

5. Cooperation and Partnerships

In order to advance disaster resilience, ADRC forges cooperation and partnerships among member countries and partner organizations, including conducting joint research and organizing learning events.

5.1 Research Cooperation

Research projects that started to get implemented in FY2021 include topics pertaining to the use of satellites for early warning, capacity building in DRR, climate downscaling, and application of Mobipack software.

5.1.1 QZSS Feasibility Studies

In collaboration with the Asia Air Survey, ADRC conducted a survey among 10 experts from member countries. The survey pertains to Satellite Report for Disaster and Crisis Management (DC Report) using the Quasi-Zenith Satellite System (QZSS) – a Japanese constellation of Global Navigation Satellite System (GNSS). Since QZSS has the capacity to send warning information using the space satellites, it is expected to offer greater application in remote and mountainous areas with poor coverage of ground-based telecommunications networks. It would also augment the ground telecommunication systems that are vulnerable to service disruptions during extreme disaster events. Survey outcomes offer insights on designing the QZSS early warning service to effectively support evacuation and response activities (Figure 5.1). In view of this project, the Cabinet Office of Japan (in partnership with ADRC) is initially inviting the following countries to participate in the feasibility studies and actual demonstrations: Chinese Taipei, Cambodia, Indonesia, Malaysia, Philippines, Thailand, Bangladesh, Nepal, Australia, and Fiji.

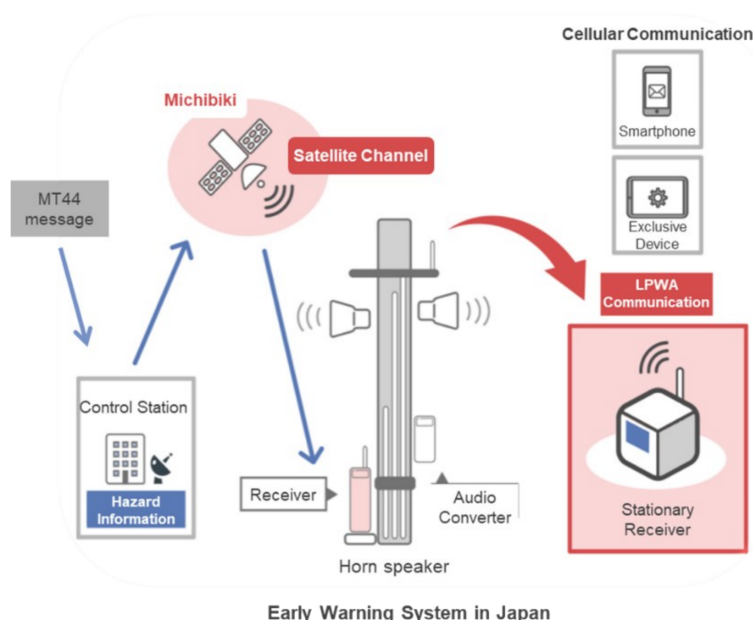


Figure 5.1 Flow of early warning service using QZSS in Japan

5.1.2 Knowledge Co-creation in CDRR

In cooperation with JICA, ADRC conducted the research project pertaining to “Knowledge Co-Creation Programmes on Comprehensive Disaster Risk Reduction (DRR)”. This project covers subject-specific training programmes targeted to the five regions: Asia, Latin America, Central Asia and Caucasus, Africa, and island countries. The project is aimed at clarifying the policy for “Comprehensive DRR” training in line with the implementation of the Sendai Framework for Disaster Reduction (2015-2030). Outcomes of this project are expected to improve the contents of JICA’s comprehensive disaster risk reduction training course,

Comprehensive disaster risk reduction program

8 steps for developing local disaster risk reduction plan

Flood part

Project research
 JV team for "Review of comprehensive disaster risk reduction program"

STEP 1 Collecting hazard information

- 1-1 Concept of hazard and tasks for Step 1
- 1-2 How to collect hazard information
- 1-3 How to collect information when hazard information is insufficient
- 1-4 Selection of hazard for planning

STEP 1-2 How to collect hazard information 2

Where to get information without a hazard map (flood)

Key Points

- When considering flood hazard countermeasures, it is necessary to collect historical inundation hazard information (past records including historical inundation area map and inundation depth). These are the basic information for inundation hazard reduction in the target area. In addition to information held by public organizations, it is desirable to collect information on inundation hazards, such as on-site historical memory (disaster records and hearsay).
- By combining the inundation hazard information with aerial photographs, it becomes possible to visually identify buildings, facilities, farmlands, etc. potentially affected by inundation. Electronic data is desirable for GIS analysis, and Google Earth should also be considered when it is difficult to obtain aerial photographs from public organizations.
- Adding the information on elevation and ground height to them, it is possible to assume the approximate inundation area in the present landform.
- Moreover, it is important for understanding about inundation hazard to collect and organize the observation information on precipitation and river level which can cause flood. Precipitation is correlated with river discharge and level, which is useful for estimating the frequency of flooding and inundation occurrence.
- Drainage networks in flood-prone areas provide useful information for analyzing flood range and duration, but analyses using these data are technical and are not expected to be conducted by local government officials.
- In the following table, 1 and 2 show the range that can be analyzed in local governments.

