

Flood Fighting Act of Japan

- * Law No. 193 of June 4, 1949, Specific to Flood Fighting
- * Corresponding to **frequent flood disasters** at that time caused by deteriorated forests and rivers as well as repeated attack of large typhoons
- * Main objective of the law is to organize activities for emergency and temporary earth works to supplement flood protection works or river banks and to control flood-water. However there may be some parts of the legislation, such those foras warning, evacuation, or exercises, useful for improvement of flood fighting in the Study Area.



Flood Fighting Act of Japan

- * Some parts of plans under the law by each prefecture or municipality can also be a good reference for institutional arrangement for flood fighting in Morocco.
- * There are **many by-laws, regulations and decisions** which supplement and explain the law as well as give criteria for flood fighting.
- * **Municipalities where flood damages are serious have each plan for flood fighting and revises every year after the evaluation of results of flood fighting activities and exercises** carried out almost every year.
- * Targets of the law include high tides, often occurs at times of typhoons in Japan



VIII. INSTITUTIONAL SETUP

Flood Fighting Act of Japan (1/10)		
Item	Article	Morocco
Responsibility of flood fighting – Mayors or Head of Flood Fighting Union	3.1	ORSEC Plan)
Establishment of Flood Fighting Union - by two or more municipalities	3.2	--
Responsibility of the Prefecture – to coordinate, promote and ensure flood fighting by municipalities or the unions	3.6	ORSEC Plan)
Designated Flood Fighting Management Body – by Governor of the Prefecture (in important areas)	4	--
Establishment of Flood Fighting Corps – Fire Fighting Brigade can substitute and assist.	5, 6.1	--
Compensation to members of Flood Fighting Corps	6.2	--
Flood Fighting Plan by the Prefecture and Designated Management Body – to ensure and to coordinate the flood fighting. Legal Obligation of the Governor, subject to Approval of the Minister of Construction, reported to the Head of National Fire Fighting Agency	7	Partial (ORSEC Plan)

Flood Fighting Act of Japan (2/10)		
Item	Article	Morocco
Prefectural Flood Fighting Council – deliberative body for Flood Fighting Plan, chaired by the Governor	8	--
River Watch (Patrol) – at ordinary times, by flood fighting bodies, dangerous places, if found should be reported to the river manager, demanding countermeasures	9	similar (MOE Guide)
Issuance Flood Forecasting – 1. by the Head of Meteorological Agency with Meteorological Observation, to be notified the Minister of Construction and relevant Governors, to be disseminated to the Public through Mass Media (broadcasting agencies, news paper companies and news agencies) 2. by the Minister of Construction in cooperation with the Head of Meteorological Agencies, regarding designated the rivers of economic importance, to be noticed to relevant Governors with Water Level or Discharge Volume, to be disseminated to the Public through Mass Media	10.1	similar (MOE Guide)

VIII. INSTITUTIONAL SETUP

Flood Fighting Act of Japan (3/10)

Item	Article	Morocco
Notifying Flood Forecasting – by Governor to the responsible persons of Flood Fighting and of water gauges when a Flood Forecasting is noticed, according to the Flood Fighting Plan	10.2	MOE Guide
Notifying Water Level – by the responsible persons of flood fighting or of water gauges when water level surpass the level determined by the Governor after Flood Forecast Notice or the person knows the possibility of a flood. to the relevant persons according to the Flood Fighting Plan	10.3	--
Flood Warning – 1. by the Minister of Construction for <u>designated rivers</u> of economic importance to be noticed to relevant Governors, the Governors should notice to the responsible person for flood fighting and related organizations 2. by Governors for the other designated rivers notice to the responsible person for flood fighting and related organizations	10.4	partial (MOE Guide, ORSEC Plan)



Flood Fighting Act of Japan (4/10)

Item	Article	Morocco
Staffing of Flood Fighting Corps and Fire Fighting Brigade – The responsible person shall arrange personnel for flood fighting, to assign activities or to let personnel to be ready, when the person receives the warning, when water level exceeds the a definite level as determined by the Governor, or when the person deems necessary.	10.5	ORSEC Plan
Priority Passage – Any vehicles shall give ways to vehides with the marks determined by the Governor.	11	unknown
Right of Passage – Personnel for flood fighting can pass roads or vacant lands even they are not public.	12	unknown
Flood Fighting Signals – The Governor shall determine the signals for flood fighting. No persons are allowed make similar sounds without flood fighting purposes.	13	unknown



VIII. INSTITUTIONAL SETUP

Flood Fighting Act of Japan (5/10)		
Item	Article	Morocco
Warning Area – Personnel for flood fighting can designate warning areas and can prohibit or restrict entrance of other persons, or command to leave. The Police can execute the same with the request of the personnel or when no persons are available.	14	unknown
Assistance by Police The responsible person for flood fighting, if deemed necessary, can ask for police assistance to the head of the Police.	15	ORSEC Plan
Assistance The responsible person for flood fighting can ask for assistance to responsible persons for flood fighting, mayors or heads of fire fighting brigade of other area. Requested persons should assist as far as possible. The cost of assistance shall be borne by asking entities.	16	ORSEC Plan
Flood Fighting Duties of Residents The responsible person, head of flood fighting corp, head of fire fighting brigade can, if inevitable, let persons living or stating in the area, to engage flood fighting activities.	17	--

Flood Fighting Act of Japan (6/10)		
Item	Article	Morocco
Notice of Collapses During flood fighting, when a river bank or another facility collapses, the responsible persons, head of flood fighting corps or head fire fighting brigade shall notify the collapse to related persons.	18	--
Fighting after Collapse The responsible person for flood fighting, head of flood fighting corps or head of fire fighting brigade shall try to minimize the damage even after the collapses.	19	--
Communication for Flood Fighting Every person shall cooperate for prompt communication for flood fighting. The Minister of Construction, the Governor, the responsible person for flood fighting, the head of flood fighting corps and the head of fire fighting brigade and their delegates can use telecommunication facilities of telecommunication agencies, police, meteorological stations, and railway companies in emergency situations for flood fighting.	20	ORSEC Plan

VIII. INSTITUTIONAL SETUP

Flood Fighting Act of Japan (7/10)

Item	Article	Morocco
Emergency Procurement The responsible person for flood fighting, the head of flood fighting corps or the head of fire fighting brigade can use lands temporarily, procure materials, vehicles and equipment, and deposit works or obstacles, if necessary. The cost to be compensated with current value.	21	--
Instruction for Evacuation The Governor or the delegates and the responsible person for flood fighting can, if deemed inevitable to avoid serious damage of flooding, instruct the residents to evacuate from the areas. The responsible person, in case the person instructs, shall notify the head of the police.	22	unknown
Instruction by the Governor The Governor can instruct to the responsible person for flood fighting, the head of flood fighting corps or the head of fire fighting brigade, in case of emergency necessity.	23	--



Flood Fighting Act of Japan (8/10)

Item	Article	Morocco
Instruction by the Minister The Minister of Construction can instruct to the Governor, the responsible person for flood fighting, the head of flood fighting corps or the head of fire fighting brigade, in case of emergency necessity to maintain the public safety along a river extending to two or more prefectures.	24	--
Flood Fighting Plan Legal Obligation, by the responsible person of a Designated Flood Fighting Management Body, to be discussed in Flood Fighting Council, to be approved by the Governor	25	limited (ORSEC Plan)
Flood Fighting Council to be established in designated flood fighting management body, to deliberate flood fighting plan and other important matters, chaired by the responsible person, members (to be less than 25 persons) – relevant public officials, representatives of related organizations appointed by the chairman	26	limited (ORSEC Plan)



VIII. INSTITUTIONAL SETUP

Flood Fighting Act of Japan (9/10)

Item	Article	Morocco
Flood Fighting Exercises Designated Flood Fighting Management Body shall conduct Flood Fighting Exercise of the Flood Fighting Corps and Fire Fighting Brigade every year .	28	missing
Cost Allocation and Subsidies	32-33	unknown
Accident Compensation of Personnel Engaged in Flood Fighting	34.1	unknown
Awards of the Personnel by the Ministry	34.2	unknown
Reporting on Flood Fighting 1. Minister of Construction, Head of National Fire fighting Agency can order reporting from Prefectures and Flood Fighting Management Bodies. 2. The Governor can order reporting from and Flood Fighting Management Bodies in the Prefecture.	35.1	MOE Guide and ORSEC Plan



Flood Fighting Act of Japan (10/10)

Item	Article	Morocco
Recommendation and Advice Minister of Construction (to Governors and Flood Fighting Management Bodies). Governors (to Flood Fighting Management Bodies) can give recommendations and advises for flood fighting .	35.2	missing?
Submission of Documents and Entry to Lands Governors and the responsible person for flood fighting can order submission of material document for preparation of Flood Fighting Plan and let the officials, the personnel for flood fighting to enter lands, if necessary. The person who enter the lands shall have identification certificate and show when asked .	36	unknown
Adjustment of Jobs of Flood Fighting and Fire Fighting	37	unknown
Penalty	38, 39, 40	unknown



Basic Act on Disaster Countermeasures of Japan

- * Law No. 223 of November 15, 1961, Basic act on disaster fighting covers **disaster prevention, minimizing damages, and restoration**, including natural disasters, such as floods, and artificial disasters.
- * Japan is a country of many disasters. Frequent attacks of typhoon causes, **floods, high tides** and **strong winds**. **Volcano** explosions cause direct damages as well as indirect ones through **debris flow**. **Earthquakes** and **Tsunami** happens many times. Because wooden materials are widely used for housing, **fires** frequently occur.
- * The basic act is the **basis of Flood Fighting Act**, and no contradiction is allowed in provisions of the act to those of the basic act. It is clearly stipulated that **Flood Fighting Plan shall not have any contradiction to Disaster Fighting Plan** mentioned in the basic act.



Basic Act (1/14)

Basic Act on Disaster Countermeasures

not a summary, but a brief explanation for the Study

Chapter 1 – General (Definition and Responsibility) (Art. 1-9)

(1) Central Government

- * to formulate and to conduct **Master Plan on Disaster Fighting** of the State
- * to establish necessary legislation and financial arrangements
- * to **promote and coordinate** disaster countermeasures conducted by Prefecture level and Municipality level
- * to give recommendations, guidance, advises to Prefectures and Municipalities and to take necessary actions
- * the Government (executive branch) shall **report every year** to the Diet (national assembly) on **disaster plans and actions taken** – the Central Government should **supervise** the plans and activities of local authorities as well as the **reporting** of plans and activities by local authorities.



VIII. INSTITUTIONAL SETUP

Basic Act (2/14)

- (2) **Prefectural Governments**
 - * to formulate and to carry out **Disaster Fighting Plan**
 - * to **promote and coordinate** disaster countermeasures conducted by Municipality level
- (3) **Municipality Government**
 - * to formulate and to carry out **Disaster Fighting Plan**
 - * to **organize** disaster fighting organizations conducted by Prefecture level and Municipality level
- (4) **Common Responsibilities**
 - * All level of administration shall take necessary actions to prevent disasters and to mitigate the damages, especially,
 - 1) to **develop researches** on disaster, disaster prevention and to **realize the results**
 - 2) to conserve the territory, mountains and watercourses
 -



Basic Act (3/14)

- 4) to organize **personnel and facilities** for **observation, information and communication** of **meteorological, territorial and hydrological conditions**
- 5) to **improve forecast and warning** of disasters
-
- 7) to enhance meteorological observation network through international cooperation
- 8) to promote international cooperation on research, observation and information exchange on artificial control of typhoons and other disaster countermeasures
- 9) to organize **personnel and facilities** for **flood fighting, fire fighting and rescue activities** and other emergency countermeasures
- 10) **education and training** on disaster fighting
- 11) **dissemination of information** of **disaster prevention**
- * to take all possible actions for disaster relief and restoration as soon as possible



Chapter 2 – Organization (Art. 11-33) Basic Act (4/14)

National Disaster Fighting Council

- a deliberative body to prepare **master plan** and **contingency plan**, and to promote the plans
- to **discuss** important matters inquired by the Prime Minister
 - * **basic policy**
 - * **general coordination** on disaster fighting
 - * **general guidelines** for disaster fighting
 - * **establishment of headquarters** for disaster fighting
 - * **declaration of contingency**

Members

Chair person: Prime Minister

Councilors: Secretary General of the Cabinet, Ministers and Heads of National Agencies, and persons of prominent knowledge and experiences appointed by the Prime Minister

Special Committee of the Council



Basic Act (5/14)

Regional (Prefecture, Municipality) Disaster Fighting Councils

- * having similar functions, activities to the central one at respective level

Regional Federation of Disaster Fighting Councils

- * **The Prime Minister or Governors** can **instruct** to establish according to the opinion of the respective council, in case **shared planning and implementation of a Disaster Fighting Plan** is deemed necessary and effective.

