

# The Australian tropical cyclone season 1981-82

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**Sixteen cyclones operated in the Australian region during the 1981-82 season. The first cyclone developed in the central Indian Ocean in October 1981 and a late cyclone off the Queensland coast extended the season to mid-May 1982. Half of the cyclones during the season developed to the severe category but those that affected the mainland caused relatively minor damage, with one exception. A decaying cyclone moved down the west coast in January 1982 and caused serious flooding in the river basins of the extreme southwest of Western Australia.**

## Introduction

The 1981-82 tropical cyclone season commenced with the development of *Alex* in late October 1981 and finished in mid-May 1982 with *Claudia*. The total of sixteen cyclones for the season was near average for the Australian region.

The most active period of the season was January when six cyclones, *Chris*, *Daphne-Fifi*, *Errol*, *Bruno*, *Abigail* and *Graham* developed. Three of these cyclones existed simultaneously for several days.

Eight of the cyclones reached the severe intensity status (mean winds of 120 km h<sup>-1</sup> or more), the most intense being *Chris* with an estimated central pressure of 934 mb and estimated maximum winds of 190 km h<sup>-1</sup>.

Of the five cyclones that made landfall three were of severe intensity when they crossed the coast, but the damage caused during this season was relatively minor. There was one exception. *Bruno* moved down the west coast as a decaying cyclone and brought torrential rain and serious flooding to river basins in the extreme southwest of Western Australia. Large stock losses and severe property damage resulted.

## Seasonal statistics

The area over which the Australian Bureau of Meteorology has international tropical cyclone warning responsibility is shown in Fig. 1. Reference in this report to the behaviour and tracks of cyclones outside this region is tentative only. Figures 1 and 7 show the place names and localities referred to in this report. A statistical summary of various aspects of the 1981-82 season is presented in Tables 1 and 2.

The ten-year average number of cyclones for the period 1972-73 to 1981-82 was derived from data

in Lourensz (1981) and from unpublished records of cyclones between 80°E and 105°E held by the Perth Tropical Cyclone Warning Centre. Compared with this average, the 1981-82 season in the Western and Northern Regions was above average while the Eastern Region was below.

Central pressures and maximum winds stated in this report have been estimated by the Dvorak (1975, 1979, 1980) technique; the winds are ten-minute averages.

A tropical cyclone day is defined here as a day on which a tropical circulation of at least tropical cyclone intensity (mean wind of 63 km h<sup>-1</sup>) existed in the Australian region for any part of the day commencing 0000 GMT.

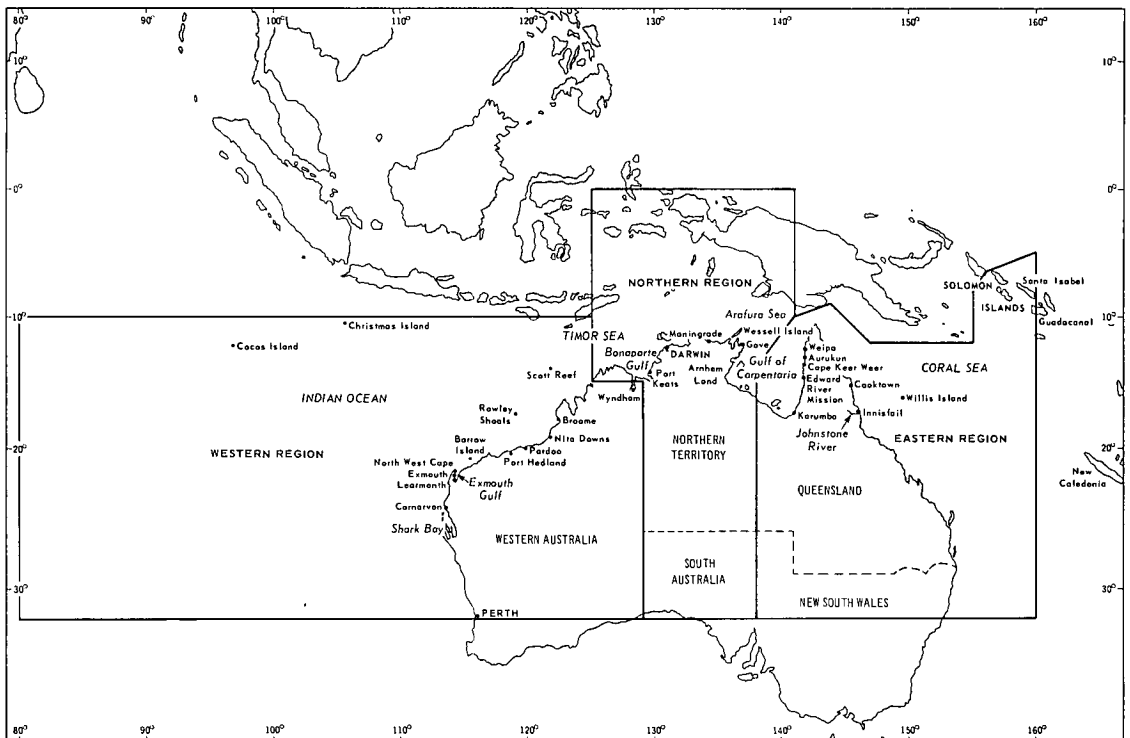
The tropical depressions tabulated are those that later developed into tropical cyclones. It should be noted that the initial location is not associated with the first appearance of a disturbance, but is taken as that point from which a closed circulation deepened into a tropical cyclone in an uninterrupted development.

