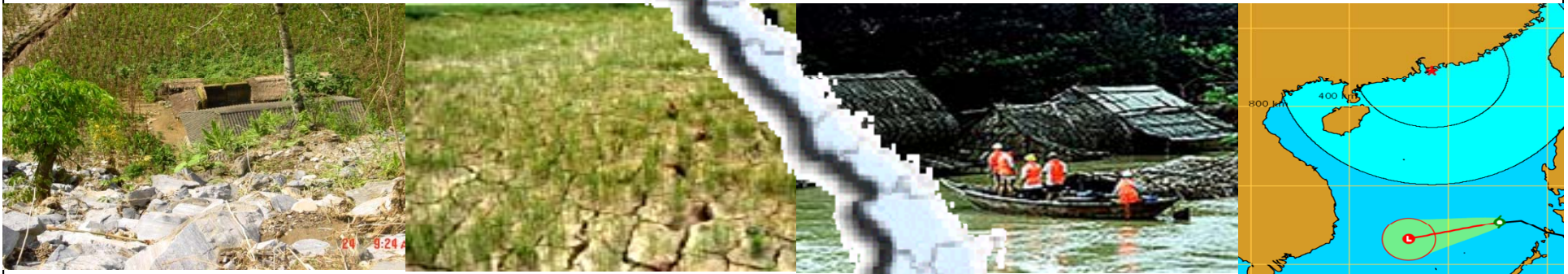


MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT OF VIETNAM
DEPARTMENT OF WATER RESOURCES



NATURAL MANAGEMENT SYSTEM IN VIETNAM



VIET NAM



Vietnam is located at the Southeast of Asia, with 333.000 km² of the total natural area and 3200km of coastline.

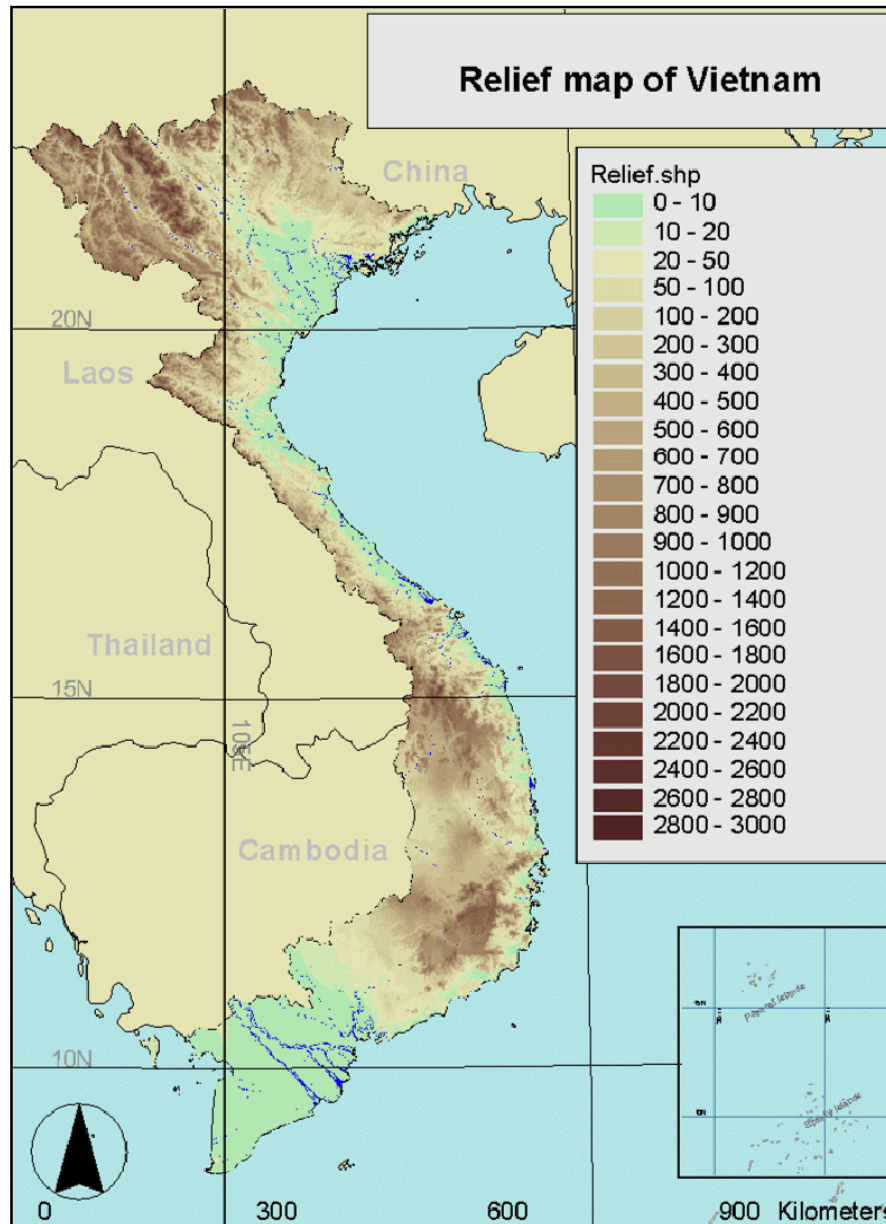
Population: 86,5 million (2008's statistics)

Population density: 226 capitas/km²

Urban population: 27 %

Rural population: 73 %

NATURAL TOPOGRAPHY



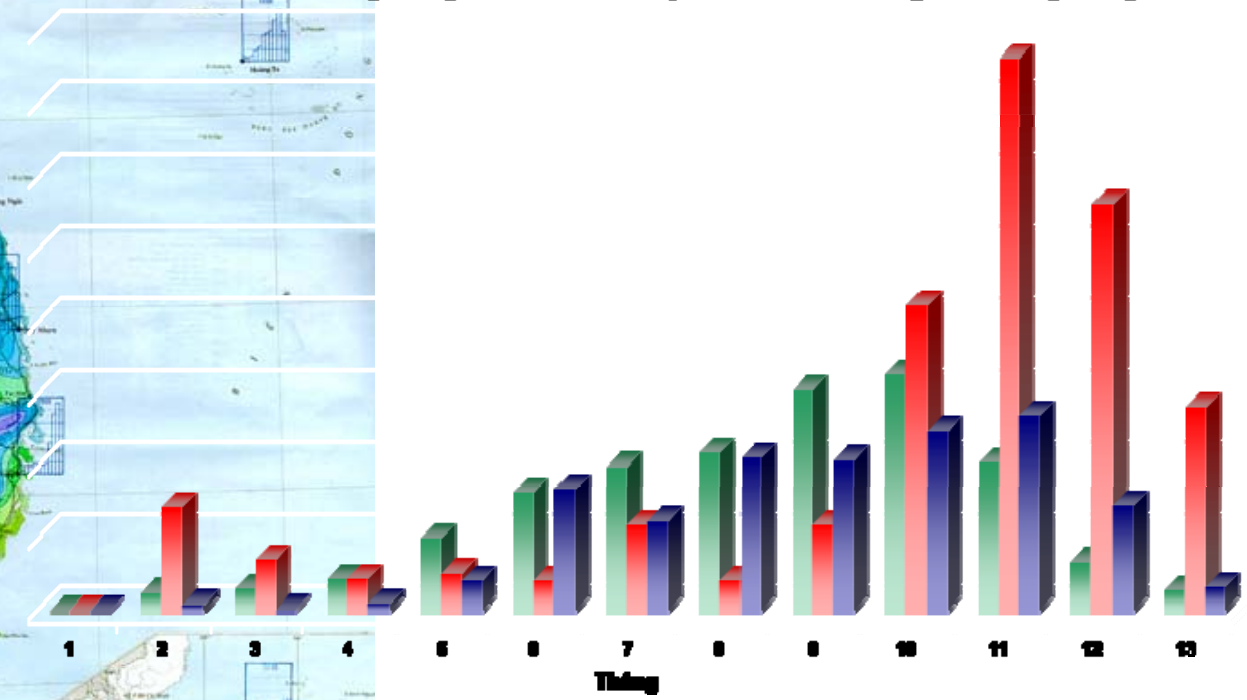
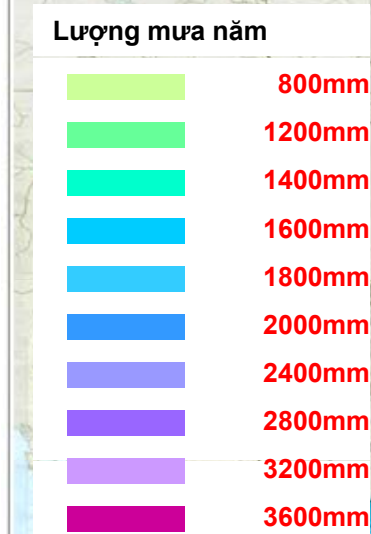
1. The Northern Vietnam is divided by high mountain ranges located in Northwest-Southeast direction. The topographical elevation lowers from the Northwest to the Southeast and to the sea side. Delta areas of the Red River and Thai Binh river and the coastal area have low natural elevation (97,4% of the area has elevation <9,0m).
2. Central and Highlands region has elevation sloping from the West to the East, with the Truong Son range in the West and low-land having sand dunes in the coastline area.
3. The Southern Vietnam has relatively flat topography with low elevation.

