世界气象组织执行理事会第78次届会上的中国承诺
Six commitments made by CMA in WMO EC-78

1. Emerging technologies such as AI and cloud platforms；
2. **Urban Multi-hazard Early Warning**；
3. Applications of meteorological satellites；
4. Education and training；
5. Joint scientific research；
6. Belt and Road Fund

《World Cities Report 2022》
Population In cities

68%
55%
2021   2050

After **409** days of effort...

Last year, during EC-78 session, CMA made six commitments about early warning — one of them was Urban Multi-hazard Early Warning.
And today, after 409 days of effort, we'd like to hand in the following homework, which is...

城市多灾种早期预警智能体　三端合一
AI Agent for Urban Multi-Hazard Early Warning: "MAZU-Urban"
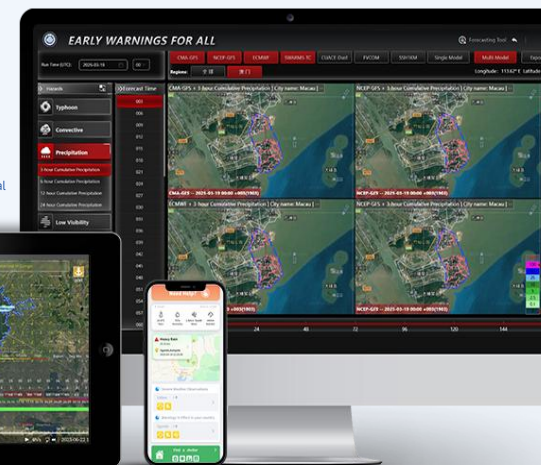
China's Solution to Early Warnings for All : MAZU

