Study on the Application and Utilization of XRAIN in Sewage Projects

Year of Research	FY2012	Implementation of anti-inundation measures

(Purpose)

As construction of sewage facilities requires substantial capital investment and time, future projects are expected to improve their cost effectiveness by utilizing as much as possible the capacities of existing and to-be-installed facilities, as well as employing rainwater information and other software approaches. Also, effective provision of information is essential to supporting and facilitating self- and mutual-aid among the residents. Under these circumstances, rainfall observation and forecast technologies play extremely important roles, especially with the former being a basic component technology. Recently, the X-band MP Radar, which can capture rainfall with high precision, has been developed, and a nationwide radar network (hereinafter referred to as XRAIN) has been built and begun operation. The purpose of this study is to collect and organize information related to rainfall observation/forecast using XRAIN to explore its future applications.

(Outcome)

Outlined below are the contents and results of this study.

(1) Classifying the Applications of XRAIN in Sewage Projects

We collected and sorted out information on the application/use of images and numerical data generated by XRAIN in flood control, improvement of combined sewer systems, management of sewer pipe construction, and other sewage projects by interviewing the local governments, scholars, and other experts, as well as by collecting relevant documents, etc.

Through the aforementioned interviews and bibliographic survey, we identified the various applications of XRAIN and classified them into the categories of flood control, combined sewer system improvement, alert for construction workers, and others. Because of XRAIN's ability to observe heavy rain with improved accuracy, its main applications are now shifting from handling of torrential downpour and other frequently occurring events of late to flood control or study/verification toward applying/utilizing XRAIN in flood control.

(2) Points to Note on Possible Applications of XRAIN

We sorted out the points to note in actually applying XRAIN in the categories listed in (1) above from the following perspectives:

1)Effective Utilization of Information
- ・Clarify whether the data is to be used raw or to be processed.
- ・Ascertain how accurate the data is.
- ・Specify where the data is to be stored and for how long.
- ・Identify the data's uniqueness and necessity by checking if there are any redundancies with other disaster-related information, etc.
- ・Define method(s) to provide information for the public via the Internet, etc.

2)Development of Administration/Operation System
- ・Examine efficient ways to operate XRAIN within a scope in which safety can be assured.
- ・Establish a system and structure to administer and operate XRAIN data.
- ・Establish a personnel organization for utilizing XRAIN data.

3)Management of Operational Risks
- ・Control the risk of missing data because of unseen circumstances.
- ・Control the risk of misinterpreting data.
- ・Control the risk of making inappropriate decisions based on data.

4)Accountability to the Public
- ・Provide clearly-defined operational rules and standards.
- ・Establish a mechanism for third-party supervision and disclosure of the results thereof.

(3) Future Verification Methods, etc. of Application/Utilization of XRAIN

Based on the results of (1) and (2) above, we organized a necessary procedure for using XRAIN on a trial basis in sewage projects for each application category.

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