

Flood summary for the Fitzroy River at Yaamba

- The town of Yaamba is on the Fitzroy River in the Fitzroy catchment.
- The river heights at Yaamba are measured on a manual gauge owned by the Bureau of Meteorology (Bureau station number: 033076).
- Yaamba experienced major flooding in January 2011 that isolated the town and affected around 3000 properties in the area.
- A detailed map of the flood warning network is available on the Bureau website at http://www.bom.gov.au/hydro/flood/qld/brochures/river_maps.shtml

Location map

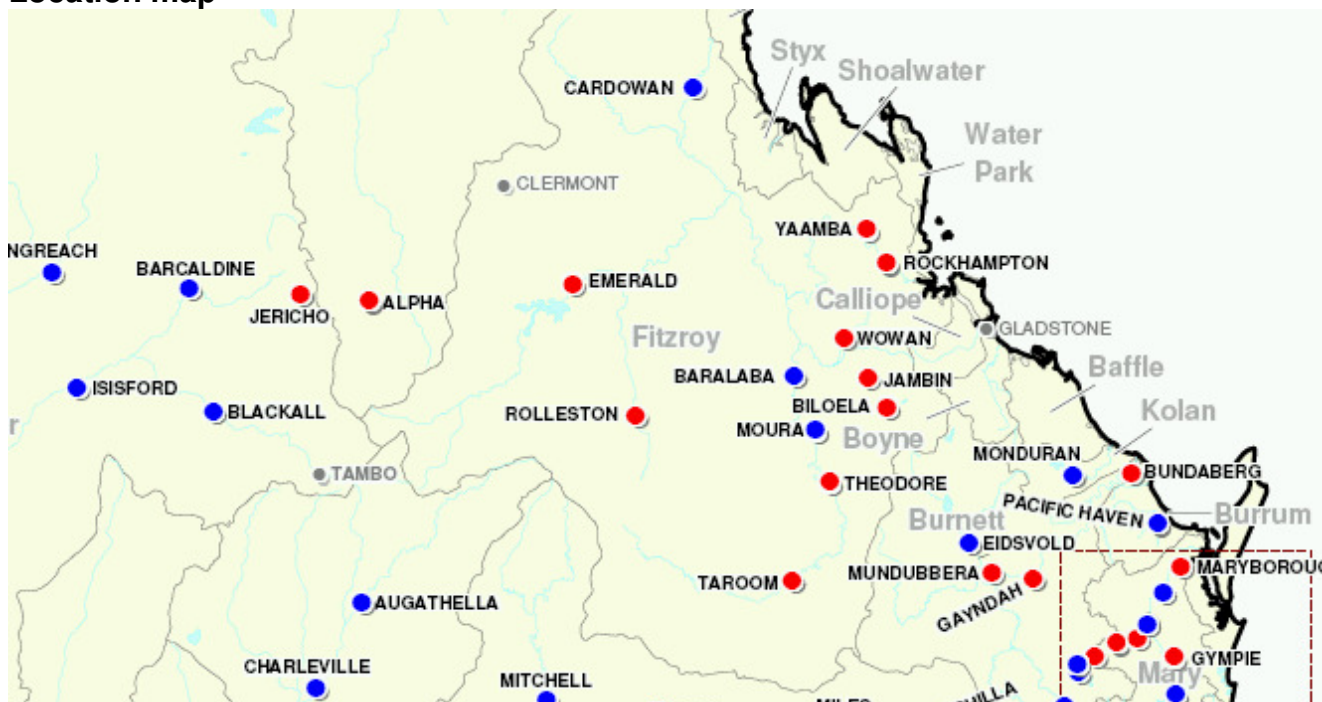


Figure 1. Map showing location of Yaamba.

Note: Red dots are reported flood inundated towns or cities and blue dots are flood affected towns or cities.