Multi-hazard

Alert

Zero-gap

Universal

MAZU
Multi-hazard Alert
Zero-gap and Universal

上海科学智能研究院
Shanghai Academy of AI for Science

AI Agent for Urban Multi-Hazard Early Warning

All-in-one Terminal

MAZU-URBAN
Multi-hazard Alert Zero-gap and Universal

Smart Tablet　　Smart Phone

上海人工智能实验室
Shanghai Artificial Intelligence Laboratory

SAIS
上海科学智能研究院
Shanghai Academy of AI for Science

AI Agent for Urban Multi-hazard Early Warning (MAZU-Urban).
It was developed under CMA's international cooperation brand "MAZU", with a focus on urban areas.
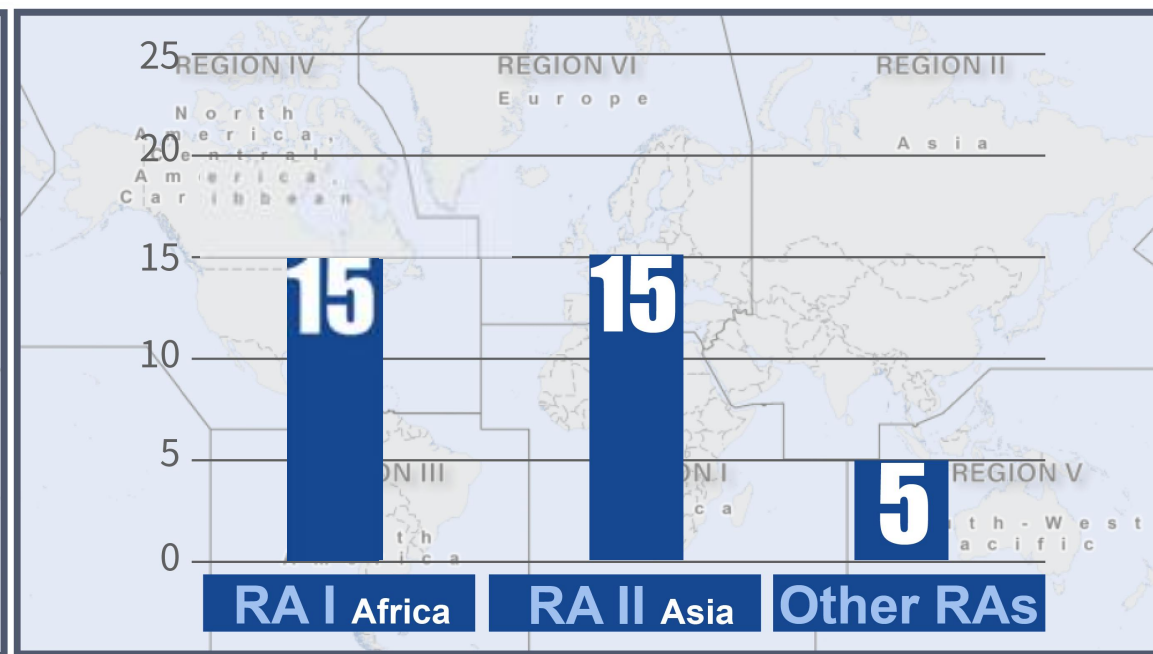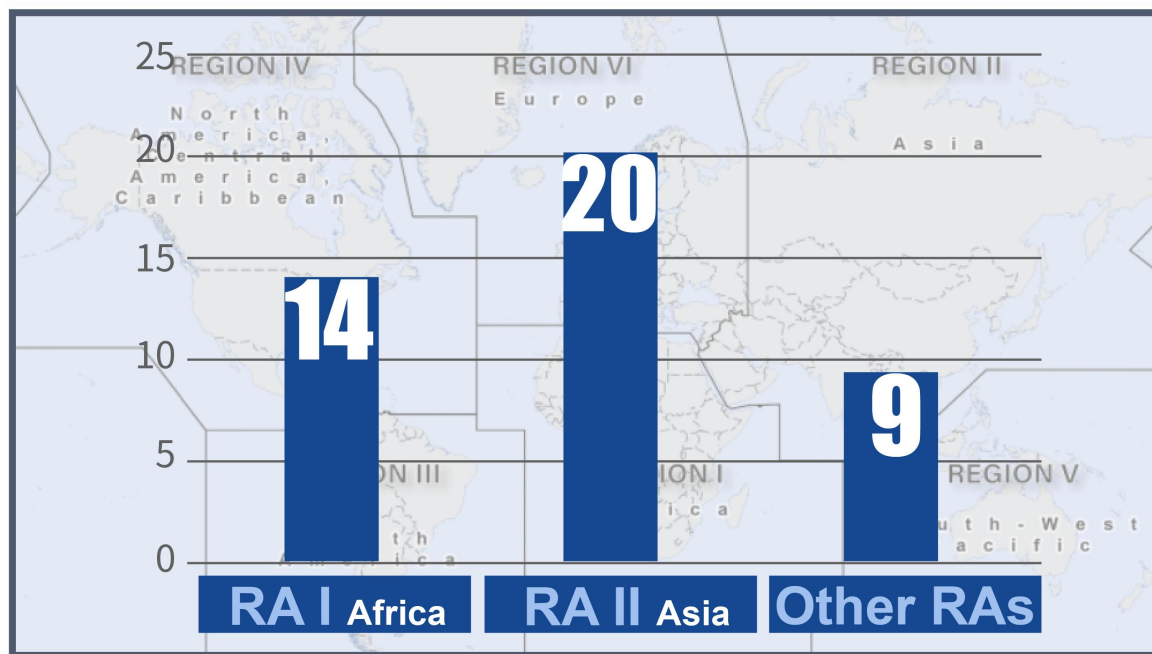
边互动 边使用 边完善
Interacting, Using, and Improving

43 WMO Members'
requirements have been listened

35 WMO Members
tested and evaluated our work since 2025

During development, we followed the concept of "interacting, using, and improving", and received support from many WMO members.
43 members gave suggestions to us and 35 members tested and evaluated our work.

边互动 边使用 边完善
Interacting, Using, and Improving

72% Mentioned
Short-staffed, Inadequate monitoring and forecasting capabilities, and Lack of training

1 ➔ **Technical Gaps**

81% Mentioned
Limited ways to broadcast warning information

2 ➔ **The "Last Mile" problem**

Based on their feedback, we found 2 main challenges:
The first is the technical gap. 72% mentioned short-staffed, inadequate monitoring and forecasting capabilities and lack of training.
The second is the "last mile" problem. 81% mentioned limited ways to broadcast warning information.

围绕早期预警四大支柱 用人工智能赋能多灾种早期预警
Based on Four Pillars of EW4ALL, AI Empowered Multi-hazrd Early Warning

Pillar 1
Disaster Risk Knowledge and Management

Use AI to build a high-quality Corpus

Led by **UNDRR**
UN Office for Disaster Risk Reduction

Pillar 2
Detection, Observation, Monitoring, Analysis, and Forecasting

Use AI weather forecasting models to improve monitoring and forecasting capabilities

Led by **WORLD METEOROLOGICAL ORGANIZATION**

Early Warnings for All

Pillar 4
Preparedness and Response Capabilities

Use AI to improve fast communication capability

Led by **IFRC**

Pillar 3
Warning Dissemination and Communication

Use AI to create a guide for urban disaster prevention and mitigation

Led by **ITU**

Based on Four Pillars of EW4ALL, we use AI to empower Multi-hazard Early Warning.

