



Cooperative operation of urban drainage facilities

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Management of drainage facilities is an important factor in urban flooding. In the past, structural management including the installation of additional drainage facilities have been adopted to prevent urban flooding as a main policy although it is costly and time consuming. Non-structural management such as effective operation of drainage facilities is necessary to raise the flood mitigation efficiency. In this study, a new type of management, cooperative operation for urban drainage facilities including pump stations and detention reservoirs, is suggested. A novel cooperative operating management is proposed as a nonstructural management. The proposed operational management are demonstrated in the Daerim sewer network in Seoul, South Korea with a detention reservoir at the upstream of the study network and a pump station at the downstream.

The new cooperative operation is based on sharing water level information at monitoring nodes and controlling drainage pumps. Results describe that flood reduction by the management of cooperative operation are better than the management of current operation. All results related to flood reduction by the cooperative operation are superior to those by the current operation.

Key words: Urban flooding, Pump station, Detention reservoir, Cooperative operation, Urban drainage facilities