

## Flood summary for the Balonne River at Surat

- The town of Surat is on the Balonne River in the Condamine-Balonne River catchment.
- The flood heights at Surat are measured on a manual gauge owned by the Bureau of Meteorology (Bureau station number: 043063).
- Surat recorded two major flood peaks in January 2011 and a new record peak height of 12.75 metres.
- 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](http://www.bom.gov.au/hydro/flood/qld/brochures/river_maps.shtml)

## Location map

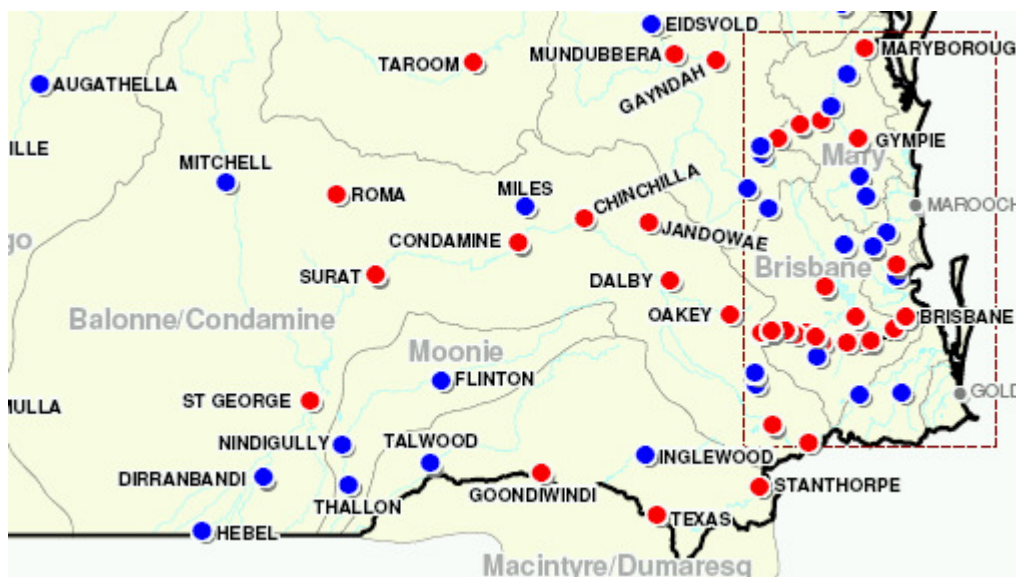
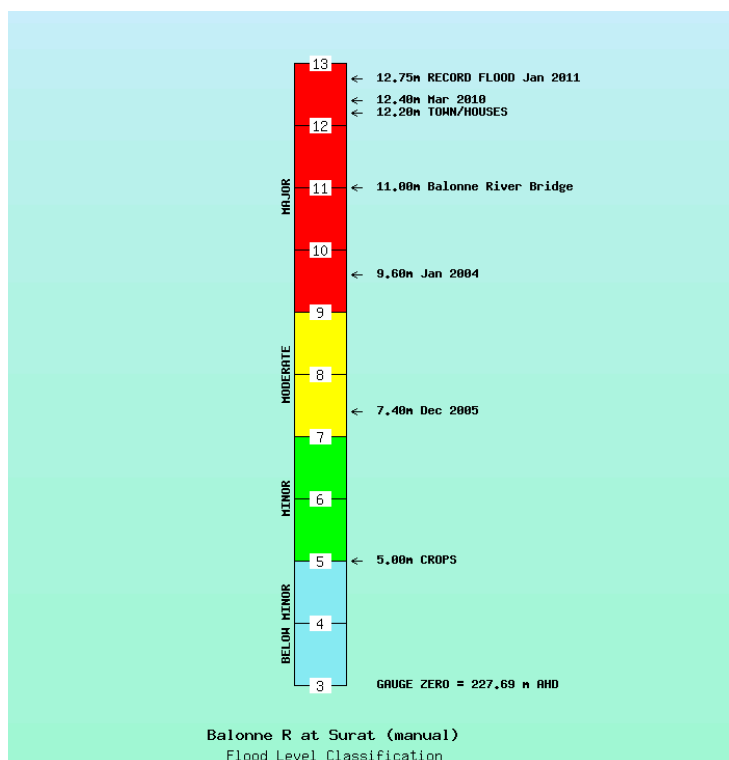


Figure 1. Map showing location of Surat.

