

# Compact X-band Dual Polarimetric Doppler Weather Radar



**Solid state**

**World's smallest and lightest!**

Model: **WR-2100**

## Usage examples







# Compact X-band Dual Polarimetric Doppler Weather Radar

## Fields of application

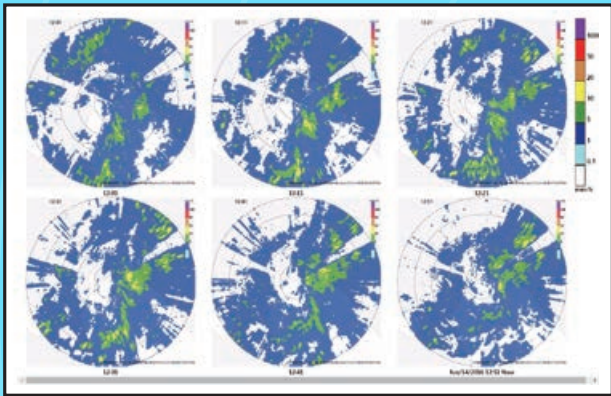


# Improving aircraft takeoff and landing rates

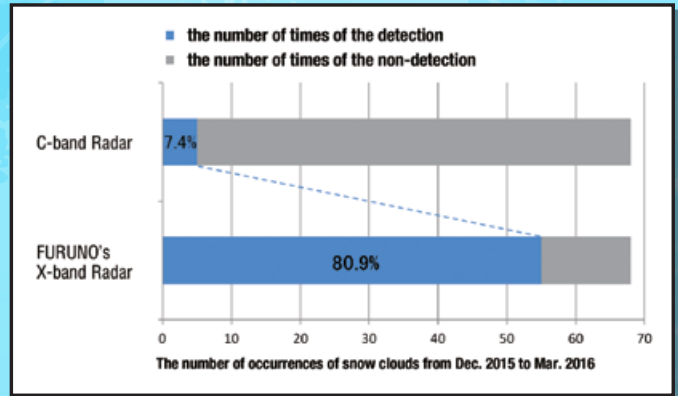
Helping air traffic controllers decide aircraft takeoffs and landings thanks to accurate snowfall observations.



## Observation Result

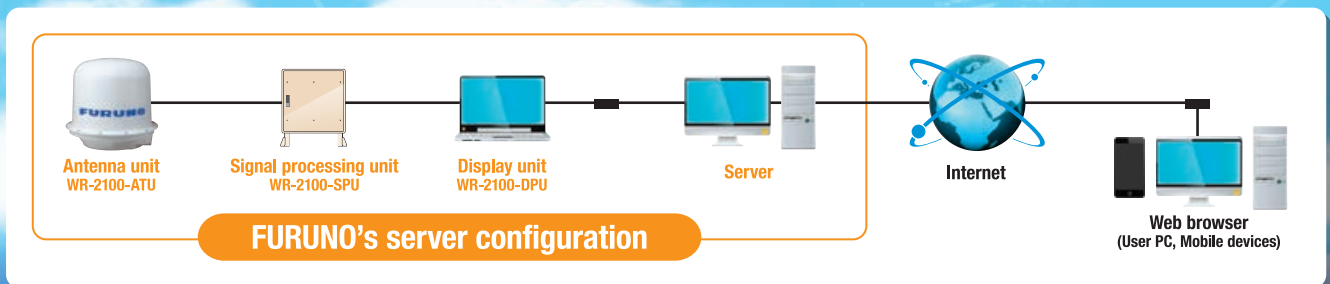


Temporal sequence of precipitation observation history in the immediate past.



Snow detection rate comparison of the FURUNO WR-2100 and C-band radar. FURUNO WR-2100 can detection snow clouds with high reliability.

