

Report on Key Activities and Main Events for UN ESCAP/WMO Typhoon Committee's (2024)

Submitted by Typhoon Committee Secretariat

In 2024, the Typhoon Committee (hereinafter referred to as TC) successfully achieved its mission to integrate and enhance regional activities of members within international frameworks. This effort aimed to reduce the loss of lives and minimize the social, economic, and environmental impacts of typhoon-related disasters. With the contributions, cooperation, and support of all TC members, the Committee smoothly implemented the decisions of the 56th Session. Some key activities and events are as follows.

1. Typhoons in the Region

- 1.1. In 2024, 26 named tropical cyclones of tropical storm intensity or above formed over the western North Pacific and the South China Sea. This number was slightly higher than the climatological average of 25.1 (1991-2020) recorded by RSMC Tokyo.
- 1.2. Eight tropical cyclones made landfall in China during the year, including Maliksi (2402), Gaemi (2403), Prapiroon (2404), Yagi (2411), Bebinca (2413), Pulasan (2414), Krathon (2418), and Kong-Rey (2422). Notably, Yagi made landfall in Hainan with maximum sustained winds of 62 m/s, making it the strongest tropical cyclone to make landfall in China during autumn.
- 1.3. In 2024, seven tropical cyclones necessitated the issuance of tropical cyclone warning signals in Hong Kong, China. These were Maliksi (2402), Prapiroon (2404), Yagi (2411), Trami (2420), Yinxing (2422), Toraji (2423), and Man-yi (2424). Among these, Yinxing, Toraji, and Man-yi all affected Hong Kong, China in November, setting a new record.
- 1.4. Eleven tropical cyclones came within 300 km of the Japanese archipelago. These were Ewiniar (2401), Gaemi (2403), Maria (2405), Ampil (2407), Jongdari (2409), Shanshan (2410), Bebinca (2413), Pulasan (2414), Cimarón (2416), Jebi (2417), and Kong-rey (2421). Of these, Maria (2405) and Shanshan (2410) made landfall, causing river inundation and landslides.
- 1.5. Up to October 2024, three tropical cyclones affected Lao PDR: Yagi (2411), Soulik (2415), and Trami (2420). These cyclones brought heavy rain and strong winds, causing flooding in certain parts of the country.
- 1.6. In 2024, seven tropical cyclones affected Macao, China, leading to the issuance of tropical cyclone warning signals. These were Maliksi (2402), Prapiroon (2404), Yagi (2411), Trami (2420), Yinxing (2422), Toraji (2423), and Man-yi (2424). The Number 8 Gale or Storm Signal was hoisted for Yagi, along with the Blue Storm Surge warning.
- 1.7. In 2024, six tropical cyclones entered Malaysia's designated area of responsibility (0-20N and 95-130E). These were Ewiniar (2401), Maliksi (2402), Gaemi (2403), Prapiroon (2404), Yagi (2411), and Soulik (2415). Heavy rain from Yagi caused flooding.
- 1.8. As of October 2024, eleven tropical cyclones (including tropical depressions) entered the Philippines Area of Responsibility (PAR). These included Ewiniar (2401), Prapiroon (2404), Gaemi (2403), Jongdari (2409), Yagi (2411), Bebinca (2413), Soulik (2415),

Pulasan (2414), and Krathon (2418). Among these, Ewiniar, Yagi, and Soulik made landfall in the country, resulting in over 100 fatalities and agricultural losses exceeding 7 billion PHP.

- 1.9. In 2024, the Republic of Korea was affected by two tropical cyclones: Jongdari (2409) and Shanshan (2410). Jongdari (2409) made landfall over the Korean Peninsula. Both cyclones brought strong winds and heavy rain to the country.
- 1.10. Singapore was affected by three tropical cyclones in 2024: Gaemi (2403), Prapiroon (2404), and a tropical depression. Instead of bringing heavy rain, these cyclones induced a strong cross-equatorial flow, resulting in dry weather conditions. A dry spell of 18 days was observed from 13 to 30 July 2024.
- 1.11. Five tropical cyclones affected Thailand in 2024: Maliksi (2402), Prapiroon (2404), Yagi (2411), Soulik (2415), and Trami (2420). Soulik (2415) entered the country, bringing widespread heavy rain and flooding to northern and northeastern Thailand.
- 1.12. In 2024, six tropical cyclones entered the WFO Guan's Tropical Cyclone Area of Responsibility: Ewiniar (2401), Ampil (2407), Shanshan (2410), Bebinca (2413), Pulasan (2414), and Jebi (2417). These cyclones brought strong winds and flooding.
- 1.13. Viet Nam was affected by five tropical cyclones in 2024: Maliksi (2402), Prapiroon (2404), Yagi (2411), Soulik (2415), and a tropical depression in July. Notably, Yagi made landfall in the Quang Ninh-Hai Phong area with winds of force 12-14 and gusts exceeding force 17, making it the strongest tropical cyclone to make landfall in Viet Nam in the past 30 years.