Category	1 Historical inundation area, inundation depth, Aerial photograph	2 Elevation and ground height	3 Precipitation data	4 Drainage system and the flow
Historical inundation area, inundation depth	National and local governments (Disaster Prevention Bureau)	National and local governments (Disaster Prevention Bureau)	National and local governments (Disaster Prevention Bureau)	National and local governments (Disaster Prevention Bureau)
Aerial photograph	National and local governments (Disaster Prevention Bureau)	National and local governments (Disaster Prevention Bureau)	National and local governments (Disaster Prevention Bureau)	National and local governments (Disaster Prevention Bureau)
Elevation and ground height	National and local governments (Disaster Prevention Bureau)	National and local governments (Disaster Prevention Bureau)	National and local governments (Disaster Prevention Bureau)	National and local governments (Disaster Prevention Bureau)
Precipitation data	National and local governments (Disaster Prevention Bureau)	National and local governments (Disaster Prevention Bureau)	National and local governments (Disaster Prevention Bureau)	National and local governments (Disaster Prevention Bureau)
Drainage system and the flow	National and local governments (Disaster Prevention Bureau)	National and local governments (Disaster Prevention Bureau)	National and local governments (Disaster Prevention Bureau)	National and local governments (Disaster Prevention Bureau)

STEP 1 – Confirmation Of Hazards

Release of satellite-based precipitation data and analysis of precipitation probability

- Satellite-based global precipitation data are released by JAXA, and the observational data are available.
- Observed probability of rainfall occurrence (once every few years) can be viewed at the ISD-JAPAN website.

System that offers global precipitation information since 2011

- Use the information to identify flood risks in the areas of uniform rainfall data.
- Observed rainfall data of GSMAF is converted into probability of rainfall occurrence in real time.
- Considered the uniformity (probability) of rainfall

Global satellite-based rainfall information using GSMAF (by JAXA)

<https://satellite.eorc.u-tokyo.ac.jp/GSMAF/index.html>

Identify the probability of rainfall occurrence using GSMAF (by JAXA)

<http://gifu.info.naturedatacenter.org/earth-webapp/mobile.aspx>

Figure 5.2 Presentation of project outcomes on improving training contents

Through the Economic Research Institute for ASEAN and East Asia (ERIA), ADRC conducted a research project titled, “Study on Disaster Resilience Policies and Measures for Sustainable Economic Growth in ASEAN Region”. Under this project, three Japanese experts prepared papers to provide policy advice pertaining to economic damage from disasters in the ASEAN region, disaster resilience of private sector of Japan, and investment in disaster risk reduction for sustainable development.

Some researchers at ADRC participate in the study on downscaling of climate change impact projection under the banner of Advanced Study of Climate Change Projection (SENTAN) with Kyoto University as the leading research agency. The research comprises five components: 1) Hazard Integration Model, 2) Hazard Mechanism, 3) Hazard Event Attribution, 4) International Collaboration, and 5) Adaptation Strategy. As of December 2021, a total of 119 researchers have engaged in the project to contribute in achieving the project goals (Figure 5.3).

Goals

- Multi hazard model development for storm and flood hazards
- Impact projections on disaster climate information, water resources, and ecosystems due to extreme weather by global/down-scaled warmings
- Analysis on changes of hazards depending on the level of global/down-scaled warming
- Down-scaled climate change impact projections in Japan and the regions of Asia and the Pacific
- Develop a framework/platform for strategic application of disaster climate information to climate change adaptation measures



Figure 5.3 Goals of climate downscaling study

5.1.5 World Bank Tech-Emerge Resilience Project Termination

Upon recommendation of the Government of Himachal Pradesh in India, the project to strengthen emergency response using Mobipack (an open source analysis software developed by the University of Tokyo) was terminated in the middle of August 2021 due to unforeseen policy challenges from the National Government of India. In that project, it was recalled that whenever a mobile phone subscriber sends a message or makes a call, his or her location is indicated in the call detail record (CDR), which the telecommunications companies store in their databases. Mobipack can access and process the CDR data from the telecommunications company, and can visually show on a dashboard of a computer screen people's movement in near real-time. This data could help inform the disaster risk management (DRM) agency's decision to take appropriate actions, such as: (i) issuing early warning to people going to hazardous locations, (ii) monitoring disaster hotspots and infection outbreaks, (iii) informing evacuation operations, and (iv) informing the distribution of relief goods and supplies. It was the Himachal Pradesh State Disaster Management Authority (HP-SDMA) that coordinated the supposed installation of Mobipack in local telecommunications companies, covering the entire 12 districts.

5.2 International Engagements and Partnerships

Annually, ADRC is engaged in a range of international/regional events and activities to strengthen partnerships and cooperation in disaster risk reduction.

