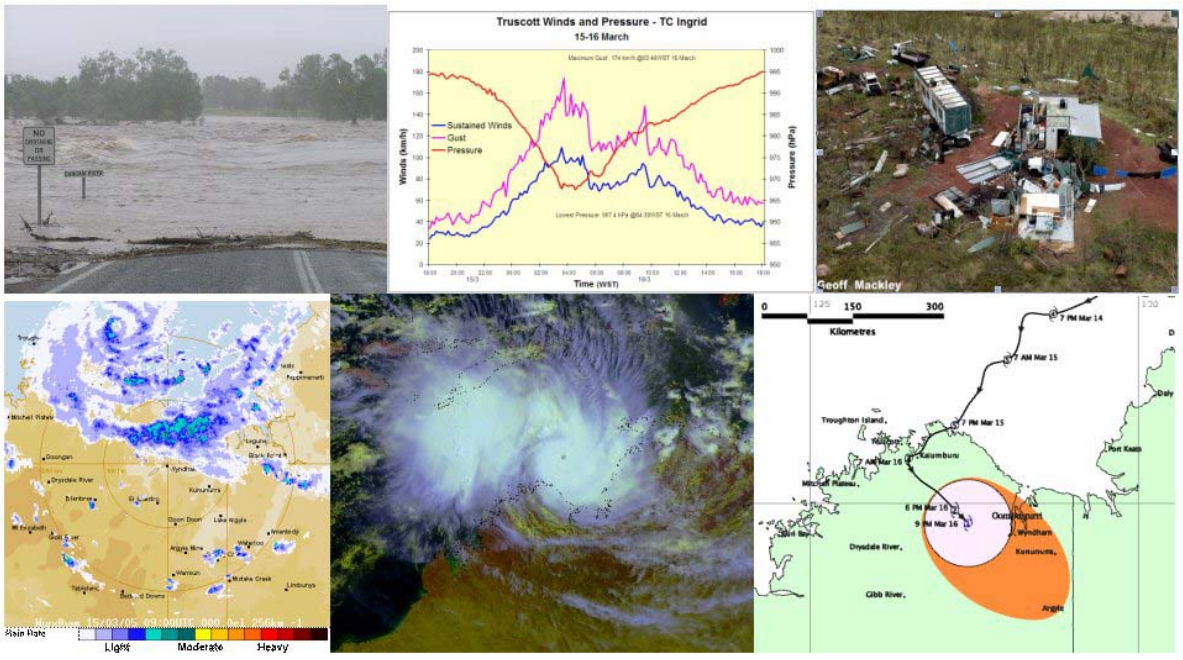
Australian Government

Bureau of Meteorology

Tropical Cyclone Season Summary
Western Australian Region
2004 – 2005



Images from TC Ingrid. Clockwise from top right Flooding on the Dunham River crossing on Great Northern Highway, Truscott observations, damage at Far Away Bay Eco resort, threat map, satellite image, Wyndham radar image near time of crossing the northeast Kimberley coast.

Season Overview

There were seven tropical cyclones that occurred in the Perth TCWC area of responsibility. Only one of these affected the coast - *Raymond* was a category one system that crossed the remote northwest Kimberley coast. More significantly TC *Ingrid* was a category 5 cyclone that crossed the north Kimberley coast but this occurred in NT's area of responsibility (operationally WA issued warnings as it weakened over the Kimberley). Warnings were issued for Cocos Islands as Adeline passed to the south causing a brief period of gales. The remainder occurred over open waters and had no known impact on the coastline or island communities. *Adeline* and *Willy* reached category three intensity causing hurricane-force winds, while the remaining five were weak category one or two systems.

The Southern Oscillation remained in a neutral phase during the season which is associated with an average number of cyclones which is what occurred (seven). There were three cyclones in the Northwest region (east of 110E), *Raymond*, *Vivienne* and *Willy* and one non-severe crossing. However, *Tim* reached cyclone intensity at 109.9E and Ingrid was a severe TC crossing the Kimberley coast. From a WA community perspective it was a very quiet season especially for the Pilbara and Gascoyne where very dry conditions persisted through the season.

