

The Australian tropical cyclone season 1982-83

Peter Bate, Regional Office, Bureau of Meteorology, Darwin
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Seven tropical cyclones occurred in the Australian region during the 1982-83 tropical cyclone season. Five of these occurred in the Western Region and two in the Eastern Region. The first cyclone developed early in January 1983. The season ended quite late with two Indian Ocean cyclones during the last week of April. Four cyclones crossed the Australian coast but caused no loss of life and relatively little damage.

Introduction

The 1982-83 tropical cyclone season was again dominated by events in the Western Region. Five of the seven cyclones to occur during the season were in this region and the remaining two were in the Eastern Region. No cyclones were recorded in the Northern Region although *Ken* and *Lena* had their geneses there. The season ran from 2 January to 29 April 1983.

Five of the cyclones reached severe tropical cyclone intensity (mean winds of at least 120 km/h) although one of these, *Monty*, barely did so. Four of the seven cyclones crossed the Australian coast, three of them in the northwest. The three cyclones to cross the northwest coast, namely *Jane*, *Ken* and *Lena* all maintained their respective identities well inland.

Lena was the only one of the four cyclones, to affect the Australian mainland, which was not classified as severe. *Jane* caused wind damage at a station located about 250 km inland. It was identifiable on satellite pictures well into central Australia where it also caused gales. *Elinor* was particularly notable for its long life cycle (almost three weeks), its very convoluted track and its two intensity peaks.

Seasonal statistics

Figure 1 shows the area for which the Australian Bureau of Meteorology has international tropical cyclone warning responsibilities. Any reference in this report to the occurrence, behaviour or tracks of cyclones outside this area is tentative only. Figure 1 also shows place names and localities referred to in the text. A statistical summary of some aspects of the 1982-83 tropical cyclone season is contained in Tables 1 and 2. The 10-year average number of tropical cyclones in the respective regions for the period 1973-74 to 1982-83 was derived from data in Lourensz (1981), Rooney (1981) and Lynch (1982) and, for cyclones occurring west of longitude 105°E, from unpublished records held by Perth Tropical Cyclone Warning Centre.

Central pressures and maximum winds have been

estimated using the Dvorak (1975) technique. Due to intermittent faults in the satellite imagery enhancement system used, the error range of these estimates may be slightly larger than normal.

A tropical cyclone day is defined here as a day on which one or more tropical circulations of at least tropical cyclone intensity (mean winds of 63 km/h) existed in the Australian region for any part of the day, commencing at 0000 GMT.

