

# BULETIN SEADPRI

Pusat Kajian Bencana Asia Tenggara  
*Southeast Asia Disaster Prevention Research Initiative*

## PERLANJUTAN MEMORANDUM PERSEFAHAMAN (MOU) MEMPERKUKUH LAGI KERJASAMA ANTARA NADMA DAN SEADPRI-UKM

*Siti Khadijah Satari, Mohd Fairus Awang & Joy Jacqueline Pereira*  
*SEADPRI-Universiti Kebangsaan Malaysia*

Kerjasama antara Agensi Pengurusan Bencana Negara (NADMA) bersama Pusat Kajian Bencana Asia Tenggara (SEADPRI-UKM) bermula di mana SEADPRI-UKM telah memberikan nasihat teknikal dan dasar berkaitan dengan pengurangan risiko bencana kepada pihak NADMA dan mengambil bahagian sebagai anggota delegasi negara yang diketuai oleh YAB Timbalan Perdana Menteri Malaysia ke forum di peringkat global dan Asia Pasifik bagi pengurangan risiko bencana anjuran Pertubuhan Bangsa-bangsa Bersatu. Kerjasama tersebut, telah diperkukuhkan lagi dengan termeterainya Memorandum Persefahaman (MoU) yang ditandatangani pada 10 Januari 2020. Melalui MoU yang dimeterai tersebut, pelbagai aktiviti berkaitan bencana dan pengurangan risiko bencana telah dijalankan secara bersama antaranya penyediaan dokumen Daftar Risiko Bencana (NRR), penggubalan Dasar Pengurangan Risiko Bencana Negara (Dasar DRR), penganjuran bengkel 2020 Asia Pacific Science and Technology Conference for Disaster Risk Reduction (APSTCDRR), Webinar Risiko Bencana di Era Perubahan Iklim, Bengkel Pemurnian Dasar Pengurangan Risiko Bencana Negara dan Bengkel Memuktamadkan Penggubalan Dasar Pengurangan Risiko Bencana Negara. NADMA juga merupakan Rakan Kerja Projek Penyelidikan yang diterajui oleh SEADPRI-UKM bagi projek "Promotion Entrepreneurship in Disaster Risk Reduction to Build Community Resilience" yang dibiayai oleh International Development Research Centre (IDRC), Kanada.

Dalam usaha memastikan kesinambungan program-program serta aktiviti kerjasama yang telah dan sedang berjalan, MoU tersebut yang tamat pada 9 Januari 2023 telah pun disambung bagi tempoh lima (5) tahun lagi sehingga 23 November 2028. Perlanjutan MoU dipersetujui oleh pihak NADMA berdasarkan bidang kepakaran, pengalaman dan komitmen yang boleh diberikan oleh pihak UKM khususnya SEADPRI-UKM dalam membantu NADMA memperkukuh fungsi serta inisiatif pengurangan risiko bencana. MoU yang baru tersebut ditandatangani oleh Datuk Khairul Shahril Bin Idrus, Ketua Pengarah NADMA dan Prof. Dato' Gs. Ts. Dr. Mohd Ekhwan Hj. Toriman, Naib Canselor, Universiti Kebangsaan Malaysia (UKM). Melalui penyambungan MoU ini, diharapkan NADMA dan SEADPRI-UKM dapat terus berkolaborasi memupuk, merangsang dan menggalakkan penyelidikan dan inovasi berkaitan pelbagai aspek mengenai bencana dan pengurangan risiko bencana. Di samping dapat terus menjalankan pelbagai aktiviti serta menggerakkan pelbagai usaha dan inisiatif yang dapat membantu kerajaan dan pihak berkepentingan melaksanakan pendekatan pengurangan risiko bencana di dalam dan luar negara.



## Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM)

### Buletin SEADPRI

Buletin SEADPRI is published biannually by Universiti Kebangsaan Malaysia's Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM) through Penerbit LESTARI. It contains short communications, case studies and original research on science, technology, innovation, impact, vulnerability and governance related to disaster risk reduction

### About SEADPRI-UKM

Universiti Kebangsaan Malaysia's Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM) has been in operation since June 2008. Based at the Institute for Environment and Development (LESTARI), the Centre addresses crucial challenges on disaster risk reduction in Malaysia and the region. The research focus is on climatic hazards, geological hazards and technological hazards, with emphasis on capacity building, mainly through post-graduate programmes and specialized training. Transdisciplinary research conducted by the Centre is action-oriented, bridges the science-governance interface and provides pathways for disaster prevention.

In 2016, SEADPRI-UKM was acknowledged by the Integrated Research on Disaster Risk Programme (IRDR), jointly sponsored by International Science Council (ISC) and the United Nations Office for Disaster Risk Reduction (UNDRR), as an IRDR International Centre of Excellence (ICoE) for Disaster Risk and Climate Extremes (ICoE-SEADPRI-UKM). Globally, SEADPRI-UKM now sits with a group of 16 institutions with similar recognition, representing various regions. The focus of ICoE-SEADPRI-UKM is to strengthen local input for addressing regional disaster risks in conjunction with national and international partners. A major flagship is the Asian Network on Climate Science and Technology (ANCST), coordinated by SEADPRI-UKM and funded by the Cambridge Malaysian Education and Development Trust, to link disaster risk reduction and climate change for building resilience in the region.

