River Administration in Japan

(Integrated Flood Management)

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River Administration

1) Flood management

- River improvement
- Flood control (operation of facilities)
- Flood warning (observe river water level)

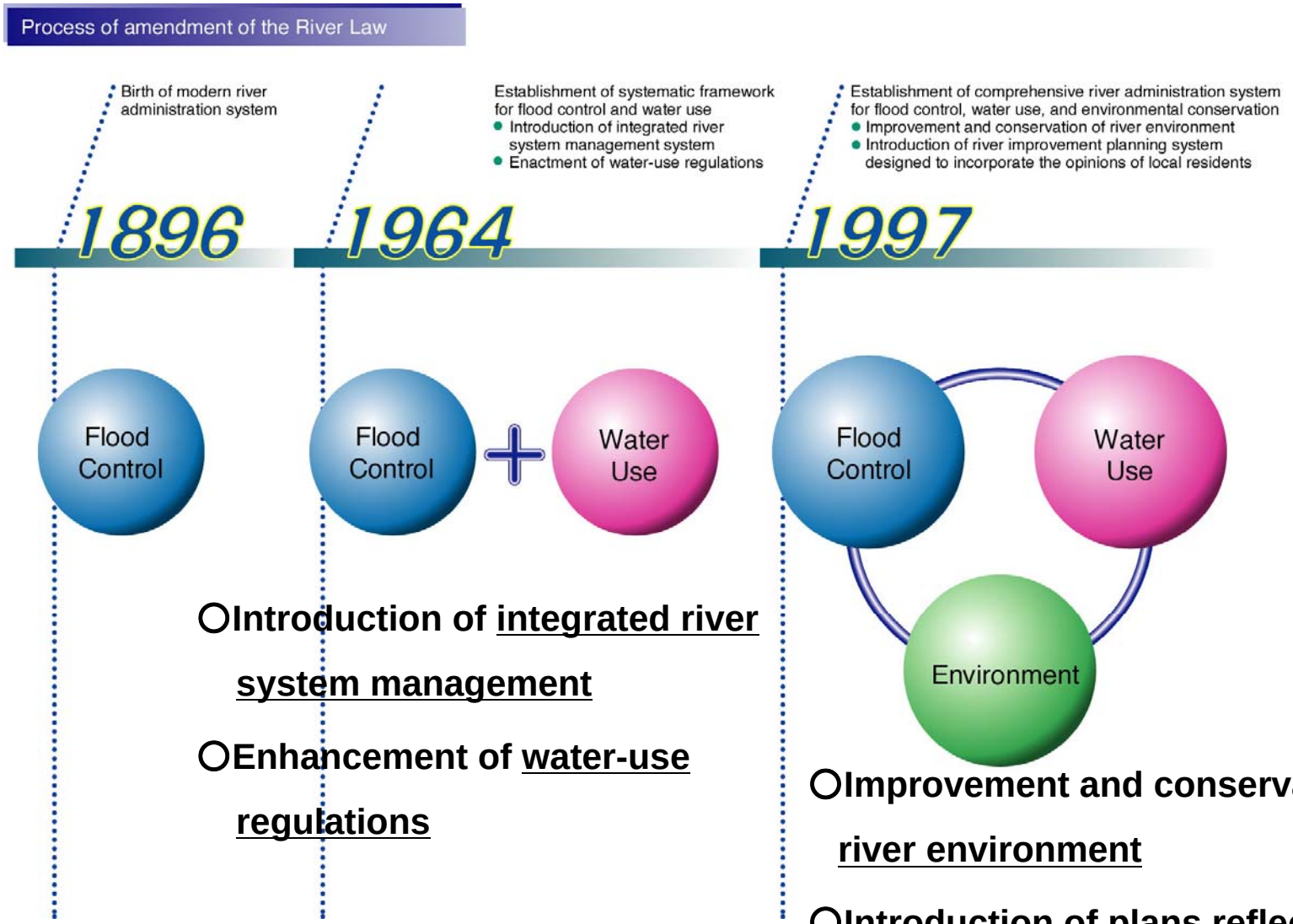
2) River water use management

- Administration of water use right

3) River environment management

- Monitoring the river environment
- Conservation and re-naturalization

Outline of River Law during 100 years



○Introduction of integrated river system management

○Enhancement of water-use regulations

○Improvement and conservation of river environment

○Introduction of plans reflected by public opinions

Water Resources Development

(Mie pref.)

Weirs enable withdrawal of river water

Naramata Dam (Gunma pref.)

Developing lakes to use as reservoirs

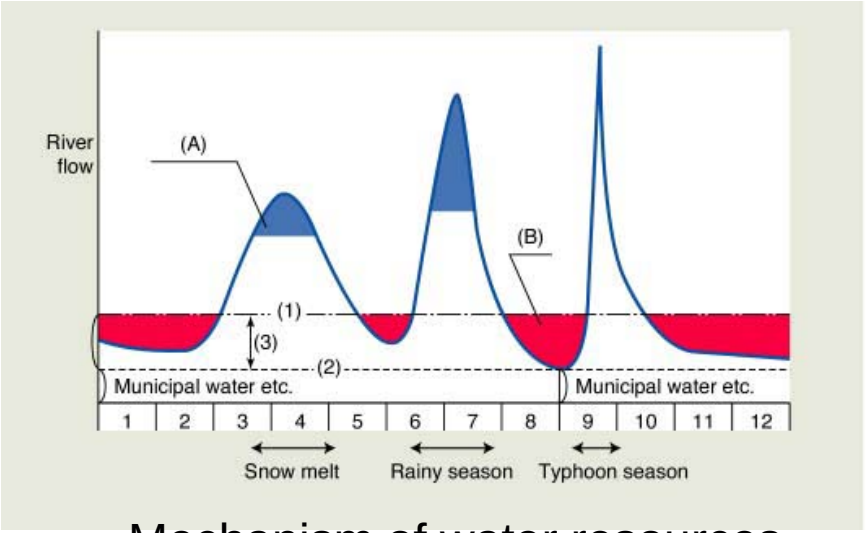
Management of Water Rights

Water right : Rights to continuously and exclusively draw water from rivers

River administrator

Apply ↑ ↓ Grant

Agriculture	Hydroelectric power generation	Drinking water supply	Industrial activities



Mechanism of water resources development by reservoirs

River administrator centrally controls water rights.