In the Australian region tropical cyclones are upgraded to severe tropical cyclones when mean winds reach hurricane force (120 km h<sup>-1</sup>). Eight cyclones reached this category during the 1981-82 season.

Cyclone *Bessi* reached severe intensity after moving into the Mauritius area of responsibility (west of 80°E) and was renamed *Armelle*. Cyclone *Abigail* reached peak intensity of 947 mb after it moved out of the Eastern Region when the centre was located west of New Caledonia.

Five tropical cyclones crossed the Australian coast from sea to land at cyclone intensity and three crossed from land to sea at this intensity.

**Fig. 1** Locality map, including the Western, Northern and Eastern Regions that comprise the Australian area of tropical cyclone forecasting responsibility.



## Tropical cyclones of the 1981-82 season

### 1. Tropical cyclone Alex, 19 to 27 October 1981 (Fig. 2)

The season commenced early with the development of *Alex* in late spring. An active convergence zone extended across the Indian Ocean just south of the equator in mid-October and a weak tropical low was identified from ship reports just south of this zone on 18 October. The system moved southeast and developed to tropical cyclone intensity at about 1800 GMT on the 19th. Peak intensity was reached at 2100 GMT 21 October with an estimated central pressure of 964 mb and estimated maximum winds near the centre of 150 km h<sup>-1</sup>.

The demise of *Alex* on the 27th was due to a shearing process as strong upper northwesterly winds swept the cloud away from the low level circulation.

### 2. Tropical cyclone Bessi, 6 to 11 November 1981 (Fig. 3)

On 1 November satellite pictures showed an area of deep convective cloud located west of Sumatra and just south of the equator. A low of 1007 mb developed near this cloud mass and drifted slowly southwards. During the next few days it moved south-southwest with little apparent deepening.

During the 6th the system became more organised

and was named tropical cyclone *Bessi*. Peak intensity in the Australian region was attained at 1200 GMT on the 11th with an estimated central pressure of 986 mb and estimated maximum winds near the centre of 90 km h<sup>-1</sup>. *Bessi* then moved into the Mauritius region of responsibility and was renamed *Armelle*.

A ship located 115 km east of the centre reported the strongest wind of 63 km h<sup>-1</sup> from the northeast at 0200 GMT 10 November.

### 3. Tropical cyclone Amelia, 4 to 7 December 1981 (Fig. 4)

On 1 December a weak tropical low was identified in the southern part of the Gulf of Carpentaria. The system moved steadily northwest and crossed over the land without any apparent deepening. During the 3rd it moved westward along the fringe of the Northern Territory coast.

*Amelia* reached cyclonic intensity at 2100 GMT on 4 December as it was moving west-southwest through the Timor Sea. During the next two days it moved parallel to the northwest coast, without any significant deepening, and finally dissipated over tropical waters north of Barrow Island on the 8th.

The highest wind reported was 46 km h<sup>-1</sup> at the Scott Reef Automatic Weather Station when the centre was about 65 km east of the station.

**4. Tropical cyclone (unnamed), 20 December 1981 (Fig. 5)**

This cyclone began as a tropical low in a weak monsoon trough located in the Gulf of Carpentaria early on 20 December. It moved rapidly westward and deepened, reaching cyclonic intensity at about 0500 GMT on the same day.

Peak intensity was attained as it made landfall near Gove at 1400 GMT on the 20th. The central pressure was estimated to have been 985 mb at this time with maximum winds of 120 km h<sup>-1</sup> near the centre. The area of maximum winds was probably in the southern quadrants due to the rapid westward movement of the storm. The cyclone weakened as it continued westward over land, just inside the north coast.

On the 21st the centre moved offshore near Darwin and deepened slightly, however winds remained below gale force and it finally dissipated on the 27th.

The highest wind speed recorded was at Gove where 115 km h<sup>-1</sup> winds with gusts exceeding 148 km h<sup>-1</sup> occurred at 1530 GMT 20 December.

Extensive tree damage was caused in the Gove area along with some minor damage to ships berthed at the Nabalco Wharf.

**5. Tropical cyclone Chris, 7 to 11 January 1982 (Fig. 3)**

Tropical cyclone *Chris* was the most severe storm in the Australian region during the season.

A large cloud cluster and associated low formed to the northwest of Christmas Island early on 5 January and drifted slowly southwards. On the 6th the system recurved to the west-southwest and became more organised. It reached cyclonic strength at 0000 GMT on the 7th.