Disaster Countermeasures Headquarters

- * to be established when a disaster **occurs** or to be **forecasted** to occur
- * according to the **opinion of respective Disaster Fighting Council**
- * **following the respective Disaster Fighting Plan**
- * headed by the **Governor** or the **Mayor**



Basic Act (6/14)

Emergency Disaster Countermeasures Headquarters

- * established by the **Prime Minister**
- * whose name, target area, place of establishment and period are determined by the Cabinet
- * establishment, the above elements and abolishment to be **publicized**

Chapter 3 – Disaster Fighting Plans (Art. 34-45)

a. Master Plan on Disaster Fighting

- * to be formulated by the National Council
- * to be **revised** if necessary, through **evaluation of results of researches, damages occurred, effects of disaster fighting activities** **every year**
- * the formulation and revisions; to be **reported to the Prime Minister, to be notified to Heads of the Designated State Organizations** (Ministers and Heads of National Agencies) and **Governors**, and to its summary be **publicized**



Basic Act (7/14)

- * items to be included:
 - **general and long-term plans**
 - important items to be discussed and formulated in, and criteria and guidelines for **Operational Plans for Disaster Fighting by Designated State Organizations and Regional Disaster Fighting Plans**, including:

Disaster Prevention

 - necessary **education**
 - necessary **training** (including desk-work exercises, leaders training)
 - **safety campaign** to include countermeasures for natural disasters
 - **maintaining material stocks** for disasters
 - **disaster countermeasures funds** of local public organizations
 - development of **meteorological observation facilities**



VIII. INSTITUTIONAL SETUP

Basic Act (8/14)

- maintenance of facilities and equipment for flood fighting, fire fighting and rescue
-
- designation of risky areas at times of disasters
- disaster prevention in schools, hospitals, factories, work places, department stores, and other public places
- disaster prevention of cultural heritages
-

Emergency Countermeasures

- forecast, communication and methods of warning
- information collection
- information dissemination and public relations
- evacuation (including group evacuation of pupils in primary schools)
- flood fighting fire fighting and rescue



Basic Act (9/14)

- lists of construction equipment and its emergency use
- list of engineers and commands to them
- demand and supply plan of flood staff, other necessary goods, materials for restoration
- keeping livestock (including effects on public health), and demands and supply plan of fodder
- temporary education of pupils and students during disasters
- cleansing, epidemic control, and hygiene
- disinfesting harmful insects
- communication plans
- electricity supply and distribution
- transportation plan
- keeping dangerous substances
- prevention of crimes and traffic control and other matters on social order



Basic Act (10/14)

- dispatching **Self Defense Forces**

Restoration

- **policies** for restoration
- **financing** and **funding**
- application of special case of **leasing lands and houses**
- promotion of restoration damaged **small scale industries**
- securing **welfare** of people in disaster areas

Annexed Documents: current conditions of

- territorial and meteorological conditions
- development of facility and equipment
- personnel for disaster fighting
- supply and demand of materials
- transportation and communication
- others necessitated by the Central Council



Basic Act (11/14)

b. Operational Plans of Disaster Fighting

- * to be formulated by **designated organizations of the state administration** regarding their portfolios and to be formulated by **designated national public organizations** (public corporations and companies) regarding their businesses
- * to be **revised** if necessary, through examination made **every year**
- * the formulation and revisions; to be **reported to the Prime Minister** (through the Minister in charge in case of designated public organizations), to be **notified** to (related) **Governors**, (and to related public organizations in case of designated organizations of the state administration) and its summary to be **publicized**

c. Disaster Fighting Plans of Prefectures and Municipalities

- * to be formulated by respective **Disaster Fighting Council** **according to the Master Plan on Disaster Fighting** (and to the Prefectural Disaster Fighting Plan in case of Municipalities) regarding respective jurisdiction



VIII. INSTITUTIONAL SETUP

Basic Act (12/14)

- * to be **revised** if necessary, through examination made **every year**
- * shall discuss with the Prime Minister who shall ask for opinions of the Central Council of Disaster Fighting in case of Prefectures
shall discuss with the Governor who shall ask for opinions of the Prefectural Council of Disaster Fighting in case of Municipalities
- * its summary to be **publicized**
- * **cannot contradict** with the **Master Plan on Disaster Fighting and Operational Plans of Disaster Fighting** in case of **Prefectures** and with the respective **Prefectural Disaster Fighting Plan** in case of **Municipalities**
- * shall include;
 - **development and improvement** of disaster fighting facilities
 - **research and development** on disaster fighting
 - **education and training** and other prevention measures
 - **information** collection and communication



Basic Act (13/14)

- issuance and dissemination of **forecasting and warning**
- **evacuation**, fire fighting, flood fighting, rescue, public health and other emergency relief activities
- **restoration**

Chapter 4 – Disaster Prevention (Art. 46-49)

Responsible Persons for Disaster Prevention

heads of designated organizations of state administration, heads of regional offices of designated organizations of state administration, heads of designated public organizations, heads of local governments, heads of designated local public organizations, manager of disaster fighting facilities, etc.

Obligations

- * preparation of **organization and staffing** for forecasting, information collection and communication
- * **execution of training**, through coordination among responsible persons, with cooperation with residents and related organizations



VIII. INSTITUTIONAL SETUP

Basic Act (14/14)

- * preparing and storing and maintaining materials for emergency countermeasures and restoration
- * development, inspection and maintenance of facilities and equipment for disaster fighting

Chapter 5 – Emergency Countermeasures

Activities and Responsibility

Communication of Warning

Staffing and Evacuation Instruction

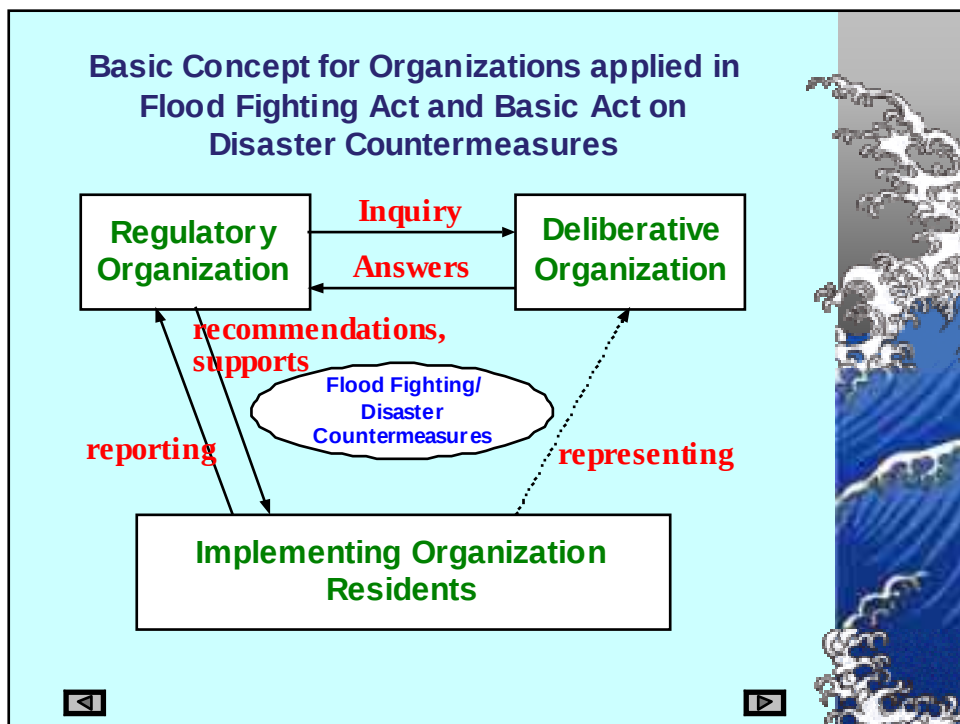
Emergency Operations

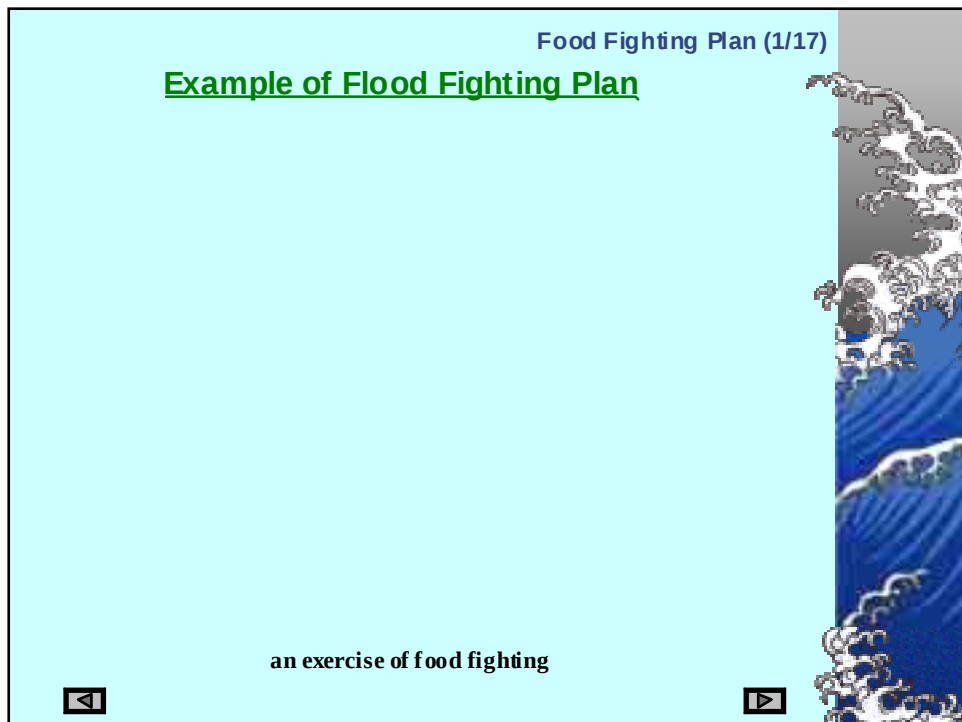
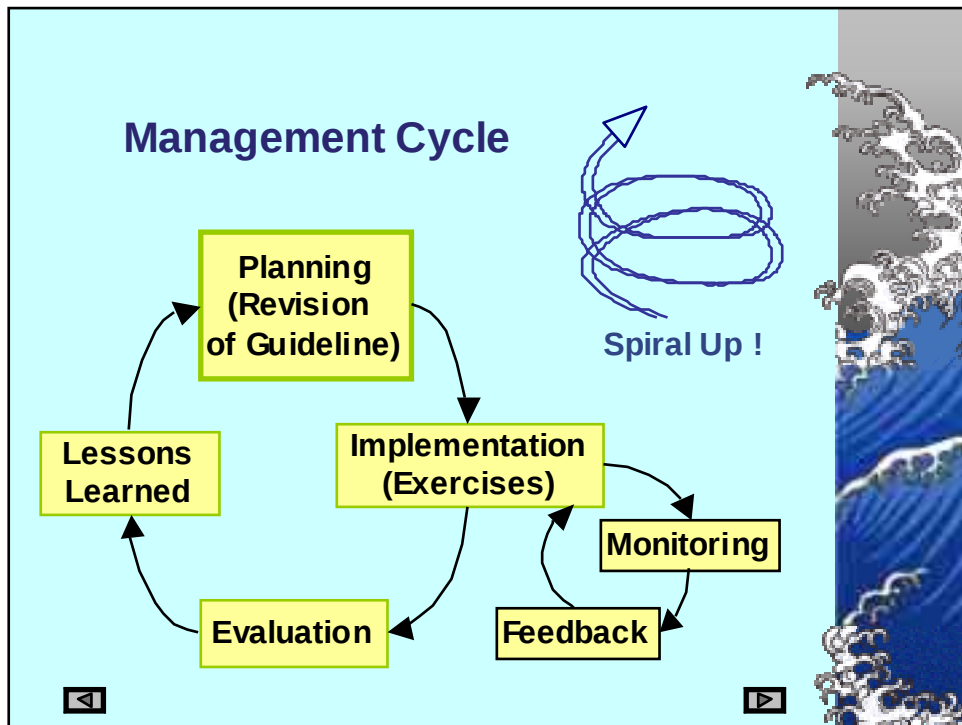
Chapter 6 – Restoration

Chapter 7 – Financial Arrangements

Chapter 8 – Contingency

Chapter 9 – Miscellaneous Provisions





Food Fighting Plan (2/17)

1. Objective

based on the article 4 of Flood Fighting Act, the Municipality, nominated as a designated flood fighting management body by the Governor of the Prefecture, according to the article 25 of the Act, to mitigate damages caused by floods (and high tides) in the Territory

2. Important Sites for Flood Fighting

(1) Important Sites

(Name of Management Office of the River)

River	Location			Management Body	Dangerous Section (m)				Current Conditions	Foreseen Risks	Flood Fighting Method
	L/R	Address	Distance Mark (km ± m)		Important	A	B	Cautious			
(around 60 sites are listed)											

Food Fighting Plan (3/17)

Map of Important Flood Fighting Site

VIII. INSTITUTIONAL SETUP

Food Fighting Plan (4/17)

(2) Dangerous Structures for Flood Fighting

River	Location			Name of Structure	Management Body of the Structure	Current Conditions	Foreseen Risks	Flood Fighting Method	Rank of Importance
	L/R	Address	Distance Mark (km ± m)						
(six bridges and two gates are listed)									



◀ ▶

Food Fighting Plan (5/17)

3. Flood Fighting Activities

(1) Flood Watch

River	Name of Gauging Station	Location of the Station	Water Level for Notice	Water Level for Warning	Manager of the Station
S	X	A	8.20 m	8.70 m	M. C.
S	Y	B	5.20 m	5.60 m	M. C.
A	Z	C	19.65 m	20.15 m	Pref.
(10 stations are listed)					

(2) Flood Fighting Signals

Article 4 of Flood Fighting Act

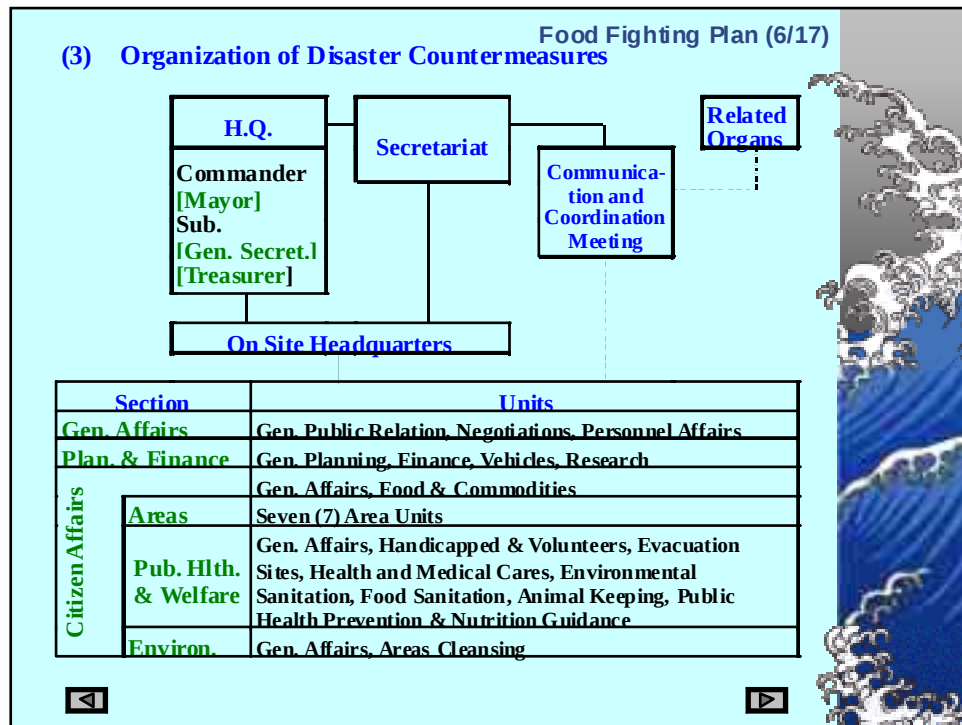
Type	Bell	Siren	Remarks
Warning for Operation Start	□ □ □ □ □ □ □ □ (4 times)	2sec. 3sec. 15sec.	
Calling for Assistance	□ □ □ □ □ (twice and 3 times)	2sec. 3sec. 2sec. 3sec. 15sec.	

