

Prepare for the fourth assessment report on impacts of climate change on tropical cyclones in the Typhoon Committee region

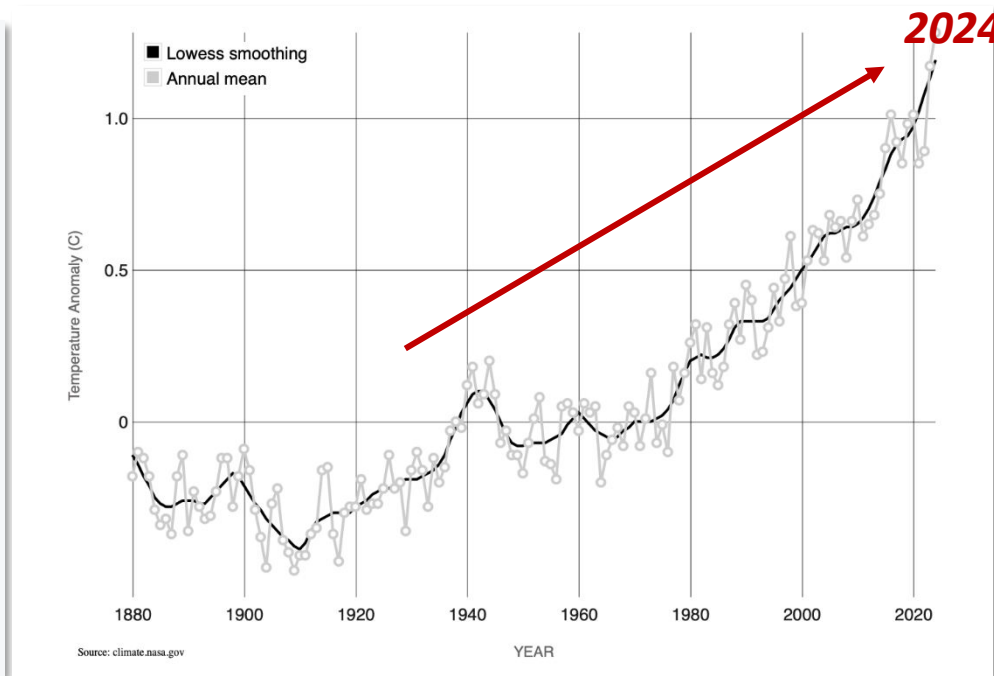
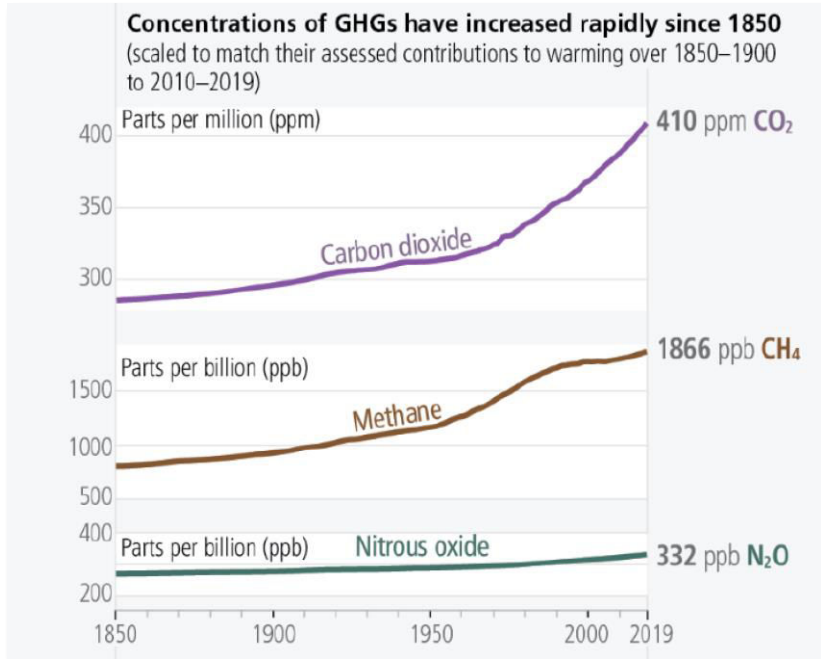
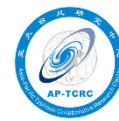
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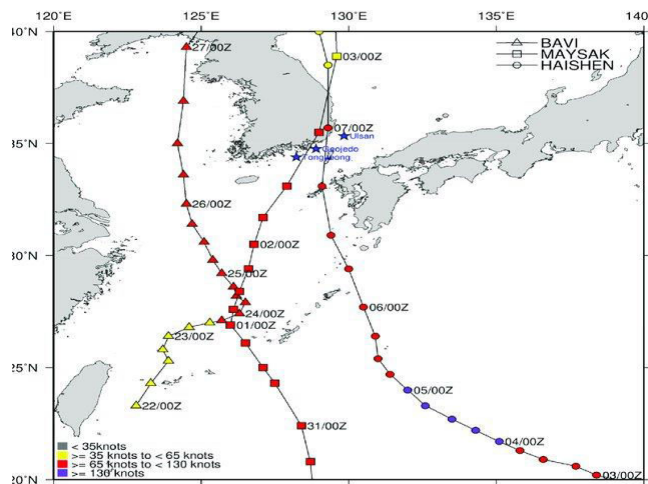
Background