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### Contact

Southeast Asia Disaster Prevention  
 Research Initiative (SEADPRI-UKM)  
 Universiti Kebangsaan Malaysia  
 43600, UKM Bangi

 [www.ukm.my/seadpri](http://www.ukm.my/seadpri)

 603 8921 4852/4858

 603 8927 5629

 [seadpri@ukm.edu.my](mailto:seadpri@ukm.edu.my)

## Climatic Hazards Programme

**Strengthening Partnerships in DRR**

*Nurfashareena Muhamad & Joy Jacqueline Pereira*  
*SEADPRI-Universiti Kebangsaan Malaysia*



Photo by SEADPRI-UKM

*Panel speakers in the new data technologies for DRR early warning system session in FBAS2023, Beijing, China.*

The Midterm Review Report for the Implementation of the Sendai Framework for Disaster Risk Reduction (DRR) 2015-2030 highlighted that "advanced technology is aiding in bridging data deficiencies, facilitating improved decision-making." This advancement is evident in the DRR initiatives aimed at achieving Sendai Target G, which is to "enhance the availability and accessibility of early warning systems and risk-related information." The emerging technologies, such as earth observation methods, artificial intelligence, and open science infrastructure, hold the promise of offering more punctual and dependable data for early warning purposes.

The Integrated Research on Disaster Risk (IRDR) ICOE-SEADPRI-UKM, represented by Dr. Nurfashareena Muhamad, was honored with an invitation to showcase our efforts in the development of the Multi-hazard Forecasting System for Cities at the "New Data Technologies for DRR Early Warning System" session. This took place during the 3rd International Forum on Big Data for Sustainable Development Goals (FBAS2023) held in Beijing, China on September 6, 2023. This session was jointly hosted by IRDR, IRDR-China, and the Digital Belt and Road (DBAR) Programme DRR Working Group (WG).

The primary goal of this session was to establish a platform for the exchange of innovations, insights, knowledge, and experiences related to new data technology for early warning systems and early actions. Diverse speakers were invited to present their respective work, shedding light on how to maximize the benefits of new data technologies, adapt the development of early warning systems to various contexts, and implement strategies to enhance public trust in cities.

In addition to FBAS2023, ICOE-SEADPRI-UKM also participated in the DBAR Science Team, which was under the leadership of Professor Guo Huodong, the DBAR Chair and Director General of The International Research Center of Big Data for Sustainable Development Goals (CBAS). Within the WG DRR co-chaired by Professor Chen Fang and Professor Rajib Shaw, ICOE-SEADPRI-UKM made significant contributions by providing reports to the Working Group.

In recent years, ICOE-SEADPRI-UKM has been actively involved in a series of influential initiatives that highlight its essential role in advancing the objectives of the DBAR WG DRR. This is aligned with the broader mission of the IRDR, which aims to harness scientific expertise to reduce various forms of disaster risk, enhance resilience, diminish vulnerability, and integrate risk science with climate change adaptation, mitigation, and sustainable development. The IRDR Programme is preparing for its Phase 2, scheduled for 2024.



Photo by SEADPRI-UKM

*Professor Chen Fang presenting the update from WG DRR in the DBAR Science Team Meeting in Beijing, China.*



## Climatic Hazards Programme

## Climate Change and One Health

Aida Soraya Shamsuddin<sup>1</sup>, Sharifah Norkhadijah Syed Ismail<sup>2</sup> & Nurulain Mustafa Udin<sup>3</sup>

<sup>1</sup>SEADPRI-Universiti Kebangsaan Malaysia

<sup>2</sup>Department of Environmental and Occupational Health, Faculty of Medicine and Health Sciences, UPM.

<sup>3</sup>School of Chemistry and Environment, Faculty of Applied Sciences, UiTM



Participants involved in the One Health Workshop in Langkawi.

In an era marked by unprecedented environmental transformation, the intricate interdependence of human health, animal wellbeing, and the integrity of ecosystems has emerged as a central concern. The concept of "One Health" recognizes the inseparable relationship between these three domains, emphasizing that holistic understanding is essential for safeguarding the health and resilience of our planet. Concurrently, the pressing reality of climate change has cast a long shadow over the intricate balance that One Health seeks to maintain.

As temperatures rise, precipitation patterns shift, and extreme weather events or disasters such as floods, droughts, and storms become more frequent, the delicate equilibrium that sustains ecosystems and underpins health systems is transforming profoundly. Vector-borne diseases, confined to specific regions, are expanding their reach, challenging the boundaries of epidemiology and requiring new strategies for containment. The habitats of zoonotic disease reservoirs are shifting, propelling human populations into closer contact with potential sources of infection. These developments underscore the urgency of comprehending how climate change can disrupt environmental stability and the very fabric of health globally.

The Malaysia Youth One Health Workshop (MyOHW) was conducted under the auspices of the One Health University Network (MyOHUN) in Malaysia. The workshop took place from

26-29 July this year, in Langkawi. Its primary objective was to augment the understanding and consciousness of the One Health concept. The funding for this workshop was provided by the United States Agency for International Development (USAID) and organized specifically for educators and teachers associated with vocational schools, polytechnic institutions, and community colleges in Malaysia. The workshop was organized and overseen by Associate Professor Gs. Ts. Dr. Sharifah Norkhadijah Syed Ismail from Universiti Putra Malaysia (UPM), with the sessions facilitated by lecturers from several universities, including UPM, Universiti Kebangsaan Malaysia (UKM), Universiti Teknologi MARA (UiTM), International Islamic University Malaysia (IIUM), and Management and Science University (MSU). Around 30 educators participated in this workshop. The programme's specific aims can be outlined as follows: 1) to promote the widespread distribution and advancement of knowledge related to the One Health concept; 2) to enhance and expand the reach of One Health education and training programmes, with a specific focus on instructors who will be tasked with educating the current and future One Health workforce, known as One Health Ambassadors; and 3) to incorporate the concept of One Health into students' innovation projects or extracurricular activities.