Flood effects and severity

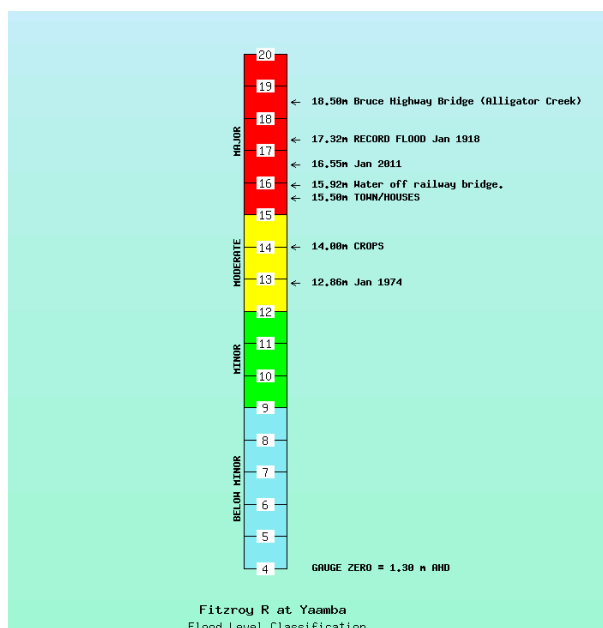


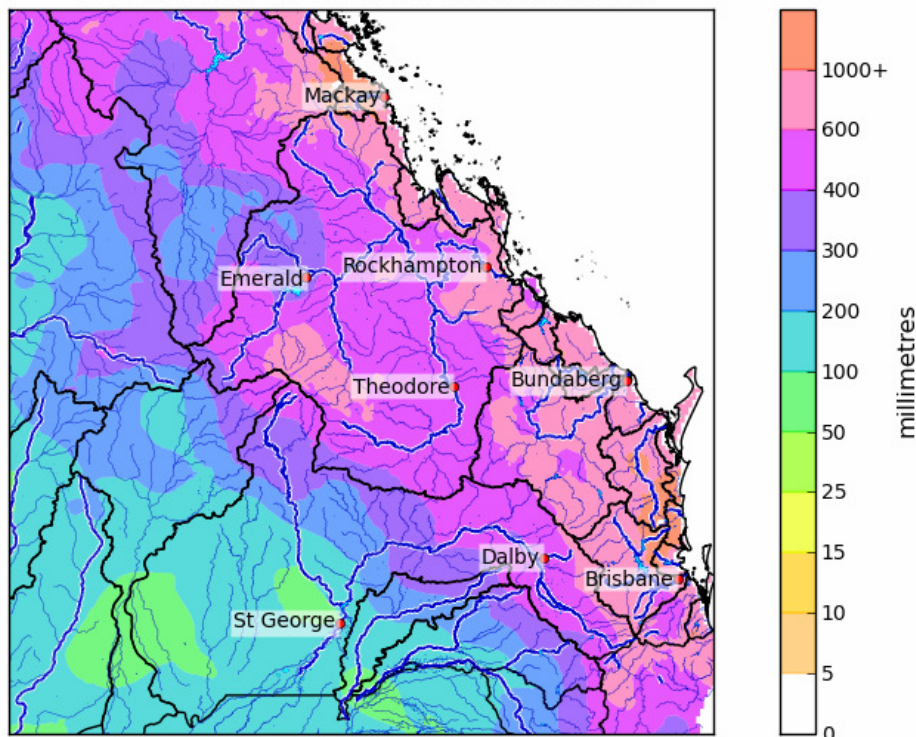
Figure 2. Flood level classifications and flood effects for Yaamba.

- **Peaked at 16.55 metres on 04/01/2011.**
- Minor: 9 metres
Moderate: 12 metres
Major: 15 metres.
- Gauge zero is 1.30 metres AHD.
- The township of Yaamba was isolated and many properties in the area were affected (Courier Mail).
- The major flood peak for Yaamba in January 2011 is the fourth highest on record.
- Above major flood level (15 metres) from 30/12/2010 to 14/01/2011.
- Remained above minor flood level (9 metres) from 03/12/2010 to 17/01/2011.