The season average verification statistics for analysis, 12 hour forecast, 24 hour and 48 hour forecast were 30 km, 75 km, 105 km and 197 km. This compares reasonably favourably to the most recent five year averages (1999/00 to 2003/04) of 36 (27) km, 87 (73) km, 139 (121) km and 249 (181) km (numbers for NW Australia also given in brackets). There was certainly variation between systems e.g. the 24 hour forecast accuracy was 71 km for *Vivienne* (13 fixes), 72 km for *Tim* (4), 79 km for *Willy* (11), 140 km for *Sally* (5), 162 km for *Adeline* (7), 172 km for *Raymond* (4), 244 km for *Phoebe* (1). Refer to Verification.

Figure 1. Tracks of tropical cyclones, 2004-05 in Perth TCWC area of responsibility.

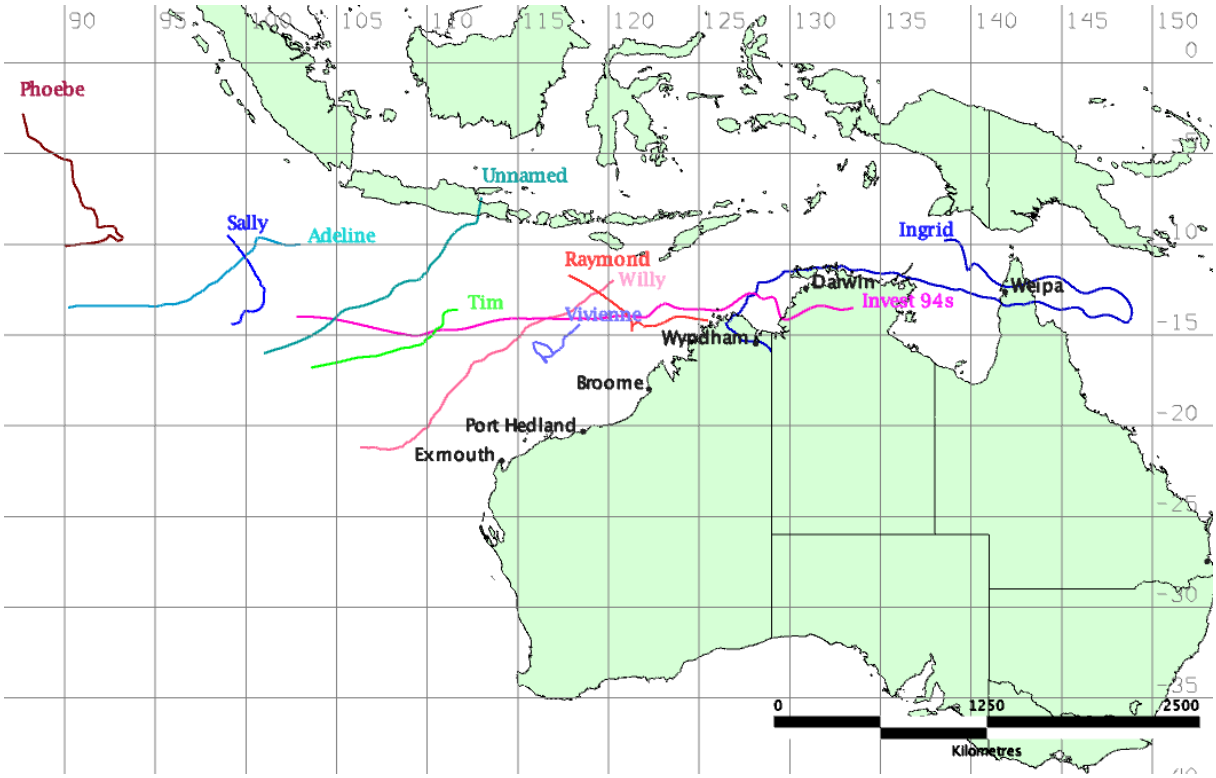


Table 1. WA Tropical Cyclone Verification statistics: 2004-2005 season.
Note: Five year average location error shown in brackets.