5.2.1 APEC-EPWG

ADRC has been serving as co-chair of the APEC Emergency Preparedness Working Group (EPWG), and had organized and participated in the following activities in FY 2021:

- **17th EPWG Meeting, 20-21 May 2021**

In this meeting, the EPWG discussed: 1) initiatives in responding to COVID-19; 2) EPWG Strategic Plan 2021-2024 and EPWG TOR; 3) APEC Putrajaya Vision 2040 Implementation Plan; 4) Cross-Fora collaboration; and 5) capacity building projects.

ADRC Executive Director Mr NAKAGAWA Masaaki presented the “Major Disaster Events and Disaster Risk Reduction (DRR) Policy Implementations During COVID-19 Pandemic” at the meeting.

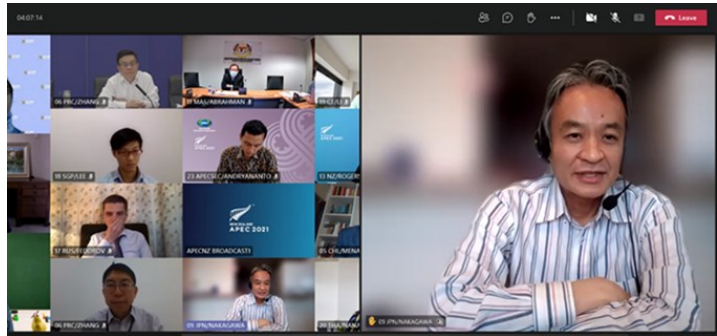


Figure 5.4 Screenshot of 17th EPWG Meeting

- **14th Senior Disaster Management Officials Forum (SDMOF-14), 26 May 2021**

SDMOF-14 discussions revolved around two major themes: 1) DRR polices including preparedness, response, and recovery measures in light of the COVID-19 pandemic, and 2) inclusive and balanced participation in disaster management. Outcomes of the first thematic discussion highlighted the importance of improving risk governance by considering the lessons from concurrent crises.

Outcomes of second thematic discussions, which was moderated by Dr Gerry Potutan of ADRC, highlighted three common actions in promoting inclusive and balanced participation in disaster management: 1) empowering communities to act in disaster management; 2) forging joint-strategies among government agencies; and 3) strengthening partnerships and collaboration.



Figure 5.5 Screenshot of 14th SDMOF

- **Workshop on Enhancing Participation in Flood Disaster Preparedness Through Community-based Hazard Mapping, 17 June 2021**

Organized by the University Putra Malaysia, the Global Environment Centre, and the Malaysian Water Partnership, ADRC presented the “Town Watching” method developed by ADRC Executive Secretary Professor OGAWA Yujiro, and explained its applications to some 50 participants from APEC economies.

- **Workshop for APEC Disaster Risk Management Strategies to Support MSMEs Business Sustainability, 24-26 August 2021**

ADRC sent resource speaker in this workshop, which was organized by Universiti Utara Malaysia (UUM). The event was aimed at increasing MSMEs coping capacity through capacity building Programme and private-public partnership and to recommend policy to support MSMEs recovery after a disaster. ADRC presented the “Policies and Practices of Japan to Support MSMEs DRM”, which was favorably welcomed by the participants.

- **Workshop on Better Risk Monitoring and Assessment for A Risk-informed Regional Economic Integration, 23-24 September 2021**

EPWG-China hosted this workshop, and ADRC sent two representatives, namely Mr NAKAGAWA Masaaki (Executive Director of ADRC) and Dr Gerry Potutan (Senior Researcher of ADRC) to serve as panelists. One session dwelt on Better Disaster Risk Monitoring and Assessment moderated by Ms Fengmin Kan (Former Regional Chief, Asia-Pacific Regional Office, UNDRR) and the other was about Inclusive DRR for Resilience Building moderated by Mr Sanny Ramos Jegillos (Senior Advisor/ Team Leader, Disaster Risk Reduction and Recovery for Building Resilience, Bangkok, Thailand). The two-day workshop brought together policymakers, experts, scientists, academia, and practitioners to share experiences on better disaster risk monitoring and assessment, risk-smart businesses, and community-based DRR in the post COVID-19 pandemic. Outcomes of the event offered insights on activities that contribute towards a risk-informed regional economic integration in the post COVID-19 world.



Figure 5.6 Screenshot of workshop hosted by EPWG-China

5.2.2 ASEAN

Engagements of ADRC in the activities related to the Association of the Southeast Asian Nations (ASEAN) and the AHA Centre in FY2021 include the following:

- **6th AADMER Partnership Conference, 8 June 2021**

The ASEAN Agreement on Disaster Management and Emergency Response (AADMER) is a document that presents the mechanisms for effective disaster risk reduction and calls for strengthening regional and international cooperation on disaster risk reduction efforts in order to mitigate the damage caused by natural hazards in the 10 ASEAN countries. In this partnership




Figure 5.7 ADRC Executive Director NAKAGAWA Masaaki at the Conference

conference, ADRC Executive Director NAKAGAWA Masaaki gave a statement highlighting the contributions of ADRC's DRR projects, such as the GLIDE system for sharing disaster information, ADRC efforts to strengthen networks among ASEAN countries, and the ERIA (Economic Research Institute for ASEAN and East Asia) research project.