Coordination water intake during droughts

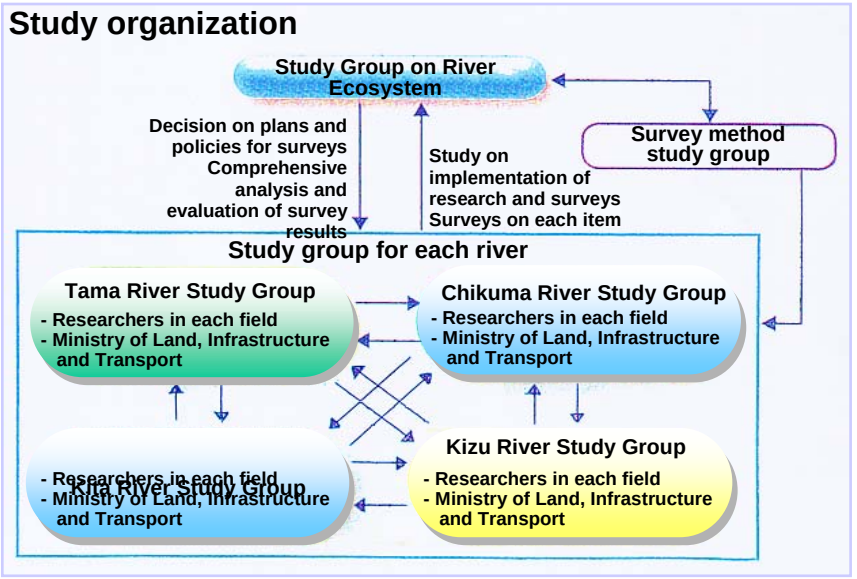
Environment Conservation and Re-naturalization

Before improvement
(December 1992)

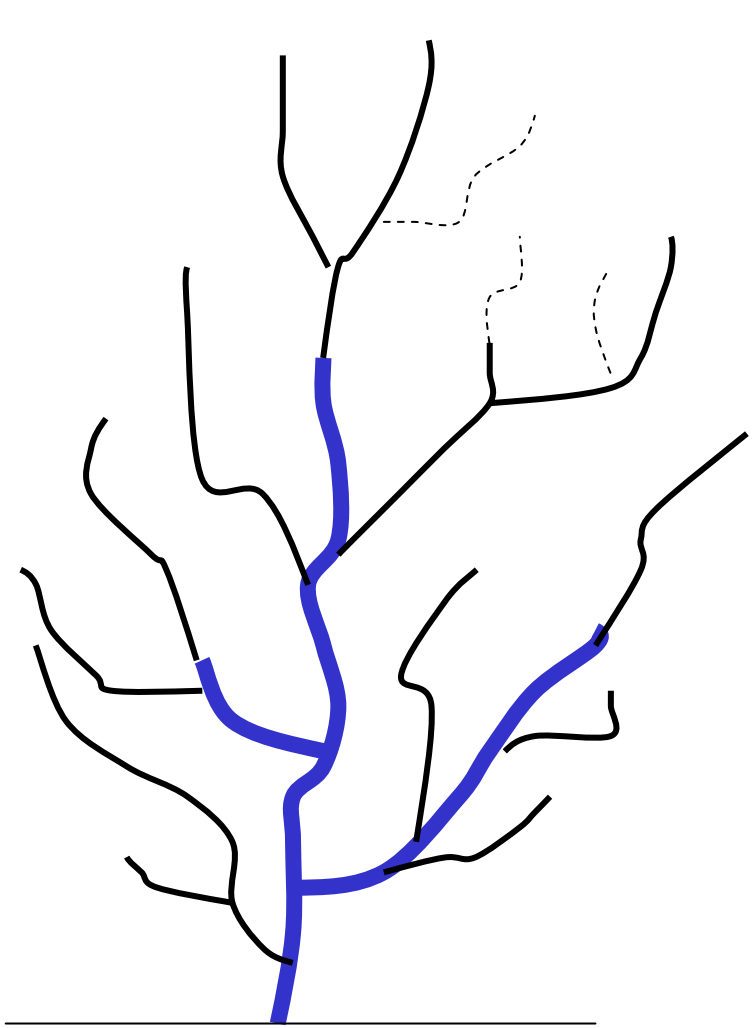
After improvement
(October 1995)

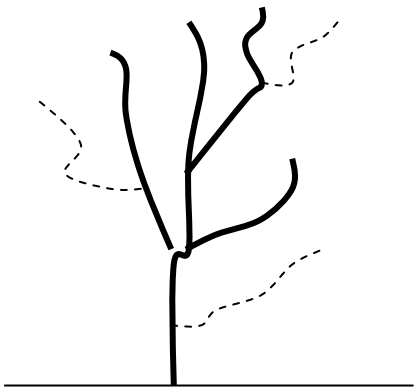
Study on River Ecosystem

The purpose of the study on river ecosystem is to understand the characteristics of rivers from an ecological viewpoint, and explore ways to create proper rivers. In order to achieve this purpose, surveys are being conducted under collaboration of ecologists, engineers, and the national and municipal governments.