Cyclone Name	Leadtime hours	No of Locations	Mean Great Circle Error km
All Cyclones	0	72	30 (35)
All Cyclones	12	54	75 (84)
All Cyclones	24	44	105 (136)
All Cyclones	48	21	197 (233)
All Cyclones	72	10	217
Adeline	0	11	43
Adeline	12	8	99
Adeline	24	7	162
Adeline	48	4	375
Adeline	72		
Phoebe	0	4	14
Phoebe	12	2	174
Phoebe	24	1	244
Phoebe	48		
Phoebe	72		
Raymond	0	8	30
Raymond	12	5	99
Raymond	24	4	172
Raymond	48		
Raymond	72		
Sally	0	10	37
Sally	12	8	55
Sally	24	7	86
Sally	48		
Sally	72		
Tim	0	7	21
Tim	12	4	41
Tim	24	4	72
Tim	48		
Vivienne	0	14	22
Vivienne	12	14	51
Vivienne	24	13	71
Vivienne	48	8	111
Vivienne	72	5	166
Willy	0	18	31
Willy	12	14	69
Willy	24	11	79
Willy	48	9	194
Willy	72	5	268

TC *Phoebe* 2 - 4 September 2004

Tropical cyclone *Phoebe* was an out of season cyclone forming out of an active monsoon band, coincident with a burst in the MJO. It was a weak category one cyclone moving south southeastwards along 90-93E before weakening near 10S on 4 September.

TC *Raymond* 1-2 January 2005

Tropical cyclone *Raymond* was a category one cyclone that moved eastwards crossing the north Kimberley coast and weakening over land. It was short lived, remaining a cyclone for about 24 hours. There was no known damage although it did bring the first significant rainfall of the season to the northern Kimberley.

TC *Sally* 7-9 January 2005

Tropical cyclone *Sally* (7-9 January) tracked south near 100E developing as it passed through the shear minimum and reaching category two intensity before weakening as it encountered cooler water. There was no known damage associated with this system.

Tropical Low 10S 11 - 17 January

A low over the Top End of the Northern Territory moved into Joseph Bonaparte Gulf on 11 January and moved steadily westwards. Although warnings were initially issued for the north Kimberley coast (by Darwin) and later for shipping, the low failed to reach cyclone intensity being hampered by shear and eventually moving over cooler water.

TC *Tim* 23-25 January 2005

Tropical cyclone *Tim* developed rapidly in a favourable low shear/strong upper outflow environment on the 23rd but as it tracked to the west southwest it encountered cooler water and dissipated on the 25th. *Tim* was a midget category one system with gales estimated at only 100 km. There was no known damage associated with this system.

TC *Vivienne* 4-9 February 2005

A low formed north of Port Hedland on the 4th associated with a monsoon burst. It suffered under moderate easterly shear for much of its lifetime limiting development. Gales occurred on the western side from the 5th through to when it was named on the 8th. On these days, however, gales did not appear to extend more than 50 per cent around the low level centre and convection pulsed diurnally. Its duration as a cyclone was brief on the 8th, and weakened rapidly on the 9th.

TC *Willy* 9-14 March 2005

A cyclone rapidly developed north of the state on the 10th reaching category three intensity early on the 11th as it tracked steadily to the southwest before weakening rapidly

on the 13-14th west northwest of the Northwest Cape. Although some offshore oil and gas activities were interrupted, at no stage were warnings issued for coastal communities.

