Research on Supporting Technology to Make Flood Damage Reduction Activities More Effective (Study period: FY2017 to FY2019)

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1. Flood damage reduction activities play a very important role in realizing local disaster prevention / mitigation

In recent years, floods exceeding the capacity of levees and disaster prevention facilities (excessive flood) frequently occurred due to intensified rainfall. In light of the forecasted increase in the frequency of flood due to future climate changes, it is important to root an effective and sustainable system of flood damage reduction in society to prepare against excessive flood, as well as to promote steady development of disaster prevention facilities.

Accordingly, with focus on "structured flood damage reduction activities for self-defense," which has been considered important since the old times in Japan, NILIM has been researching to clarify what technological support river administrators should provide in order to further improve the disaster reduction effect by flood damage reduction activities.

2. Severe circumstances of flood-fighting teams and flood disaster risk

For flood-fighting teams as a self-defense organization, the trend of difficulty in transfer of flood damage reduction techniques, etc. is recognized across the country due mainly to decrease in team members, difficulty in gathering resulting from increase in office employee members, and decrease in new members. It is further concerned about a gap between the total amount of necessary flood damage reduction activities (left axis in the Figure) and the practicable amount of flood damage reduction activities (right axis in the Figure) due to the diversified roles required for flood-fighting teams, such as evacuation guidance and rescue relief, in addition to the patrol of levees and disaster prevention facilities and flood damage reduction works during flood. This can be referred to as "increase in local flood risk due to inability to conduct sufficient flood damage reduction activities."

3. Search for technological support which river administrators should provide in order to ease the bottleneck of flood damage reduction activities

For identifying technological support which river administrators should provide for flood damage reduction activities, we first conducted interviews of flood-fighting teams actually engaged in flood damage reduction activities about details and current condition of the flood damage reduction activities process. Consequently, important issues were identified, including a case where a flood-fighting team had to start flood damage reduction activities without sufficient preparation when informed by residents of occurrence of flood damage in a branch river, etc. prior to the issuance of flood warning in the main river. It is accordingly identified as important contents of support to provide river water level monitoring and forecast information including branch rivers, which is necessary in securing preparation/ activity time. In addition, even for excessive flood, it is also important to execute flood damage reduction activities. We are therefore researching the methods for providing information on the sections requiring priority flood damage reduction activities through clarifying characteristics, such as flood water level rising rate in the flood plain, with high-resolution flood simulation reflecting detailed levee height and microtopography near the river using LP (laser profiler) data.

We continue to research on technologies for supporting prioritization of areas requiring flood damage reduction activities to reduce flood risk and forecast / monitoring technologies for supporting enhancement of flood damage reduction activities efficiency.

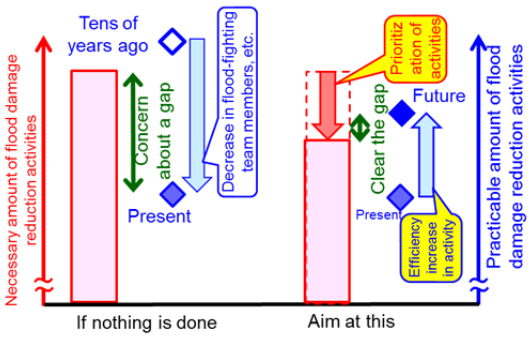

Fig. Image of the future direction of flood damage reduction activities