Administration at each River System





National Government

Local (Prefecture) Government

City

Class A river system

Class B river system

Others

No. of Rivers in Japan

	No. of River Systems	No. of Rivers	Length (km)		
A :	109	14,000	87,500		
			10,500	National G	(8.5%)
			77,000	Local G	
B:	2,722	7,100	36,000	Local G	
			113,000	Local G	(91.5%)
		Total length	123,500	km	

Budget for river management

RSNG: River section administrated by National G

RSPG: River section administrated by Prefecture G

In 2005

RSNG : ¥ 814 Billion ($ 6.8 Billion) 53 %

RSPG : ¥ 729 Billion ($ 6.1 Billion) 47 %

Total : ¥ 1,543 Billion ($ 12.9 Billion)

* $ 1 = ¥120

Composition of Budget

Ratio of National Government Expense

For river improvement

for RSNG : 2/3

for RSPG : 1/2 , 1/3 (Subsidy)

for Big project : 3/4

For maintenance for RSNG : 5.5/10

River Administrator

MLIT has approx.100 River Administration Offices.

47 Prefectures
Each Prefecture Government has
approx.10 Infrastructure Administration Offices.
Total approx.500 Offices.

Tasks of River Administrator

1) Flood management
2) River water use management
3) River environment management

Activities of River Administration Offices

- Observe rainfall, river water level, river water quality
- Research the environment of river and river basin
- Study river improvement and environment
- Plan, design and construct river structures
- Patrol to observe problems of structures, illegal acts
- Administrate use of river area

Flood Management

1) River improvement

Channel improvement (embankment, dredging)

Dam, Retarding basin, Floodway

2) Operation of Flood Control Facilities

Dam, Sluice gate, Pumping station

3) Warning of flood

Observation of rainfall and river water level

Estimation of river water level

4) Provide the information for damage mitigation

Publication of Hazard Maps

System for Planning River Improvement 1

Basic River Management Policy

Social Infrastructure Council

- Basic policy on flood control measures, water use and environment conservation
- Unregulated peak discharge on target level
- Design flood discharge

River Improvement Plan (for 20 ～ 30 years)

Persons experiences or academic standing

Reflection of local opinions through public hearing

Governor of local government

- Flood control facilities (Dam, Retarding Basin)
- Embankment, bank heightening, river widening, dredging, bank protection, pumping station, etc.

System for Planning River Improvement 2

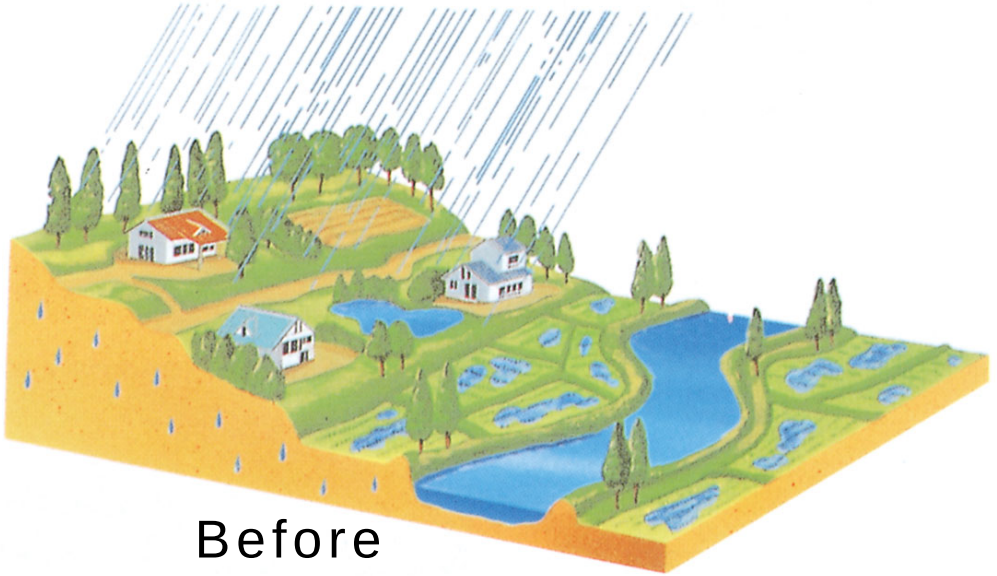
River Improvement Plan of each project implemented by local government

Local governments discuss plans with MLIT

MLIT approves the plan

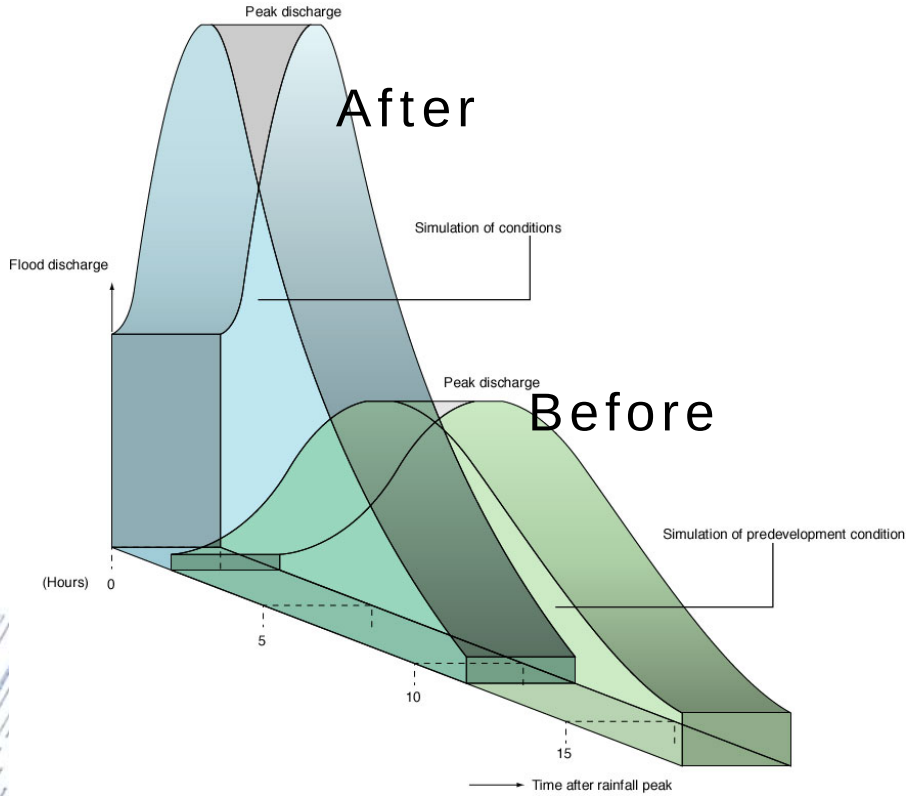
- Flood control facilities (Dam, Retarding Basin)
- Embankment, bank heightening, river widening, dredging, bank protection, pumping station

