

Training Workshop on Synergized Standard Operating Procedures for Coastal Multi-Hazards Early Warning System

ESCAP/WMO Typhoon Committee , WMO/ESCAP Panel on Tropical Cyclones

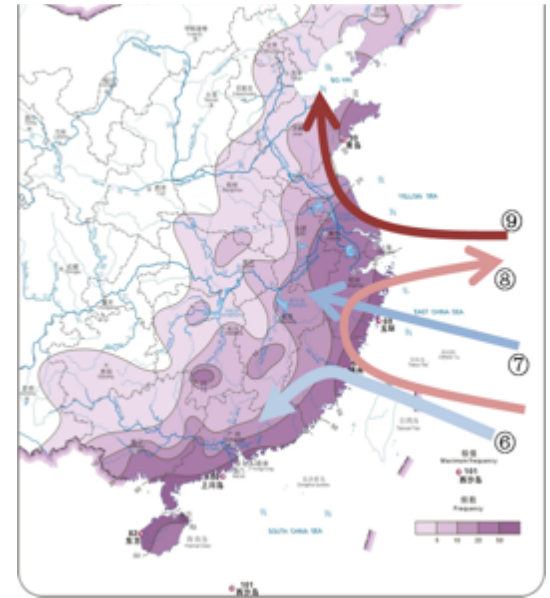
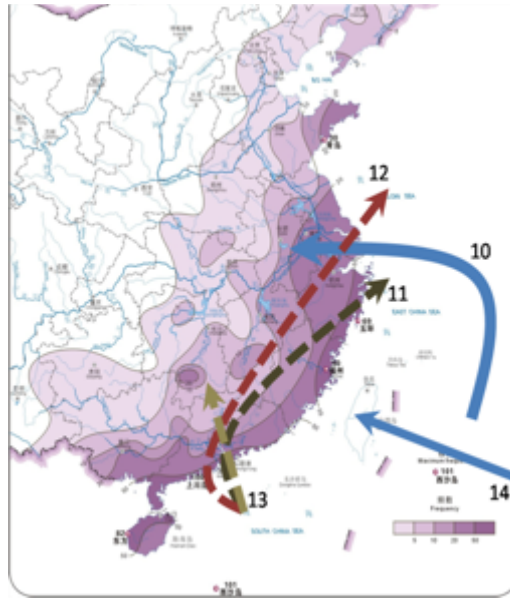
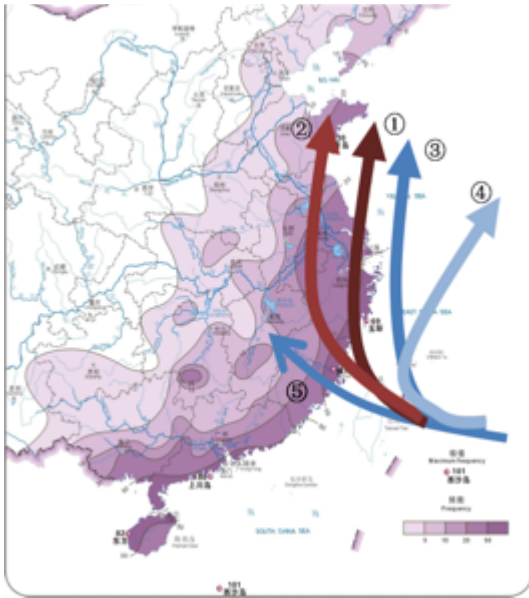
Review of Two Typical Tropical Cyclones Affecting Shanghai

Zhang Jianlei

*Department of Emergency response, Disaster mitigation and Public service, SMS
Shanghai 200030, China*

(June 10th, 2014)

Tropical Cyclones Affecting Shanghai



Tropical cyclones can bring significant wind and precipitation to Shanghai from different direction.

One of the most disastrous weather systems to Shanghai.