(Prefectural Regulation No. 54 August 23, 1949)



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VIII. INSTITUTIONAL SETUP



Food Fighting Plan (7/17)

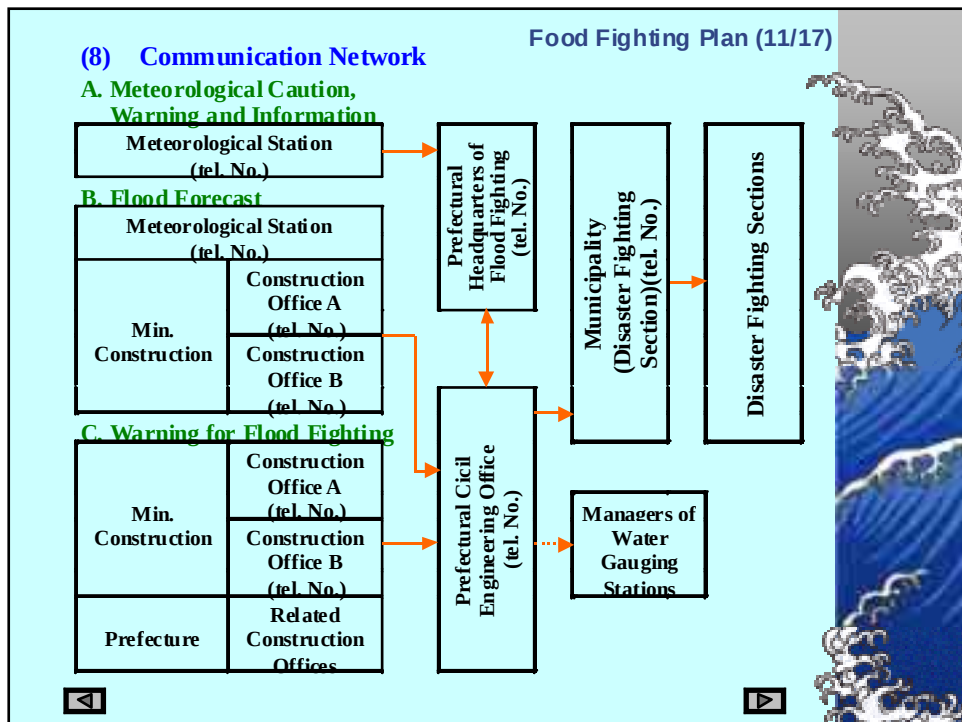
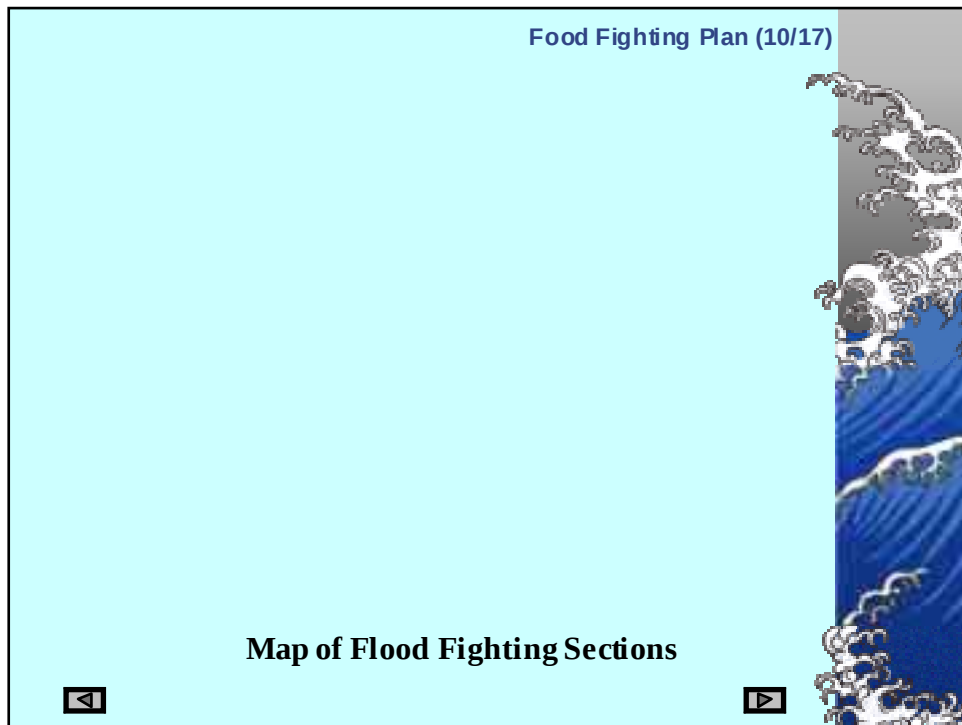
Section	Units
Industries & Economy	Gen. Affairs, Agriculture/Forestry/Fishery, Markets
Town Development	Gen. Affairs, Civil Engineering, Sewerage, Architecture and Housing
Fire (Flood) Fighting	Gen. Affairs, Warning & Patrol, Fire (Flood) Fighting
Water Supply	Information, Gen. Affairs, Water Supply, Pipes, Facilities, Water Quality
Education	Gen. Affairs, School Facilities, Instructions to Schools, Social Education, Gymnastic Facilities, School Meal Supply

VIII. INSTITUTIONAL SETUP

Food Fighting Plan (8/17)		
(4) Staff Deployment		
Grade	Criteria	Deployment
1st	1) meteorological warning issued 2) typhoon information announced, anticipated effects 3) flood forecast or warning issued from river managers (tsunami, earthquakes) 6) necessitated by the Commander	1) for meteorological and hydrological information collection and internal communication on disaster 2) for watch and patrol, if necessary 3) for public relation, if necessary
2nd	1) criteria for 1st grade + high possibility of a disaster 2) small disasters in some areas occurred (tsunami, earthquakes) 5) necessitated by the Commander	1) for meteorological and hydrological information collection and communication on disaster 2) for countermeasures against for small disasters 3) for public relation 4) for evacuation
3rd	1) damage of the disaster extends to wide or all areas (earthquakes) 3) necessitated by the Commander	all staff in headquarters or necessary staff for full functioning of disaster countermeasures
(Municipality Regulation of Disaster Countermeasure Headquarters)		

Food Fighting Plan (9/17)					
(5) Emergency Staffing					
Personnel of all units shall assemble, when ordered, and immediately start operation.					
(6) Flood Fighting Sections					
Section Number	Location			Responsible Units	Persons
	River	L/R	Length (m)		
Section 1	A river	L and R	1,100	E9, E10, E11	339
					
	Subtotal		32,000		
.....					
Section 6			36,200	W12, W13	396
Total			177,000		2,294
(7) Activities of Fire Fighting Brigade					
As soon as a flood fighting warning is informed according to Article 10-4, Fire Fighting Brigades shall operate to mitigate flood damages and to maintain the safety of the public, following this Plan.					

VIII. INSTITUTIONAL SETUP



VIII. INSTITUTIONAL SETUP

Food Fighting Plan (12/17)

(9) Grades of Warning for Flood Fighting and the Criteria

Grade	Range
Preparation	when deemed necessary according to rainfall, water level and discharge or other river conditions
Operation Start	when water levels exceed the warning level and further discharge increase of rivers is anticipated, according to hydrological conditions
Information of Conditions	when necessary according to river conditions
Cancel	when water levels going down again below the warning level, or necessity of flood fighting has ended according to river conditions

4. Report of Flood Fighting Activities

Every chief of a section, head of a fire fighting brigade shall submit report with the following format to secretariat of the headquarters within two days. The flood fighting manager shall report to Head of Construction Office of the Ministry of Construction and Head of Prefectural Civil Engineering Office.

Food Fighting Plan (13/17)

Report of Flood Fighting Activities

reported by
address
name

Flood Conditions	River Name	Warning Water Level (m)	Discharge Volume			
Flood Fighting Site	River Name	Address L/R	Distance (m)			
Date/Time	from / / 2000. :	to / / 2000. :				
Personnel	Flood Fighting Corps (persons)	Fire Fighting Brigades (persons)	Others (persons)	Total (persons)		
Outline of the Activities	Plance:	Length (m)				
Results Effects Damage	Bank m	Agri. m ²	Houses unit	Roads m	People person	others
Material, Equipment Employed	Type a	Amount	Residents' Activities:			
			Injured or Dead Staff:			
	Others		Rainfall Level:			
Self-Evaluation, and Remarks:						

(by each flood fighting site)

VIII. INSTITUTIONAL SETUP

Food Fighting Plan (14/17)

5. Materials for Flood Fighting

(1) Warehouses and Stored Material

Ware-house	Place	Key-holder	Floor Area	Stored Materials			
				type a	type b		
A							
B							
.....							
Total							

(Location of each warehouse is shown in the map of flood fighting sections)

(2) Available Materials in case of Emergency

To secure the materials for emergency cases, responsible persons shall request dealers before the cases. In case no time to request to headquarters at times of emergency, the materials can be procured from nearest dealers and shall be reported to the responsible person after emergency procurement.

Name of Shop or Company	Address	Telephone	Materials Available
			sands, gravel
			bags
			
			construction



Food Fighting Plan (15/17)

6. Flood Fighting Exercise

(1) Forecast and Communication Exercise

To prepare adequate response and operation in emergency cases of flood, following exercises will be conducted.

- * S river basin: date
- * A river basin: date

(2) Flood Fighting Exercise

To learn practical skills, to strength organization for flood fighting and to enhance consciousness of residence on importance of flood fighting

Held by: Coordinating Association for Flood Fighting
Date and Time: October 11, 2000, 9:00-18:00
Place: (adress)
Participating Entities: Municipalities of
Observing Entities: Construction Offices of the Ministry of Construction and the Prefecture
Number of Participants: 175 persons
Contents of Exercise: basic training, methods of flood fighting works



Food Fighting Plan (16/17)

Annexes and Attachment

- 1. By-law of the Municipality on Flood Fighting Council**
List of position, name, address and telephone No. of the chair person and councilors
- 2. Formats of Flood Forecast and Warning**
Flood Forecast, Warning for Flood Fighting,
- 3. Report of Flood Fighting Activities**
patrol, working, damage, and evacuation
- 4. Criteria for Designation of Important Flood Fighting Sites**
(by Ministry of Construction and Prefecture)
height of banks, cross section of banks, slopes, water leaks, water colliding and scouring, structures, construction sites, etc.
- 5. Communication Facilities**
 - * Municipal Disaster Fighting Radio System
 - * Fire Fighting Radio System
- 6. Criteria for Meteorological Alerts**
General purpose: caution, warning
Flood fighting purpose: caution, warning



Food Fighting Plan (17/17)

- 7. Rules for Staffing in Emergency**
- 8. Telephone Directory of Organizations related to Flood Fighting**
- 9. Explanation of Flood Fighting Works**