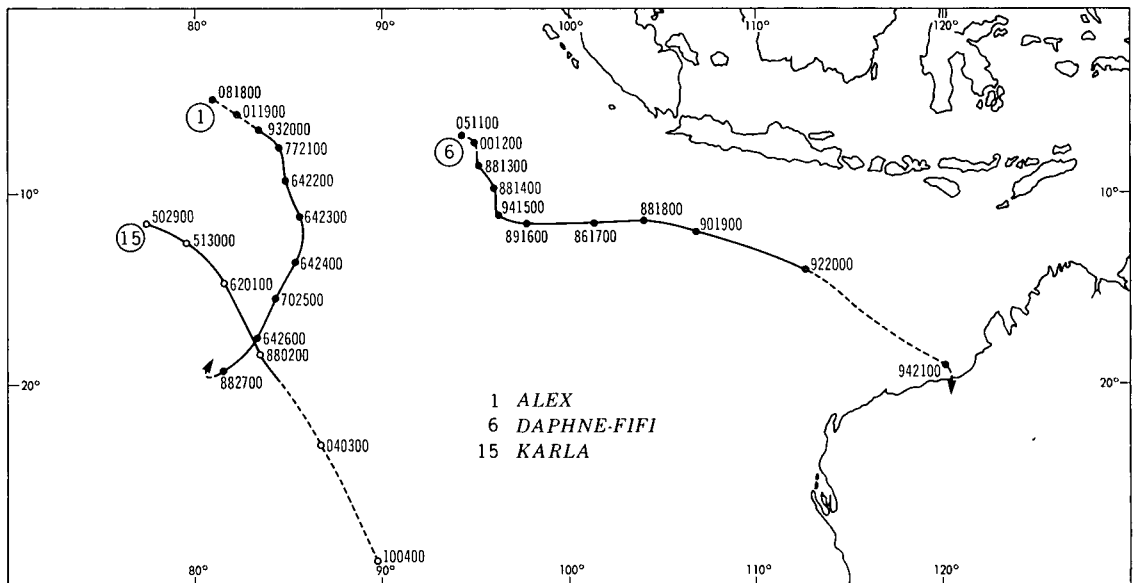
During the next few days the centre moved in a general westerly direction and continued to deepen. At 1200 GMT on the 9th an eye was clearly visible on the satellite pictures. *Chris* moved into the Mauritius region late on the 11th as a very severe storm and was renamed *Damia*. Peak intensity in the western Region was reached at 1200 GMT on the 11th with an estimated central pressure of 934 mb and estimated maximum winds near the centre of 190 km h<sup>-1</sup>.

The steering mechanism which caused cyclone *Chris* to track steadily across the Indian Ocean in a westward direction was probably provided by the strong anticyclone that was located south of the storm's centre during most of its life.

The highest wind reported was force 7 from the southeast by a ship located about 240 km south of the centre at 1700 GMT on the 7th.

An enhanced infrared picture of *Chris* at 0600 GMT 10 January from the Japanese geo-stationary satellite GMS 2 is reproduced in Fig. 6. This image shows the cyclone when its central pressure was about 945 mb. The small symmetric eye is surrounded by a band of cirriform cloud which at the coldest level appears white and at a slightly lower and warmer level as black.

**Fig. 2 Tracks of tropical cyclones during the 1981-82 season in the Western Region — cyclones 1, 6 and 15. Broken lines denote pre or post cyclone stage; full lines denote system at tropical intensity. Key to groups along track in code PPYYGG: PP central pressure (tens and units of millibars); XX pressure unknown; YYGG Greenwich date and time.**



**6. Tropical cyclone Daphne-Fifi, 12 to 19 January 1982 (Fig. 2)**

Post analysis showed that tropical cyclones *Daphne* and *Fifi* were in fact the one cyclone. A week before the birth of *Daphne-Fifi*, cyclone *Chris* passed south of Cocos Island and then moved westwards into the central Indian Ocean as a severe cyclone. This produced an extensive monsoonal trough which stretched from the central Indian Ocean to the Northern Territory and became very active. In fact the next three cyclones of the season were generated in this trough, the first of which was *Daphne-Fifi*.

The system was first identified as a tropical depression on 11 January. It drifted southeast, slowly intensified and became a tropical cyclone at 0900 GMT on the 12th. It then changed direction slightly to the south-southeast and moved towards the Cocos Island area. However, on the 15th the centre curved to the east and reached peak intensity at 0600 GMT 16 January with an estimated central pressure of 986 mb and an estimated maximum wind near the centre of 100 km h<sup>-1</sup>. It continued moving in a general easterly direction for the next three days.

On the 19th the centre moved in a southeasterly direction, accelerated and weakened, and finally dissipated as it crossed the northwest coast. The acceleration and weakening of *Daphne-Fifi* was most likely influenced by the strong circulation of cyclone *Bruno* which was operating to the south during this period.

A northerly wind of 96 km h<sup>-1</sup> was reported by a ship at 1400 GMT 18 January when it was 80 km northeast of the centre. The highest wind gust recorded at Cocos Island was 82 km h<sup>-1</sup> from the east-southeast early on the 15th.

No damage was reported, however, there were delays to shipping operations at Christmas Island.

**7. Tropical cyclone Errol, 13 to 17 January 1982 (Fig. 5)**

*Errol* started as a tropical low in the Timor Sea on 11 January. This low was part of an active monsoonal trough which was quasi-stationary in the area and had produced cyclones *Chris* and *Daphne-Fifi* in the previous week.

The system moved in a general southwest to west direction and slowly deepened, reaching cyclonic intensity at 0000 GMT on the 13th. On the 15th *Errol* recurved to the southeast as it came under the influence of the northwest monsoon flow. Peak intensity occurred at 0000 GMT on the 15th with an estimated central pressure of 980 mb and estimated maximum winds near the centre of 100 km h<sup>-1</sup>.

