2019 Advanced Institute -- Training Course on Landslide Investigations and Hazards Mitigation

June 24 – June 29, 2019
Hanoi University of Mining and Geology (HUMG), Hanoi, Vietnam

Organized by

- Integrated Research on Disaster Risk, International Centre of Excellence-Taipei (IRDR ICoE-Taipei)
- International Council for Science Regional Office for Asia and the Pacific (ISC-ROAP)
- Landslide Research Team of Academia Sinica (LRT-AS)
- Landslide Research Team of National Central University (LRT-NCU)
- Earthquake-Disaster &Risk Evaluation and Management, E-DREaM Center, National Central University
- Hanoi University of Mining and Geology (HUMG), Hanoi, Vietnam
- Disaster Prevention Research Institute (DPRI), Kyoto University, Japan

Background

Landslides are common and widespread in many parts of the world. They can happen on hilly slopes or mountainous terrain given certain conditions in topography and material strengths in soil and bedrock for inducing the gravitational slope movement. Landslides also commonly occur during other major natural hazards, such as earthquakes, typhoons, heavy rains, volcanic eruptions, and tsunami, thus easily create a very dangerous situation of multiple hazards happening at the same time. Landslides have caused extensive infrastructure damage and threatened the human life through the centuries; densely populated modern societies are particularly vulnerable to the landside hazard.

The basic processes of triggering and initiation of landslides such as gravity, strength of material, external forces due to seismic shaking and pore-water pressure have been investigated for decades. However, research limitations remain for characterizing the landside processes due to inadequate amount of field observations and technological restrictions. But now many previous limitations have been effectively eliminated by using newly developed or improved technologies in geophysical, seismological, geological, remote sensing, geochemical research fields. These advanced technologies were developed and used in separate disciplines in the past decade, but are now reaching a point of potential integration and collaboration for resolving important issues in landslides. The introduction of these key techniques for landslide studies will be the main theme of this training course.

As one of the most tectonically active regions, Southeast Asian countries suffered from landslide hazards in the past long history. Build a platform to share and discuss the experiences regarding to landslide investigations and hazards evaluation is necessary. The training course, which is supported by ICoE-Taipei, Landslide Research teams in National Central University and Academia Sinica (LRT-NCU and LRT-AS), intend to provide a short training course which comprises a series of comprehensive lectures, practices and field trip. We hope this training course will provide fundamental information and knowledge about landslides for future mitigation of hazards and thus reducing human casualties and property losses for societies.

Objectives

The training course invites experts as well as young scientists from Southeast

Asian countries to participate a two-way training course on the aspect of landslide investigations and landslide hazards mitigation. The participants will be asked to present the experiences in their countries. Discussions are also planned to facilitate the communications among the participants. The objective of this course is to enhance understanding, skills and practical knowledge to new waves of landslide investigations, landslide analysis, laboratory testing, monitoring, modeling, and landslide hazard evaluation.

To strengthen the outcomes of the training course, "call-for-proposal" will be announced no later than 3-6 months after this training course. The trainees will be invited to submit landslide research proposals followed by a competitive reviewing process. Only limited numbers of proposals will be granted for one year. IRDR ICoE-Taipei and ISC-ROAP will review and announce results no later than 3 months after closing of the proposal submission. The grantees will be required to submit a report to IRDR ICoE-Taipei and ISC-ROAP no later than 3 months after the end of the executive period.

Location

The training course is mainly organized by Integrated Research on Disaster Risk International Centre of Excellence, Taipei (IRDR ICoE-Taipei), of the Academia Sinica in Taiwan in partnership with ISC-ROAP. The Instructors are supported by the LRT-AS, LRT-NCU, E-DREaM, HUMG, and DPRI Kyoto University. The training course will be delivered at Hanoi University of Mining and Geology, Hanoi, Vietnam. For more information about the location, please visit http://en.humg.edu.vn/ .

Target Audience

Approximately 20-30 young to mid-career candidates from academia, practitioner, and policy communities from Vietnam are expected. Participants are encouraged to bring specific issues or research ideas about site specific or regional landslides study.

Training Course Agenda

This training course includes the following topics and each slot contains lectures and/or discussion, plus one-day field trip to landslide sites in Northern Vietnam.