Changes in Run-off Flow due to Changes in Land Use



Before

After



Comprehensive Flood Management Measures

River improvement, Damage mitigation measure and Runoff Control in Basin

Retention areas

- Maintenance of controlled urbanization districts
- Conservation of nature
- Construction of reservoirs and regulating basins
- Installation of permeable pavements and seepage sumps

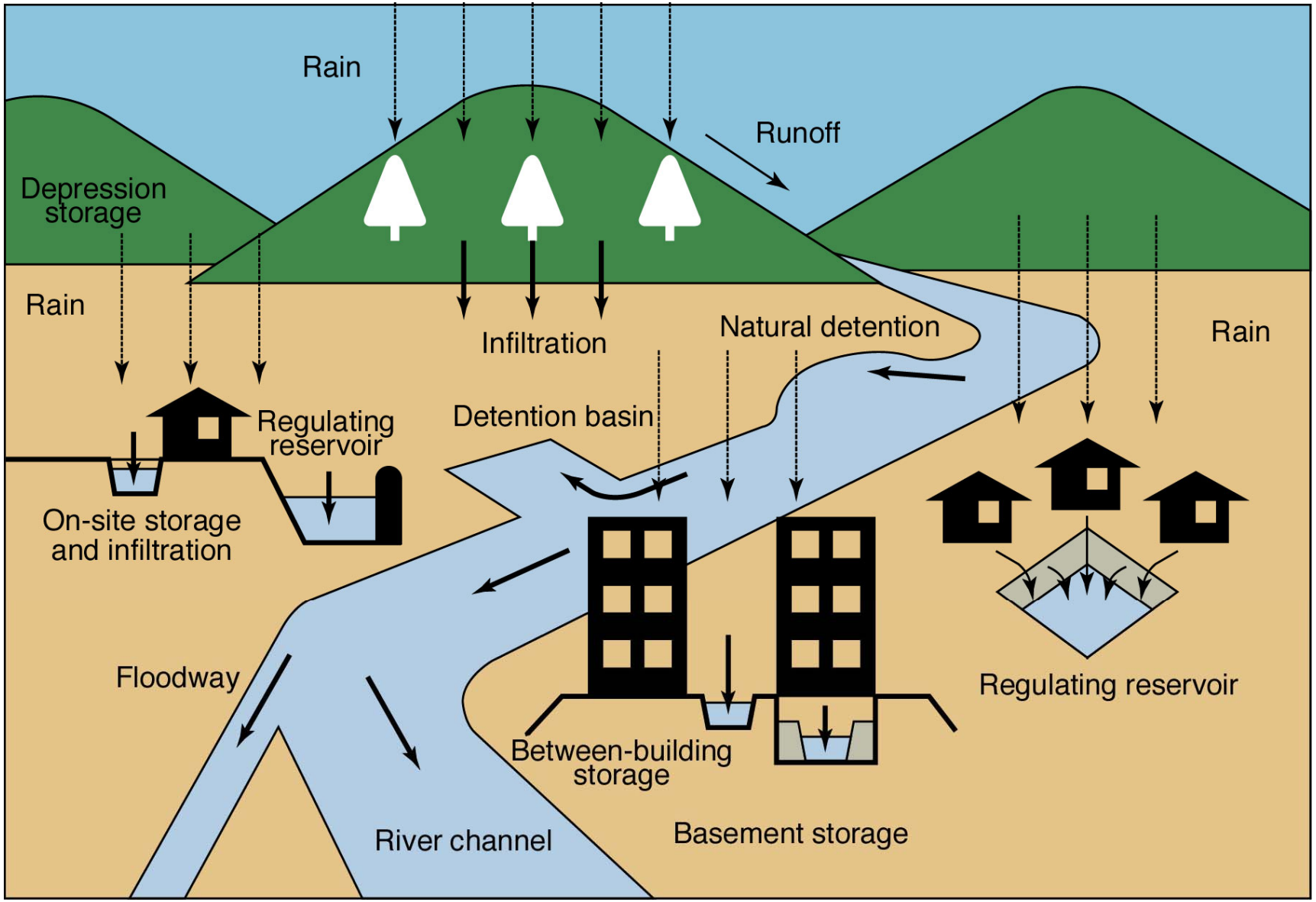
Detention areas

- Preservation of urbanization control zones
- Control of landfill
- Promotion of conditions favorable to agricultural activities

Low-lying areas

- Development of drainage facilities
- Construction of storage facilities
- Encouragement of use of flood-proof buildings

Concept of Comprehensive Flood Control



Example of Implementation 1

■ River Measures

Multipurpose retarding basin

The Yokohama International Sports Stadium

In order to avoid hindering flood control capacity, the piloti method (elevated-floor style) has been incorporated in the construction of the Yokohama International Sports Stadium.