In this transformative three-day workshop, educators from vocational schools, polytechnic institutions, and community colleges united to unravel the intricate web of human, animal, and environmental health. We have learned that collaboration and interdisciplinary thinking are the keys to tackling global health challenges head-on, breaking down the barriers that separate these vital aspects of our wellbeing. MyOHW has also shed light on the imperative need for widespread awareness and education on the One Health concept. The youths now carry the torch to spread this holistic approach far and wide, equipping communities with the knowledge needed for informed decisions, sustainable practices, and a deepened sense of responsibility towards our planet. Moreover, MyOHW has sounded the alarm on the urgent connection between environmental conservation, climate change, and One Health. The intricate dance of ecosystems, human actions, and the health of all species demands our attention. By proactively safeguarding our environment, we can safeguard human and animal health while securing a future rich in biodiversity.

## Climatic Hazards Programme

# Jejak Karbon dalam Kehidupan Harian: Kesedaran dan Tindakan Komuniti

Aida Soraya Shamsuddin,<sup>1</sup> Nurfashareena Muhamad,<sup>1</sup> Mohd Fairus Awang,<sup>1</sup> Mohd Faizol Markom,<sup>1</sup> Noor Shafirah Ramli,<sup>1</sup> Aziemah Zulkifli<sup>2</sup>

<sup>1</sup>SEADPRI-Universiti Kebangsaan Malaysia

<sup>2</sup>LESTARI-Universiti Kebangsaan Malaysia



Photo by SEADPRI-UKM

SEADPRI menerima sijil penghargaan dari penganjur

Pada 15 Oktober 2023, sambutan “Hari Sukan Negara Daerah Hulu Langat dan Bandar Baru Bangi Pagi Tanpa Kenderaan 2023” telah berlangsung dengan meriahnya di Taman Tasik Cempaka, Bandar Baru Bangi. Tujuan utama sambutan ini adalah untuk memupuk kesedaran masyarakat dalam mengurangkan penggunaan kenderaan bermotor, yang turut menyumbang kepada pelepasan karbon yang tinggi. Selain itu, acara ini bertujuan untuk meningkatkan kesedaran terhadapintai alam sekitar dalam kalangan masyarakat serta mempromosikan dan menggalakkan sukan papan luncur, kasut roda, dan berbasikal

Pusat Kajian Bencana Asia Tenggara (SEADPRI), Institut Alam Sekitar dan Pembangunan, telah diamanahkan untuk mewakili Universiti Kebangsaan Malaysia (UKM) dalam sambutan ini. Pihak SEADPRI telah mempamerkan “Program Jejak Karbon di Sekolah” mereka yang telah dijalankan di dua buah sekolah, iaitu Sekolah Menengah Agama Persekutuan Kajang (SMAPK) dan Sekolah Berasrama Penuh Integrasi Gombak (INTEGOMB). Aktiviti-aktiviti jejak karbon yang dijalankan di sekolah-sekolah ini telah dipamerkan. Di samping pameran, pelbagai aktiviti menarik turut dijalankan di ruang pameran. Salah satu daripadanya adalah permainan teka silang kata, yang memberi peluang kepada pengunjung untuk menguji pengetahuan mereka mengenai jejak karbon dan isu-isu alam sekitar secara interaktif. Melalui pendekatan ini, SEADPRI berusaha menyampaikan maklumat dengan cara yang menarik dan berdaya tarikan kepada masyarakat yang hadir, menjadikan kesedaran mengenai jejak karbon dan isu-isu alam sekitar

lebih mudah diakses dan difahami oleh pelbagai lapisan masyarakat.

Selain itu, pengunjung juga diberi penerangan tentang pengiraan jejak karbon individu. Pengiraan jejak karbon individu memainkan peranan penting dalam membentuk kesedaran serta usaha untuk mengurangkan impak negatif terhadap alam sekitar. Dengan memahami sejauh mana aktiviti harian kita menyumbang kepada pelepasan gas rumah hijau dan kesan perubahan iklim, kita mampu melangkah ke arah tingkah laku yang lebih mesra alam. Langkah ini tidak hanya merupakan inisiatif individu yang signifikan, tetapi juga langkah pertama dalam membentuk masyarakat yang lebih sedar akan tanggungjawab terhadap persekitaran.

Secara keseluruhan, maklum balas yang diterima dari pengunjung ke ruang pameran SEADPRI amat positif. Keinteraktifan dan kesedaran yang terbentuk melalui penerangan mengenai jejak karbon telah memberikan impak yang memberangsangkan kepada mereka. Selain itu, kami juga telah menerima cadangan yang bernas, iaitu untuk meluaskan program jejak karbon ke luar daripada persekitaran sekolah, dengan menjalankannya di kawasan perumahan atau di peringkat komuniti. Cadangan ini menunjukkan keinginan untuk melibatkan lebih ramai individu dan membentuk satu impak yang lebih besar dalam usaha mengurangkan jejak karbon serta meningkatkan kesedaran mengenai isu perubahan iklim di kalangan masyarakat setempat. Kami akan terus mempertimbangkan cadangan ini sebagai sebahagian daripada usaha berterusan dalam mencapai matlamat kelestarian dan kesedaran alam sekitar.

## Climatic Hazards Programme

## ASM-UKM SEADPRI FORUM 2023

Navakanesh Bathmanathan, Siti Khadijah Satari & Joy Jacqueline Pereira  
SEADPRI-Universiti Kebangsaan Malaysia



Registered participants of the 2023 SEADPRI FORUM

SEADPRI-UKM organized a webinar entitled “Climate Change and Cities: Engaging in the IPCC AR7 cycle” with the support of the Academy Sciences of Malaysia (ASM) and Asian Network on Climate Science and Technology (ANCST). It was held on 10 November, 2023, with over 50 participants joining the forum.

The panel session included remarkable speakers such as Associate Professor Dr. Zelina Zaiton Ibrahim, Associate Professor Dr. Sharina Abdul Halim, and Professor Dr. Lim Yun Seng. Professor Dr. Joy Jacqueline Pereira presented an overview of the IPCC, with the session moderated by Dr. Nurfashareena Muhamad.

