STATE
OCEANIC
ADMINISTRATION

Marine Disaster Risk Assessment and Zoning in the Coastal Areas of China

National Marine Hazard Mitigation Service,
State Oceanic Administration

2014. 02 Chengdu

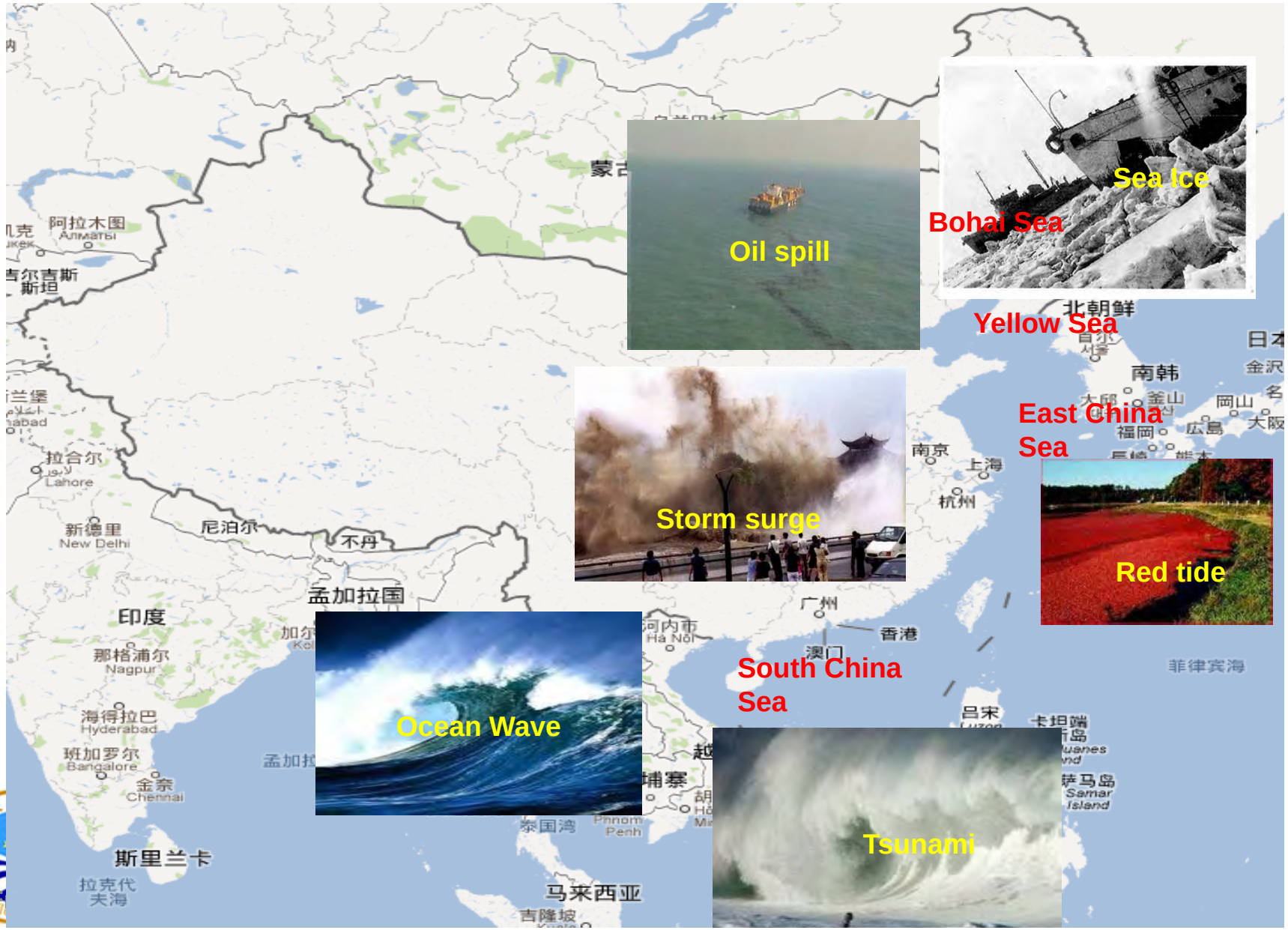
Outline

1 Marine disaster in China

2 Marine disasters risk assessment and zoning

3 Intent Cooperation

1.Marine disaster in China



1.Marine disaster in China

- **Storm surge disaster**

Before 1949

After 1949

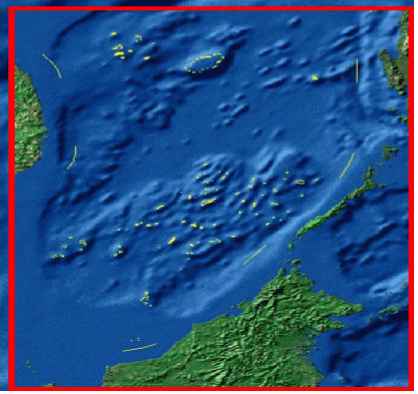
8/30/1939，Lianyungang, More than 13000 people were killed

9/1/1905，Shanghai, more than 20000 people were killed

8/2/1956, Xiangshan, 3403 people were killed

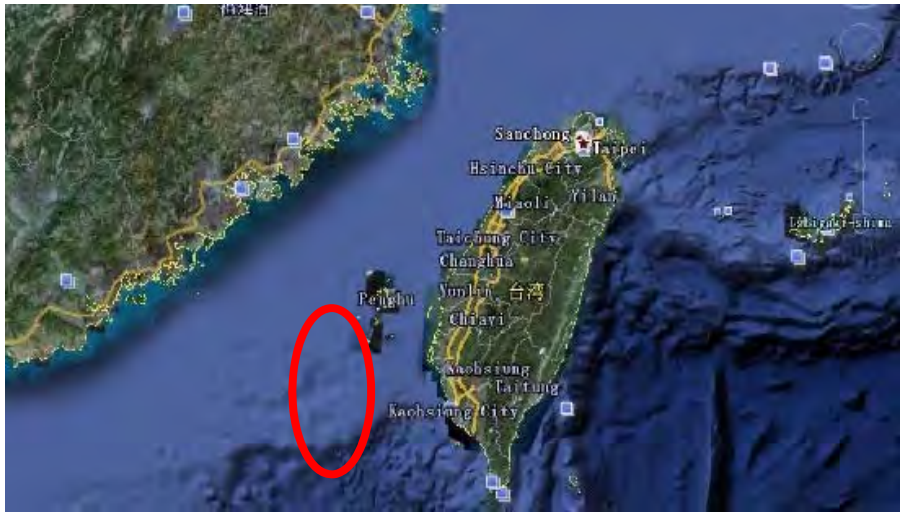
8/2/1922, Shantou, more than 70000 people were killed

9/2/1937, Hongkong, more 11000 people were killed



1.Marine disaster in China

In 1781, Tsunami hit Taiwan Strait, about 40000~50000 people were killed, more than 20 countrysides were completely destroyed!

