ANNEX I

MEMBER REPORT

Japan

ESCAP/WMO Typhoon Committee
18th Integrated Workshop
ESCAP - UN Conference Center, Bangkok, Thailand
28 November – 1 December 2023

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I. Overview of tropical cyclones which have affected/impacted Member's area since the last Committee Session

1. Meteorological Assessment (highlighting forecasting issues/impacts)

In 2023, 9 tropical cyclones (TCs) of tropical storm (TS) intensity or higher had come within 300 km of the Japanese archipelago as of 4 November*. One made landfall, and the country was affected even by those that did not make landfall. The TCs are described below, with their tracks shown in Figure 1.
*The track/intensity commentary provided here is subject to change once best-track data are finalized.

(1) TY MAWAR (2302)

MAWAR formed as a tropical depression (TD) over the sea around the Caroline Island s at 18 UTC on 19 May 2023 and moved westward. It was upgraded to TS intensity over the same waters at 12 UTC on 20 May and moved northwestward. It was upgraded to severe tropical storm (STS) intensity at 00 UTC and was upgraded to typhoon (TY) intensity at 18 UTC on 21 May over the same waters and moved northwestward. It reached its peak intensity with maximum sustained winds of 115 kt and a central pressure of 900 hPa near the Mariana Islands at 12 UTC on 25 May and moved westward. After turning northward, it was downgraded to STS intensity over the sea south of Okinawa at 18 UTC on 31 May and moved northward. It was weakened to TS intensity over the same waters at 00 UTC on 2 June and moved east-northeastward. It transitioned into an extratropical cyclone over the sea south of Japan by 00 UTC on 3 June. It dissipated over the sea east of Japan at 18 UTC on 3 June.

(2) TY GUCHOL (2303)

GUCHOL formed as a TD over the sea east of Philippines at 00 UTC on 06 June 2023 and moved northward. It was upgraded to TS intensity over the same waters at 12 UTC the same day. After moving west-northwestward, it was upgraded to STS intensity at 18 UTC on 7 June and further upgraded to TY intensity at 12 UTC the next day. Gradually turning northeastward slowly, it reached its peak intensity with maximum sustained winds of 80 kt and a central pressure of 960 hPa over the sea east of Philippines at 18 UTC on 09 June. Accelerating northeastward over the sea south of Japan, it was downgraded to STS intensity at 06 UTC on 11 June and transitioned into an extratropical cyclone by 12 UTC next day. After continuously moving northeastward and eastward, it entered the sea south of Aleutians and crossed longitude 180 degrees east before 18 UTC on 16 June.

(3) TY KHANUN (2306)

KHANUN formed as a TD over the sea east of the Philippines at 18 UTC on 26 July 2023 and moved northwestward. It was upgraded to TS intensity over the same waters at 00 UTC on 28 July, to STS intensity at 12 UTC the next day and to TY intensity at 00 UTC on 30 July while moving northwestward to northward. It reached its peak intensity with maximum sustained winds of 95 kt and a central pressure of 930 hPa over the sea south of Okinawa Island at 00 UTC on 01 August. While gradually turning westward and entering the East China Sea, it gradually weakened. It remained almost stationary over the same waters and then moved eastward. It developed again over the sea south of Kyushu Island at 06 UTC on 08 August while gradually turning northward. It hit Korea with TS intensity after 00 UTC on 10 August and transformed into an extratropical cyclone at 06 UTC the same day. After turning west-northwestward and entering the Yellow Sea on 11 August, it dissipated at 00UTC the next day.

(4) TY LAN (2307)

LAN, after forming as a TD, was upgraded to TS intensity west of Minamitorishima Island at 00 UTC on 8 August 2023 and moved westward. It was upgraded to TY intensity southeast of Chichijima Island at 06 UTC on 10 August. After changing its move northwestward, it reached its peak intensity with maximum sustained winds of 90 kt with a central pressure of 940 hPa 00 UTC the next day. It landed near Shionomisaki, Wakayama Prefecture with STS intensity berore 20 UTC on 14 August. It transitioned into an extratropical cyclone over the Sea of Japan at 06 UTC on 17 August.

(5) STS DAMREY (2310)

DAMREY, after forming as a TD, was upgraded to TS intensity south of Minamitorishima Island at 18 UTC on 24 August 2023 and moved eastward. After changing its move northward, it was upgraded to STS intensity and reached its peak intensity with maximum sustained winds of 50 kt with a central pressure of 985 hPa over the sea east of Japan at 15 UTC on 28 August. It transitioned into an extratropical cyclone over the sea far off east of Japan by 06 UTC on 29 August.

(6) TY HAIKUI (2311)

HAIKUI, after forming as a TD, was upgraded to TS intensity west of the Mariana Islands at 00 UTC on 28 August 2023 and moved westward. It was upgraded to TY intensity south of Okinawa Island at 00 UTC on 1 September. It reached its peak intensity with maximum sustained winds of 85 kt with a central pressure of 950 hPa over the same waters at 00 UTC on 3 September. It hit Taiwan the same day. It weakened to TD intensity around the southern coast of South China at 00 UTC on 5 September.

(7) STS KIROGI (2312)

KIROGI, after forming as a TD, was upgraded to TS intensity north of the Chuuk Islands at 12 UTC on 30 August 2023 and moved northward. It reached its peak intensity with maximum sustained winds of 50 kt with a central pressure of 992 hPa south of Minamitorishima Island at 06 UTC the next day. It weakened to TD intensity north of Chichijima Island at 00 UTC on 3 September.

