4.9 DEVELOPMENT OF A DETECTION SYSTEM OF HEAVY RAINFALL USING X-BAND PHASED-ARRAY WEATER RADAR

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Toshiba has been developing a detection system of heavy rainfall using observation data of X-band Phased-Array Weather Radar (PAWR) which already installed in Osaka University, Japan under a grant of NICT. The information distributed from the system can be expected to be applied for river or drainage management. The mainly characteristics of the system are as follows:
i) the data of the weather radar which achieved precise 3 dimensional observation of cumulonimbus can be used.
ii) it is available to notify the alarm about localized heavy rainfalls. For the first time in Japan, we asked Osaka local governments to use the system for disaster-prevention activities and conducted demonstration experiments with them for 3 years between 2015 and 2017. In the experiments, we defined the disaster-prevention activities as a protocol in advance in case of alarm notification. The Osaka local government conducted the disaster-prevention activities in accordance with the protocol during the experiments. Specifically, when an alarm was received, preparation for pump operation in sewage-treatment plant, evacuation guidance for the park users and monitoring the point of risk of inundation were carried out, and the application of the weather radar data was confirmed through the system.

As a result of this experiments, we obtained many cases that the alarm notification succeeded immediately before localized heavy rainfalls. Moreover, we were able to accumulate a lot of cases that disaster-prevention activities of local government proceed smoothly. Finally, it is showing that three dimensional rainfall data observed by PAWR is critically useful for disaster-prevention work of Osaka local government.

Moreover, we succeeded in developing a latest dual-polarization phase-array weather radar which is possible to observe with a high degree of accuracy and we started trial observation from Feb. 2018. In this presentation, the outline of this newly developed radar and system are presented.