IX. OUTLINE OF MASTER PLAN



TOPICS

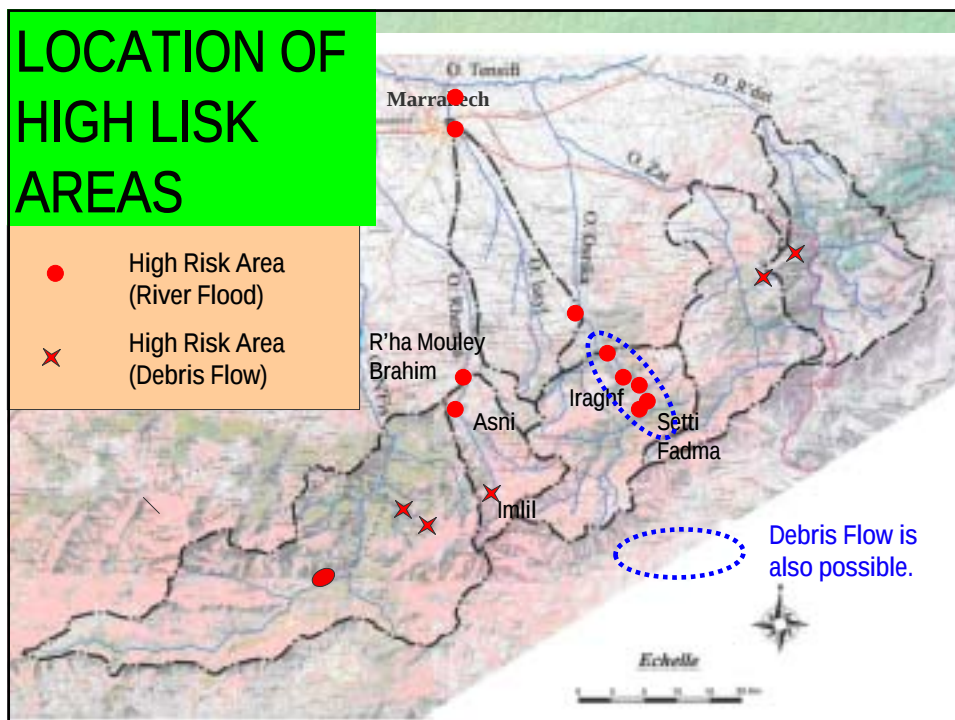
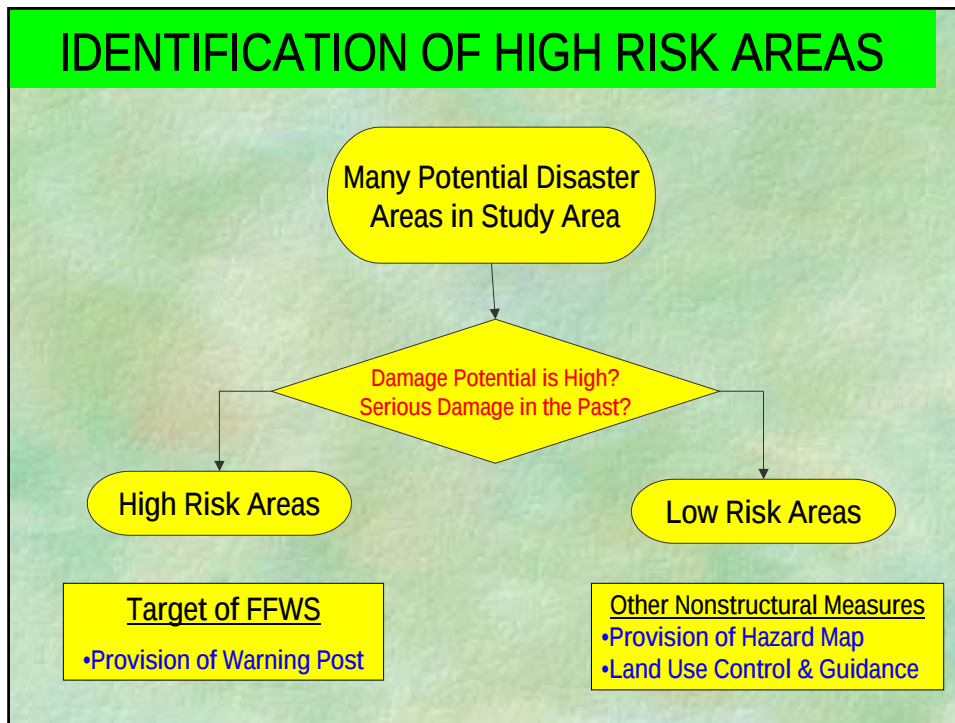
- Strategy of Master Plan
- Basic Condition for Formulation of Master Plan
- Identification of High Risk Areas
- Major Points of Improvement
- Conceivable Options
- Selection of Optimum Options

STRATÉGIE DE BASE POUR LA FORMULATION DU PLAN DIRECTEUR

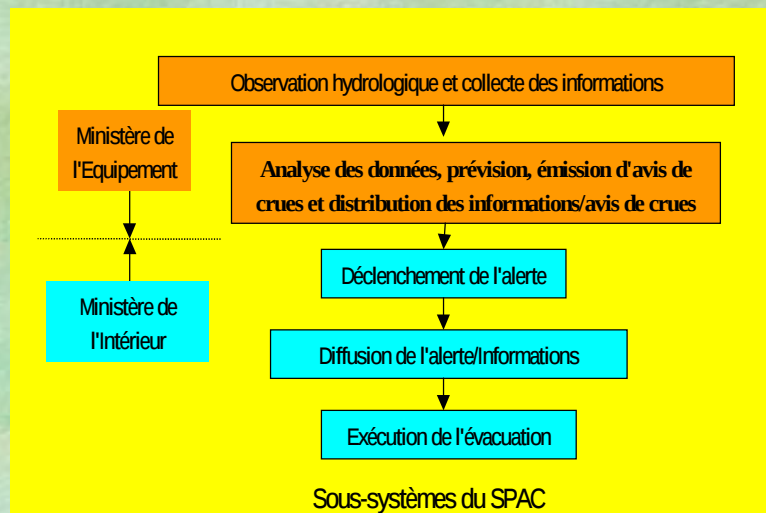
- *Établissement d'un système durable*
- *Établissement d'un système fiable doté d'une réponse rapide*
- *Promotion de la participation publique*
- *Autres:*
 - *Utilisation intégrale des résultats du projet pilote*
 - *Considération intégrale des études*
 - *Coopération avec les administrations concernées*

CONDITIONS DE BASE POUR LA FORMULATION DU PLAN DIRECTEUR

- *L'année ciblée pour l'achèvement de la réalisation du Plan Directeur est 2007.*
- *La crue cible est celle de 1995.*



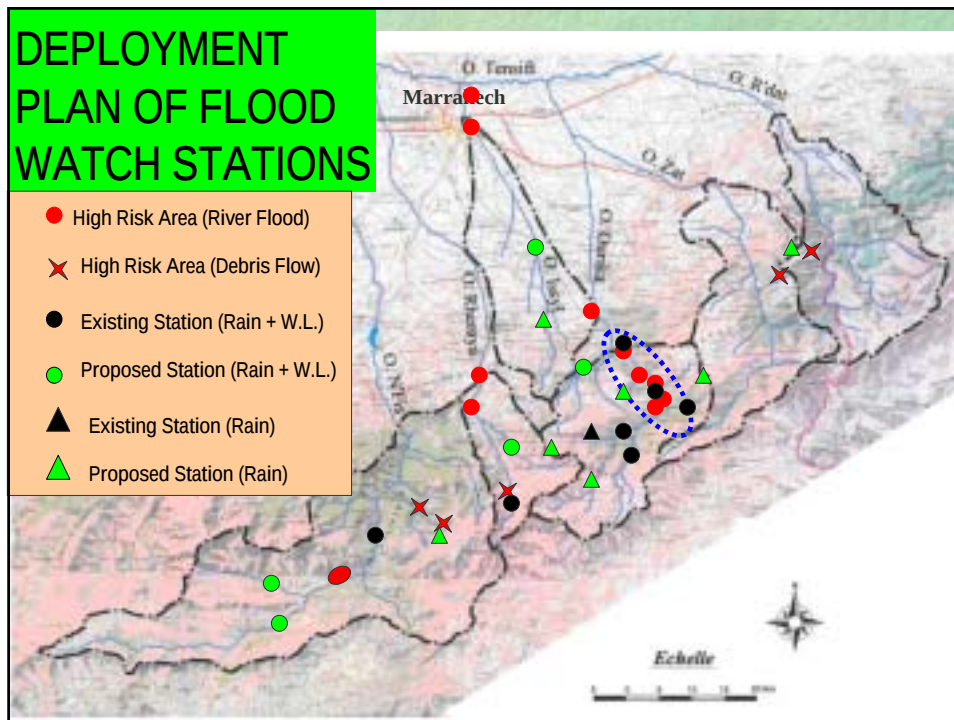
POINTS OF IMPROVEMENT FOR EVERY SUBSYSTEM



HYDROLOGICAL OBSERVATION & DATA COLLECTION (DRHT)

- ☞ **Increase of Flood Watch Stations**
 - Rainfall: 8 (present) to 20 stations (proposed)
 - Water Level: 7 (present) to 12 stations (proposed)
- ☞ **Upgrading of equipment**
 - Upgrading of Observation Equipment (3 Options)
 - Upgrading of Data Transmission Method (3 Options)
- ☞ **Collabroration with DMN**
 - Receiving Radar Pictures and Satellite Picttures from DMN Data on Real Time Basis through Internet

IX. OUTLINE OF MASTER PLAN



DATA ANALYSIS, FORECASTING, ANNOUNCEMENT OF FLOOD NOTICES AND DISTRIBUTION OF FLOOD INFORMATION/NOTICES (DRHT)

Data Analysis

- Data Processing (Estimation of Rainfall Intensity, Accumulated Rainfall, Conversion of Water Level to Discharge)
- Visualization of Processed Data
- Data Storage

Real-Time Forecasting

- Flood Forecasting (USSCS Method + Muskingum Method)
- Debris Flow Forecasting (Rainfall Threshold Line)
- Upgrading of Observation Equipment (3 Options)
- Upgrading of Data Transmission Method (3 Options)

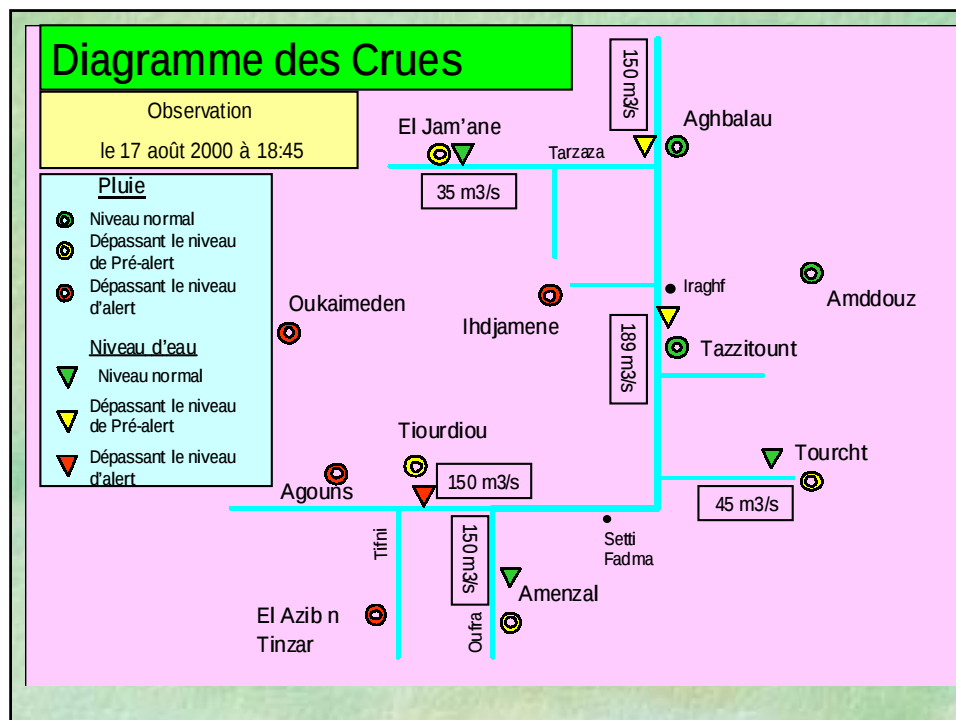
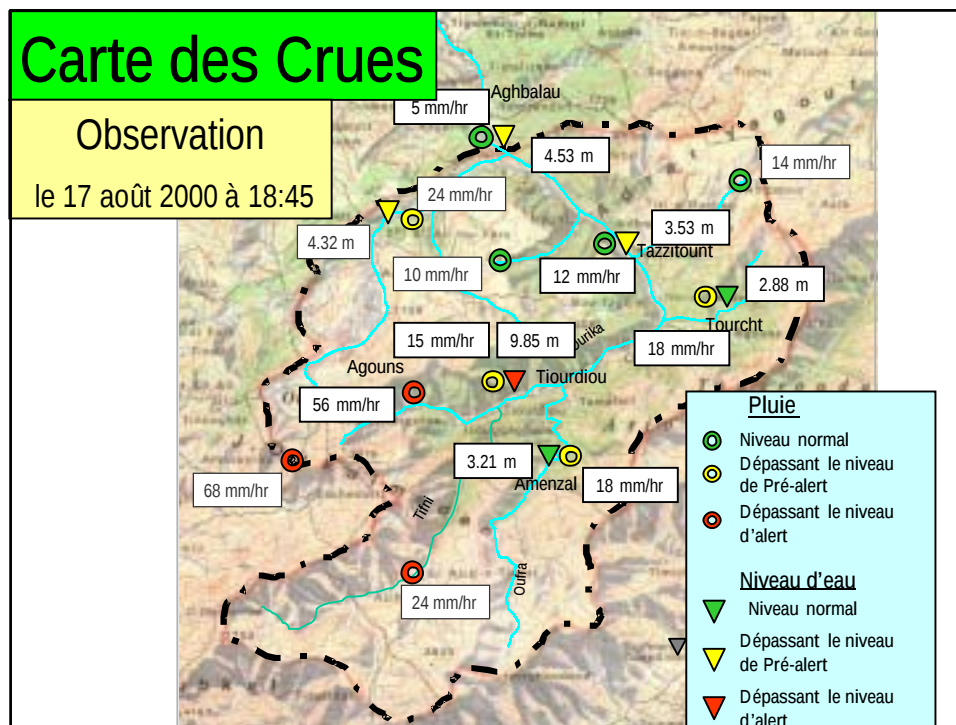
Announcement of Flood Notices

- Definition of Flood Notices
- Criteria of Flood Notices (Pre-Alert, Alert Rainfall/Waterlevel)

