

**PART 4**

**DECISION NO. 581-TTG OF JULY 25, 1997  
PROMULGATING THE REGULATION ON FLOOD AND  
STORM WARNING**

**(Official Government Translation)  
15 September, 1997**

**(DMU Translation)  
June 1998**



SOCIALIST REPUBLIC OF VIETNAM  
Independence - Freedom - Happiness

# CÔNG BÁO

Official Gazette

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## **THE PRIME MINISTER**

### **DECISION No.581-TTg of July 25, 1997 promulgating the Regulation on Flood and Storm Warning.**

The flood and storm warning includes the regular monitoring, gathering and processing of information, the issuance of announcements and forecasts on storms, tropical low atmospheric pressure and floods and the prompt transmission of such information to the different agencies so that the latter direct different levels, branches, economic organizations, social organizations and the entire people to well serve the flood and storm prevention and combat as well as the reduction of natural calamities.

The General Department of Hydro-Meteorology shall exercise the function of State management over the work of flood and storm warning. The branches, economic organizations, social organizations and individuals inside and outside the country that want to engage in the work of flood and storm warning within the territory and territorial water of Vietnam must obtain permission from the General Department of Hydro-Meteorology.

Levels, branches and mass media agencies, while transmitting information on storms, tropical low atmospheric pressure and floods provided by the General Department of Hydro-Meteorology, shall have to strictly comply with the contents of such information.

The Regulation also includes detailed provisions on the regime of flood and storm warning; and responsibilities of the ministries and branches for the work of flood and storm warning.

**DECISION OF THE PRIME MINISTER  
Issuing Regulation on Flood and Storm Warning**

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**THE PRIME MINISTER**

*Pursuant to the Government Organisation Law, dated 30 September 1992;*

*Pursuant to Decree No.32/CP, dated 20 May, 1996, issued by the Government, stipulating in detail the implementation of the Law on Flood and Storm Preparedness and Prevention;*

*Pursuant to Decree No.24/CP, dated 19 March, 1997, issued by the Government stipulating in detail the implementation of the Law on Utility and Protection of Hydro-meteorological projects;*

*As requested by the Director of the General Department of Hydro-Meteorology;*

**DECIDES**

**Article 1 - To issue this Decision together with the Regulation on Flood and Storm Warning.**

**Article 2 - This Decision will replace Decision No.206/TTg dated 28 June 1980 issued by the Prime Minister, dealing with the Regulation on Storm Warning, and it will take effect after 15 days, counted from the signing date. All previous Decisions on Regulations on and Responsibility for Flood and Storm Warning which disagree with this Decision will be revoked.**

The Director of the General Department of Hydro-Meteorology is responsible for guiding and directing implementation of this Decision.

**Article 3 - Ministers, Heads of ministerial agencies, Heads of Governmental agencies, and Chairmen of Provincial People's Committees are responsible for implementing this Decision./.**

**Distribution:**

- Standing office of the Political Bureau- Prime Minister, Deputy Prime Ministers
- Ministries, Agencies, Governmental Agencies
- State Council, Provincial People's Committees
- Office of the National Assembly
- President Office
- Central Party and offices of its Departments
- Supreme People's Prosecurocy
- Supreme People's Court
- Central Agencies and organisations
- Official Gazette

**For and on behalf of  
the Prime Minister Deputy Prime Minister,  
Nguyen Khanh already signed and sealed.**

**[signed 25 July 1997]**

**REGULATION ON FLOOD AND STORM WARNING**

(Issued together with Decision No.581/TTg,  
dated 25 July 1997, by the Prime Minister)

Storms, Tropical Low Pressure and Floods are extremely dangerous hydro-meteorological phenomena. They can cause great loss of life and property, and adverse affects to the environment.

This Regulation stipulates the responsibilities and rights of branches and levels with regards to warnings on storms, tropical low pressure and floods.

**Chapter I**

**GENERAL PROVISIONS**

**Article 1-** Flood and storm warning mentioned in this Regulation include the regular monitoring, gathering and processing of information, the issuance of announcements and forecasts on storms, tropical low pressure and floods, and the prompt dissemination of such information to the different authorities, agencies, levels, branches, economic and social organisations, and to the entire community, to carry out flood and storm preparedness and natural disaster mitigation properly.

**Article 2-** The General Department of Hydro-Meteorology administers flood and storm warning work for the State.

Branches, economic and social organisations, and individuals inside and outside the country who want to engage in the work of flood and storm warning within the territory and territorial waters of Viet Nam must obtain permission from the General Department of Hydro-Meteorology.

Levels, branches, and mass media agencies, in transmitting information on storms, tropical low pressure and floods, shall follow exactly whatever information has been provided by the General Department of Hydro-Meteorology.