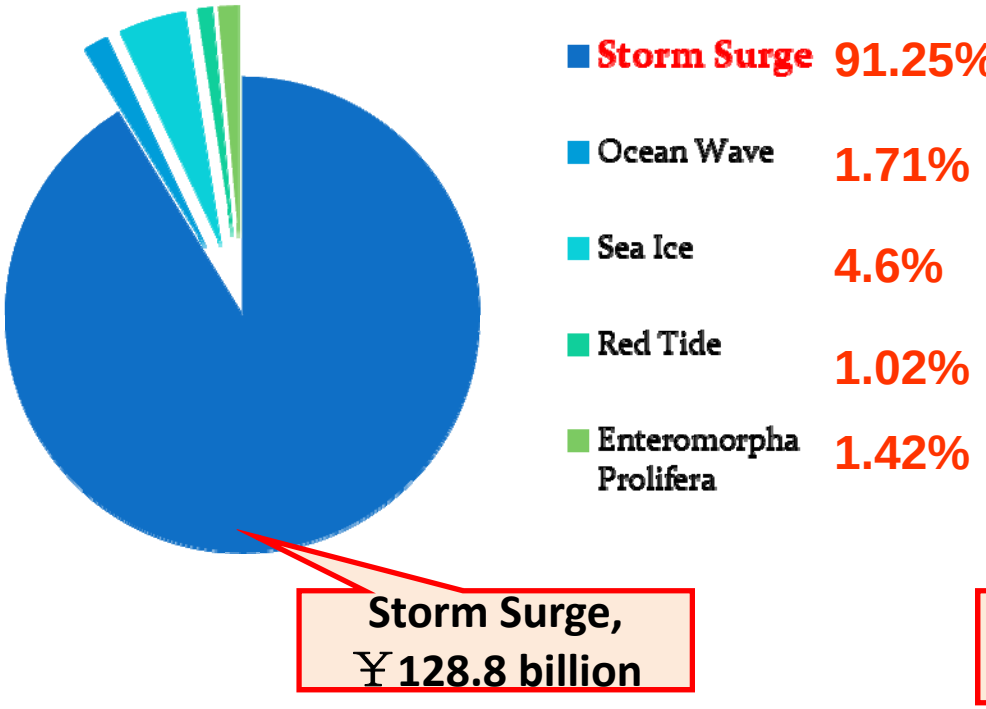


In 1969, the whole Bohai Bay were frozen, lasted for 3 months, 58 cargo ships were destroyed , two oil platforms were knocked down!

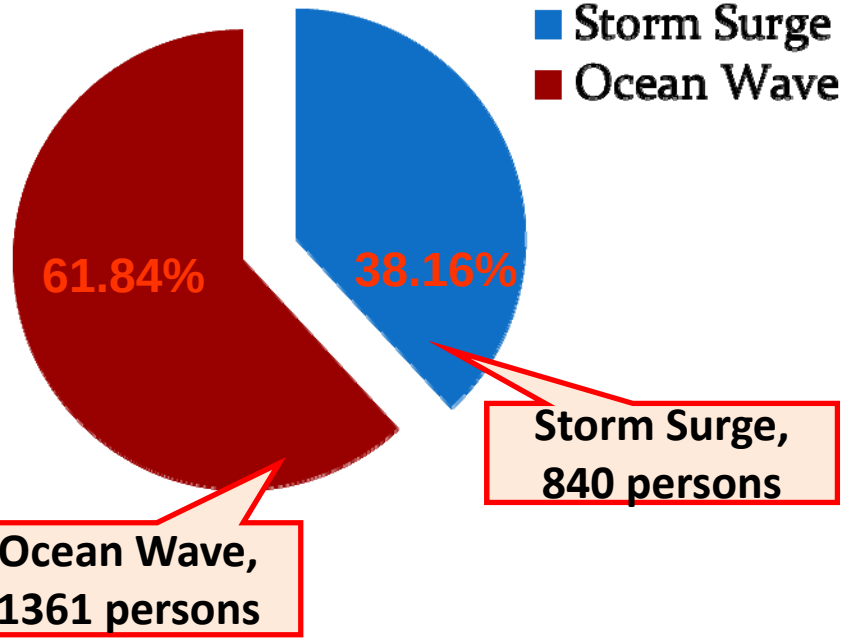
Average ice thickness was more than 50cm!

1.Marine disaster in China

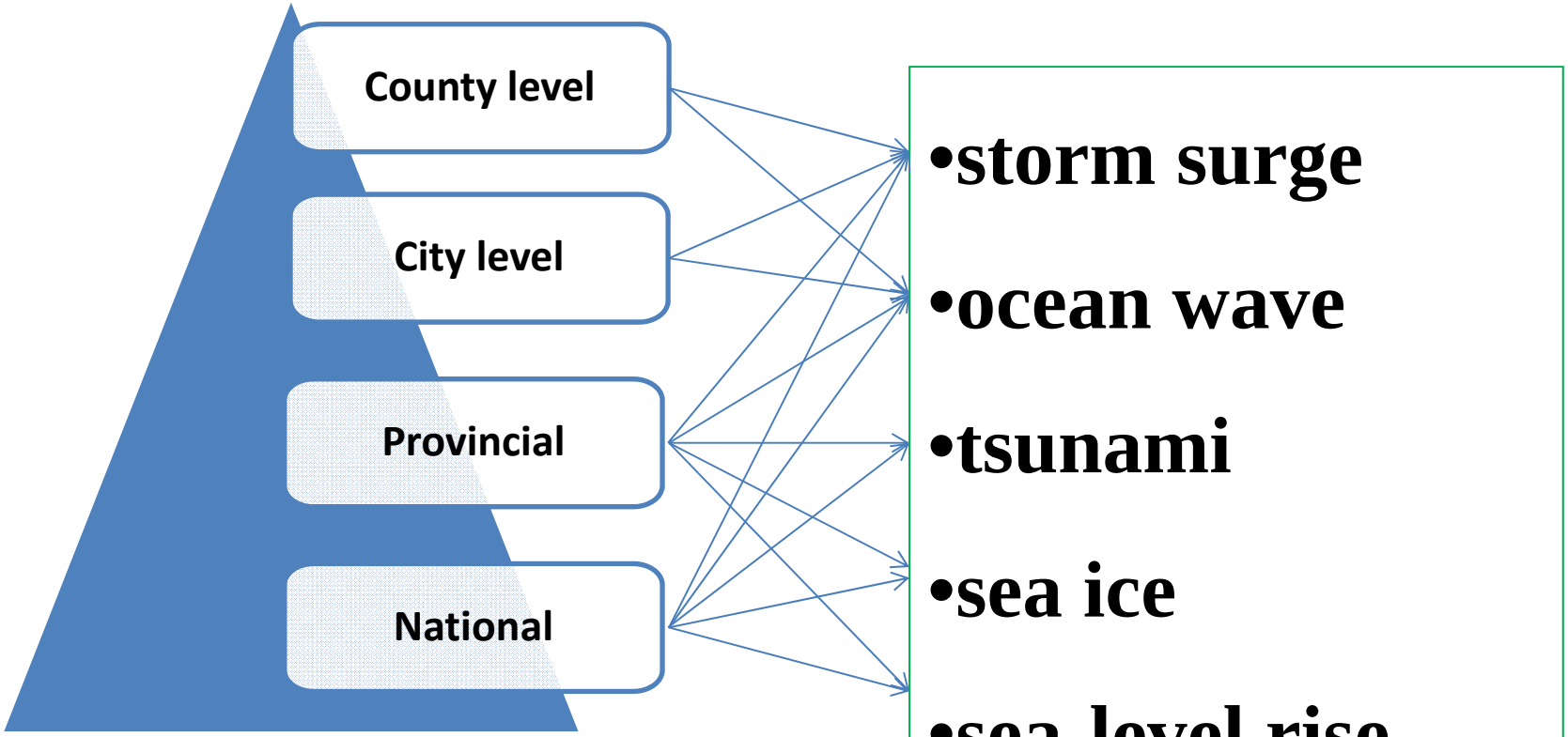
Tangible economic loss (2001-2010)