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

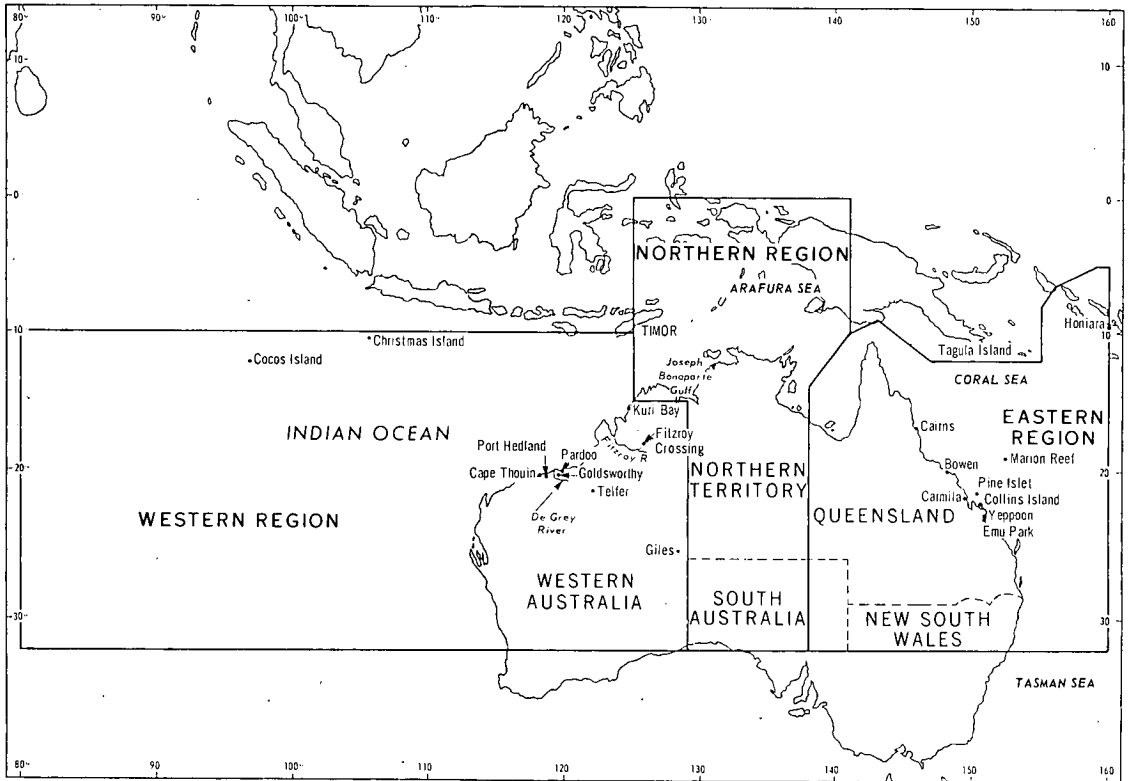
Figures 2, 3 and 4 show the tracks of the seven tropical cyclones which occurred in the Australian region during the 1982-83 season. Figures 5 and 6 show infrared and visible satellite pictures of tropical cyclone *Jane*.

Large-scale aspects

The number of tropical cyclones which occurred in the Australian region during the 1982-83 season was slightly above half the 10-year running mean from 1973-74 to 1982-83. Seven tropical cyclones occurred in the southern hemisphere between longitudes 105°E and 165°E during the season. This was equal to the lowest number (observed in five other seasons) since 1959-60. The annual mean incidence in this area over the 24-year period is 10.4.

This low occurrence was linked by Darwin Regional Meteorological Centre, in a series of diagnostic bulletins, with the extreme southern oscillation — El Nino event of 1982-83. Sea surface temperatures were anomalously high in the tropical central and eastern South Pacific and low in the Tasman, Coral and Arafura seas early in the season. Monthly average MSL pressure at Darwin was much above normal until March, reflecting the regional circulation anomaly. Record values of 3.3 mb and 3.9 mb above normal were reached in January and February respectively.

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



The monsoon trough was generally poorly developed in Australian longitudes until late in the season. Most Australian region tropical cyclones are spawned in the monsoon trough and the majority of genesis events occur when both the monsoon westerlies and easterly trade winds are well developed (McBride and Keenan 1982).

Conversely, in the tropical central, and eastern South Pacific, pressures were lower than normal, with anomalous westerly winds maintaining an active monsoonal trough. There was an unprecedented high incidence of tropical cyclones in the South Pacific east of the dateline. Eight cyclones originated east of the dateline during the 1982-83 season, compared to a mean, since 1959-60, of 1.8 per year.

Tropical cyclones of the 1982-83 season

1. Tropical cyclone Jane, 2 to 11 January 1983 (Fig. 2)

Jane was the first cyclone to occur in the 1982-83 Australian region tropical cyclone season. It was also the most intense to occur in the Western Region. It crossed the coast as a severe tropical cyclone, but the damage reported was only minor.