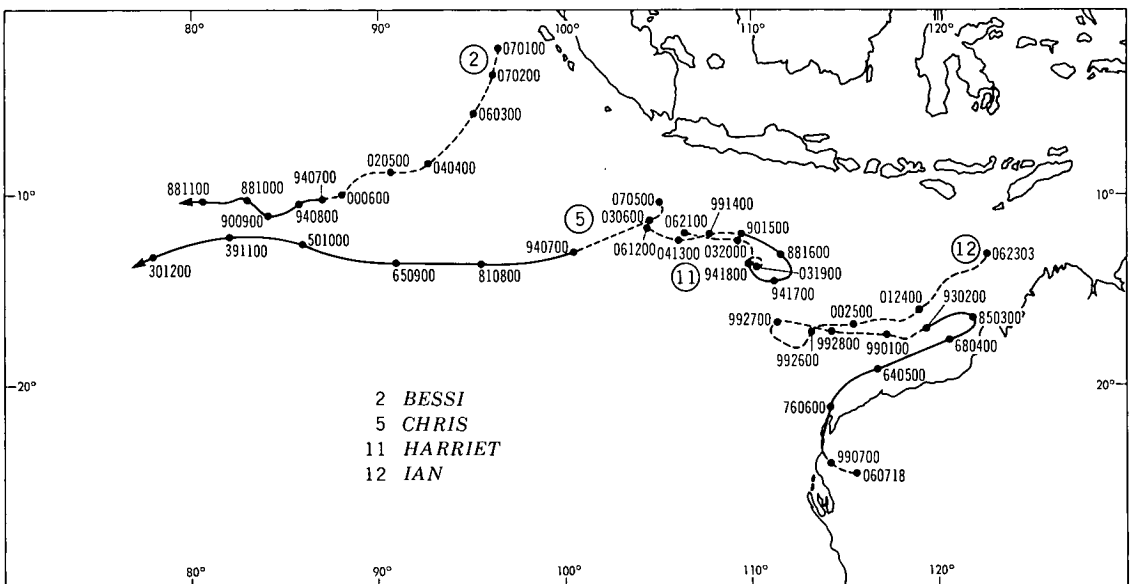
From the 16th *Errol* slowly weakened, and late on the 18th the system merged with cyclone *Bruno*, which was the stronger of the two. The remaining energy associated with *Errol* appeared to be transferred to *Bruno*, and *Errol* dissipated very rapidly off the northwest coast.

**8. Tropical cyclone Bruno, 15 to 20 January 1982 (Fig. 5)**

On 10 January a weak tropical low developed in an active monsoonal trough which extended from the Indian Ocean to the Arafura Sea. The low drifted slowly westward during the next few days and crossed the coast near Maningrida late on the 14th.

During the 15th, as it moved southwest over the land, satellite pictures showed that the system was becoming more organised and cyclonic intensity was attained at approximately 1800 GMT on the 15th

**Fig. 3 Tracks of tropical cyclones during the 1981-82 season in the Western Region — cyclones 2, 5, 11 and 12. Symbols as per Fig. 2.**



when the centre was just inside the coast near Port Keats.

*Bruno* continued to develop as it moved across Bonaparte Gulf and at 0500 GMT on the 16th the central pressure was estimated to be 986 mb with maximum winds of about 120 km h<sup>-1</sup>.

*Bruno* made landfall again at about 0700 GMT on the 16th, the centre then moved steadily southwest and weakened. However, it still maintained sufficient strength to cause strong to gale force winds as it moved through the West Kimberley.

The system weakened markedly as it approached Port Hedland over land early on the 18th. After passing Port Hedland *Bruno* moved out to sea, merged with the remnants of cyclone *Errol* and reintensified rapidly. Peak intensity was reached at 1500 GMT on the 19th with an estimated central pressure of 976 mb and estimated maximum winds of 90 km h<sup>-1</sup>.

*Bruno* again made landfall at the southern end of Exmouth Gulf at approximately 2200 GMT on the 19th. It then weakened and moved steadily southward as a tropical depression before tracking out to sea at Shark Bay. The centre made landfall again just south of Perth about 0000 GMT on the 22nd and finally dissipated over land.

The highest wind gusts recorded were 89 km h<sup>-1</sup> at Broome at 0905 GMT on the 17th and 107 km h<sup>-1</sup> at Barrow Island on the 19th.

*Bruno* brought torrential rain to many areas of Western Australia, especially in the southwest where over 60 centres exceeded their January monthly record, many exceeding the previous record by three to four times. The heaviest falls occurred in a broad band centred along a line joining Dwellingup, Collie, Arthur River, Katanning and Tambellup. Falls of 200 to 250 mm were general in this area during the 48 hours ending 0100 GMT 22

January. Isohyets for this period are shown in Fig. 7. The highest two-day rainfall in the above period was 270 mm at Bowelling and the highest daily rainfall was 160 mm at Dwellingup and Arthur River for the 24 hours ending 0100 GMT on the 21st.

