



## スリランカにおける降雨による高速長距離土砂流動災害の早期警戒技術の開発 Development of early warning technology of rain-induced rapid and long-travelling landslides in Sri Lanka

### ◆ The 5<sup>th</sup> World Landslide Forum

Nov. 2 to 6, 2021

The 5th World Landslide Forum (WLF5), initially scheduled for November 2 to 6, 2020, and postponed due to the COVID-19 pandemic, was held from November 2 to 6, 2021, at the Kyoto International Conference Center, combining "live" in-person sessions with "virtual" online and pre-recorded presentations. Members of Project RRL attended the 2nd Joint Coordination Committee (JCC) Meeting concurrently held on November 4 with the WLF5, not to mention the WLF5 SATREPS session on November 6 for their progress reports.



The 5th World Landslide Forum (WLF5)

### Joint Coordination Committee (JCC) meeting

Nov. 4, 2021

The 2nd JCC Meeting was held on November 4, 2021, under the chairmanship of Dr. Asiri Karunawardena, Director-General of the National Building Research Organization (NBRO), and in the presence of persons approved as new JCC members at the 1st JCC meeting. The new JCC members are officers from the Central Engineering Consultancy Bureau (CECB), professors from the University of Moratuwa, and the University of Peradeniya. Experts from the "Project for Capacity Strengthening of Development on Non-structural Measures for Landslide Risk Reduction in Sri Lanka

(Project SABO)" under Technical Cooperation of Japan International Cooperation Agency (JICA) also joined.

The JCC members shared a common understanding about the following:

- (1) Though the COVID-19 pandemic had been a significant burden, the members had taken possible steps further ahead since the first JCC meeting.
- (2) Be that as it may, the members had been conscious that some activities had not fully started yet. The activities were (i) field observations at the unstable soil masses perching atop the two pilot sites, Athwelthota and Aranayake, and (ii) developing technologies for risk communications and public education.
- (3) It takes about two to three months for JICA missions to get their passports officially visaed.

Considering all mentioned above, the members agreed that relevant members would travel to Sri Lanka in March and April, avoiding the heavy monsoon rainy season in May and the Sinhala-and-Tamil New Year celebration in the middle of April.

### WLF5 SATREPS Session

Nov. 6, 2021

Project RRL is complementary with the JICA's technical cooperation project (Project SABO), where the challenge is implementing intangible measures. Not to mention that the session served as the venue for the SATREPS project members to report their progress, the members from Project SABO also reported their achievements. Here are the presentations in the session:

Convener: Kazuo Konagai & Ryosuke Uzuoka

1 Kazuo Konagai

SATREPS project for Sri Lanka with regard to "Development of early warning technology of Rain-induced Rapid and Long-travelling Landslides"

2 Ryo Onishi

Technology development of reliable rainfall prediction in mountain regions of Sri Lanka

3 Shiho Asano

Strategy for monitoring creeping movements of unstable soil masses triggered by heavy rain at pilot sites in tropical forested mountain

4 Ryosuke Uzuoka

Porewater pressure build-up of slopes subjected to different rainfall conditions by centrifuge modelling

5 Imaya Ariyaratna

Early warning system against rainfall-induced landslide in Sri Lanka

6 Toru Koike

Strengthening non-structural measures for Landslide Risk Reduction in Sri Lanka – Achievement in Project SABO –

7 Major General: Sudantha Ranasinghe

Role of Disaster Management Center on Landslide Risk Management



SATREPS Session in WLF5

◆ Students from Sri Lanka newly admitted to the University of Tokyo and Yamanashi University

Apr. and Oct., 2021

The encouraging news for the project in 2021 was that two more students from NBRO, Sri Lanka, Mr. Dhanushka Jayathilake and Mr. Sandaruwan Karunaratne, have newly been admitted to the University of Tokyo and Yamanashi University, respectively.

Mr. Dhanushka Jayathilake was officially admitted to the International Graduate Program at the Department of Civil Engineering, the University of Tokyo, in April 2021. However, he could enter Japan in October, a half-year behind schedule due to the strict COVID-19 border restriction.

