

# Radar Rainfall Information by XRAIN (expanded trial version)

(Study period: FY2016)

YAMAJI Hideyuki, Researcher, KAWASAKI Masaki, Head, TSUCHIYA Shuichi (Dr. Eng.),  
Senior Researcher  
Water Cycle Division, River Department

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## 1. Introduction

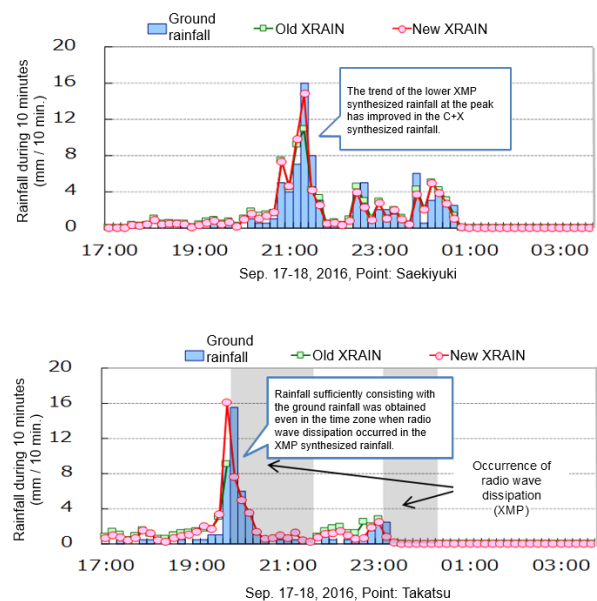
The MLIT has been distributing almost real-time radar rainfall information since 2010 using XRAIN with high resolution and 250 m mesh, which is updated every one minute. Since the conventional XRAIN ("Old XRAIN") was equipped with only X band MP radar rain gauge, whose radar waves were likely to dissipate in a heavy rain area, unobservable area (radio wave dissipation area) often appeared. Then, NILIM developed a technique to build the C-band MP radar rain gauge, whose radio waves are hard to dissipate in Old XRAIN<sup>1)</sup>. With this technique, it has become possible to minimize the appearance of radio wave dissipation area in radar rainfall observation, which was a persistent issue for Old XRAIN, and the observation area was expanded and test distribution of XRAIN (expanded trial version)<sup>2)</sup> ("New XRAIN") in July 2016. Then, NILIM evaluated the accuracy of New XRAIN with an example of actual rainfall that occurred in fiscal 2016 and re-identified the rainfall calculation parameter.

This paper introduces the radar rainfall information using New XRAIN and provides an example of observation results.

## 2. Radar rainfall information by New XRAIN

Radar rainfall information by New XRAIN is provided with the minimum observation area of 250 m mesh and distribution interval of 1 minute, and the time required from observation to distribution is 1 to 2 minutes. With observation performance equivalent to Old XRAIN, New XRAIN distributes rainfall information in wider area.

Figure shows the comparison of rainfall time series observed with ground rain gauges (at Saekiyuki, Takatsu) and Old XRAIN and New XRAIN using an example of actual rainfall in September 2016. The results of observation by New XRAIN are almost equivalent to those with ground rain gauges from the beginning to end of rainfall, and particularly show that the heavy rain, which was observed to be small by Old XRAIN due to the effect of radio wave dissipation, was accurately recognized.



**Figure:** Rainfall time series (Sep. 2016)

## 3. Conclusion

This paper introduced the radar rainfall information using New XRAIN and an example of observation results. The rainfall calculation parameter re-identified by NILIM is applied to operation of New XRAIN in fiscal 2017. In addition, further expansion of distribution area is expected by providing the existing C-band radar rain gauge, which is to be upgraded in turn, with New XRAIN.

☞ See the following for details.

- 1) Material of press release on XRAIN (expanded trial version)

<http://www.nilim.go.jp/lab/bcg/kisya/journal/kisya20160629.pdf>

- 2) XRAIN (expanded trial version)

<http://www.river.go.jp/x/>