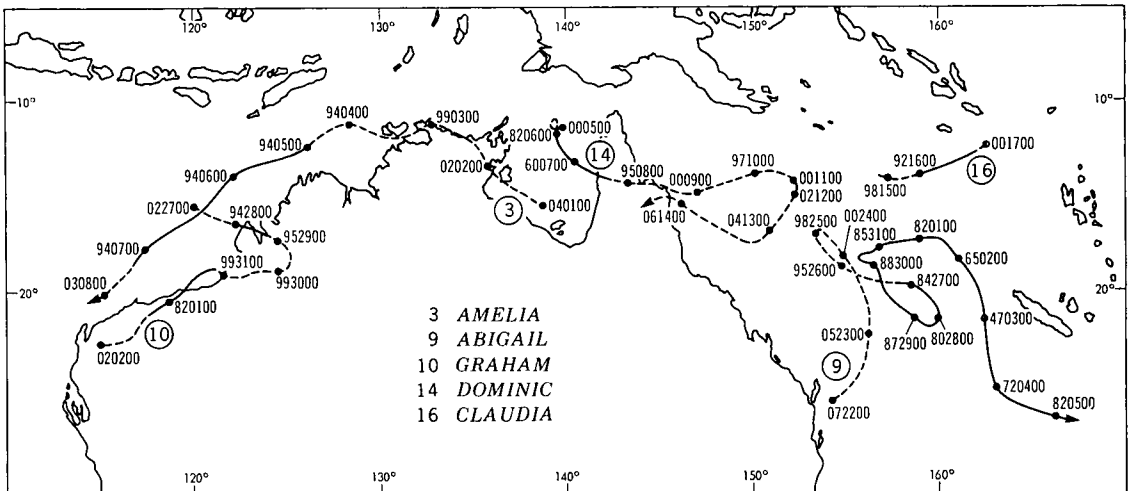
As *Bruno* moved through the northwest only minor damage occurred through a combination of wind and rain, however, severe damage was inflicted in the southwest of Western Australia by extensive flooding. The Collie and Blackwood Rivers in the southwest became raging torrents, with the Blackwood reaching its highest level since 1955. Many bridges were washed away and there was extensive road and rail damage. Many farms were completely inundated and a number of towns were flooded. These included Collie, Cranbrook, Tambellup, Kojonup, Katanning, Boyup Brook, Bridgetown, Nannup and Darradup. The worst affected town was Nannup where 75 houses were flooded, many of them to the roof-top. It was reported that 100 000 sheep were lost, mostly through hypothermia. Total damage was estimated at about \$10 million.

**9. Tropical cyclone Abigail, 26 January to 1 February 1982 (Fig. 4)**

*Abigail* was the first cyclone of the season to affect the Queensland Region and originated from a low which developed just off the south Queensland coast on 22 January. During the next 3 days the low moved initially to the northeast and then to the northwest, slowly intensifying. On the morning of 25 January the low, situated approximately 330 km east of Willis Island, commenced to move towards the southeast.

Cyclonic intensity was reached on the night of 26 January. During the next 3 days *Abigail* executed a

**Fig. 4 Tracks of tropical cyclones during the 1981-82 season in the Western, Northern and Eastern Regions — cyclones 3, 9, 10, 14 and 16. Symbols as per Fig. 2.**



complete loop and by the evening of 30 January was located approximately 620 km east-southeast of Willis Island. At this time the cyclone underwent a further major change in direction and commenced moving to the east-northeast. *Abigail* moved out of the Eastern Region on the evening of 1 February with a central pressure of 977 mb, the lowest pressure attained whilst in this region. The strongest wind reported in the region was 95 km h<sup>-1</sup> by a ship located at 0200 GMT 29 January 250 km to the west-southwest of the centre.

In association with a ridge of high pressure over southern parts of Queensland, *Abigail* produced strong to occasionally gale force winds over coastal areas of central and southern Queensland but otherwise had little effect on the State.

After moving out of the Eastern Region *Abigail* commenced to move towards the south-southeast passing to the west of New Caledonia. It continued to intensify and attained its lowest central pressure of 947 mb on 3 February. It then began to weaken and finally assumed a more easterly track while moving to the south of New Caledonia.

**10. Tropical cyclone Graham, 28 January to 1 February 1982 (Fig. 4)**

On the days prior to the genesis of *Graham* the intertropic convergence zone was located near latitude 15°S across northern Australia. A low became evident just south of this zone on 27 January, it moved eastward and deepened reaching

cyclonic intensity just before it crossed the coast at about 0000 GMT on the 28th. The cyclone then weakened into a rain bearing depression as it moved inland. During the 29th it recurved to the west as a ridge of high pressure developed to the south.

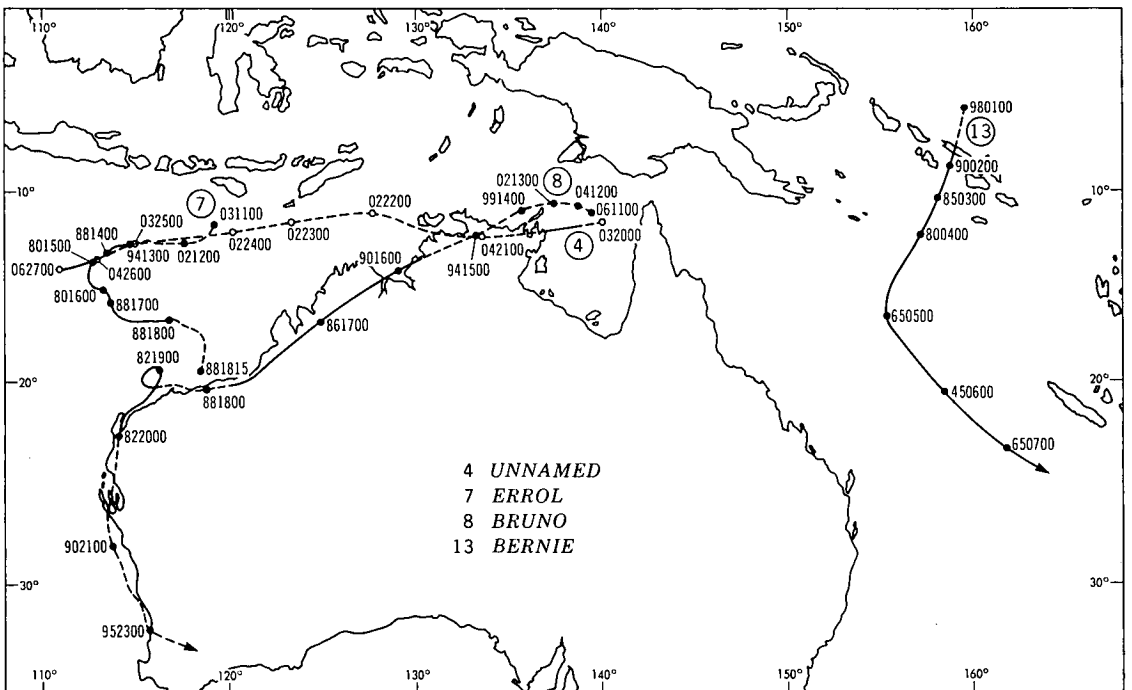
At 0000 GMT on the 31st the system moved out to sea and redeveloped rapidly. It subsequently moved to the southwest and approached the coast again. Maximum intensity occurred just before this second landfall when the central pressure was estimated at 980 mb and winds of 100 km h<sup>-1</sup> were expected near the centre. At 2325 GMT on the 31st the cyclone passed about 25 km south of Port Hedland and winds of 81 km h<sup>-1</sup> with gusts up to 119 km h<sup>-1</sup> were recorded. This wind was the strongest reported during the life of *Graham*.

