposium**  
 Uji Campus, 24-26 August 2010



INTERNATIONAL SYMPOSIUM ON A ROBUST AND RESILIENT SOCIETY AGAINST NATURAL HAZARDS & ENVIRONMENTAL DISASTERS  
 THE THIRD AUN/SEED-NET REGIONAL CONFERENCE ON GEO-DISASTER MITIGATION  
 KYOTO UNIVERSITY, JAPAN AUGUST 24-26, 2010



**International Symposium on a Robust and Resilient Society against Natural Hazards & Environmental Disasters and the Third AUN/Seed-Net Regional Conference on Geo-Disaster Mitigation**  
 Uji Campus, 24-26 August 2010



INTERNATIONAL SYMPOSIUM ON A ROBUST AND RESILIENT SOCIETY AGAINST NATURAL HAZARDS ENVIRONMENTAL DISASTERS  
 THE THIRD AUN/SEED-NET REGIONAL CONFERENCE ON GEO-DISASTER MITIGATION  
 KYOTO UNIVERSITY, JAPAN AUGUST 24-26, 2010

**99 from 16 countries (62 Japanese)**





## **GCOE-ARS**

### **Workshop on Science and Education**

Uji Campus, D-1518, DPRI, Kyoto University,

August 23, 2010

and

### **International Symposium on a Robust and Resilient Society against Natural Hazards & Environmental Disasters and the third AUN/SEED-Net Regional Conference on Geo-Disaster Mitigation**

Uji Campus, Kyoto University

August 24-26, 2010



## **Global COE Program**

「極端気象と適応社会の生存科学」

### **Sustainability/Survivability Science for a Resilient Society Adaptable to Extreme Weather Conditions**

<http://ars.gcoe.kyoto-u.ac.jp/>



*Disaster Reduction Hyperbase (DRH)  
DRH System status, IHP implementation in  
DRH contents, and perspective*



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## **CONTENTS**

1. Context of the IHP-DRH Joint Activities
2. IHP-DRH Project
3. Outcomes of IHP-DRH Project Phase I
4. DRH Contents Activities in Phase 2
5. Points of discussion at the 2nd IHP-DRH WS:  
Facilitation of the contents proposals
6. What to realize in the Workshop, Hanoi
7. IHP-DRH project: its significance



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## 1. Context of the IHP-DRH Joint

### Activities

#### \* Two projects for DRH (initially independent)

##### + IHP Flood Project (*Flood Disaster Prevention and Mitigation Measures in Asia and the Pacific region*)

- Responsible sector: UNESCO Office, Jakarta
- Funding source: MEXT trust fund + UNESCO operational fund (ongoing)
- Mission: Flood disaster risk reduction technology

##### + DRH Project (*Disaster Reduction Hyperbase*) (<http://drh.edm.bosai.go.jp/>)

- Institution in charge: NIED, DPRI-KU, UN-ISDR, etc.
- Major sponsor: MEXT (special coordination fund for S&T)
- Project period: Apr. 2005-Mar. 2006 / Jul. 2006-Mar. 2009
- Mission: Knowledgebase for DRR technology

#### \* Initiation of collaboration (2008)

-Contacts among *MEXT* (Sonoko Watanabe), *UNESCO* (Giuseppe Arduino), *IHP RSC* (Kaoru Takara) and *DRH* (Hiroyuki Kameda) leaders

-Key issue: To make the IHP Flood Project be instrumented with a *mechanism for disseminating its research outputs in order to encourage practical implementation*

-Proposed: Incorporate DRH as *information platform*; all parties agreed on the collaboration scheme

-16th IHP-RSC in Ulaanbaatar, October 2008 / presentation on DRH (Kameda), scheme of collaboration (Takara), and discussion for *consensus development*

## 2. IHP-DRH Project

#### + UNESCO-NIED Contract

- Phase I (April 2009-March 2010)
- Phase II (April 2010-March 2011)

#### + Tasks of the IHP-DRH Project:

- 1) Implementation of research outputs from the IHP Flood Project as DRH Contents (Main objective)
- 2) Organize IHP-DRH management meetings
- 3) Organize IHP-DRH Workshops