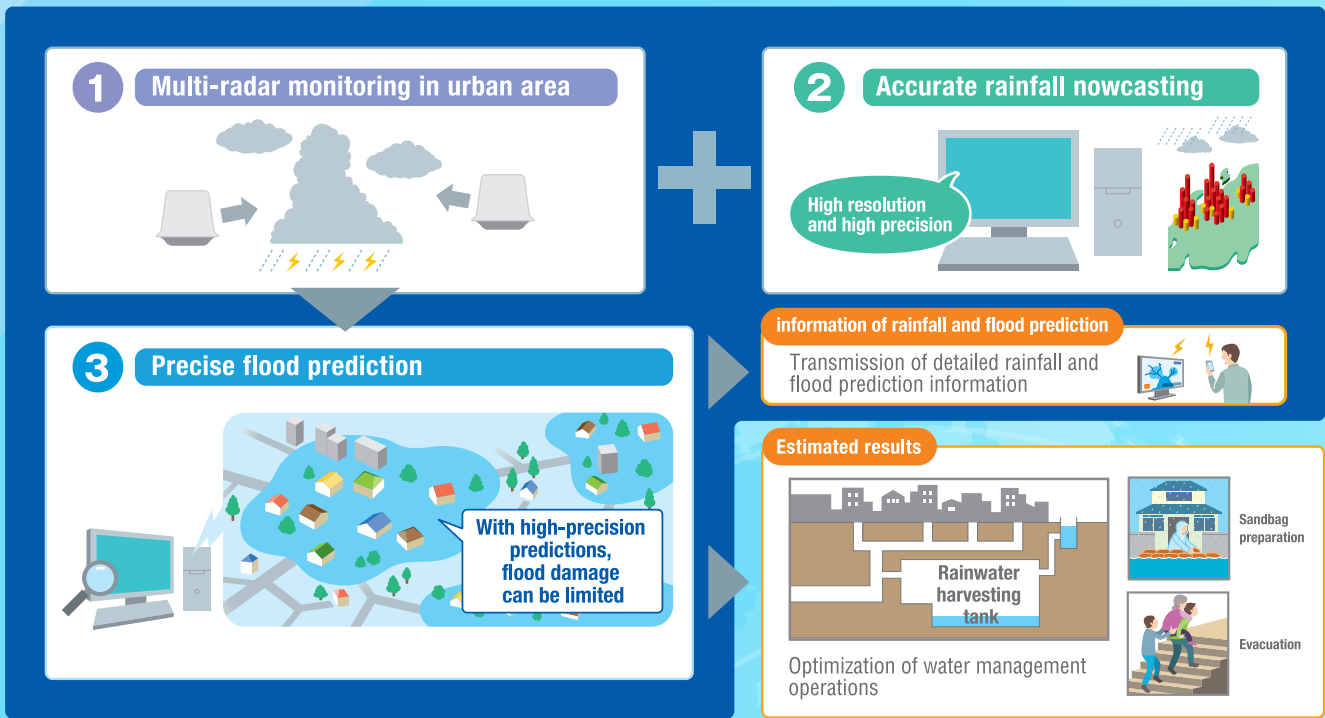
## System Configuration





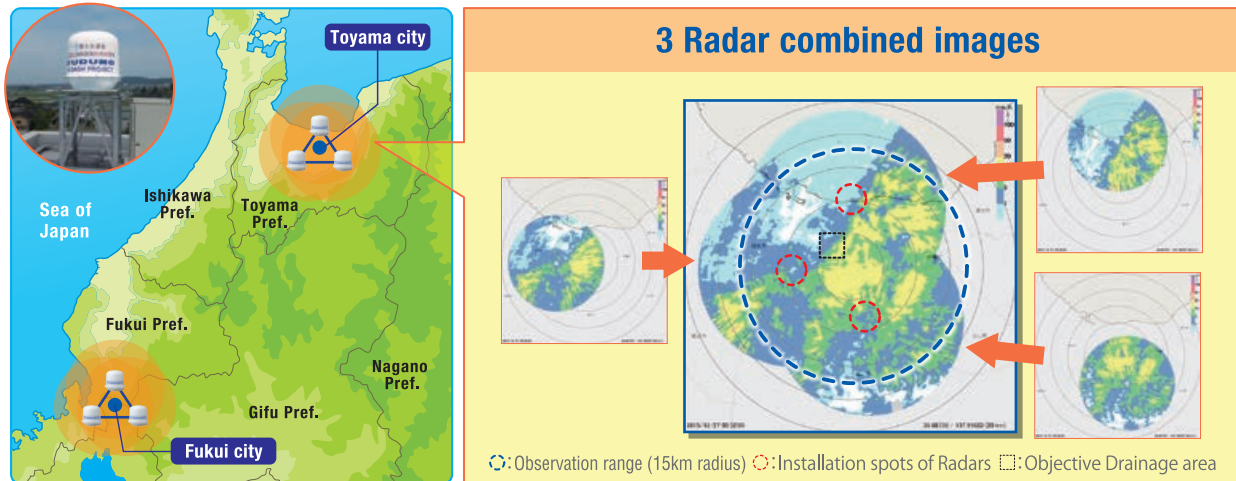
# Multi-radar system in urban areas

A joint research project for rainwater management, focused on monitoring heavy rainfalls in urban areas.



## FURUNO's Multi-radar system

● In the Japanese cities of Fukui and Toyama, set of 3 Radars have been installed



## Joint research team members

**METAWATER Co., Ltd.** → Multidisciplinary engineering and integration

**New Nippon Consultants Co., Ltd.** / **Nihon Suido Consultants Co., Ltd.** → Simulation model for sewage pipelines

**FURUNO ELECTRIC CO., LTD.