(8) TS YUN-YEUNG (2313)

YUN-YEUNG formed as a TD over the sea south of Okinawa. It moved northeastward and was upgraded to TS intensity over the sea south of Japan at 12 UTC on 5 September 2023. Moving north-northeastward over the same waters, it reached its peak intensity with maximum sustained winds of 45 kt and a central pressure of 996 hPa at 00 UTC on 8 September. It weakened to TD intensity over the sea south of Shizuoka Prefecture at 12 UTC on 8 September and dissipated at 00 UTC the next day.

(9) TY KOINU (2314)

KOINU, after forming as a TD, was upgraded to TS intensity over the sea east of the Philippines at 18 UTC on 29 September 2023. It moved northwestward and was upgraded to TY intensity over the same waters at 18 UTC on 1 October. It moved westward and reached its initial peak intensity with maximum sustained winds of 90 kt with a central pressure of 940 hPa south of Okinawa Island at 18 UTC the next day. It weakened once and developed again. It reached second peak intensity with maximum sustained winds of 90 kt with a central pressure of 940 hPa at 03 UTC on 4 October. It weakened to TD intensity around the southern coast of South China at 12 UTC on 9 October.

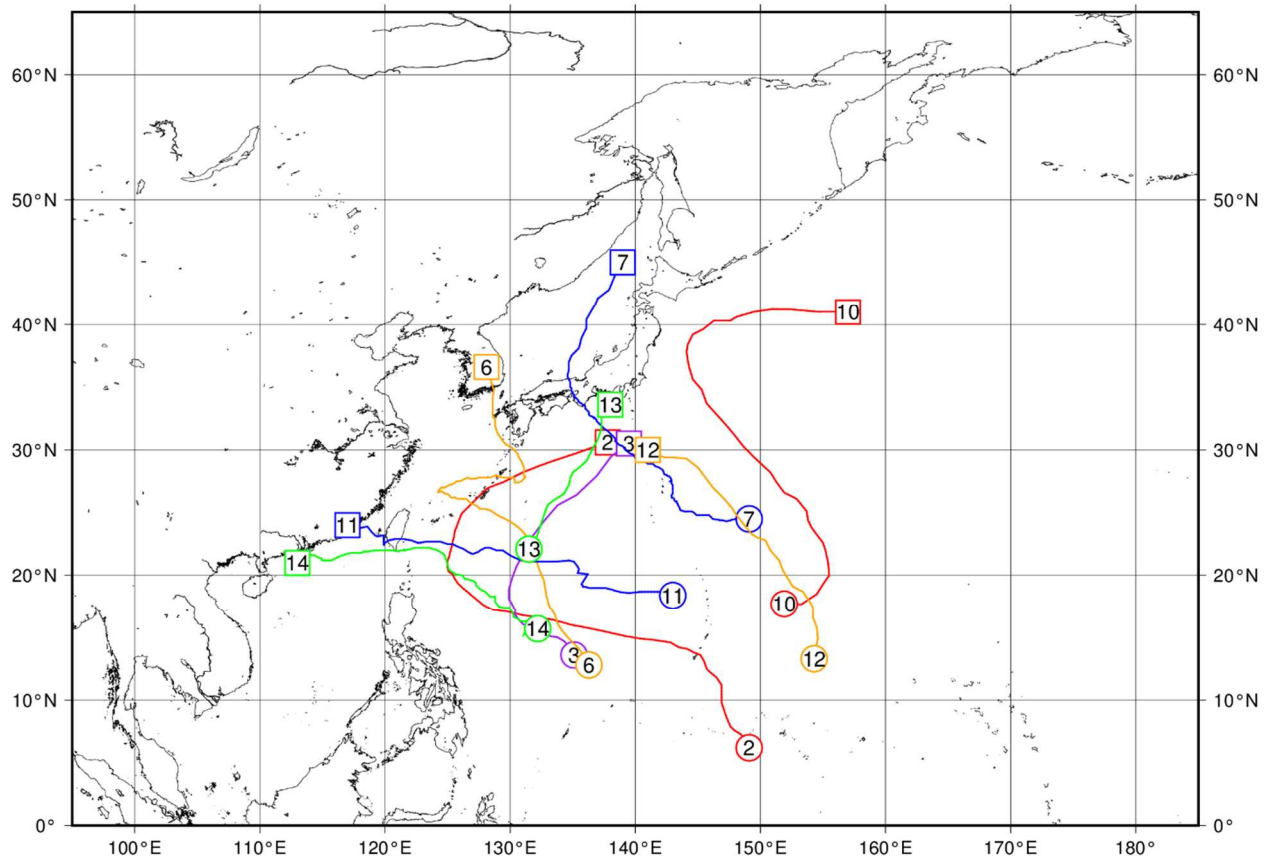

Figure 1: Tracks of the nine named TCs affecting Japan in 2023

The number circles represent the genesis point of each named TC, while the squares show the dissipation point. The last two digits of the identification number for each named TC are shown.

2. Hydrological Assessment (highlighting water-related issues/impact)

In 2023, nine TCs of TS intensity or higher approached Japan, and one of them landed so far. In addition to that, there was heavy rainfall accompanied by TCs and an active rainy front. Those TCs and related weather have caused significant impacts in Japan.

1) Typhoon MAWAR (May 31 to June 3)
The typhoon and the accompanying active heavy rainy front brought heavy rainfall mainly to the Pacific Ocean side of western and eastern Japan, causing inundation damage of 44 rivers and 308 landslides. 23 rainfall stations recorded the highest 24-hour rainfall in recorded history.