Mean annual frequency: 2

Maximum annual frequency: 6

Maximum daily rainfall: 420 mm

Maximum gust: 33 m/s

Typhoon early warning Operational levels

Outlook

- Genesis potential

Watch

800 ~ 1200 km

- Track & striking prob.

Alert

400 ~ 800 km

- Track & striking prob.
- Intensity

Warning

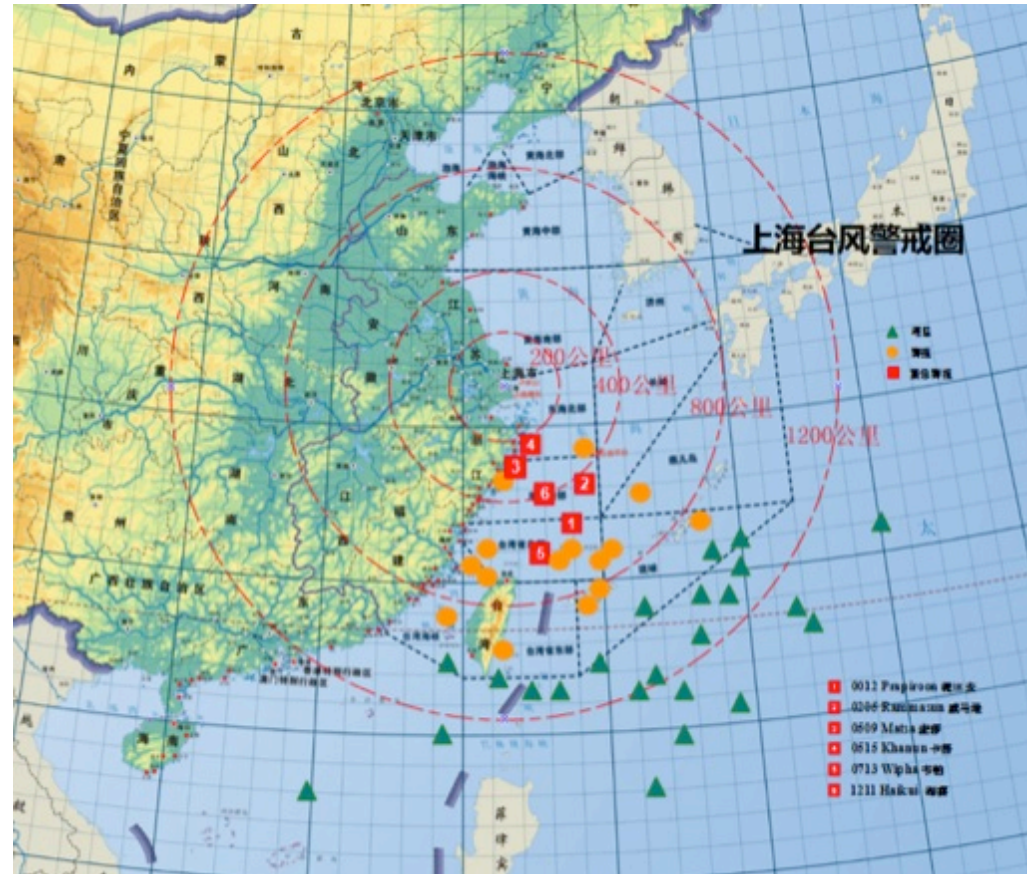
200 ~ 400 km

- Track & intensity
- Rainfall & wind

Emergency Warning

< 200 km

- Track & structure
- Rainfall & wind
- Impacts

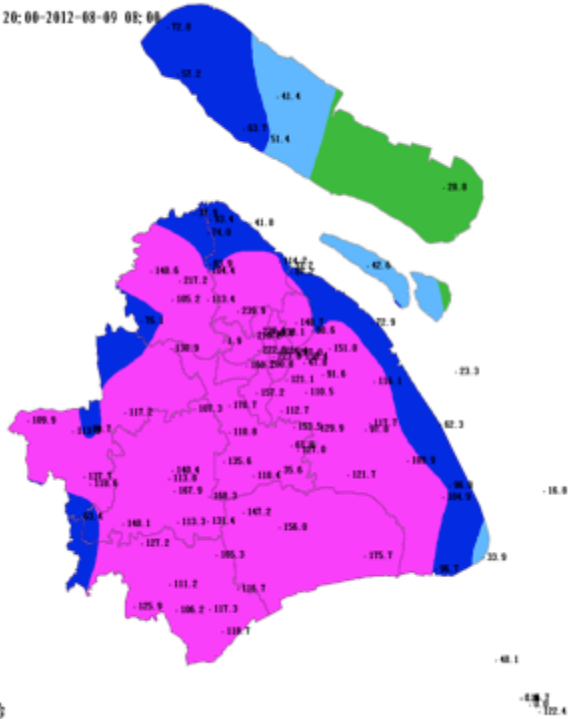


The influence of "Haikui" to Shanghai

from August 7th 20:00 to August 9th 08:00, 2012

上海市自动站雨量累计

2012-08-07 20:00-2012-08-09 08:00



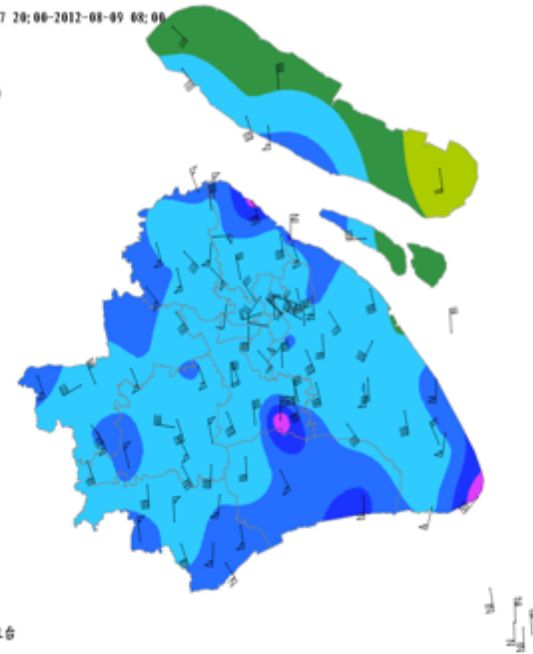