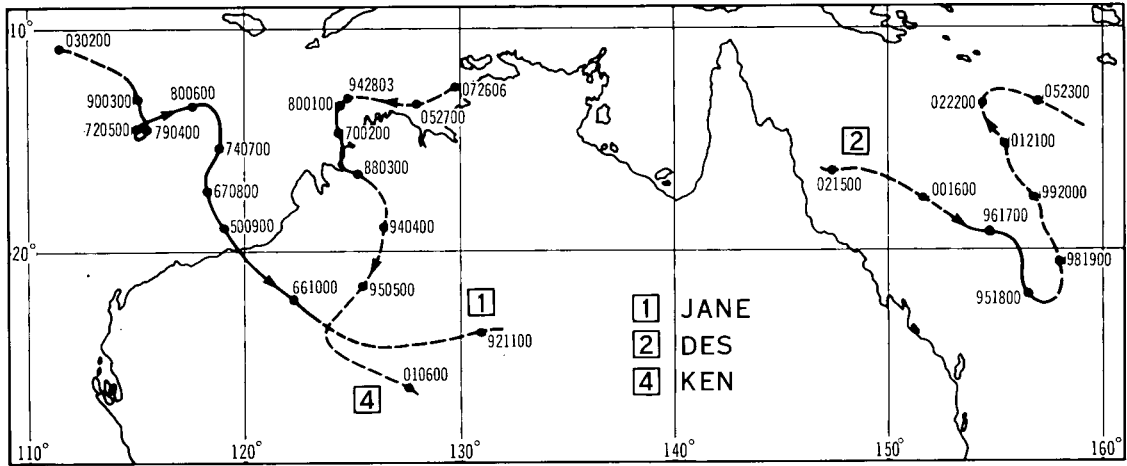
During late December and early January a monsoonal trough became established about latitudes 11°S to 13°S between Cocos Island and

northern Australia. A tropical low formed in the vicinity of the trough 700 km east of Christmas Island on 2 January and began drifting towards the east-southeast.

The low developed to tropical cyclone intensity at 1200 GMT 2 January, with an estimated central pressure of 994 mb. After following a meandering path for the next four days it settled onto a generally southward track during 6 January. Peak intensity was attained just off the Pilbara coast at 0600 GMT 9 January with an estimated central pressure of 947 mb and maximum winds of 170 km/h. Enhanced infrared and visual imagery of *Jane* at this point are shown in Figs 5 and 6 respectively. The Dvorak EIR technique gave a T-number intensity estimate of 5.5 based on these pictures.

The cyclone made landfall near Pardoo at approximately 0700 GMT 9 January and then accelerated to the southeast over land. *Jane* weakened below tropical cyclone intensity at approximately 0700 GMT 10 January when it was centred about 270 km south of Telfer. The resulting depression moved rapidly to the southeast under the influence of an upper northwesterly flow. At 1200 GMT 10 January it turned eastward and passed north of Giles and by 12 January had moved into Queensland, establishing a trough in which cyclone *Des* was spawned some days later.

Fig. 2 Tracks of tropical cyclones 1, 2 and 4 of the 1982-83 season. Broken lines denote pre or post-cyclone stage; full lines denote tropical cyclone stage. Key to number groups along track in code form PYYGG: PP — central pressure (tens and units of millibars); YY — date; GG — time (GMT whole hours).



The strongest wind reported over the sea was 148 km/h, from the west, at 0200 GMT 9 January. The report came from an oil drilling ship located about 60 km north-northwest of the cyclone centre. The strongest gust over land was 185 km/h from the southeast — reported from Goldsworthy at 1000 GMT 9 January. The centre was then 40 km northeast of the town. On 11 January gale force winds and heavy rain were reported inland as far as the southwestern Northern Territory.

Jane caused minor damage only. At Port Hedland, Goldsworthy and Telfer a few buildings were unroofed and trees were uprooted. Pardoo station suffered extensive damage to the outcamp building and also some stock losses caused both by flooding and by drowning of stock driven into the sea by the wind. Minor flooding occurred in the De Grey River Basin. Two workmen aboard a drilling ship were slightly injured.

2. Tropical cyclone Des, 14 to 23 January 1983 (Fig. 2)

Des was the second Australian region tropical cyclone of the season, and the first in the Eastern Region. It was a weak cyclone.