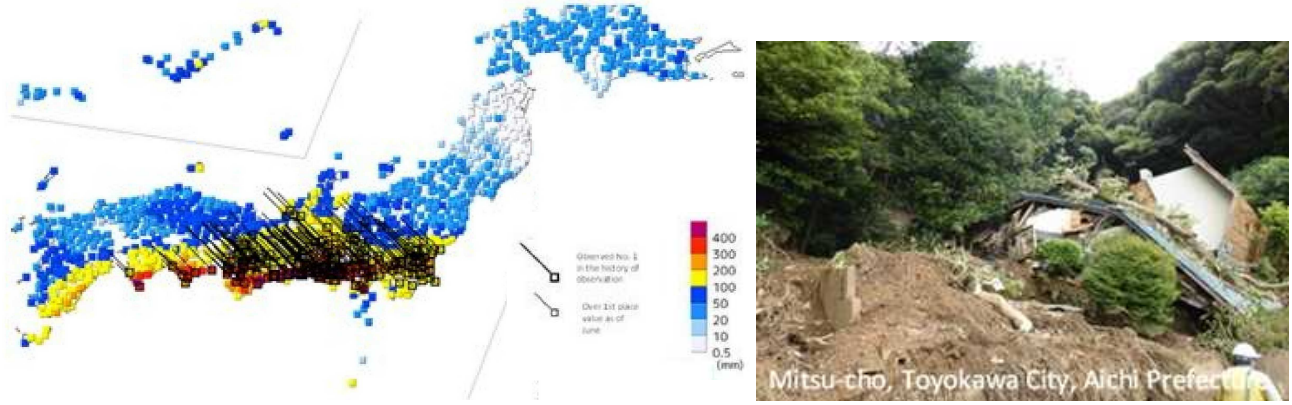

Figure 2: Maximum 24-hour rainfall for the period (Period: June 1, 2023- June 3, 2023)

3. Socio-Economic Assessment (highlighting socio-economic and DRR issues/impacts)

Damages Caused by Tropical Cyclones in 2023:

16 tropical cyclones of Tropical-Cyclone intensity or higher developed as of October 23, 2023, of which 9 approached Japan and 1 of them reached above the national islands.

Khanun (2306) developed to tropical storm intensity in east of the Philippines on July 28. It developed with typhoon intensity on July 30; approached the Okinawa region on August 2 to 3; passed Amami City of Okinawa after pausing in East China Sea and further proceeded in north above the sea west of Kyushu. Part of the southern Kyushu region, with continuous rain that started prior to the approach of the typhoon, received over 1,000mm of rainfall in total, and maximum sustained wind speed of over 50m was recorded in part of Okinawa Prefecture.

Khanun caused casualties of 1 fatality, 7 heavily injured and 90 slightly injured. It also brought housing damages: 4 houses were completely destroyed, 24 half destroyed, 190 partially destroyed, 23 inundated above floor level and 94 inundated below floor level.

As for the lifeline, it caused power blackouts for approx. 241,740 households mainly in the service areas of Okinawa Electric Power Co., Inc. and Kyushu Electric Power Co., Inc. Water supplies were disrupted for approx. 32,730 households mainly in Okinawa Prefecture.

Lan (2307) developed to tropical storm intensity on the sea near Minami Torishima Island on August 8. It developed with typhoon intensity on August 10; moved up in north on the southern sea of the main islands of Japan; landed in Wakayama Prefecture on August 15 and went further northward across the Kinki region towards Sea of Japan. It transitioned into an extratropical cyclone on August 17 after moving northward across Sea of Japan. Some areas of Tottori and other Prefectures observed more than double the amount of monthly average rainfall for August; and there were squalls with maximum sustained wind speed of over 30m, tornados, etc.

Lan caused casualties of 8 heavily injured and 58 slightly injured. It also brought housing damages: 9 houses were completely destroyed, 15 half destroyed, 106 partially destroyed, 127 inundated above floor level and 557 inundated below floor level.

As for the lifeline, it caused power blackouts for approx. 101,260 households mainly in the service areas of Kansai Electric Power Co., Inc. and Chubu Electric Power Co., Inc. Water supplies were disrupted for approx. 7,540 households mainly in Mie Prefecture.

Yun-Yeung (2313) developed to tropical storm intensity over the sea in south of Daito Island on September 5. It moved northward to the southern part of the main islands of Japan, further proceeded to Tokaido Sea on September 8 and transitioned into an extratropical cyclone. Warm and humid air flew from south into the eastern side of the typhoon which caused heavy rain on the Pacific side of Tohoku and Kanto regions, away from the center of the typhoon. It also brought maximum sustained wind speed of over 30m in part of Tokyo and Shizuoka Prefectures.

Yun-Yeung caused casualties of 3 fatalities and 21 slightly injured. It also brought housing damages: 19 houses were completely destroyed, 1,658 half destroyed, 966 partially destroyed, 749 inundated above floor level and 2,373 inundated below floor level.

As for the lifeline, it caused power blackouts for approx. 22,700 households in the service areas of Tokyo Electric Power Co., Inc. and Tohoku Electric Power Co., Inc. Water supplies were disrupted for 176 households in Fukushima, Ibaraki and Chiba Prefectures.

4. Regional Cooperation (highlighting regional cooperation and related activities)

Asian Conference on Disaster Reduction 2022 (See Section II)
Date: March 10-12, 2023
Location: Dushanbe, Tajikistan
Theme: WHAT IS NEXT? Learning from the past, preparing for the future

II. Summary of Progress in Priorities supporting Key Result Areas

1. Update of the probability-circle radii for TC track forecasts

Main text:
The RSMC Tokyo – Typhoon Center updated the 70% probability-circle radii in TC track forecasts on RSMC Tokyo's website (https://www.jma.go.jp/jma/jma-eng/jma-center/rsmc-hp-pub-eg/RSMC_HP.htm).