- Rapid increases in well-mixed greenhouse gas concentrations since 1850 are *unequivocally* caused by human activities.
- Global surface temperature in 2024 reached a record high since 1850. It was **1.28 °C** warmer than the 20th century baseline 1951–1980 and **1.47 °C** warmer than the late-19th century (1850 – 1900) preindustrial average.
- The 10 most recent years have been the **warmest** on record.

Background

Typhoon Bavi, Maysak and Haishen in 2020 consecutively strike the northeastern Asia



Typhoon Doksuri (2023) led to widespread destruction in China and Philippines



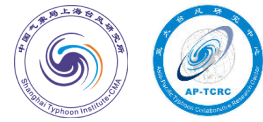
Typhoon Hinnamnor (2022) hits the Republic of Korea

Typhoon Bebinca and Pulasan consecutively made landfall in Shanghai in 4 days during September 2024



- Anomalous TC activities and their regional influence attract much attention from scientific communities, public and policy makers.

Objective & Actions



■ Objective

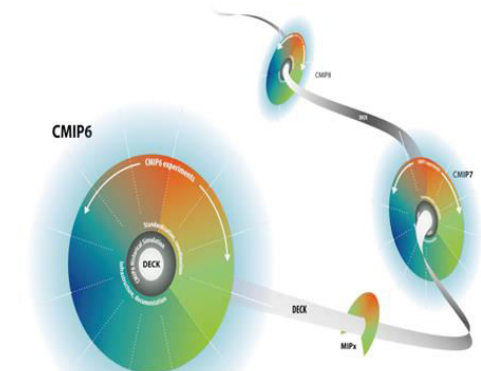
- Prepare for the fourth assessment report on impacts of climate change on tropical cyclones in the Typhoon Committee region.



Development of IPCC Assessment Report

A common suite of experiments for each phase of CMIP provides an opportunity to construct a multi-model ensemble using model output from various phases of CMIP

- The Sixth IPCC Assessment Report (AR6) has been finalized in 2023.
- The 7th IPCC assessment cycle has started.



■ Actions

- *Review latest climate research on typhoons activity and related regional influence since finalization of the third assessment report.*
- *Enhance scientific understanding of the impact of climate change on typhoon activities and related regional influence.*
- *Promote research collaboration with the Typhoon Committee Members to assess and understand the impact of climate change on typhoons from history to future.*
- *Develop the fourth assessment report and prepare to contribute to the seventh IPCC assessment cycle.*

■ Organizer & Participants

- *CMA*
- *HKO*
- *JMA*
- *KMA*
- *AP-TCRC*

Objective & Actions



Development of the assessment report



✓ In the past decade, the first to third TC assessment reports have been jointly developed.

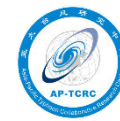
✓ **An assessment report** will be released by TCS after approval from all TC Members.

✓ **Two papers** will then be published after the final release of the assessment report.

the 3rd assessment reports have been cited by more than 75 times in past 5 years.

- *Considering the increasing attention from scientific community, public, and policy makers on impacts of climate change on tropical cyclones, along with the start of the 7th IPCC assessment cycle, we have started the fourth TC assessment report with cooperation with the Typhoon Committee Members since 2024.*

Progress of TC-AR4

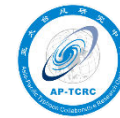
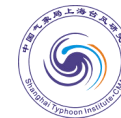


- Then, we proposed action plans at the WGM annual meeting and was approved to continue in 2025.

- The proposal was first approved in the 56th session of Typhoon Committee in Malaysia in 2024.
- Start the first discussion with related experts in February 2024.



Progress of TC-AR4



CIRCULAR LETTER

Our reference: TCS/102-2024 – 8 August 2024

To: **Directors and Focal Points of NMHSs of TC Members**
Subject: **Nomination to participate in the expert term of the Fourth Assessment Report on Impacts of Climate Change on Tropical Cyclones in Typhoon Committee Region**

Dear Sir/Madam,

With reference to Annual Operating Plan (AOP) 11 of Working Group on Meteorology (WGM), TCS is coordinating with the China Meteorological Administration (CMA) to set up an expert team to prepare for the *Fourth Assessment Report on Impacts of Climate Change on Tropical Cyclones in Typhoon Committee Region (TC-AR4)*.

In this connection, I am pleased to invite you to nominate candidates who are interested in participating in the AOP. It is expected that candidates should have some research experience in the field of climate change. Interested Members can communicate directly with the designated contact person of CMA (Dr. HUANG Xin, email: huangx@typhoon.org.cn) and submit application together with the Curriculum Vitae of the applicant, with a copy to TCS (email: info@typhooncommittee.org). Please note that other than competence requirements, proficiency in English is also necessary.