**Article 3-** Storms, tropical low pressure and floods mentioned in this Regulation include:

- 1- Storms and tropical low pressure occurring in the East Sea, and storms originating east of 120°E longitude which may move into the East Sea within the next 12 to 24 hours and from there directly towards the coast of Viet Nam (see Annex 1 attached).
- 2- Floods on all major rivers within the territory of Viet Nam (see Annex 2 attached).

**Article 4-** In this Regulation, the terms hereafter should be understood as follows:

**1- A tropical cyclone** is a whirlwind zone, and its diameter may extend to hundreds of kilometres. It forms in tropical seas with wind circulating anti-clock-wise towards the centre. The atmospheric pressure inside the cyclone is lower than outside pressure, and is sometimes accompanied by precipitation, storms and whirlwinds.

**2- The centre of a tropical cyclone** is the place with the lowest pressure value, and the point of convergence towards which surrounding winds are circulating.

**3- A wind force** is the average speed defined in a 2 minute period of observation (calculated according to the Beaufort scale).

**4- A strongest wind force of a tropical cyclone** is the maximum of the average wind force of the tropical cyclone.

**5- A gust of wind** is a suddenly increasing wind speed identified over a 2 minute period.

**6- A tropical low pressure** is a tropical cyclone with maximum wind velocity of Beaufort Scale 6 to 7 and possible gusts of wind.

**7- A storm** is a tropical cyclone with maximum wind velocity of Beaufort Scale 8 or higher and possible gusts of wind.

Storms are distinguished by:

**a) A Normal Storm** is a tropical cyclone with maximum wind velocity of Beaufort Scale 8 to 9 and possible gusts of wind.

**b) A Strong Storm** is a tropical cyclone with maximum wind velocity of Beaufort Scale 10 to 11 and possible gusts of wind.

**c) A Very Strong Storm** is a tropical cyclone with maximum wind velocity of Beaufort Scale 12 or higher and possible gusts of wind.

**8- A Landing Storm** is a storm that has struck the mainland.

**9- A Dissolving Storm** is a storm that weakens into a tropical low pressure zone, with maximum wind velocity of Beaufort Scale 6 or lower.

**10- An Area Directly Affected** by a storm or a tropical low pressure is an area with wind velocity of Beaufort Scale 6 or higher, as a result of a storm or a tropical low pressure.

**11- A Storm Surge** is a phenomenon in which sea water rises higher than the normal tide level, as a result of a storm.

**12- A Flood** is a phenomenon in which river water rises for a certain period and then decreases.

**13- The Flood Peak** is the highest water level observable, in a specific area, during a flood.

**a) The Yearly Flood Peak** is the highest flood level in a year.

**b) The Average Flood Peak** is the average value of flood peaks observable over many years.

**14- Floods are distinguished by:**

**a) A Small Flood** is a flood that has a lower peak than the average peak for other years.

**b) A Medium Flood** is a flood that has a peak equal to the average peak for other years.

**c) A Major Flood** is a flood that has a higher peak than the average peak for other years.

**d) A Massive Flood** is a flood with an unusually high peak (one rarely recorded over an observation period).

**e) A Record (or Historic) Flood** is the flood, out of a series of observations and surveys, with the highest peak measured.

**15- The Flood Amplitude** is the difference in value between the flood peak and the original (preceding) water level.

**16- The Flood intensity** is a change in water level value over a specific interval.

**17- The Flood Season** is officially defined as follows:

**a) On rivers in the North of Viet Nam: from 15 June to 15 October.**

**b) On rivers from Thanh Hoa Province to Ha Tinh Province: from 15 July to 15 November.**

- c) On rivers from Quang Binh Province to Binh Thuan Province: from 1 September to 30 November.
- d) On rivers in the South of Viet Nam and in Tay Nguyen (the central highlands): from 15 June to 30 November.

## Chapter II

### REGULATION ON STORM AND FLOOD WARNING

**Article 5-** When the General Department of Hydro-Meteorology identifies a storm, tropical low pressure or flood, the General Department of Hydro-Meteorology must issue bulletins as stipulated.

**Article 6-** Based on the location of the storm and its possible effects on the country, bulletins are classified as follows:

**1- An Observed Storm Bulletin:**

When a storm is occurring east of 120°E longitude, and is likely to move into the East Sea within the next 12 to 24 hours, and from there directly towards the coast of Viet Nam, an Observed Storm Bulletin is issued.

**2- A Remote Storm Bulletin:**

When the centre of a storm crosses 120°E longitude into the East Sea, and is at least 1,000 km from the closest point on the coast of Viet Nam; or when the centre of the storm is located 500 km to 1,000 km from the closest point on the coast of Viet Nam but is not yet likely to move towards the coast of Viet Nam, a Remote Storm Bulletin is issued.

**3- A Nearby Storm Bulletin:**

When the centre of a storm is moving towards Viet Nam but 500 km to 1,000 km from the closest point on the coast of Viet Nam; or when the centre of the storm is 300 km to 500 km from the closest point on the coast of Viet Nam but not likely to move towards Viet Nam in the next several days, a Nearby Storm Bulletin is issued.