A tropical depression was first located in the monsoon trough on 14 January about 150 km east-northeast of Cairns. The depression moved steadily east-southeast from this point while intensifying gradually. Tropical cyclone intensity was attained about 1600 GMT 16 January.

Des reached peak intensity at 1200 GMT 17 January when located 830 km east of Bowen. The central pressure at this time was 994 mb and maximum winds were estimated at 100 km/h.

During 18 January *Des* weakened below tropical cyclone intensity and turned onto a northward track. It followed a general northward course for the next four days while slowly weakening. The depression turned eastward on 22 January when located about

180 km south-southeast of Tagula Island and dissipated over water on 23 January.

Ships' observations of 17 January indicated gale force winds in the cyclone's southwest quadrant, the strongest observed wind being 98 km/h some 300 km from the centre. The only significant effect of *Des* on Queensland was to produce very rough seas and moderate rain on the central coast.

3. Tropical cyclone Elinor, 11 February to 4 March 1983 (Fig. 3)

Elinor was the second and last cyclone to occur in the Eastern Region during the season. It wandered erratically in the Coral Sea for more than two weeks before crossing the central Queensland coast.

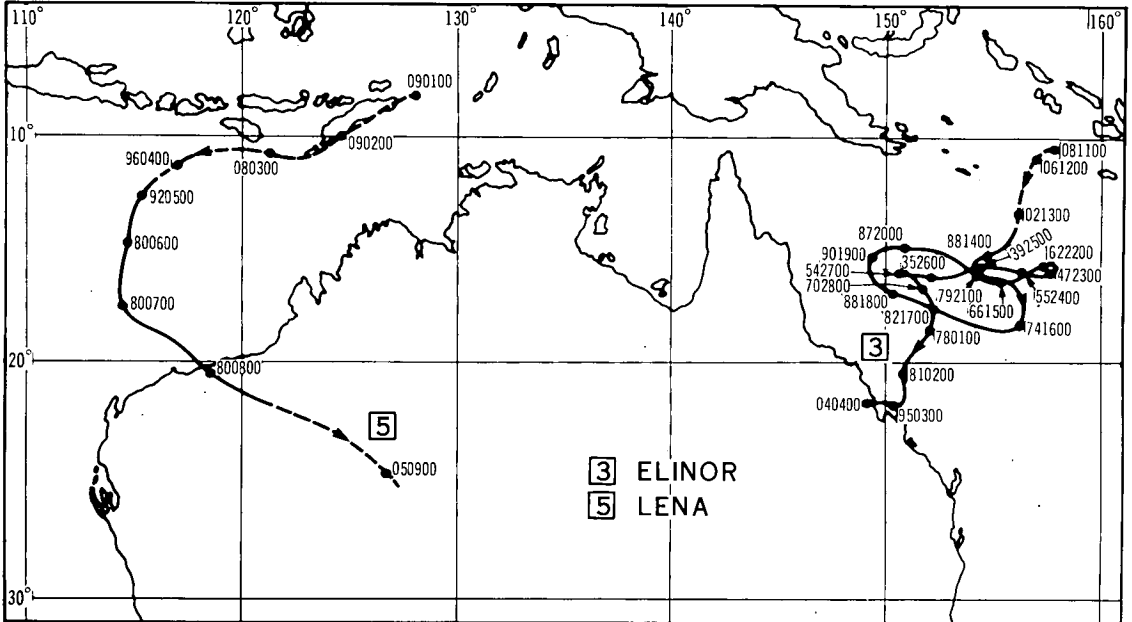
Elinor originated as a tropical depression in the monsoon trough southwest of Honiara on 11 February. The depression moved to the southwest into the Coral Sea and reached tropical cyclone intensity at 0600 GMT 13 February. It intensified rapidly and then commenced its meandering track. The first of two peaks in intensity was reached on 15 February with an estimated central pressure of 966 mb.

After 16 February it weakened while describing a large clockwise loop in the Coral Sea. However, the cyclone then re-intensified and from 21 to 27 February a well-defined eye was visible on satellite photographs.