** → Multi-radar system for urban areas

**EMORI & CO.,LTD** → Flood prediction analysis system

**Kobe University** → Rainfall prediction model

**Fukui City, Toyama City** → Field experiments

# Support of sewer flood management

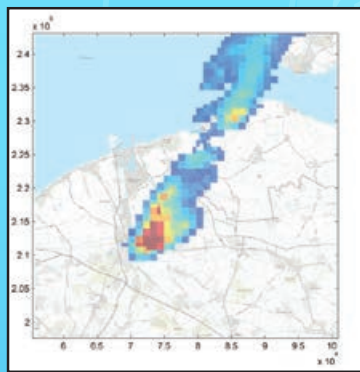
Flood prediction and risk management in urban area using rainfall observations and sewage model.



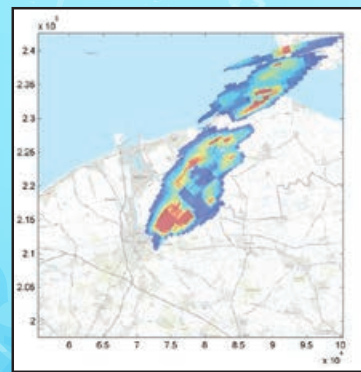
## Observation Result

**WR-2100 radar on roof Artevelde High School at Gent  
(extreme summer thunderstorm of 5 June 2015)**

X-band signals are more sensitive to rain drop fluctuation than the C-band. On the WR-2100 side, there are some strong small-scale storm cells detected by the X-band but not the C-band. So for that area, X-band data may actually provide better estimates.