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

## Flood effects and severity



- **Peaked at:**  
**12.75 metres on 04/01/2011 (New record).**  
**12.4 metres on 18/01/2011.**
- Minor: 5 metres  
 Moderate: 7 metres  
 Major: 9 metres
- Gauge Zero is 227.695 AHD
- Above major flood level (9 metres) from 23/12/2010 to 29/01/2011.
- Above minor flood level (5 metres) from 04/12/2010 to 01/02/2011.

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

## Rainfall summary

- Rainfall recorded in December 2010 and January 2011, which led to major flooding at Surat, was heaviest over the eastern half of the catchment.
- Between 300 to 600 millimetres of rainfall was recorded over the Condamine River catchment from the start of December 2010 to the end of January 2011 with falls up to 1400mm over the far east of the catchment. Falls between 100 and 300 millimetres were recorded over the Balonne River catchment.
- The heaviest rainfall periods during December 2010 and January 2011 occurred from 26/12/2010 to 28/12/2010, with falls between 100 and 200 millimetres and from 06/01/2011 to 12/01/2011 with falls between 200 and 400 millimetres.

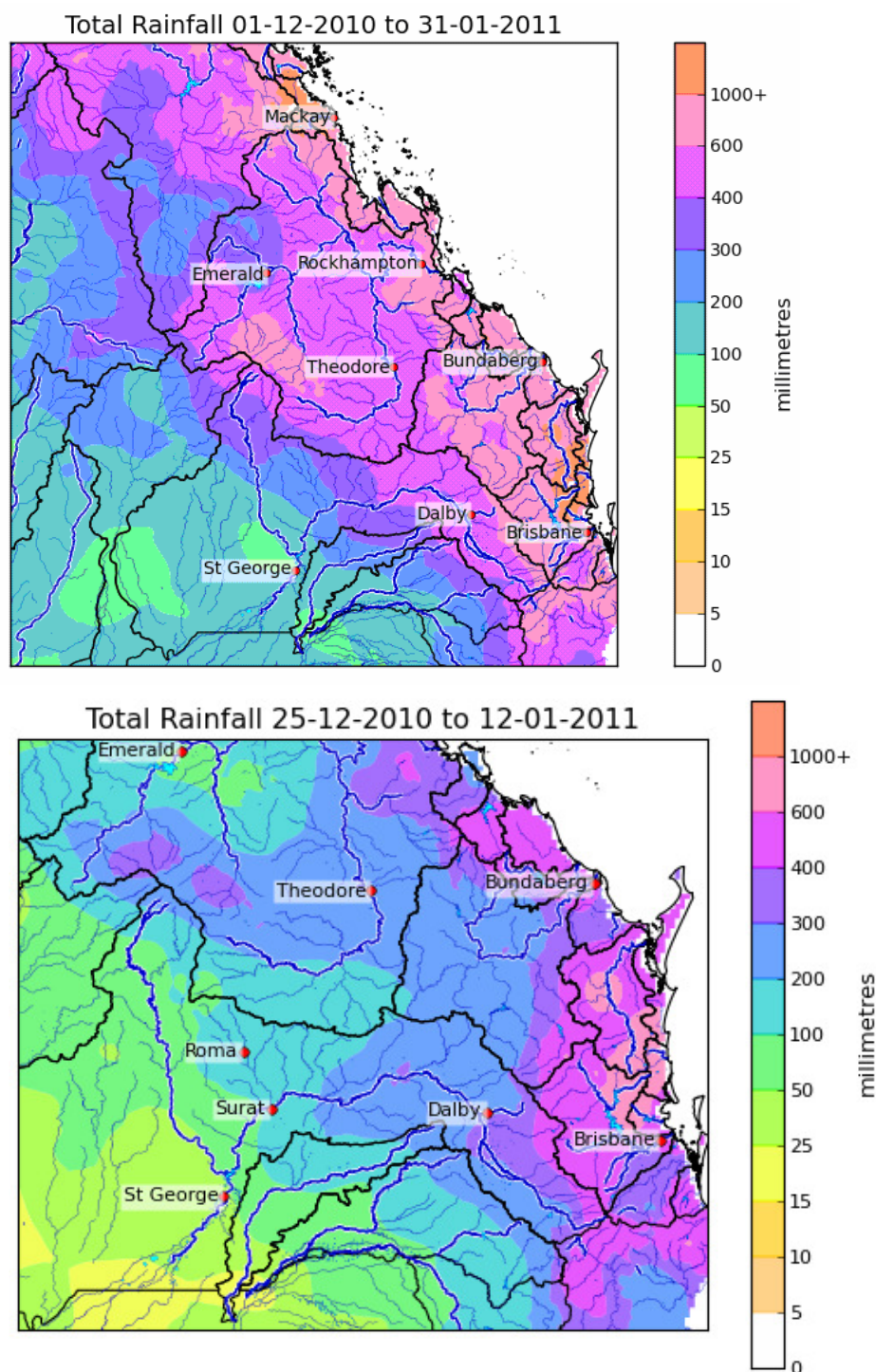


Figure 3. Rainfall map from 01/12/2010 to 31/01/2011 (top) and for the period from 9 AM on 25/12/2010 to 9 AM on 12/01/2011 (bottom).