#### + Major Events in the IHP-DRH Project

- Sep. 2009: Project management meeting (Kyoto & Tokyo)
- Nov. 2009: 1st IHP-DRH Workshop and 17th RSC (Wuhan)
- May 2010: FFWS Seminar and management meeting (Kuala Lumpur)
- Sep. 2010: Project management meeting (Kyoto & Tokyo)
- Nov. 2010: 2nd IHP-DRH Workshop and 18th RSC (Hanoi)

**DRH** **NIED**

### 3. Outcomes of IHP-DRH Project Phase I


- \*Reports on IHP-DRH Project, Phase I
  - Executive report: submitted to UNESCO on 5 March 2010
  - Activity report: submitted to FFWS on 13 March 2010
- \*Accomplishments (1): Establishment of IHP-DRH collaboration scheme
  - IHP-DRH Workshop, Wuhan, 3 November 2009



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### \*Accomplishments (2): Registration of DRH Contents



**DRH Contents from IHP (DRH53: proposed by Binaya Kumar Mishra)**  
 (http://drh.edm.bosai.go.jp/database/item/296c35e7ea84aac0907e7f3c7e5e2a451ec6885#)

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### \*Accomplishments (3): Highlighting IHP on the DRH channel



**\*DRH Top page (as of 10/10/10)**

<http://drh.edm.bosai.go.jp/>

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2. Name of institution
3. Electronic file of the logo (JPEG or PNG)
4. URL of the institution
5. Serial number(s) of your contribution in the DRH Database (like DRH50)

(Posted on 27 February 2010 / Recent update: 10 April, 2010 / v2.6)

	<National Research Institute for Earth Science and Disaster Prevention (NIED), Japan / <a href="#">DRH1</a> , <a href="#">DRH2</a> , <a href="#">DRH3</a> , <a href="#">DRH4</a> , <a href="#">DRH6</a> , <a href="#">DRH18</a> , <a href="#">DRH19</a> , <a href="#">DRH20</a>		<Ministry of Education, Culture, Sports, Science and Technology, Japan / <a href="#">DRH8</a> , <a href="#">DRH10</a> , <a href="#">DRH11</a>
	<United Nations Educational, Scientific and Cultural Organization (UNESCO) / <International Hydrology Programme (IHP) / <a href="#">DRH22</a>		<International Consortium on Landslides (ICL) / <a href="#">DRH56</a> , <a href="#">DRH57</a>
	<Kyoto University, Japan / <a href="#">DRH5</a> , <a href="#">DRH33</a>		<Beijing Normal University, China / <a href="#">DRH16</a> , <a href="#">DRH44</a> , <a href="#">DRH45</a>
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	<Bangladesh Disaster Preparedness Centre (BDPC), Bangladesh / <a href="#">DRH17</a>		<Agency for the Assessment and Application of Technology, Coastal Dynamic Research Center, Indonesia / <a href="#">DRH10</a>
	<INDECI (Peru's Civil Defence), Peru / <UNI (National University of Engineering ), Peru / <a href="#">DRH12</a>		

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## 4. DRH Contents Activities in Phase 2

**\*DRH contents being developed under the IHP-DRH scheme (to be presented in this workshop)**

- "Hazard monitoring rating system and landslide risk assessment and impact to flood" (Proposer: Mohamed Nor)-DRH60 (IOT, PT proposed)**
- "Rain-induced landslide susceptibility: a guidebook for communities & non-experts (Proposer: Dan Peckley)-DRH61 (PT proposed)**
- "Asia Pacific Flow Regimes from International Network Data (APFRIEND) project: Flood Design (Proposer: Dennis Jamieson)-DRH62 (IOT proposed)**
- "Flood hazard risk mapping methods – Japanese practice" (Proposer: Kaoru Takara and Ken Kobayashi)**