Rainfall summary

- Between 400 to 1000 millimetres of rainfall was recorded over the Fitzroy River catchment from the start of December 2010 to the end of January 2011.
- The heaviest rainfall periods during December and January occurred from the 26/12/2010 to 28/12/2010, with falls between 200 and 300 millimetres over most of the catchment with some areas receiving over 400 millimetres.

Total Rainfall 01-12-2010 to 31-01-2011



Rainfall map 26-12-2010 to 28-12-2010

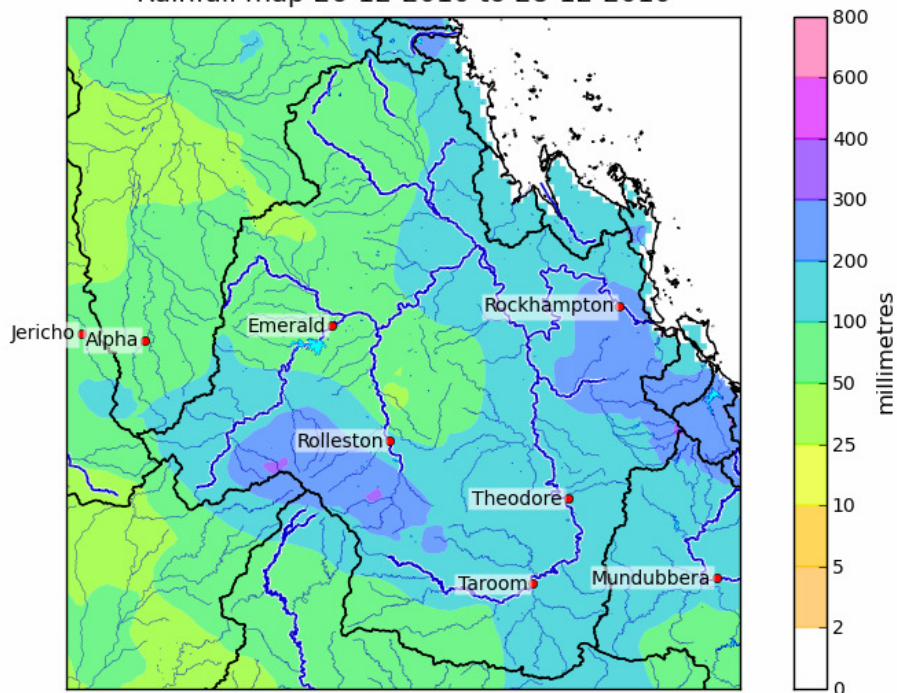


Figure 3. Rainfall map from 01/12/2010 to 31/01/2011 (top) and for the 48 hours to 9 AM on 28/12/2010 (bottom).

Rainfall Intensity

- Coolmaringa TM on the Mackenzie River and Kingsborough TM on the Don River, both upstream from Rockhampton, have been selected as examples of recorded rainfall intensities across the eastern parts of the Fitzroy River catchment during December 2010 and January 2011. The rainfall intensity data is shown in Table 1.
- The most significant rainfall intensities for December 2010 and January 2011 at these two sites can be seen below. All durations were well below the 1% Annual Exceedence Probability (100 year Average Recurrence Interval).

Table 1. Recorded maximum rainfall intensities for Coolmaringa TM on the Mackenzie River and Kingsborough TM on the Don River for December 2010 and January 2011.