## Rainfall Intensity

- The December and January floods at Surat were not caused by local area intense rainfall and rainfall intensity analysis of single sites in the large catchment above Surat is not informative.
- The flood levels at Surat were the result of the combination of large flows in Dogwood Creek, Bungil Creek, Charleys Creek, Myall Creek and the Upper Condamine River.

## Flood event timeline

**Table 2. Flood timeline for Surat**

Time/Date	Event Description	Gauge Height (metres)	Comment
05/12/2010	First warning issued		
04/12/2010	River level first exceeds the minor flood level.	5.00	Remained above the minor flood level for ~59 days.
07/12/2010	River level first exceeds the moderate flood level.	7.00	Remained above the moderate flood level for ~5 days.
6:00 AM 09/12/2010	Moderate flood peak	8.05	
12/12/2010	River level falls below moderate	7.00	
14/12/2010	River level exceeds the moderate flood level	7.00	Remained above the moderate flood level for ~48 days.
9:00 AM 19/12/2010	Moderate flood peak	8.80	
23/12/2010	River level exceeds the major flood level.	9.00	Remained above the major flood level for ~37 days.
5:45 AM 04/01/2011	Major flood peak.	12.75	New Peak Height Record.
10:00 PM 18/01/2011	Major flood peak	12.40	Equal 2 <sup>nd</sup> highest peak on record.
29/01/2011	River level falls below major	9.00	
31/01/2011	Final fall below moderate	7.00	
01/02/2011	Final fall below minor	5.00	
10/02/2011	Final warning issued		

## Flood Heights at Surat

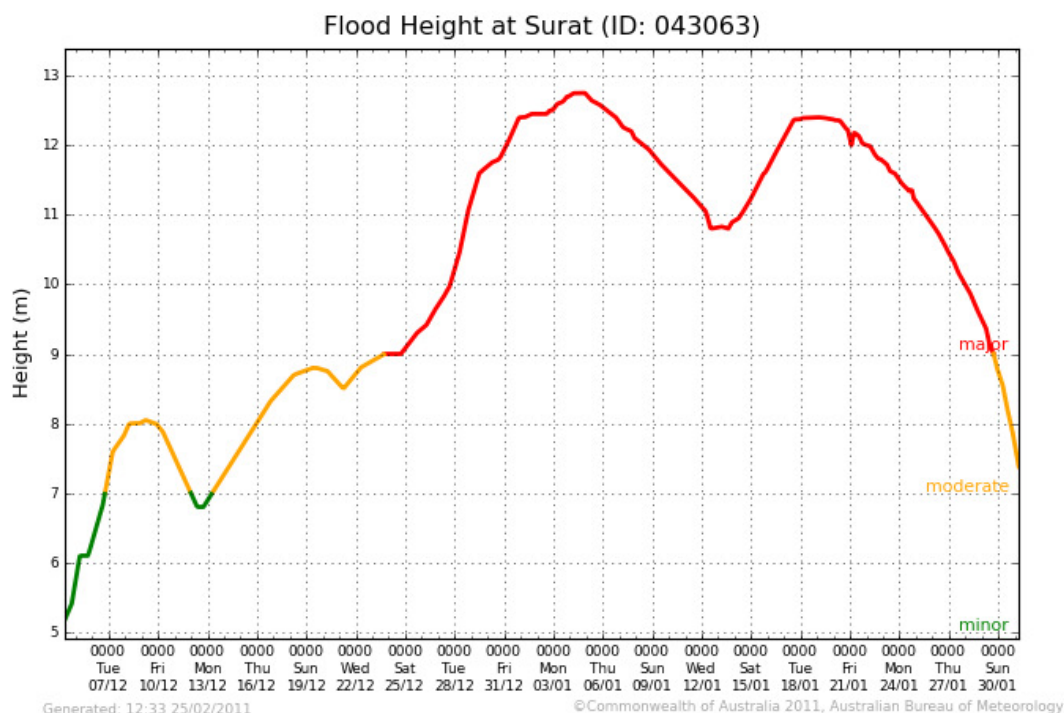


Figure 4. Flood Heights at Surat manual gauge for December 2010 and January 2011

### Comparison with previous floods

- River height records for the manual river height recording gauge at Surat at its current site commenced in 1943.
- River height peak of 12.75 metres on 04/01/2011 is a new record. River height peak of 12.4 metres on 18/01/2011 equals the height recorded in March 2010 and is the second highest on record.