**4- An Emergency Storm Bulletin:**

When the centre of a storm is 300 km to 500 km from the closest point on the coast of Viet Nam and has the potential to move towards on the coast of Viet Nam in the next 1 to 2 days; or when the centre of the storm is less than 300 km from the closest point on the coast of Viet Nam, an Emergency Storm Bulletin is issued.

**5- A Landing Storm Bulletin:**

a) When a storm lands on the mainland of the country, with wind velocity of Beaufort 8 or higher, a Landing Storm Bulletin is issued.

b) When a storm has already struck other countries, with wind velocity of Beaufort Scale 8 or higher, and has the potential to affect Viet Nam directly, Storm Bulletins continue to be issued as stipulated in Items 3 and 4 of Article 6 of this Regulation.

**6- A Final Storm Bulletin:**

When a storm is over and no longer affects Viet Nam, a Final Storm Bulletin is issued.

**Article 7-** Based on the possible effects of tropical low pressure on the country, Tropical Low Pressure Bulletins are classified as follows:

**1- A Tropical Low Pressure Bulletin:**

When a tropical low pressure is occurring in the East Sea and the centre of the tropical low pressure is located over 500 km from the closest point on the coast of Viet Nam; or when the centre of a tropical low pressure is 300 km to 500 km from the coast of Viet Nam and is not

yet likely to move towards the coast of Viet Nam in the next 24 hours; or when a storm has landed and weakens into a tropical low pressure, a Tropical Low Pressure Bulletin is issued.

## **2- A Nearby Coastal Tropical Low Pressure Bulletin:**

When the centre of a tropical low pressure is less than 300 km from the closest point on the coast of Viet Nam; or when the centre of a tropical low pressure is 300 km to 500 km from the coast of Viet Nam and has the potential to affect Viet Nam directly in the next 24 hours, a Nearby Coastal Tropical Low Pressure Bulletin is issued.

## **Article 8- A Flood Bulletin includes:**

Besides issuing daily Hydrological forecasts, regarding the flood situation on rivers in the flood season, the General Department of Hydro-Meteorology shall issue "Flood Bulletins" and "Emergency Flood Bulletins" corresponding to the following situations:

### **1- A Flood Bulletin:**

When the flood water level downstream on the Red River and/or on Thai Binh River is higher than Alarm Level II and likely to increase; or when another of the rivers listed in Annex 2 reaches Alarm Level III, a Flood Bulletin is issued.

### **2- An Emergency Flood Bulletin:**

When the flood level on one of the rivers listed in Annex 2 is higher than Alarm Level III and likely to increase, an Emergency Flood Notice is issued.

## **Article 9- Contents of a Storm Bulletin:**

### **1- Title of Storm Bulletin:**

Once the correct type of storm bulletin has been issued, as per Article 6 of this Regulation, the General Department of Hydro-Meteorology assigns a number to the storm based on its order among storms in the year.

*Observed Storms* are not given numbers.

### **2- Outline of Situation:**

An **Outline of Situation** announces the latest information on the position of the centre of a storm, describes the storm's strongest wind force, and provides a synopsis of the storm. Specific contents include:

a) **The Centre of a Storm** (defined by longitude and latitude rounded to the first decimal). If the centre cannot be located at a co-ordinate, it shall be located in a square, with sides equal to 1 or 2 degrees longitude and latitude.

In an **Emergency Storm Bulletin**, besides the centre defined by a co-ordinate, the distance from the centre to the farthest point on the coast of Viet Nam or to coastal areas directly vulnerable must also be given.

b) **The Strongest Wind Velocity** is measured near the centre of the storm, together with the velocity of gusts of wind if available (see Annex 3 attached).

c) **The Synopsis of a Storm** gives the storm's direction, changes in direction, speed of movement and intensity (with indication whether the storm is increasing or decreasing) over the last 12 hours or 24 hours.

### **3- Forecast Synopsis of a storm for the next 24 hours includes:**

a) **The Direction of a Storm**, defined as one of 16 main directions or as lying between 2 main directions. The main directions include: North, North-Northeast, Northeast, East-Northeast, East, East-Southeast, Southeast, South-Southeast, South, South-Southwest, Southwest, West-Southwest, West, West-Northwest, Northwest, North-Northwest.

b) **The speed of movement of a storm.**



- c) The forecast storm synopsis for the next 24 hours.
- d) For an **Emergency Storm**, besides the above-forecasted factors, if the storm is likely to affect the country directly in the next 12 hour or 24 hours, the following additional forecast information must be given:
  - Time and vulnerable regions.
  - Regions likely to be affected by strong winds.
  - Possible medium and heavy rain (see Annex 4 attached).
  - Possible storm surges and increases in the height (m) of sea water caused by the storm.