Based on recent improvements in forecast accuracy, radii for two days ahead and beyond have been reduced, with those for five days ahead now being up to 40% smaller. The new radii apply to TCs forming after 26th June 2023.

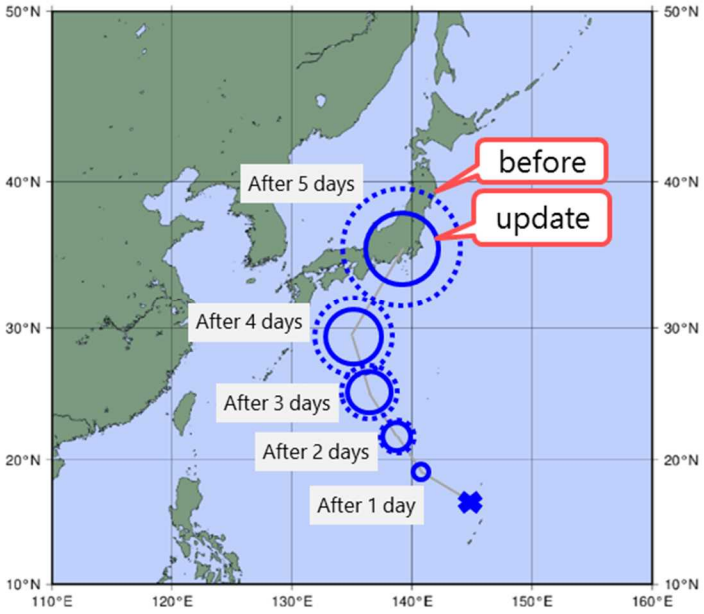

Figure 3: Example of center position and radius of probability circle.

Identified opportunities/challenges, if any, for further development or collaboration:
Ongoing focus will be placed on improving forecast accuracy.

Priority Areas Addressed:
Integrated
- Enhance activities to develop impact-based forecasts and risk-based warning.

Meteorology
- Enhance the capacity to monitor and forecast typhoon activities particularly in genesis, intensity and structure change.

Key Pillars of UN's Early Warnings for All (EW4All) Initiative Addressed:

Key Pillars of EW4All	Please ✓ the related pillar(s)
Disaster risk knowledge and management	
Detection, observation, monitoring, analysis, and forecasting	✓

Warning dissemination and communication	
Preparedness and response capabilities	

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2. Attachment training in 2023

Main text:
The 22nd ESCAP/WMO Typhoon Committee Attachment Training course was held online from 11 to 13 January 2023. RSMC Tokyo – Typhoon Center has run annual ESCAP/WMO Typhoon Committee Attachment Training courses since 2001 with the support of the WMO Tropical Cyclone Programme and the Typhoon Committee to enhance the tropical cyclone (TC) analysis and forecasting capacity of Committee Members. Due to persisting COVID-19, the 2023 course was held virtually (as in 2021 and 2022) with 51 attendees from eight Typhoon Committee Members including China; Hong Kong, China; Macao, China; Malaysia; the Philippines; the Republic of Korea; Thailand; and the United States of America.

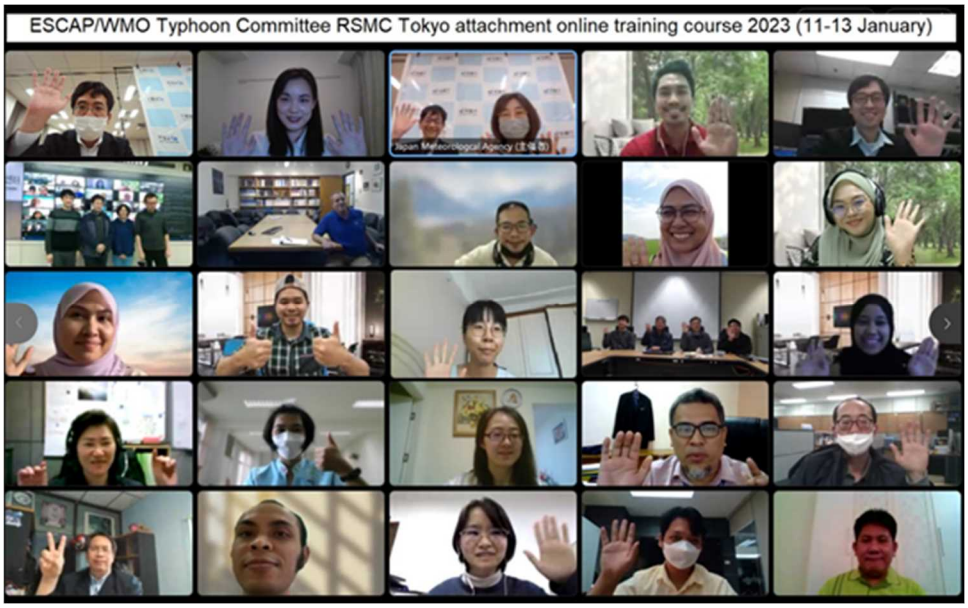

Figure 4: Attendees and Tokyo Typhoon Center staff (13 January 2023)

Identified opportunities/challenges, if any, for further development or collaboration:
Ongoing focus will be placed on enhancing the quality of the training course.

Priority Areas Addressed:
Integrated
- Enhance activities to develop impact-based forecasts and risk-based warning.