During 28, 29 and 30 January *Graham* caused extensive rainfall over the Kimberleys, with 24-hour totals of over 100 mm being common. The highest 24-hour rainfall was 178 mm at Broome for the period ending 0100 GMT 30 January. Pardoo station reported some building damage and the loss of many trees.

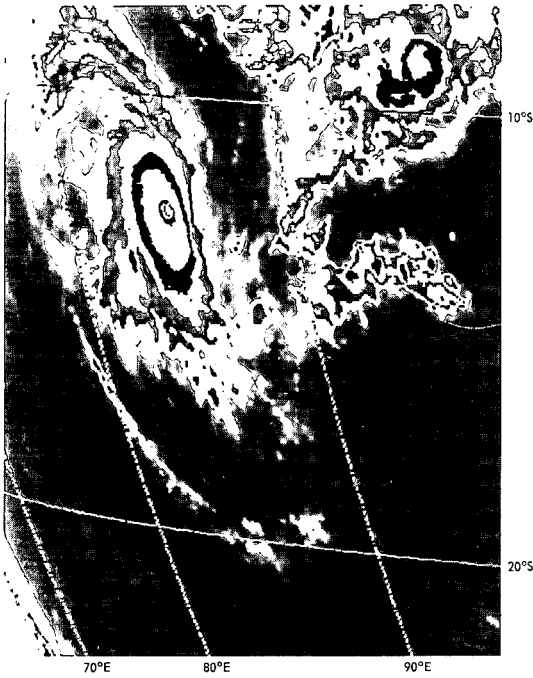
**11. Tropical cyclone Harriet, 14 to 18 February 1982 (Fig. 3)**

On 12 February a cloud cluster was located south of Christmas Island and circulatory features could be identified on the satellite imagery near the eastern edge of this cluster. The system moved eastwards, deepened slowly, and attained cyclonic strength at

**Fig. 5 Tracks of tropical cyclones during the 1981-82 season in the Western, Northern and Eastern Regions — cyclones 4, 7, 8 and 13. Symbols as per Fig. 2.**



**Fig. 6 Enhanced infrared picture of tropical cyclone Chris at 0600 GMT 10 January 1982 from the Japanese geo-stationary satellite GMS 2.**



1800 GMT on the 14th. *Harriet* reached peak intensity at 0600 GMT on the 15th with an estimated pressure of 988 mb and estimated winds near the centre of 90 km h<sup>-1</sup>.

*Harriet* failed to develop into a severe cyclone, possibly as a result of the upper tropospheric easterly flow which caused a shearing process that prevented the low level centre moving under the deep convective cloud mass.

Late on the 16th the centre recurved to the west as it came under the influence of a ridge of high pressure centred south of the storm. On the 18th *Harriet* displayed an erratic path but drifted west-northwest during its decaying stages on the 19th and 20th.

**12. Tropical cyclone Ian, 1 to 6 March 1982 (Fig. 3)**

On 23 February a surface cyclonic circulation could be identified in the Timor Sea. Although the system was weak it covered a large area extending northwards to Indonesia and southwards to the northwest coast of Australia.

For the next two days the system moved steadily west-southwest under the influence of a strong easterly upper tropospheric flow. On the 26th the upper flow changed rapidly from easterly to westerly and the low recurved sharply and tracked eastwards.

Cyclonic intensity was reached late on 1 March. The first gales were reported as the storm passed close to the Automatic Weather Station at Rowley Shoals at 2200 GMT 1 March. Eastward movement continued as *Ian* deepened and approached the Kimberley coast.

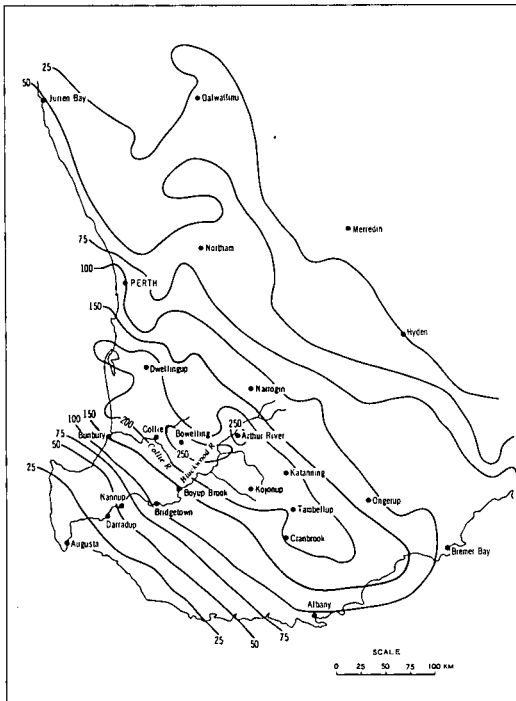
On the 3rd, however, it recurved to the southwest as the upper flow over the storm suddenly changed to easterly. *Ian* then assumed a more climatologically normal track and moved parallel to the northwest coast and deepened. It reached peak intensity at 0300 GMT on the 4th with an estimated central pressure of 964 mb and estimated maximum winds near the centre of 150 km h<sup>-1</sup>.