TC *Ingrid* 15-17 March 2005

A small but intense system that had crossed the Cape York peninsula and then moved off the Top End coast battering the Cobourg Peninsula and the Tiwi islands, crossed the north Kimberley coast as a rare category 4 cyclone northeast of Kalumburu. The remote eco-tourist resort of Faraway Bay felt the full force of the cyclone. Two caretakers sheltered for the night in a shipping container, but most of the resort was totally destroyed. Although the cyclone passed close to Kalumburu damage was comparatively minor, some buildings suffered roof damage and power supplies were cut.

At Truscott damage was more substantial: large hanger doors were blown inwards, a couple of small buildings destroyed, verandahs collapsed, satellite dishes blown away and not found, huge amount of rain resulting in washouts along the runway. Based on debris found 400 metres inland, the barge landing was estimated to have been 3 metres under water during storm surge. Truscott recorded 438mm of which 341.2mm fell in just four hours between 1 and 5am and 125.8mm fell in one hour between 2 and 3am.

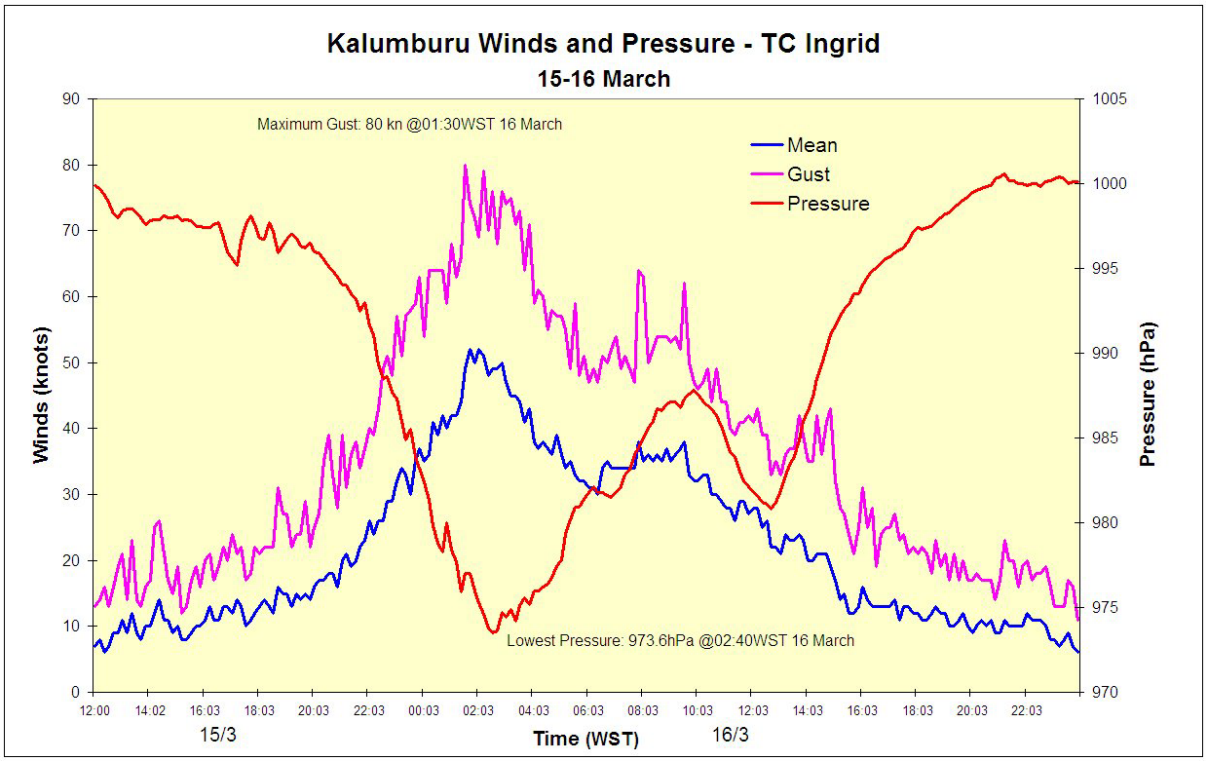
See figure 2: graphs of wind and pressure from Kalumburu, Truscott and Troughton Island.