Death (2001-2010)



2. Marine disasters risk assessment and zoning



four-level marine disaster risk assessment

2. Marine disasters risk assessment and zoning

Workflow :

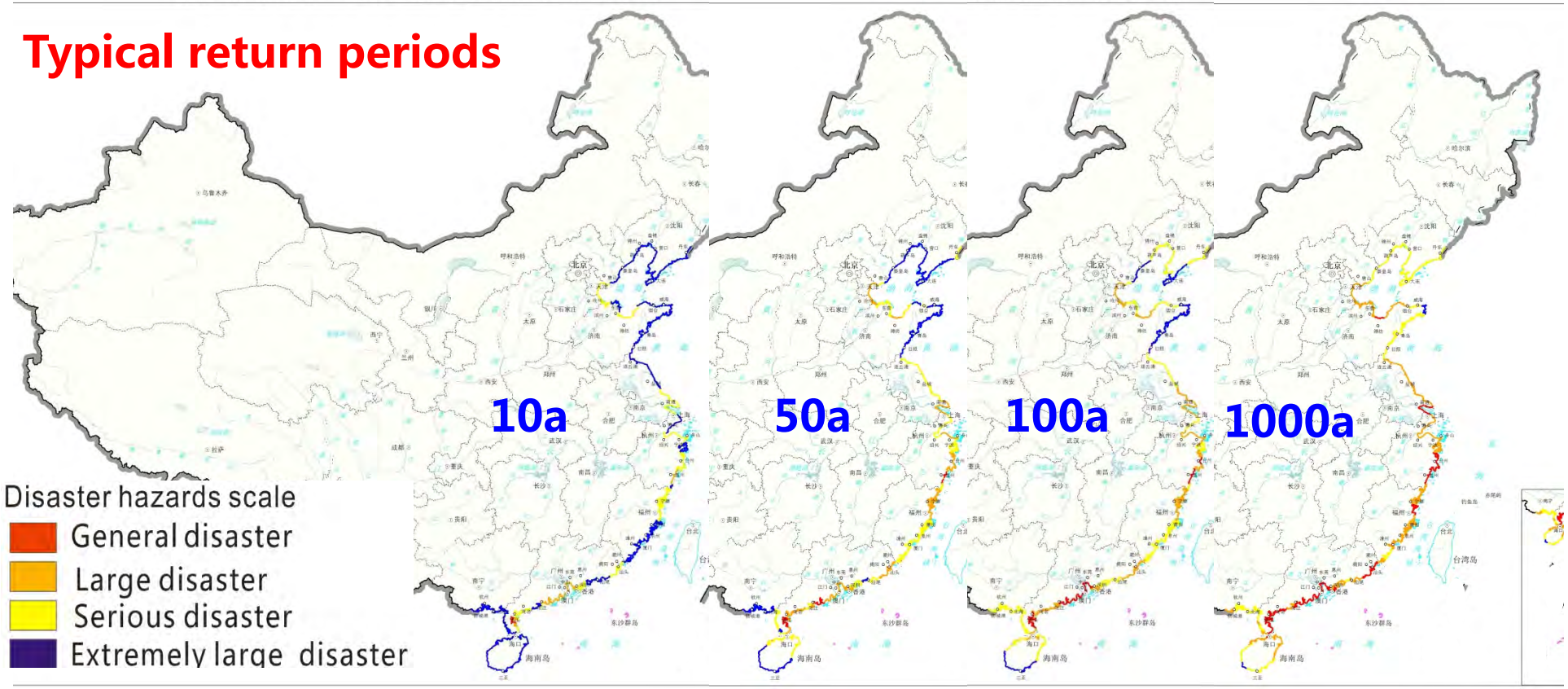
Dataset Collecting	Select area, collect multi source data
Hazards analysis	Model building and verification, hazards analysis
Risk analysis	Vulnerability analysis, mitigation ability assessment, comprehensive risk assessment
Risk zoning	Determine the risk level Based on the assessment results and units
Validation	Validate the result by spot surveying and investigating
Risk Mapping	Cartography based on the results

