2023 Annual Work Plan of the Asia-Pacific Typhoon Collaborative Research Center (AP-TCRC)

The Asia-Pacific Typhoon Collaborative Research Center (AP-TCRC) aims to (1) reach normal operation of the institution, (2) have a gradual expansion of the team, and (3) achieve some of the short-term goals in 2023. The detailed work plan is as follows.

I. Promote efficient operation of the institution

a) Improve institutional settings and scientific management of the team

- Refine the internal organization of the AP-TCRC and introduce full-time and collaborative innovation technology staff through multiple channels
- Clarify the working responsibility of each team and ensure the normal operation based on the Department of Academic Exchange (General Office) and multiple Joint Research Teams.

The Department of Academic Exchange (General Office) is responsible for the daily management, research communication, academic journals and logistical support of the AP-TCRC.

The Science Director is responsible for forming the Joint Research Teams.

b) Formulate the management system and regulate the operation of the center

- Improve the charter and various management systems of the AP-TCRC to ensure the normal operation of the center
- Set related rules and regulations such as salary plan and assessment system
- Develop and apply an incentive mechanism conducive to the best use of talents, and implement the first annual assessment

c) Recruit talents worldwide and establish research teams

- Recruit full-time researchers and collaborative innovation task-based scientists with multi-channel resources.

II. Launch research plan and carry out core scientific research

a) Clarify demand-oriented research tasks

Collect and sort out the requirements of the Members of the ESCAP/WMO Typhoon Committee, and clarify every key task and implementation step of the scientific and technological development plan of the AP-TCRC.

b) Define core problems and carry out scientific research

The work plan of the AP-TCRC for 2023 is as follows:

- Tropical cyclone scientific experiments and mechanism:
  - Organize the Experiment on Typhoon Intensity Change in

Coastal Area (EXOTICCA)

- Promote the international cooperative research on typhoon intensity change in the Asian-Pacific region
- Promote typhoon scientific experiments with two major features of maritime aircraft observation and typical scenarios in coastal cities
- Study the observation quality control technology of new equipment under typhoons
- Focus on the key scientific issues of the fine structure and precipitation as well as wind effects of typhoons on mega-cities and target the research on the cloud microphysics, extreme precipitation mechanism and boundary layer structure within the typhoon
- Initiate the construction of typhoon-ocean observation database in the Asian-Pacific region
- Initiate the study on the typhoon data standard and the design of the compilation program
- Study the trend of typhoon activity in the Asian-Pacific region under climate change.

2023 Target:

- Expand the typhoon science experimental area outward, with no less than one experimental area and participating in

international experiments

- Complete the formation of the team and determine the scheme for the compilation of the Asia-Pacific typhoon climatological atlas
- Invite no less than two international scientists to participate in typhoon-related guest research if the epidemic situation permits.

➢ <u>R&D of tropical cyclone modeling</u>:

- Carry out research on key physical processes using a high-resolution model
- Start the construction of the global center for typhoon forecast verification, and the technology R&D of precipitation and wind forecast verification
- Begin the research on the construction of the global tropical cyclone modeling system.

2023 Target:

- Complete the debugging of tropical cyclone numerical simulation system and carry out 1 or 2 typhoon modeling tests
- Release the *Verification of Global Tropical Cyclone Operational Forecast in the western North Pacific*.

- Multidisciplinary application:
  - Start the construction of a typhoon disaster risk assessment system for megacities affected by typhoons
  - Develop a typhoon catastrophe model for coastal mega-city scenarios with a combination of theoretical and scientific test data
  - Conduct research on typhoon monitoring and forecasting methods based on Artificial Intelligence and big data.

  2023 Target:
  - Finish the construction of the preliminary version of the typhoon disaster risk assessment system
  - Preliminary completion of typhoon catastrophe model
  - Official release of the first issue of the *Western North Pacific Typhoon Climate Change Monitoring*.

c) Conduct technology exchanges and training

- Release the *International Tropical Cyclone Collaborative Research Guide* after the meeting of the first International Scientific Steering Committee
- Advance the level of the journal *Tropical Cyclone Research and Review* (TCRR)
- Launch the "World Typhoon Distinguished Lecturer" series of

lectures from the international top typhoon scientists.

2023 target:

- No less than four “World Typhoon Distinguished Lecturer” series
- Publication of TCRR journal on schedule and a significant increase in citation rate
- Host a technical workshop.

III. Make full use of policy resources

- Make full use of the policy resources such as the residential registration policy for overseas professionals in Shanghai, fast-service channel for permanent residence application, talent rental and housing policy to attract talents in typhoon research area
- Using the talent plan “Gathering global talents in Shanghai” and the policies related to the international talent cultivation development in Pudong New Area and start the recruitment of global talents.