Example of Implementation 2

■ River Basin Measures

Outflow Control Facilities

The Kirigaoka Regulating Reservoir

The storage function of the adjusting pond and the filtering of the well serve to both control outflow and process the drained water

The Kirigaoka during Flooding

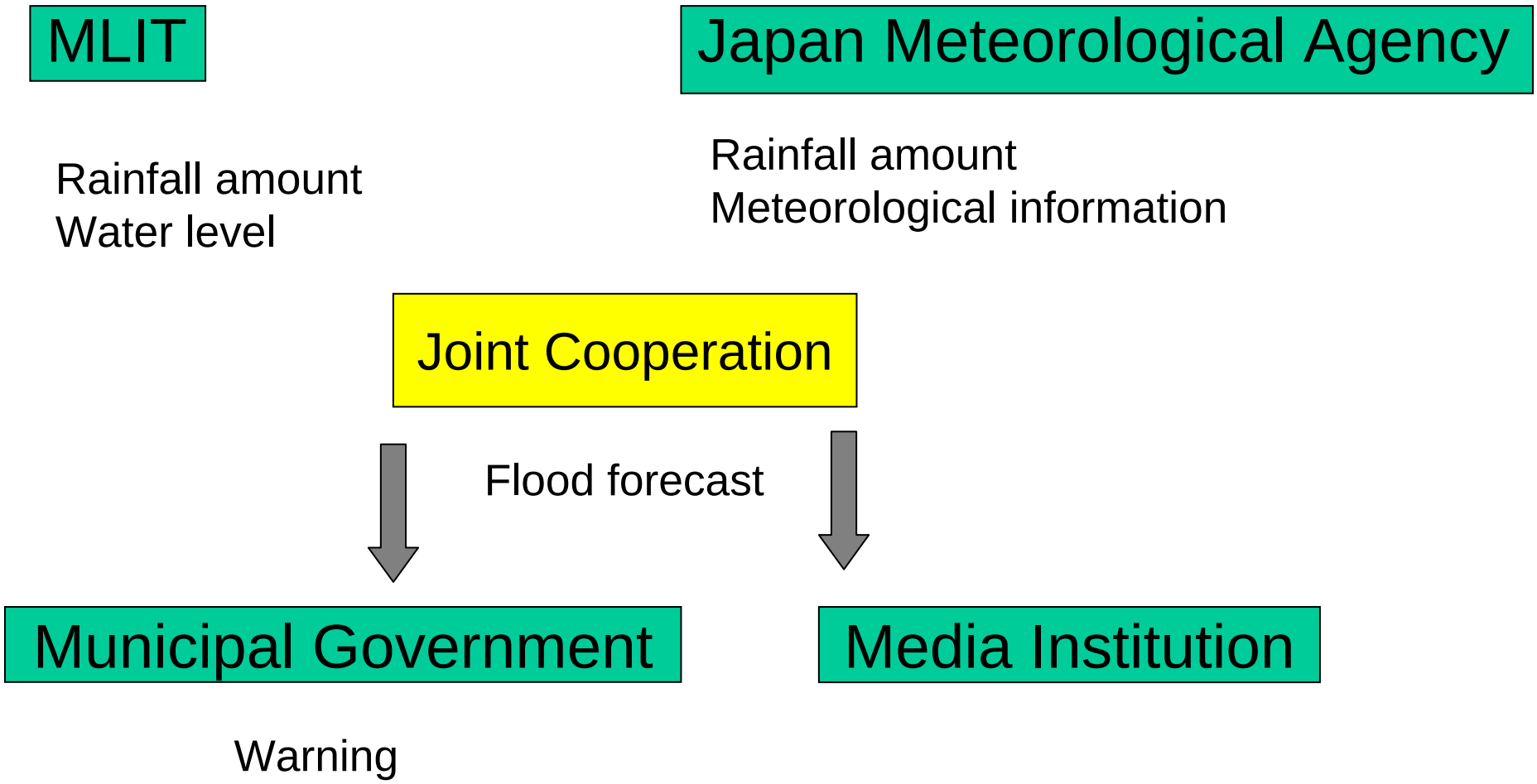
Example of Implementation 3

■ River Basin Measures

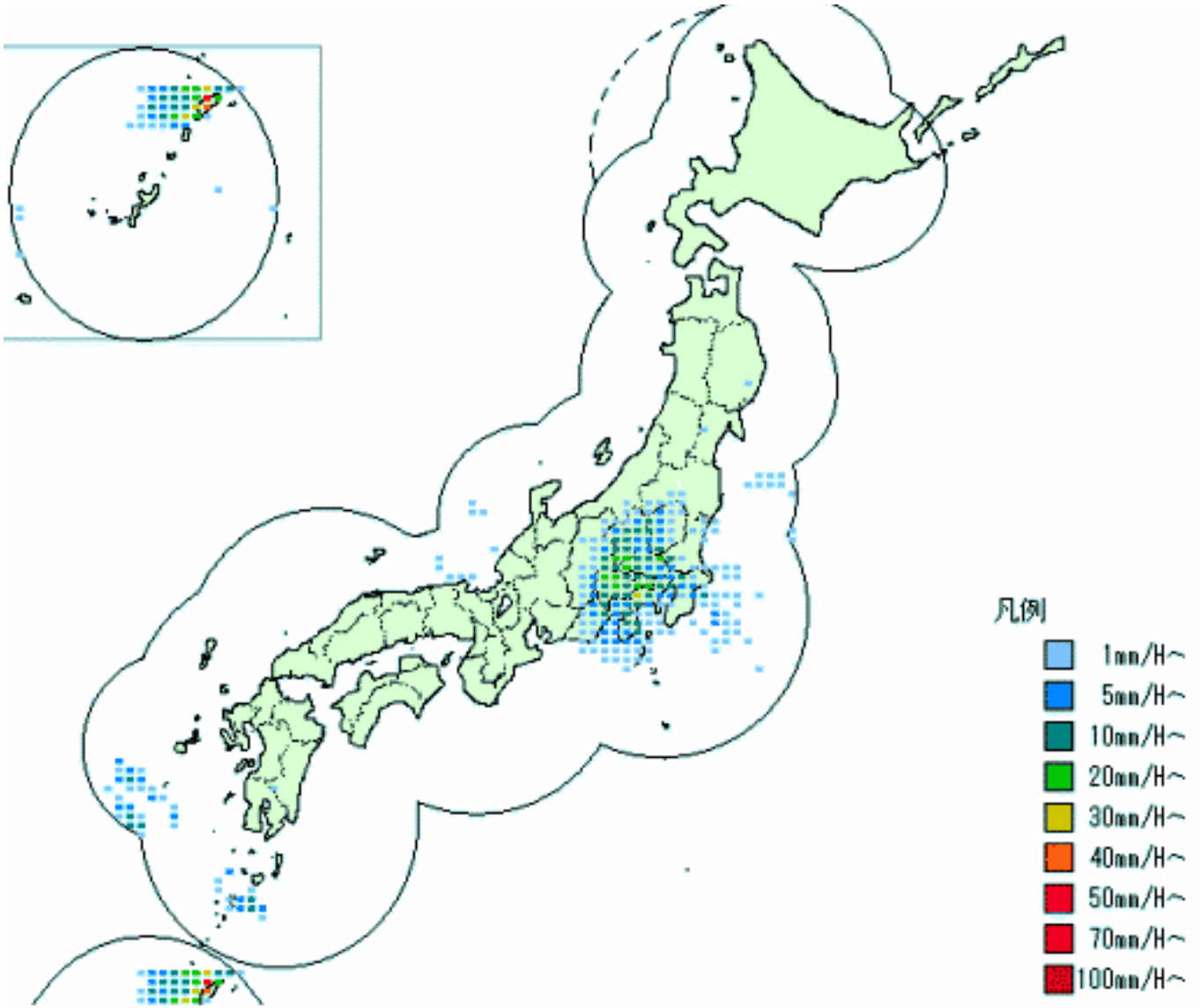
Piloti Style (Elevated-Floor) Construction

The piloti method (elevated-floor style) is used to minimize damage even if the building is inundated.

