



# Summary of the 2002/03 Australian Region Tropical Storm Season and Verification of Authors' Seasonal Forecasts

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## Summary

**An inactive year with basin tropical storm activity and Australian landfalling events 0.8 standard deviation below normal. The forecasts correctly predicted tropical cyclone activity from early August.**

The Tropical Storm Risk (TSR) consortium presents a validation of their Australian region seasonal forecasts for basin tropical storm and severe tropical storm numbers and for Australian tropical storm strikes. These forecasts were issued monthly from the 9th August to the 11th December 2002 and span the tropical storm season from 1st November 2002 to 30th April 2003. All forecasts were correct to within one standard error and the basin numbers forecasts were almost exactly correct from early August.

## Features of the 2002/03 Australian Region Season

- The 2002/03 Australian Region tropical storm season featured 8 storms of which 4 made severe tropical cyclone strength (U.S. hurricane equivalent). These figures compare to 30-year climatology values of 11.3 and 6.0 respectively.
- A second consecutive inactive season. Only 5 years in the last 30 have seen less tropical storms.
- An unusually high number of very severe tropical cyclones (hurricane Category 3 and above) for such an inactive season. Four out of the eight storms reached this strength. The ratio of very severe tropical cyclone numbers to tropical storm numbers is the second highest since reliable records began.
- Three tropical storms struck the Australian mainland (Craig, Graham and an unnamed storm). Fortunately these were weak and hit land in sparsely populated areas.



## Catalogue of Events in 2002/03

<b>Individual Storm Summary for Australian Region</b>					
No	Name	Dates	Peak Wind (kts)	Storm Category	Category at Australian Landfall
1	Unnamed	04 Jan-06 Jan	50*	TS	TS
2	Beni	19 Jan-05 Feb	125	STC	
3	Fiona	04-13 Feb	100	STC	
4	Graham	26 Feb-01 Mar	35	TS	TS
5	Harriet	02-08 Mar	35	TS	
6	Erica	04-15 Mar	140	STC	
7	Craig	08-12 Mar	35	TS	TS
8	Inigo	01-08 Apr	140	STC	

\* 10 minute average value.

### Key for Tables

Severe Tropical Cyclone (STC)	=	1 Minute Sustained Wind > 63Kts	=	Hurricane Category 1 to 5.
Tropical Storm (TS)	=	1 Minute Sustained Wind > 33Kts.		
Australian Region	=	Southern Hemisphere 100°E to 170°E (Storm must form within to count).		
Australian Strike	=	Strike on Australian Coast from Perth around to Brisbane.		

## Verification of Forecasts for 2002/03

### 1. Australian Region Total Numbers

The number of tropical storms and severe tropical cyclones was ~0.8 standard deviation below the 30-year average. All the TSR forecasts correctly predicted the number of severe tropical cyclones and predicted the number of tropical storms to within one. The December forecast performed best correctly predicting the number of tropical storms and severe tropical cyclones.

<b>Australian Region (100°E to 170°E) Total Numbers</b>			
		Tropical Storms	Severe Tropical Cyclones
Average Number (±SD) (1992/93-2001/02)		10.8 (±2.8)	5.7 (±2.1)
Average Number (±SD) (1972/73-2001/02)		11.3 (±3.8)	6.0 (±2.4)
Actual Number 2002/03		8	4
TSR Forecasts (±FE)	11 Dec 2002	8.2 (±1.8)	4.0 (±1.6)
	6 Nov 2002	9.0 (±1.7)	4.3 (±1.6)
	8 Oct 2002	7.7 (±2.4)	3.8 (±1.9)
	5 Sep 2002	7.3 (±2.4)	3.6 (±1.9)
	9 Aug 2002	7.5 (±2.7)	3.7 (±2.2)

## 2. Australian Strike Numbers

Three tropical storms made landfall in Australia. The TSR forecasts overpredicted by one but outperformed a climatological forecast.

<b>Australian Region Strike Numbers</b>		
		Tropical Storms
Average Number ( $\pm$ SD) (1992/93-2001/02)		4.4 ( $\pm$ 2.1)
Average Number ( $\pm$ SD) (1972/73-2001/02)		4.9 ( $\pm$ 2.3)
Actual Number 2002/03		3
TSR Forecasts ( $\pm$ FE)	11 Dec 2002	3.5 ( $\pm$ 2.1)
	6 Nov 2002	3.6 ( $\pm$ 2.1)
	8 Oct 2002	3.6 ( $\pm$ 2.2)
	5 Sep 2002	3.5 ( $\pm$ 2.3)
	9 Aug 2002	3.5 ( $\pm$ 2.2)

## Future Forecasts and Verifications

1. Extended-range forecast for Australian-region tropical storms in 2003/04 will be issued on 16th May.
2. Monthly updates for the 2003 Atlantic hurricane and NW Pacific typhoon seasons will be issued on 9th June.

## Tropical Storm Risk.com (TSR)

*Tropical Storm Risk.com* (TSR) is a venture which has developed from the UK government-supported TSUNAMI initiative project on seasonal tropical cyclone prediction. The TSR consortium comprises experts on insurance, risk management and seasonal climate forecasting. The TSR industry expertise is drawn from *Benfield*, the leading independent reinsurance intermediary, *Royal & SunAlliance*, the global insurance group, and from *Crawford & Company*, a global provider of risk management services. The TSR scientific grouping brings together climate physicists, meteorologists and statisticians at *UCL* (University College London) and the *Met Office*. TSR forecasts are available from <http://tropicalstormrisk.com>.

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