Topics

Field Survey of Coastal Disasters Due to T0416 and T0418


ODA Katsuya (Head), KUMAGAI Kentaro (Researcher)
Coastal Disaster Prevention Division, Coastal and Marine Department

Introduction

In 2004, Japan was hit by typhoons a total of ten times, making it the largest number Japan meteorological observation had ever annually recorded, and breaking the previous record of six typhoons in a year. High water levels and large waves due to those typhoons were measured at many observation points in that year. Disasters due to storm surge and high waves occurred in the coastal areas of Japan. After typhoons T0416 and T0418 struck, National Institute for Land and Infrastructure Management (NILIM) and Port and Airport Research Institute (PARI) immediately visited and surveyed the disaster-stricken areas at the request of Ports and Harbors Bureau, the Ministry of Land, Infrastructure and Transport (PHB-MLIT).

1. Outline of the field survey

In the night of Aug. 30 and early morning of Aug. 31, 2004, T0416 passed through the islands of Kyusyu and Chugoku districts of Japan. It caused disasters due to the storm surge and high wave in the coastal areas of Setonaikai Sea. On Sept. 1 and 2, 2004 three researchers from NILIM and PARI visited at Takamatsu Port, Uno Port and other ports where T0416 struck, and surveyed the inundated areas of the ports and their neighboring areas (Photo 1). As a result, problems in the methodology of evacuation advisory and other issues were identified.

Photo 1 Field Survey in Takamatsu Port

On Sept. 8, 2004 T0418 passed through Japan Sea. It caused the disasters due to the tyhoon-induced high waves at the breakwater of the Hakodate Port (Photo 2 and 3). On Sept. 10, immediately after the typhoon passed, six researchers/engineers from NILIM, PARI, PHB-MLIT and other institutes visited at Hakodade Port and surveyed the condition of the breakwater, leading to a preliminary assessment of the damage.

Photo 2 Breakwater of Hakodate Port (Pre-disaster)

Photo 3 Breakwater of Hakodate Port (Post-disaster)

In addition, PARI surveyed 21ports that also suffered severe damage due to T0416 or T0418.

2. Recent meteorological trend of typhoon and viewpoint for further studies

In 2004, twenty-nine typhoons were born in the Pacific. The average number of the typhoons born in the Pacific is 26.7 a year. It seemed that the number of the typhoons initiated in Pacific in 2004 was relatively average, when compared with past years. In contrast, the average number of typhoons to strike Japan is 2.6 a year, yet in 2004 this figure rose to 10. It is alleged that high atmospheric pressure remained close to Japan Island from June to Dec. in 2004, and it caused the historical number of typhoons to hit Japan Island. It is also a distinctive feature that a lot of powerful typhoons passed over neighboring seas of Japan in 2004. Thus it is a priority matter to consider the effect of the recent meteorological trend of the typhoon, such as routes, sizes, and other parameters in order to take measures to mitigate disasters due to typhoons.

A Figure 1 shows that disasters due to typhoon occurred constantly in the past in Japan, and it is obvious that planning to mitigate typhoon disaster and prepare against typhoon disaster are important for coastal areas.

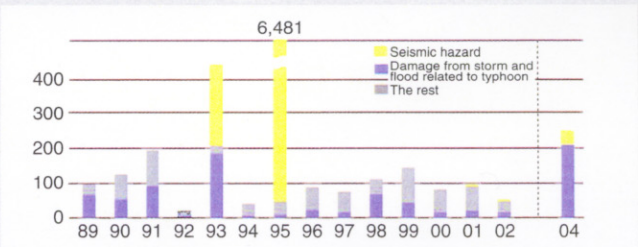

Figure 1 Human Death or Missing from Natural Disaster

3. Further studies

The main areas of research at PARI are the generation mechanisms of storm surge or high wave due to typhoon. Based on the results of PARI, NILIM researches about designing port facilities or shore protection facilities with consideration for storm surge and high wave, and NILIM studies on the further utilized 'Hazard Map' and on the communication between the administration and the inhabitants to mitigate coastal disasters due to typhoon.