Flood Forecasting and Warning



Rainfall Radar System

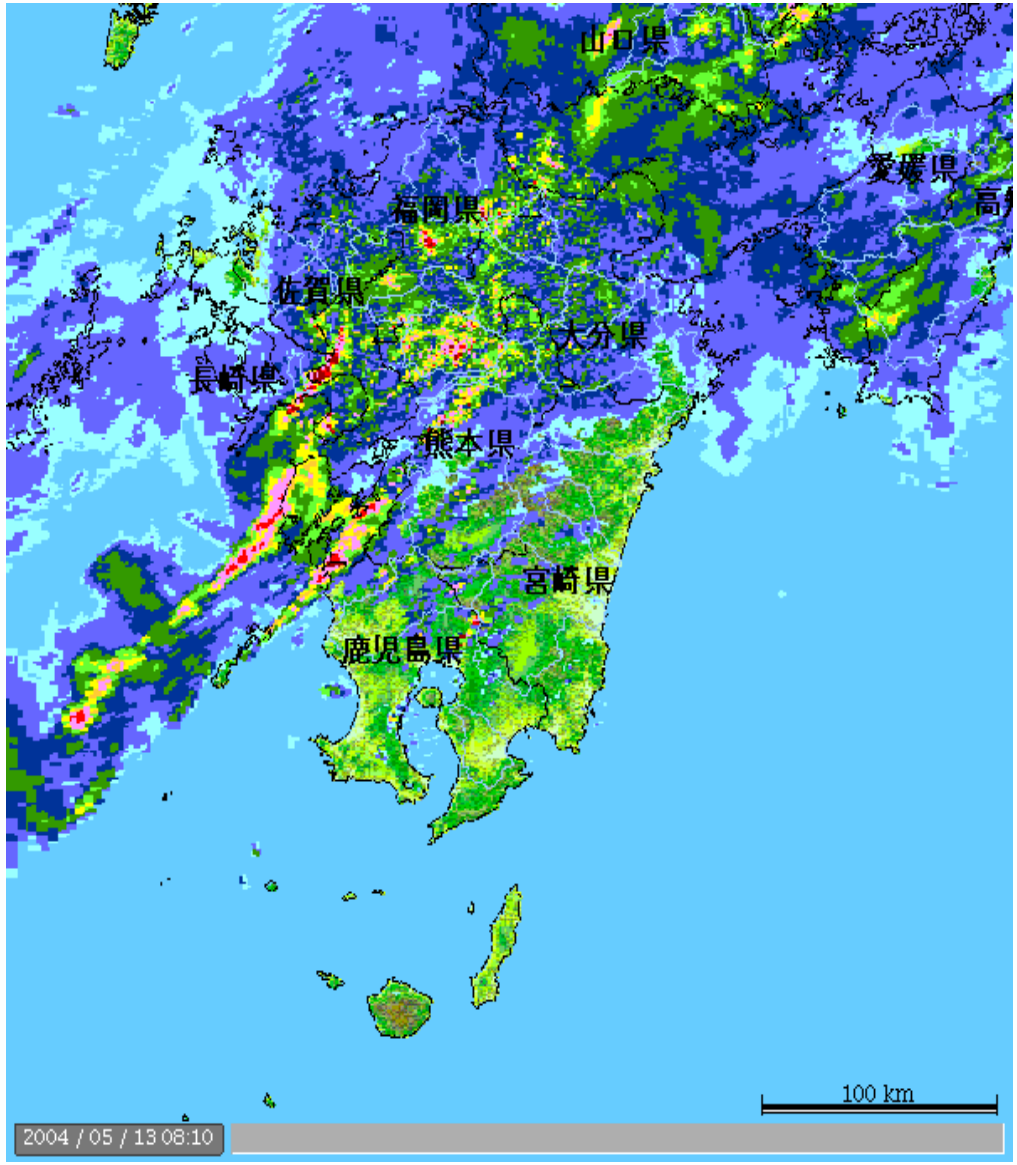


国土交通省統一河川情報システム - Microsoft Internet Explorer

雨量レーダ履歴動画

更新時刻 2004年05月13日 14:16

メニュー | 画面選択 | 現況レーダ雨量 | 累加レーダ雨量 | 雨量レーダ履歴動画 | 雨量レーダ履歴4分割 | レーダー予測動画 | レーダー予測4分割 | ヘルプ