Meteorology
- Enhance the capacity to monitor and forecast typhoon activities particularly in genesis, intensity and structure change.
- Develop and enhance typhoon analysis and forecast techniques from nowcast to medium-range, and seasonal to long-range prediction.
- Enhance and provide typhoon forecast guidance based on NWP including ensembles, weather radar and satellite related products, such as QPE/QPF.
- Promote communication among typhoon operational forecast and research communities in Typhoon Committee region.
- Enhance training activities with TRCG, WGH, and WGDRR in accordance with Typhoon Committee forecast competency, knowledge sharing, and exchange of latest development and new techniques.

Key Pillars of UN's Early Warnings for All (EW4All) Initiative Addressed:

Key Pillars of EW4All	Please ✓ the related pillar(s)
Disaster risk knowledge and management	✓

Detection, observation, monitoring, analysis, and forecasting	✓
Warning dissemination and communication	✓
Preparedness and response capabilities	

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3. Updates on JMA's numerical weather prediction system

Main text:
The Japan Meteorological Agency (JMA) upgraded its Global Spectral Model (GSM; Yonehara et al. 2023) and Global Ensemble Prediction System (GEPS; Ota et al. 2023) on 14 March 2023. Enhancements include:

- Increased GSM horizontal resolution
  - Incorporation of quadratic grid formation from TL959 (linear, approx. 20 km grid spacing) to TQ959 (quadratic, approx. 13 km grid spacing) with refinement of numerical diffusion in the model and filters for mean orography
- Change of source data set for orographic ancillary files from GTOPO30 to MERIT DEM + RAMP2
- Revision of physical processes for variables including non-orographic gravity waves, boundary layers, orographic drag and radiation
- Enhancement for lake surface processing
- Revision of global snow depth analysis
- Assimilation of Suomi-NPP and NOAA-20/VIIRS AMVs
- Expansion of the two-tiered sea surface temperature method using the Seasonal Ensemble Prediction System from tropical and sub-tropical oceans to the whole globe for GEPS

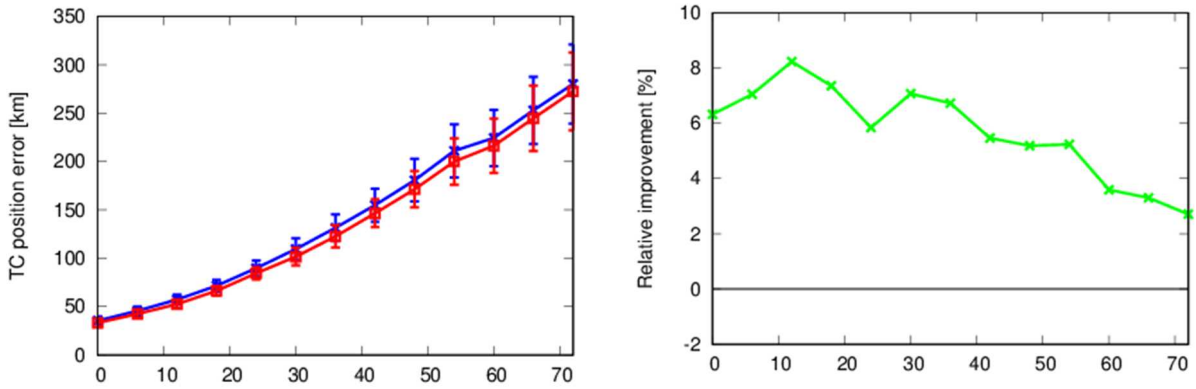

Figure 5: Improvement of typhoon track forecast (x-axis: forecast time)
Left: Average error of GSM typhoon track forecast, the previous version (blue), then new version (red).
Right: Average improvement rate of GSM typhoon track forecast error [%]

These updates improve the accuracy of typhoon forecasts. Fig.5 shows the verification results of typhoon track prediction errors for 2021 Typhoons, TY CHAMPI (2105) to TY RAI (2122). The average improvement is about 6% over a period of 72 hours.

References
Yonehara, H., Y. Kuroki, M. Ujiie, C. Matsukawa, T. Kanehama, R.Nagasawa, K. Ochi, M.Higuchi, Y. Ichikawa, R. Sekiguchi, and S. Hirahara, 2023: Upgrade of JMA's operational global Numerical Weather Prediction system. Res. Activ. Earth. Sys. Modell,, 6.15-6.16.

Ota, Y., J. Chiba, Y. Ichikawa, H. Oashi, T. Takakura, and H. Yamaguchi, 2023: Upgrade of JMA's Global Ensemble Prediction System. WGNE Res. Activ. Earth Sys. Modell., 53, 6.11-6.12.

Identified opportunities/challenges, if any, for further development or collaboration:
Ongoing focus will be placed on improving NWP accuracy.

Priority Areas Addressed:
Meteorology

- Enhance the capacity to monitor and forecast typhoon activities particularly in genesis, intensity and structure change.
- Develop and enhance typhoon analysis and forecast techniques from nowcast to medium-range, and seasonal to long-range prediction.

Key Pillars of UN's Early Warnings for All (EW4All) Initiative Addressed:

Key Pillars of EW4All	Please ✓ the related pillar(s)
Disaster risk knowledge and management	
Detection, observation, monitoring, analysis, and forecasting	✓
Warning dissemination and communication	
Preparedness and response capabilities	

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4. UN 2023 Water Conference

Main text:
The main programs of the United Nations Water Conference consist of "Plenary Meetings", in which representatives of the countries, regions, and organizations participating in the conference gave speeches, and the "Interactive Dialogue", in which discussions were focused on five individual themes related to water, were held in parallel. H.E. Yoko Kamikawa, a member of the House of Representatives, participated in the UN 2023 Water Conference as a special envoy of the Prime Minister of Japan.
At the Interactive Dialogues, Japan co-chaired with Egypt with a theme of "Water for Climate, Resilience and Environment (ID3)", and discussed how to respond to the increase in water-related disasters and the loss of aquatic ecosystems due to climate change. Based on the discussion, submitted the Co-Chair's Key Messages to the United Nations Secretariat.

