

Joint Research on Advanced Storm-water Management by Using Real Time Information Network (with Niigata City)

Year of Research

2011~2013

Implementation of anti-inundation measures

(Purpose)

Real time information network is a system which collects the information about a rainfall, water level and flow rate, storm-water pump operation, etc., and provides them in real time. This study was made to select the inundation-prone area in Niigata City as a model area, and in order to use effectively the existing institution by the optimization of the pump operation, etc., get the picture by "visualization" of water level and flow rate of a lifeline network, and examine the introductory of the real time rain water information network (following, RTN) for the same drainage basin.

(Results)

(1) Formulation of run-off analysis model

① Adjustment of analysis model

By using existing runoff-analysis model which was created in separate study, the correction of the model and additional construction were carried out to the form that RTN can be worked.

② Accuracy confirmation of present analysis

The appearance check at the time of the past heavy rainfall was performed by the runoff-analysis. And it was checked that there was reproducibility for pumping level of 3 pump station in the same area.

③ Accuracy confirmation of prediction analysis

We confirmed the predictive analysis accuracy of the sewage and storm-water pump water level and water level in the duct line. In consequence, the prediction result which is considered that can support the judgment of the pump operation was obtained (Fig. 1).

(2) Creation of distribution contents

The real time information service contents on the WEB, which can check the water level inside sewer culvert and operational status of the pump, were created.

(3) Evaluation of introduction effects

The introduction effect of RTN was assessed quantitatively about the following items. The advantage that added up these introduction effects exceeded the cost which introduces RTN.

- ① Mitigation of inundation damage (Inundation mitigation by maintenance of the prior warning system of the area which has fear of inundation at the time of heavy rain)
- ② Unification improvement (Cut down of the number of times of unsettled discharge by the stockpiling operation of the pump station at the time of small rain)
- ③ Energy reduction (Energy reduction by high-water level operation of the pump station in fine weather)

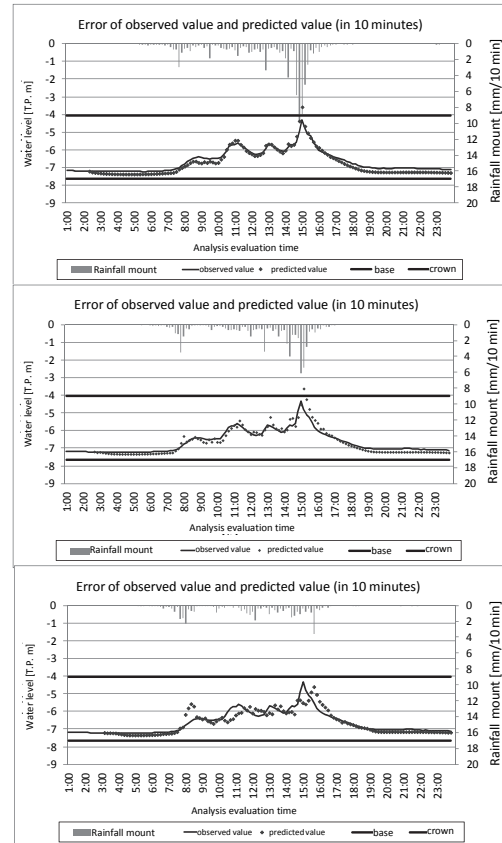


Fig.1 Validation result of prediction accuracy

(Future subject)

In fiscal year 2013, we will continuously operate RTN and aim at the accuracy improvement by checking the predictive accuracy, and it is due to scrutinized the evaluation and the examination about the operational procedure of RTN. Moreover, about information service contents, it is due to serve the contents which aimed at the support of the staff assignment inside a city or the pump operation judgment.

※ Niigata, Japan Institute of Wastewater Engineering and Technology
Inquiries ; Masataka Ikeda, Manabu Onishi and Ryo Matsuoka, 2nd Research Department [03-5228-6598]

Key words	Anti-inundation measure, Improved confluence, Real time information network, Advanced storm-water management
-----------	--