

Development of Flood Control Activity Supporting Technology Based on Actual Status

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1. Importance of supporting technology for flood control activities serving a very important role in local disaster prevention / mitigation

In recent years, floods exceeding the ability of levees or other disaster prevention facilities frequency occurred due to intensified rainfall. To prepare against such floods, it is important to root an effective and sustainable system of flood control in society as well as to promote steady development of disaster prevention. Accordingly, with focus on "systematic flood control activity for self-defense," which has been considered important since the old times in Japan, NILIM has been studying to clarify what technical support river administrators should implement in order to further improve the disaster reduction effect by flood control activity.

2. Preparation of a risk information map that supports "Evacuation guidance by door-to-door visit"

The following were found from the detailed hearings from the flood-fighting teams (concurrent service by local fire brigade) in 5 municipalities in local area where flood control activity was actually conducted in recent years about the process of actual flood control activities. 1) In a series of heavy rains and floods, activities are conducted in very many cases to prevent branch river / inland flood before flood control activity at the main river levees. 2) Since these activities are various and require a large amount, activity for the main river is likely to become difficult. Then, NILIM has prepared "Possible Human Damage Map" (tentative title) on a trial basis in order to support "Evacuation guidance by door-to-door visit" from the activities in 1) above since it could take much time and affect other activities although it is highly effective in damage prevention / mitigation. In preparation, considering rainfall, run-off from the mountainous land in the back, and microtopography, the inundation depth distribution attributable to branch / inland floods was obtained from the two-dimensional unsteady flow calculation and overlapped with the inundation depth distribution by flooding of the main river. This is a risk information map showing difficulty in evacuation due to branch river flood / inland inundation, which could occur before issuance of evacuation information based on the main river water level, and relative possibility of human damage based on the maximum inundation depth at a flood of the main river. This map is intended to promote the

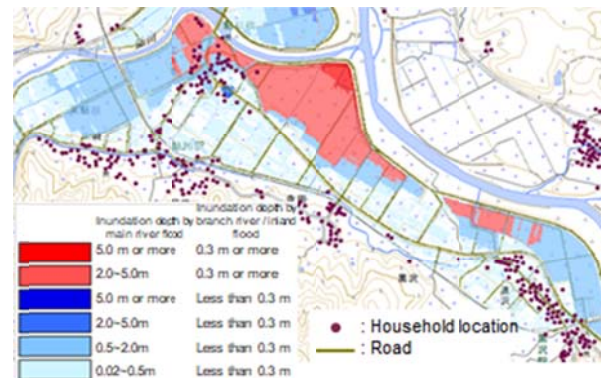


Fig.: Priority implementation of evacuation guidance in a high risk area.

preferential and early evacuation guidance for the high risk areas that were narrowed down based on various inundation events that can occur in connection with heavy rain events. Consequently, the result of trial calculation showed that not only the evacuation guidance time in high risk area but the evacuation guidance time in the whole inundation area can be reduced.

3. Actual flood control activities in metropolitan area and flood control activity supporting technology

The following characteristics, which are different from the characteristics in local area as stated in 2) above, were recognized from the hearing survey conducted to disaster prevention departments and flood-fighting teams (concurrent service by fire brigade) in some cities located in the low-lying area of metropolitan area. 1) In addition to the flood-fighting team, employees of the city also independently engage in on-site flood control activities. 2) Since there has been little experience in flood control activity that accompanies a large amount of activity in recent years, it could be difficult to have sufficient estimation about progress in the time series of damage from flood of inner / outer water.

Considering the actual status stated above, it would be effective to provide "information on forecast of inundation events likely to occur next" with the inundation forecast system, etc. developed by NILIM as technology to support flood control activity. We intend to study quantitative evaluation methods for the effect of these forecast technologies on flood control activity and the effect of damage reduction as a result of the former effect.