The forum was organized with the intention of highlighting the scoping meeting, which will be held in late March or early April 2024, to develop the scope and outline of the special report as well as the process and timeline for the IPCC Panel to decide on

further IPCC work. The selection of scoping meeting participants took into consideration the following criteria:

- Scientific, technical, and socioeconomic expertise, including the range of views.
- Geographical representation.
- A mixture of experts with and without previous experience in IPCC.
- Gender balance.
- Experts with a background from relevant stakeholder and user groups, including urban practitioners and planners, representatives of civil society organizations, and local/regional governments.

More information can be found on the following website: [IPCC Special Report on Climate Change and Cities – Scoping Meeting – Asian Network on Climate Science and Technology \(ANCST\)](#).



## Climatic Hazards Programme

# The 1st ASEAN Disaster Resilience Forum

Puteri Amirah Nabilah Azman, Nur Zahidah Mohamad & Joy Jacqueline Pereira  
SEADPRI-Universiti Kebangsaan Malaysia



Representatives from SEADPRI-UKM, ASEAN Secretariat, U-Inspire Alliance, and Singapore Civil Defence Force (SCDF).

The 1st ASEAN Disaster Resilience Forum (ADRF) was part of the ASEAN Disaster Management Week (ADMW) 2023, in Singapore. The ADRF is a biennial forum which provides an avenue for ASEAN and its partners and friends to discuss ways and means to strengthen disaster resilience in the region. The 1st ADRF, themed “Mobilising ASEAN and Its Partners on the Journey towards Building a Disaster Resilient ASEAN Community”, invoked discussions on a “whole-of-ASEAN” approach towards a disaster resilient ASEAN Community and the important roles of ASEAN’s partners and friends in this endeavour.

The inaugural ASEAN Disaster Management Week 2023 (21-24 August) was filled with activities by the ASEAN

Committee on Disaster Management (ACDM). The event brought together representatives from ASEAN Member States (AMS) and different DM sectors to discuss DM strategies, enhance regional cooperation and capacity building, and promote information-sharing among the different stakeholders.

ADMW was co-organized by the AHA Centre, European Union, Swiss Agency for Development and Cooperation, Asian Development Bank (ADB), Temasek Foundation, Singapore Civil Defence Force, and The ASEAN Secretariat, and supported by Knowledge Partners Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM), Universiti Kebangsaan Malaysia (UKM), and the S. Rajaratnam School of International Studies.

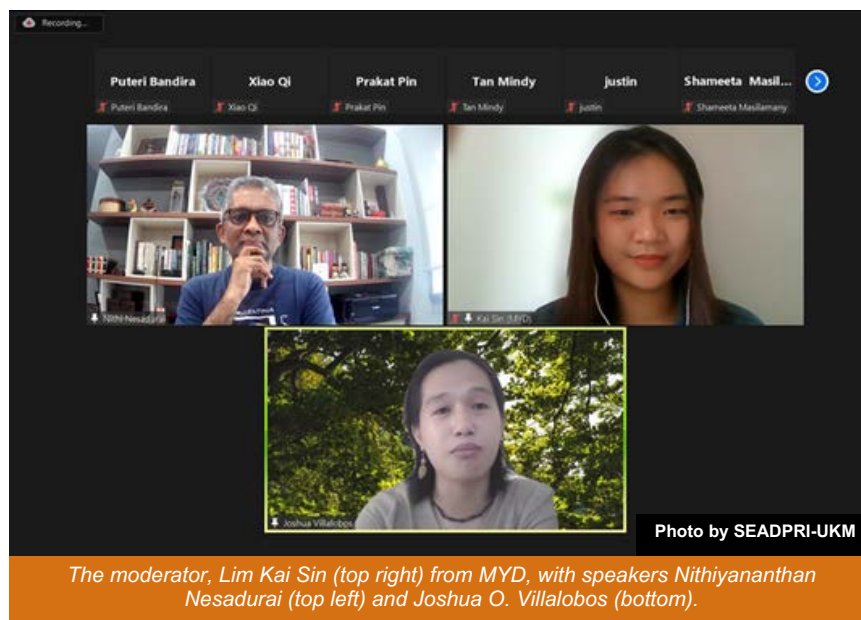
## Tahniah Pemenang Anugerah bagi Kolokium LESTARI 2023



Setinggi-tinggi ucapan tahniah kepada saudara Jeremy Jason Chin Chuong, iaitu merupakan pelajar Pusat Kajian Bencana Asia Tenggara (SEADPRI), di bawah seliaan Prof. Madya Dr. Tan Ling Ling kerana telah memenangi Anugerah Pemenang Peserta Terbaik Kategori Sarjana dan Anugerah Pemenang Abstrak Lanjutan Terbaik Kategori Sarjana dengan tajuk pembentangan “DEVELOPMENT OF DNA BIOSENSORS EARLY WARNING SYSTEM FOR HARMFUL ALGAL BLOOM (HAB) DETECTION: A CASE STUDY IN TUMPAT, KELANTAN” dan saudari Nurul Ain binti Zulhaimi iaitu pelajar di bawah seliaan Prof. Dr. Joy Jacqueline Pereira bagi Anugerah Pemenang Peserta Terbaik Kategori Doktor Falsafah dengan tajuk pembentangan “PEMBENTUKAN KERANGKA DAYA TAHAN TERHADAP BAHAYA BERKAITAN IKLIM DI WILAYAH PERSEKUTUAN LABUAN”.