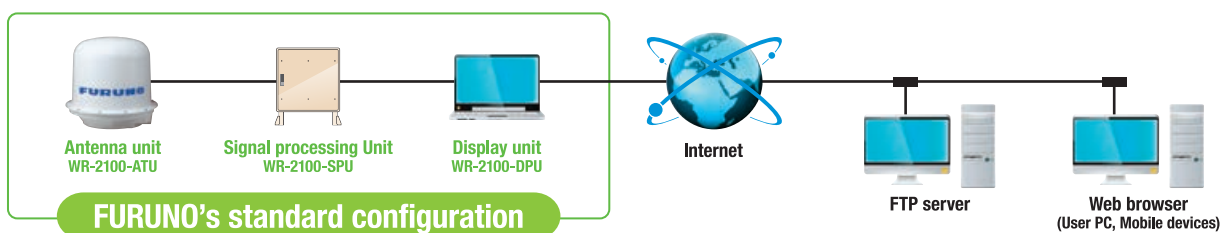


RMI C-band radar: 500m, 5min



FURUNO WR-2100 radar: 100m, 1min

## System Configuration





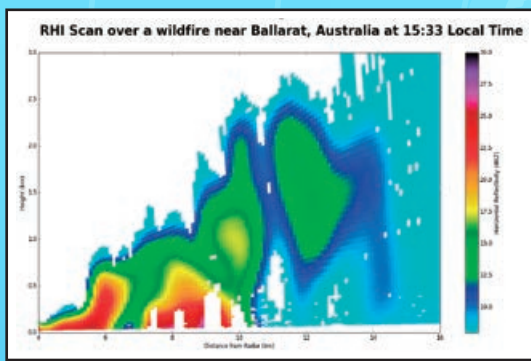
# Transportable Observation Unit

Small size allows the FURUNO WR-2100 weather radar to easily be mounted on a transportable platform creating a mobile observation unit that can be deployed in desired area.

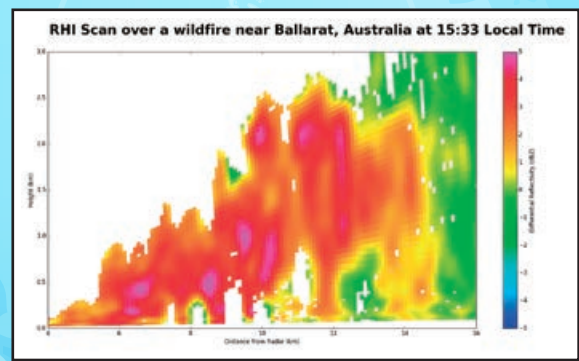


## Observation Result

The WR-2100 is a versatile unit which can be used for both meteorological and many other applications. The University of Queensland in Australia has developed a wildfire prediction model using the WR-2100 radar. The WR-2100 small size is perfect for their transportable mobile unit. The WR-2100 provides unique, detailed information of the fire plumes and wind speed/direction within the fire activity to the researchers.



RHI scan showing horizontal reflectivity



RHI scan showing differential reflectivity (ZDR)

## System Configuration \* Designed by the University of Queensland





# Observation of local urban heavy rain

Monitoring heavy rain storms, producing real-time nowcasts for a city and provides early warning alarms for city departments like waste water management.

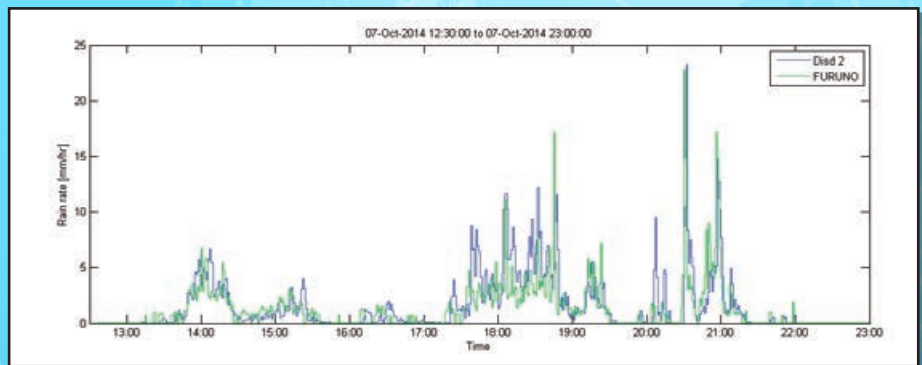


## Observation Result

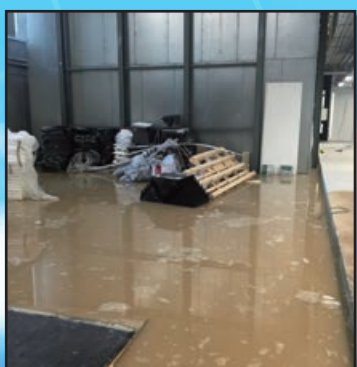
The WR-2100 provides outstanding precipitation observation performance for rain, hail and snow. The comparison graph below shows the WR-2100 matches the same dynamics as a disdrometer in a rain event.