≥0.1mm的站点数: 96
 ≥10mm的站点数: 95
 ≥25mm的站点数: 92
 ≥50mm的站点数: 82
 ≥100mm的站点数: 63
 ≥250mm的站点数: 0

极值统计	
站点	雨量
鲁迅公园	246.2
上大附中	240.3
大宁灵石公园	238.6
人民公园	223.6
长寿公园	222.9
嘉定区	217.4
河北公园	211.7
甘泉公园	210.9
陆家嘴	208.4
襄阳公园	202.3

上海中心气象台

上海市自动站风极大值统计

2012-08-07 20:00-2012-08-09 08:00



≥10.8m/s的站点数: 89
 ≥13.9m/s的站点数: 85
 ≥17.2m/s的站点数: 72
 ≥20.8m/s的站点数: 31
 ≥32.7m/s的站点数: 1

极值统计	
站点	风
小洋山	43.5/85
佘山	40.3/116
小雷山	39.8/119
海湾751基地	38.5/105
吴泾通海路	36.1/118
吴淞	34.7/68
洋山三期	34.5/105
三甲港	33.4/68
下三星	33.0/127
滴水湖	33.0/63

上海中心气象台

The widespread fall of heavy rain. The heavy rain (>200mm) happen mainly in central areas and Jiading District. The max rainfall occurred at Luxun Park (246.2mm)。