06/24 (Day 1)

08:30-09:00	**Registration**	
09:00-09:10	**Opening** Yue-Gau Chen (NTU&IESAS), Tran Thanh Hai (HUMG)	
09:10-09:30	Jian-Cheng Lee (IESAS)	IRDR ICoE-Taipei introduction
09:30-10:30	Hsin-Hua Huang (IESAS)	Monitoring large-scale deep-seated landslides in space and time using seismic noise interferometry as a new tool (I)
10:30-10:50 Coffee Break and Group Photo		
10:50-12:00	Hsin-Hua Huang (IESAS)	Monitoring large-scale deep-seated landslides in space and time using seismic noise interferometry as a new tool (II)
12:20-13:40 Lunch		
13:40-15:10	Wei-An Chao (NCTU)	Understanding landslide source mechanism with seismology (I)
15:10-15:30 Coffee Break		
15:30-17:00	Wei-An Chao (NCTU)	Understanding landslide source mechanism with seismology (II)
Welcome Banquet (start at 17:30)		

06/25 (Day 2)

09:00-10:30	Nina Yunung Lin (IESAS)	Landslide detection and monitoring: the SAR perspective I (lecture + hands-on)
10:30-10:50 Coffee Break		
10:50-12:20	Nina Yunung Lin (IESAS)	Landslide detection and monitoring: the SAR perspective II (lecture + hands-on)-

		Communicate with Earthworm
12:20-13:40 Lunch		
13:40-15:10	Nina Yunung Lin (IESAS)	Landslide detection and monitoring: the SAR perspective III (lecture + hands-on)
15:10-15:30 Coffee Break		
15:30-17:00	Nina Yunung Lin (IESAS)	Landslide detection and monitoring: the SAR perspective IV (lecture + hands-on)

06/26 (Day 3)

09:00-10:30	Ya-Ju Hsu (IESAS)	Real-Time Monitoring of Landslides with Low Cost GNSS Receivers and Probing Slip Behaviors of Slope Movement
10:30-10:50 Coffee Break		
10:50-12:20	Yu-Chang Chan (IESAS)	Using airborne Lidar techniques for 3D geologic mapping and landslide investigations
12:20-13:40 Lunch		
13:40-15:10	Tran Thanh Hai (HUMG)	Tectonic induced landslide hazards in coastal provinces, central Viet Nam and implication (I)
15:10-15:30 Coffee Break		
15:30-16:50	Tran Thanh Hai (HUMG)	Tectonic induced landslide hazards in coastal provinces, central Viet Nam and implication (II)

Geomorphological approach for prediction and mitigation of rainfall-induced landslides

06/27 (Day 4)

09:00-10:30	Yuki Matsushi	Geomorphological approach for

	(Kyoto U.)	prediction and mitigation of rainfall-induced landslides (I)
10:30-10:50 Coffee Break		
10:50-12:20	Yuki Matsushi (Kyoto U.)	Geomorphological approach for prediction and mitigation of rainfall-induced landslides (II)
12:20-13:40 Lunch		
13:40-15:10	Jia-Jyun Dong (NCU)	Early warning thresholds of landslides
15:10-15:30 Coffee Break		
15:30-16:50	Nguyen Quoc Phi (HUMG)	Current status of landslide investigations in Vietnam and digital citizen science for community-based landslide hazard management

06/28 (Day 5)

09:00-10:30	Li-Yuan Fei (CGS)	The Road from National LiDAR mapping program to Zonation of the Geohazards in Taiwan (I)
10:30-10:50 Coffee Break		
10:50-12:20	Li-Yuan Fei (CGS)	The Road from National LiDAR mapping program to Zonation of the Geohazards in Taiwan (II)
12:20-13:40 Lunch		
13:40-15:10	Samuel Hsiao-Yuan Yin (SWCB)	Non-Structural Countermeasures against Debris Flow and Landslide Disasters in Taiwan (I)
15:10-15:30 Coffee Break		
15:30-16:50	Samuel Hsiao-Yuan Yin (SWCB)	Non-Structural Countermeasures against Debris Flow and Landslide Disasters in Taiwan (II)

06/29 (Day 6) One-day field trip

Lecturer: Tran Thanh Hai (HUMG)

Location: Cam Pha area, Quang Ninh province

ORGANIZERS

IRDR Integrated Research on Disaster Risk	Integrated Research on Disaster Risk (IRDR) Programme
ICoE Taipei	IRDR International Centre of Excellence-Taipei (ICoE-Taipei)
中央研究院 ACADEMIA SINICA	Academia Sinica
International Science Council	International Council for Science Regional Office for Asia and the Pacific (ICSU ROAP)
國立中央大學	National Central University
Earthquake-Disaster & Risk Evaluation and Management E-DREaM NCU	Earthquake-Disaster &Risk Evaluation and Management, E-DREaM Center, National Central University
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KYOTO UNIVERSITY KYOTO JAPAN FOUNDED 1897	Disaster Prevention Research Institute (DPRI), Kyoto University, Japan
GADRI Global Alliance of Disaster Research Institutes	Global Alliance of Disaster Research Institutes