2. Marine disasters risk assessment and zoning

- **Storm surge disaster risk zoning**
- **Tsunami disaster risk zoning**

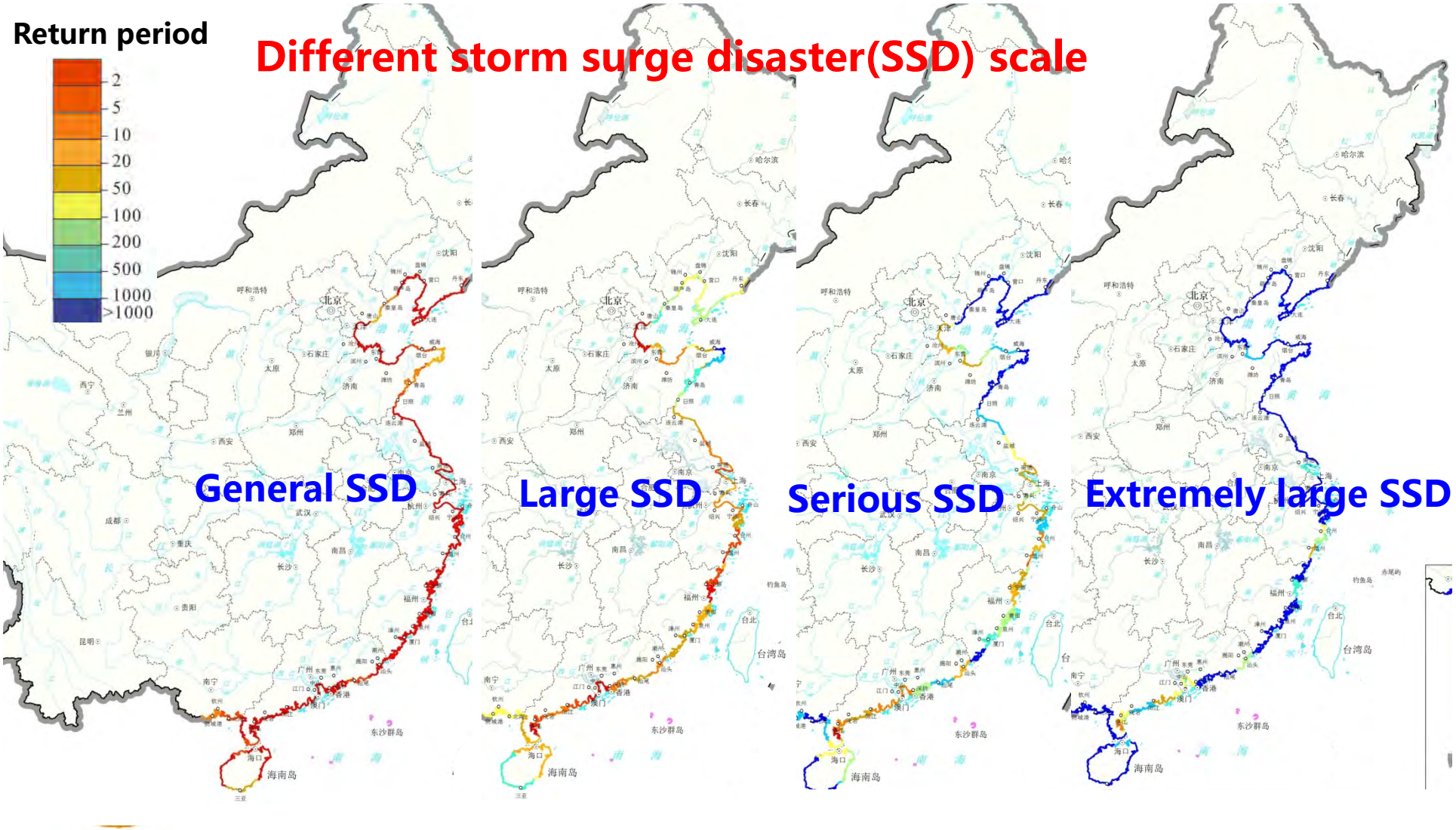
2.1 Storm surge disaster risk zoning

Hazards intensity analysis in China：each 10km shore



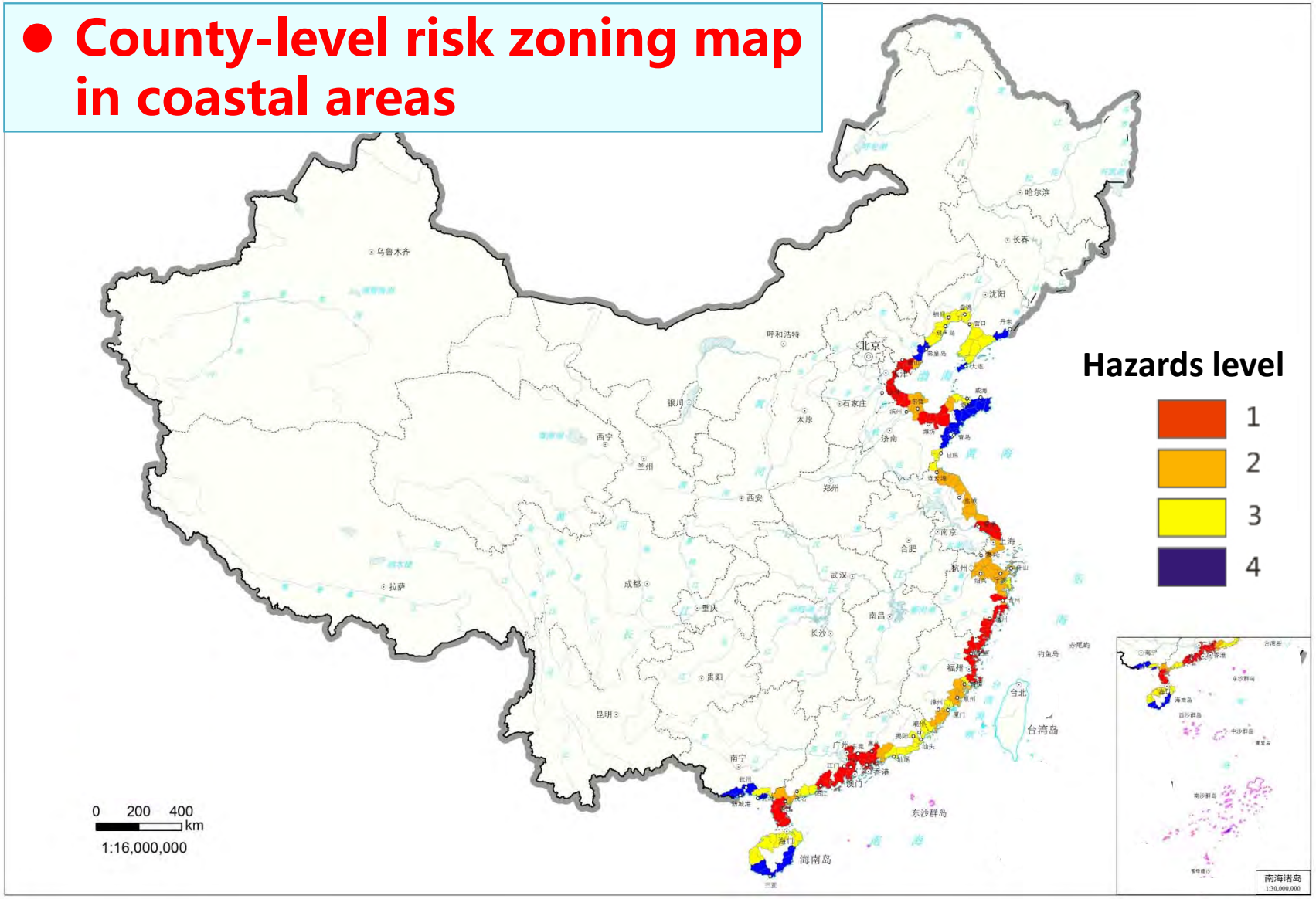
2.1 Storm surge disaster risk zoning