- Level 8-10 in central areas
- level 10-12 along the coast
- Level 14

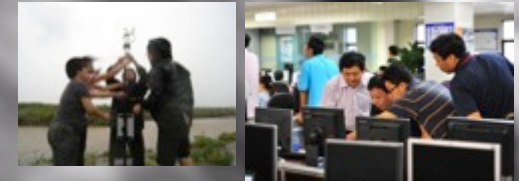
The actions SMS took



Multi-Agencies Coordination



Early warning



Early detection and Scientific Judgment



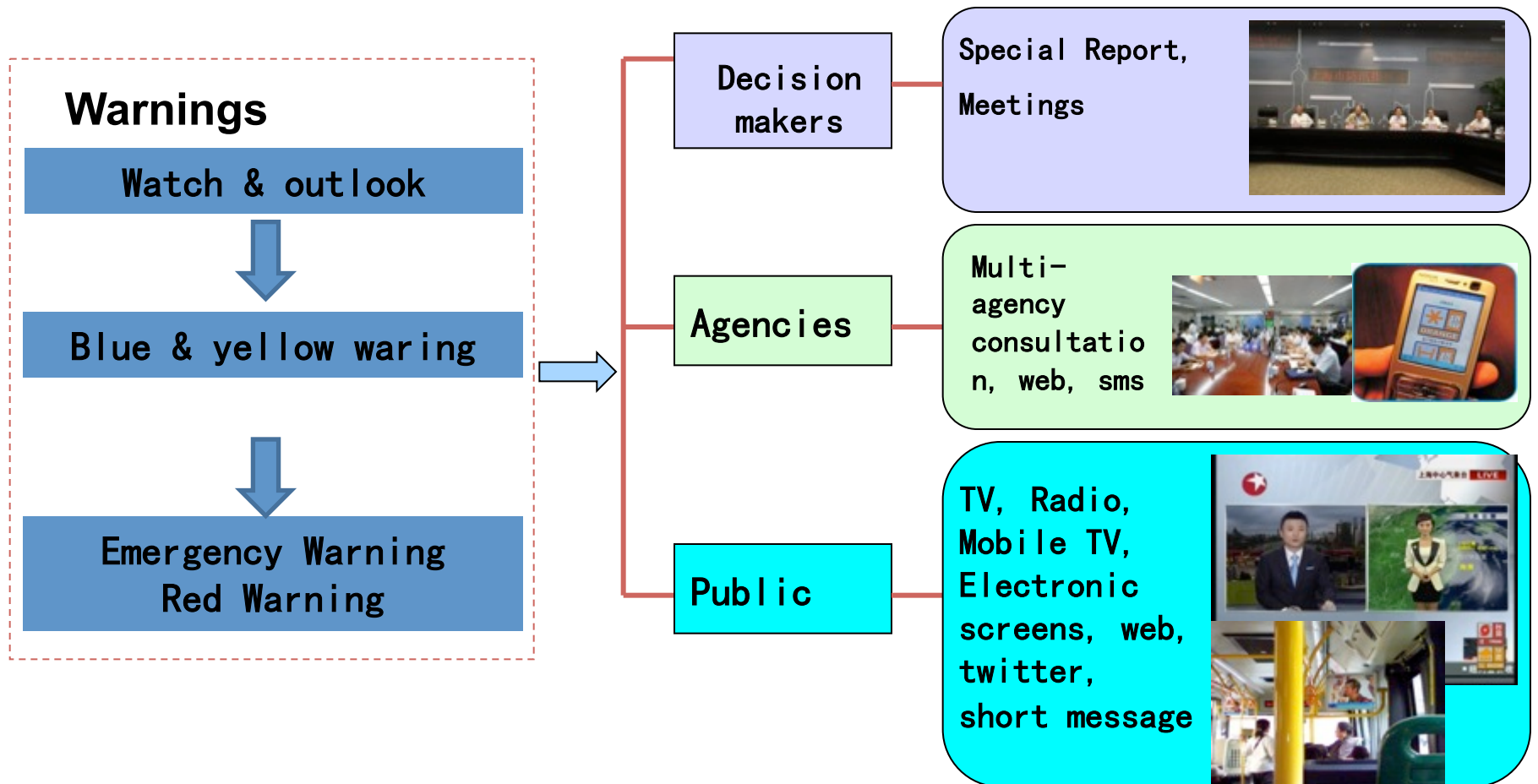
Early dissemination through Multi-Channel among wide-spread area



Public education & Expert Interpretation

Keep the adequate work rhythm

Warnings to be fast issued, early received, effectively used.