So, next, let's look at the details.

第一支柱 – 打造AI赋能的灾害风险知识与管理语料库工具
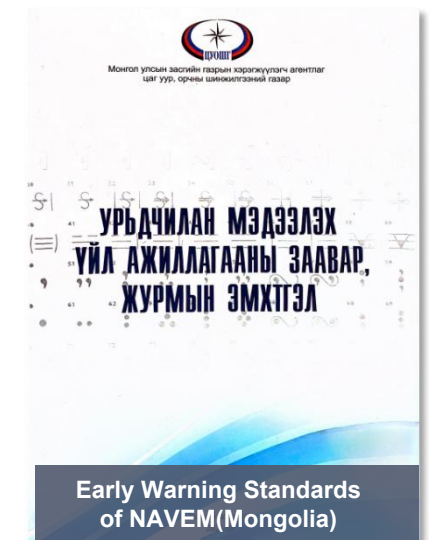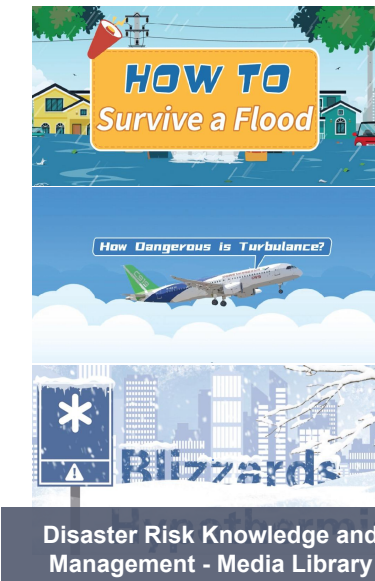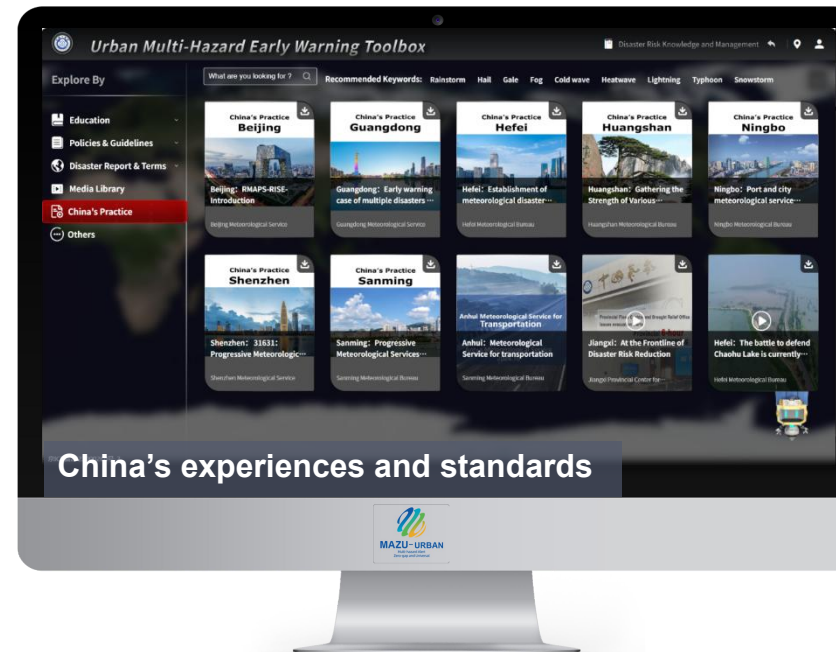## Pillar 1 An AI-powered Urban Early Warning Information Corpus Tool

International standards： UN, WMO, UNEP...

China's experiences and standards： **11 cities** (Beijing, Shanghai, Guangzhou…)

Users' experience and standards： **2 Members** (NAMEM and SMG)

8,500 AI knowledge pairs have been formed and will be updated regularly.

Led by

UN Office for Disaster Risk Reduction

China's experiences and standards

Disaster Risk Knowledge and Management - Media Library

Early Warning Standards of NAVEM(Mongolia)

For Pillar 1, standards and experiences were collected from international organizations, 11 cities in China, and users. Right now, 8,500 AI knowledge pairs have been formed and will be updated regularly.