On 26 February the cyclone attained its second and more intense peak. The lowest central pressure was assessed at 935 mb. On 27 February it turned sharply to the southeast and gradually weakened. The weakening ceased on 1 March when *Elinor* turned southeast toward the Queensland coast. It finally crossed the coast near Camilla on 3 March, weakened to below tropical cyclone intensity by 0000 GMT 4 March, and dissipated rapidly thereafter.

At the time of greatest intensity the maximum wind was assessed at 180 km/h although reports

Fig. 3 Tracks of tropical cyclones 3 and 5 of the 1982-83 season. Symbols as per Fig. 2.



from Pine Islet between 0800 GMT and 1500 GMT 2 March gave estimates of wind strength between 165 and 215 km/h. Reports of estimated winds to 130 km/h with 5 m waves and 7.5 m swell were received from ships within 100 km of the centre on 28 February and 2 March. Winds of 128 km/h were measured at Marion Reef at 0600 GMT 1 March.

The only major damage experienced was the wrecking of two ocean-going yachts near the coast. On southern parts of the central Queensland coast and adjacent islands the damage was only minor. Trees up to 0.75 m diameter were blown down. Power disruptions and minor damage to houses occurred.

Some localised heavy rainfalls were recorded. Yeppoon registered 474 mm in the 48 hours to 4 March and Emu Park 340 mm.

The only report of any storm surge was from an observer on Collins Island who reported that tide heights were one metre above predicted levels.

4. Tropical cyclone Ken, 26 February to 6 March 1983 (Fig. 2)

Ken was the second cyclone of the season to cross the northwest coast of Australia. Although *Ken* was classified as severe it crossed the coast in a sparsely populated area and no reports of damage were received.

During the last week of February a weak monsoon trough extended across far northern Australia from tropical cyclone *Elinor*, then in the Coral Sea. By 0600 GMT 26 February a weak tropical depression had developed in this trough and had begun to move slowly west-southwestward from the Joseph Bonaparte Gulf.

For the next two days the depression moved slowly

westward, gradually intensifying. It attained tropical cyclone intensity at 0300 GMT 28 February, when located approximately 270 km north of Kuri Bay. *Ken* then turned sharply southward. It reached peak intensity at 0000 GMT 2 March when the central pressure was estimated at 970 mb and maximum winds at 130 km/h.

The cyclone crossed the coast near Kuri Bay about seven hours later. It then recurved to the southeast over land. *Ken* weakened below tropical cyclone intensity around 1000 GMT 3 March when the centre was located 120 km north-northeast of Fitzroy Crossing. It continued inland in a general southward direction as a rain-bearing depression. It eventually recurved again to the southeast on 5 March and entered South Australia on 6 March where the remnants interacted with an eastward-moving frontal system.

Although *Ken* crossed the coast very close to Kuri Bay, wind observations from that station were somewhat erratic due to the nature of the coastal topography. The cyclone did not pass sufficiently close to any other stations or ships for winds greater than gale force to be reported.