Early Warning & Early Dissemination



TC "Haikui" became TY, in
China offshore
17:00 Aug.6th

"Haikui" enhanced to STY,
Approaching to China coast.
14:00 Aug.7th.

STY landing in Zhe Jiang
Province.
3:00 Aug.8th

"Haikui" severity
influenced Shanghai
Aug.8th



14:00 Aug. 6th



10:00 Aug. 7th

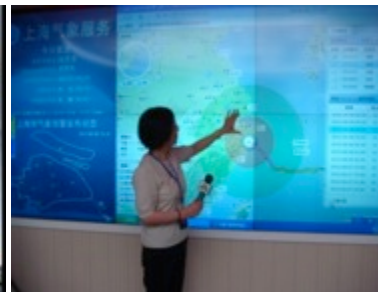


15:00 Aug. 7th



11:00 Aug. 8th

The warning Signal was issued ahead of the disasters through every channel



warning signal in English. TV Interview **28 times**, in time link with radio **42 times**, Paper interview **72 times**, link with mobile TV **12 times**, WEB news **158**, Weibo **344**, hotline **580**↑, news conferences **2**, special reports for decision maker **31**

Use the new media, meet the various requirements

■SMS To all citizens



■The twitters covered all the web



■English Warnings



《ICS weather forecast》



Multi-Agencies Coordination



Agriculture Administration
Action: Fatsen the greenhouses



Construction Administration
Action: Fatsen the billboards on the top of buildings