RAINFALL DISTRIBUTION BY REGION

Vietnam has monsoon tropical climate with hot and humid weather and high rainfall. However, the rainfall is distributed unevenly by time, and location (even in the same region).

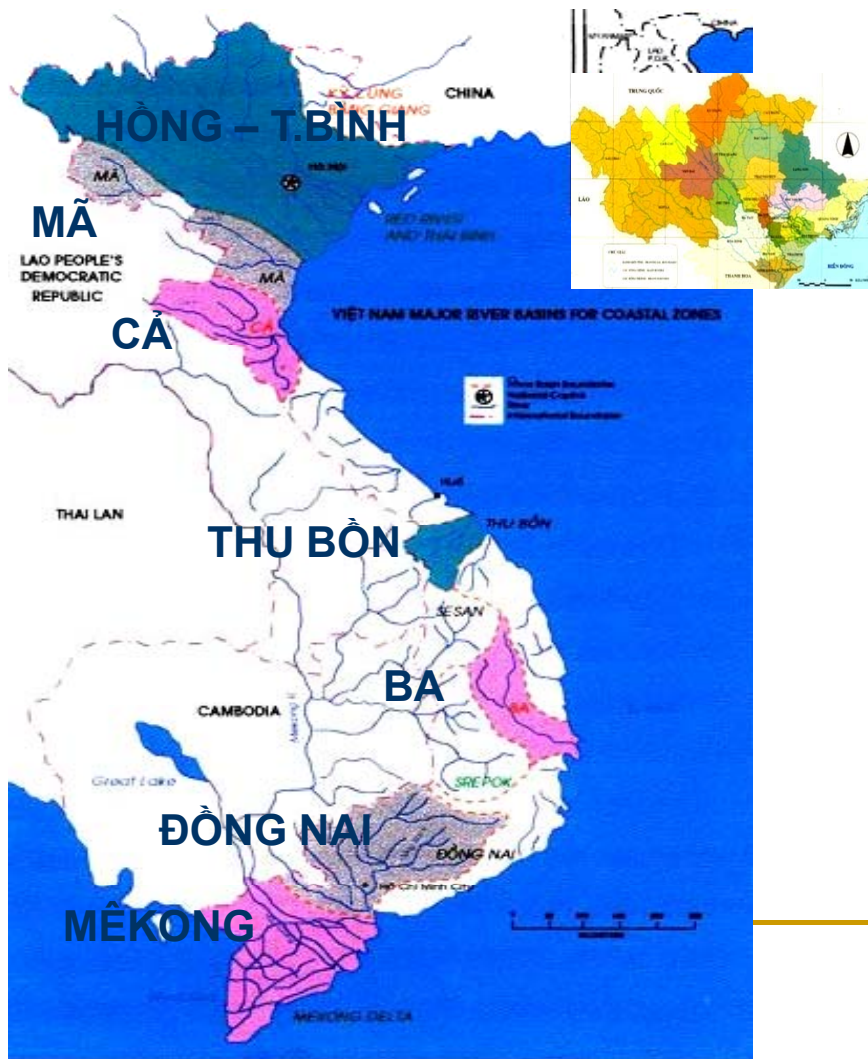
LƯỢNG MƯA BÌNH QUÂN TẠI BA VÙNG

Đồng bằng Bắc Bộ Duyên hải miền Trung Đồng bằng nam Bộ



MAIN RIVER SYSTEMS IN VIETNAM

Vietnam has 14 main river systems. River density is 1,5 – 2 km/km². There are 2 river systems sharing international basins that are:



The Red - Thai Binh river system in the North:

- Basin area is larger than 10.000 km².
- Unevenly developing with the river network density ranges from 0,25 to 0,5 km/km²

The Mekong river system in the South:

- Large basin area
- High river network density

NATURAL DISASTERS IN VIETNAM



Natural Hazards in Vietnam

Relative Frequency

High

Medium

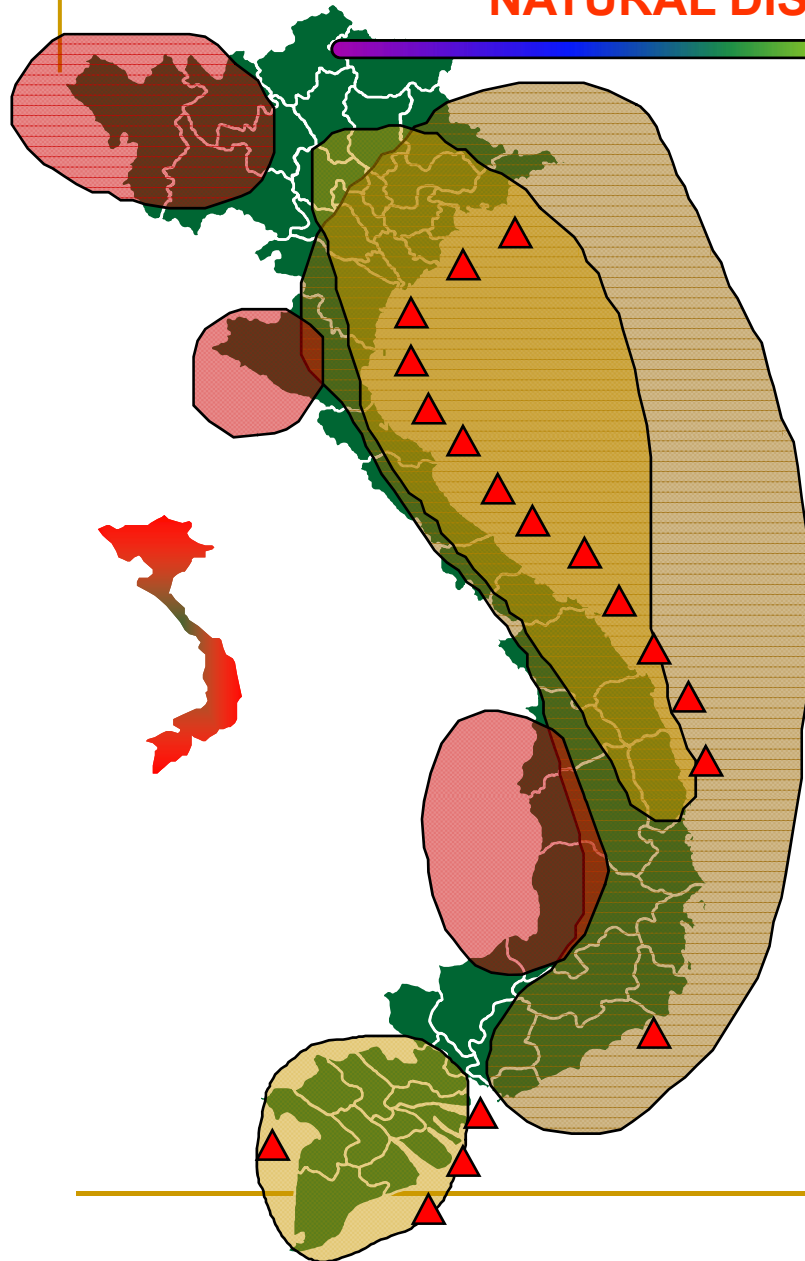
Low

**Flood
Typhoon
Inundation**

**Hail rain
Drought
Landslide
Fire
Deforestation**

**Earthquake
Accident (technology)
Frost**

NATURAL DISASTERS IN VIETNAM



 River Flooding

 Flash floods

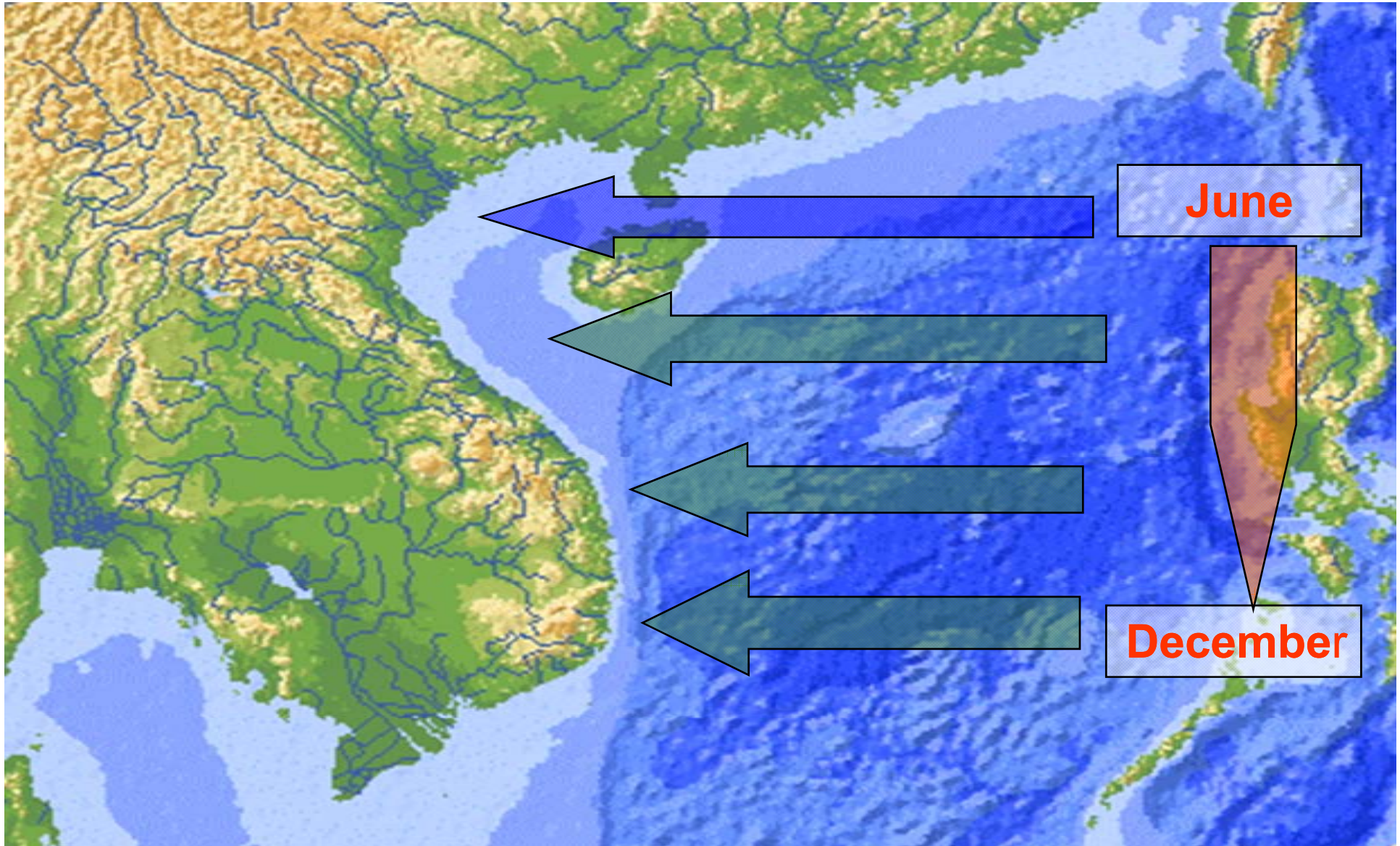
 Typhoons

 Storm Surges

Not included in map:

- Droughts
- Salt water intrusion
- Forest fire

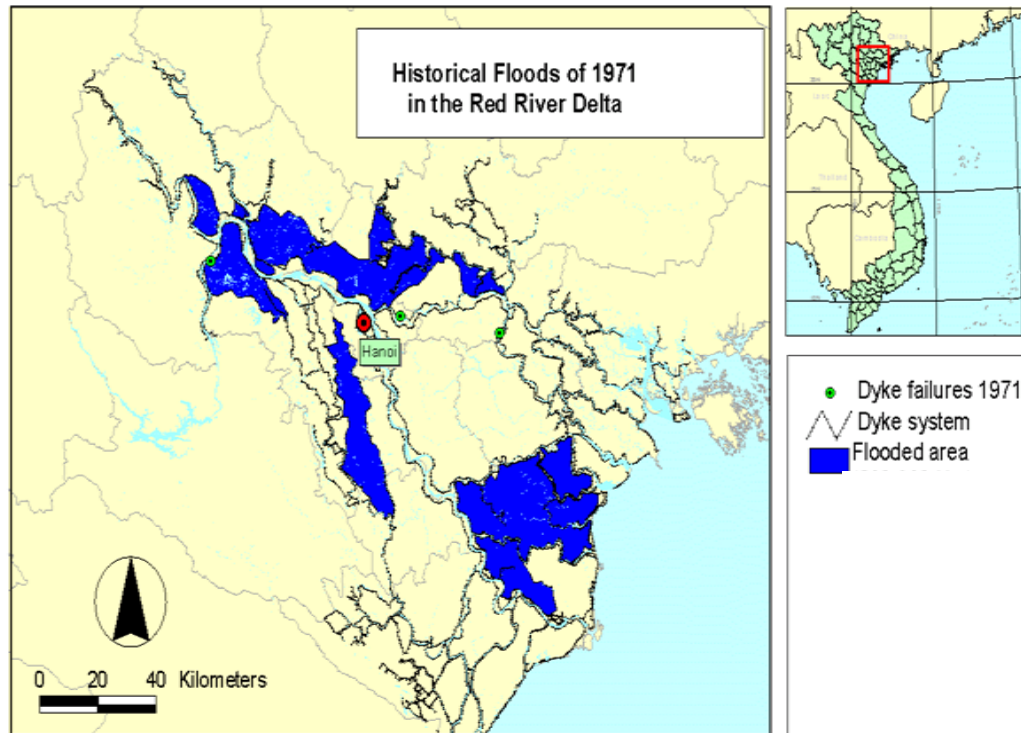
Typhoon Tracks



SERIOUS DISASTERS 1971- 2006

- **Historical flood event of 1971 on the Red river system**
 - **Linda Storm 1997**
 - **Flooding in Central Vietnam 1999**
 - **Flash floods in Lai Chau Province 2000**
 - **Flooding in MeKong River 2000, 2001,2002**
 - **Xangsen Typhoon 2006**
-