Occurrence frequency analysis in China : each 10km shore



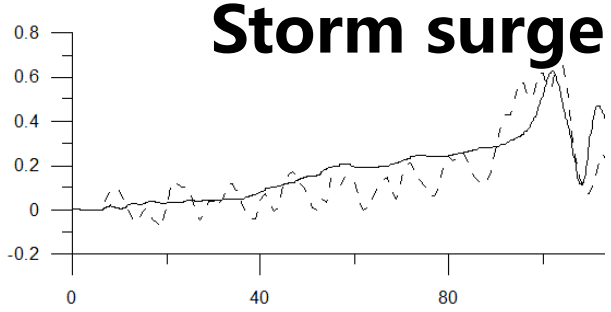
2.1 Storm surge disaster risk zoning

- **County-level risk zoning map in coastal areas**

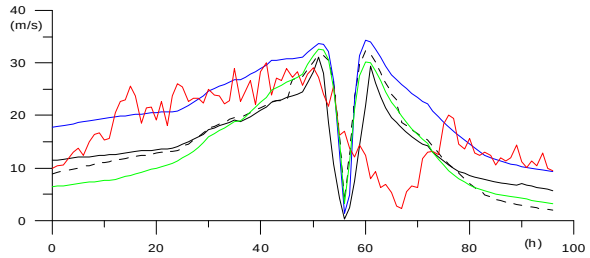


2.1 Storm surge disaster risk zoning

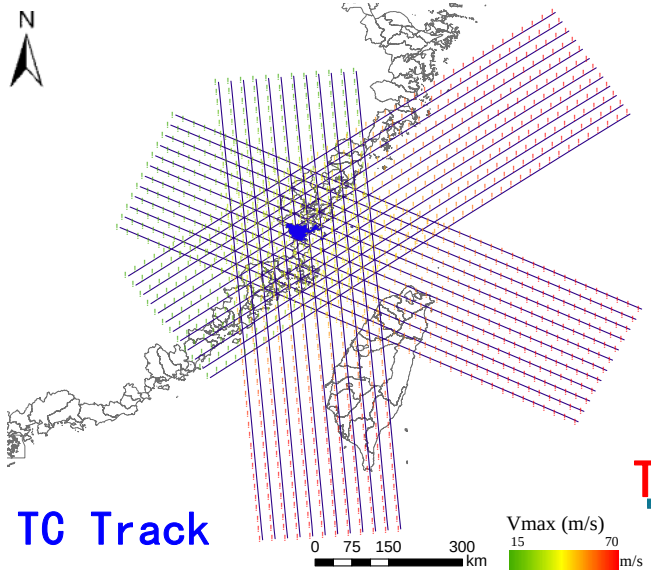
Storm surge disaster risk zoning in Lianjiang