TC *Adeline* 1-5 April 2005

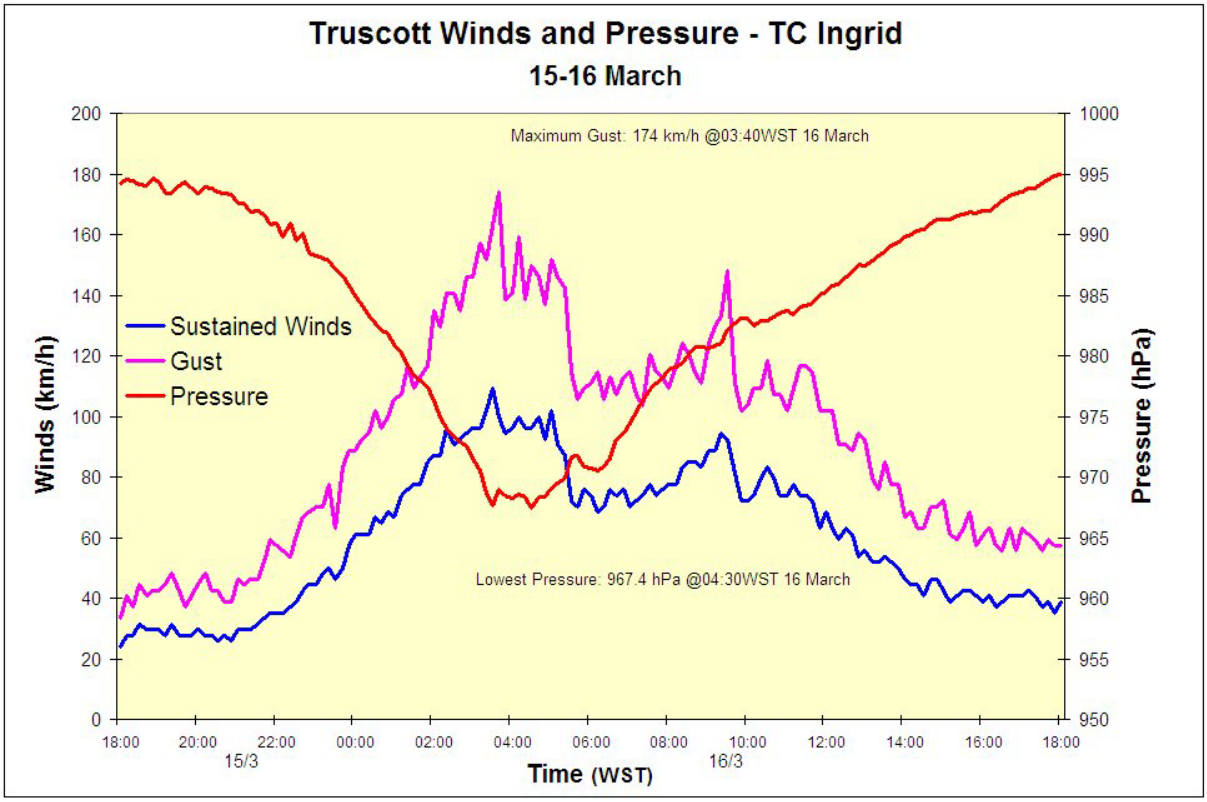
A low developed west of Christmas Islands reaching TC intensity on the 3rd as it moved to the west southwest passing to the south of Cocos Islands overnight from the 3rd to the 4th. It continued to develop reaching category 3 intensity before moving steadily westwards passing west of 90E late on the 5th when it was renamed *Juliet* by La Reunion. Warnings were issued for the Cocos Islands where gales were briefly reported and a daily fall of 160mm was registered. There was some minor damage and many fallen trees on Cocos Islands.