Bureau of City Appearance
Action: draining sewage



Multi-Agency Consultation



Electric Power Co.
Action: repairing the wires

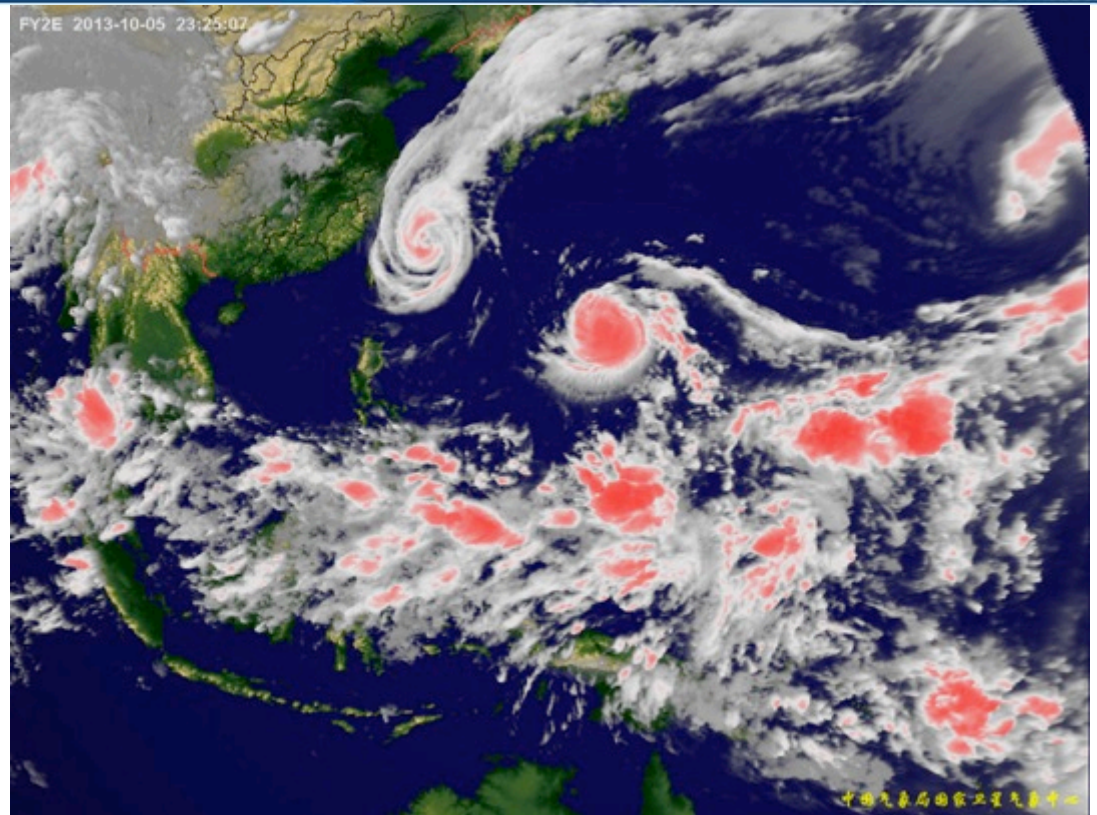
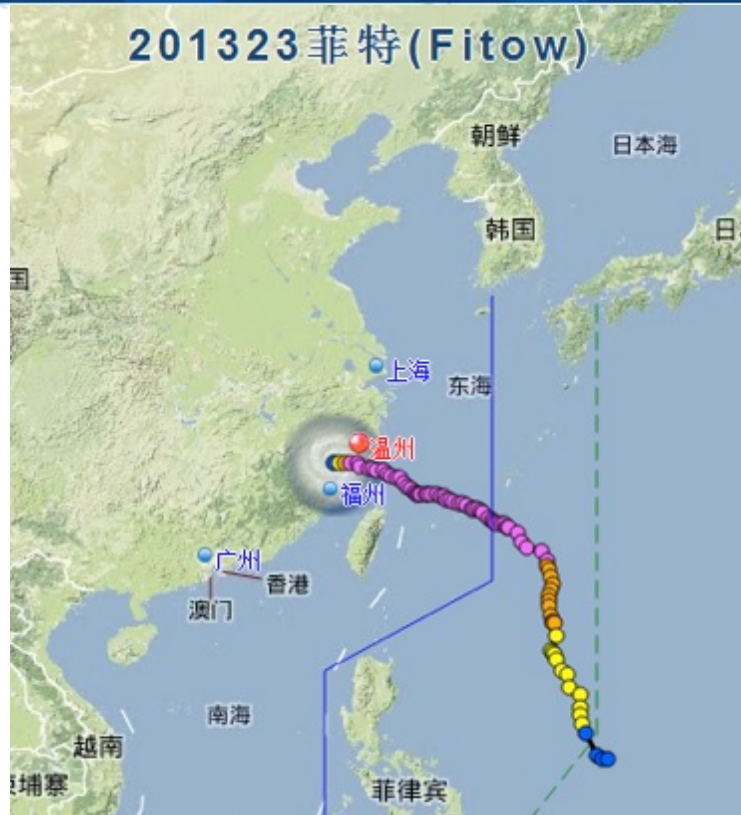


Traffic Police
Action: Traffic Control



Fire Police
Action: fasten the air condination

The case of TC 'Fitow'



Tropical Cyclone Fitow began to impact the Chinese mainland on October 6, 2013 causing significant damage and disruption. Between 20:00 on October 7 and 14:00 on October 8th, Shanghai received total precipitation of 156mm, which is the most rainfall in 18 hours recorded since 1961.