SERIOUS DISASTERS



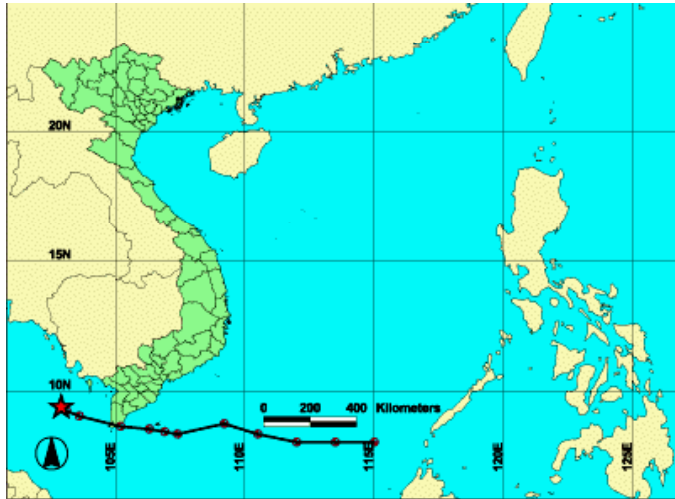
- The historical flood event happened in August 1971 was the most extreme flood on the Red river basin, caused dyke failures in numerous places

The dyke system was seriously threatened: erosion happened in 648 dyke section with total length of 74km, spill and near spill over dyke in 307 sections with length of 415km, boiling wells in 1628 places, termite nest collapse in 265 places, and water leakage in almost the dyke system.

Total inundated area was 250.139 ha, of which 162.598 ha totally damaged. Inundation affected 2,71 million of people, caused immediate losses of over 1 billion đồng. A number of traffic routes, cities and industrial zones were flooded.

SERIOUS DISASTERS

Linda Storm (2 Nov. 1997)



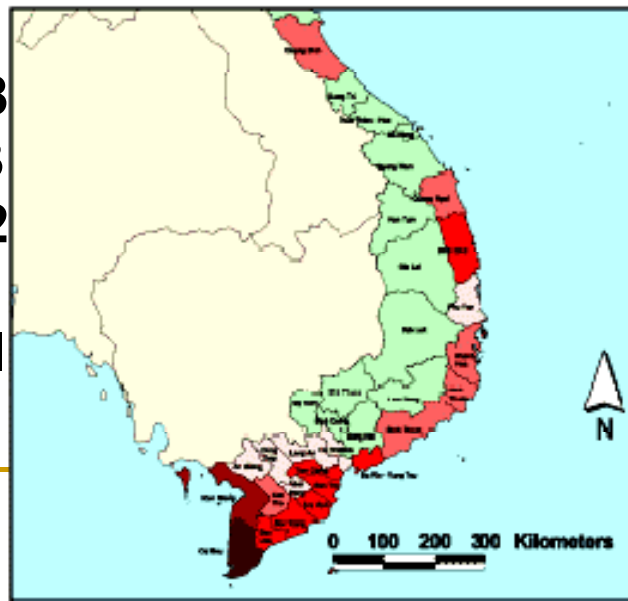
On 2 November 1997 the center of Typhoon Linda hit the southern tip of Vietnam (the area from Bac Lieu Province to Ca Mau Province) with wind velocities of 75 to 102 km/h (Beaufort Scale 9 to 10). On 3 November 1997, Typhoon Linda moved west and northwest, away from Viet Nam, towards the Gulf of Thailand, at a speed of 20 km/h.

No. of people killed: 778

No. of people missing: 2123

No. of people injured: 1232

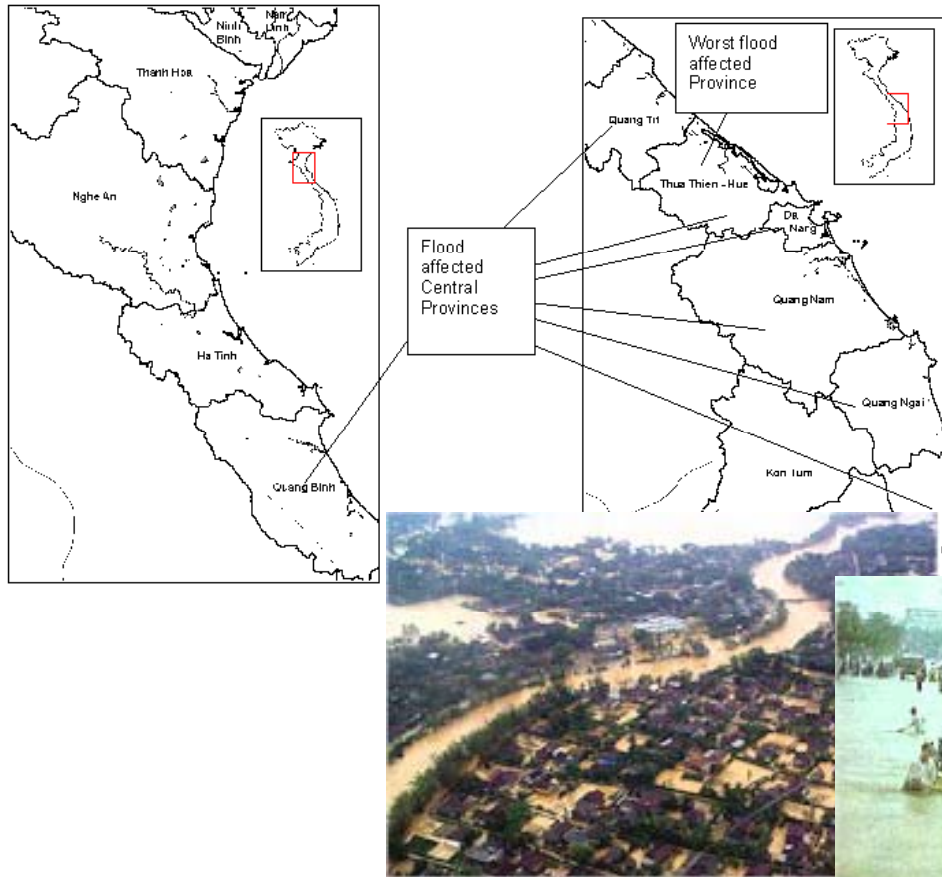
Economic loss: \$US 593 Mil



People killed/missing
1-16
17-45
46-191
192-460
461-1292

SERIOUS DISASTERS

Flooding in Central Provinces



In November 1999, severe floods occurred in the Central Provinces from Quang Binh to Binh Dinh

