Japan Geoscience Union Meeting 2010
(May 23-28 2010 at Makuhari, Chiba, Japan)

AHW017-P06 Room: Convention Hall Time: May 26 17:15-18:45

The study on the regional characteristics in precipitation-water level response of the rivers in Chiba Prefecture

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The measure that defends the person's life with the hardware such as dams and embankments has been taken since the Western flood control industrial method of the Meiji era period was introduced. It can be said that this is "Engineering Adaptation" to the flood. However, it began to appear the limit of an engineering adaptation since the Tokai downpour disaster in 2000, and the government revised the flood prevention law in 2001. As a result, the municipality came to inform the resident the flood expectation district and the evacuation site, and the resident came to shelter from the flood based on the information. To avoid the flood or to reduce damage, it comes to be recognized that there is a limit in structural measures, and non-structural measures come to be expected. Moreover, it is necessary that the resident understand the vulnerability of the region where they live so that the resident effectively use the information of disaster.
On the other hand, as the Internet spreads, the web page that inform local residents of real-time precipitation and water level data called WINC2(Weather Information Chiba 2) opened since September, 2005, in Chiba Prefecture, Japan. The system shows the information of last eight hours about 200 points in Chiba Prefecture. More one year passed after the system had started, and the data of the rainfall and the water level has been accumulated. The time change of the rainfall and the water level is important disaster prevention information. The local resident learns the vulnerability to the flood damage in the region by knowing characteristics of precipitation-water level response of the river from the information.
In the present study, we used the data of precipitation and water level during ten minutes in 2006 accumulated by WINC2 offered from Chiba Prefecture. Precipitation-water level hydrograph of 10 9 of the water level observation point was made to extract the regionality of the water level response to the rainfall from these information, and the response characteristic of the water level was examined to the rainfall in each region. In the present study, it was assumed that the precipitation of the precipitation observation point nearest to the point in the water level observation point represent the precipitation in each observation point of water level.
As a result of the analysis, three parameters in all precipitation-water level response events that show regionality of precipitation-water level response: precipitation of each event and rise amount of water level, time lag from beginning of rainfall to beginning of water level raising, and time lag from the peak of precipitation to the peak of water level, were able to be obtained. Excluding the urban area of the Tokyo Bay, rise amount of water level was proportional to the precipitation in most points, and the ratio of an increase of the water level rise amount was different according to the point. Therefore, we calculated the amount of water level in each valley when there was expediently 100mm continuous rainfall from the scatter chart, and made the result a map. As a result, when there are 100mm continuous rainfall, the water level raising tends to be large in the mountainous district in the south part of the prefecture, and to be small in the plateau in the north part of the prefecture. It will be necessary to verify the relation among geographical features, geological features feature, and the result. From the result of the point in the urban area of the Tokyo Bay, the effect of the flood control facilities is suggested. As future tasks, It is necessary to verify the position and the operation situation of the flood control facilities. Moreover, though the

present study used only the data in 2006, to extract a more detailed, more accurate regionality, I think that I should analyze it in the longer time frame.

Keywords: precipitation-water level relationship, hazard information system, hazard map, Chiba Prefecture, WINC2, regionality