The impact of “Fitow”

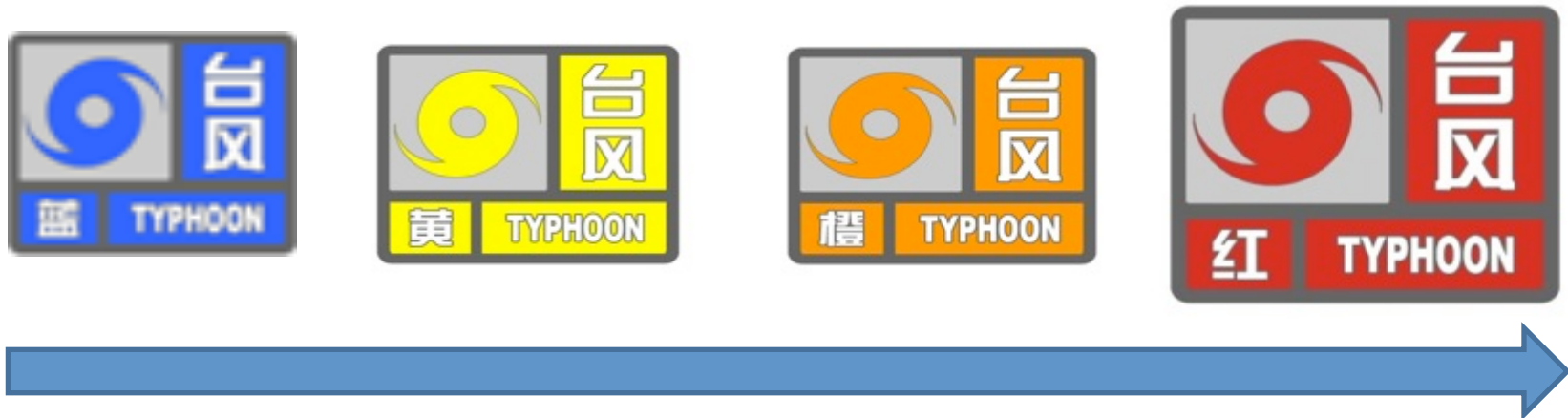
The impact was very significant: **97** roads were flooded; **900** communities were flooded with many underground parking facilities and cars damaged; and some flood prevention walls were damaged and some destroyed. Overflowing rivers flooded four districts. By October 11, there were over 1.2 million people directly impacted with **one reported death**; and nearly **28,000,000 hectares of farmland** was flooded. The direct economic loss is estimated **at 890 million RMB**.

In Zhejiang Province, **seven deaths** were reported and the direct economic loss is estimated at **over 33 Billion RMB**.



The Warnings

SMS issues accurate warnings according to standard operating procedures and protocols, increasing the severity from blue to red as the situation worsened. Over **18 million** people were alerted.



The feedback

However, the public response has been **why were the warnings so late?**

The orange alert for rainfall was issued at 5:36 am on October 8 and the red alert at 07:38 am.

This **day coincided with the first day** of school and work after the Chinese national holiday. The **time of issuing the highest alerts coincided with rush hour** – the morning commute was well underway before many people were aware of the severity of the situation.

Gridlock prevented people from either getting to their destinations or returning home



