

Survey on the Common Minute Rainfall Radar System

Whole term

1994.7 ~ 1995.2

(Purpose)

Flood in an urban area severely give damage to houses, urban facilities, lifelines, transportation and economic activities. Even urban areas with sewerage service can be damaged by a sudden and local heavy rainfall which is not easy to cope with immediately.

The rainfall information system using rainfall radar, which covers a wide area and can offer very detailed rainfall information at real time, has recently been increasingly introduced especially in Tokyo metropolitan area for management of sewerage systems and for disaster prevention. If the rainfall information could be shared with nearby cities, it would be a very effective tool to take area-wide measures for rainwater. However, at present, there is no compatibility of the data and its utilization is restricted within fragmentary local areas. Hence, the Ministry of Construction has been conducting a survey since 1993 aiming at the development of utility software and the establishment of “minute rainfall radar system” compatible with other cities for the sewerage projects.

The objectives of the survey are to improve the precision of the information in “the common minute rainfall radar system” and to develop the radar system and the standard specifications of the design considering questionnaire survey results for the municipalities.

(Results)

1. A questionnaire survey was conducted for 67 cities. The results are as follows:

- Large cities are more interested in the minute rainfall radar than small and medium size cities.
- As a city comprehends the rainfall radar more, it proportionally tends to be more eager to introduce the radar.
- High priority has not yet been given to management applying the rainfall radar in a nation-wide level.
- Users want rainfall data itself rather than applying it to advanced use.
- For the utilization of the rainfall information, “rainfall forecast”, “personnel distribution” and “weather monitoring” are the main objectives, and it is also utilized for “precedence spinning-reserve operation of pump” and “operation of storage pipe and stormwater retention reservoir”.

2. Project evaluation

The system is available for every municipality with almost the same service charge as other meteorological service systems.

3. Discussion on system functional allocation

The total system covers huge amount of information, such as from radar to user, furthermore the each system requires high performance function, thus it should have those functional allocation decentralized as much as possible. Accordingly the radar system takes charge of transmission of radio wave, rainfall intensity conversion and correction by ground rain gauge, and the center/sub-center system takes charge of composition of rainfall data, and the user system takes charge of display and processing of data.

4. Utilization of rainfall data

Considering effective operation of sewerage systems by utilizing observational rainfall data, required functions for each terminal unit were compiled.

5. Standard specifications

The specifications for designing the systems, such as the radar system, were examined and standardized.

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Keywords

Radar, rainwater, disaster prevention, project, system, data processing, specification