- **AHA Centre Executive (ACE) Programme, 17 November 2021**

This event was jointly organized by the AHA Centre and Kobe University to showcase the latest DRR technology transfer to DRR organizations. ADRC presented the following in one of the sessions: 1) Outline of the Sentinel Asia, 2) Trend of Emergency Observation Request, and 3) How to register disaster information into the OPTEMIS system.



Session on Sentinel Asia:
"Space-based disaster risk management support for the benefit of the Asia-Pacific region"

Time (JST)	Agenda Item	Speaker/Moderator	Annotation
15:00- 15:05	Opening	Dr. Ramanditya Wibardana	➤ opening and introduction of speakers
15:05- 15:20	Keynote Presentation	Mr. MIYOSHI (Sentinel Asia Secretariat)	➤ significance of space technologies for disaster management ➤ explanation on "Sentinel Asia" ➤ support from Japan-based JPT members <i>including those who are not at this session</i> (membership, their pivotal roles)
15:20- 15:40	Hands-on Session: "Sentinel Asia Web-GIS"	Ms. TAKAKURA (JAXA)	➤ overview of Web-GIS based products (comparison between a bare VAP and a VAP combined with Web-GIS)
15:40- 15:50	How to make an Emergency Observation Request (EOR) to Sentinel Asia	Dr. IKEDA (ADRC)	➤ explanation on the flow of EOR ➤ how to make an EOR (including how to determine the AOI and fill in the form) ➤ invitation to the simulation training program on EOR using Sentinel Asia's system "OPTEMIS" to be schedule on 19 November (from 16:30-JST) for those who are currently or might be responsible for making EORs
15:50- 16:20	Extraction of building footprints from satellite data ~ theory and hands-on practice~	Prof. MIYAZAKI (University of Tokyo)	➤ usefulness of building footprints for assessing damages caused by natural disasters ➤ general theory: how to extract building footprints from satellite data ➤ demonstration of an application, followed by hands-on session using the application ➤ Sentinel Asia's plan for this initiative (including possible cooperation with NSPO) ➤ invitation for participants in the session to join this initiative (citing prerequisites, terms and conditions as well)

Figure 5.8 Agenda of the Sentinel Asia Session in the ACE Programme

- **Public-Private Seminar on Innovative Policies and Technologies for Disaster Risk Reduction, 29 March 2022**

The Cabinet Office of Japan, the ASEAN Secretariat, and in collaboration with ADRC organized this seminar to support the implementation of AADMER Work Programme 2021-2025. ADRC Executive Director NAKAGAWA Masaaki presented the GLIDE (Global unique disaster IDentifier) and also highlighted other innovative engagements of ADRC, such as Sentinel

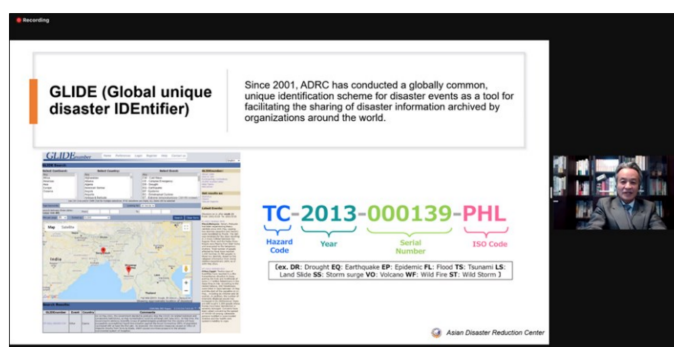


Figure 5.9 ADRC presentation at the Public-Private Seminar

Asia, Quasi-Zenith Satellite System-Early Warning Service (QZSS-EWS), Visiting Researchers Programme (VR), Comprehensive DRR Training along with JICA, and Town Watching for DRR during this event. Outcomes of the seminar are expected to contribute to the implementation of the AADMER Work Programme 2021-2025 and the development of the ASEAN-Japan Work Plan on Disaster Management 2021-2025.

- **ASEAN-Japan Work Plan: Workshop on Collaborative Actions, 23 March 2022**

This workshop was jointly organized by the Cabinet Office of Japan and ASEAN Secretariat. ADRC supported this event by sending resource persons. In this workshop ACDM focal points discussed the identified concrete activities to be incorporated into the ASEAN-Japan Work Plan (e.g., capacity building, evidence-based DRR, and community-based DRR).