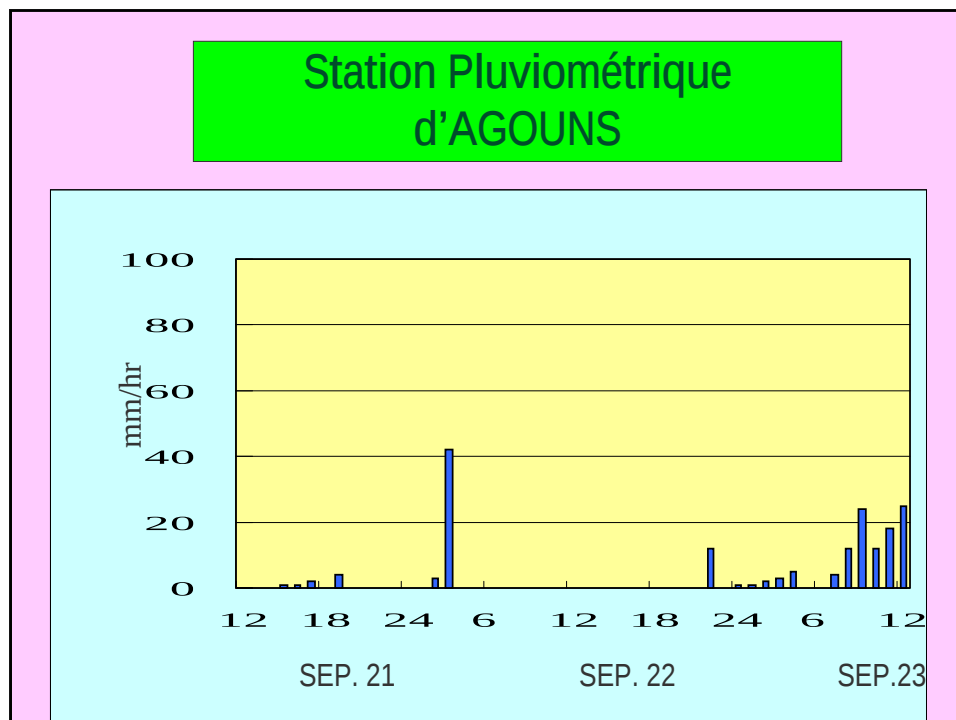
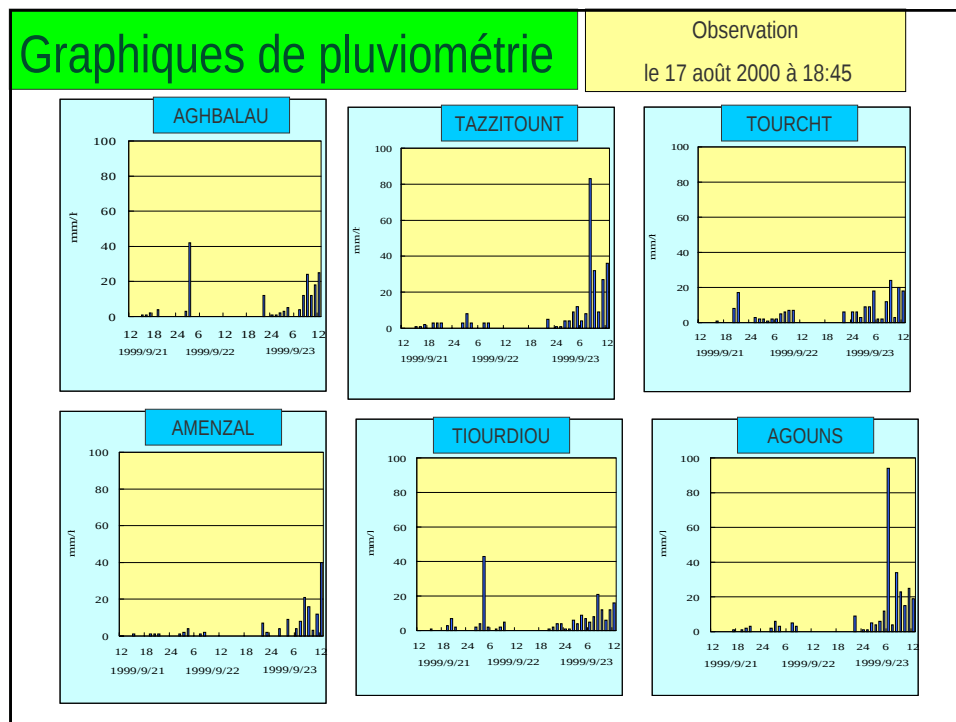
Distribution of Flood Information/Notices to Related Agencies

- Distribution Methods (Three Options)

IX. OUTLINE OF MASTER PLAN

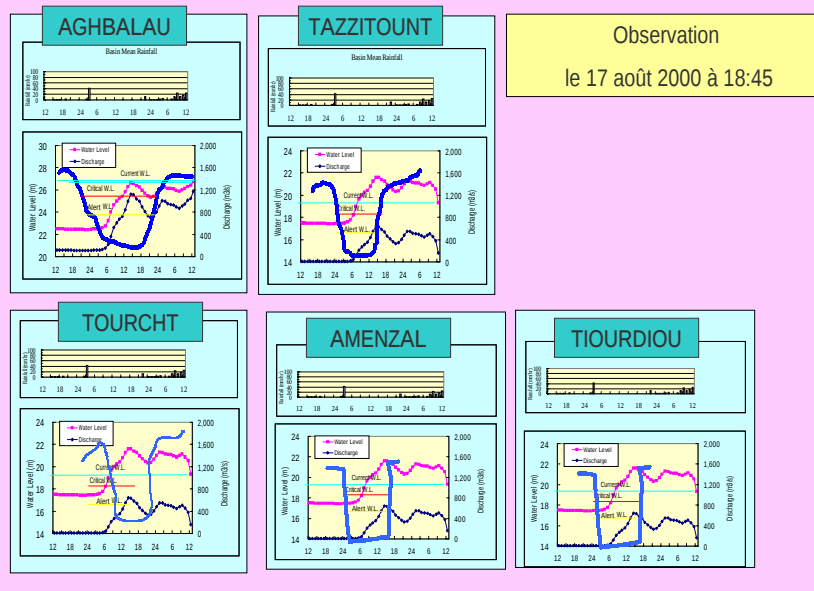


IX. OUTLINE OF MASTER PLAN

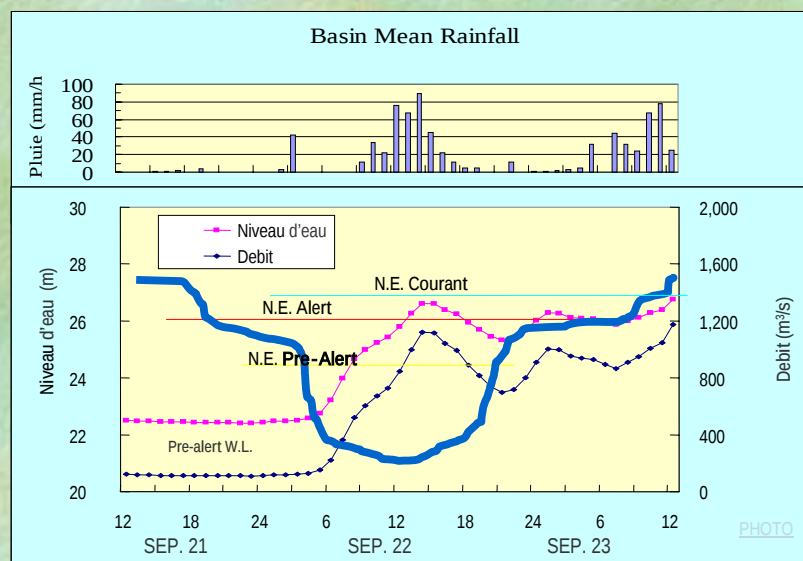


IX. OUTLINE OF MASTER PLAN

Graphiques du Niveau d'Eau et Débit



Station de Jaugeage du Niveau d'Eau de Tiourdiou

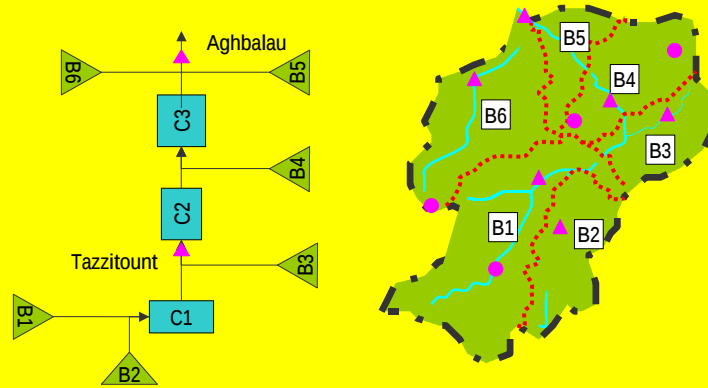


IX. OUTLINE OF MASTER PLAN

REAL-TIME FLOOD FORECASTING

Model Structure

- Calculation of Runoff from Sub-basin : USSCS Method (Unit Hydrograph)
- Flood Propagation in River : Muskingam Method

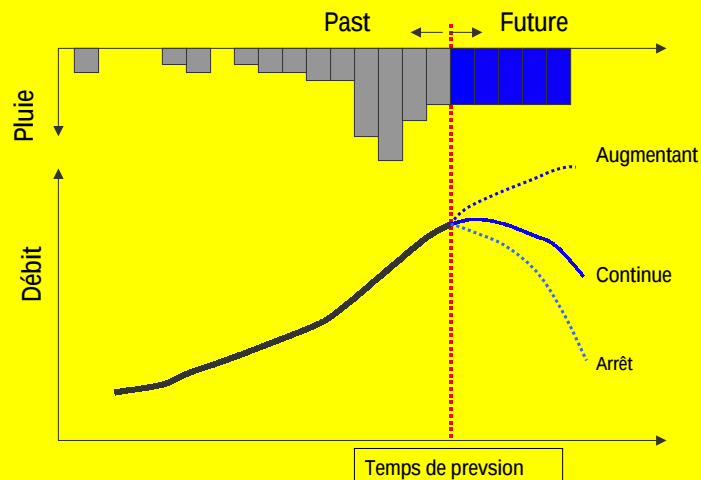


Modeling of Ourika River Basin

REAL-TIME FLOOD FORECASTING

Input Data

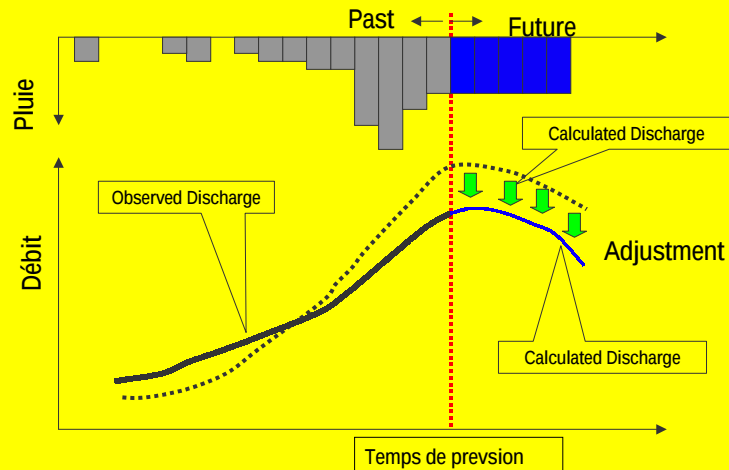
- Observed rainfall and discharge data
- Future Rainfall (Selection from 3 or 4 Scenarios: Increase, Continue, Stop, etc.)



IX. OUTLINE OF MASTER PLAN

REAL-TIME FLOOD FORECASTING

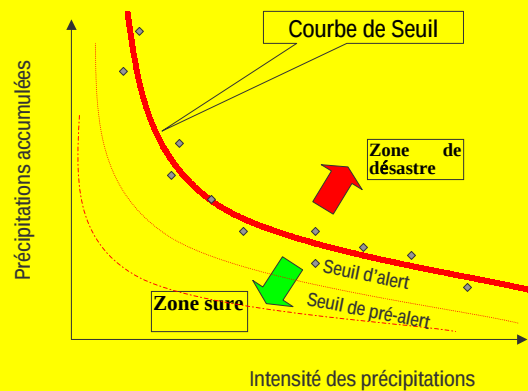
Adjustment of Calculated Data by Utilizing Observed Data



FORECASTING OF DEBRIS FLOW

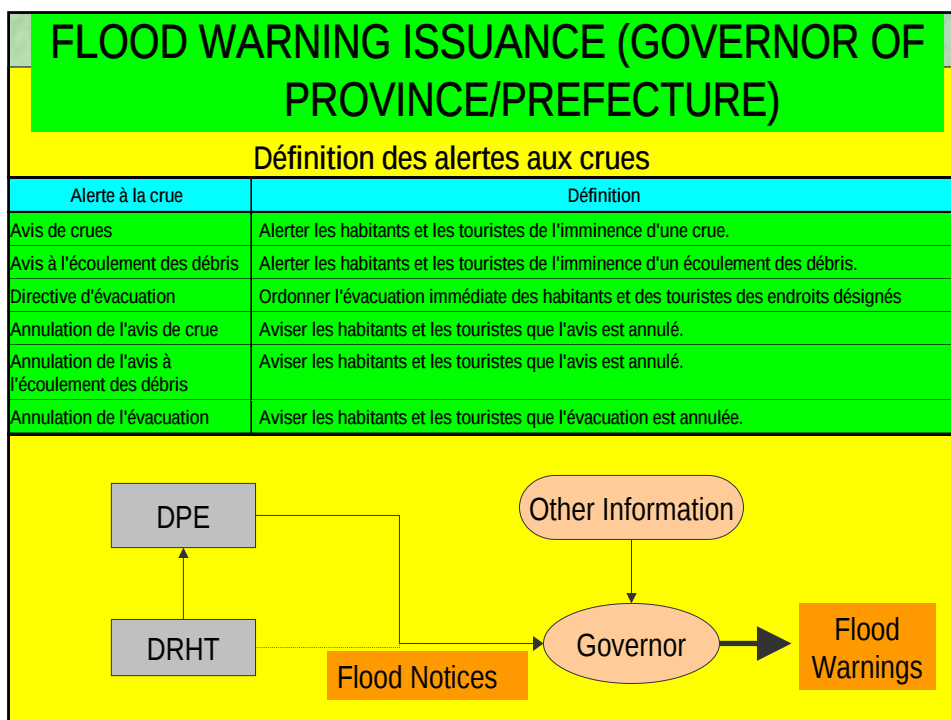
Two Methods

- Direct Detection of Debris Flow by a Sensor (Wire, Vibration, or Acoustic Sensor): Costly and not effective for the Study Area
- Utilization of Rainfall Data as an Indicator of Debris Flow: Proposed for the Study Area