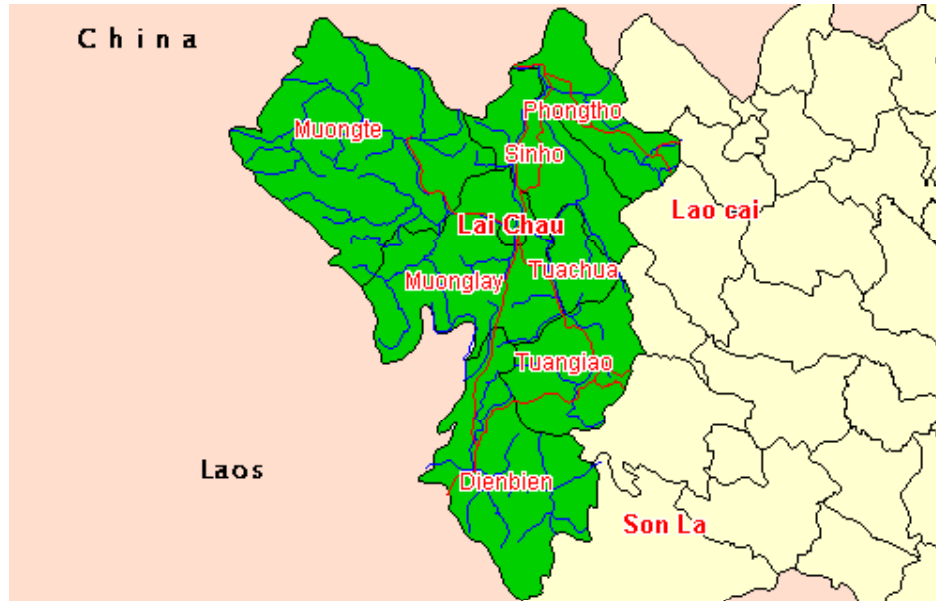


More than 600 people were killed or reported missing and the value of the loss of property was approx. \$US 300 Mil.

SERIOUS DISASTERS

Flashflood in Lai Chau Province

3 October 2000



**Nam Coong Commune,
Sin Ho District,
Lai Chau Province**

No. of people killed: 40

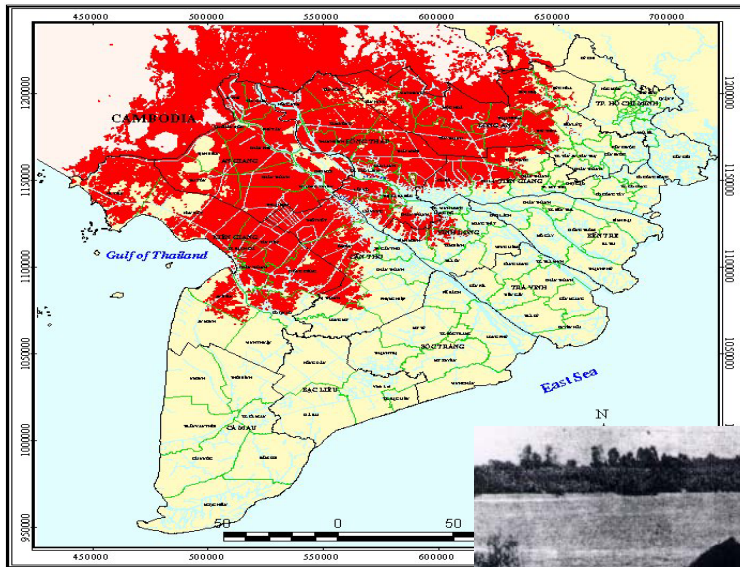
No. of people injured: 17

Economic loss: \$US 140,000



Flooding in Mekong River

In November 2000, the Mekong River Delta suffered the harshest flooding in over 40 years.



Losses

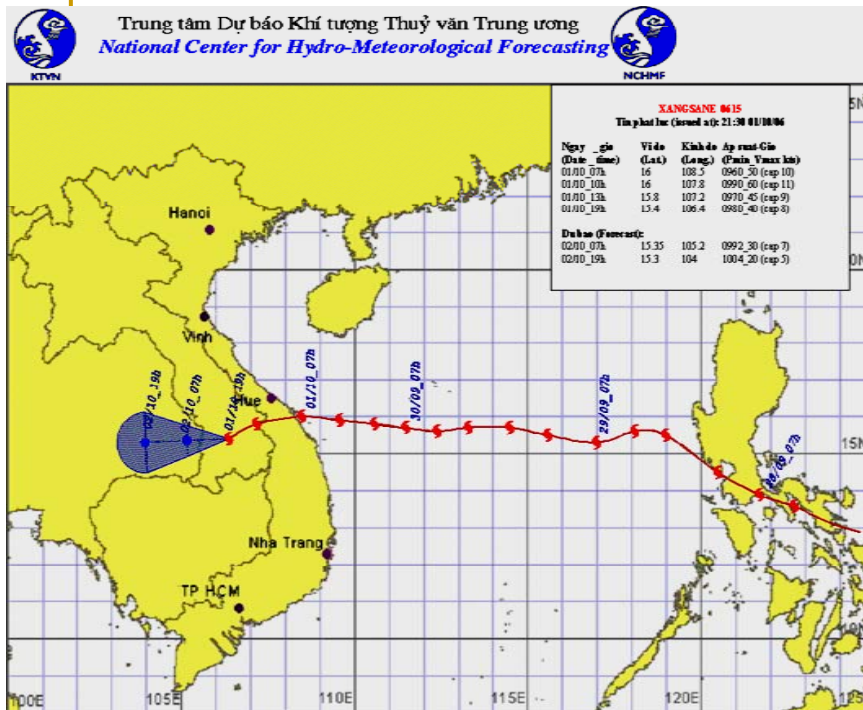
No. of people killed:
(of which 335 were children) **481**

Households affected: **888,000**

US\$ 280 Mil.



SERIOUS DISASTERS



One of the most violent typhoon in the last 20 years in Vietnam (Beaufort scale 12, gusting Beaufort scale 13-14)

Formed in the East sea of the Philippines (26/9/06) landed to Da Nang AM 1/10/06

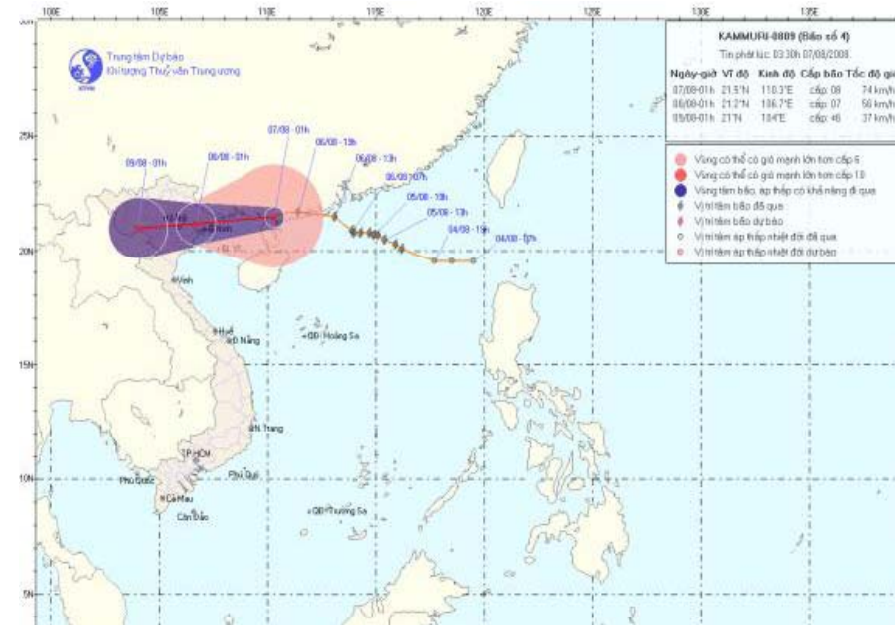
Stable track, intensity and high movement speed (20km/h).