**Article 10- Content of a Tropical Low Pressure Bulletin:**

The content of a Tropical Low Pressure Bulletin, like the content of a Storm Bulletin, includes:

**1- Title of a Tropical Low Pressure Bulletin:**

Classification of Tropical Low Pressure Bulletins (as per Article 7 of this Regulation).

A Tropical Low Pressure Bulletin is not given a number.

2- If a **Tropical Low Pressure** is likely to affect the country directly in the next 24 hours, the following, additional information needs to be provided in a **Nearby Coastal Tropical Low Pressure Bulletin**:

a) The distance from the centre of Tropical Low Pressure to the closest point on Viet Nam's coast or to the most vulnerable coastal areas. If the exact co-ordinates of the centre of a Tropical Low Pressure cannot be located, the centre of the Tropical Low Pressure must be located within a square, which each side equal to 1 degree longitude or latitude. The distance from the centre of the Tropical Low Pressure must then be counted from the centre of the square.

b) The time the Tropical Low Pressure is forecast to land and the regions most likely to be affected.

c) Possible strong wind, and medium and heavy rain (see Annexes 3 and 4 attached).

**Article 11- Content of a Flood Bulletin includes:**

**1- The Title of the Flood Bulletin:**

A Flood Bulletin is classified by type of flood (as per Article 8 of this Regulation), and indicates the names of rivers and locations affected (see Annex 2 attached).

2- An outlined synopsis of the flood for the last 24 hours, listing both true water level data measured the day before, and the most up-to-date data.

3- Forecast water levels on the Red River, on the Thai Binh River, on the Cuu Long River, and flood peaks on other rivers (see Annex 2 attached). The possibility and probable development of a flood in a designated period are identified. The forecast water level value is compared to flood warning level value or special flood level value.

**Article 12- Regulation on Flood and Storm Warning:**

**1- For an Observed Storm Bulletin:**

Every day, 2 bulletins, one at 09:30 and another at 15:30, are transmitted and provided to the Central Party Office, the Government Office and the Central Committee for Flood and Storm Control.

2- All Storm Bulletins and Tropical Low Pressure Bulletins are officially transmitted 4 times every day at 4:30, 9:30, 15:30 and at 21:30.

Should a storm or Tropical Low Pressure become complicated, in addition to the 4 standard official transmitting times, additional information, when necessary, will be transmitted between any two official transmissions.

**3- A Flood Bulletin** is transmitted daily at 11:00. In case a flood becomes complicated, additional information will be transmitted at 21:00.

**4- Emergency Flood Bulletins:** there are 2 official transmissions daily at 11:00 and 21:00. In case a flood is particularly violent or becomes complicated, an additional transmission will be made between the 2 official transmissions.

### Chapter III

#### OBLIGATION OF FLOOD AND STORM WARNING

**Article 13- Obligations of ministries and branches regarding flood and storm warning**

**1- General Department of Hydro- Meteorology:**

- a) Organises regular observation and prompt identification of weather and hydrological conditions, and transmits official bulletins on storms and tropical low pressure occurring in the East Sea, and on floods on the main rivers throughout the country.
- b) As storms, tropical low pressure, or floods on main rivers occur, the General Department of Hydro-Meteorology is obliged to transmit bulletins on these storms, tropical low pressure, and floods, as stipulated in Chapter II, and to provide such information to the relevant authorities (see Annex 5 attached).
- c) Instructs and supervises Regional Hydro-Meteorology Stations, Provincial Forecasting Stations, and Hydro-Meteorology Services in vulnerable areas in providing prompt information on storms, tropical low pressure, and floods to Provincial Party Offices, to People's Committees, to Committees for Flood and Storm Control at all levels, to Central and Provincial broadcasting stations, to television stations, and to Central and local daily papers.

**2- Central Committee for Flood and Storm Control:**

- a) Receives bulletins from the General Department of Hydro-Meteorology on storms, tropical low pressure and floods. Based on the latest information, the Central Committee for Flood and Storm Control decides the proper measures to take in directing and managing work according to its functions.
- b) Provides up-to-date information on storms, tropical low pressure, and floods so that the General Department of Hydro-Meteorology can update information on the actual occurrence of storms, tropical low pressure and floods, and also summarise and evaluate forecasting.