- Changing Climate: Water scarcity, droughts and the melting cryosphere
- Resilience to water disasters: Decreasing risks and conserving biodiversity
- Working for the future: Early Warning from source to sea
- Commitment, Actions, and Coalitions to meet water challenges towards full-achievement of water-related goals and targets.

Discussion and reports at the United Nations are basically focused only on individual activities. However, such conceptual discussions do not solve problems, especially in the field of water-related disaster risk reduction. Thus an Action Workflow was proposed in the Interactive Dialogue 3, which will help implementation, the discussion will ultimately lead to the implementation of countermeasures on the ground.

Figure 6: Speech by H.E. Ms. Yoko Kamikawa at the Plenary Meeting

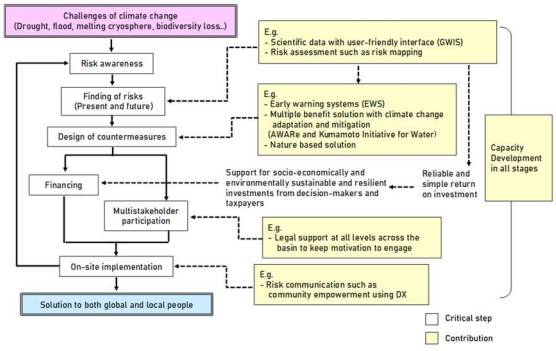

Figure 7: Action Workflow proposed in the ID3

Identified opportunities/challenges, if any, for further development or collaboration:
None

Priority Areas Addressed:
Enhance collaborative activities with other regional/international frameworks/organizations, including technical cooperation between TC/AP-TCRC and TC/PTC cooperation mechanism.
Promote international cooperation of DRR implementation project.

Key Pillars of UN's Early Warnings for All (EW4All) Initiative Addressed:

Key Pillars of EW4All	Please ✓ the related pillar(s)
Disaster risk knowledge and management	✓
Detection, observation, monitoring, analysis, and forecasting	✓

Warning dissemination and communication	✓
Preparedness and response capabilities	✓

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5. 12th TC WGH Meeting (in Bangkok, Thailand), 20-22 September 2023

Main text:
The 12th Meeting of the Typhoon Committee Working Group on Hydrology (WGH) on 20-22 September 2023 was jointly hosted in hybrid by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and Royal Irrigation Department (RID) Thailand, as Joint Organization Committee (JOC). It was chaired by Dr. MIYAMOTO Mamoru from ICHARM (the International Centre for Water Hazard and Risk Management). 50 attendees from 11 countries/regions had constructive discussions on the theme of "Community outreach and multi-stakeholder engagement -Boosting Early Warning for All-". Many presentations were delivered on each country's/region's situations and Annual Operating Plans (AOPs).

Figure 8: 12th WGH Meeting group photo

Priority Areas Addressed:
Enhance collaborative actives with other regional/international frameworks/organizations, including TC and PTC cooperation mechanism.

Key Pillars of EW4All	Please ✓ the related pillar(s)
Disaster risk knowledge and management	✓
Detection, observation, monitoring, analysis, and forecasting	✓
Warning dissemination and communication	✓
Preparedness and response capabilities	✓

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6. Asian Conference on Disaster Reduction 2022

Main text:
ADRC organized the Asian Conference on Disaster Reduction (ACDR 2022) for online and in-person attendance to support broader participation from member countries, partner organizations and other stakeholders. The conference was held on 10 – 12 March 2023 at Sendai International Center in Miyagi Prefecture, Japan, attracting 84 in-person participants from 17 countries and 121 online participants from 22 countries. Based on the theme "What Is Next? Learning from the past, preparing for the future", it featured key sessions titled 1) Large-Scale Disasters and Countermeasures; 2) Broaden Our Horizons for Disaster Data Linkage in Sendai Framework for Disaster Risk Reduction: Application of GLIDE (GLobal IDEntifier Number); and 3) Provision of Information via Satellite for Disaster and Crisis Management. A further Special Session on the Great Kanto Earthquake of 1923 was also held to commemorate the disaster and discuss lessons learned from it.

Technical Session 1 highlighted recent large-scale disasters in relation to the climate crisis and its increasing economic impacts and cascading/compounding effects, providing opportunities to learn about disaster risk management (DRM) systems such as more effective investment in advanced DRR and DRM measures.

Technical Session 2 gave a review of the current status of disaster data management in Asia, and featured tools and practices applied to effectively handle disaster data from a wide range of stakeholders. Focus was placed on contributing to SFDRR Target G-5: Number of countries that have accessible, understandable, usable, and relevant disaster risk information and assessment available to the people at the national and local level.

Technical Session 3 provided an overview of Quasi Zenith Satellite System (QZSS) utilization for disaster and crisis management (DC Report). It presented the outcomes of QZSS DC Report demonstrations in certain countries where early warning messages are transmitted via space satellites and received on the ground in text, audio and image format. A summary of ACDR 2022 can be accessed online at https://acdr.adrc.asia/meeting/home/acdr2022.