## Climatic Hazards Programme

## Strengthening Youth Capacity in Just Transition

Alka Kaur Sandhu,<sup>1</sup> Nur Zahidah Mohamad<sup>2</sup> & Nurfashareena Muhamad<sup>2</sup><sup>1</sup>Malaysia Youth Climate Action Pact (MYCAP)<sup>2</sup>SEADPRI-Universiti Kebangsaan Malaysia

On 17 September of this year, SEADPRI-UKM and Malaysia Youth Climate Action Pact (MYCAP) organized a workshop in collaboration with U-INSPIRE Malaysia@UKM, Malaysia Youth Delegation (MYD) and UNICEF Malaysia. The workshop, entitled 'Strengthening Youth Capacity in Just Transition', aims to foster collaboration and empower youth-focused NGOs in addressing climate change issues, with a special emphasis on the concept of just transition. This is a concept that has been around since the 80s. With just transition, the whole of society – all communities, all workers, all social groups – work towards a common goal in a fair and inclusive way.

The workshop was moderated by Lim Kai Sin, Co-Focal Point of Malaysia Youth Delegation (MYD), and featured Nithiyananthan Nesadurai, Regional Coordinator of Climate Action Network

Southeast Asia (CANSEA), and Joshua O. Villalobos, Youth Advocate and Climate Justice Activist from the Philippines, as panelists. The workshop discussed the importance of just transition in Southeast Asia, and specifically in Malaysia. The panelists highlighted the challenges and opportunities in achieving Just Transition in the region, and shared examples of successful just transition initiatives.

The MYCAP workshop was a valuable opportunity for youth-focused NGOs to learn about just transition and discuss how they can get involved in the movement. The workshop also served as a recruitment platform to get youth-led organizations in Malaysia on board with the idea of a united climate action pact.

**BIBLIOMETRIC WORKSHOP**

TARGET: researchers, academicians, science officers, science officer assistants, interested individuals, and students (multidisciplinary, pure and applied science, social science, environmental science, education, engineering, etc) from government and private institutions

26 – 27<sup>th</sup> July 2023  
9 am – 4 pm

Bilik Kuliah UTAMA, LESTARI

Organiser: Southeast Asia Disaster Prevention Research Initiative, LESTARI

Call for Participation

"PRE-REGISTER NOW, PAY LATER"  
\*payment follow-up with details within 1-2 weeks before the BMW'23  
\*scan QR for more details & to pre-register

Category	Normal (RM)	Early Bird (RM)
UKM Student	250	230
Non-UKM Student	300	250
UKM Staff	350	300
Non-UKM Staff	450	400

QR Code: BMW'23

E-certificate  
\*theory & practical  
\*competitive fee  
\*lunch provided

**SPEAKERS/FACILITATORS**

Dr. Nur Syamimi Mohamad

ChM. Dr. Nur-Fadilah Mazlan

Pn. Nurul Izzah Mohd Ali

**LIMITED**

Pada 26 dan 27 Julai 2023, Pusat SEADPRI telah menganjurkan satu bengkel "Bibliometric Workshop" bertempat di Bilik Kuliah Utama, LESTARI. Bengkel ini telah dihadiri oleh warga UKM terutamanya pelajar siswazah dari LESTARI



## Geological Hazards Programme

### The 59th CCOP meet

*Lim Choun Sian*

*SEADPRI-Universiti Kebangsaan Malaysia*



*Representatives from SEADPRI-UKM, ASEAN Secretariat, U-Inspire Alliance, and Singapore Civil Defence Force (SCDF).*

Hosted by the CCOP Technical Secretariat in cooperation with the Government of Thailand through the Department of Mineral Resources, the 59th CCOP Annual Session was held at Phang Nga, Thailand on 29 October to 2 November 2023.

The Phang Nga Bay in Khao Lak, situated 90km to the north of Phuket Island, is a new redevelopment area after the resorts and villages were flattened by the Indian Ocean tsunami 19 years ago on 26 December 2004. This resort area was the among worst hit area outside Indonesia causing more than 5000 deaths.

The session was attended by delegates represented by the geological survey or science agencies of Member Countries namely Brunei Darussalam, Cambodia, China, Indonesia, Japan, Republic of Korea, Lao PDR, Malaysia, Myanmar, Philippines and Thailand; Cooperating Countries (Denmark, Finland, Poland and United Kingdom), Cooperating Organizations (EuroGeoSurveys, Hanyang University, IUGS, and UKM). SEADPRI represented UKM.

Many activities have been jointly undertaken by UKM and CCOP over the past decade under the auspices of the Department of Mineral and Geoscience Malaysia. The activities were organized to recognize the importance of regional cooperation, build capacity and exchange of geoscientists in the East and Southeast Asia regions in addressing issues related to regional sustainable development, including geohazards, climate change adaptation, disaster resilient city, geoheritage and young geoscientists.

In this annual session, SEADPRI presented activities with its regional partners including the project 'Promotion of Social Entrepreneurship in Disaster Risk Reduction to Build Community Resilience', funded by the International Development Research Centre (IDRC) Canada. The key partners of this project are Royal University of Phnom Pehn (RUPP) and Geological Society of Malaysia (GSM). The project, completed this year, focuses on fostering long-term community resilience to climate change in Malaysia and Cambodia, and empowering young female social entrepreneurs to develop disaster resilient plans via the use of GIS, open source and crowd-sourcing technology.

At the Thematic Session, 47 speakers gave presentations on the latest research achievements in the region with over 100 geologists from CCOP member countries and cooperating countries attending. The theme of 'Action for Future: Advancing Geoscience Sustainable Development in the East and Southeast Asia' focused on climate change and disaster risk reduction; sustainable energy and critical resource management; and digital transformation and innovation.

SEADPRI-UKM, as one of the cooperating organization members, was also represented in the Advisory Group meeting by Dato' Yunus Abdul Razak, honorary fellow at SEADPRI, who is the Vice Chair of CCOP Advisory Group. The Advisory Group comprising the representatives of the cooperating countries, cooperating organizations and honorary advisors, meet once a year to consider the technical, scientific and research aspects of CCOP's work programme.