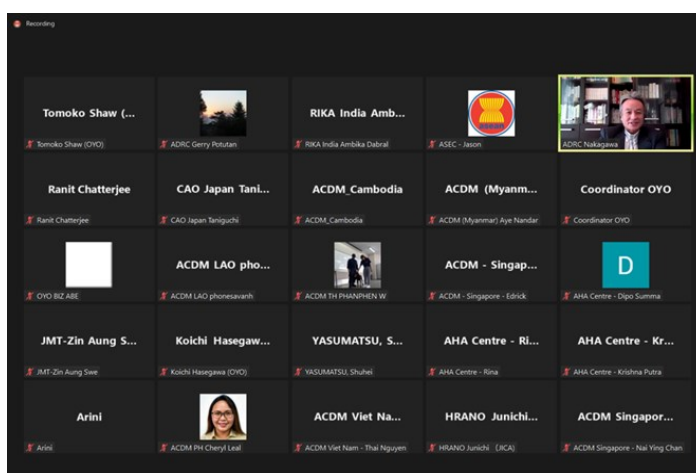


Figure 5.10 ADRC presentation at the Workshop

5.2.3 APRSAF/Sentinel Asia

Under the framework of the Sentinel Asia – an initiative led by the Asia Pacific Regional Space Agency Forum (APRSAF) to support disaster management with WEB-GIS technology and earth observation satellite data – ADRC functions as the focal point to receive emergency observation request as well as participate in related activities.

- **International Disaster Charter Online Training, 3 February 2022**

ADRC participated in the International Disaster Charter Online Training held on February 3 in 2022, and received a lecture on the latest status of the International Disaster Charter and how to register data in COS-2 system.



Figure 5.11 Screenshot of a presentation in the IDC online training

- **27th Session of the Asia-Pacific Regional Space Agency Forum, 30 Nov - 3 Dec 2021**

This session was co-organized by the Vietnam Academy of Science and Technology, the Ministry of Education, Culture, Sports, Science and Technology (MEXT), and the Japan Aerospace Exploration

Agency (JAXA). APRSAF has four Working Groups: (1) Space Applications Working Group (SAWG); (2) Space Technology Working Group (STWG); (3) Space Environment Utilization Working Group (SEUWG); and (4) Space Education Working Group (SEWG). ADRC is a member of the Space Applications Working Group (SAWG) and reported on trends in Sentinel Asia emergency observation requests and its future action plans during the session.

Satellite Applications for Societal Benefit Working Group (SAWG)

November 30th-December 1st, 2021
12:00 – 16:15 in Vietnam Time (UTC+7)
14:00 – 18:15 in Japan Time (UTC+9)

AGENDA

Co-Chair:

Dr. Vu Anh Tuan, Vice Director General, Vietnam National Space Center (VNSC, VAST)
Mr. HIRABAYASHI Takeshi, Senior Chief Officer of Earth Observation Missions (JAXA)

DAY 2: December 1 st	
TIME	SESSION / TITLE
12:00-13:30	Sentinel Asia for Disaster Management Session Co-Chair: Dr. KAWAKITA Shiro
12:00[15min]	• Sentinel Asia - Trend of Emergency Observation Request -, Mr. IKEDA Makoto (ADRC)
12:15[15min]	• Sentinel Asia Status Report, Mr. TAKEI Goro (JAXA)
12:30[15min]	• NSPO-NARLabs Engagement in Sentinel Asia, Dr. Franz Ming-Chih Cheng (NARLabs)
12:45[15min]	• Integration of Satellite data and Crowdsourced information through a Mobile App for the Sentinel Asia, Dr. Manzul Kumar Hazarika (GIC/AIT)
13:00[15min]	• Development of Mirror Target Calibration for Optical Satellite Data, Prof. NAGAI Masahiko (Yamaguchi University)
13:15[15min]	• Using Earth Observation to help Pacific countries managing disaster risk reduction and response, Dr. Kargren Rafael (Pacific Earth Observation Council)

Figure 5.12 Agenda of the SAWG Session in the 27th Session of APRSAF

• **5th Symposium on Human Resource Development and Space Data Utilization for Disasters, 25 January 2022**

ADRC participated in this symposium, which was jointly organized by Yamaguchi University and Udayana University. ADRC made a presentation about Sentinel Asia and the Activation of Emergency Observations, explaining how emergency observations are requested during disasters and how to become a member of the Sentinel Asia Programme. About 70 experts, representing local disaster management organizations, Tokyo University, the National Research Institute for Earth Science and Disaster Resilience, and the organizing institutions (Yamaguchi University and Udayana University) participated in this symposium.

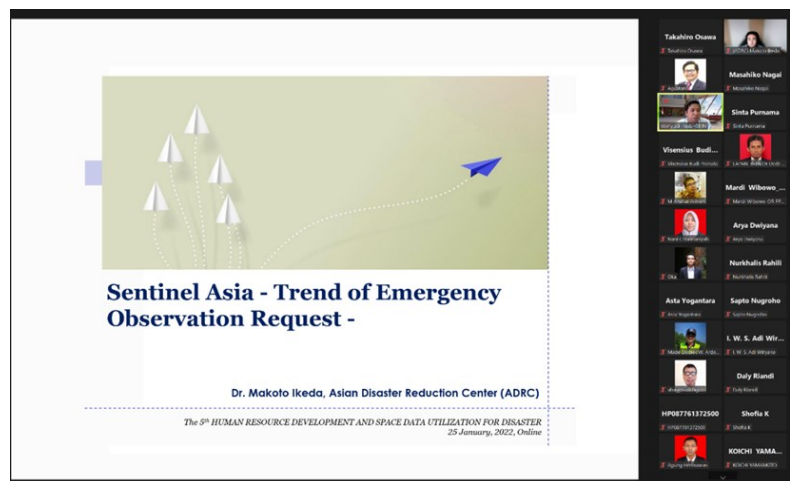


Figure 5.13 ADRC presentation in the symposium

5.2.4 ESCAP/WMO: Typhoon Committee

Under the auspices of the Cabinet Office Government of Japan, ADRC has been engaged in the activities of the ESCAP/WMO Typhoon Committee. ADRC participated in most of its activities in FY 2021.