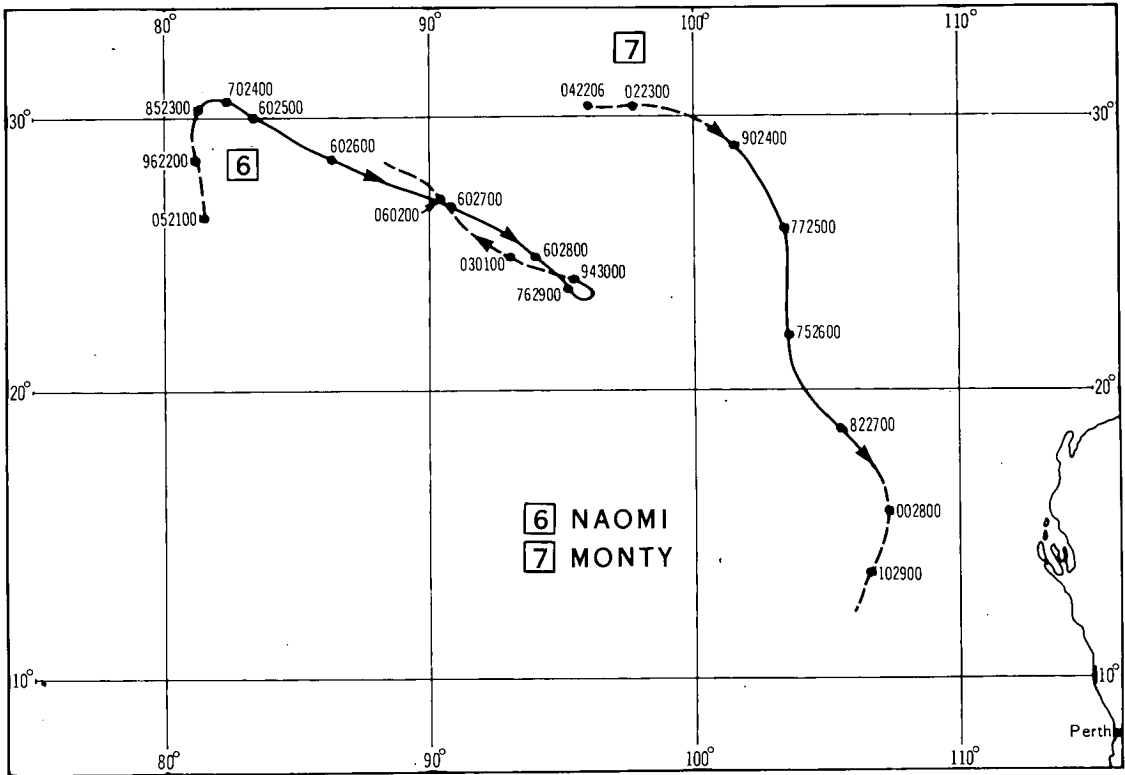
No damage was reported to have been caused by *Ken*. However, the heavy rainfall associated with this cyclone contributed to the serious flooding of the Fitzroy River some two weeks later.

5. Tropical cyclone Lena, 1 to 9 April 1983 (Fig. 3)

Lena was the third cyclone of the season to cross the northwest Australian coast.

A weak tropical low was located off the northeast coast of Timor on 1 April and moved initially southwestward. During the next few days it tracked in a generally west-southwest direction. By 0600

Fig. 4 Tracks of tropical cyclones 6 and 7 of the 1982-83 season. Symbols as per Fig. 2.



GMT 4 April it had reached tropical cyclone intensity, with an estimated central pressure of 994 mb.

Lena then gradually turned onto a southward course. It reached maturity at about 0000 GMT 6 April with an estimated central pressure of 980 mb and maximum winds of 110 km/h.

Early on 7 April *Lena* recurved sharply to the southeast and accelerated towards the coast. Landfall was made near Cape Thouin around 2300 GMT of the same day. The cyclone continued moving rapidly southeast over land and weakened to below tropical cyclone intensity at 1000 GMT 8 April when the centre was 90 km south of Telfer. The system continued to be identified as a rain-bearing depression on 9 April as it passed south of Giles and into South Australia where it became extra-tropical.

Whilst *Lena* was over the sea the strongest wind reported was 74 km/h from the east-southeast at 1805 GMT 7 April. The report came from a ship located 50 km south of the centre. The peak gust reported after landfall was 153 km/h from the north, at Port Hedland Meteorological Office. This occurred at 2345 GMT 7 April when the centre was located some 30 km southwest of Port Hedland.

Minor damage was caused by cyclone *Lena* at Port Hedland. The roof of the Community Welfare Office was blown off, partly demolishing a nearby house. Minor damage was inflicted on other houses. Many

trees were uprooted and power lines brought down. The Customs launch was driven ashore and holed and two Taiwanese fishing boats were damaged in the harbour.