2. Improvement of TC Activities

2.1 Implementation of AOPs

In 2024, the Typhoon Committee implemented various plans and projects, including 4 POPs, 28 AOPs, and 1 PP from WGM, WGH, WGDRR, and TRCG. These initiatives were supported by TCP/WMO and TCS, as well as strong contributions from all members. The achievements and outcomes of POPs, AOPs, and PPs were shared among members through training courses, workshops, and technical documents.

2.2 19th Integrated Workshop/Asia Pacific Typhoon Collaborate Research Center Forum

The 19th Integrated Workshop (IWS)/Asia Pacific Typhoon Collaborate Research Center (AP-TCRC) Forum was successfully held in Shanghai, China, from 19 to 22 November 2024. The event was co-hosted by the AP-TCRC, STI/CMA, China Meteorological Administration and the ESCAP/WMO Typhoon Committee, with the participation of 181 experts from 11 TC members, international organizations, and observers. The forum's theme was "Embracing New Technologies for Achieving Early Warnings for All" and featured three main topics: (1) New Observation and Forecasting Techniques for Typhoons, (2) Typhoon Risk Reduction and Early Warning and (3) "Typhoon Plus" Industry Risk Management. Thirteen experts from National Meteorological and Hydrological Services, universities, research institutes, and enterprises delivered invited talks on these topics. A plenary discussion was held on "Typhoon Early Warnings for All and International Cooperation," resulted in the issuance of the "Shanghai Initiative", which strongly supported enhanced international cooperation to mitigate the increasing threat of tropical cyclone activities in the Asia Pacific Region. The theme of the 19th IWS was "Strengthening the Value Chain within the UN EW4All Framework for the Typhoon Committee Region." The WGM, WGH and WGDRR Parallel Sessions took place during the 19th IWS/AP-TCRC Forum.

2.3 WG's Annual Meeting

7th Annual Meeting of WGM hosted by JMA, Japan was held in Tokyo, Japan from 30 to 31 October 2024 with 33 participants from 11 TC Members, including China, Hong Kong, China, Japan, Laos, Macau, China, Malaysia, the Philippines, Republic of Korea, Thailand, Vietnam, and the United States, and WMO.

WGH 13th working meeting hosted by Information Center of the Ministry of Water Resources, China in cooperation with Nanjing Research Institute of Hydrology and Water Conservation Automation in Nanjing, China with the theme as "Strengthen Standardization for Better National Hydrological Services" was held on 22-23 October 2024. The meeting was attended by around 70 participants from 9 Members and regional organizations.

The 19th WGDRR annual meeting hosted by NDMI · ROK in Seoul was held on 25 to 28 June 2024. The meeting topic was "Towards EW4All: Bridging Gaps for Effective Disaster Risk Reduction". 42 participants from members, and representatives from ESCAP, WMO, TCS and AWG, participated in the meeting. WG reviewed the AOPs implementation with the budget expenditure in 2024 and proposed the plans for 2025.

2.4 Roving Seminar and other trainings

The Roving Seminar 2024, hosted by the Thailand Meteorological Department with the theme "Artificial Intelligence for Enhanced Tropical Cyclone Prediction and Emergency Response," was held in hybrid mode in Bangkok, Thailand, from 17 to 19 December 2024. The seminar featured 7 lecturers, including experts from WGH and WGDRR, and was attended by 82 participants from 9 TC Members.

RSMC Forecaster's Training Attachment hosted by WMO RSMC Tokyo Typhoon Center, JMA, Japan was held from 15 to 26 January 2024 with participants from Hong Kong China; Lao PDR; Macau China; Malaysia; the Philippines; Republic of Korea; Saudi Arabia; Sri Lanka and Vietnam.

Attachment Training on Radar Integrated Nowcasting System (RaINS, WGM AOP4) hosted by Met Malaysia Department, Malaysia was held in Kuala Lumpur, Malaysia from 14-25 October 2024. Mr. Lim Zheng Liang from Meteorological Service Singapore and Mr. Phapasit Khamphoumy from Department of Meteorology and Hydrology Lao PDR attended the attachment training.