- **18th Session of WMO's Regional Association V (Southwest Pacific), 1-3 Sep 2021**

As an observer to the constituent bodies of the World Meteorological Organization (WMO), ADRC participated in this session. The key discussions at the session pertained to the working structure, strategic priorities, and flagship initiatives of Regional Association V in the context of the WMO's Comprehensive Regional Reform. ADRC has been engaging in the activities of the regional association to further explore collaboration on new initiatives as well as to promote partnerships that could lead to closer regional cooperation.



Figure 5.14 Screenshot of the 18th Session of WMO RA-V

- **16th Working Group on DRR (WGDRR), 5 November 2021**

Thirty (30) representatives from ESCAP, WMO, ADRC, Thailand, Malaysia, Lao PDR, Vietnam, USA, China (Shanghai, Hong Kong, and Macau), and Typhoon Committee Secretariat (TCS) participated the virtual meeting held on 5 November 2021. The key outcome of the meeting was the proposed 2022 Annual Operations Plan (AOP). It should be noted that this outcome was later presented and discussed



Figure 5.15 Screenshot of the 16th WGDRR Meeting

further at the 16th Integrated Workshops (16th IWS) of the Typhoon Committee, 2-3 December 2021. Members of the WGDRR noted that the 2022 AOP is similar to the 2021 AOP, where only AOP6 incurred expenditure. In view of this, members agreed that all the 2021 projects will continue in 2022.

- **16th Integrated Workshop (IWS) of the Typhoon Committee, 2-3 December 2021**

The IWS is an annual event for members and observers of the Typhoon Committee (TC) to review the activities and progress of the four TC working groups: Working Group on Meteorology (WGM); Working Group on Hydrology (WGH); Working Group on Disaster Risk Reduction (WGDRR); and Training and Research Coordination Group (TRCG). During the two-day event, members of each working group

discussed, in parallel, its respective priorities in line with the Typhoon Committee's Draft Strategic Plan 2022-2026. ADRC is a member of the WGDRR, and participated in discussing priorities and key result areas (KRAs) of this group.

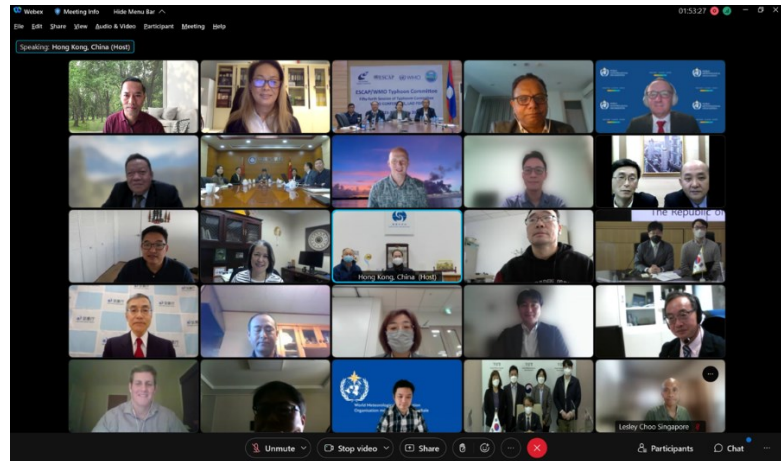


Figure 5.16 Screenshot of the 54th Session of the Typhoon Committee

- **54th Session of the Typhoon Committee, 23-25 February 2022**

Lao PDR hosted the 54th Session of the Typhoon Committee which was held online. The event opened by electing Madam Outhone Phetluangshy (Director General, Department of Meteorology and Hydrology, Ministry of Natural Resources and Environment) of Lao PDR and Mr Weng Kun Leong (Director Meteorological and Geophysical Bureau) of Macao, China as Chair and Vice Chair of the 54th Session respectively. One of the outcomes of the meeting was the presentation of the Committee's Strategic Framework 2022-2026 that is aimed at achieving two targets: 1) substantially reduce total mortality caused by tropical cyclone related disasters of the Members in the decade 2021-2030 compared to the period 2005-2015; and 2) Reduce direct economic loss caused by tropical cyclone related disasters in relation to the total GDP of the Members in the decade 2021-2030 compared to the period 2005-2015. The 55th Session of the Typhoon Committee will be organized in Macao, China in February 2023.

5.2.5 APP-DRR

ADRC engages in the Asia-Pacific Partnership for Disaster Risk Reduction (APP-DRR), which is a multi-stakeholder forum for disaster risk reduction focused on the implementation of the Sendai Framework. ADRC contributes in the APP-DRR, as it serves as the main consultation forum for the Asia-Pacific Ministerial Conference for DRR (APMCDRR) and implementation of the new Asia Pacific Action Plan of the Sendai Framework.