## Geological Hazards Programme

# Regional Workshop at the National Geoscience Conference

*Puteri Amirah Nabilah, Siti Khadijah Satari & Joy Jacqueline Pereira  
SEADPRI-Universiti Kebangsaan Malaysia*



*Speakers for the workshop at the National Geoscience Conference 2023. From the left Dr. Nurfashareena, Prof. Chhinh Nyda, Ms. Jolly, Prof. Alfredo Mahar Lagmay, Prof. Joy Jacqueline Pereira, Mr. Navakanesh, Ms. Nurul, Mr. Ghazali and Dr. Lim Choun Sian*

The National Geoscience Conference (NGC) 2023 took place at Everly Hotel, Putrajaya, from 7-9 November, 2023. During the opening ceremony, the inauguration of the MyBahaya App was conducted by Datuk Zamri bin Ramli, Head Director of the Department of Mineral and Geoscience. Prof. Dr. Joy Pereira delivered the keynote speech here entitled 'Energy Transition and Climate Risks: A Catalyst for Transforming the Geology Workforce?'

Later in the day, the program included a 'Regional Workshop on Youth Innovation in Disaster Prevention and Climate Science' hosted by SEADPRI-UKM. Distinguished speakers from across Southeast Asia were invited to share their expertise.

The keynote speaker for the workshop, Prof. Alfredo Mahar F.A. Lagmay from the Philippines, presented 'Citizen Science,

Open Data, and Innovation.' Prof. Dr. Chhinh Nyda, from Cambodia, discussed 'Promotion of Agricultural Cooperative in Disaster Risk Reduction to Build Community Resilience in Cambodia, A Potential Business Model.' Ms. Jolly Joyce Sulapas, also from the Philippines, showcased her research on 'Innovative Open Science for Geological Hazards.' Mr. Navakanesh M. Batmanathan from Malaysia, demonstrated the functionality of the 'MyBahaya Application for Building Community Resilience.' Ms. Nurul Sri Rahatiningtyas from Indonesia shared insights on 'Leveraging the OpenStreetMap (OSM) Project to Enhance Decision-Making Processes in Indonesia.' Lastly, Mr. Gazali Rachman, representing Brunei Darussalam, presented his findings on 'Land Subsidence and its Impacts on Coastal Flood Hazards in Brunei Darussalam.' Dr. Nurfashareena Muhamad and Dr. Lim Choun-Sian moderated the workshop.

## Geological Hazards Programs

### Empowering Children in DRR

*Sarah Sopian & Nurfashareena Muhamad  
SEADPRI-Universiti Kebangsaan Malaysia*



Photo by SEADPRI-UKM

*The year 4 and year 5 students at SK Kandasang actively engaged in the development of the mudslide model and the school risk mapping activity.*

Children are among the most susceptible to the impact of disasters, making it crucial to equip them with knowledge and skills in disaster risk reduction (DRR). With a dedicated aim to enhance DRR education within schools, SEADPRI has embarked on the Sabah Field Mission, with specific attention to the geohazard-prone region of Kandasang. It is worth highlighting that this mission builds upon the accomplishments of the pilot mission in Janda Baik conducted last year, which was a success.

The aim of this mission is to integrate DRR education into the curriculum of schools. This approach recognizes that schools are ideal places for children to acquire essential knowledge and skills about DRR. By educating the children on disaster preparedness and response, we empower them to be both informed and proactive in safeguarding themselves and their communities.

The "Bengkel Pemerkasaan Pengetahuan dan Pengurangan Risiko Bencana" workshop took place at Sekolah Kebangsaan Kandasang. This workshop was organized on 4 October, 2023, as part of the Science and Technology Week on DRR (STDR3 Week) and was made possible under the UNICEF Malaysia fund for Youth and Young Professionals Empowerment: Implementing SETI for Disaster Resilience. The event was a collaborative effort involving various key organizations, including U-INSPIRE Malaysia@UKM, Disaster Preparedness and Prevention Centre (DPPC), Malaysia-Japan International Institute of Technology (MJIT), Universiti Teknologi Malaysia (UTM) Kuala Lumpur, and UNICEF Malaysia.

The workshop commenced with a briefing by Encik Mohd. Khairul Zain Ismail, followed by an introduction to disasters by Prof. Dr. Sharifah Zarina Syed Zakaria and Dr. Iffah Farhana Abu Talib. To ensure that knowledge transfer extended beyond the classroom, each student was provided with brochures on disaster preparedness. These brochures were intended to be shared with their households, effectively extending the reach of DRR education.

The session continued with hands-on activities related to DRR, including the creation of preparedness bags, a "Danger Bingo" game, a disaster-themed board game, construction of simple mudslide models, and school risk mapping. These interactive activities not only engaged students but also demonstrated the potential for school children to play an active role in conveying critical information to their households and local communities.

The workshop concluded with a reflection session, where students and teachers shared their experiences and identified valuable lessons learned. As a token of appreciation for their active participation, certificates and gifts were presented to the students.

This workshop represents a significant step in educating children about disaster risk reduction. It equips them with practical skills and instills a sense of responsibility in building disaster-resilient communities. By empowering children as agents of change, these initiatives contribute to safer and better-prepared communities in the face of disasters.



## Geological Hazards Programs

### MyBahaya Application and the Bukit Antarabangsa Community

*Navakanesh M Batmanathan, Joy Jacqueline Pereira, Nurfashareena Muhammad, Siti Khadijah Satari, Puteri Amirah Nabilah, Nur Zahidah Muhamad*  
*SEADPRI-Universiti Kebangsaan Malaysia*



*Introduction of the MyBahaya application to the local community*

The MyBahaya platform was designed to capture photo-based early warning signs in Ampang Jaya, Selangor. It allows the public to participate in citizen reporting for signs of geohazards such as landslides. The application was developed with the support from the International Development Research Centre (IDRC) of Canada, SEADPRI-UKM, Geological Society of Malaysia (GSM), Malaysian Meteorological Department (MetMalaysia) and Atlas Informatics.