6. Tropical cyclone Naomi, 21 April to 2 May 1983 (Fig. 4)

Naomi was a late-season cyclone which developed in the Indian Ocean. It did not cross the Australian coast.

The cyclone originated from a tropical low which formed just south of an active monsoon trough established across the Indian Ocean near 11°S. During 21 April this low moved northward and intensified. It attained tropical cyclone intensity at about 0600 GMT 22 April, while continuing to move northward.

On 23 April *Naomi* recurved sharply to the east and then to the southeast on 24 April. It continued to intensify to a severe tropical cyclone. Maximum intensity was reached at about 0000 GMT 25 April with an estimated central pressure of 960 mb and maximum winds of about 150 km/h.

Naomi tracked steadily southeastward for the next few days, maintaining its intensity. On 29 April the centre executed a complete anticlockwise loop and then moved northwest and slowly weakened as the low-level centre sheared away from the deep convective cloud mass. The system finally dissipated

Fig. 5 Enhanced infrared imagery of tropical cyclone Jane at 0600 GMT 9 January 1983 from the Japanese geostationary satellite GMS-2. The cyclone made landfall at 0700 GMT.

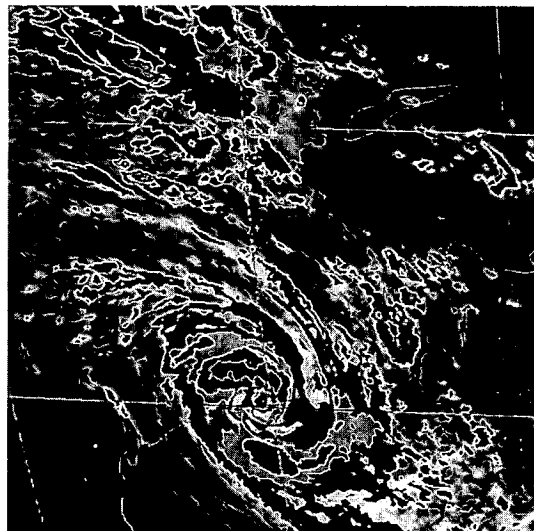


Fig. 6 Visible imagery of tropical cyclone Jane at 0600 GMT 9 January 1983.

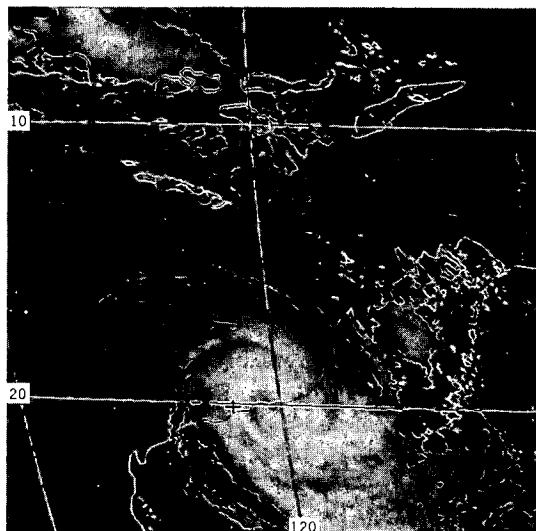


Table 1. Summary of the 1982-83 tropical cyclone season in the Australian Region.

	<i>Australian Region</i>	<i>Western Region</i>	<i>Northern Region</i>	<i>Eastern Region</i>
Number of cyclones in the 1982-83 season	7	5	0	2
Average number of cyclones per season (10-year average 1973-74 to 1982-83)	13.6	8.4	2.4	4.6
Initial location of tropical depression [Note (a)]	6	2	2	2
Coastal crossings at cyclone intensity (sea to land) [Note (b)]	4	3	0	1
Coastal crossings at cyclone intensity (land to sea)	0	0	0	0
Tropical cyclone days (one cyclone active)	35	21	0	22
Tropical cyclone days (two cyclones active)	9	5	0	0
Tropical cyclone days (three cyclones active)	0	0	0	0
Severe tropical cyclones	5	4	0	1

(a) One cyclone (*Monty*) had its initial location as a tropical depression in Indonesian waters.