Broad affected area of strong wind (Quang Tri - Quang Ngai province)

- Dead: 66 persons
Missing: 2 (by flood) Injury: 525
Collapsed houses: 19.736 Damaged houses: 273.744
- Sunk and damaged boats: 878
- Total economic loss estimated: 10.375 billion VND (650 million USD)

Storm No. 4 (Kammuri), August 2008

- Storm No. 4 hit the mainland of Guang Dong (China) on August 6 and weaken and headed to the northern part of Gulf of Tonkin. It then move westward. On August 7 storm No. 4 made landfall in Quang Ninh province, weaken into tropical depression and continued to move westward.



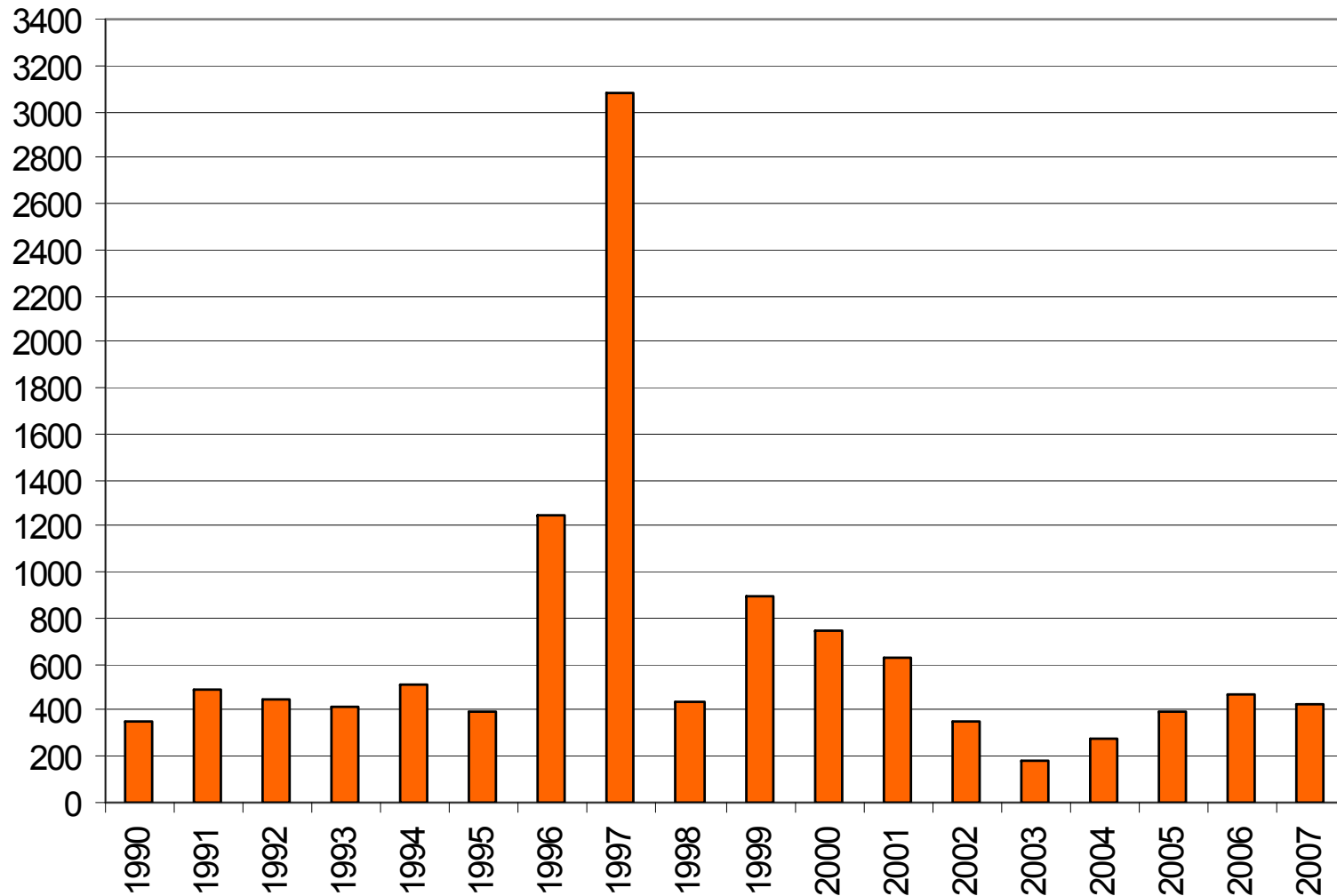
Storm No. 4 (Kammuri), August 2008

- The storm's circulation caused heavy rain in northern provinces of Vietnam. The rainfall recorded in Red river and Thai Binh river valley was from 100 to 300mm. In some places the rainfall recorded more than 500mm such as: Sapa: 524mm and Thac Ba: 657mm, etc.
 - Large flooding occurred in Thao, Lo and Thai Binh river system. The flood peak in Lao Cai was 84.91m (1.41m over the Warning level III) and in Yen Bai was: 34.326m (0.16m lower than that recorded in the historical flood in 1968) which caused serious damage to Lao Cai, Yen Bai and Phu Tho provinces.
 - Damage: 133 people recorded dead; 34 missing and 91 people injured. Total damage losses: VND bill. 1.969 (US\$ mil. 120)
-

