



Summary of the 2001/02 Australian Region Tropical Storm Season and Verification of Authors Seasonal Forecasts

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Summary

**A year with 40% less storm activity than normal and no East Coast landfalling events.
The pre-season forecast correctly anticipated activity would be the lowest since 1994/5.**

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 Queensland tropical storm strikes. These forecasts were issued on 7th June and 13th December 2001 and span the tropical storm season from 1st November 2001 to 31st May 2002. The 13th December forecast correctly predicted that basin activity would be much lower than average but still over-estimated basin numbers.

Features of the 2001/02 Australian Region Season

- The 2001/02 Australian Region tropical storm season featured 7 storms of which 2 made severe tropical cyclone strength (U.S. hurricane equivalent). These figures compare to 25-year climatology values of 11.5 and 6.5 respectively.
- The season was one of the least active on record - no season during the last 30-years has seen fewer severe tropical cyclones and only 4 years have seen less tropical storms.
- Only 2 Australian landfalling events occurred during the season - severe tropical cyclone Chris hit Western Australia and tropical storm Bernie made landfall near the Northern Territory/Queensland border. No storm hit our Queensland Coast region of interest (average 1).
- The first storm of the season occurred in January, whilst the two severe tropical storms both occurred in early February. The last storm of the season, Upia, was spawned during the passage of an exceptionally strong Madden Julian Oscillation wind burst at the end of May and was one of the latest forming tropical storms in this region on record.



Catalogue of Events in 2001/02

Individual Storm Summary for Australian Region					
No	Name	Dates	Peak Wind (kts)	Storm Category	Category at Queensland Landfall
1	Bernie	03-04 Jan	45	TS	
2	Chris	03-06 Feb	125	STC	
3	Claudia	11-12 Feb	75	STC	
4	Des	05-07 Mar	45	TS	
5	19P	19-25 Mar	35	TS	
6	Bonnie	10-15 Apr	50	TS	
7	Upia	26-28 May	35	TS	

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).
 Queensland Strike = Strike on Northeast Australian Coast from 15°S (Cooktown) to 30°S (northern New South Wales).

Verification of Forecasts for 2001/02

1. Australian Region Total Numbers

The number of tropical storms and severe tropical cyclones was considerably below average, with both forecasts failing to correctly predict the degree of inactivity. The pre-season forecast was by far the best of the two and offered significant improvements over a climatology forecast. However, its severe tropical cyclone forecast was still more than two standard deviations too high. The June forecast was too high by

Australian Region (100°E to 170°E) Total Numbers		
	Tropical Storms	Severe Tropical Cyclones
Average Number (\pm SD) (1976/77-2000/01)	11.5 (\pm 4.0)	6.5 (\pm 2.5)
Actual Number 2001/02	7	2
TSR Forecast (\pm SD) 13 December 2001	8.9 (\pm 2.2)	4.5 (\pm 1.2)
TSR Forecast (\pm SD) 7 June 2001	12.7 (\pm 2.5)	6.0 (\pm 1.6)

more than two standard errors for each category, largely because the October-November Niño 4 (5°S-5°N, 160°E-150°W) forecast, whilst being reasonably accurate, was not a sufficiently good proxy for the region used in the December forecast (5°S-5°N, 160°E-170°W). This suggests the error bars in the June storm models are too low and that adjustments are necessary for next year's forecast.

2. Queensland Strike Numbers

No tropical storm made landfall in the region of interest, which whilst not perfectly predicted, was not an unlikely event given the error bars involved.

Queensland (15°S to 30°S) Strike Numbers	
	Tropical Storms
Average Number (\pm SD) (1976/77-2000/01)	1.0 (\pm 0.9)
Actual Number 2001/02	0
TSR Forecast (\pm SD) 13 December 2001	1.1 (\pm 0.8)

Future Forecasts and Verifications

1. Monthly updates for the 2002 Atlantic hurricane and NW Pacific typhoon seasons will be issued on 5th July.
2. Extended-range forecast for Australian-region tropical storms in 2002/03 will be issued in July.

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 the *Benfield Group*, 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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Data for the verification was obtained from <http://www.met-office.gov.uk/sec2/sec2cyclone/tcver.html> and <http://www.australiasevereweather.com/cyclones/>.