



## Flood Forecasting and Warning Services

The Bureau of Meteorology (the Bureau) is responsible for providing an effective flood forecasting and warning service in each Australian state and territory. This service is provided in cooperation with other organisations such as state and territory government water and emergency management agencies, catchment authorities and local councils.

The Bureau delivers this service through Flood Warning Centres and Regional Forecasting Centres in Bureau regional offices in each state and the Northern Territory.

The Bureau is improving the accuracy and timeliness of flood warnings and forecasts through the introduction of new technology, specialist training and more staff.

### Data collection

Rainfall and river height data is collected from a network of over 4500 stations across Australia. These stations are owned and operated by the Bureau and partner organisations, commonly water management agencies and local councils.

Data is gathered in real-time directly through Bureau telemetry systems or by transfer from partner agencies. In many areas, the Bureau works with other organisations to implement shared data collection systems using event-reporting radio telemetry with the Bureau-developed display and analysis software called Enviromon. Enviromon ensures the data is available to the Bureau Flood Warning Centres. It can be used locally at the same time for interpretation and automatic warnings and alarms.

More than one hundred shared data systems are now operating and the technology has recently been extended to include communication using the internet and satellite communication for remote areas.

### Types of flooding

Australia's most common form of flooding occurs in rivers following heavy rainfall. Flooding of rivers in inland areas of central and western New South Wales and Queensland, as well as parts of Western Australia, can spread for thousands of square kilometres and may last for weeks or even months.

Flooding of hilly or mountainous areas, and rivers draining to the coast, can occur more quickly but often lasts for just one or two days. Flash flooding usually results from relatively short, intense bursts of rainfall—commonly from thunderstorms—and is a particularly serious problem in urban areas where drainage systems may not cope.

### Flood services

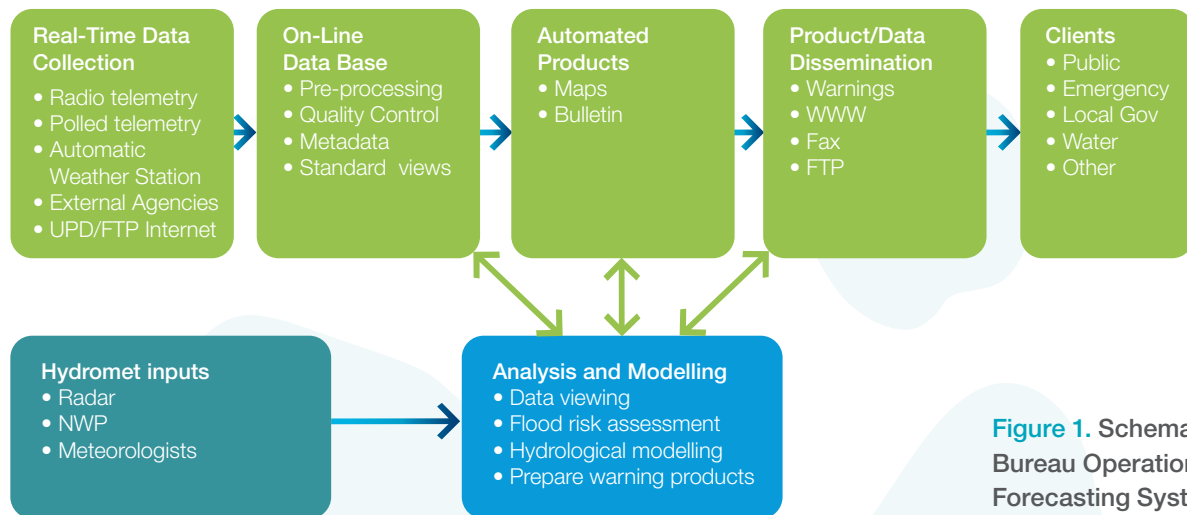
The Bureau's Flood Warning Service provides:

- **Early advice** of possible flooding if flood producing rain is expected in the near future.
- **A generalised flood warning** that flooding is occurring or is expected to occur in a particular region. No information on the severity of flooding or the particular location of the flooding is provided in this instance. These warnings are issued for areas where no specialised warnings systems have been installed. As part of its Severe Weather Warning Service, the Bureau also provides warnings for severe storms that may cause flash flooding. In some areas the Bureau has implemented local monitoring systems in collaboration with local councils to assist with flash flood warning.
- **Warnings of minor, moderate or major flooding** in areas where specialised warning systems have been installed. In these areas, the flood warning message will identify the river valley, the locations expected to be flooded, the likely severity of the flooding and when it is likely to occur.

The Bureau of Meteorology is making Australia safer by improving its flood warning and forecasting services.

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[www.bom.gov.au/water](http://www.bom.gov.au/water)



**Figure 1. Schematic of Bureau Operational Flood Forecasting System**

- **Predictions of expected river height** at a town or other important locations and the time that this height will be reached. This particular service is the most useful because it allows local emergency authorities and people in the flood threatened zone to determine the area and likely depth of flooding. This type of warning can only be provided for locations with specialised flood warning systems and for which flood forecasting models are available.
- **Rainfall and river height maps and bulletins** that summarise observed rainfalls and river heights (in metres) at selected locations within river basins. These are presented as tables, charts and maps on the Bureau web site at: [www.bom.gov.au/water/flood](http://www.bom.gov.au/water/flood)

## Improving flood forecasting

The Bureau is working continually with partner agencies to improve flood forecasting and warning services. This includes evaluating and implementing the latest research in improved hydrologic forecasting techniques, new data collection technologies and developments in numerical weather prediction and remote sensing to improve forecasting performance.

Communication and dissemination of warning information is also critical to the effectiveness of these services. The Bureau works closely with emergency management and response organisations in areas such as public education and the application of new communication technologies.

## Flood information

The Bureau's role is to provide Flood Warnings, which sometimes contain forecasts of expected river heights. In the interpretation of warning messages, it is important to note that predicted (and observed) height is a river level above a certain point and not floodwater depth. Other agencies such as local councils and state agencies are responsible for interpreting river levels into depths and areas of inundation and for planning and managing protective action such as evacuation from areas at risk of flooding. People living in floodprone areas should consult with these agencies to find out what level of warning service operates in their area.

Radio stations, particularly local ABC and commercial stations, broadcast flood warnings and bulletins soon after they are issued. The web is also a good source of flood warning information. The Bureau's web site can be found at <http://www.bom.gov.au/>