

Expanding torrential rainfall monitoring regions with X-band MP radar

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1. Expanding torrential rainfall monitoring regions

In recent years, drownings and flood disasters caused by localized heavy rainfall and concentrated torrential rainfall have occurred increasingly often. So the *Water* and Disaster Management Bureau of the Ministry of Land, Infrastructure, Transport and Tourism has introduced X-band MP radar, strengthened the resolution of radar rain information, and enhanced its real-time availability in order to strengthen rainfall monitoring systems. The National Institute for Land and Infrastructure Management is building data processing and transmission systems to realize more advanced radar rainfall information, conducting technical studies of scan modes, parameter tuning etc. needed for trial operations of X-band MP radar, and studies to improve precision by advancing rainfall observations, the correction of attenuation, and synthesis methods. X-band MP radar started trial operation in some regions in 2010, and new trial operation regions will be added beginning in July 2011, expanding the area where torrential rainfall is monitored (Fig. 1). This is extending the observation range to all government ordinance designated cities except Sapporo to strengthen torrential rainfall monitoring systems in cities. The monitoring systems around Mt. Kurikoma and Sakurajima Island, both regions at high risk of sediment disasters, were strengthened.

In the Niigata Region, one more X-band MP radar base will be established to start monitoring by two bases beginning in 2012, in order to reduce the areas where monitoring is impossible during torrential rainfall. Land subsided and river levees were damaged as a result of the earthquake and tsunami caused by the Great East Japan Earthquake, so to strengthen torrential rainfall monitoring systems in this disaster region, where safety from flooding has declined, X-band MP radar will be introduced in Tohoku and the Northern Kanto.

2. Examples of the use of X-band MP radar rainfall information

In Niigata, where trial transmission started in 2011, X-band MP radar based rainfall information

was used by regional governments as reference information to order flood-fighting activities and evacuations during the Niigata/Fukushima torrential rainfall of 2011. When typhoon No 12 of 2011 triggered the collapse of soil, blocking river courses, X-band MP radar rainfall information for the Kinki Region was used as rainfall information to monitor the collapse of the soil blocking the rivers.

3. Developing technologies using X-band MP radar

The National Institute for Land and Infrastructure Management, regional development bureaus, and universities and research institutes, are developing technologies using X-band MP radar to achieve early detection of torrential rainfall, to improve rainfall predictions, and to increase the precision of inundation predictions.

The National Institute for Land and Infrastructure Management is carrying out studies using X-band MP radar rainfall information to improve inundation simulations of urban regions, and advance evacuation information systems in water parks. In the future, the NILIM plans to perform research on the detailed evaluation of precision of monitoring by X-band MP radar and on the precision of calculation of average river basin rainfall.

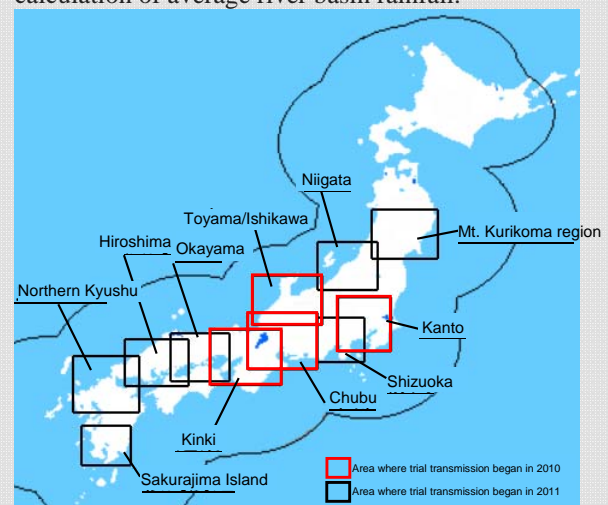


Figure 1. Regions where X-band MP Radar Trials have Begun