The community engagement was carried out on 9 November this year as part of the National Geoscience Conference (NGC) Field excursion. The purpose was to introduce MyBahaya application to the Bukit Antarabangsa community. A total of 90 participants including conference delegates, members of community and JMG officers were involved in this event. The site visit began with the community presenting the history of landslide events, preparedness programs and other initiatives over the years. A short briefing by the Mineral and Geoscience Department of Malaysia and SEADPRI-UKM was

conducted to provide geological details and findings from the IDRC project.

Prior to the MyBahaya testing, IDRC project members presented the ways of using the application for collecting evidence of slope failures such as cracks, water seepage, soil movements and rock falls. This also included how to take photos in a specific way, and finally uploading of the photos onto the system (<https://seadpri.ddns.net/idrc/>).

The participants were placed in several groups to observe the impacted areas and as well as test the MyBahaya platform. They were able to identify early warning signs such as cracks and soil movements. Most importantly, several locals provided feedback to improve the platform. The suggestion included collecting basic information, confirmation for submitted photos and diagrams of the different early warning signs which could be used by the public as a guide when capturing such information on the field. This showed that the present system needs some improvements for establishing a more user-friendly interface.

## Geological Hazards Programs

### Explorers Meet Up: Asia-Pacific region

Navakanesh M Batmanathan

SEADPRI-Universiti Kebangsaan Malaysia



Thirty explorers at the spotlight event in Hong Kong

An opportunity for explorers to connect and share their experiences with a wider audience was made possible at the National Geographic Leadership workshop held at the Eaton Hotel, Hong Kong. It was a 4-day programme (22-25 May 2023), with exciting activities to enhance leadership and public speaking skills.

Prior to the workshop, several online assessments were conducted to learn the basics of public presentation. These included practicing with the assigned trainers and getting critical comments from the group. The final output was transformed into a lightning pitch with a powerful call to action.

Some of the on-going initiatives are providing immediate and long-term aid to local climate refugees in the Philippines, spearheaded by explorer Issa Barte, who currently uses crowdfunding and storytelling to support her cause. Similarly, explorer Wong facilitates youth-oriented conferences, clean-ups and workshops to improve education and action on plastic pollution. Many of the other explorers pioneer marine biodiversity and wildlife preservation.

The fundamental outcome of the explorers meet-up was to highlight potential collaboration and discussions on critical

issues. The National Geographic Society offers a wide range of grant opportunities for transformative ideas in five focus areas: Ocean, Land, Wildlife, Human History & Cultures and Human Ingenuity. The Level 1 grants are essentially for early career scientists, while Level 2 targets established individuals who seek a higher level of funding.

Besides funding opportunities, the workshop provided invaluable key takeaways on effective communication and adaptability in leadership roles. It was well-structured, extremely engaging and facilitated in a manner that encouraged fellow explorers to participate. The use of real-life case studies and interactive activities greatly enhanced the learning experience. The additional breakout sessions for group discussions further enriched the effectiveness of team dynamics. These learning experiences helped to better connect team members and foster positive work environments.

Overall, the training offered a comprehensive view of transformational leadership, emphasizing the importance of emotional intelligence and fostering a growth-oriented mindset.

For more information on grant details, please visit <https://grants.nationalgeographic.org/s/grant-opportunities>

## Technological Hazards Programme

# Potential Application of Aptasensor for Anti-doping Screening

Ling Ling Tan

SEADPRI-Universiti Kebangsaan Malaysia

Among the substances prohibited by the World Anti-Doping Agency (WADA), e.g. peptide hormones, growth factors, related substances, and mimetics are classified as prohibited both in- and out-of-competition. The misuse of recombinant human growth hormone (rhGH) in sports to gain a performance advantage is deemed to be unethical. However, once injected, rhGH has been considered to be undetectable because it is identical to the 22 kD fraction of pituitary-derived hGH (pit-hGH). Therefore, insulin-like growth factor-I (IGF-I) biomarker assay might be applied well after rhGH doping, as IGF-I rises substantially following rhGH administration, and is generally stable for several days after collection and during long-term storage at 25°C for up to 12 months.

IGF-I protein is a 70 amino acid-linked polypeptide, a member of the insulin superfamily, and it is a growth hormone widely expressed in cells or tissues, including the liver and brain. It is the growth hormone mediator, a strong mitogenic factor capable of stimulating various cellular responses, including cell growth, proliferation, and differentiation by activation of IGF-1 receptor and the subsequent upregulation of phosphoinositol-3-kinase-protein kinase B signaling cascade. Due to the much longer half-life of IGF-I versus hGH or recombinant hGH, IGF-I has become a biomarker target of interest for athletic regulatory bodies seeking to identify athletes who are doping with rhGH.

At present, IGF-I is detected by using different bioanalytical methods including immunoradiometric assay (IRMA); immunodiagnosics system (IDS-iSYS) based on an automated sandwich, chemiluminescent immunoassay (CLIA); and liquid chromatography with tandem mass spectrometry (LC-MS/MS) as recommended by the WADA. Additionally, other available techniques for IGF-I assay are such as radioimmunoassay (RIA), enzyme-linked immunosorbent assay (ELISA), and optical immunoassay. Although these analytical techniques display various advantages, including sensitivity and high accuracy, they suffer from one or more drawbacks, such as time-consuming procedures, excess reagent consumption, high cost, and narrow dynamic range. For instance, ELISA is widely utilized as a detection strategy in clinical diagnosis based on a sandwich assay. However, it is limited to poor sensitivity and involves long and extensive pretreatment processes. In addition, immunoassays typically require chemical extraction techniques to separate IGF-I from its six known binding proteins in serum. Furthermore, immunoassays have the general drawback of lacking reproducibility to some extent due in part to variations in batch-to-batch polyclonal or monoclonal antibody

reagent production and genetic drift in host animals and hybridomas.