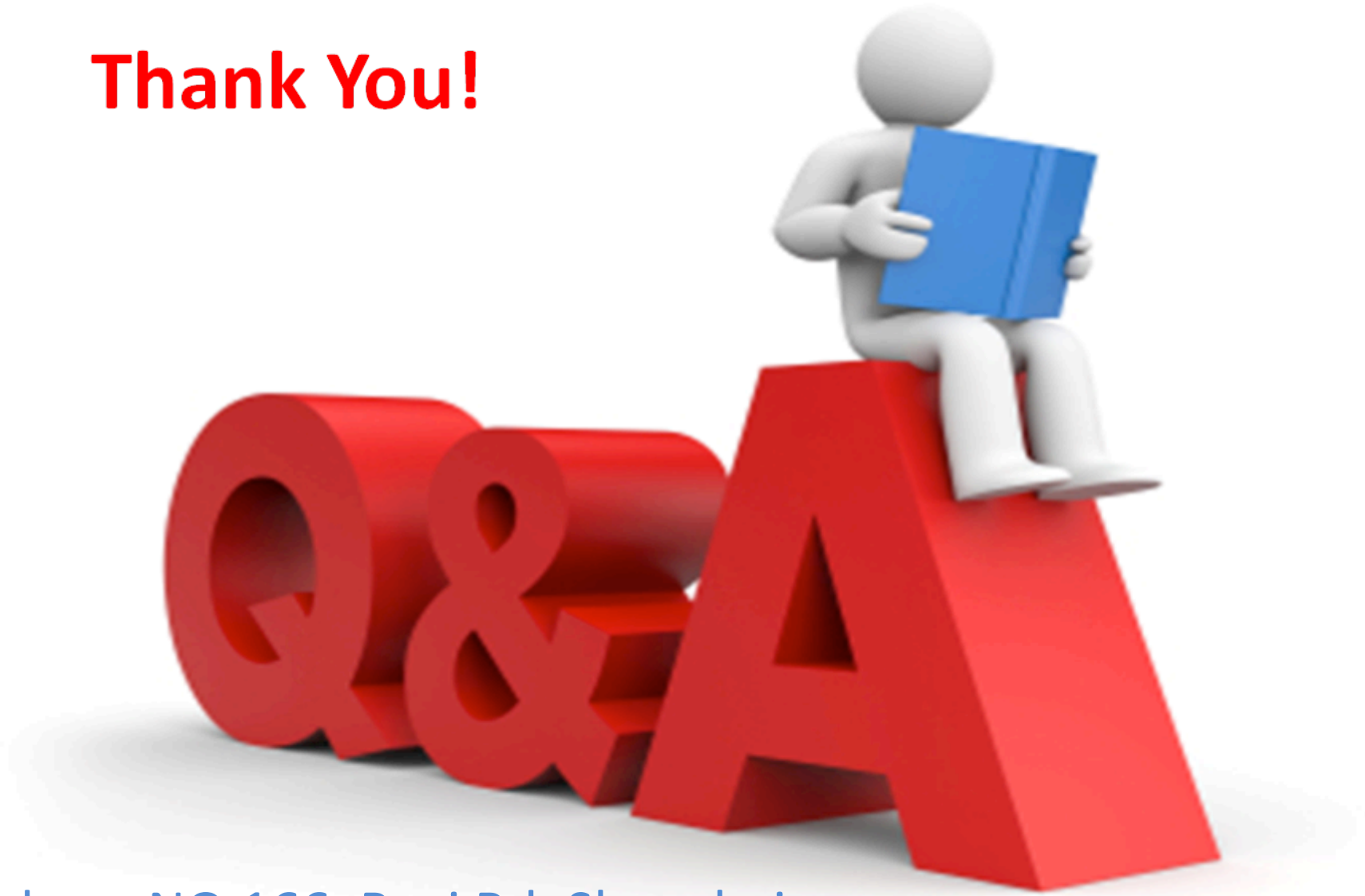
The warning signal and guidance



In the next 24 hours, the tropical cyclone is likely to impact or has already had an impact on the target area. Average wind speeds of 118-133km/h on- and off- shore or gust of 150-166km/h; this condition is to continue.

1. Government and related departments should start emergency response and disaster rescue for typhoon.
2. Outdoor assemblies, classes and business (except special industries) should be suspended.
3. Take protective measures for ships in port and transfer people to safe places.
4. Reinforce wind-affected structures, people should stay in safe areas; remind that when typhoon eye passes the wind will be weakened or stop for a short time and the people should continue to stay in safe places; people in unsafe buildings should be transferred in a timely fashion..
5. Preventative measures should be taken against flash floods and geological disasters induced by heavy rainfall.

Thank You!



Address:NO.166, Puxi Rd. Shanghai
Email:zhangjianlei@189.cn