**3- Voice of Viet Nam:**

- a) Upon receipt of a Remote Storm Bulletin, a Nearby Storm Bulletin, a Tropical Low Pressure Bulletin, or a Flood Bulletin, as mentioned in Items 2,3 and 4 of Article 12, every 2 hours (at the start of each broadcast) the Voice of Viet Nam shall transmit the bulletin, and repeat the broadcast throughout the day on all channels of the Voice of Viet Nam. The Voice of Viet Nam shall continue to transmit the latest information until it receives an official update.
- b) Upon receipt of an Emergency Storm Bulletin, Nearby Coastal Tropical Low Pressure Bulletin, Emergency Flood Bulletin, or an Official Telegram from the Central Committee for Flood and Storm Control, the Voice of Viet Nam shall immediately broadcast the Bulletin or Telegram 2 times, and then repeat the broadcast every hour throughout the day on all channels of the Voice of Viet Nam. The Voice of Viet Nam shall continue to transmit the latest information until it receives an official update, or is requested by Central Committee for

Flood and Storm Control or by General Department of Hydro-Meteorology to change the transmission time(s).

#### **4- Viet Nam Television:**

- a) Upon receipt of an Remote Storm Bulletin, a Nearby Storm Bulletin, a Tropical Low Pressure Bulletin, or a Flood Bulletin, as mentioned in Items 2,3 and 4 of Article 12, Viet Nam Television shall transmit the bulletin on the most current news programs on all channels.
- b) Upon receipt of an Emergency Storm Bulletin, a Nearby Coastal Tropical Low Pressure Bulletin, an Emergency Flood Bulletin, or an Official Telegram from the Central Committee for Flood and Storm Control, Viet Nam Television shall immediately broadcast the Bulletin or Telegram, and then repeat the broadcast every 2 hours throughout the day on all channels. Viet Nam Television shall continue to transmit the latest information until it receives an official update, or is requested by Central Committee for Flood and Storm Control or by General Department of Hydro-Meteorology to change the transmission time(s).

#### **5- Central and Local Daily Papers:**

Upon receipt of a bulletin (as mentioned above in Article 6, Article 7, and Article 8), or Official Telegram from Committees for Flood and Storm Control at all levels, the bulletin or telegram will be published immediately in the latest issues of Central and Local daily papers.

#### **6- General Department of Post and Telecommunications:**

Supervises closely and, where necessary, gives top priority to and co-ordinates with national media agencies – including agencies of the General Department of Posts and Telecommunications, companies belonging to the General Corporation of Post and Telecommunications of Viet Nam, and media agencies within ministries and branches – the gathering, receipt, and transmission of information provided by the General Department of Hydro-Meteorology on storms, tropical low pressure, and floods. The General Department of Posts and Telecommunications also disseminates directives from the Central Committee for Flood and Storm Control and from Provincial Committees for Flood and Storm Control to all levels, branches, and local authorities, to boats operating at sea, and to the entire community, to prepare for storms and floods to minimise damages.

#### **7- Provincial People's Committees and Provincial Committees for Flood and Storm Control:**

- a) Receives information on storms, tropical low pressure, and floods, provided by Regional Hydro-Meteorological Stations, Provincial Forecasting Stations and Hydro-Meteorological Services; as well as warnings and directives from the Central Committee for Flood and Storm Control. Based on the specific content of the directives, warnings and information received, concerned authorities in provinces and cities will disseminate promptly, to levels, branches, social and economic organisations, and people throughout the provinces, information on storms, tropical low pressure, and floods, together with instructions regarding storm and flood preparedness and prevention.
- b) Directs local Broadcasting Stations and Television Stations to transmit both bulletins on storms, tropical low pressure and floods, and directives from Committees for Flood and Storm Control at all levels, rapidly and accurately, at the appropriate time.

#### **8- Ministries and Branches:**

Upon receipt of information from the General Department of Hydro-Meteorology on storms, tropical low pressure and floods provided, Ministries and branches must do the following:

- a) Announce the information received to all agencies and units under their control in vulnerable areas, so that they can make preparations, and take measures to prevent damage.

b) Instruct, supervise and verify that units under their control promptly notify vessels operating at sea, irrigation projects, warehouses, harbours, etc., of the storm, tropical low pressure, or flood, so that they can make preparations, and take measures to prevent damage.

c) Provide all requested communications assistance to the General Department of Posts and Telecommunications and concerned agencies, and when necessary, commit internal communications resources to flood and storm warning activities throughout the country.

**9- Ministry of National Defence, Ministry of Transport, Ministry of Agriculture and Rural Development, Ministry of Aquatic Products:**

In addition to their obligations, as given in Item 8 of Article 13, the Ministry of National Defence, the Ministry of Transport, the Ministry of Agriculture and Rural Development, and the Ministry of Aquatic Products must:

a) When notified of storms, tropical low pressure or floods, organise and implement construction of signal poles at harbours, on off-shore islands, and at dike monitoring stations; instruct, verify and supervise the emplacement of sign boards and signal lights in these places, as well as on vessels operating at sea or on rivers (as specified in Annexes 6 and 7).

b) Equip lighthouses with facilities for transmitting storm warning signals or tropical low pressure warning signals.

c) Co-operate closely with concerned authorities in transmitting storm warnings or tropical low pressure warnings on all channels at coastal information stations, to vessels operating at sea.