- **APP-DRR Forum, 8-9 December 2021**

The discussions in this Forum emphasized seizing new regional opportunities in order to make more progress through the new Asia Pacific Action Plan (2021-2024), the Global Platform for Disaster Risk Reduction, 23-28 May 2022 in Bali, Indonesia; the Asia-Pacific Ministerial Conference on Disaster Risk Reduction (APMCDRR), 19-22 September 2022 in Brisbane, Australia; and the Mid-Term Review of the Sendai Framework. At the Forum, ADRC Executive Director Mr NAKAGAWA Masaaki, proposed two points to advance an evidence-based approach for the mid-term review. One is to give more focus on data development in developing countries to address the lingering challenge of lack of disaster risk

reduction data. The other is to have greater actions and increase efforts in reducing disaster risk in addition to disaster response activities.

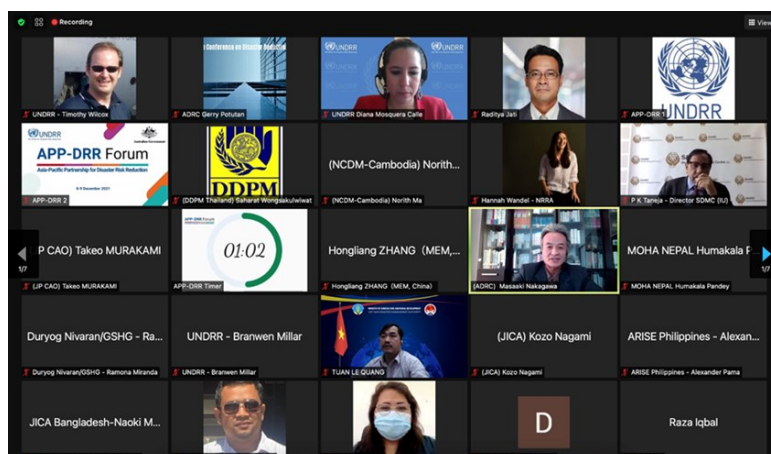


Figure 5.17 Screenshot of the APP-DRR Forum 2021

5.2.6 Other International Engagements

Upon invitation of international and regional organizations, ADRC participated in conferences and seminars in FY 2021 as opportunity to disseminate DRR information as well as strengthen the ADRC network.

- **Workshop on the Accessibility of Emergency Plans and Systems, 15 June 2021**

This workshop was organized by the Ministry of Family, Labour and Social Services in Turkey. It was an opportunity for DRR institutions and organizations from around the world to give updates on the latest DRR activities related to the accessibility of emergency and evacuation plans and systems ADRC presented in Session 3, "Examples of Good Practices for the Accessibility of Emergency and Evacuation Plans and Systems".



Figure 5.18 Flyer of the Workshop on Accessibility of Emergency Plans

- **Workshop on State Resilience to Shocks and Disasters, 13-14 August 2021**

This two-day event was held in Freetown, Sierra Leone and organized by the African Peer Review Mechanism (APRM) in collaboration with the United Nations Office for Disaster Risk Reduction (UNDRR), the World Health Organization (WHO), the European Commission (EC), African Risk Capacity

(AFC), and the Economic Community of West African States (ECOWAS). The discussions focused on five themes: (1) Disaster Risk Knowledge; (2) Understanding Disaster Risk Governance, (3) Building Resilience in Health, Agriculture, Peace, and Security in Africa; (4) Multi-Hazard Early Warning Systems and Emergency Operations; and (5) Developing Integrated Disaster Risk Financing. Dr Gerry Potutan of ADRC gave a presentation entitled, “Building the Case for Multi-Hazard DRM System Experiences in Asia during the COVID-19 Pandemic”.

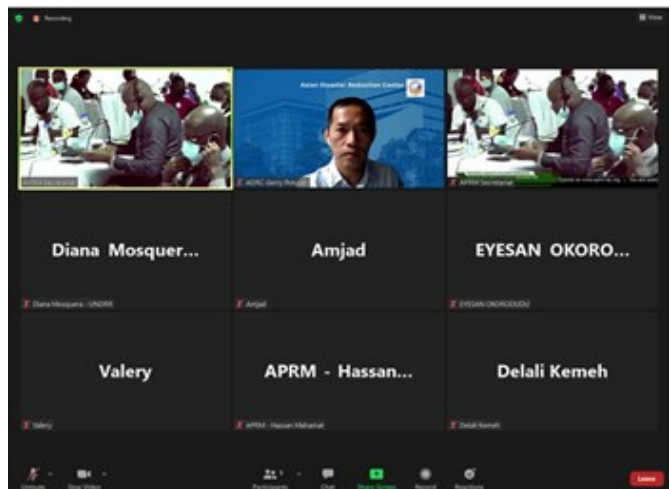


Figure 5.19 Screenshot of the workshop hosted by APRM

- **5th Global Summit of GADRI: Engaging Sciences in Action, 1 September 2022**

This summit was organized by the Global Alliance of Disaster Research Institutes (GADRI) managed by Kyoto University. ADRC participated in the Panel Discussion and presented the utilization of space technology for DRR and good practices involving Sentinel Asia. ADRC suggested the strengthening of networks between disaster management organizations and space agencies as well as expanding the networks of research institutions to support Sentinel Asia.