第二支柱 – 打造AI赋能的监测和预报分析工具
Pillar 2 An AI-powered Monitoring and Forecasting Analysis Tool

Led by

WORLD
METEOROLOGICAL
ORGANIZATION

International exchange data

Over **6,000** station observations from WMO-WIS

China satellites and AI weather forecasting models

FY- 4B/2H +1 global AI model +1 regional AI model for Africa

Analysis tool to improve urban disaster monitoring and forecasting will be provided

WMO-WIS

CMA-GFS-AIM-Fengqing

FY-4B/2H

Urban Flooding Weather Risk Assessment Tool
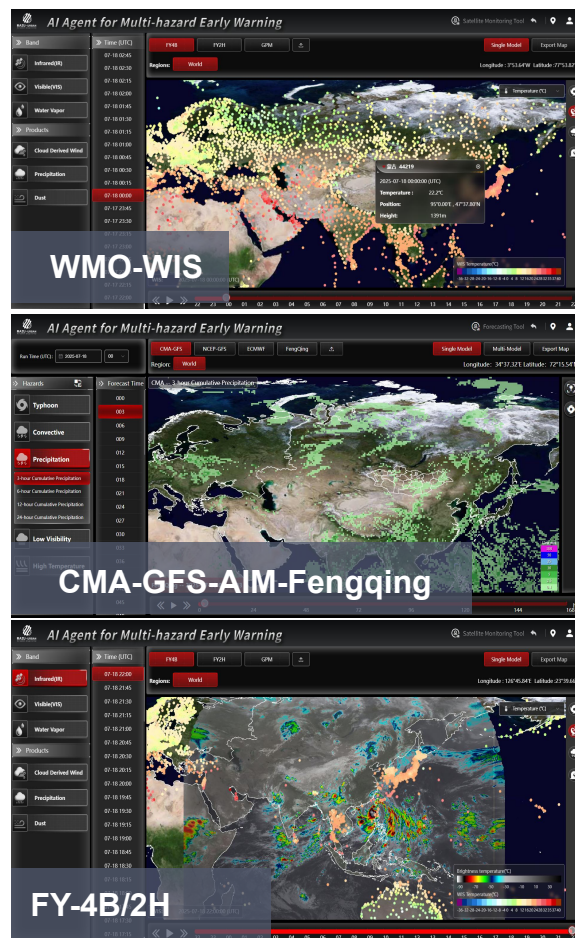
For Pillar 2, based on more than 6000 WMO-WIS stations, China's Fengyun satellites, and China's AI weather forecasting models, analysis tool to improve urban disaster monitoring and forecasting will be provided.

第三支柱 – 打造AI赋能的预警发布和传播工具
Pillar 3 An AI-powered Disaster Information Collection and communication Tool

Led by **ITU**

International exchange data: **CAP warnings** issued by WMO Members from WMO-SWIC

Users' disaster information: Disaster events that happened in user's city

Minute-Level Urban Disaster Collections:

Search multi-source information and generate urban disaster bulletins by **AI**

Multi-channel dissemination: **One-click** sharing to Weibo, Wechat, Telegram, X, Ins, and YouTube

WMO-SWIC
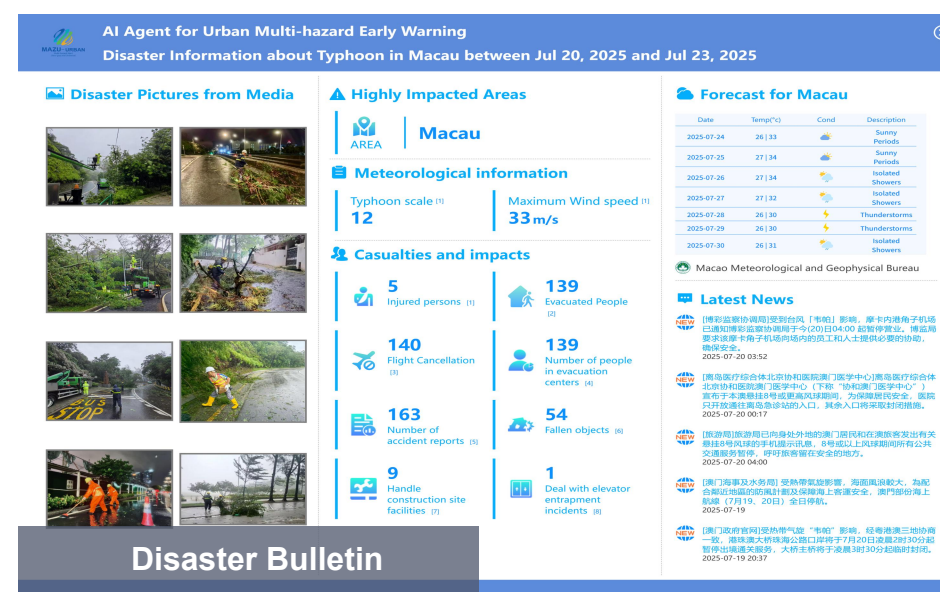
Disaster Bulletin

For Pillar 3, based on WMO CAP warnings and disaster events that happened in user's city, we use AI to search multi-source information and generate urban disaster bulletins, with one-click sharing to social medias (such as X, Instagram, etc.).