In addition, I would like to remind you that nominations should reach CMA and TCS on or before **31 August 2024**.

Thank you very much for your attention.

Yours sincerely,

Duan Yihong
Secretary of Typhoon Commit

cc: Dr. TANG Jie, Chairperson of WGM

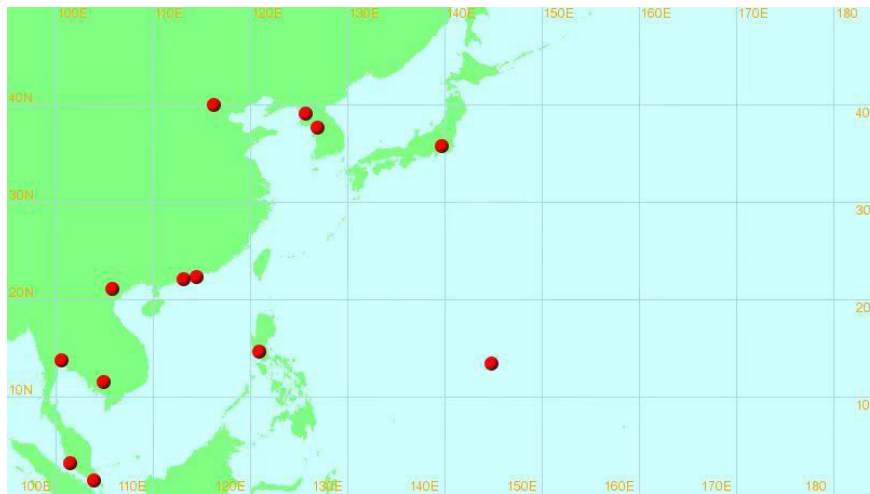
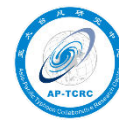


- TCS sent a circular letter to invite the TC Members to nominate candidates participating in the AOP-11.
- The expert team has finally been established in July 2025.

■ TC-AR4 Structure

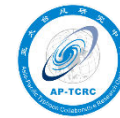
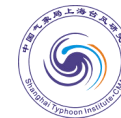
- Ch. 1 : Introduction
- Ch. 2 : Observed TC activity and characteristics changes
- Ch. 3 : Detection and attribution of TC changes
- Ch. 4 : Tropical cyclone impacts in the Typhoon Committee region
- Ch. 5 : Future Projections
- Ch. 6 : Uncertainties
- Ch. 7 : Recommendations for Future Work
- Ch. 8 : References

Future Plans

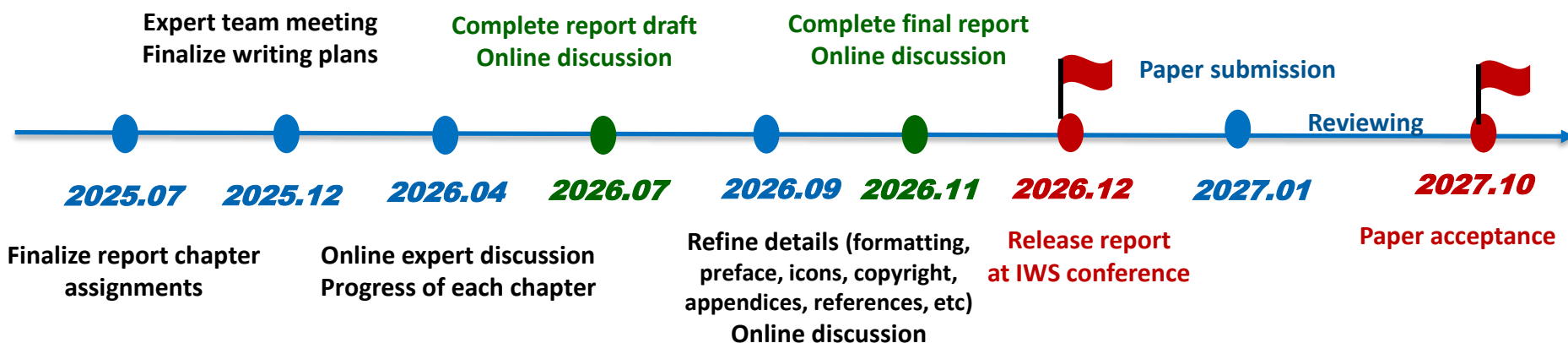


- Aim to complete the TC-AR4 by the end of 2026.
- To meet the IPCC's timeline, our articles must be submitted no later than March 2027, and published no later than October 2027.
- Apply for funding as travel expenses for expert group members.

Future Plans



Timelines



A blue-tinted background image of the Shanghai skyline, featuring the Oriental Pearl Tower and other skyscrapers along the Huangpu River.

Thank You!

Xin HUANG

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