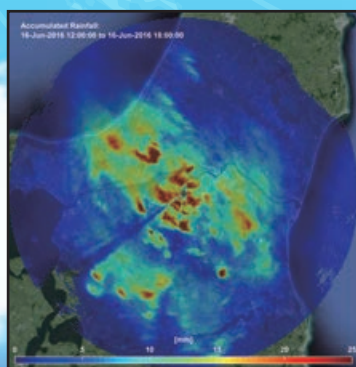
High intensity hailstorm over the city of Aalborg. Resolution is 300 x 300 meter. Background map, Google Map, 2015



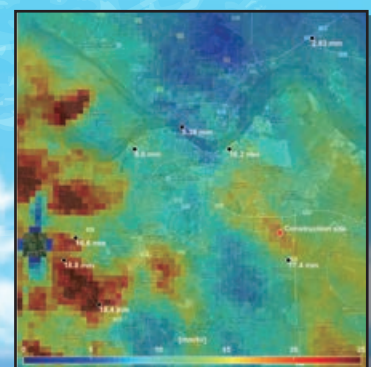
Comparison between FURUNO WR-2100 and an OTT Parsivel disdrometer



Water damage on construction sites



Rainfall intensity monitoring

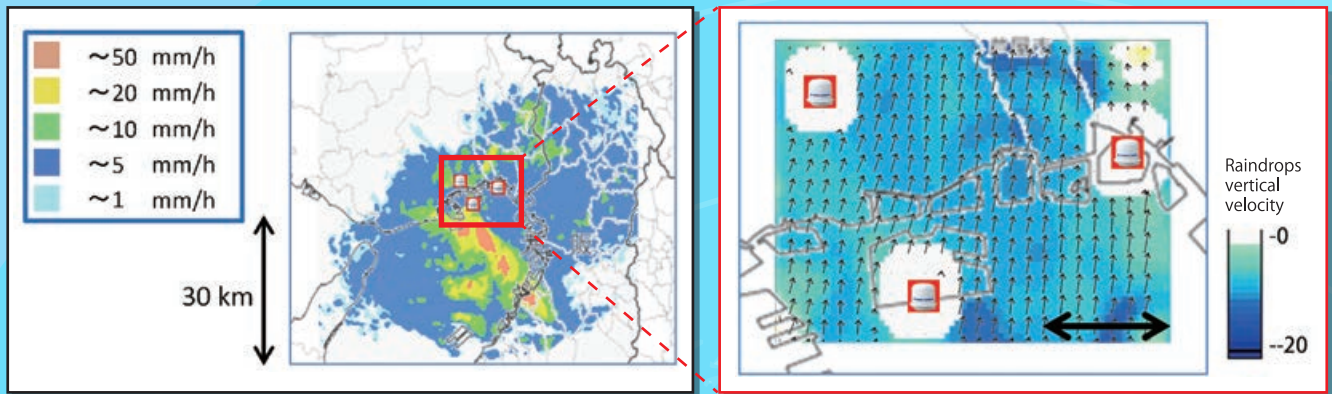


Zoom into the area of interest



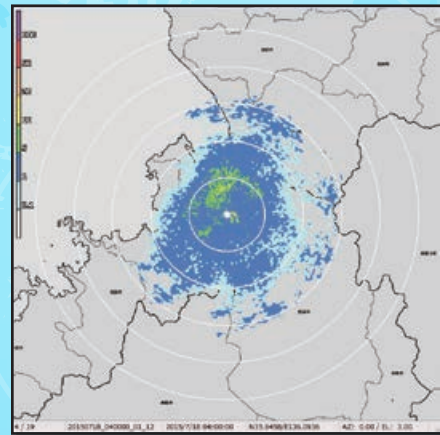
### Rainfall and Wind Vector Monitoring (Japan)

Enhanced local observation using three radar systems to monitor a critical area. Using multiple radars and displays wind vectoring can be detected and shown.



### Freeway Observation (Japan)

The system is dedicated for localization of sudden torrential rain to support highway operations.



### Landslide prevention (Croatia)

Utilizing high precision rainfall measurements with a ground and water flow model.



### Disaster Prevention (Indonesia)

Volcano ash and Rainfall monitoring.







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