

Research Trends and Results

Flood Risk Visualization Project

- Addressing the issue of "last one mile" to use river information for evacuation behavior -

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1. Background of the project

Many issues have been recognized by the occurrence of the flood of Kinugawa River in the September 2015 Kanto-Tohoku Heavy Rain. Of those, one of the most outstanding issues is the presence of areas where residents were isolated due to delay in evacuation etc. and no recommendation or directive for evacuation was issued before the levee break.

In case of such a large-scale flood, the river administrator needs to ensure the appropriate issuance of recommendation / directive for evacuation by municipalities and provide information on the river status to encourage residents to evacuate at their own decision. At present, river administrators provide information only on points, such as water level observed at the water level observation points and the estimated water level at flood forecast points. With such discrete information, however, in order to image the condition of the river on the whole from upstream to downstream, determine the risk or urgency of flood etc. for each site, and perform evacuation operation timely and appropriately, abundant knowledge and experience concerning the floods of the relevant river are required. However, for local government etc. that receive river information, it is very difficult to ensure and foster human resources immediately who are able to grasp and determine the situation appropriately from the information given at present. In other words, such information would not be used effectively for evacuation behavior or risk management due to the issue of the information provided in case of a major flood and its literacy.

In such circumstances, the River Department of the NILIM launched the Flood Risk Visualization Project immediately after the Kanto-Tohoku Heavy Rain in order to address the issue of "last one mile" to use information provided by river administrators in case of a major flood effectively for evacuation behavior and risk management.

2. Flood Risk Visualization System

As a tool for solving issues on the present information and its literacy, we have undertaken to establish "Flood Risk Visualization System." This System aims to

provide visualized information on the flood risk of rivers on the whole from upstream to downstream (including risk and urgency of flood and extent of rescue operation, evacuation population, etc. in the event of a flood) (See Figure). This System also aims to support the river office and relevant municipalities in grasping and sharing flood risk and making decisions for risk management in case of a flood, and to serve as a common tool for communication between the river office and municipalities at ordinary times, contributing to improvement in river information literacy through use in disaster training, etc. In accordance with these purposes, we are working for system establishment by setting up the following three points as requirements of visualized system; "Recognize flood risk etc. comprehensively by integrating various information concerning flood risk, etc.", "Recognize flood risk on each site with the profiles of water level, levee height, levee ground height, etc.", and "Recognize urgency of flood with expressions with reality, etc."

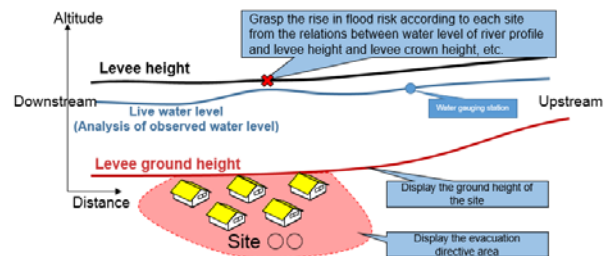


Figure: Image of the profile of river level, levee height, etc.

3. Future development

For visualization system, integration of observation, analysis, and expression skills is indispensable. Particularly, expression skills play an important role for solving the issue of last one mile to use information for evacuation behavior, etc. Therefore, we continue to study the content and expression of information from the viewpoints of sociology etc. and reflect knowledge obtained from study in the System.