Led by

Role-Based Workflow Prompt: 2 roles and 4 disasters

Function Calling: Establish a connection between the LLM and monitoring, forecasting data, enabling the LLM to use accurate data.

Localized DeepSeek 70B LLM: Intelligent generation of guide for urban disaster prevention and mitigation within Minutes.

For Pillar 4, based on role-based and disaster-specific workflow prompts, function calling and early warning guidelines contributed by users, the locally deployed DeepSeek LLM is used to generate a guide for urban disaster prevention and mitigation.

2 最后一公里
For the Last Mile Problem

推出双端 提升预警到达率
Dual Platforms for Better Warning Delivery

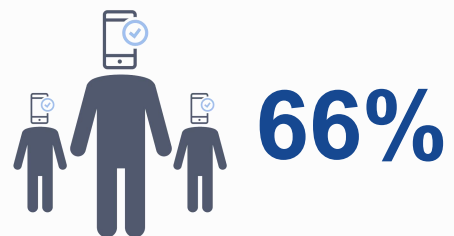### Route Weather Risk Assessment Tool for Lake Victoria

Tablet

Change of water level compared to the base line

+0.5m ➡ **+2.2m**

1993   **2024**

From Facts and Figures 2024 by ITU
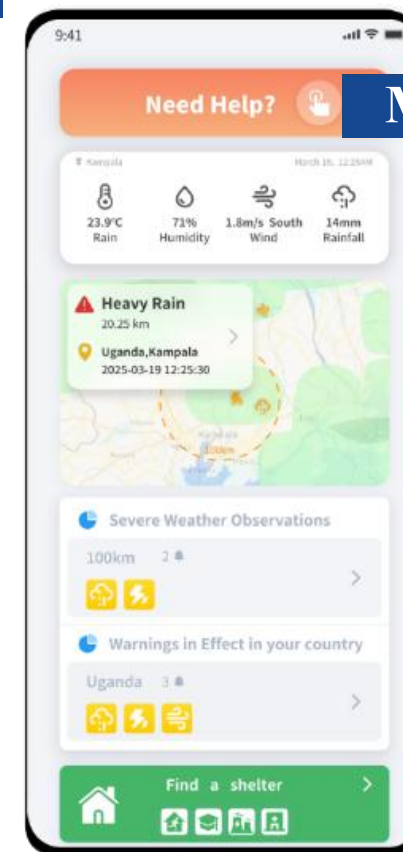
■ in Africa

66%

Percentage of individuals owning a mobile phone

3G   **4G**

15%   **60%**

Population coverage by type of mobile network

Mobile

MAZU-URBAN APP

Smart recommendations for emergency shelters and emergency phone numbers based on location

AVAIABLE ON TECNO PLAM STORE

TECNO Mobile

Market share in Africa over **40%**

To bridge the "last mile" in early warning dissemination, we introduced two platforms to enhance warning delivery.
For urban industries, we developed a smart tablet, and for the public, we offer a smart phone.

城市多灾种早期预警智能体是"国际公共产品"
AI Agent for Urban Multi-Hazard Early Warning (MAZU-Urban): International public products

**Open Source
& Open Access**

**Co-creation
& Sharing**

**Empower,
Not Replace**

WORLD METEOROLOGICAL ORGANIZATION

China Meteorological Administration

UNDRR — UN Office for Disaster Risk Reduction

ITU

IFRC

UN environment programme

China Meteorological Administration

中国联通 China unicom

上海人工智能实验室 Shanghai Artificial Intelligence Laboratory

SAIS 上海科学智能研究院 Shanghai Academy of AI for Science

35 members tested and evaluated our work

The development of MAZU-URBAN has been guided by the WMO, with technical support from the CMA, financial and institutional support from the Shanghai Municipal Government. MAZU-URBAN has also received support from relevant international organizations, countries (and regions), as well as our partners. Up to now, 35 Members tested and evaluated our work. In future, we will continue to expand our service coverage and improve its effectiveness, following the principle of "one country, one policy" and "one city, one policy."

众人拾柴火焰高
Many hands make the light up

人工智能赋能全民早期预警
AI Empowered Multi-Hazard Early Warning

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