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**TROPICAL CYCLONES IN VANUATU**  
1847 to 1994

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(Revised May 1994)

## TROPICAL CYCLONES IN VANUATU

Sources of information:

New Caledonia Meteorological Service  
 New Zealand Meteorological Service  
 Fiji Meteorological Service  
 Vanuatu Meteorological Service

Visher – Tropical Cyclones of the Pacific, pp 37-38

### **Author's Note**

This publication is evolutionary in nature. New information is added as it comes to hand. Some of the date – particularly the historical – is vague and uses archaic terminology. Where possible facts are checked, but if still in some doubt is printed in bold and italic.

### **Introduction**

The following is taken from Visher (see above).

From New Hebrides [*the former name of Vanuatu*] for the 26 years, 1867-1893, 22 hurricanes are reported. There is a period of eight years with no record, and information for other years is lacking. As many as three hurricanes have occurred in one year. On the other hand, three or more consecutive years have passed during which no hurricane was reported. The average storminess may be two hurricanes a year. As to monthly distribution, nearly all the recorded storms have occurred in the first three months of the year, 12 in January, 11 in February, nine in March. However, two storms occurred in April, two in November, one in May, and one in October.

He then goes on to list the following:

<u>Date of Lifespan</u>	<u>Intensity</u>	<u>Location</u>
1847, January 16	hurricane	entire Tanna
1847, March 2-11	Hurricane	southern Vanuatu
1848, February 1-15	severe hurricane	Erromango & Tanna, New Caledonia
1848, December 25	hurricane	near Vanuatu
1852, February 18-24	severe hurricane	Aneityum
1854, January 1	hurricane	East
1860, March 14	Hurricane	West of Vanuatu
1862, January 17-18	hurricane	ESE of Tanna
1867, February 27	Hurricane	West of Vanuatu
1867, March 7	hurricane	Futuna & Efate

<u>Date of Lifespan</u>	<u>Intensity</u>	<u>Location</u>
1868, January 30	hurricane	
1868, April 21	hurricane	
1868, May 17	hurricane	
1869, February 23	hurricane	
1871, March 17-22	hurricane	Futuna & Fiji
1872, February 17	hurricane	Futuna & elsewhere
1873, January 3-7	severe hurricane	Vanuatu & Fiji
1874, February 15-25	Severe hurricane	Vanuatu, New Caledonia then moved north
1874, October 2	hurricane	
1878, January 9	hurricane	Sandwich island (off southern Malekula?)
1879, January 9-10	hurricane	
1880, January 21-26	severe hurricane	Vanuatu & New Caledonia
1889, March 16	Hurricane	West of Vanuatu
1890, January 2	Hurricane	passed between Vanuatu & New Caledonia
1891, February 10-11	hurricane	crossed southern Vanuatu, moved northeast
1891, March 9-12	hurricane	Vanuatu & Solomon Islands
1892, February 14-18	hurricane	did considerable damage
1893, February 17	severe hurricane	storm moved west over Futuna
1893, March 5	hurricane	Epi and elsewhere
1903, March 3-6	hurricane	West from Santo
1907, April 11	hurricane	very severe near Futuna
1910, March 25	hurricane	crossed Vanuatu from Fiji
1916, January 8-9	severe hurricane	western Vanuatu then New Caledonia
1918, November 11	severe hurricane	Tonga (Tongoa?) region
1921, November 23	cyclone	Luganville, Canal Segond (between Luganville & Aore Island), moved southeast
1922, February 25-26	hurricane	general
1922, December 17	hurricane	general
1923, February 13-14	hurricane	
1928, February		
1932, February & April		
1933, April		
1936, January		

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At that time of writing (February 1991) definitions of the terms 'hurricane' and 'severe hurricane' as used by Visher are not known. It is unlikely that they will be akin to modern day (see below) terminology. It is probable that 'hurricane' relates to present-day 'gale force winds' and 'severe hurricane' to 'storm and/or hurricane force winds.'

In the following descriptions of cyclones the terms “minor”, “moderate”, and “severe” do not refer to the absolute intensity of the storm but, rather, to the magnitude of its impact on the island group concerned. These assessments are very subjective. They are strongly influenced by the amount of publicity given to the storm, by the chance that a meteorological observing station did or did not lie directly in the path of the storm, and by the existence or not of detailed reports from the masters of ships unfortunate enough to encounter the cyclone. Publicity is, of course, influenced by the area affected; heavy damage in a large town or village naturally attracts more attention than the destruction of coconut and banana plantations in sparsely populated areas. Any deductions concerning the frequency of severe storms certainly in the earlier years must be extremely tentative.

The advent of the use of meteorological satellites – from about the mid-1960s – really enabled meteorologists to detect all cyclonic activity in the region, particularly over the sea areas. The increase in reported cyclones from this time is due rather to the use of these satellites rather than an actual growth in their formation. It is interesting though to note that Visher remarks:

*"..... New Hebrides [Vanuatu], during the 26 years, 1867-93, 22 hurricanes are reported, but there is a gap of eight years with no record. On this basis it appears that somewhat more than one hurricane is to be expected annually. But since two storms a year have been recorded in many years, and as the island groups of similar size to the east and west have averages of two or more a year, it seems reasonable to surmise that an averages of nearly two storms may be expected to affect some part of New Hebrides annually."*

## Definitions

The following definitions are used through this publication.