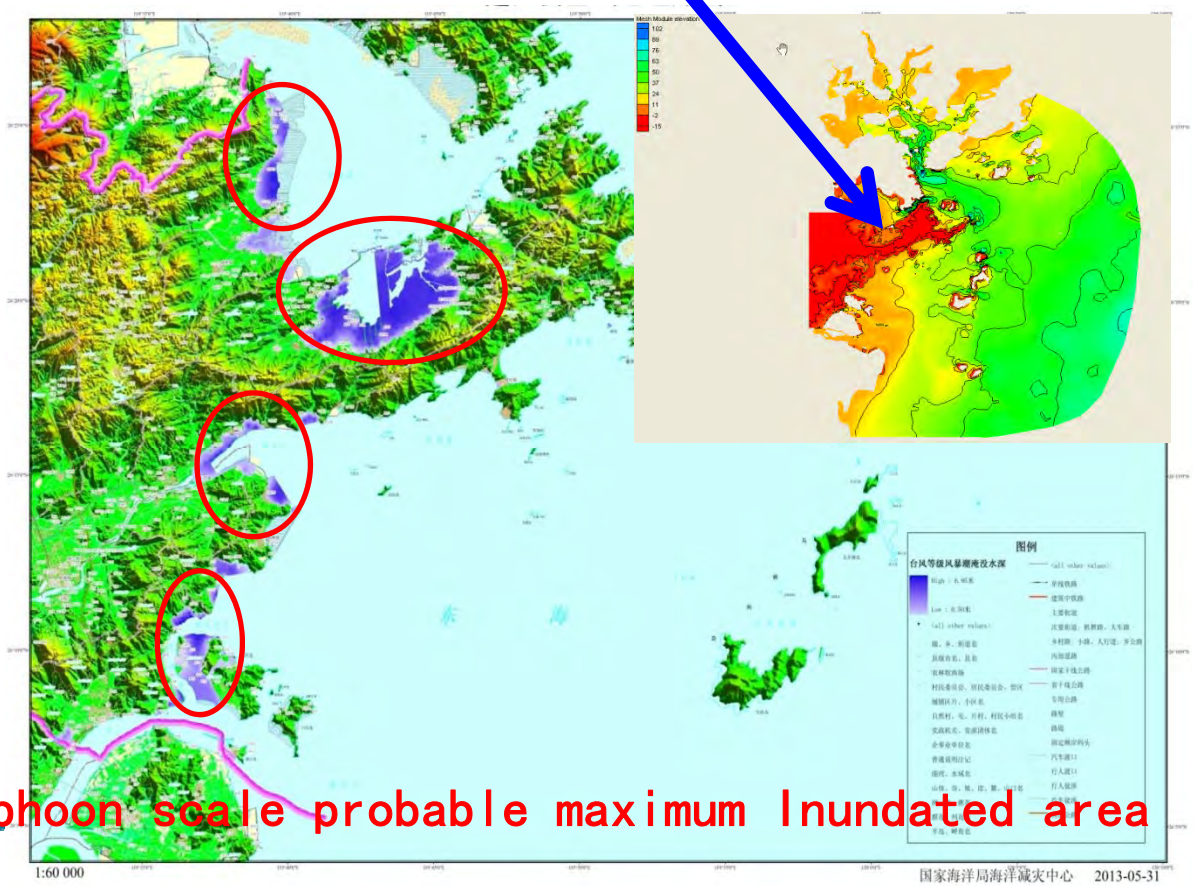
Validation result



- FVCOM+SWAN
- Gird size：50~100M

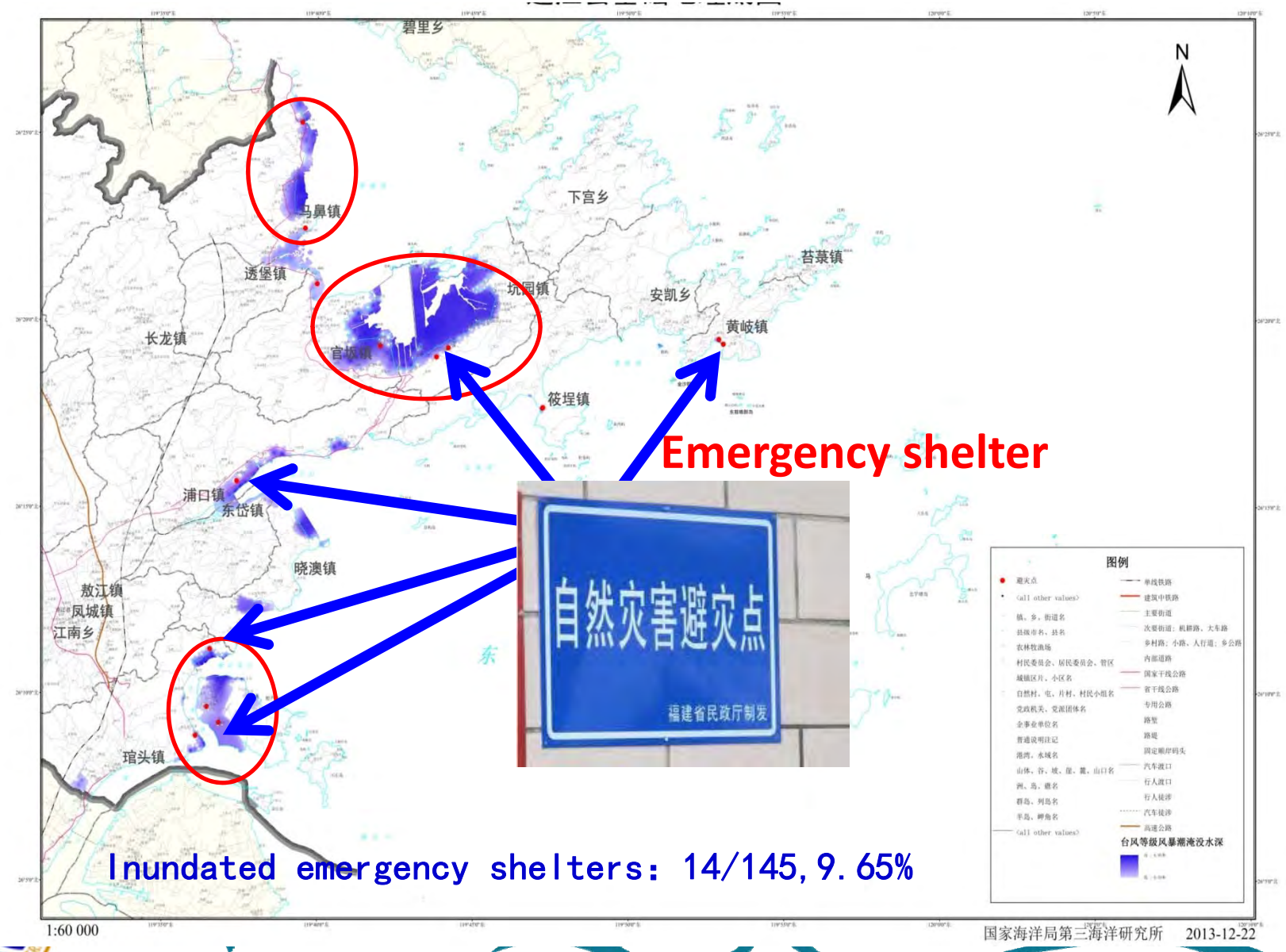


TC Track



Typhoon scale probable maximum Inundated area

2.1 Storm surge disaster risk zoning



