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Practical Use of the MP Radar by the Tokyo Fire Department

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1. MP Radar Information Experimentally Used by the Tokyo Fire Department (TFD)

In 2009, the TFD concluded with the National Research Institute for Earth Science and Disaster Prevention (NIED) a memorandum about the mutual cooperation in collecting and sharing information on storm and flood damage. Since the conclusion of this disaster information memorandum, the TFD has been experimentally using the MP radar for fact-finding to identify typhoons, localized heavy rains or others most clearly. The radar has been in use mainly for (i) the earlier preparation for flood protection/control and (ii) the better, more specific monitoring of weather conditions.

2. TFD's Flood Protection Activities

The TFD, based on the Flood Protection Law, goes on the alert for the overflow of rivers, and decides on the "areas to be protected from water damage" together with local communities. The TFD, as a fire service organization, is missioned to conduct search and rescue in such disasters according to the related laws and regulations. The Department, then, puts itself on the alert for storms and floods, and may issue the emergency flood protection order after learning overall and judging from the weather conditions, the typhoon's path and severity, the possibilities of major water damage, the actual disaster facts, etc. With a flood protection order given, more firefighters are mobilized, and some of them are incorporated into lifeboat units. The flood protection order is put out based on the weather conditions and the actual disaster damage. Knowing these facts quickly and correctly, emergency responders can get ready for flood protection activities sooner.

3. Access to MP Radar Images

For information about local heavy rains and others, fire stations can have access to the TFD website which is specially opened on the NIED home page showing the images taken by the NIED-operated MP radar. Starting in 2011, the MP radar-provided data can be viewed on the TFD's Disaster Information System (web-GIS) as well as on this "MP radar site."

(1) MP Radar Site
The MP radar site indicates how hard it rains, how much it has rained, which areas will be in the path of the rain, etc. The site, then, activates its alert sound system when precipitation reaches a warning level, showing the fire stations in the "areas of danger" so that they can quickly prepare for an upcoming rainstorm.

(2) TFD's Disaster Information System (web-GIS)
The TFD's Disaster Information System demonstrates both the MP radar information and the detailed area data simultaneously on its map. This duality conveniently helps firefighters quickly decide on the action to take for flood protection.

4. When and How Is the MP Radar Information Used?

(1) Access for Fact-finding
Under rough weather, in case of necessity, fire stations have access to the MP radar site to check out rainfall continuously.

(2) Rainfall "Confirmation" and Rainfall Conditions Assessment
The "sudden rise in water level resulting in inundation" may well occur after the sudden increase in rainfall strength within a short period of time (10 to 20 minutes) which goes beyond the flood control standard (50 mm/h) of the Tokyo Metropolitan Government. Information needs to be collected without fail in the following cases:
a. When the MP radar site activates its alert sound system.
b. When localized heavy rains are observed.

(3) Practical Use of the TFD's Disaster Information System (web-GIS)
When localized heavy rains are expected with the MP radar information given, the TFD's Disaster Information System (web-

GIS) is used to obtain detailed area data. With the following, expected dangers can be understood with ease:
a. Enlarged area maps and the MP radar information are shown simultaneously.
b. River water levels and the MP radar information are shown simultaneously.
c. Past inundation damage and the MP radar information are shown simultaneously.

Keywords: MP radar, Tokyo Fire Department (TFD), Flood protection activities, Method of specific use