

# Progress Report on Flood Hazard Mapping in China

For the Third East and Southeast Asian Regional Seminar on Flood Hazard Mapping

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February, 2009

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## Item A: FHM-related situation in China

### A-(1) Current/target situation of FHM in China

#### (1)-1 Current stage of FHM in China

It is a little difficulty to say which single stage China's FHM is in currently. For the FHM work conditions differ from south to north and from the seaside area to inland area. In 2004, we launched pilot work in seven major river basins. Altogether 36 pilot areas participated this work. More than 300 flood hazard maps were made for those pilot areas. Taking reference to this pilot work, most maps were of type D or type F and some were of type E. The conclusion, however, can't be extended to the whole country cause that the pilot areas that we chose have better work conditions (such as long-term hydrologic data, etc). If the work of FHM is carried out in the whole country, I think the total stage maybe in stage C or D.

#### (1)-2 Outline of current situation in China

Generally say, FHM is still in pilot stage in China .But the pilot products have been put into usage in pilot areas.

By the end of 2007, the first stage of FHM pilot project was finished. Thirty-six pilot areas including 12 sections important river dikes, 9 cities, 9 flood detention areas and 6 reservoirs. More than 300 flood hazard maps were finished and were taken into use in those areas. Two technical files were issued to the pilot areas to guide and coach this work. And two training seminars were held in province of JiangSu. Two technical examinations were held in ShangHai and ChangChun.

In 2008, the second stage of FHM pilot projects was launched. Another 18 pilot areas were selected including cities, flood detention areas, reservoirs and important river banks. The second stage pilot project is supposed to be finished in 2010. Accompanying with FHM in those areas, two technical files are planned to be modified or to be written. One file is flood hazard mapping guideline and the other one is flood hazard mapping technical handbook.

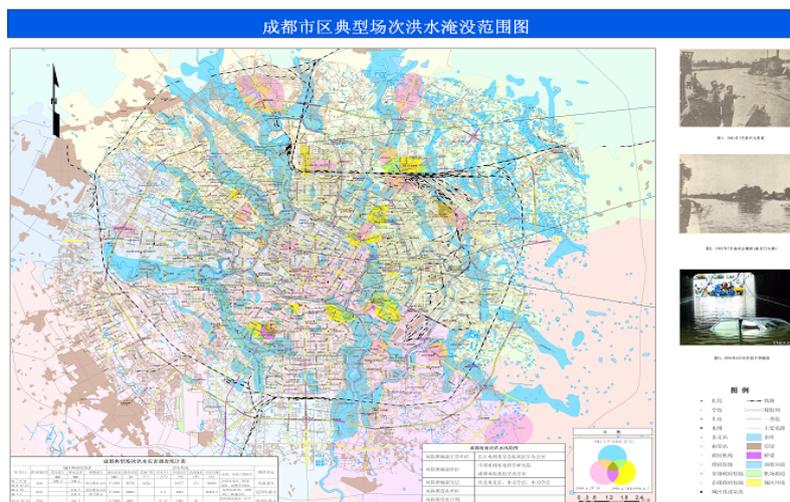
The purpose of carrying out pilot projects is to gain experiences for making, using, modifying and management of FHM.

(1)-3 Good practices of FHM

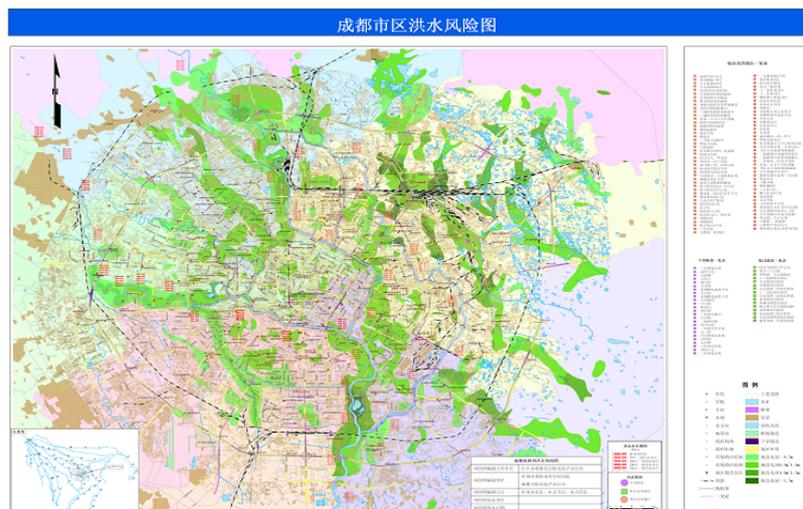
Example 1: FHM practices in ChengDu city.

