1. Area of Inundated Land

The principal causes of flood disasters are the heavy and torrential rains generated by typhoons, cyclones, storms, etc., and the tsunami and high tides caused by earthquakes and typhoons.

In terms of percentage, the amount of damage sustained, as classified by kind, such as rice and non-rice, differs significantly depending on the year, but stands at 69% for Class A Rivers, 13% for Class B Rivers, 20% for Class C Rivers, 70% for non-rice and 30% for steep slopes. The aggregate amount of damage classified by major river systems (computed on the basis of the 1970 flood) was greater for the Todoroki Gawa river system with 6,938,820 million yen during the period from 1960 through 1977, followed by the Yodo Gawa and Gata Gawa river systems.

The areas inundated by floods during the decade from 1960 to 1970 covered an aggregate total of 1,930,986 fa. of which three-fourths were farmlands and the remainder was housing areas. The inundated area differs, depending on the year, but reached a low of 3,508,824 ha in 1966 and a high of 11,100,000 ha in 1966. The dwellings damaged by inundation, when those inundated by floods are included, amounted to an aggregate total of 2,728,000 buildings in that decade.

2. Distribution of Landslides

A landslide is the phenomenon in which part of the land slides at a relatively slow to medium speed. Landslides take place in areas where there exist special strata or structures. They also tend to occur frequently in one and the same area.

Under the Law for the Prevention of Landslides, the places where landslides take place or are likely to take place are designated as landslide control areas and a wide variety of measures are stipulated, because landslides produce damage to rice, to cultivated lands, buildings, roads, etc.

There were 39,019 landslides including those in Okayama Prefecture in 1972, of which 30,016 are designated as landslide control areas and the remaining 9,003 places are not designated as such. The aggregate number of landslides, both designated and reclassified, was 75,000 ha, or about 7% of the national land. Classified by prefectures, landslides were greatest in Chiba Prefecture with 36,494 ha, which was followed by Tottori, Okayama, and Ibaraki prefectures.

4. A check of the interrelationships between landslides and typhoons reveals that the occurrence of landslides is greatest in the Tottori strata. Practically every landslide in Chiba, Okayama and Ibaraki prefectures take place in Tottori strata. Landslides also frequently take place in the estrivale which consists of metamorphic rocks and Palaeozoic strata, such as in Okayama. There are some cases in which landslides take place as rocks are made clayey by hydrothermal processes. The clayey strata landslide areas, such as the Tottori strata and the estrivale, are used as easily to fail in most instances. Particularly in the mountains of the Shikoku Region and Okayama, landslide areas on the more moderate slopes than the sides of ordinary mountains have been used as farmland, particularly, as easily to fail from the old days.

5. Salient Points of the Legend and Map Compilation

Landslide control areas designated by Government: Those landslide areas designated by the Law for the Prevention of Landslides, and controlled by the Ministry of Agriculture and Forestry, Forestry Agency, and Ministry of Construction.

Landslide hazard areas other than designated control areas: Of all the landslides areas surveyed by the aforesaid ministries and agency, this map shows the areas whose designation as landslide control areas is considered necessary under the Law for the Prevention of Landslides.

The landslide area, as referred to in this map, is the area which has more than 3 ha and for which landslide control projects are conducted. Even in the case of larger landslide areas, they do not exceed 50 ha in area. This map does not represent Okayama Prefecture, whose survey has not been completed.

Source 1. Ministry of Agriculture and Forestry, Forestry Agency and Ministry of Construction.

3. Epicenters of Destructive Earthquakes and the Areas Where Tsunamis Occur

Many earthquakes occur in Japan and its peripheries. There occur about 1,800 earthquakes that can be felt a year, of which there are several destructive earthquakes.

An earthquake not only destroys buildings and other things with its immediate location but also gives rise to secondary disasters, such as landslides, tsunamis, fires, etc.

When a big earthquake occurs on the seabed of the Pacific Ocean, a tsunami may take place. There are cases in which tsunami generated along the coast of South America and Alaska produce damage to Japan. Along coast areas, such as the Shiretoko Coast, the tsunami becomes particularly high in the deep part of seas, then passing the danger of Having damage.

Salient Points of the Legend and Map Compilation

The epicenter of each destructive earthquake, the year of its occurrence and its magnitude were shown in this map based on the Japan Meteorological Agency (1960) and Unitra (1965, 1970). The data on the destructive earthquakes that have occurred since 1968 are supplemented on the basis of the Earthquake Monthly Report.

The indication of the areas in which tsunami occur is based on the aforesaid references and Hata & Urban (1968), and this map provides an outline of the coastlines which are believed to have been affected by tsunami more than 1 m in height.

Sources
2. Tanaka (Unita), Table of Major Earthquakes in and Near Japan Which Were Accompanied by Damages, Bulletin of the Earthquake Research Institute, University of Tokyo, Vol. 33, No. 4, 1966.

3. Distribution of Intensity of Major Destructive Earthquakes

Salient Points of the Legend and Map Compilation

The intensity of each destructive earthquake is indicated by the Modified Mercalli's Intensity Scale, which uses Roman figures from I to X. The Intensity Scale is based on the damage caused by the earthquake, and the figures I to X represent the degree of intensity.

Source
EPICENTERS OF DESTRUCTIVE EARTHQUAKES AND THE AREAS WHERE TSUNAMIS OCCUR

DESTRUCTIVE EARTHQUAKES

- Magnitude
  - Less than 6
  - 6 - 7
  - 7 - 8
  - 8 and over

- Date
  - Before 1800
  - 1800 - 1905
  - After 1906

Past earthquakes with extreme damages

TSUNAMIS

- Damaged area by tsunami
  - Area height about 1m and over

Scale: 1:6,000,000

DISTRIBUTION OF INTENSITY OF MAJOR DESTRUCTIVE EARTHQUAKES

- Intensity
  - 1 - 2
  - 3 - 4
  - 5 - 6
  - 7 and over

Scale: 1:18,000,000

EVENTS

- October 28, 1931: Nobi Earthquake (M = 8.4)
- September 7, 1923: Kanto Earthquake (M = 7.8)
- December 7, 1944: Tonankai Earthquake (M = 8.0)
- December 21, 1946: Nankaido Earthquake (M = 8.1)
- June 28, 1966: Hikuri Earthquake (M = 7.3)
- March 4, 1952: Tokai Offshore Earthquake (M = 8.1)
- June 16, 1968: Niigata Earthquake (M = 7.5)