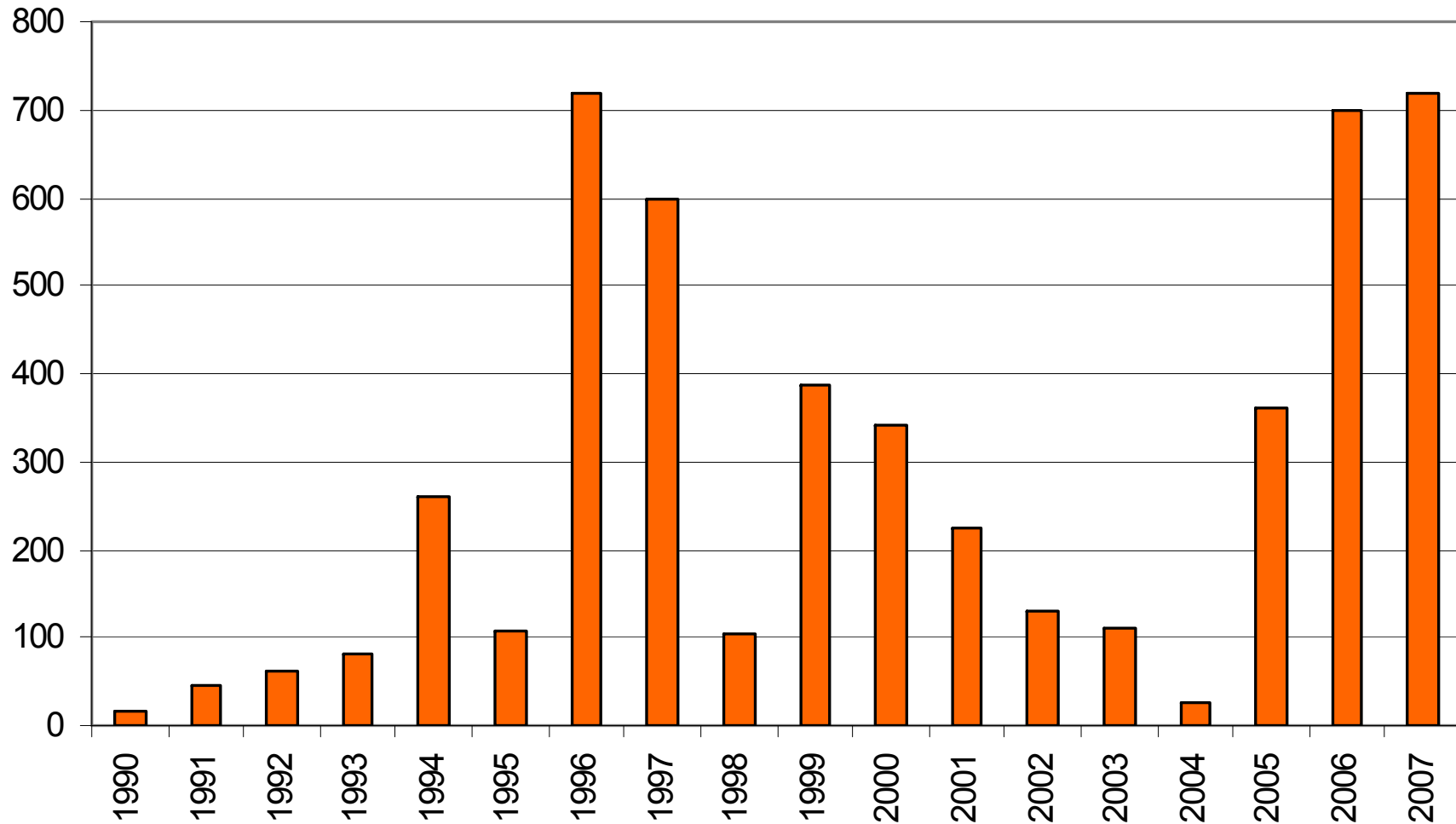
Some photos of the flooding after storm No 4 (Kammuri)



HUMAN LOSS RECORDED FROM 1990 TO 2007



ECONOMIC LOSS RECORDED FROM 1990 TO 2007



General Perspective and Goals in Disaster Management

1. General perspective:

- Disaster management includes preparedness, response and recovery of consequences caused by disaster, Priority is given to preparedness.
- Vietnamese Citizens and foreigners living in the territory of Vietnam all are duty-bound to disaster prevention, response and mitigation.
- Disaster prevention, response and mitigation are joint actions of Government and citizens.
- Disaster prevention, response and mitigation shall be succeeding and unleashing traditional experience, learnt lessons and combining them with modern knowledge and technologies through international cooperation

2. Goals:

- Minimize the losses of human life
- Minimize the losses of properties, the damage of natural resources and cultural heritages, and the degradation of environment contributing significantly to ensure the country sustainable development.

3. Guiding principles

Government consolidates the State management on disaster prevention, response and mitigation nationwide.

- Step by step complete institutions and organizational mechanisms from central to local levels.
 - The National Strategy for disaster prevention, response and mitigation must be implemented in synchronous, period-based and priorities-based manners.
 - Investment for disaster prevention, response and mitigation is critical to ensure a sustainable development.
 - Combine both structural and nonstructural measures, for multipurpose. Disaster prevention, response and mitigation shall be integrated into socioeconomic development master planning and plans of every region, sector, and nation-wide.
 - Disaster prevention, response and mitigation shall be socialized.
 - Ensure the implementation of international commitments in the field of disaster prevention, response and mitigation.
-

4. Measures: Non-structural measures:

- Strengthen early warning and forecast capacities.
 - Improve legislation and policies: Dyke law, Flood and Storm Control Ordinance and other under law documents, Decrees, Circulars, etc.
 - Modernize information systems
 - Consolidate the steering mechanism for disaster prevention, response and mitigation at all levels
 - Strengthen search and rescue capacities.
 - Develop building code for disaster mitigation works.
 - Develop and improve the legal framework.
 - Follow the “4-on-the-spot” motto: command on the spot, man-power on the spot, materials on the spot and logistics on the spot
 - Integrate disaster mitigation into socio-economic development planning in Vietnam and implementation of National Strategy.
 - Raise community awareness.
 - Increase investment and do research.
 - Implement socialization policy on disaster mitigation.
 - Actively integrate into the International Community: Participate in regional and international organizations: ADPC; ADRC; Typhoon Committee; WMO, ARF... for experience sharing.
-

4. Measures: Structural measures:

Construct reservoirs and upgrade the reservoirs system in upstream.

- Enhance dyke systems, upgrade sluices underneath the dykes, retard and divert flood.
 - Improve and upgrade infrastructure and social-economic situation.
 - Construct storm shelters for boats and ships when storm or tropical depression occur
 - Implement programs on forestation and protection of upstream forests
 - Construct erosion prevention structures
-

Solutions to response to natural disaster in Vietnam

- In 16th November 2007, the Prime Minister issued the Decision No.172/2007/ QD-TTg on approving the National Strategy for natural disaster prevention, response and mitigation to 2020.
-

Responsibilities and solutions for each region

a. The Northern plains and the North Central

- Enhance flood-prevention capacity for river dyke system
 - Continue constructing reservoir system
 - Improve the flood discharge capacity for river bed
 - Implement programs such as restoring and upgrading sea dykes, plantation of watershed forest and protective forest
-

Responsibilities and solutions for each region

b. The Central Coast, South East and Islands

“Proactive in prevention, avoidance and adaptation to develop”

- Plan residential, industrial and tourism areas
 - Shift the crop and animal husbandry structure
 - Promote research and suggest solutions on preventing the river mouth area extension, enhancing flood discharge and combining with water traffic
 - Strengthen and upgrade dykes, preserve natural sand dune; build reservoirs, afforest and; build parking space for boats and ships
-

Responsibilities and solutions for each region

c. The Mekong River Delta

“Live together with floods”

- Planning to control flood
 - Construction of residential clusters and infrastructure for the population to flood resistance
 - Proactively take advantage of floods
 - Enhance international cooperation with countries in Mekong basin
-

Responsibilities and solutions for each region

d. Mountainous areas and Central Highlands

“Proactively prevent natural disasters ”

- Define and map areas highly prone to flash floods, landslides
 - Establish warning and communication systems
 - Strengthen the international cooperation in natural disasters forecasting, warning
-

