Visually and easily detectable radar information available for judging the evacuation from heavy rainfall disasters

IZUMI YOKOTA
Kyushu University, Fukuoka, Japan
NISHIYAMA, KOJI (Kyushu University, Fukuoka, Japan)
TSUKAHARA, KENICHI (Kyushu University, Fukuoka, Japan)
WAKIMIZU, KENJI (Kyushu University, Fukuoka, Japan)

E-mail: yokota.izumi.290@m.kyushu-u.ac.jp

In Japan, when the possibility of heavy rainfall occurrence is forecast, a local government has an authority to issue the information of evacuation recommendation and instruction for local residents, based on real-time information (river stage, soil moisture, rainfall amount, and actual disastrous situation) as well as weather forecasting in a pre-determined specific region. However, the delay of the timing for issuing evacuation information is one of serious problems in Japan due to the shortage of well-educated staffs in a local government, and the difficulty of complicated mechanisms causing serious heavy rainfall and subsequent disasters. On the other hand, there are significant features relating to heavy rainfall such as 'band-like Back-Building (BB) systems', which can be clearly seen from weather radar. Therefore, this study investigated such visually and easily detectable features recognized by local government staffs and local residents using JMA (Japan Meteorological Agency) radar networks (C-BAND) for judging the evacuation.

Several heavy rainfall cases show that the judgment of the issue by a local government for local residents was conducted after heavy rainfall had intensified. This implies that the issue was conducted based on meteorological and hydrological information in a specific 'narrow' region under the control of the local government regardless of the existence of long-lived stationary heavy rainfall distribution in the surrounding region. Actually, before the onset of heavy rainfall, real-time radar images showed stationary BB type rainfall distribution like a smoke flowing from the upwind to the downwind region. In addition, the accumulation of rainfall around the BB region could be clearly recognized by radar-raingauge composite images. These features are common among disastrous heavy rainfall cases, and are visually and easily detectable for ordinary persons who have no meteorologically-technical knowledge. Therefore, it is expected that these significant features are effectively available for the evacuation of local residents.