IX. OUTLINE OF MASTER PLAN

ANNOUNCEMENT OF FLOOD NOTICES		
Messages d'avis de crues		
Type de désastres	Message d'avis de crue	Définition
Crue de l'oued	Message d'avis de pré-crues	Aviser les administrations concernées que les précipitations et/ou les débits ont dépassé les seuils de pré-alerte et la situation est prévue se détériorer.
	Message d'avis de crues	Aviser les administrations concernées que les précipitations et/ou les débits ont dépassé les seuils d'alerte et la situation est prévue se détériorer.
	Annulation du message d'avis de pré-crues	Aviser les administrations concernées que les précipitations et/ou les débits ont diminué des seuils de pré-alerte et la situation est prévue s'améliorer.
	Annulation du message d'avis de crues	Aviser les administrations concernées que les précipitations et/ou les débits ont diminué des seuils d'alerte et la situation se stabilise.
Écoulement des débris	Message d'avis de pré-écoulement des débris	Aviser les administrations concernées que les précipitations ont dépassé les seuils de pré-alerte et la situation est prévue se détériorer.
	Message d'avis d'écoulement des débris	Aviser les administrations concernées que les précipitations ont dépassé les seuils d'alerte et la situation est prévue se détériorer.
	Annulation du Message d'avis de pré-écoulement des débris	Aviser les administrations concernées que les précipitations ont diminué des seuils de pré-alerte et la situation est prévue s'améliorer.
	Annulation du Message d'avis de écoulement des débris	Aviser les administrations concernées que les précipitations ont diminué des seuils d'alerte et la situation se stabilise.



IX. OUTLINE OF MASTER PLAN

DISSEMINATION OF FLOOD WARNINGS (PROVINCE/PREFECTURE)

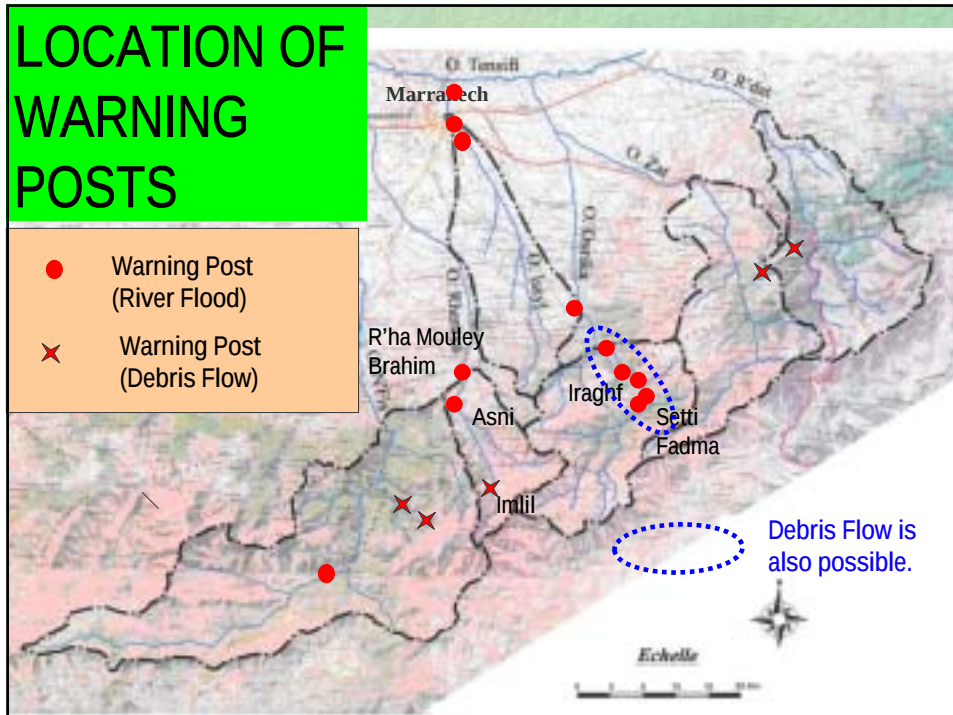
- 🔊 Installation of 17 Warning Posts
- 🔊 Upgrading of equipment (3 Options)

Destinataires des alertes aux crues

Classification	Destinataires supposées
Individus	Habitants et touristes
Autorités locales	Les Cercles, Caïdats, Machiakhas (Cheikhes), Douars(Mocadams) concernées
Autres organisations gouvernementales concernées	Gendarmerie Royale, Protection Civile, Ministère de l'Intérieur, et autres administrations impliquées dan le Plan ORSEC
Diffusion par Mass Media	TV et Radio

LOCATION OF WARNING POSTS

- Warning Post (River Flood)
- ✕ Warning Post (Debris Flow)



EVACUATION (PROVINCE/PREFECTURE)

☞ To facilitate preparation of an evacuation plan, a guideline is elaborated in the Master Plan Study.

☞ Contents of Guideline

- Evacuation Places and Routes
- Stock of Materials and Equipment
- Guidance of Tourists
- Evacuation Drill
- Enlightenment and Education

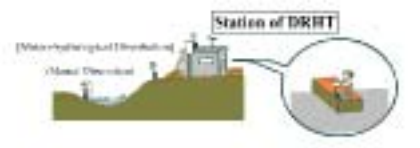
OPTIONS DES SOUS-SYSTÈMES

OPTION CONCEVABLE DE SOUS-SYSTEME

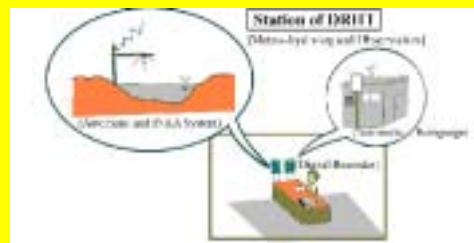
Sous-système	Système		Option A (Manuel)	Option B (Semi-Automatique)	Option C (Automatique)
Observation météo-hydrologique et collecte de	Composant	Elément			
	Observation météo-hydrologique	Equipemnt d'observation	Observation manuelle	Observation automatique	Observation automatique
Analyse de données prévision des crues et des écoulements de débris Flow	Collecte de données	Equipement de transmission de données	Communication radio par voix	Communication radio par voix	Système de télémétrie radio
	Traitement de données	Equipement de gestion de données	Traitement manuel de données	Traitement de données par ordinateur	Traitement de données d'ordinateur et service de
	Distribution de données	Equipement de contrôle de données	Distribution de données par téléphone et facsimile	Equipé d'un PC pour le contrôle de données aux administrations concernées	Equipé d'un PC pour le contrôle de données aux administrations concernées avec le service Internet
	Transmission de données	Méthode de transmission	Ligne téléphonique	Ligne téléphonique	Propre réseau radio et ligne téléphonique en renforcement
Dissémination d'alerte	Commande d'alerte	Equipemen de contrôle d'alerte	Equipement de contrôle d'alerte n'est pas installé à la cidat	Equipement simple de contrôle d'alerte est installé à chaque caldat	Emission de message d'alerte directement à l'office provincial à travers l'équipement de contrôle
	Dissémination d'alerte	Poste d'alerte	Amplificateur de voix non-connecté à chaque poste d'alerte	Amplificateur de voix non-connecté à chaque poste d'alerte	Amplificateur de voix connecté à chaque poste d'alerte
	Transmission de message	Radiotéléphone VHF ou ligne téléphonique	Aucune ligne de transmission est fournie. Le caldat va au poste d'alerte et diffuse le message d'alerte	Entre la caldat et le poste d'alerte connecté par un téléphone public des abonnés et ub radiotéléphone VHF	Propre réseau radio VHF

IX. OUTLINE OF MASTER PLAN

THREE OPTIONS FOR HYDROLOGICAL OBSERVATION AND DATA COLLECTION



Option-A (manual)



Option-B (Semi-Automatic)



Option-C (Automatic)

THREE OPTIONS FOR DATA ANALYSIS, FORECASTING, AND DISTRIBUTION OF FLOOD INFORMATION/NOTICES



Direct Line

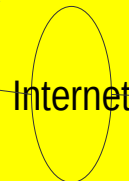


Related Agencies

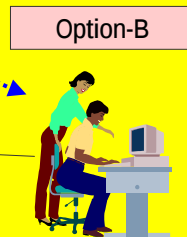


DRHT

VHF Radio



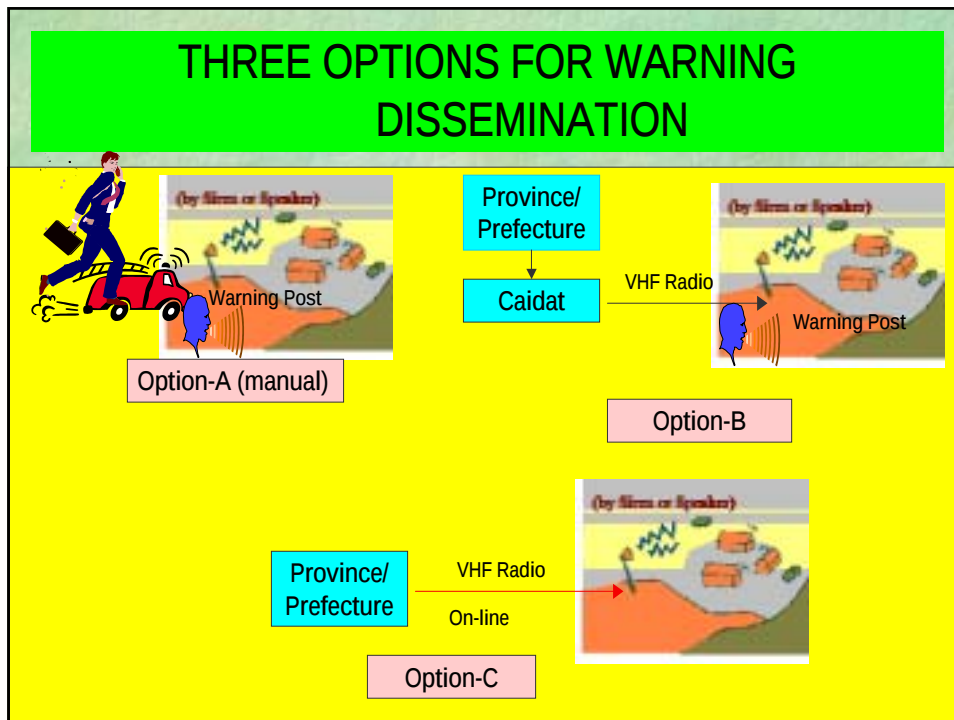
Option-C



Option-B

Related Agencies

IX. OUTLINE OF MASTER PLAN



ALTERNATIVES

Les alternatives sont établies pour les cas types suivants :

- *Alternative-1: Combinaison de l'option-A*
- *Alternative-2: Combinaison de l'option-B*
- *Alternative-3: Combinaison de l'option-C*

IX. OUTLINE OF MASTER PLAN

TROIS ALTERNATIVES

Alternative	Coût (Millions DH)	Précision	Temps nécessaire pour le fonctionnement total *
Alternative-1	8,0	Basse	90 min à 6 heures
Alternative-2	36,6	Moyenne	50 min
Alternative-3	50,4	Haute	30 min

NECESSARY TIME FOR FFWS OPERATION

Sous-système		Alternative-1 (Manuel)	Alternative-2 (Semi-Automatique)	Alternative-3 (Automatique)
Observation hydrologique et collecte de données	Observation hydrologique	5 to 30 min.	0	0
	Collecte de données	10 min.	5 min.	0
Analyse de données, prévision et collecte de données	Analyse de données	25 min.	15 min.	5 min.
	Prévision	10 min.		
	Distribution de message d'avis de crue	10 min.	5 min.	5 min.
Diffusion d'alerte		5 min.	5 min.	5 min.
Déssimination d'alerte		15 min. à 5 hrs.	10 min.	5 min.
Evacuation		10 min.	10 min.	10 min.
Le temps total nécessaire		90 min. à 6 hrs.	50 min.	30 min.

Time of Concentration of Flood in Ourika = 1 to 2 hours

SÉLECTION DU PLAN OPTIMAL

- L'évaluation économique est en cours.
- La nécessité du SPAC est claire.
- Le système basé sur le fonctionnement manuel est ne peut pas répondre aux besoin de sécurité.
- Des systèmes automatique ont été récemment mis en service dans plusieurs bassins.
- Il n'existe pas de grande différence entre le système semi-automatique et le système automatique
- Éventuellement, il serait recommandable d'appliquer l'alternative-3 au Plan Directeur.