The training courses for WGH AOP1 on Knowledge Sharing on Pacific Ocean Storm Surge Inundation Modeling hosted by Nanjing University of Information Science and Technology and WMO Regional Training Center (Nanjing) in Nanjing, China was held from 23 to 27 September 2024. Nine trainees in total from 4 TC Members, namely China; Macao, China; Philippines and Thailand, attended the training course.

The training courses for WGH AOP8 on Flood Control and Early-Warning and Forecasting and Hydrological Monitoring for Developing Countries in Nanjing, China, in conjunction with the Training Course on Water Ecosystems Protection and Restoration Technologies for Developing Countries from 6 to 26 November 2024 in Hangzhou/Nanjing, China, organized by Nanjing Research Institute of Hydrology and Water Conservation Automation in cooperation with the National Research Institute for Rural Electrification /Hangzhou Regional Center (Asia-Pacific) for Small Hydro Power, the Ministry of Water Resources of China, with financial support. The training course attended by 34 participants in total from 10 developing countries, including 6 participants from 3 TC Members.

The technical workshop on Hydrological Data Quality Control and Flood Forecasting with AI Technique hosted by Han River Flood Control Office under the Ministry of Environment of ROK and Korea Institute of Civil Engineering and Building Technology at Department of Meteorology and Hydrology of Lao P.D.R was held on 6-8 November 2024. 16 participants in total from 4 TC Members were invited to attend this workshop with funding support from Republic of Korea.

2.5 Workshop on AI in Tropical Cyclone Forecasting

A kick-start workshop for the Preliminary Project (WGM PP1) “Promoting Technical Exchange of AI Applications in Tropical Cyclone Analysis and Forecasting” hosted by the Hong Kong Observatory, was held at Hong Kong, China, on 21-22 May 2024. 29 experts from 11 Typhoon Committee Members, including China, Hong Kong, China, Japan, Laos, Macau, China, Malaysia, the Philippines, Republic of Korea, Thailand, Vietnam, and the United States, participated in the workshop, Chair of TRCG as well as TC Secretariat participated in the workshop. The workshop also invited leading AI development teams from WMO World Meteorological Centre, academia and information technology company to share the latest advancements in AI applications in weather forecasting.

2.6 Cross-Cutting Project

A cross-cutting program under WGD RR AOP1, involving both WGH and WGD RR, was successfully held in Japan from 24 to 26 September 2024. The program was co-organized with the International Centre for Water Hazard Risk Management, Japan Meteorological Agency, and Tohoku University, Japan. Participants included representatives from NDMI, Macao China, Vietnam, and TCS.

3 Typhoon Committee Research Award for Young Scientists

Typhoon Committee Research Award for Young Scientist has been approved in 57th Session held in Manila, The Philippines on 17-20 February 2025. This award is to encourage and recognize young scientists in the Typhoon Committee Region who have made distinguished contributions to typhoon-related research, particularly those connected with Typhoon Committee activities. The document includes Guidelines for the awards, Criteria for granting awards, Method of submission of candidatures, Method of selection, Nature of awards, Awarding ceremony, administrative support and Cost implications

4 Progresses on Journal of Tropical Cyclones Research and Review

In 2024, the TCRR journal achieved an impact factor of 2.4, placing it 66th out of 110 in the JCR Meteorology & Atmospheric Sciences category (Q3). Its CiteScore improved to 4.6, and the journal saw 134,522 full-text downloads in 2023. During 2024, TCRR published 25 articles from authors in 10 different countries and regions, including Typhoon Committee members such as China, Hong Kong China, Japan, Macao China, and the Philippines. Additionally, the journal appointed former World Meteorological Organization senior officer Ms. Nanette Lomarda as the executive editor and added nine internationally renowned experts to the editorial board, enhancing the submission and review process for better manuscript quality and efficiency. The TRCC was founded in 2011 by the Shanghai Typhoon Institute of the China Meteorological Administration and is now managed by the Shanghai Asia Pacific Typhoon Cooperation Research Center (AP-TCRC).

5 Progress of Cross-cutting Project of SSOP-III

The proposal of the project on the Synergized Standard Operating Procedures for Coastal Multi-Hazard Early Warning System (SSOP) phase III is still under updating according to the comments from the panel of UNESCAP Multi-Donor Trust Fund for Tsunami, Disaster and Climate Preparedness. Hopefully, the updated proposal report will be submitted to ESCAP for approval in 2025. WGH submitted two AOPs, namely WGH AOP 1 (Knowledge Sharing on Storm Surge Inundation Mapping) led by USA and WGH AOP 7 (Flood resilience enhancement through Platform on Water Resilience and Disasters) led by Japan, to be involved in the SSOP-III. Those three projects may jointly conduct the potential activities in future.