開始時刻 表示 移動刻み 5分

< 2004年5月 13日 8時 10分 >

終了時刻

< 2004年5月 13日 14時 10分 >

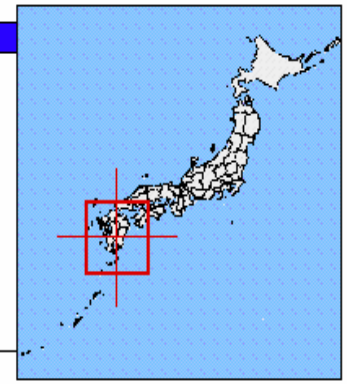
表示間隔 10分

九州地方

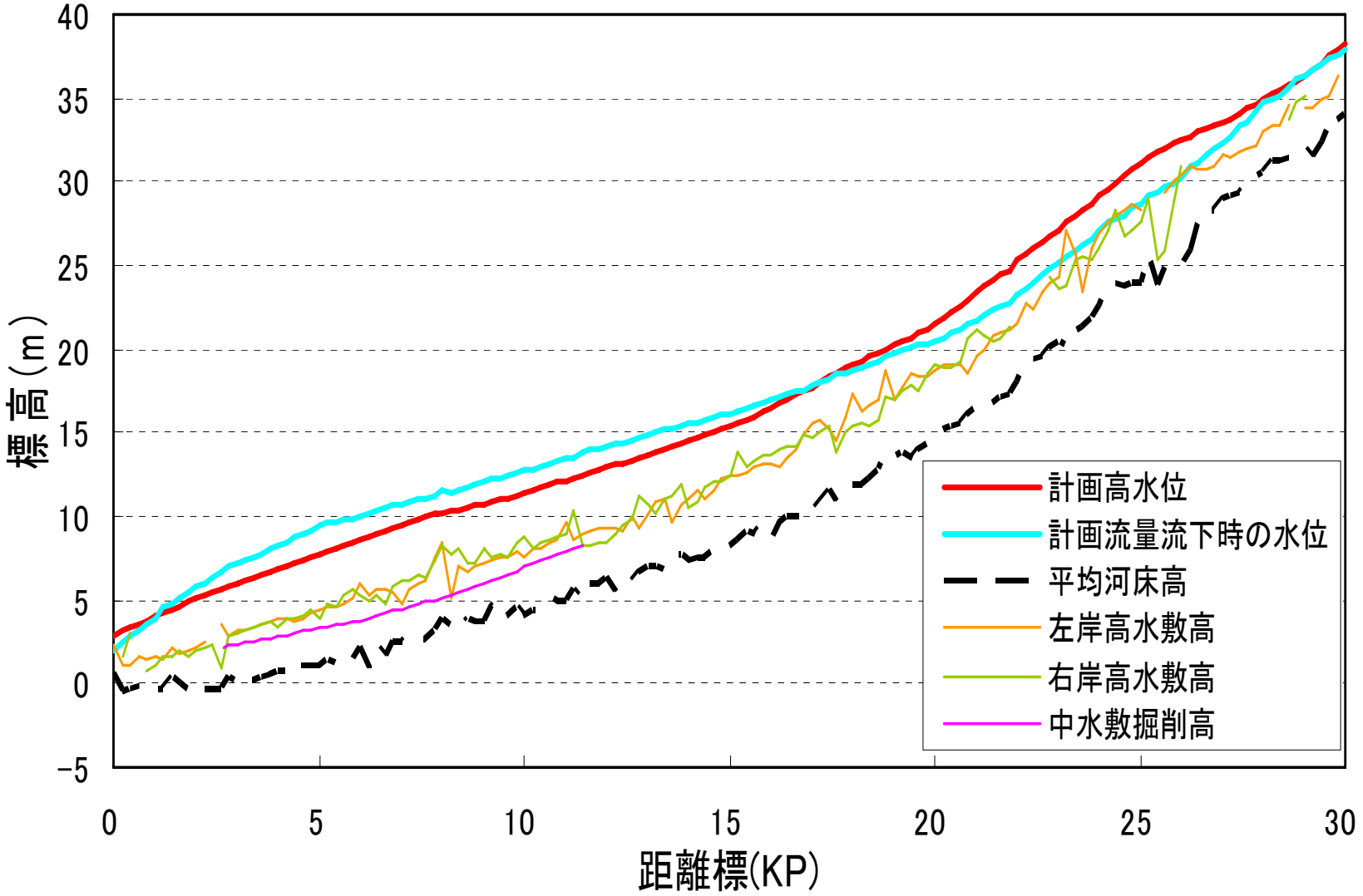
河川名
行政名称
道路・鉄道

雨量凡例

- 100mm～
- ～100mm
- ～80mm
- ～50mm
- ～40mm
- ～30mm
- ～20mm
- ～10mm
- ～5mm
- ～1mm
- 0mm
- 欠測



