September Forecast Update for Australian-Region Tropical Storm Activity in 2005/6

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Forecast Summary

TSR continues to anticipate the 2005/6 Australian season will see activity close to average.

The TSR (Tropical Storm Risk) early September forecast update for Australian-region tropical cyclone activity in 2005/6 continues to anticipate activity close to average. The forecast spans the Australian season from the 1st November 2005 to the 30th April 2006 and is based on data available through the end of August 2005. Our main predictor is the forecast anomaly in October-November Niño 4 sea surface temperatures (SST) which we anticipate will be close to average at 0.20±0.25°C. Since SSTs in this region are linked to vertical wind shear over the Australian region during Austral summer, an average Niño 4 SST indicates average wind shear and average tropical storm activity. Thus we expect Australian basin cyclone activity and landfalling numbers to be close to average in 2005/6. Monthly updated forecasts will follow through to early December 2005.

Australian Region Total Numbers Forecast for 2005/6

		ACE Index	Severe Tropical Cyclones	Tropical Storms
TSR Forecast (±FE)	2005 /6	90 (±38)	5.3 (±2.1)	9.8 (±3.0)
29yr Climate Norm (±SD)	1975/6-2004/5	83 (±43)	5.7 (±2.4)	10.6 (±3.7)
Forecast Skill at this Lead	1975/6-2004/5	20%	23%	34%

Key:

ACE Index	=	Accumulated Cyclone Energy Index = Sum of the Squares of 6-hourly Maximum Sustained Wind Speeds (in units of knots) for all Systems while they are at least Tropical Storm Strength. ACE Unit = $x10^4$ $knots^2$.
Severe Tropical Cyclone	=	1 Minute Sustained Wind > 63Kts = Hurricane Category 1 to 5.
Tropical Storm	=	1 Minute Sustained Wind > 33Kts.
SD	=	Standard Deviation.
FE (Forecast Error)	=	Standard Deviation of Errors in Cross-Validated Hindcasts 1975/6-2004/5.
Forecast Skill	=	Percentage Improvement in Mean Square Error Afforded by Cross-Validated Hindcasts 1975/6-2004/5 with 5-year block elimination over Hindcasts Made with the 1975/6-2004/5 Climate Norm.
Australian Region	=	Southern hemisphere 100°E to 170°E (Storm Must Form as a Tropical Cyclone Within to Count).

- Very severe tropical cyclones (hurricane category 3-5) are not forecast due to data reliability problems in the historical record.
- Our Australian region (100°E to 170°E), while slightly non-standard, is selected to provide the best overview for tropical cyclone activity around the whole of Australia.

There is a 14% probability that Australian tropical storm numbers in 2005/6 will be above-average (defined as more than 12 tropical storms), a 68% likelihood they will be near-average (defined as between 9 and 12 tropical storms) and a 18% chance they will be below-average (defined as less than 9 tropical storms). The 1975/6-2003/4 climatology probabilities for each category are 30% (above-normal), 33% (near-normal) and 37% (below-normal).

Australian Landfalling Numbers in 2005/6

		Tropical Storms
TSR Forecast (±FE)	2005 /6	4.2 (±2.0)
Average (±SD)	1975/6-2004/5	4.6 (±2.2)
Forecast Skill at this Lead	1975/6-2004/5	16%

Key: Landfalling Region = Northern Australian coast from Perth around to Brisbane.

- Severe tropical cyclone strikes are not forecast due to their low occurrence rate and to their lack of correlation with tropical storm strike numbers.

There is a 19% probability that Australian tropical storm strike numbers in 2005/6 will be above average (defined as more than 5 landfalling tropical storms), a 55% likelihood they will be near normal (defined as 4 or 5 landfalling tropical storms) and a 26% chance they will be below normal (defined as less than 4 landfalling tropical storms). The 1975/6-2004/5 climatology probabilities for each category are 33% (above-normal), 40% (near-normal) and 27% (below-normal).

Key Predictors for 2005/6

The key factor behind our forecast for Australian-region tropical storm activity in 2005/6 being close to average is the anticipated neutral effect of early austral summer SSTs in the Niño 4 region. Average SSTs in this region lead to average atmospheric vertical wind shear over the Australian region during Austral summer; a condition favouring average tropical storm activity. Our current forecast SST anomaly (1975-2004 climatology) for October-November 2005 Niño 4 SST is 0.20±0.25^{o}C (down slightly from 0.25±0.33^{o}C last month). The forecast skill for this predictor is 88% (assessed using cross-validated hindcasts over the period 1975-2004).

Further Information

Further information on the TSR forecast methodology and on TSR in general, may be obtained from the TSR website (http://tropicalstormrisk.com). The nest TSR monthly forecast update for Australian-region tropical storm activity in 2005/6 will be issued on the 5th October 2005.

Appendix - Predictions from Previous Months

1. Australian Region Total Numbers

a) Deterministic forecasts

Australian Region ACE Index And Total Numbers 2005/6				
		Tropical Storms	Severe Tropical Cyclones	ACE Index
Average Number (±SD) (1975/6-2004/5)		10.6 (±3.7)	5.7 (±2.4)	83 (±43)
TSR Forecasts (±FE)	8 Sep 2005	9.8 (±3.0)	5.3 (±2.1)	90 (±38)
	5 Aug 2005	9.6 (±3.0)	5.2 (±2.2)	-
	7 Jul 2005	10.0 (±3.3)	5.4 (±2.3)	-
	7 Jun 2005	9.8 (±3.4)	5.3 (±2.3)	-
	9 May 2005	10.4 (±3.5)	5.6 (±2.3)	-

b) Probabilistic forecasts

Australian Region Tropical Storm Numbers 2005/6				
		Tercile Probabilities		
		below normal	normal	above normal
Climatology 1975/6-2004/5		37	33	30
TSR Forecasts	8 Sep 2005	18	68	14
	5 Aug 2005	20	67	13
	7 Jul 2005	18	64	18
	7 Jun 2005	20	62	17
	9 May 2005	25	53	22

2. Australian Landfalling Numbers

a) Deterministic forecasts

Australian Landfalling Numbers 2005/6		
		Tropical Storms
Average Number (±SD) (1975/6-2004/5)		4.6 (±2.2)
TSR Forecasts (±FE)	8 Sep 2005	4.2 (±2.0)
	5 Aug 2005	4.2 (±2.0)
	7 Jul 2005	4.3 (±2.0)
	7 Jun 2005	4.3 (±2.0)
	9 May 2005	4.5 (±1.9)

b) Probabilistic forecasts

Australian Landfalling Numbers 2005/6				
		Tercile Probabilities		
		below normal	normal	above normal
Climatology 1975/6-2004/5		27	40	33
TSR Forecasts	8 Sep 2005	26	55	19
	5 Aug 2005	28	54	18
	7 Jul 2005	26	54	20
	7 Jun 2005	27	53	20
	9 May 2005	24	53	23