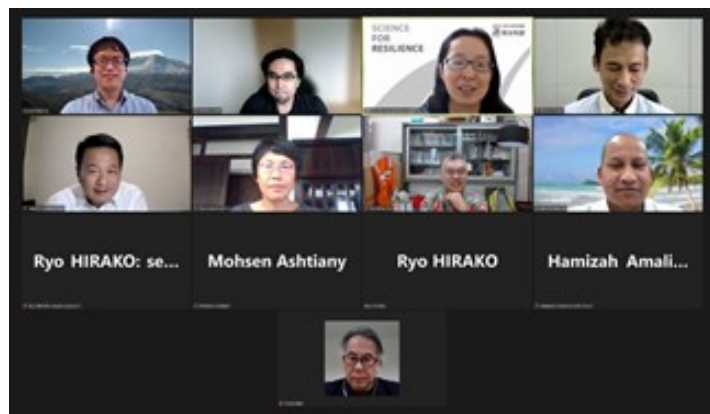


Figure 5.20 Screenshot of the 5th GADRI Global Summit

- **Inter-Regional Dialogue on Regional Cooperation - Application of Cutting-Edge Technology for Disaster Risk Reduction in China, Japan, and Korea, 13 October 2021**

This activity was organized by the Trilateral Cooperation Secretariat (TCS) and the UNDRR Office for Northeast Asia (UNDRR ONEA), where ADRC gave a presentation that included the following case studies: 1) new mapping technology known as “Red Relief Image Map (RRIM)”; 2) new communication technology called “Relay-by-Smartphone”; and 3) an environmentally-friendly disaster resilience technology known as “Gabion”.

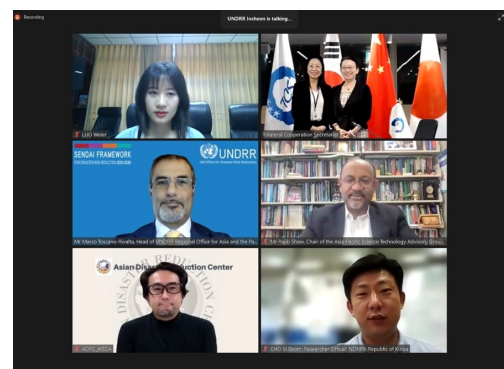


Figure 5.21 Screenshot of the Inter-Regional Dialogue

- **Workshop on DRR, School Safety, and Safe Reopening of Schools, 21-23 Dec 2021**

Upon invitation of the National Institute of Disaster Management (NIDM), ADRC delivered a keynote speech at the workshop. ADRC offered insights on adapting the school disaster risk reduction (School DRR) activities with the COVID-19 Pandemic during the re-opening to the officials in India who participated in the workshop. During the three-day event, the discussions took a detailed look at the impacts and implications of COVID-19 on school safety in India and what countermeasures can be taken for safe reopening of schools. As a consequence of the lockdowns, schools in India have been indefinitely closed. Outcomes of the workshop include crafting joint strategies among state governments and other stakeholders for education continuity planning after the COVID-19 pandemic.



Figure 5.22 Flyer of the Workshop on School Safety

- **4th Spatial Planning Platform Forum, 9 February 2022**

ADRC organized a session entitled "Resilient Society through Disaster Risk Reduction" at the 4th Spatial Planning Platform (SPP) Forum held online on 9 February. The SPP is an organization led by UN Habitat and the government of Japan, with the participation of Asian countries and specialized organizations, which aims to contribute to the creation of a sustainable society through better urban and regional planning. The 4th SPP Forum featured presentations from: 1)



Figure 5.23 Screenshot of the 4th SPP Forum

2) Prof NISHIKAWA of Nagoya University on planning efforts for disaster risk reduction (DRR) in Japan; 2) Sendai City on the integration of DRR into local government planning; and 3) Philippine Government on lessons learned from community relocation in the process of disaster recovery and reconstruction.

- **Forum on Climate Change and DRR, 13 February 2022**

Dr Gerry Potutan, Senior Researcher of ADRC, gave a lecture in this Forum. The lecture highlights the importance of investing in the community by enhancing practical capacities that can contribute to building disaster resilience. The purok system in the Municipality of San Francisco, Cebu Province, is one example of such investment. Each purok in this municipality had successfully implemented pre-emptive evacuation through the support of its community

leader. Based on this experience, the following insights were drawn about community organizing through the purok system: 1) it enhances practical capacities for disaster response and recovery; 2) it institutionalizes mutual-help in the community; and 3) it prepares the community how to evacuate from and respond to disasters.



Figure 5.24 Screenshot of ADRC presentation in the Forum on Climate Change