Estimation of Water Level



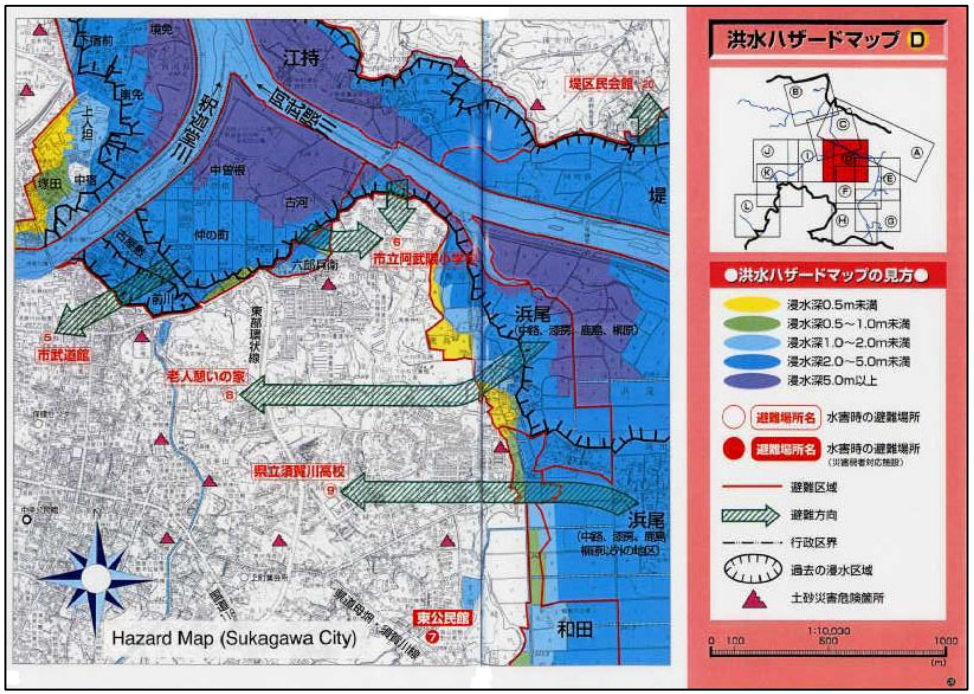
Provision pictures of flood situation

Dissemination of River Information by Mobile Phones

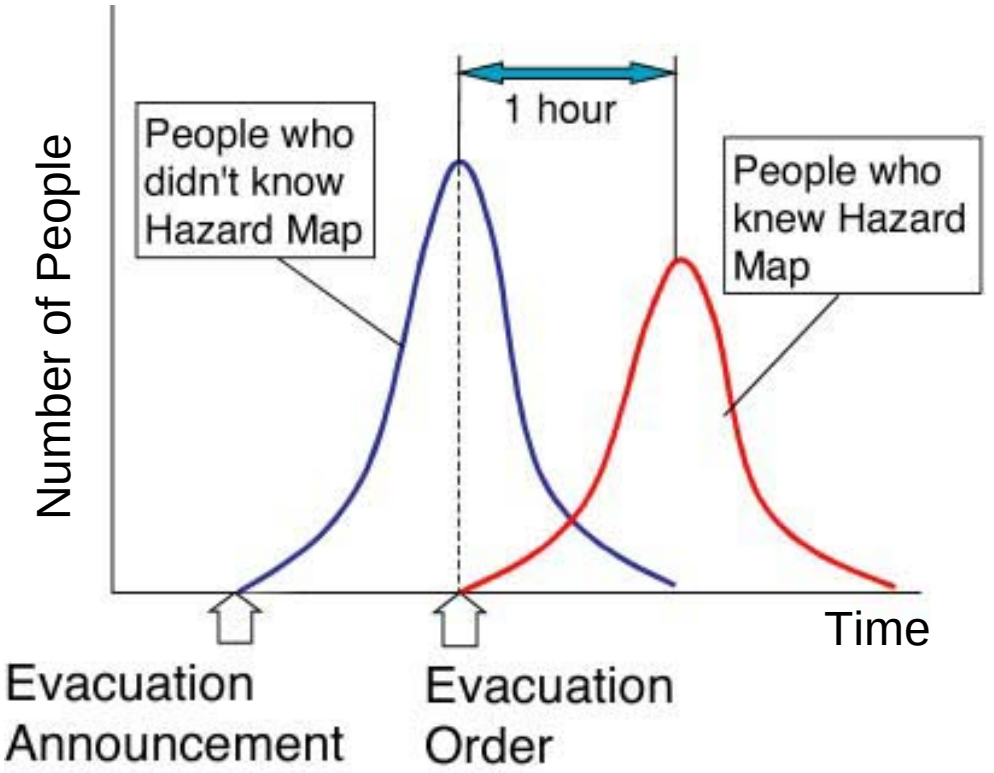
Provide various information to the general public

Speed up flood control activities

Hazard Map



People who have seen hazard maps start evacuation about one hour earlier than those who have not



Flood Fighting

Activities of Flood Fighting bodies

Mayer → Flood Fighting bodies

order

temporarily bank protection

3,250 bodies 950,000 people

Restoration works

Municipalities, Prefectures and MLIT
survey of damaged structures

- report the estimation of restoration cost to MLIT
  MLIT reports the estimation to MOF
  - MLIT & MOF assess the estimation
    - MOF set up the supplementary budget

Integrated Flood Management

1) River improvement
2) Cooperation for runoff control in basin
3) Operation of Flood Control Facilities
4) Warning of flood
5) Provide the information for damage prevention
6) Flood Fighting

In Japan
River administration Offices
Staff of them work as River Administrator