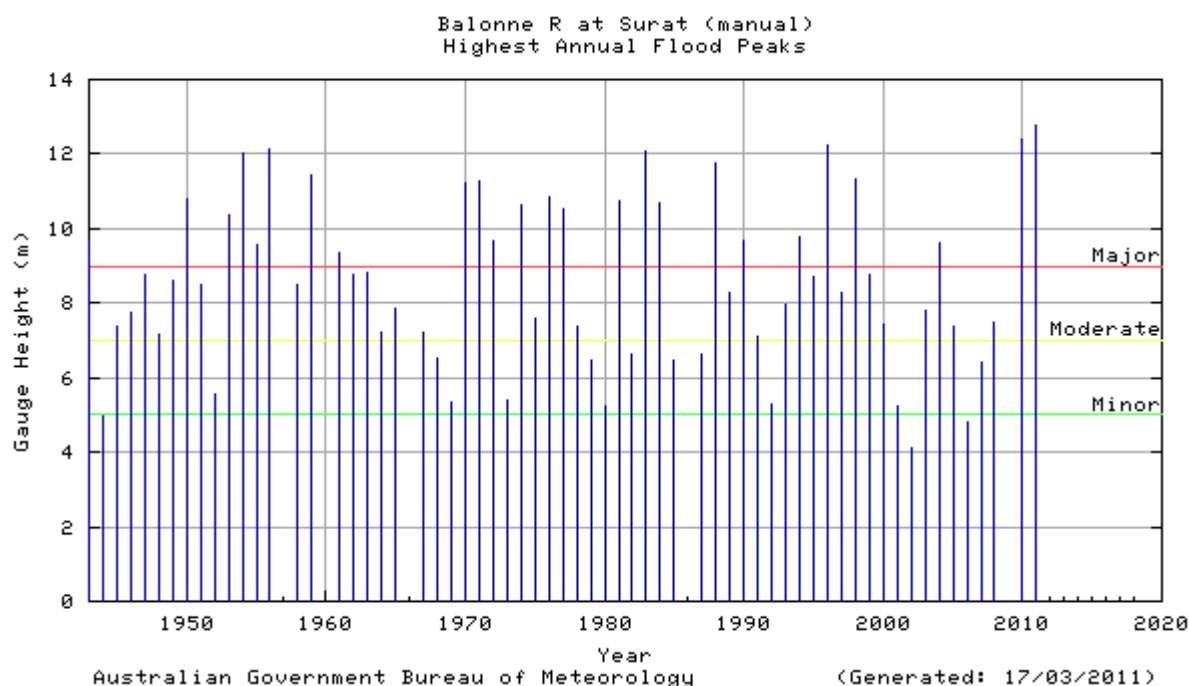


Figure 5. Highest annual flood peaks for the Balonne River at Surat

Note: Records for Surat date back to 1910 however only peak heights from 1943 to now can be compared. Heights before 1943 were recorded from a different site.

## Warning and Forecast Service

- The first warning for the Condamine-Balonne River was issued on 05/12/2010 for minor flooding in the Condamine River and more significant flooding in the Maranoa and Balonne Rivers. However, further rainfall in December saw the continuation of the Condamine-Balonne River Flood Warning through to 10/02/2011.
- Thunderstorm activity caused river rises and 2 moderate flood peaks at Surat in December 2010. Heavy rainfall over the Upper Condamine River catchment area including Myall and Charleys Creek during late December and again in early January resulted in the two major flood peaks of 12.75 metres and 12.40 metres at Surat during January 2011
- A total of 103 warnings were issued for the Condamine-Balonne River system during December 2010 and January 2011.