#### Chapter IV

#### IMPLEMENTATION ARTICLES

**Article 14-** Organisations and individuals who excel in fulfilling their storm, tropical low pressure, or flood warning duties, who carry out these duties promptly to help prepare for storms and flood, and who work effectively to prevent damage, are rewarded as set out in the State Regulation.

Any organisations or individuals who fail to fulfil their assigned duties or who violate this Regulation, shall be disciplined and, depending upon the severity of their actions, fined administratively or investigated for criminal responsibility in accordance with Vietnamese Law.

**Article 15-** The Director of the General Department of Hydro-Meteorology is responsible, in co-ordination with concerned ministries, branches, and Provincial People's Committees, for instructing, organising and verifying the proper implementation of this Regulation.

**For and on behalf of the Prime Minister**

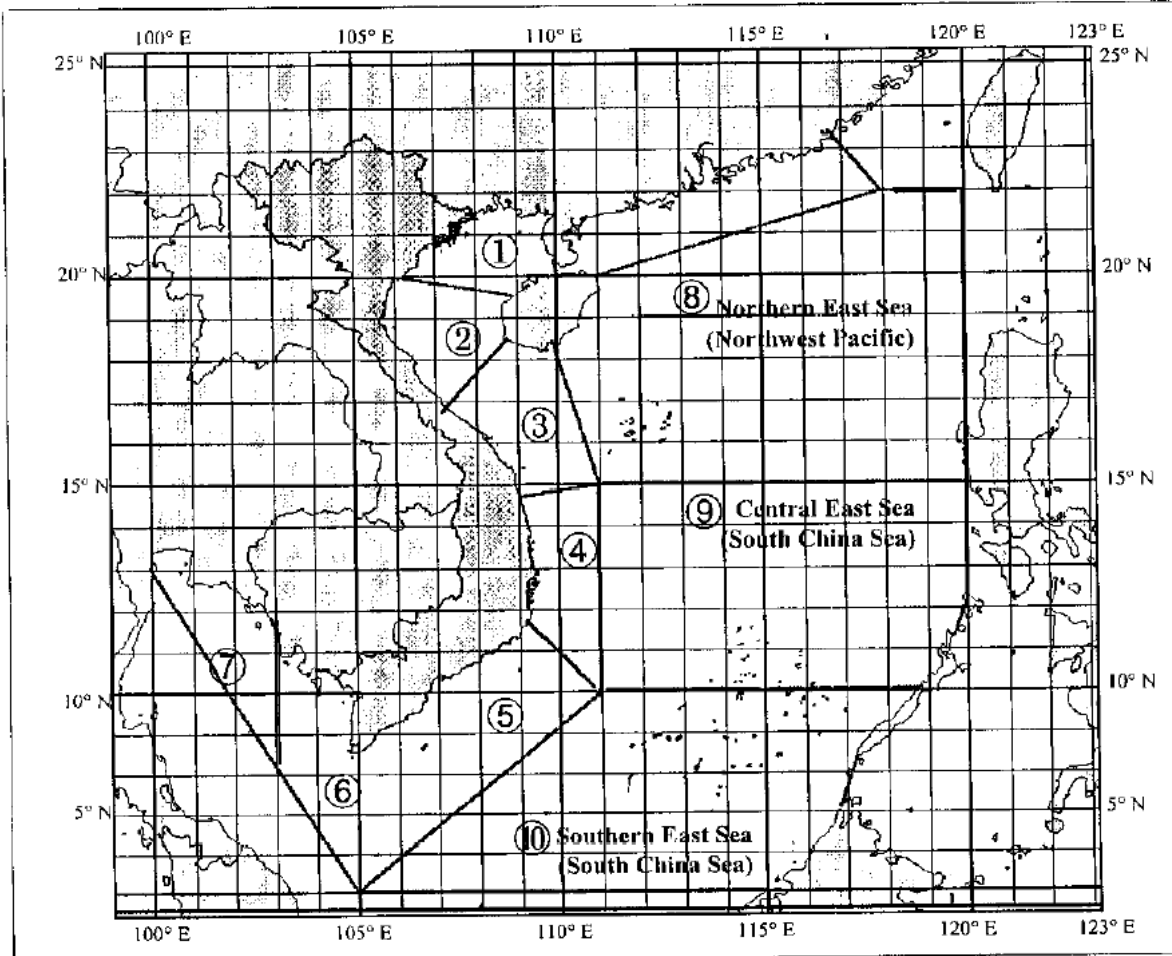
**Deputy Prime Minister, Nguyen Khanh,  
already signed and sealed**

*[Signed 25 July, 1997]*

*Translation prepared by UNDP Project VIE/93/031- Disaster Management Unit. Every effort has been made to prepare an accurate translation of this Decision of the Prime Minister. However, the Vietnamese language document is the controlling legal instrument.*