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## Current State of DRH Contents (as of Nov. 7, 2010)

	under discussion on DRH Forum	registered in DRH Database	total
IOT	11	13	24
PT	10	15	25
TIK	1	10	11
total	22	38	60

Algeria	1	Japan	31
Bangladesh	2	Malaysia	1
Brazil	1	Nepal	4
China	5	New Zealand	1
Canada	1	Peru	1
India	1	Philippines	2
Indonesia	5	Sri Lanka	1
Iran	3	East Timor	1
total		60	

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## Criteria for Implementation Oriented Technology (IOT)

ver. 040425 (EqTAP rep)  
070917 (Stressa)

- Technically or scientifically acceptable
- Problem identification and methodology development practiced in direct communication with stakeholders and end-users to create incentive for their participation and ownership
- Regional characteristics properly incorporated in terms of local context including available materials, cost, and workmanship
- Most advanced research methodologies mobilized to generate high-quality products and meet the actual demands of the region

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## Criteria for Process Technology (PT)

ver. 070703(FM1)  
070917 (Stressa)

- With emphasis on “practical use” of research
- A tested methodology with social, cultural, economic, ecological, and technical feasibilities, developed through an implementation/ testing process ensuring results in disaster reduction
- Demonstrated stakeholders’ participation and enhanced ownership
  - of the process
  - of results and lessons
- Amenable/adaptable to local context, and with institutionalization potential
- In-depth knowledge and insight gained through experience with disasters and mitigation

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### Criteria for Transferable Indigenous Knowledge (TIK)

ver. 070702(FM1)  
070917(Stresa)  
071004 (Tsukuba)

- Originated within communities, based on local needs, and specific to culture and context (environment and economy)
- Provides core knowledge with flexibility for local adaptation for implementation
- Uses local knowledge and skills, and materials based on local ecology
- Has been proven to be time tested and useful in disasters
- Is applied or applicable in other communities or generations

### General Criteria for DRH Contents Acceptance

- **Understandable to users**
- **Implementable (Usable, Doable)**
- **Shown to be useful**

Plus

- **Criteria for each category (IOT, PT, TIK)**

#### \* Facilitation by DRH Facilitators:

(IOT) Mosen Ghafory-Ashtiany and Hiroyuki Kameda  
(PT) Amod Dixit and Norio Okada  
(TIK) Anshu Sharma and Rajib Shaw  
**(IHP-DRH) Kaoru Takara (IHP leader) and Hiroyuki Kameda (DRH Manager)**

#### **i) To make it understandable to users:**

- Use terminology that can be understood by non-experts.
- Incorporate as many illustrations as possible including photographs, diagrams and figures.
- If you would like to include technical descriptions (such as scientific journal and paper, technical report, etc.), put them in attached files.

#### **ii) To make it implementable**

- Provide as detailed and quantitative explanations as possible in the comment boxes for process of implementation and resources required.

#### **iii) To make it shown to be useful:**

- Incorporate as many Application Examples as possible.
- It is desirable that application examples are practical applications.

### ***How to develop UNITWIN***

- Use the existing networks through ICL-IPL, UNESCO-IHP, AUN/SEED-Net, AUEDM, ICSU-IRDR, IDRiM Society, etc.
- Collaborate with the Landslide School Network (LSN)
- Promote interdisciplinary GCOE-ARS Graduate School Program “Sustainability/ Survivability Science for a Resilient Society Adaptable to Extreme Weather Conditions
- Promote the DRH Project and use the contents for Education for DRR

### ***FORTHCOMING EVENTS in 2011***

- IDRiM Society Meeting at the Univ. of Southern California, LA, USA on July 14-16
- Kyoto University and University of Oklahoma Joint Workshop on Extreme Weather, September 14-16
- 5<sup>th</sup> International Conference on Flood Management (ICFM5), Tsukuba (or Tokyo), Japan on September 27-29
- 2<sup>nd</sup> World Landslide Forum, FAO, Rome, Italy on October 3-8
- 19<sup>th</sup> Session of UNESCO-IHP Regional Steering Committee for Southeast Asia and the Pacific, Kyoto, Japan on October 24-28