Mr. Sandaruwan Karunaratne, admitted in October 2021 to the Department of Civil and Environmental Engineering, had to wait likewise for a month and entered Japan in November.

**Mr. Dhanushka Jayathilake**



After completing my bachelor's degree from the University of Moratuwa (UoM), I joined the Human Settlements Planning and Training division of the National Building Research Organisation (NBRO) in 2012. From there onwards I'm working with different aspects of Landslide

Disaster Risk Reduction within the country.

Notable contributions that I made during my service period at NBRO are for the following:

- (1) Development of Landslide Risk Assessment,
- (2) Community-Based Landslide Risk Reduction,
- (3) Disaster Resilient Housing Construction Techniques,
- (4) Development of Landslide Risk Information Portal,
- (5) Nature-based Landslide Risk Reduction,
- (6) Project for Capacity Strengthening on Development of Non-Structural Measures for Landslide Risk Reduction (Project SABO), and
- (7) Geotechnical Clearance for High-rise Constructions.

Meantime I obtained my Master's degree from the University of Moratuwa in 2017 as an MSc by research. In 2021 April, I was awarded a JICA – SATREPS scholarship to start my doctoral degree at The University of Tokyo under the project RRL. Subsequently, I joined the Geo-disaster Mitigation Engineering Laboratory, Institute of Industrial Science, the University of Tokyo, under the supervision of Professor Takashi Kiyota. Parallely, under the guidance of Professor Ryo Onishi, Tokyo Institute of Technology, I started to work on simulating mountain rainfalls using the “Multiscale simulator for Geoenvironment (MSSG).”

I would like to express my sincere gratitude to JICA, JST, ICL, The University of Tokyo, NBRO, and all the members of Project RRL for offering me this opportunity. I hope this would be a golden opportunity for me to enhance my knowledge, capacity, and experience to contribute to future landslide disaster risk reduction in Sri Lanka.

## Mr. Sandaruwan Sujeewa Karunarathne



After the graduation with a B.Sc. honors degree in geology from the Department of Geology at the University of Peradeniya, Sri Lanka, I have been actively working as a field geologist and as Officer in Charge (OIC) in the

Landslide Hazard Mapping Project (LHMP) in Landslide Research and Risk Management Division (LRRMD) of the National Building Research Organization (NBRO), Sri Lanka. I have actively been engaged in developing landslide disaster risk-reduction measures. The activities for the pre-disaster preparedness phase are landslide susceptibility mapping, potential damage zone assessment, and research activities related to the above field. Those for the disaster response phase are damage zone assessment for quick discussions, and issuing technical guide reports in rainfall-induced landslide/slope failures /debris flows during disaster periods in Sri Lanka. Further, I have been engaged in Landslide Risk Assessment for Land, Buildings, Projects, and Resettlements as an additional allocation of my service to NBRO in Sri Lanka. Meanwhile, I followed the M.Sc. course of Engineering Geology and Hydrogeology in the Post Graduate Institute of Science (PGIS), University of Peradeniya, Sri Lanka, and graduated with the highest Grade-Point-Average. Upon graduating with the M.Sc. degree, I was fortunate enough to receive an award of MEXT scholarship from JST to undertake a doctoral degree through the project RRL from SATREPS. Currently, I have just started my doctoral studies in the Department of Engineering of the faculty of Integrated Graduate School of Medicine Engineering and Agricultural Science at the University of Yamanashi in Japan under the supervision of Prof. Satoshi Goto. I would like to express my sincere gratitude to JST, ICL, NBRO, the University of Yamanashi, and all the members of Project RRL.

## ◆ The 2nd online progress report session for Sri Lankan students

Jan. 21, 2022

The 2nd online progress report session for Sri Lankan students (Mr. Sanchitha Jayakody, Imaya Ariyaratna, and Mr. Dhanushka Jayathilake) was held online on January 21, 2022, in the presence of JICA officers.