(b) Tropical cyclone *Ken* has been counted only as a single crossing from sea to land although it may have crossed the very indented coastline in the vicinity of Kuri Bay several times.

Table 2. Tropical cyclones in the Australian Region during the 1982-83 cyclone season.

No.	Name and lifespan as cyclone	Initial location of tropical depression	First reached tropical cyclone intensity	Estimated lowest central pressure (mb)	Weakened below tropical cyclone intensity
1	<i>Jane</i> 2 Jan — 10 Jan	10.8°S 111.5°E 0000 GMT 2 Jan	12.0°S 114.1°E 1200 GMT 2 Jan	947	23.3°S 123.8°E 0700 GMT 10 Jan
2	<i>Des</i> 16 Jan — 18 Jan	16.3°S 146.9°E 1200 GMT 14 Jan	18.5°S 152.7°E 0600 GMT 16 Jan	994	22.0°S 158.0°E 1800 GMT 18 Jan
3	<i>Elinor</i> 13 Feb — 3 Mar	10.6°S 157.8°E 0000 GMT 11 Feb	14.0°S 155.9°E 0600 GMT 13 Feb	(a) 966 (b) 935	21.9°S 149.2°E 0000 GMT 4 Mar
4	<i>Ken</i> 28 Feb — 3 Mar	12.8°S 129.9°E 0600 GMT 26 Feb	13.1°S 124.9°E 0300 GMT 28 Feb	970	17.3°S 126.2°E 1000 GMT 3 Mar
5	<i>Lena</i> 4 Apr — 8 Apr	8.2°S 128.0°E 0000 GMT 1 Apr	11.7°S 116.2°E 0600 GMT 4 Apr	980	22.3°S 121.8°E 1000 GMT 8 Apr
6	<i>Naomi</i> 22 Apr — 29 Apr	13.7°S 81.5°E 0000 GMT 21 Apr	11.0°S 81.1°E 0600 GMT 22 Apr	960	16.2°S 95.4°E 2300 GMT 29 Apr
7	<i>Monty</i> 23 Apr — 27 Apr	9.8°S 96.0°E 0600 GMT 22 Apr	10.6°S 100.5°E 1800 GMT 23 Apr	975	23.8°S 107.2°E 1900 GMT 27 Apr

over tropical waters on 2 May.

The strongest wind reported was 120 km/h, from the west-southwest, at 0345 GMT 23 April by a ship located 110 km north-northwest of the centre.

No damage was reported.

7. Tropical cyclone *Monty*, 22 to 29 April 1983 (Fig. 4)

Like tropical cyclone *Naomi*, *Monty* occurred late in the season and remained over the Indian Ocean throughout its life cycle. It was the last cyclone for the season to occur in the Australian region.

For some days prior to the genesis of tropical cyclone *Monty* an active monsoon trough was well established across tropical waters of the Indian Ocean near latitude 9° to 11°S.

At 0600 GMT 22 April a weak tropical low developed just south of the monsoon trough about 300 km north-northwest of Cocos Island. Tropical cyclone *Naomi* also had its genesis in this trough, some fifteen degrees of longitude further west and about 36 hours earlier.

During the next two days the low moved in a general east to east-southeast direction and deepened, attaining tropical cyclone intensity at about 1800 GMT 23 April with an estimated central pressure of 994 mb.

On 24 April the cyclone moved towards the south-southeast and continued to intensify. It reached peak intensity at about 0600 GMT with an estimated central pressure of 975 mb and maximum winds of

120 km/h, barely attaining severe tropical cyclone status.

During the next few days *Monty* moved in a general southward direction, finally dissipating over colder waters off the west coast during 29 April.

There were no wind reports available close to the centre of *Monty*. However, ships on the periphery of the storm reported winds near gale force between 25 and 28 April.

No damage was reported.

Acknowledgments

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