DATA/INFORMATION TRANSMISSION NETWORK

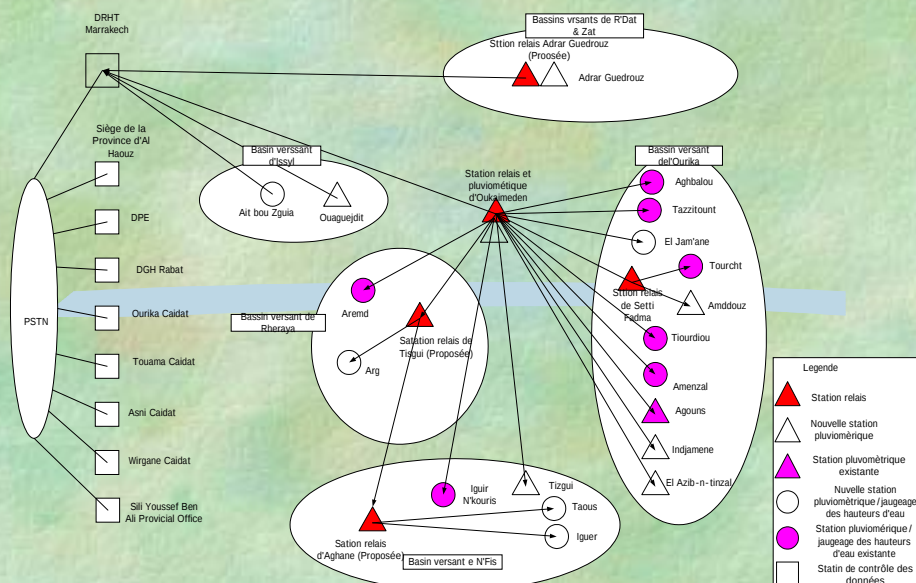


Fig. Schéma du système conceptuel pour la transmission des données

IX. OUTLINE OF MASTER PLAN

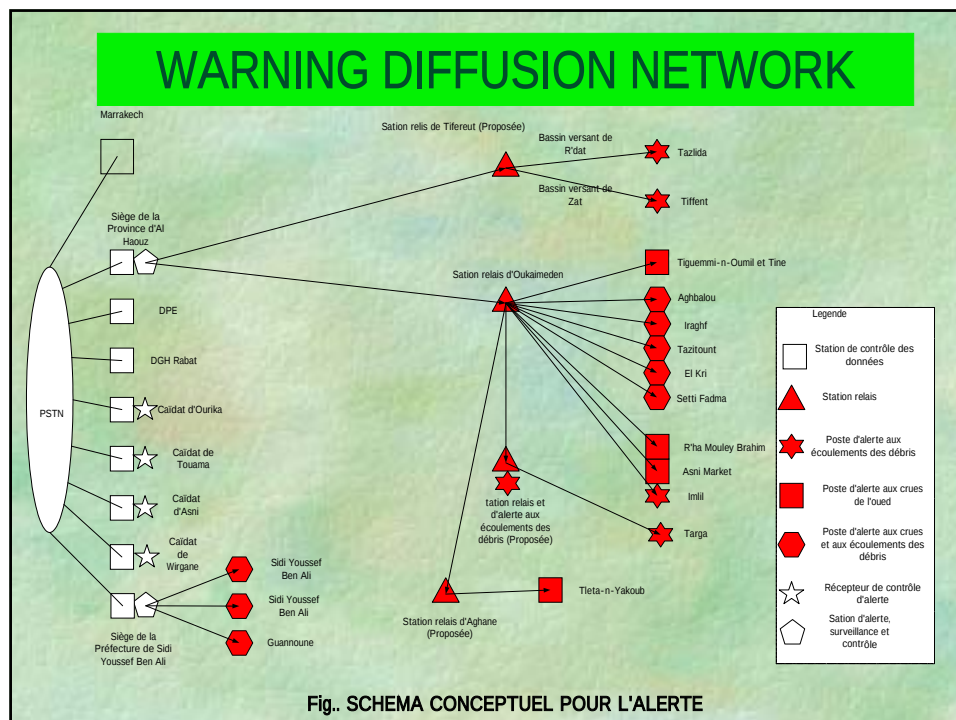
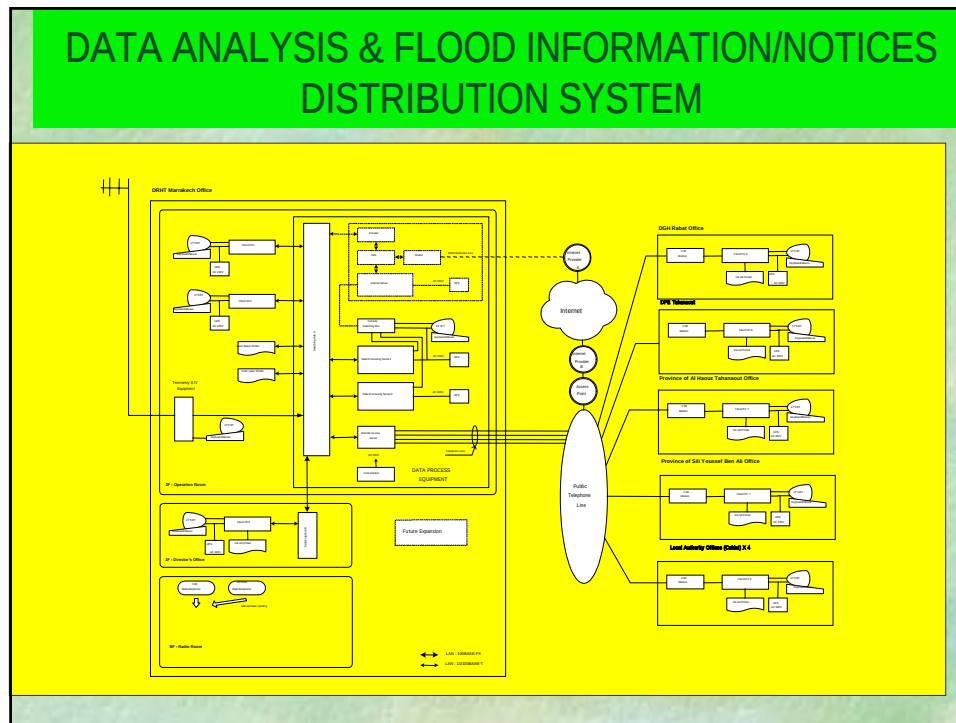


Fig.. SCHEMA CONCEPTUEL POUR L'ALERTE

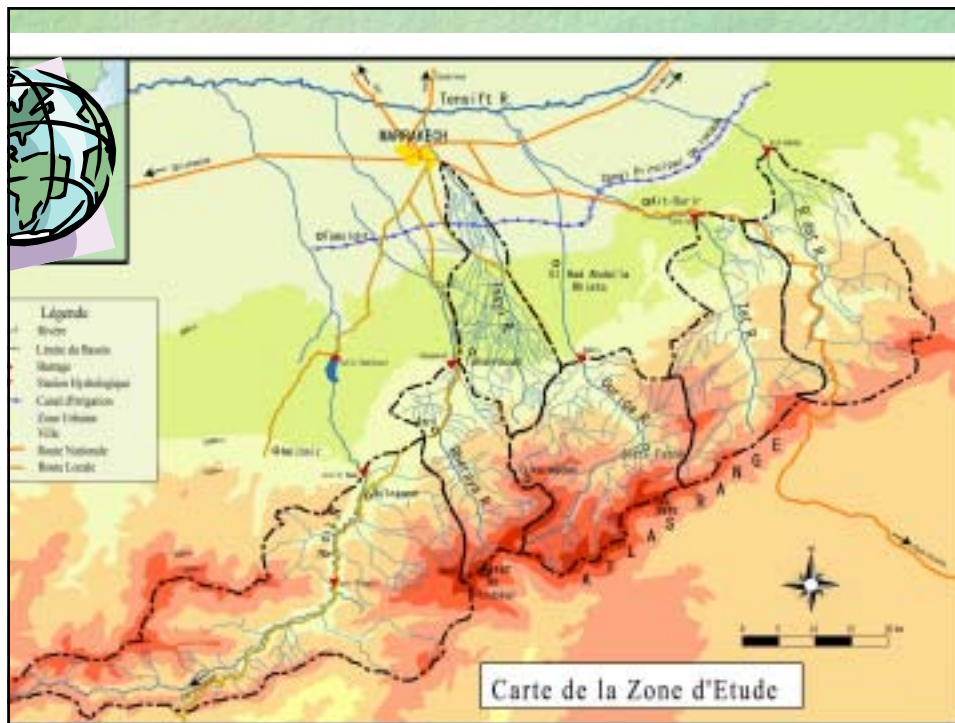
Objectif du Projet Pilote

Tester et confirmer la précision de l'Avant-projet du Plan Directeur.

Sélection de la Zone Cible pour le Projet Pilote

Le Bassin Versant de l'Ourika a été choisi comme Zone du Projet Pilote en raison des éléments suivants:

- Applicabilité générale du système aux autres bassins
- Fiabilité des données existantes
- Urgence de l'introduction d'un SPAC



Stratégie de Formulation du Projet Pilote

- (1) Definition des alternatives
- (2) Considération des plan d'expansion futurs
du Projet Pilote
- (3) Considération de l'acquisition et de
l'installation des équipements

Etablissement des Alternatives

- Alternative 1: Appliquer une partie du système proposé dans l'Avant-projet du Plan Directeur.
- Alternative 2: Appliquer un système intermédiaire entre le système existant et celui proposé dans le Plan Directeur. (l'Alternative 2 est divisé en alternative 2-1, 2-2 et 2-3)

Nécessité d'un Système Intermédiaire (Arrangement Graduel)

Fig. 7.3.1 Différence entre le système actuel et celui proposé pour le Plan Directeur

Système			Niveau de la performance du système actuel			
Sous-système	Composante	Élément	Non-diagnosable	Niveau initial	Entre le niveau initial et celui du plan Directeur	Niveau du Plan Directeur
Observation météo-hydrologique et collecte des données	Observation météo-hydrologique	Densité des stations d'observation				
	Collecte des données	Observation des mesures				
Analyse des données et prévision des crues et des écoulements des débris	-	Arrangement de bases de données, affichage des conditions hydrologiques				
		Prévision des crues				
		Transfer d'informations aux administrations concernées				
Emission de l'alerte aux crues et aux écoulements des	-	Définition de seuils pour l'émission de l'alerte				
Diffusion de l'alerte	-	-				
Execution de l'évacuation	-	définition de paramètres				

Legende: → Niveau de la performance du système actuel

Priorités de l'Amélioration du Système

Composition du sous-système	Première priorité	Deuxième priorité	Troisième priorité
	Performance d'un système pratique	Mise à jour du système pratique	Amélioration du système mis à jour
Système d'observation météo-hydrologique et de collecte des données	-	○	○
Analyse des données, affichage et prévision des crues et des écoulements des débris	○	-	○
Émission de l'alerte aux crues et écoulements des débris	○	-	○
Diffusion de l'alerte	-	○	○
Exécution de l'évacuation	○	-	○
○ : Amélioré			
- : non amélioré			

Première Priorité

Système			Niveau de performance du système			
Sous-système	Composante	Élément	Non disponible	Niveau actuel	Entre le niveau initial et celui du Plan Directeur	Niveau du Plan Directeur
Observation météo-hydrologique et collecte des données	Observation météo-hydrologique	Densité des stations d'observation		→		
		Observation de mesure		→		
	Collecte des données	-		→		
Analyse des données et prévision des écoulements des débris	-	Arrangement des données, affichage des conditions hydrologiques		→		
		Prévision des crues		→		
		Indes informations aux administration concernés		→		
Émission de l'alerte aux crues et aux écoulements des	-	définition de seuils pour l'émission de l'alerte		→		
Diffusion de l'alerte	-	-		→		
Exécution de l'évacuation	-	définition de paramètres		→		

Legende: → : Niveau de performance du système actuel → Première priorité

Second Priority

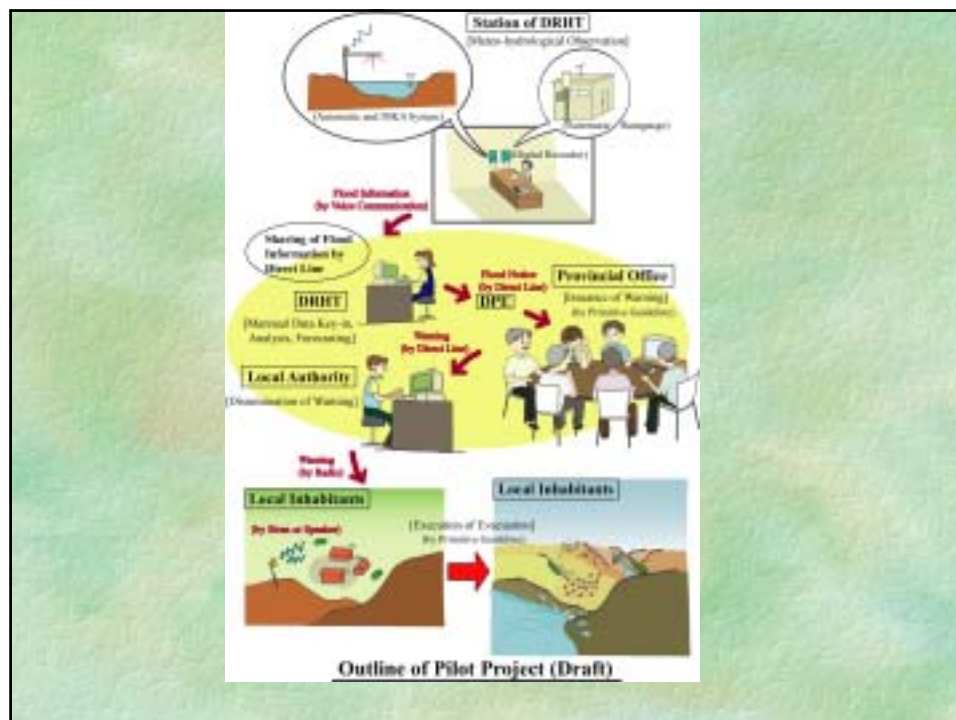
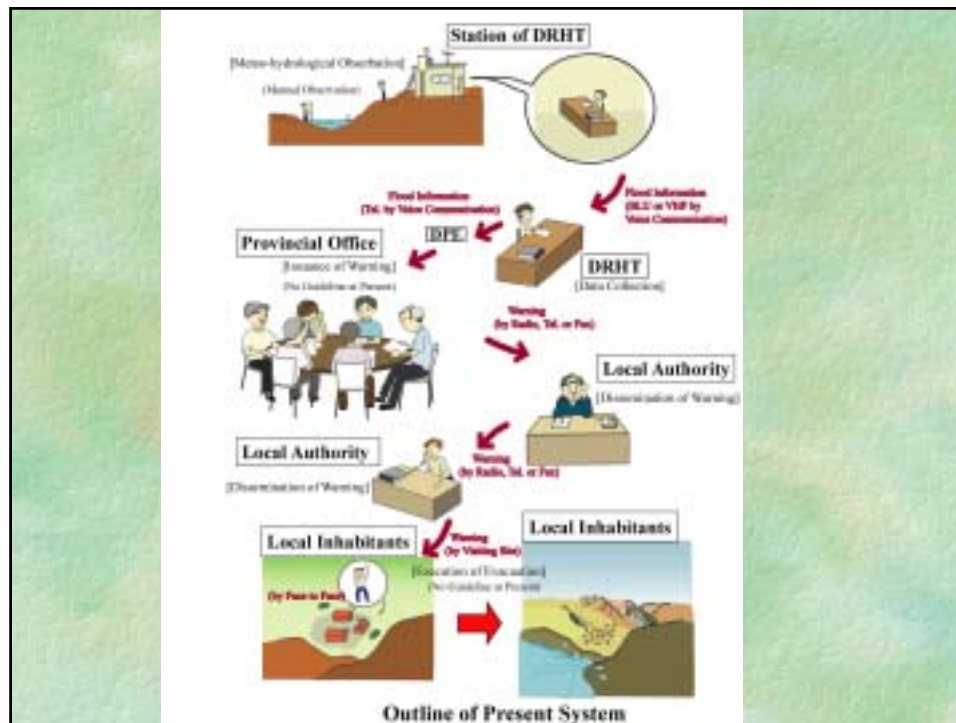
System			Achievement of Level of System			
Sub-system	Component	Item	No Provision	Primitive Level	Between Primitive Level and Master Plan Level	Master Plan Level
Meteo-hydrological Observation Data Collection	Meteo-hydrological Observation	Density of Observation Stations	→	→	→	
		Observation Measurement	→	→	→	→
	Data Collection	—	→	→	→	
Data Analysis and Forecasting of Flood and Debris Flow	—	Arrangement of data base, display of hydrological condition	→	→	→	
		Flood Forecasting	→	→		
		Distribution of Information to Agencies Concerned	→	→	→	
Issuance of Warning on Flood and Debris Flow	—	Arrangement of guideline for issuance of warning	→	→		
Dissemination of Warning	—	—	→	→	→	
Execution of Evacuation	—	Arrangement of guideline	→	→		