ChengDu city is the capital of SiChuan province which is located in southwest China. City area is 598 squared km. City population is 10.6 million. ChengDu city is an important finance, trade, culture center and traffic, communication hub for southwest China. Chengdu FHM project was launched In 2005 and was finished in 2007.

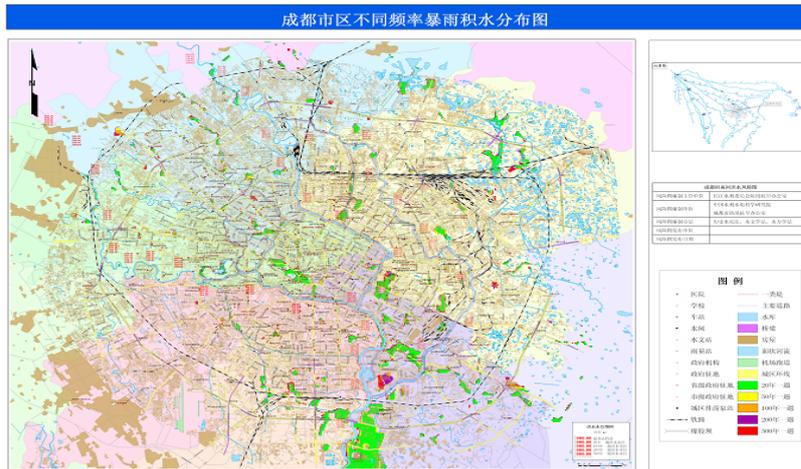
Type E: Past inundation areas based on simulation for ChengDu city  
(several past floods)



Type E: Past inundation area based on simulation for ChengDu city  
(several past floods)



Another type: Seeper distribution map based on simulation  
for different frequency rainfall



Example 2: FHM practices in Eenzhou city.

Wenzhou city is located in east China. It is often attacked by typhoon from west Pacific Ocean. So FHM for Wenzhou city mainly considered rainstorm caused by typhoon.

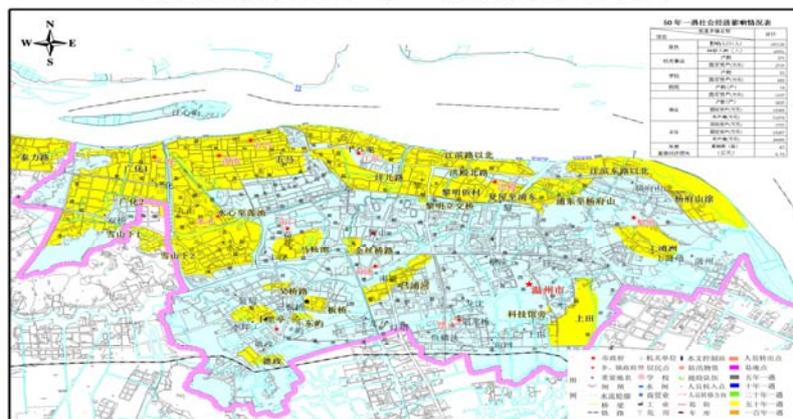
Type C: Past inundation area of a single past flood  
(Caused by No. 0505 Typhoon Fera)

2005年5号台风“海棠”温州城市受淹图



Type F: Once in 50 years flood inundation area based on simulation

温州城市五十年一遇洪水风险图



#### (1)-4 Target/necessary stage of FHM in China

In my opinion, the perfect target stage of FHM in China is stage G in which stage indication forecast is realized by real time analysis and FHM play a more important role in flood defending and disaster deduction than now. But it is not the necessary stage or type currently. The necessary stage we need now is stage C or D which is easier to make and also can be used for disaster deduction.

