

# If it doesn't rain it pours: estimating flood risk for safer communities

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Recent climate conditions experienced in Australia certainly ring true with the famous words from author, Dorothea Mackellar, 'of droughts and flooding rains'.

Australia continues to experience major and catastrophic flooding. In 2019, there has been damaging floods in Townsville, followed by Tropical Cyclone Trevor in Queensland and the Northern Territory as well as heavy rains and flooding in the Pilbara following Tropical Cyclone Veronica. The Townsville event in February broke rainfall records with annual rainfall achieved in just 10 days. The Flinders River experienced its most significant flooding in the last 50 years, growing to 70 km in width.

The damage bill for the Townsville floods alone topped \$1 billion. In western Queensland, half a million cattle were lost and there has been an increase in people suffering melioidosis and having to be hospitalised. In response, the Australian Government set aside \$3.9 billion for the Natural Disaster Emergency Response Fund as well as \$232 million to help flood-affected North Queenslanders and \$8 billion in additional spending on infrastructure.

## Understanding risk

Understanding risk is a first priority as listed in the National Disaster Risk Reduction Framework.<sup>1</sup> Understanding flood risk is critical to help communities reduce the risks and effects of damaging floods. Many groups have echoed this, including the Insurance Council of Australia (ICA). In their media release from 20 March 2019, the ICA indicated that knowing your flood risk is important in understanding your insurance premium and being able to undertake flood mitigation activities. The ICA also detailed the 20 most flood-prone Australian federal electorates; 16 of which are in Queensland with the remaining four in New South Wales.

To help understand flood risk in Australia, the Australian Rainfall and Runoff<sup>2</sup> comprises a national guideline document, data and software suite to develop reliable and robust estimates of flood risk. These estimates help decision-makers plan new developments in safer areas and new infrastructure, such as roads and bridges, are designed appropriately.

The Australian Rainfall and Runoff was first published in 1958 by Engineers Australia and has been published by

the Commonwealth of Australia since 2016. Australian Rainfall and Runoff 2016 was the most comprehensive update in three decades. Working with Engineers Australia, Geoscience Australia added 30 years of data collected from across Australia, including observations from more than 10,000 rainfall gauges and 100,000 storm events.

The Brisbane River Strategic Floodplain Management Plan<sup>3</sup> was released in April 2019, which was regarded as setting a new national benchmark. This large and significant flood study adopted the best practice recommended in the Australian Rainfall and Runoff 2016.

Today, Australian Rainfall and Runoff has international reach. The Oak Ridge National Laboratory in the USA publishes multiple images from Australian Rainfall and Runoff in their reports, presentations and journals, supporting the work of the United States of America Regulatory Commission. New Zealand is also interested in developing a similar guideline. The benefit is that they can use relevant content from Australian Rainfall and Runoff by providing the appropriate attribution to the Commonwealth of Australia.

In May 2019, Geoscience Australia and Engineers Australia announced the latest release of Australian Rainfall and Runoff. The 2019 version represents best practice and provides flood modellers with greater confidence in using the guideline. Of particular note is the finalisation of Book 9 that deals with modelling floods in complex urban environments.

Australian Rainfall and Runoff continues to be a quality product for assessing flood risk and reflects the value of those in the private and public sectors effectively working together.

Australian Rainfall and Runoff is free and openly accessible online and via PDF for download.

1 Department of Home Affairs 2018, *National Disaster Risk Reduction Framework*. At: [www.homeaffairs.gov.au/emergency/files/national-disaster-risk-reduction-framework.pdf](http://www.homeaffairs.gov.au/emergency/files/national-disaster-risk-reduction-framework.pdf).

2 Australian Rainfall and Runoff. At: <http://arr.ga.gov.au/>.

3 Brisbane River Strategic Floodplain Management Plan. At: <https://publications.qld.gov.au/dataset/brisbane-river-strategic-floodplain-management-plan-technical-evidence-report>.