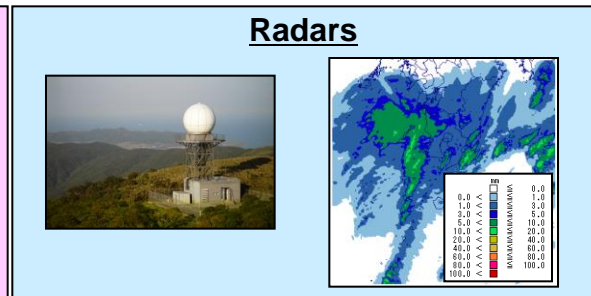
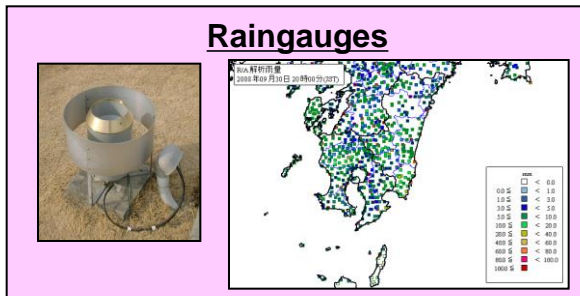


# Measuring Rainfall – What is Radar/Raingauge-Analyzed Precipitation? (Japan Meteorological Agency (JMA))

To help prevent disasters, JMA monitors rainfall using the observational equipment detailed below.

## Equipment for observing precipitation

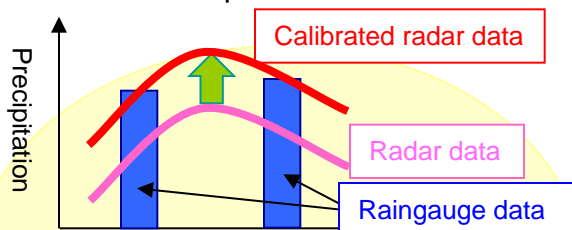


The features of raingauges and radars are shown below.

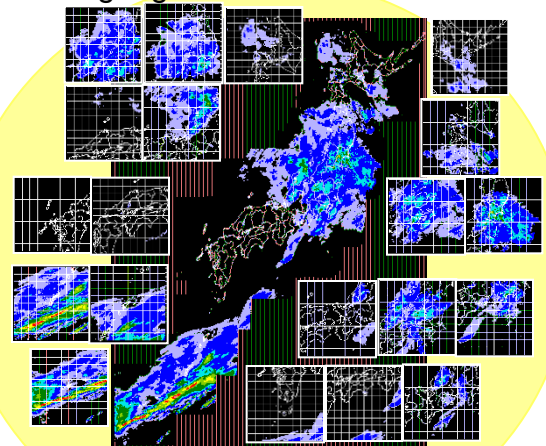
	Raingauges	Radars
Advantages	Can measure actual amounts of precipitation.	Can observe large areas with higher spatial resolution than the raingauge network.
Disadvantages	Can observe precipitation at single points only.	May produce readings different from precipitation observed on the ground, as it measures the amount of rain overhead.

## Radar/Raingauge-Analyzed Precipitation combines the advantages of raingauges and radars

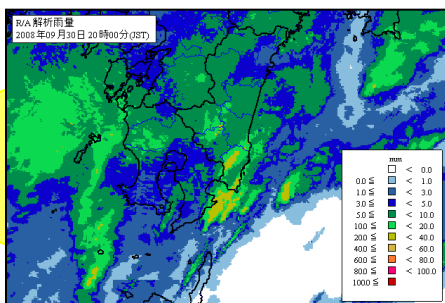
JMA has created an optimal mix of the advantages found in raingauge data and radar data.



Precipitation amounts observed by radar generally does not agree with those observed by raingauges, and radar data are therefore calibrated with raingauge data.



The calibrated radar data are then made into a single composite data set.



### Radar/Raingauge-Analyzed Precipitation

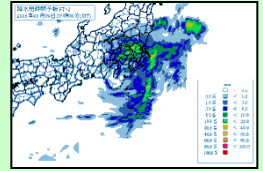
Radar/Raingauge-Analyzed Precipitation data depicts hourly precipitation with high dimensional accuracy, and is issued every thirty minutes with a spatial resolution of 1 km.

# Information derived from Radar/Raingauge-Analyzed Precipitation

JMA issues Very-short-range Forecasts in the form of Precipitation and Precipitation Nowcasts, and also produces/utilizes the Soil Water Index as a warning/advisory criterion. This information is derived from Radar/Raingauge-analyzed Precipitation.

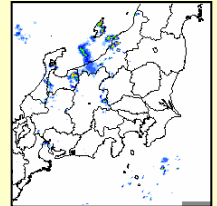
## Very-short-range Forecasts of Precipitation

Data on precipitation is issued every thirty minutes to provide forecasts of hourly precipitation amounts for the next six hours with a spatial resolution of 1 km. (<http://www.jma.go.jp/en/radame/>)



## Precipitation Nowcasts

Precipitation Nowcasts provide ten-minute precipitation forecasts of swiftly growing convections with a spatial resolution of 1 km up to an hour ahead to assist with disaster prevention activities. Nowcasts are issued every ten minutes within three minutes of each radar observation. (<http://www.jma.go.jp/en/radnowc/>)

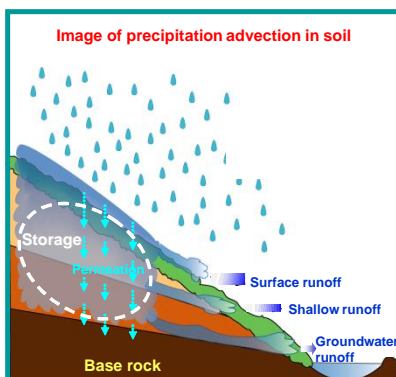


## Soil Water Index

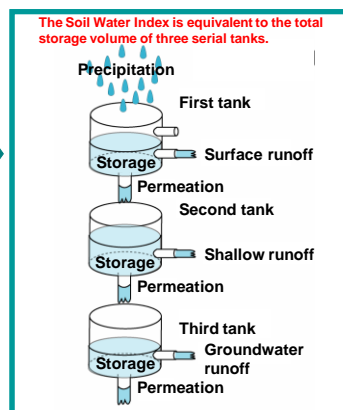
The Soil Water Index shows the risk of landslides\* caused by heavy rain, and has a spatial resolution of 5 km up to six hours ahead.

## What is the Soil Water Index?

The Soil Water Index shows the risk of landslides\*, and is calculated from a tank model, Radar/Raingauge-Analyzed Precipitation and Very-short-range Forecasts of Precipitation. Higher index values indicate an increased risk of landslides\*.



Modeling



**Soil Water Index values are calculated for individual 5-km grid squares.**  
The whole nation is covered by approximately 16,000 such squares.

To protect life, JMA alerts the public to natural hazards through warnings and advisories including those for heavy rains. JMA monitors heavy rains using Radar/Raingauge-Analyzed Precipitation, Very-short-range Forecasts of Precipitation and the Soil Water Index.



\* The term "landslides" here refers to debris flows and concentrated slope failures.