Other available strategies for IGF-I detection based on biosensor techniques are mostly reported to be based on immunological reactions employing IGF-I antibodies. These include electrochemical impedance immunosensor based on nanocomposite of reduced graphene oxide–tin sulfide loaded with gold nanoparticles; optical immunosensor based on the birefringence of nematic liquid crystals of 4-cyano-4-pentylbiphenyl; and surface plasmon resonance-based immunosensor. Despite their novel sensor design, interpreting IGF-1 results is still far from straightforward, with high costs and complicated instrumentation. In this contribution, an electrochemical aptasensor based on nanostructured materials-modified screen-printed carbon electrodes would provide high promise as a label-free sensing platform for rhIGF-I. The proposed IGF-I-responsive aptamer conjugated with organic ligands-modified nanomaterials is anticipated to demonstrate a novel inverse sensitivity concept, whereby a higher electrochemical signal would be generated with less targeted IGF-I upon specific recognition of the IGF-I binding aptamer towards target analyte. It is envisaged that the developed IGF-I aptasensor could be a simple, reliable, and cost-effective method for rapid anti-doping screening to monitor the abuse of GH and IGF-I in sports.



Some athletes use peptide hormones, growth factors, related substances, and mimetics in sports to increase muscle strength and power beyond the natural limit. (Google image)



## Technological Hazards Programme

## Kursus Maya Asas Elektrokimia &amp; Prototaip Pantas

Tan Ling Ling &amp; Gan Kok Beng

SEADPRI-Universiti Kebangsaan Malaysia

**WEBINAR**

**27<sup>th</sup> September 2022**  
(Tuesday)

**9.00 am-1.00 pm**  
(Local Time in Kuala Lumpur, Malaysia)

**WeBEX Virtual Platform**

**Fundamentals of Electrochemistry & Rapid Prototyping**

To share basic knowledge on the fundamentals of electrochemistry, basic electronics and their application to electrochemistry sensing applications as well as the basics of 3D printing

This workshop training will be virtually conducted for young scientists from ICGB member countries. Participants will receive an email with a meeting link inviting them to join/participate in this free-of-charge training course

ICGB International Centre for Genetic Engineering and Biotechnology

UNIVERSITI KEBANGSAAN MALAYSIA  
National University of Malaysia

Photo by SEADPRI-UKM

Kursus Asas Elektrokimia & Prototaip Pantas pada 27 September 2022 di atas talian melalui Microsoft Teams.

Kursus asas elektrokimia dan prototaip pantas yang ditaja oleh geran antarabangsa (XX-2022-002), Collaborative Research Programme-International Centre for Genetic Engineering and Biotechnology (CRP-ICGEB) telah diadakan secara dalam talian melalui Microsoft Teams pada 27 September 2022. Kursus Latihan secara percuma selama sehari dijalankan secara maya adalah untuk berkongsi pengetahuan asas mengenai asas elektrokimia, elektronik asas dan aplikasinya kepada sensor elektrokimia serta asas percetakan 3D kepada saintis muda di peringkat pengajian sarjana muda, sarjana, doktor falsafah dan rakan pasca doktoral daripada anggota negara ICGEB.

Seramai dua orang penceramah telah dijemput dalam kursus ini daripada kalangan pensyarah Universiti Kebangsaan

Malaysia (UKM). Prof. Madya Ts. Dr. Loh Kee Shyuan dari Institut Sel Fuel, UKM telah dijemput bagi sesi perkongsian mengenai asas elektrokimia yang merangkumi elektrokimia bahan elektromangkin untuk membran sel fuel pertukaran proton. Minat penyelidikan beliau melibatkan bahan elektromangkin struktur nano dan membran elektrolit polimer untuk aplikasi sel bahan api. Prof. Madya Dr. Gan Kok Beng dari Jabatan Kejuruteraan Elektrik dan Elektronik, Fakulti Kejuruteraan dan Alam Bina, UKM berkongsi mengenai elektronik asas dan aplikasinya kepada sensor elektrokimia serta asas percetakan 3D dan demonstrasi pencetakan 3D. Projek penyelidikan beliau adalah berkaitan dengan teknologi dron, optik bioperubatan, sistem terbenam, dan kecerdasan buatan untuk aplikasi perubatan.

## CELEBRATING SUCCESS



Congratulations to the Program Coordinator of Climatic Hazards, Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM) Prof. Dr. Joy Jacqueline Pereira, on her appointment as Co-Chair of Working Group III on Mitigation of Climate Change and Member of the IPCC Executive Committee (ExCom). The SEADPRI-UKM community extends its heartfelt gratitude for her contributions, and we hope that she will continue to advance and serve in her new role.

We extend our warmest congratulations to Dr. Nurfashareena binti Muhamad on her appointment as a Member of the Asia Pacific Science Technology Advisory (APSTAAG) from the UNDRR Regional Office. Her dedication, perseverance, and talent have led to this incredible milestone. Let's applaud her hard work and commitment, serving as an inspiration to us all.



**Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM)**

Universiti Kebangsaan Malaysia (UKM), 43600 UKM Bangi, Selangor, MALAYSIA

Tel : +603 8921 4852/4853 Fax : +603 8927 5629 Email : [seadpri@ukm.edu.my](mailto:seadpri@ukm.edu.my) Website : [www.ukm.my/seadpri](http://www.ukm.my/seadpri)

ISSN 2180- 1142



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