*Ian* had been weakening for at least 12 hours before it crossed the coast at Northwest Cape at about 0600 GMT on the 6th. It finally dissipated east of Carnarvon late on the 7th. The highest reported wind of 102 km h<sup>-1</sup> from the north at 2200 GMT 5 March was by a ship located 85 km east of the centre.

Over the land, gales were reported from the town of Exmouth and the communications base at Northwest Cape. At Learmonth Meteorological Office the strongest gust was an easterly of 79 km h<sup>-1</sup> at 0540 GMT 6 March.

The only damage reported was at the town of Exmouth where power lines were brought down and some trees were blown over. The cyclone caused oil rigs operating off the northwest coast to be shut down and 250 oil rig workers were evacuated.

**Fig. 7 Isohyets over southwest Western Australia for the 48 hours ending 0100 GMT 22 January 1982.**



### 13. Tropical cyclone *Bernie*, 1 to 6 April 1982 (Fig. 5)

Tropical cyclone *Bernie* developed from a tropical low which on 1 April was embedded in the intertropical convergence zone north of Santa Isabel in the Solomon Islands group. Moving in a south-southwesterly direction, the low reached cyclonic intensity on the night of the 1st and crossed Santa Isabel on the morning of the 2nd with a central pressure of 990 mb.

During the next three days the cyclone maintained its south-southwesterly direction of movement and gradually intensified. At 0000 GMT 5 April, *Bernie* commenced to recurve to the southeast and 24 hours later attained its greatest intensity of 945 mb. *Bernie* moved out of the Eastern Region at about 1200 GMT 6 April and gradually weakened as it continued its southeasterly movement.

As *Bernie* crossed the Solomon Islands it caused some crop and property damage as well as local flooding on a number of the islands. The cyclone had little effect on Queensland apart from strong winds experienced in central and southern coastal areas on the 5th and 6th. The strongest wind associated with the cyclone was a report of 126 km h<sup>-1</sup> from a ship situated 160 km to the northeast of the centre at 2100 GMT 3 April.

### 14. Tropical cyclone *Dominic*, 5 to 7 April 1982 (Fig. 4)

*Dominic* developed from a tropical low which was situated approximately 270 km northwest of Weipa early on 5 April. The low intensified during the day and attained cyclonic intensity by 1500 GMT. During the next two days the cyclone moved in a general southeasterly direction and continued to develop, attaining maximum intensity at 0900 GMT on 7 April with a central pressure of 950 mb. This intensity was maintained until *Dominic* crossed the west coast of Cape York Peninsula near Cape Keer-Weer about 3 hours later.

Winds were estimated to have reached 185 km h<sup>-1</sup> at Edward River Mission with some damage to buildings and power lines. At Aurukun damage was assessed at \$200 000 and severe damage to natural vegetation was reported from the Cape Keer-Weer area. While there was evidence of a significant storm surge in the Cape Keer-Weer area no quantitative data are available. Tide levels of almost 1.0 m above the predicted value were recorded at Weipa and almost 1.5 m below at Karumba.

*Dominic* weakened considerably as it crossed Cape York Peninsula and moved into the Coral Sea with a central pressure of 999 mb on the evening of the 8th. During the following six days *Dominic* described a large looped track before recrossing the east coast approximately 50 km north of Cooktown at about 0300 GMT 14 April. Throughout this period *Dominic* failed to reach cyclonic intensity although wind gusts to 98 km h<sup>-1</sup> were reported from

Willis Island at 1400 GMT 9 April. Just prior to landfall strong winds and minor tree damage were reported from the Innisfail area whilst a yacht at the mouth of the Johnstone River reported wind gusts to 120 km h<sup>-1</sup>.

### 15. Tropical cyclone *Karla*, 30 April to 2 May 1982 (Fig. 2)

*Karla* moved into the Western Region from the Mauritius area of responsibility at about 0600 GMT 30 April with an estimated central pressure of 954 mb and estimated winds near the centre of about 160 km h<sup>-1</sup>.

Satellite photographs on the 30th showed a well defined eye, with significant cirrus outflow. As the cyclone moved steadily southeast on 1 May, it came under the influence of a westerly trough and most of the cloud sheared away from the low level circulation. *Karla* finally dissipated on the 4th over cold water.

### 16. Tropical cyclone *Claudia*, 15 and 16 May 1982 (Fig. 4)

*Claudia* was the first May cyclone to develop in the Queensland Region for 10 years. It was short-lived and barely attained cyclonic intensity. It developed from a tropical low which on the morning of 15 May was situated 600 km southwest of Guadalcanal. The low moved on a general easterly track until 2100 GMT on 15 May when it reached cyclonic intensity with a central pressure of 992 mb. It then commenced to move on an east-northeasterly track and degenerated into a tropical low on the evening of the 16th. The low dissipated the following day approximately 350 km southeast of Guadalcanal.

