

# New Stage for Preventing / Mitigating Storm Surge Disasters in Coast - Guide for Preparing a Storm Surge Inundation Area Map -

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## 1. Background

In Japan, development of storm surge hazard maps is behind as compared with tsunami hazard maps (Figure 1). Possible reasons for this are no rise in risk awareness due to no experience of a major high-tide disaster since the 1959 Ise Bay Typhoon and unclear setting of external force in the expected maximum magnitude. However, since large-scale storm surge disasters have recently occurred in many places in the world, it is required to take measures for preventing / mitigating storm surge disasters.

Then, the Flood Control Law was revised in May 2015 to require prefectural governments to prepare a storm surge inundation area map in the expected maximum magnitude and municipalities to prepare a storm surge hazard map. Accordingly, Coast Division of the NILIM is required to provide technical support to prefectures as "Consultation Center for Storm Surge Inundation Simulation."

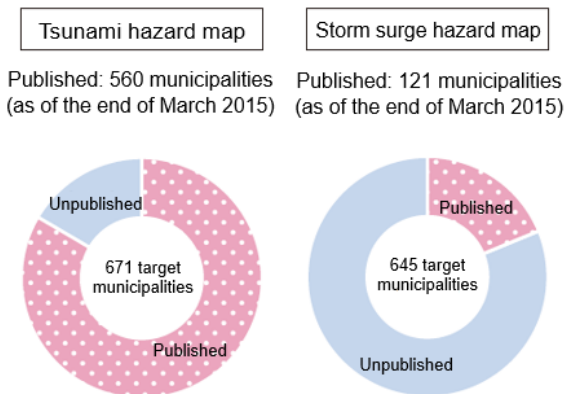


Figure 1: Hazard map preparation for tsunami and storm surge

(Source: White Paper on Land, Infrastructure and Transport in Japan, 2015)

## 2. Outline of the Guide for Preparing a Storm Surge Inundation Area Map

A "guide" describing technical matters for preparing a storm surge inundation area map under the Flood Control Law was documented based on the opinions, etc. of academics and published in July 2015. In the course of formulating this guide, the NILIM Coast Division provided technical support as outlined below.

### (1) Setting of external force conditions

- Based on the 1934 Muroto Typhoon as the typhoon with the expected maximum magnitude, increased / decreased the central pressure according to latitudes in

reference with actual typhoons in the past (Figure 2).

- Considered the low pressure based on the 2014 Nemuro Storm Surge for Hokkaido, Tohoku and Hokuriku Regions.
- Considered the river flow (design flood discharge) for the rivers under the control of the country.
- (2) Setting of break conditions for levees etc.
  - Levees etc. will break when the water level reaches the design condition.
- (3) Storm surge inundation simulation
  - Based on the typhoon model (formula of Myers), waves (spectral method), and storm surge flooding calculation (nonlinear long wave theory).
  - Adoption of methods other than this guide is also acceptable in accordance with technical progress.
- (4) Output of the results of storm surge inundation simulation
  - In addition to inundation zones and inundation depth, output inundation duration time from a viewpoint of utilization for evacuation, corporate BCP, etc.

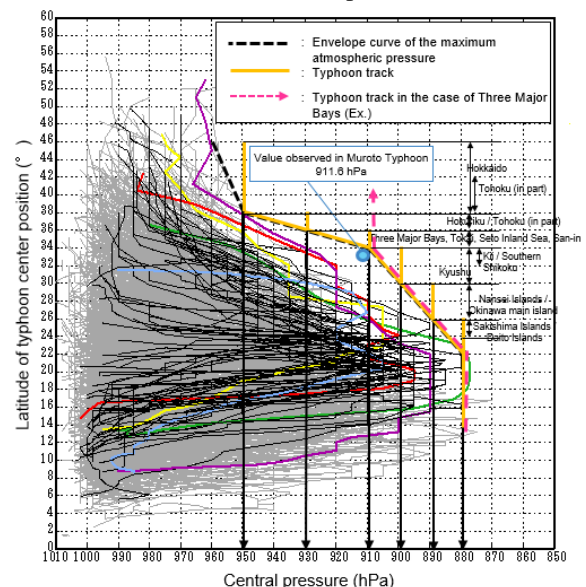


Figure 2: Setting of central pressures of expected typhoons

See the following for details.

1) Guide for Preparing a Storm Surge Inundation Area Map, ver. 1.00

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