## ◆ Field surveys in Japan

2021-22

### Hokkaido

Date: Oct. 29-31, 2021

Location: Atsuma, Hokkaido

Member: Takashi Kiyota, Masataka Shiga, Dhanushka Jayathilake (Univ. of Tokyo)

Purpose: Survey of the multiple-landslides area, soil sampling



### Tuskuba

Date: Nov. 23-25, 2021

Location: Forestry & Forest Products Research Institute

Member: Sanchitha Jayakody (Kyoto Univ.)  
Shiho Asano (FFPRI)

Purpose: Training of installing and handling weather forecasting equipment at FFPRI and surrounded slope area





## Atami

Date: January 17-18, 2022

Location: Mt. Izu, Atami City

Member: Kazuo Konagai, Kyoji Sassa, Doan Loi (ICL), Sanchitha Jayakody (Kyoto Univ.)

Purpose: This landslide, which occurred at Mt. Izu in July 2021, showed similar rapid and long-traveling nature to the landslides at the selected survey sites in Sri Lanka. The field survey was thus conducted. The soil samples taken from immediately behind the exposed scar were sent to the Kyoto ICL-SATREPS office for ring shear tests.



## ◆ Missions to be dispatched

in Mar. and Apr., 2022

### **The 1st Mission (March 3 to 15, 2022)**

**Members:** Dr. Shiho Asano: Forestry and Forest Products Research Institute, Mr. Shogo Morita: Japan Conservation Engineers, and Mr. Masayuki Otsuka: Osasi Technos.

**Mission:** Installing field measurement equipment

**Note:** The Mission is planned to be accompanied by Prof. Ryosuke Uzuoka and Mr. Sanchitha Jayakody, Kyoto University. However, Kyoto University imposes travel bans to Level 3 or larger countries, including Sri Lanka.

**The 2nd Mission (The mission first planned to be dispatched from March 31 to April 8, 2022, will travel to Sri Lanka in June or July, given the current harsh condition of COVID-19)**

**Members:** Dr. Kazuo Konagai, Dr. Dang Khang, Dr. Kiyoharu Hirota, Mr. Doan Huy Loi, Dr. Kyoji Sassa, Dr. Kumiko Fujita: ICL, Dr. Ryo Onishi, and Mr. Jo Hirai: Tokyo Institute of Technology (TIT).

**Mission:** Holding the 3rd JCC meeting and the 3rd Landslide Technical Forum to share the project's current progress and map out tactics for 2022 activities.

## ◆ Greetings from the project leaders

In 2022, we have embarked on the third-year stage of the roadmap towards the goals of the five-year SATREPS Project RRL, amid considerable uncertainty, as COVID-19 continued to run its course in both Sri Lanka and Japan. As said in this Newsletter, good things for us are:

(i) We have gotten two more Ph.D. candidates enrolled at the University of Tokyo and Yamanashi University, and

(ii) We are finally starting the field measurement, the long-delayed activity due to the strict border restrictions. Behind these steady and successful signs of progress, there have been continuous supports from officers of JICA, JST on the Japanese side, NBRO, CECB, University of Moratuwa, University of Peradeniya, Disaster Management Center, etc. on the Sri Lankan side. On behalf of Project RRL, we would like to tender our sincere thanks to all supporters from Sri Lanka and Japan.

The International Consortium on Landslides is going to start publishing a new Open Access Book Series "Progress in Landslide Research and Technology (P-LRT)" <https://icl.iplhq.org/book-series-of-klc2020/>.

The target readers and users of this book series are practitioners and other stakeholders who apply the most advanced knowledge of science and technology for landslide disaster risk reduction. Our progress report will appear in the first issue (Vol.1, No.1). We are sure this article will merit the readers who face difficulty issuing RRL early warnings and thus dealing with RRL disaster mitigation issues.

With gratitude, we would like to send you warm wishes for a safe, healthy, and successful 2022!

### Project Leaders

Kazuo Konagai  
International Consortium on Landslides (ICL)  
Asiri Karunawardena  
National Building Research Organisation (NBRO)