# Chart of Offshore Climatological Forecasting Zones

Annex 1



## Legend:

- (1) North of the Gulf of Tonkin
- (2) South of the Gulf of Tonkin
- (3) Offshore area from Quang Tri Province to Quang Ngai Province
- (4) Offshore area from Binh Dinh Province to Ninh Thuan Province
- (5) Offshore area from Binh Thuan Province to Ca Mau Province
- (6) Offshore area from Ca Mau Province to Kien Giang Province
- (7) Gulf of Thailand
- (8) Northern East Sea (Northwest Pacific Ocean)
- (9) Central East Sea (South China Sea)
- (10) Southern East Sea (South China Sea)

**LIST OF MAIN RIVERS FOR WHICH FLOODS ARE OFFICIALLY  
ANNOUNCED ON THE VOICE OF VIETNAM AND VIETNAM  
TELEVISION BY THE GENERAL DEPARTMENT OF HYDRO-  
METEOROLOGY**

Annex 2

| Number | River name | Hydro- Stations   | Water level (m) at Alarm level |      |      | Proposed Time |      |      |
|--------|------------|-------------------|--------------------------------|------|------|---------------|------|------|
|        |            |                   | I                              | II   | III  |               |      |      |
|        |            |                   |                                |      |      |               |      |      |
| 1      | Red river  | Hanoi             | 9.5                            | 10.5 | 11.5 | 24 h          | 36 h | 48 h |
| 2      | Da         | Hoa Binh          | 21                             | 22   | 23   | 12 h          | 24 h |      |
| 3      | Thao       | Phu Tho           | 17.5                           | 18.2 | 19.9 | 12 h          | 24 h |      |
| 4      | Lo         | Tuyen Quang       | 22                             | 24   | 26   | 12 h          | 24 h |      |
| 5      | Thai Binh  | Pha Lai           | 3.5                            | 4.5  | 5.5  | 24 h          | 36 h |      |
| 6      | Cau        | Dap cau           | 3.8                            | 4.8  | 5.8  | 24 h          |      |      |
| 7      | Thuong     | Phu Lang Thuong   | 3.8                            | 4.8  | 5.8  | 24 h          |      |      |
| 8      | Luc Nam    | Luc Nam           | 3.8                            | 4.8  | 5.8  | 24 h          |      |      |
| 9      | Hoang Long | Ben De            | 3                              | 3.5  | 4    | 24 h          |      |      |
| 10     | Ma         | Gang              | 3.5                            | 5    | 6.5  | 24 h          |      |      |
| 11     | Ca         | Nam Dan           | 5.4                            | 6.9  | 7.9  | 24 h          |      |      |
| 12     | La         | Linh Cam          | 4                              | 5    | 6    | 12 h          | 24 h |      |
| 13     | Gianh      | Mai Hoa           | 3                              | 5    | 6    | 12 h          | 24 h |      |
| 14     | Huong*     | Hue               | 0.5                            | 1.5  | 3    | 12 h          | 24 h |      |
| 15     | Thu Bon*   | Cau Lau           | 2.1                            | 3.1  | 3.7  | 12 h          | 24 h |      |
| 16     | Tra Khuc*  | Tra Khuc          | 2                              | 4.2  | 5.7  | 12 h          | 24 h |      |
| 17     | Con*       | Tan An            | 5.5                            | 6.5  | 7.5  | 12 h          | 24 h |      |
| 18     | Da Rang*   | Tuy Hoa (Phu Lam) | 2                              | 2.8  | 3.5  | 12 h          | 24 h |      |
| 19     | Tien       | Tan Chau          | 3                              | 3.6  | 4.2  | 3 - 5 days    |      |      |
| 20     | Hau        | Chau Doc          | 2.5                            | 3    | 3.5  | 3 - 5 days    |      |      |