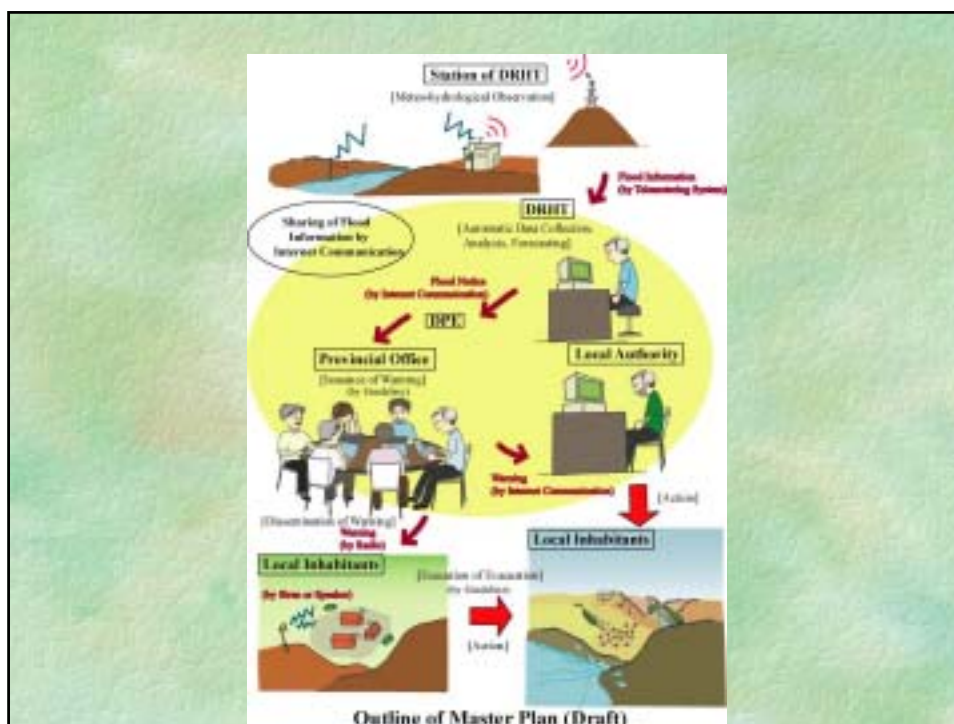
Legend: → : Achievement Level of Present System → First → Second Priority

Troisième priorité

Système			Achèvement of Level of System			
Sous-système	Composante	Élément	Non-disponible	Niveau actuel	Entre le niveau initial et celui du Plan Directeur	Niveau du Plan Directeur
Observation météo-hydrologique et collecte des données	Observation météo-hydrologique	Densité des stations d'observation	→	→	→	→
		Observation de mesure	→	→	→	→
	Collecte des données	—	→	→	→	→
Analyse des données et prévision des écoulements des débris	—	Arrangement des données, affichage des conditions hydrologiques	→	→	→	→
		Prévision des crues	→	→	→	→
		Indes informations aux administration concernés	→	→	→	→
Emission de l'alerte aux crues et aux écoulements des	—	définition de seuils pour l'émission de l'alerte	→	→	→	→
Diffusion de l'alerte	—	—	→	→	→	→
Exécution de l'évacuation	—	définition de paramètres	→	→	→	→

Legend: → Système actuel → Première Priorité → Deuxième priorité → Troisième



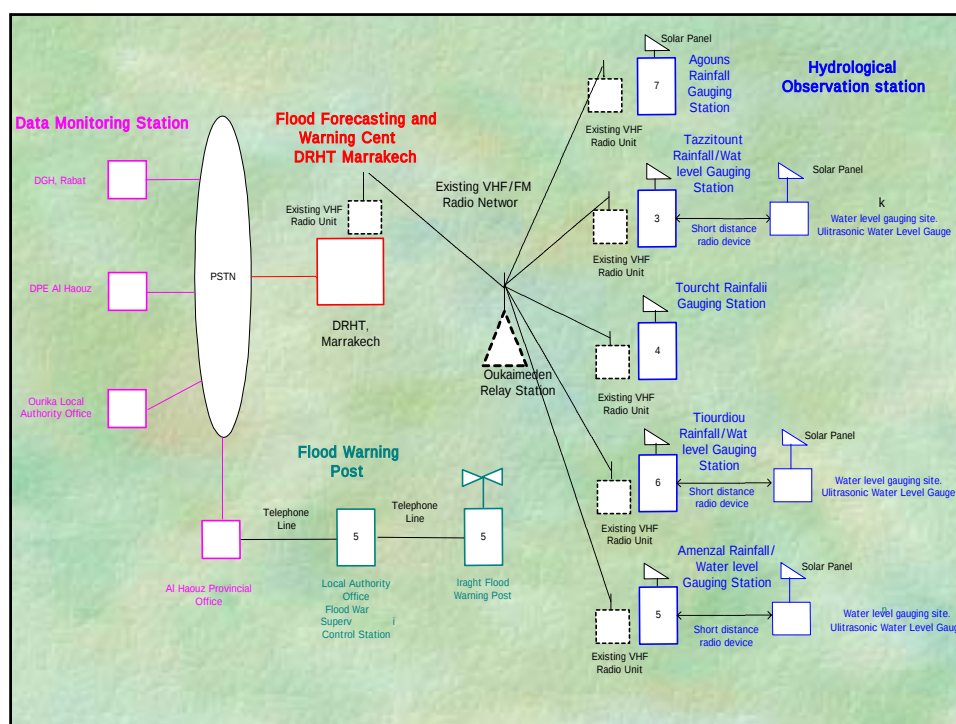


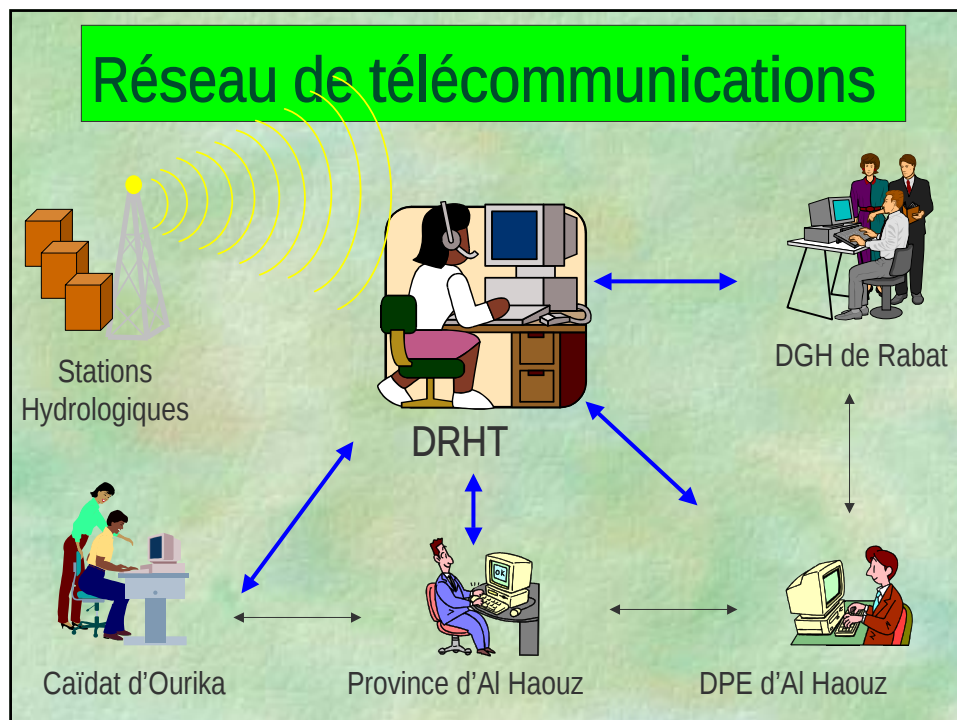
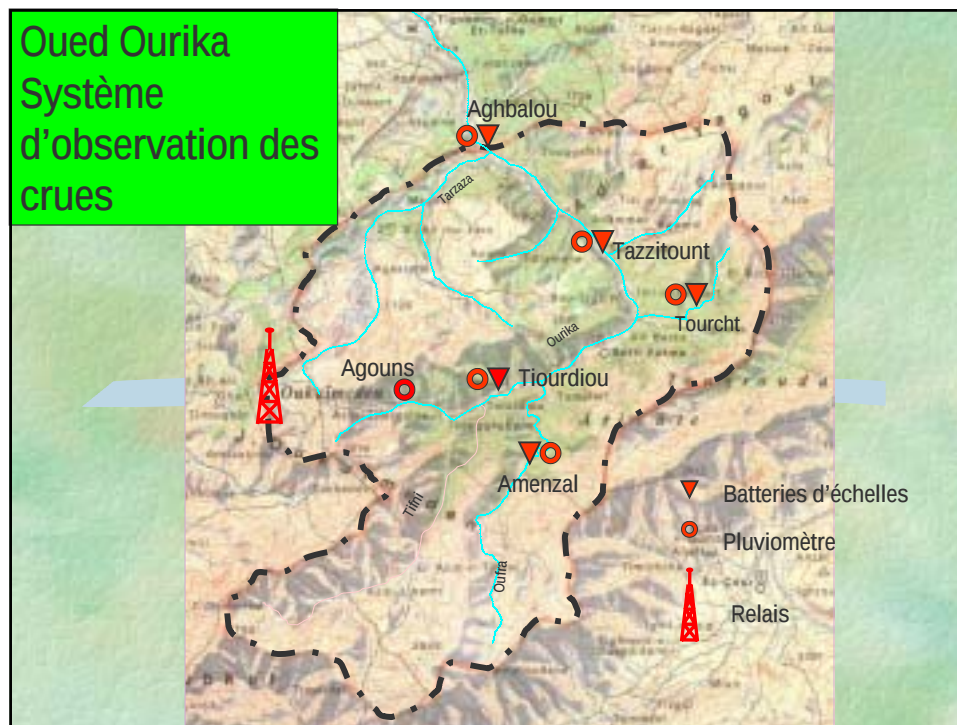
Établissement des alternatives:

- **Alternative 1: Partie du Plan Directeur**
(Amélioration à la Troisième Priorité)
- **Alternative 2: Niveau intermédiaire**
- (Alternative 2-1: Amélioration à la Première Priorité)
- (Alternative 2-2: Amélioration à la Deuxième Priorité)
- (Alternative 2-2: Alternative 2 + Télémétrie)

Sélection du Projet Pilote:

- Il peut y avoir plusieurs processus à examiner pour la réalisation du Plan Directeur (avant l'examen de l'alternative 1)
- L'alternative 1 sera contrainte par la période d'installation et les fonds budgétaires
- Alternative 2-2 pourrait être examinée durant la période d'étude, mais l'alternative 2-3 est considérablement difficile.





Remerciements

- ✿ Nous voudrions exprimer nos sincères remerciements aux fonctionnaires marocains concernés.
- ✿ Particulièrement à ceux de la DGH, la DRHT, la DPE, la DMN, la DPA, l'ORMVA, la DREF, la Protection Civile, le Ministère du Tourisme, la Gendarmerie Royale, etc.
- ✿ Nous sommes également reconnaissants à M. le Gouverneur de la Province d'Al Haouz pour son précieux soutien.