**Table 3. Table of peak height predictions for Surat.**

Time of Height Forecast	Forecast	Peak
<b>05/12/2010 First warning issued. Minor flooding at Surat at this time.</b>		
7:48 AM on Sunday the 5th of December 2010	Recent rains have also caused rises and minor flooding in the Balonne River from the Surat area to Beardmore Dam. Rises will continue in these areas today causing some minor to moderate flooding.	Rising limb forecasts – reach a level and expected to continue rising.
11:00 AM on Monday the 6th of December 2010	In the Balonne River from the Surat area to Beardmore Dam, moderate flood levels are expected this week.	
9:43 AM on Tuesday the 7th of December 2010	Further rises are expected between Surat and Beardmore Dam during the next few days.	
10:22 AM on Thursday the 9th of December 2010	Moderate flood levels continue in the Balonne River between Surat and Weribone. The flood peak is currently in the Surat area. River level rises will continue between Surat and Beardmore Dam into the weekend.	8.05 metres at 6:00 AM Thu 09/12/2010
9:30 AM on Friday the 10th of December 2010	Renewed rises with a smaller peak should be expected during next week as waters from the Condamine River arrive.	Rising limb forecasts – reach a level and expected to continue rising.
9:49 AM on Monday the 13th of December 2010	Renewed rises are expected along the Balonne River during this week as waters from the Condamine River and local tributaries arrive.	
9:14 AM on Tuesday the 14th of December 2010	Further rises are expected along the Balonne River during this week as waters from the Condamine River and local tributaries arrive. Major flood levels are possible at Surat during this week.	
10:30 AM on Saturday the 18th of December 2010	River rises and moderate flood levels extending along the Balonne River between Surat and Beardmore Dam. Major flood levels are possible during the weekend at Surat.	
11:17 AM on Sunday the 19th of December 2010	Moderate flood levels extend along the Balonne River between Warkon and Weribone. Major flood levels are possible at Surat during the next 24 hours.	
12:03 PM on Monday the 20th of December 2010	Major flood levels are possible at Surat this week	
12:03 PM on Tuesday the 21st of December 2010	Major flood levels are forecast at Warkon and Surat through the weekend and continuing next week. River levels of at least 10 metres are expected at Surat.	
11:02 AM on Thursday the 23rd of December 2010	Moderate flood levels at Surat are expected to continue to rise through the weekend with major flood levels of at least 10 metres expected next week.	
10:07 AM on Sunday the 26th of December 2010	Major flooding is rising at Surat, with a flood peak of at least 10 metres expected later this week.	12.75 metres at 5:45 AM Tue 04/01/2011
5:26 PM on Monday the 27th of December 2010	Major flood peak (at least 11 metres) later this week.	
10:19 AM on Wednesday the 29th of December 2010	Initial major flood peak (up to 12 metres) later this week.	
12:48 PM on Wednesday the 29th of December 2010	Peak up to 12 metres next week.	

9:00 PM on Thursday the 30th of December 2010	Reach 12 metres during next week.	
7:55 AM on Friday the 31st of December 2010	Exceed 12 metres during the weekend. Possibly reach near the March 2010 flood level of 12.4 metres by Thursday 6th.	
7:11 PM on Friday the 31st of December 2010	Exceed the March 2010 flood level of 12.4 metres by Thursday 6th January.	
1:10 PM on Saturday the 1st of January 2011	Record levels higher than 12.4 metres during this week. Peak expected by Thursday 6th January.	
6:19 PM on Saturday the 1st of January 2011	Levels over 13 metres are possible with the peak expected by Wednesday 5th January.	
9:11 PM on Saturday the 1st of January 2011	Levels over 13 metres are possible with the peak expected by Tuesday 4th January.	
8:27 AM on Tuesday the 4th of January 2011	Peak around the current level of 12.8 metres today.	
7:04 PM on Tuesday the 4th of January 2011	Remain around the major flood peak overnight.	
2:11 PM on Wednesday the 5th of January 2011	Major flood levels will continue to fall slowly during the remainder of this week and into next week.	Rising limb forecasts – reach a level and expected to continue rising.
10:53 AM on Monday the 10th of January 2011	Major flooding continues to fall slowly around Surat and Weribone, with some renewed rises expected over the next several days.	
6:09 PM on Thursday the 13th of January 201	Renewed rises are occurring at Warkon as upstream floodwaters arrive.	
10:55 AM on Saturday the 15th of January 2011	Reach 12 metres on Tuesday/Wednesday with further rises.	12.40 metres at 10:00 PM Tue 18/01/2011
8:28 AM on Sunday the 16th of January 2011	Exceed 12 metres on Tuesday/Wednesday with further rises. Peak expected later this week.	
9:00 AM on Monday the 17th of January 2011	Peak near 12.6 metres (major) on Tuesday/Wednesday.	
3:46 PM on Tuesday the 18th of January 2011	Peak near 12.6 metres (major) overnight tonight.	
9:04 AM on Wednesday the 19th of January 2011	Remain steady at 12.4 metres (major) during Wednesday.	
10/02/2011 Final warning issued for the Condamine-Balonne River System.		

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