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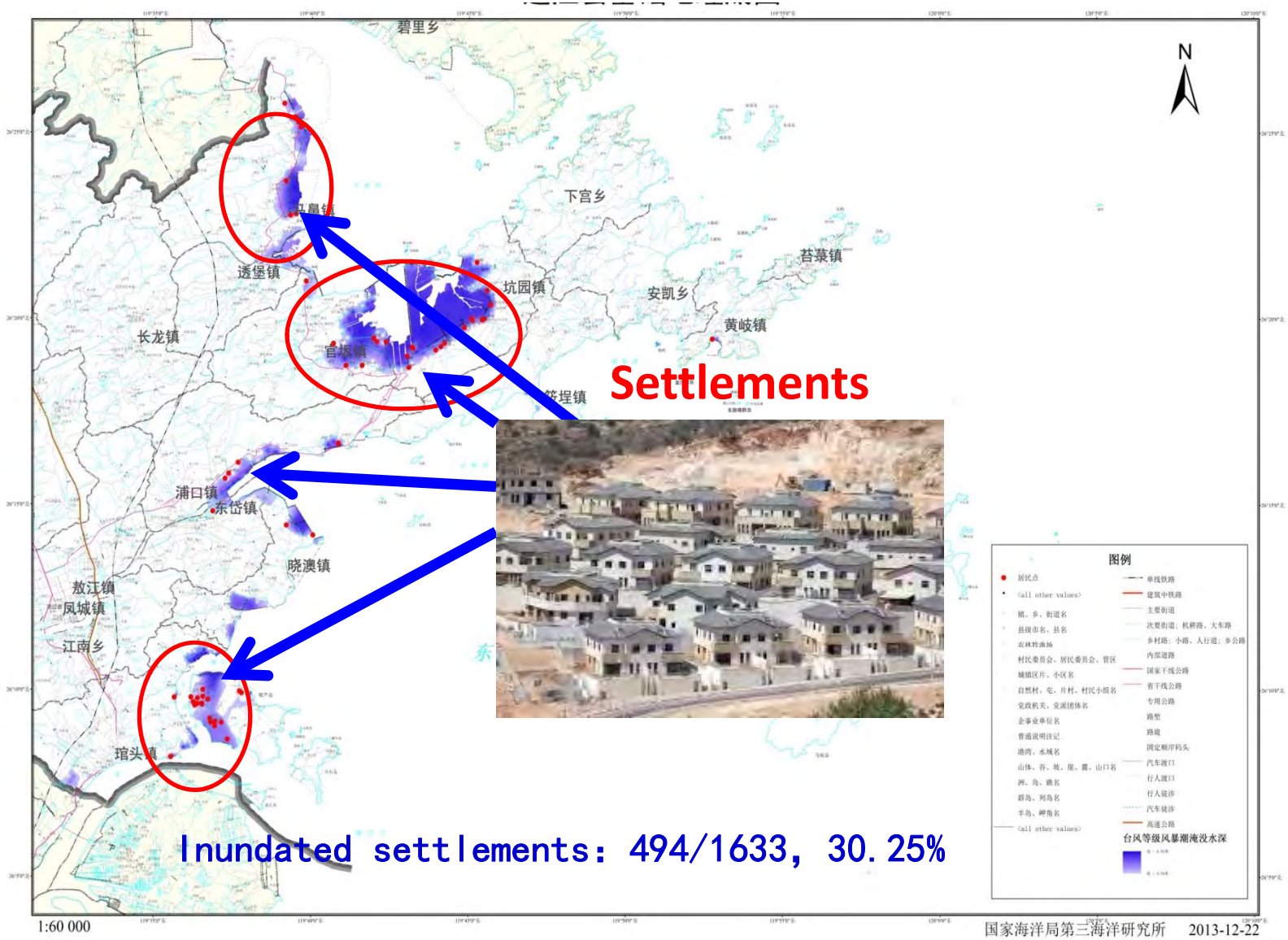
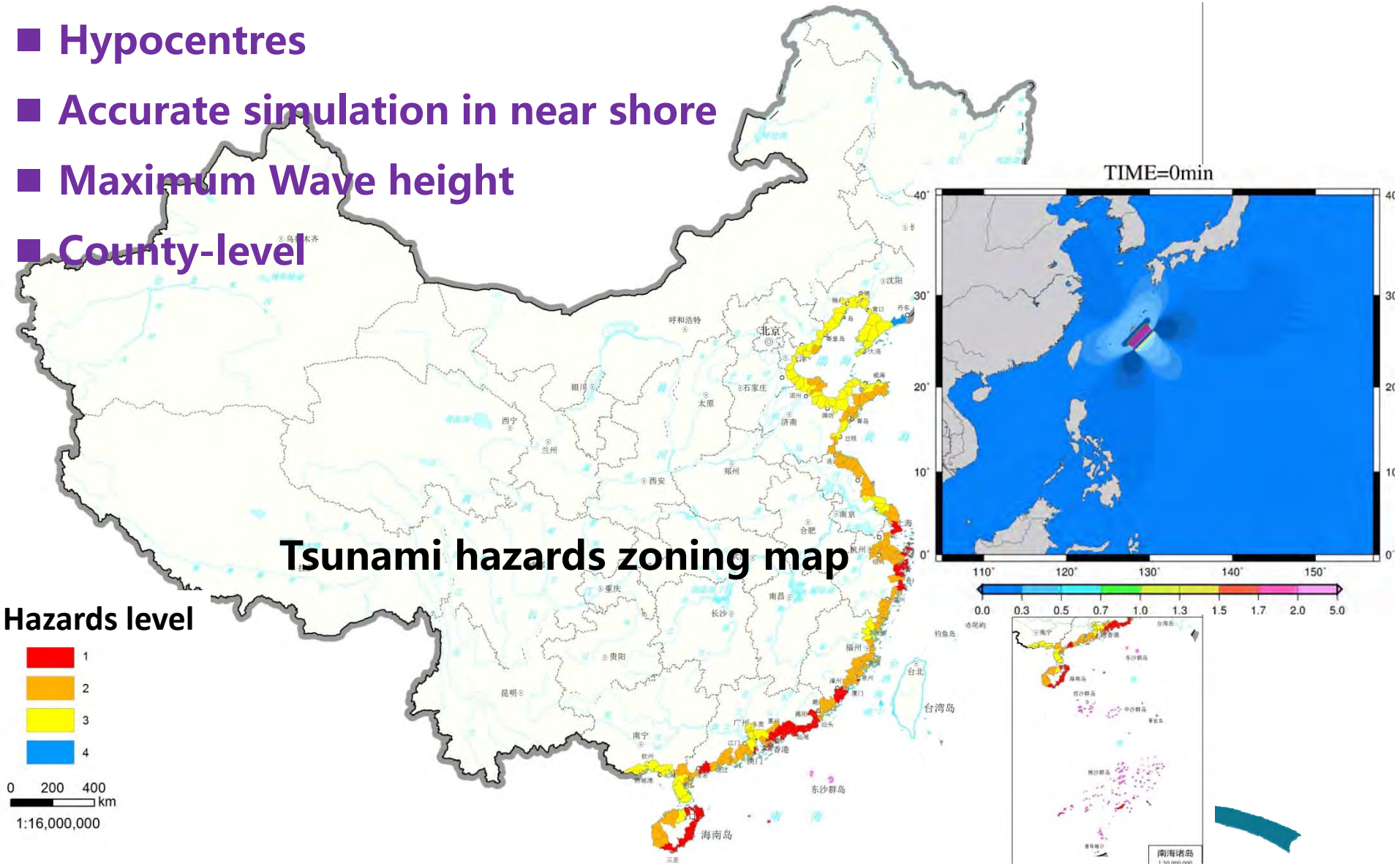


2.2 Tsunami disaster risk zoning

- Hypocentres
- Accurate simulation in near shore
- Maximum Wave height
- County-level