Figure 9: Group Photo of ACDR2022 at Sendai International Center, Sendai City, Japan

Identified opportunities/challenges, if any, for further development or collaboration:

ACDR 2022 provided opportunities in the field to members of the Typhoon Committee's Working Group on Disaster Risk Reduction (WGDRR), such as the National Disaster Management Research Institute (NDMI) of the Republic of Korea. It provided avenues for greater collaboration among key institutional partners in advancing disaster risk reduction activities.

Priority Areas Addressed:

Integrated

- Strengthen cross-cutting activities among working groups in the Committee.
- Enhance collaborative activities with other regional/international frameworks/organizations, including technical cooperation between TC/AP-TCRC and TC/PTC cooperation mechanism.

DRR

- Promote international cooperation of DRR implementation project.

Key Pillars of UN's Early Warnings for All (EW4All) Initiative Addressed:

Key Pillars of EW4All	Please ✓ the related pillar(s)
Disaster risk knowledge and management	
Detection, observation, monitoring, analysis, and forecasting	✓
Warning dissemination and communication	✓
Preparedness and response capabilities	✓

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7. Visiting Researchers Program

Main text:
ADRC works to enhance the disaster risk management (DRM) capacities of its 31-member countries, many of which are also members of the Typhoon Committee, through the Visiting Researchers (VR) Program. As of March 2023, a total of 126 officials from 27 countries had participated in the program since it started in 1999. Under this initiative, VRs are invited to Japan to conduct their own research on disaster risk reduction (DRR) with opportunities to attend relevant events and visit related organizations. It enables VRs to compare and learn from different DRM systems in the Asian region.

The VR Program is also intended to further enhance cooperation among member countries and ADRC. In 2022, seven visiting researchers came to Japan for on-site training. During their stay, the VRs learned about innovative and practical DRR technologies as well as gained greater knowledge in promoting cooperation/collaboration with national governments, international organizations and DRR agencies.

Azerbaijan	2
Armenia	9
Yemen	3
Iran	1
India	8
Indonesia	3
Uzbekistan	2
Cambodia	4
Kyrgyz	2
Sri Lanka	11
Korea	3
Thailand	11
Tajikistan	2
China	3
Turkey	1
Nepal	9
Bangladesh	6
Pakistan	6
PNG	1
Philippines	9
Bhutan	4
Vietnam	5
Malaysia	4
Myanmar	5
Maldives	4
Mongolia	6
Lao PDR	2
Total	**126**

Left: A table on numbers of VRs as of March 2023. Right: VRs in Japan

Identified opportunities/challenges, if any, for further development or collaboration:
ADRC facilitates networking among VR alumni for cooperation in various ongoing projects toward effective and efficient implementation. VRs are also invited to design new projects suited to local conditions, and are contacted whenever ADRC intends to suggest policy updates or extends support to their home countries based on requests or information they have provided. New VRs are encouraged to contact alumni to establish communication and share experiences/insights. Some alumni also attend the ACDR every year and give presentations, thereby supporting opportunities for wider collaboration in typhoon disaster risk reduction and other areas.

Priority Areas Addressed:

Integrated

- Strengthen cross-cutting activities among working groups in the Committee.
- Enhance collaborative activities with other regional/international frameworks/organizations, including technical cooperation between TC/AP-TCRC and TC/PTC cooperation mechanism.

DRR

- Promote international cooperation of DRR implementation project.
- Share experience/knowhow of DRR activities including legal and policy framework, community-based DRR activities, methodology to collect disaster-related information.

Key Pillars of UN's Early Warnings for All (EW4All) Initiative Addressed:

Key Pillars of EW4All	Please ✓ the related pillar(s)
Disaster risk knowledge and management	
Detection, observation, monitoring, analysis, and forecasting	
Warning dissemination and communication	
Preparedness and response capabilities	✓

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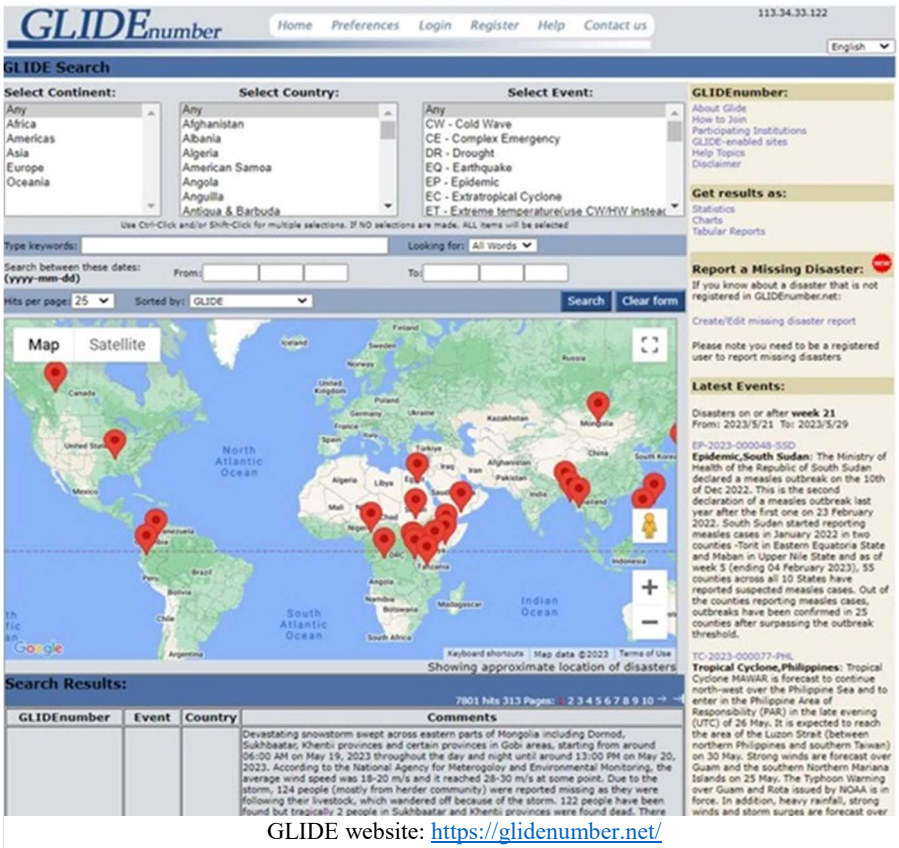
8. GLobal unique disaster IDEntifier (GLIDE)