#### A-(2) FOR making of FHM

##### (2)-1 Institutional situation for making FHM

I am sorry to say that we still don't have FHM-related law by now. To local governments we don't have a restriction to clear their obligation on FHM. To finance department we can't apply budget for FHM every year. To the technical department we can't get data for free. To the public we lack a measure to regulate the underlying problems by issuing FHMs. So the absence of FHM-related law is a big obstacle to popularize FHM in China.

Currently, FHM in China is impelled by the Ministry of Water Resources (MWR). The Office of State Flood Control and Drought Relief Headquarters (OSFCDRH) is responsible for carrying out FHM-related work. The technical support organizations at central level are China Institute of Water resources and Hydropower Research (IWHR) Water resources administrations and the offices of flood control and drought relief headquarters at each level are the responsible organizations. Water-related research or design institutions and colleges are technical organizations. Thus formed the FHM system.

Table 1 FHM Organization System

Administration level	Responsible organization	Technical organization
Central	MWR, OSFCDRH	IWHR, GIWP
River basin	Seven river basin administration committees	Water resources research institutions at each river basin, universities...
Province	Water resources administration at province level	Water resources research institutions, universities...
Local	Water resources administration at local level	Water resources research institutions, universities...

##### (2)-2 Hydrological/topographical data situation for making FHM

In China, Hydrological data is in the charge of the Hydrology Bureau which is a composing department of the Ministry of Water Resources. By now, China has set up a set of hydrology measure system consists of more than 1,000 central hydrology measure stations and thousands of local hydrology measure stations. Some stations have been set up for more than 100 years and have long term hydrology data while some others, especially those in some small river basins, only have several years' history. Long term hydrology data are not free for the public even for public affairs such as FHM. FHM organizations need to buy data from hydrology department. Situation of topographical data is almost the same with hydrological data.

##### (2)-3 Problems for making FHM in China

Lacking of basic datum is the biggest obstacle for making FHM in China. Hydrological data, topographical data, large scale digital map are in the charge of different government departments. These data are not free for the public.

Flood risk's rationality is hard to validate. In some cases, the simulation inundation results are quite different with the actual situation especially when topographical data are not renewed in time. It is time taking to validate and revise.

Focusing more on possible flood calculation or simulation. Most FHMs that were finished in China are of type E or type F. Comparing with type C or type D, they take more time and more money. Type C or type D FHM may be more suitable for most area in China.

Lacking local residents' participants. Current FHM are mainly made by technical organizations. Local residents' participants are not necessarily involved in the process of making FHM.

A-(3) For disseminating/use of FHM

(3)-1 Institutional situation for disseminating/ use FHM

Same with (2)-1.

(3)-2 Problems for disseminating/use of FHM in China

No FHM-related law to maintenance authority of FHM. By disseminating FHM, doubt and dissatisfaction will come up with showing flood risk to the public. Local resident may complain that high flood risk will affect the exchange of their estate or will rise up their insurance fee. On the other hand, land use department or insurance company maybe don't agree with the flood risk that FHM shown and refuse to accept FHMs as a reference when make land use plan or make insurance rate.

**Item B: For improvement of FHM research by ICHARM**

**B-(1) For efficient/effective disaster preventions**

(1) Saturation level of TV, radio, internet and newspaper in China

TV saturation (population) is more than 99.3% and closing 100%. Radio saturation (population) is more than 95%. Internet saturation is 12.3% (2007). Newspaper saturation is 75 newspapers per thousand people.

(2) The flow of information related to evacuation in flood

Meteorological forecast or heavy rainfall alert is issued to the public and local flood defending department by local government and meteorological department. Local flood defending departments issue flood or typhoon emergency responses considering meteorological and hydrological real time information. Local governments issue evacuation order.

(3) Awareness level of residents for disaster prevent

In south and east China, flood occur almost every year, residents' awareness of disaster is comparatively higher than residents in north and west China. City residents' awareness is higher than rural area residents'. Developed area is higher than developing area. In some east and southeast provinces, such as ZheJiang, FuJian, GuangDong, HuNan, JiangXi and ShanDong, some villages have appointees or organizations (not special) for disaster alert and evacuation. In coastal areas, people's awareness of typhoon is far higher than before due to the disaster related knowledge

education in school and popularization in public.

**B-(2) Flood hazard map manual made by ICHARM**

No detailed suggestion. If have, may communicated later.