**NB: Alarm Level applicable from 1 January, 1995**

# WIND VELOCITY TABLE

Annex 3

| Wind Velocity | Wind Speed  |           | Average Tide Height | Severity Level   |
|---------------|-------------|-----------|---------------------|--|
|               | Beaufort    | m/s       | km/h                |  |
| 0             | 0 - 0.2     | < 1       |                     | Gentle wind<br>No damage expected  |
| 1             | 0.3 - 1.5   | 1 - 5     | 0.1                 |  |
| 2             | 1.6 - 3.3   | 6 - 11    | 0.2                 |  |
| 3             | 3.4 - 5.4   | 12 - 19   | 0.6                 | Leaves of young trees move gently  |
| 4             | 5.5 - 7.9   | 20 - 28   | 1                   |  |
| 5             | 8 - 10.7    | 29 - 38   | 2                   | Affects paddy rice during flowering period<br>Gently rough sea. Fishing boats rock a great deal and have to furl sails.  |
| 6             | 10.8 - 13.8 | 39 - 49   | 3                   | Trees shake. It is difficult to move against the wind  |
| 7             | 13.9 - 17.1 | 50 - 61   | 4                   |  |
| 8             | 17.2 - 20.7 | 62 - 74   | 5.5                 | Small branches of trees are broken, roofs of huts are blown away<br>It is hardly possible to move against the wind<br>Sea is rough. It is dangerous for boats and ships. |
| 9             | 20.8 - 24.4 | 75 - 88   | 7                   |  |
| 10            | 24.5 - 28.4 | 89 - 102  | 9                   | Trees, houses, electricity poles collapse<br>Infrastructure damage is great.<br>Sea is violently rough<br>Ships are sunk   |
| 11            | 28.5 - 32.6 | 103 - 117 | 11.5                |  |
| 12            | 32.7 - 36.9 | 118 - 133 | 14                  | Violent storm surges   |
| 13            | 37 - 41.4   | 134 - 149 |                     | Extreme damage   |
| 14            | 41.5 - 46.1 | 150 - 166 |                     | Heavy and large ships sunk   |
| 15            | 46.2 - 51   | 167 - 183 |                     |  |
| 16            | 51.1 - 56.1 | 184 - 201 |                     |  |
| 17            | 56.2 - 61.4 | 202 - 221 |                     |  |

## RAINFALL RANKING TABLE

*Annex 4*

| Ranks           | Rainfall                          |
|-----------------|-----------------------------------|
| Gentle Rain     | Approximately from 1 to 5 mm/24 h |
| Rain            | Appr. from 6 to 15 mm/24 h        |
| Medium Rain     | Appr. from 16 to 50 mm/24 h       |
| Heavy Rain      | Appr. from 51 to 100 mm/24 h      |
| Very Heavy Rain | Above 100 mm/24 h                 |

## LIST OF AGENCIES PROVIDED INFORMATION ON STORMS, TROPICAL LOW PRESSURE AREA AND FLOODING BY THE GENERAL DEPARTMENT OF HYDRO- METEOROLOGY

*Annex 5*

| Agency Name   | Mode of information provision  |
|---|--|
| Office of General Party<br>Office of the Government<br>Central Committee for Flood and Storm Control<br>Ministry of Agriculture and Rural Development<br>General Department of Post and Telecommunication<br>Voice of Vietnam<br>Vietnam Television<br>Daily Central Papers | General Department of Hydro- Meteorology delivers information        |
| Ministry of Defence, Ministry of Industry, Ministry of Transport and Ministry of Aquatic Products   | Receive information at General Department of Hydro Meteorology       |
| Other agencies  | According to agreement with General Department of Hydro- Meteorology |







## SIGNAL SYSTEM FOR WARNING OF STRONG WIND

( Winter monsoon, tropical low pressure storm)

( Used at signaling stations and on boats and ships operating at sea)


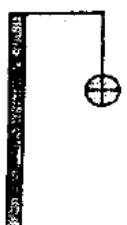
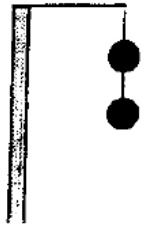
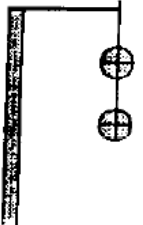
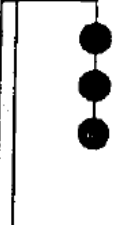
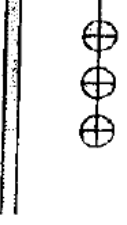
*Annex 6*

| Signal | Signal Shape  |   | Meaning   |
|--------|---|---|---|
| No. 1  | <p>Black star shape circle,<br/>with a 2 m diameter</p>  | <p>One red light</p>     | <p>Expecting wind velocities of Beaufort Scale 6 to 7 (equal to 39 to 61 km/h) that can sink boats and destroy thatched cottages.</p>       |
| No. 2  | <p>Black star shape triangle,<br/>with 2 m sides</p>   | <p>Two red lights</p>  | <p>Expecting wind velocities of Beaufort Scale 8 or more (equal to 61 km/h or higher); can sink ships, damage houses and utility poles.</p> |

# SIGNAL SYSTEM FOR WARNING OF FLOODING

( Alarm Level 1, 2 and 3)  
 ( Used at dike monitoring stations)

Annex 7

| Signal        | Signal Shape   |   | Meaning  |
|---------------|--|---|--|
|               | Day time   | Night time  |  |
| Alarm Level 1 | One red star shape circle, with a 1 m diameter<br>      | One green light<br>      | Water level on the controlled area reaches Alarm Level 1 |
| Alarm Level 2 | Two red star shape circles, with a 1 m diameter<br>   | Two green lights<br>   | Water level on the controlled area reaches Alarm Level 2 |
| Alarm Level 3 | Three red star shape circles, with a 1 m diameter<br> | Three green lights<br> | Water level on the controlled area reaches Alarm Level 3 |