Main text:
In 2001, ADRC proposed the concept of GLIDE (Global unique disaster IDEntifier) system, in which common but unique numbers are assigned to disasters all over the world based on cooperation among relevant organizations. This is intended to promote disaster information sharing among databases developed by various different DRR organizations, research institutions and governments to support disaster resilience worldwide.

As of March 2023, over 7,700 GLIDE numbers had been issued. A GLIDE Number (e.g., TC-2023-000121-CHN/TC-2023-000121-PHL for Typhoon Doksuri in China and the Philippines) comprises the components: disaster classification (e.g., TC), year of occurrence (e.g., 2023), serial number within the year (e.g., 0001221), and country code (e.g., CHN). Once a disaster occurs, an operator issues a GLIDE number by inputting disaster information such as location, time, disaster type and initial damage, and uploads it to the GLIDE website for automatic dispatch to over 2,000 subscribers. The GLIDE system is linked to other disaster data management tools (e.g., applications at Reliefweb, Sentinel Asia, UNOSAT, ADINet, and ESCAP), and its governance and functions are periodically updated. A steering committee (SC) was established in 2021 for governance of GLIDE.

The GLIDE SC is composed of representatives from ADRC, CRED/EMDAT, EU/JRC, ICRC, IDMC, IFRC, Tohoku University, UNDP, UNDRR, UNOCHA, UNOSAT and WMO.

Identified opportunities/challenges for further development or collaboration:
The GLIDE system allows Typhoon Committee members to link disaster database systems, including information on typhoon-related disasters, to provide a more holistic perspective. It also offers a platform for greater collaboration with other key institutional partners in advancing disaster risk reduction activities.



GLIDE website: https://glidenumber.net/

Priority Areas Addressed:

Integrated

- Strengthen cross-cutting activities among working groups in the Committee.
- Enhance collaborative activities with other regional/international frameworks/organizations, including technical cooperation between TC/AP-TCRC and TC/PTC cooperation mechanism.

DRR

- Provide reliable statistics of mortality and direct disaster economic loss caused by typhoon-related disasters for monitoring the targets of the Typhoon Committee.
- Promote international cooperation of DRR implementation project.

Key Pillars of UN's Early Warnings for All (EW4All) Initiative Addressed:

Key Pillars of EW4All	Please ✓ the related pillar(s)
Disaster risk knowledge and management	✓
Detection, observation, monitoring, analysis, and forecasting	
Warning dissemination and communication	✓
Preparedness and response capabilities	✓

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Appendix I - Priority Areas of Working Groups for the Strategic Plan 2022-2026

WG	Priorities
Integrated	1. Strengthen the cooperation between TRCG, WGM, WGH, and WGDRR to develop impact-based forecasts, decision-support and risk-based warning.
	2. Strengthen cross-cutting activities among working groups in the Committee.
	3. Enhance collaborative activities with other regional/international frameworks/organizations, including technical cooperation between TC/AP-TCRC and TC/PTC cooperation mechanism.
Meteorology	4. Enhance the capacity to monitor and forecast typhoon activities particularly in genesis, intensity and structure change.
	5. Develop and enhance typhoon analysis and forecast techniques from nowcast to medium-range, and seasonal to long-range prediction.
	6. Enhance and provide typhoon forecast guidance based on NWP including ensembles, weather radar and satellite related products, such as QPE/QPF.
	7. Promote communication among typhoon operational forecast and research communities in Typhoon Committee region.
	8. Enhance training activities with TRCG, WGH, and WGDRR in accordance with Typhoon Committee forecast competency, knowledge sharing, and exchange of latest development and new techniques.
	9. Enhance RSMC capacity to provide regional guidance including storm surge, in response to Member's needs.
Hydrology	10. Improve typhoon-related flood (including riverine flood, flash flood, urban flood, and coastal flood) monitoring, data collection and archiving, quality control, transmission, processing, and sharing framework.
	11. Enhance capacity in typhoon-related flood risk management (including land-use management, dam operation, etc.) and integrated water resources management and flood-water utilization.
	12. Strengthen capacity in effective flood forecasting and impact-based early warning, including hazard mapping and anticipated risk based on methodological and hydrological modelling, and operation system development.
	13. Develop capacity in projecting the impacts of climate change, urbanization and other human activities on typhoon-related flood disaster vulnerability and water resource availability.
	14. Increase capacity in utilization of advanced science and technology for typhoon-related flood forecasting, early warning, and management.
DRR	15. Provide reliable statistics of mortality and direct disaster economic loss caused by typhoon-related disasters for monitoring the targets of the Typhoon Committee.
	16. Enhance Members' disaster risk reduction techniques and management strategies.
	17. Evaluate socio-economic benefits of disaster risk reduction for typhoon-related disasters.
	18. Promote international cooperation of DRR implementation project.
	19. Share experience/knowhow of DRR activities including legal and policy framework, community-based DRR activities, methodology to collect disaster-related information.