Figure 2. Graphs of wind and pressure from (a) Kalumburu, (b) Truscott and (c) Troughton Island.

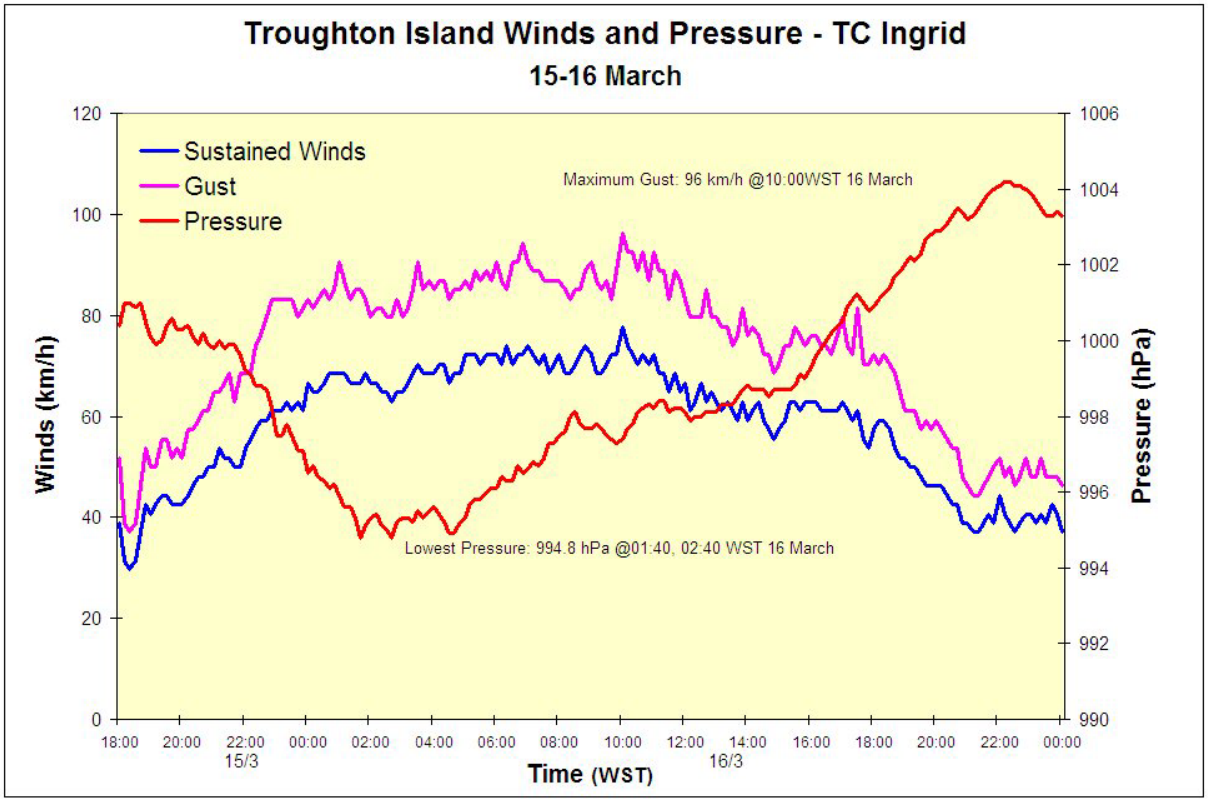
(a)



(b)



(c)


Troughton Island Winds and Pressure - TC Ingrid
15-16 March
Sustained Winds
Gust
Pressure
Maximum Gust: 96 km/h @10:00WST 16 March
Lowest Pressure: 994.8 hPa @01:40, 02:40 WST 16 March
Winds (km/h)
Pressure (hPa)
120
100
80
60
40
20
0
1006
1004
1002
1000
998
996
994
992
990
18:00
20:00
22:00
00:00
02:00
04:00
06:00
08:00
10:00
12:00
14:00
16:00
18:00
20:00
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15/3
16/3
Time (WST)