Rainfall Duration	Coolmaringa TM			Kingsborough TM		
	Rainfall (mm)	Period ending	ARI (years)	Rainfall (mm)	Period ending	ARI (years)
30 mins	22	10:25 AM 22/12/2010	< 1	45	12:05 PM 27/12/2010	10-20
60 min	33	10:45 AM 22/12/2010	1-2	53	12:15 PM 27/12/2010	5
2 hr	49	5:10 PM 27/12/2010	1-2	63	7:50 PM 27/12/2010	2-5
3 hr	61	5:40 PM 27/12/2010	2-5	78	8:15 PM 27/12/2010	5-10
6 hr	103	9:00 PM 27/12/2010	10-20	93	10:00 PM 27/12/2010	5-10
12hr	117	2:40 AM 28/12/2010	5-10	147	11:10 PM 27/12/2010	20
24hr	167	1:15 PM 03/12/2010	10-20	155	10:55 AM 28/12/2010	5-10
48hr	174	1:15 PM 03/12/2010	5-10	232	10:00 PM 27/12/2010	10-20
72hr	259	12:15 PM 03/12/2010	10-20	265	10:55 AM 28/12/2010	10-20

Note: A flood frequency analysis would be required to assess the probability of flood levels reached at each location. The frequency analysis in this report is for rainfall only.

Flood event timeline

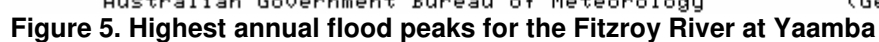
Table 2. Flood timeline for Yaamba

Time/Date	Event Description	Gauge Height (metres)	Comment
11:06 AM 04/12/2010	First warning issued		First warning issued with reference to Yaamba flooding.
04/12/2010	River level first exceeds the minor flood level.	9.00	Remained above the minor flood level for ~46 days.
6:00 PM 04/12/2010	Minor flood peak	10.50	
09/12/2010	River level first exceeds the moderate flood level	12.00	Remained above the moderate flood level for ~13 days.
9:00 AM 14/12/2010	Moderate flood peak	14.10	
21/12/2010	Fall below moderate	12.00	
26/12/2010	River level exceeds the moderate flood level again.	12.00	Remained above the moderate flood level for ~22 days.
30/12/2010	River level first exceeds the major flood level	15.00	Remained above the major flood level for ~ 16 days.
9:00 AM 04/01/2011	Major flood peak	16.55	4 th highest flood peak on record for Yaamba.
14/01/2011	Final fall below major	15.00	
16/01/2011	Final fall below moderate	12.00	
18/01/2011	Final fall below minor	9.00	
7:54 AM 17/01/2011	Final warning issued		



Comparison with previous floods

- River height records for Yaamba date back to 1889 with 11 major flood peaks in the record, including two major floods in 1918 and in 1991.
- The major flood level of 16.55 metres is the fourth highest peak on record. (The highest flood on record is 17.32m in 1918).
- The previous time the river level exceeded 15 metres was in January 1991.



Warning and Forecast Service

- The first warning issued for the Fitzroy River that included reference to expected river height rises at Yaamba was issued on 04/12/2010. Warnings then continued for the catchment throughout the month, finalising on 17/01/2011 following the major flood peak at Yaamba.
- This period of warnings included the moderate flood peak at Yaamba in December and the major flood peak at Yaamba in January 2011.
- A total of 86 warnings were issued for the Fitzroy River system during December 2010 and January 2011 that referred to river rises and flooding at Yaamba.

Table 3. Table of peak height predictions for Yaamba

Time of Height Forecast	Forecast	Peak
11:06 AM 04/12/2010 First warning issued referencing flooding at Yaamba. Height at 9:00 AM on 04/12/2010 was 10.4m (minor).		
2:39 PM on Thursday the 30th of December 2010	Reach around 16.1 metres during Saturday with further rises.	Rising limb forecasts – reach a level and expected to continue rising
12:07 PM on Friday the 31st of December 2010	Expected to reach 16.1 metres on Saturday with further rises to around 16.6 metres on Monday.	
7:04 AM on Sunday the 2nd of January 2011	Reach about 16.5 metres on Monday with possible further rises.	
6:41 AM on Monday the 3rd of January 2011	Peak about 16.5 metres overnight Monday, remaining high for several days.	16.55 metres at 0900 Tues 04/01/2011
7:14 PM on Tuesday the 4th of January 2011	Remain around the major flood peak of 16.55 metres overnight. River levels to remain high for several days.	

Note: This table does not include all forecasts issued during these flood events.