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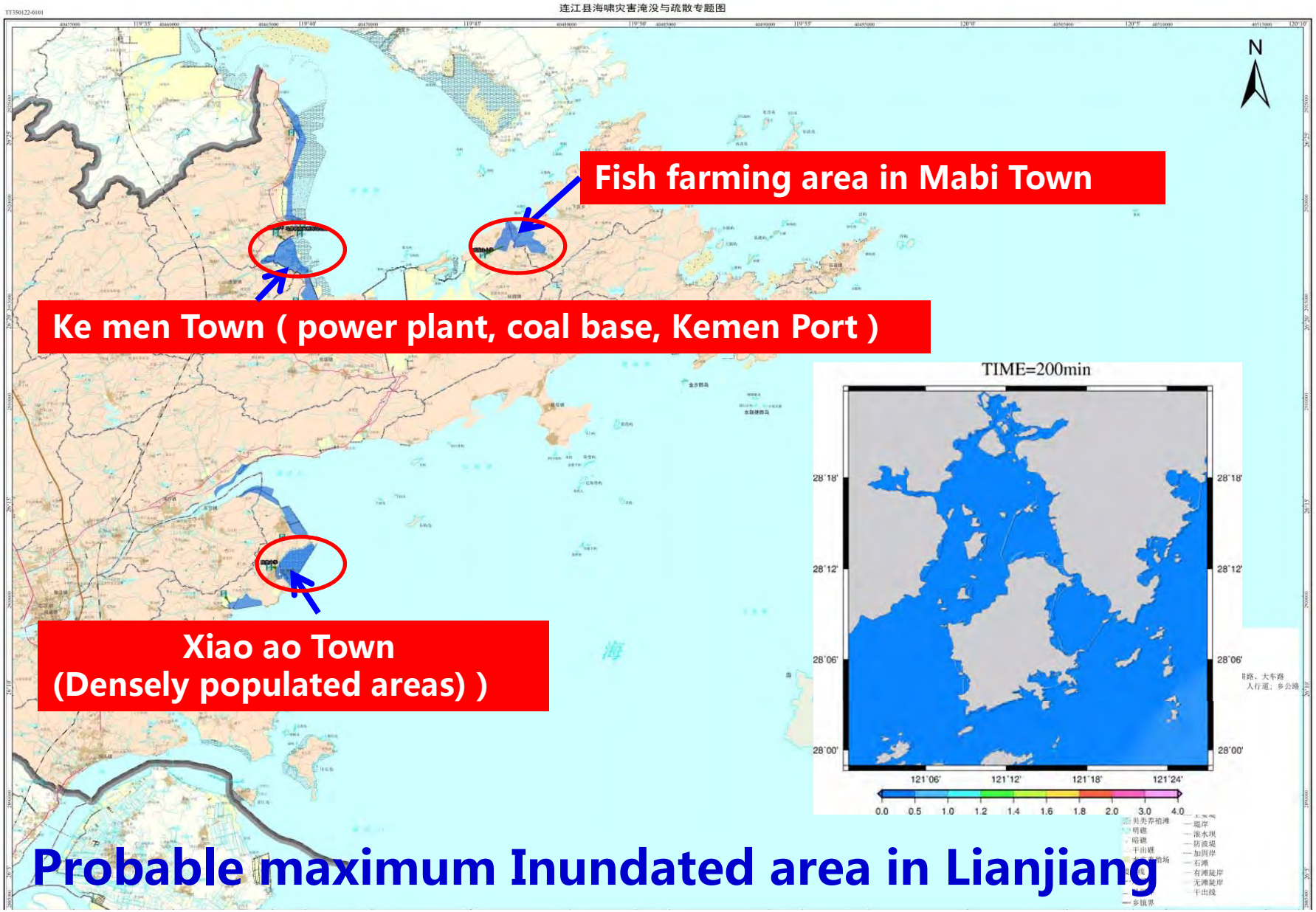
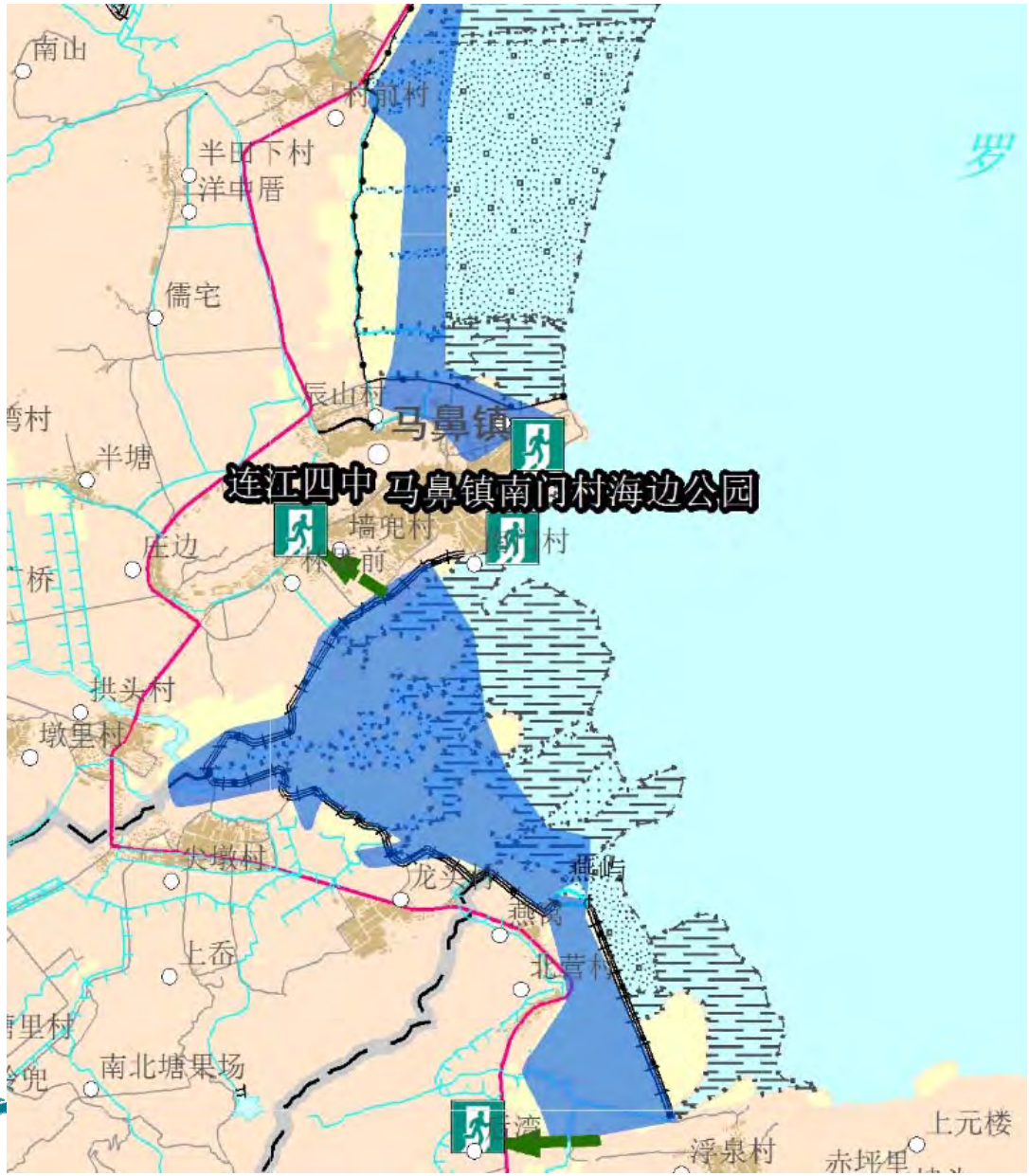


2.2 Tsunami disaster risk zoning

Large scale evacuation route map:

■Probable maximum inundated areas

■Shelters distribution



3.Intent cooperation

'3.11'earthquake Tsunami

We are facing tsunami disaster.....

3.Intent cooperation

We are facing storm surge disaster……

3.Intent cooperation

What shall we do

- Storm surge disaster risk analysis technical cooperation
- Tsunami disaster risk assessment in South China Sea
- ……

Thank you !