Responsibilities and solutions for each region

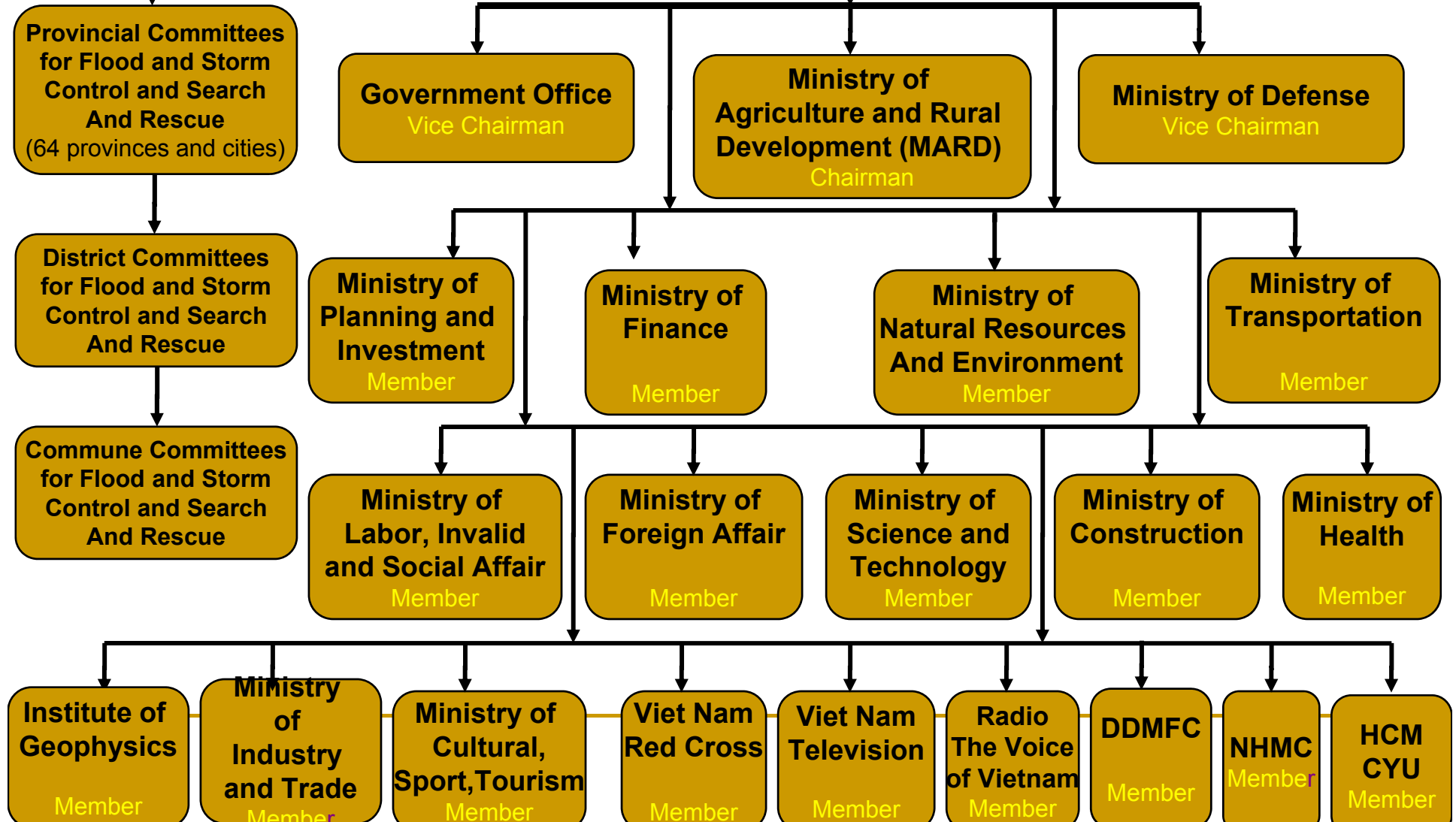
e. Offshore areas

“Proactively prevent and response ”

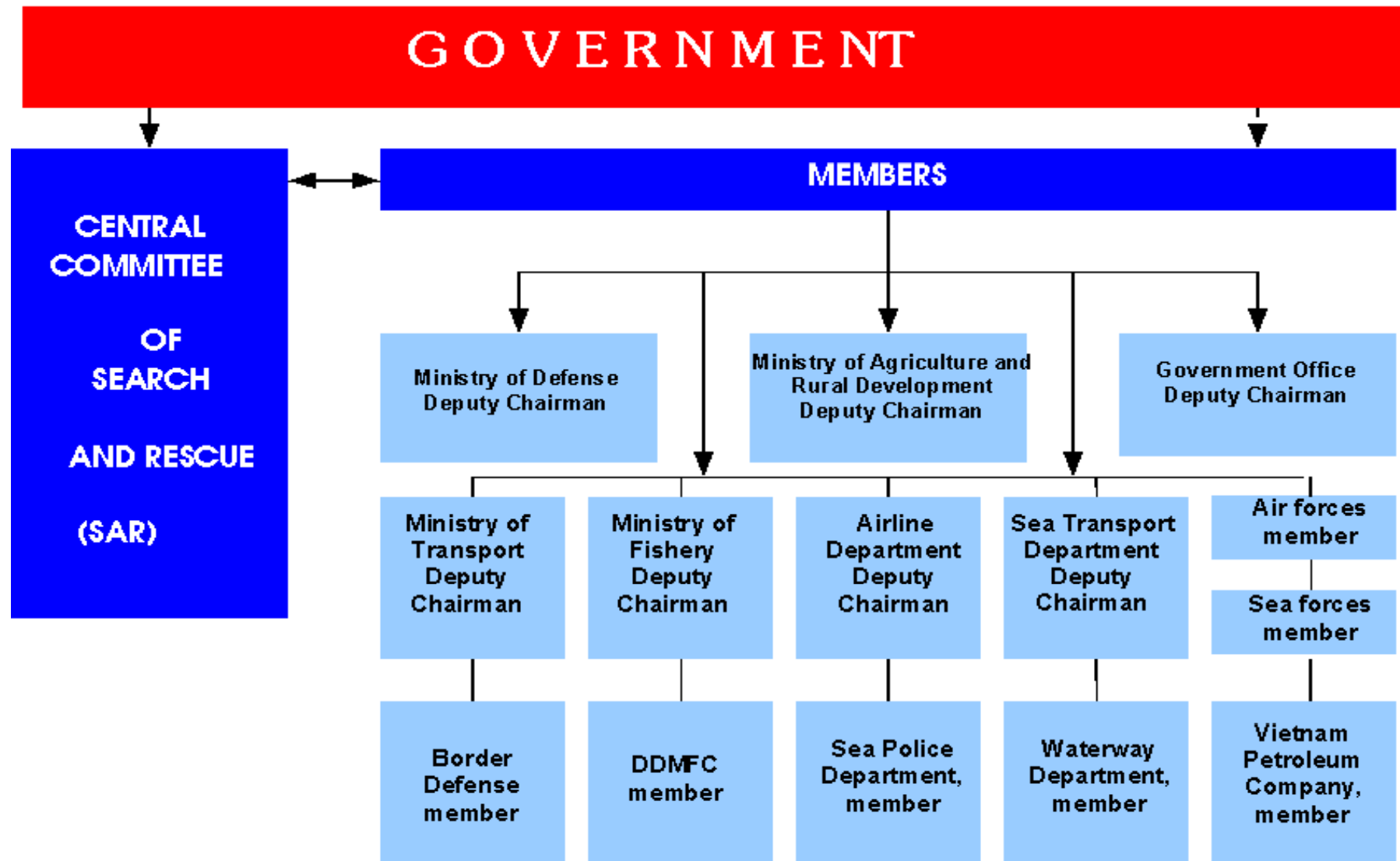
- Build management system for pelagic fishing boats and ships
 - Establish communication system
 - Strengthen the cooperation with other countries and border localities in region
-

GOVERNMENT

Central Steering Committee for Flood and Storm Control - Vietnam (CCFSC)



The Administrative Structure of Vietnam National Committee for SAR.



GREAT SUPPORT FROM UN ORGANIZATIONS, FOREIGN GOVERNMENTS, BANKS, NGOS AND DONORS



Thank for your Attention