The strongest wind reported was 65 km h<sup>-1</sup> from a ship located, at 0000 GMT on the 16th, approximately 600 km to the southwest of the centre. *Claudia's* development strengthened pressure gradients in a ridge over southern Queensland and caused strong winds over much of the east Queensland coast on 15 to 16 May.

## Acknowledgments

Material used in this report was provided by the staffs of the Tropical Cyclone Warning Centres of the Bureau of Meteorology in Brisbane, Darwin and Perth.

## References

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**Table 1. Summary of the 1981-82 tropical cyclone season in the Australian Region.**

	Australian Region	Western Region	Northern Region	Eastern Region
Number of cyclones in 1981-82 season	16	11	4	4
10 year average (1972-73 to 1981-82)	14.4	9.0	3.0	4.7
Initial location of tropical depression	12	5	2	5
Coastal crossings at cyclone intensity (sea to land)	10	6	2	2
Coastal crossings at cyclone intensity (land to sea)	5	2	2	1
Tropical cyclone days (one cyclone active)	49	39	5	14
Tropical cyclone days (two cyclones active)	8	4		2
Tropical cyclone days (three cyclones active)	3	2		
Severe cyclones	8	4	1	3

(a) Two cyclones developed from depressions initially located in Indonesian waters.

(b) Two cyclones developed from depressions initially located in the Mauritius Region.

**Table 2. Tropical cyclones in the Australian region during the 1981-82 tropical cyclone season.**

No.	Name and lifespan	Initial location of tropical depression		First reached tropical cyclone intensity		Estimated lowest central pressure (mb)	Weakened below tropical cyclone intensity	
1	<i>Alex</i> 19 Oct-27 Oct	5.1°S 0000 GMT	81.0°E 18 Oct	6.4°S 1800 GMT	83.0°E 19 Oct	964	19.4°S 0600 GMT	81.0°E 27 Oct
2	<i>Bessi</i> 6 Nov-11 Nov	2.2°S 0000 GMT	96.5°E 1 Nov	10.2°S 1200 GMT	87.4°E 6 Nov	986	West of 80°E after being renamed <i>Armelle</i>	
3	<i>Amelia</i> 4 Dec-7 Dec	15.8°S 0000 GMT	138.8°E 1 Dec	12.2°S 2100 GMT	126.5°E 4 Dec	994	18.7°S 0600 GMT	116.8°E 7 Dec
4	<i>Unnamed</i> 20 Dec	11.8°S 0000 GMT	140.1°E 20 Dec	11.9°S 0500 GMT	138.8°E 20 Dec	985	12.2°S 17 GMT	136.1°E 20 Dec
5	<i>Chris</i> 7 Jan — 11 Jan	10.3°S 0000 GMT	105.1°E 5 Jan	13.1°S 0000 GMT	100.5°E 7 Jan	934	West of 80°E after being renamed <i>Damia</i>	
6	<i>Daphne-Fifi</i> 12 Jan — 19 Jan	7.0°S 0000 GMT	94.3°E 11 Jan	7.7°S 0900 GMT	95.1°E 12 Jan	986	14.1°S 0000 GMT	112.8°E 20 Jan
7	<i>Errol</i> 13 Jan— 17 Jan	11.8°S 0000 GMT	119.2°E 11 Jan	12.9°S 0000 GMT	114.8°E 13 Jan	980	16.8°S 0000 GMT	116.8°E 18 Jan
8	<i>Bruno</i> 15 Jan — 20 Jan	11.0°S 0000 GMT	140.2°E 11 Jan	13.7°S 1800 GMT	130.1°E 15 Jan	976	20.1°S 2100 GMT	120.1°E 17 Jan 23.5°S 0300 GMT
9	<i>Abigail</i> 26 Jan — 1 Feb	25.6°S 0000 GMT	154.2°E 22 Jan	19.6°S 1500 GMT	157.4°E 26 Jan	977	East of 160°E	
10	<i>Graham</i> 28 Jan — 1 Feb	15.7°S 0000 GMT	120.0°E 27 Jan	16.7°S 0000 GMT	122.3°E 28 Jan	980	17.3°S 2100 GMT	124.3°E 28 Jan 21.3°S 0600 GMT
11	<i>Harriet</i> 14 Feb — 18 Feb	11.8°S 0000 GMT	104.2°E 12 Feb	12.1°S 1800 GMT	109.1°E 14 Feb	988	13.5°S 0300 GMT	110.3°E 18 Feb
12	<i>Ian</i> 1 Mar — 6 Mar	13.2°S 0300 GMT	122.6°E 23 Feb	17.2°S 2100 GMT	119.1°E 1 Mar	964	23.5°S 1500 GMT	113.7°E 6 Mar
13	<i>Bernie</i> 1 Apr — 6 Apr	5.7°S 0000 GMT	159.6°E 1 Apr	7.3°S 1200 GMT	159.3°E 1 Apr	945	East of 160°E	
14	<i>Dominic</i> 5 Apr — 7 Apr	11.4°S 0000 GMT	139.8°E 5 Apr	11.3°S 1500 GMT	139.5°E 5 Apr	950	14.4°S 1800 GMT	142.5°E 7 Apr
15	<i>Karla</i> 30 Apr — 2 May	West of 80°E		West of 80°E		954	19.9°S 0900 GMT	84.7°E 2 May
16	<i>Claudia</i> 15 May—16 May	13.8°S 1800 GMT	156.5°E 15 May	14.1°S 2100 GMT	158.5°E 15 May	992	East of 160°E	