<b><i>Gale Force Wind</i></b>	Average surface wind speed of <b>34 to 47 knots</b> (63 to 87 km per hour or wind force of 8 or 9 in the Beaufort Scale).
<b><i>Storm Force Wind</i></b>	Average surface wind of <b>48 to 63 knots</b> (88 to 17 km hour, Beaufort Force 10 or 11)
<b><i>Hurricane Force Wind</i></b>	Average surface wind of <b>64 knots</b> (118 km per hour, Beaufort Force 12) or more
<b><i>Tropical Cyclone</i></b>	A non-frontal cyclone of synoptic scale developing over tropical waters and having a definite organized wind circulation with average wind of 34 knots (63 km per hour) or more surrounding the centre
<b><i>Tropical depression</i></b>	A tropical disturbance in which the central position can be identified and the average wind surrounding the centre is below gale force.

## History of Tropical Cyclones in Vanuatu from 1940.

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<sup>1</sup> WMO/TD – No.292, *Tropical Cyclone Operational plan for the South Pacific and South-East India Ocean*, World Meteorological Organization, Geneva, 1989

No.	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
1	Gale	25 - 29 December 1939	Commenced it's life as a cyclone in extreme northeast of Vanuatu sea area and then moved SE. <i>No damage</i>
2	Hurricane	4 – 17 February 1940	Southwestward through central Vanuatu – <i>Severe</i> Within the space of 12 days two hurricanes swept through the centre of the New Hebrides. Both came from the northeast having developed to the west of the Ellice islands. The belt of destructive hurricane force winds appears to have very narrow in both cases.  On February several small islands just north of Efate, including Mataso, Nguna and Lelepa, bore the brunt of the storm. As many as 10 Missions churches and many island houses were destroyed. All citrus and breadfruit trees on these islands and a large proportion of the coconut trees were uprooted.
3	Hurricane	14 - 23 February 1940	Southwestward over central Vanuatu – <i>Severe</i> The second hurricane went through the Group on 19 February n a broadly similar track devastating the islands of Tongoa and Emai just south of Epi. A trader on Tongoa described the storm vividly. The experience was so shattering that he thought it must be the worst in Pacific history. It was certainly the worst in that particular area since 1932.  The trader's store was shattered in the first onslaught, and then, after the passage of the eye of the storm in the early hours of the 19 <sup>th</sup> , the wind returned with even greater violence and his home collapsed. His barometer indicated a fall of about 40 mb in nine hours (the actual readings quoted are improbable). Devastation on Tongoa was almost complete.
4	?	1 – 7 February 1941	Southwestward through the Banks Islands – <i>Minor damage</i>
5	?	16 - 26 February 1941	Passed between Aneityum and Matthews & Hunter Islands. <i>No damage</i>
6	?	25 Feb – 8 Mar 1942	Southwestward over southern Vanuatu passing between Tanna and Aneityum. Very near to Futuna – <i>Unknown damage</i>
7	?	4 – 6 February 1944	Very rapidly southwestward through central Vanuatu – <i>Unknown damage</i>

No.	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
8	Storm	11 – 14 January 1947	<p>Southwestward towards Vanuatu but turned south just east of the southern islands – <i>Minor damage</i></p> <p>This cyclone was first detected northwest of Rotuma on 11 January. It headed towards Vanuatu but fortunately began to re-curve and missed the Northern Islands passing within 50km of Tanna and Aneityum, moving Southsoutheast.</p> <p>Strong winds and heavy rain were all that the Southern New Hebrides had to endure, and no significant damage was reported. But, about 150 km southsoutheast of Aneityum, the 10,000 ton SS. "Waitomo" came very close to the centre of the hurricane. Early on the 14<sup>th</sup>, just after midnight, the ship's log recorded wind SSE force 10 to 11; torrential rain; visibility 200 meters; pressure 966 mb; vessel shipping heavy spray, and rolling and pitching violently. The tarpaulin on No. 5 hatch ripped, drums and cases on deck and in the holds broke loose, two lifeboats on the starboard side were badly damaged, and two crew members needing medical attention in Lautoka for minor injuries received during the buffeting.'</p>
9	?	21 – 30 January 1948	<p>Southwestward through northern Vanuatu – <i>Moderate damage</i></p> <p>Like the hurricanes of February 1940 this cyclone began in the neighbourhood of the Ellice Islands and moved Southwestward. This one, however, went through the New Hebrides somewhat further north. The chief target was the island of Obe, East of Santo, which was struck on the afternoon of 24 January.</p> <p>The storm also did considerable damage in Santo itself, where many of the old army huts left by the US Army were damaged, and in Malekula. A considerable number of mango and other trees were blown down.</p>
10	?	17 – 24 January 1949	<p>Southwestward towards Vanuatu but re-curved to the Southeast, East of the group. Probably not closer than 100 km to any island in the group – <i>Minor damage</i></p>
11	?	24 – 27 January 1949	<p>Southwestward through Central Vanuatu – short lived. No reports of winds in excess of gale force – <i>Minor damage</i></p>

No.	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
12	Hurricane	19Dec 1951–1Jan 1952	<p>Southwestward through central Vanuatu – <i>Severe damage</i></p> <p>The first cyclone of this season developed west of the Ellice Island about 19 December and moved rather slowly southwest. On the 25<sup>th</sup> it passed through the New Hebrides between Luganville and Vila. Although the distance between them is only about 280km neither place experienced worse than Gale Force winds.</p> <p>But on Epi and Ambrym the Hurricane destroyed all villages and plantations in its path. Malekula also suffered. More than 100 people were killed, half of them in a landslide on Epi. Six small vessels were sunk and three others disappeared. At least 15,000 coconut trees on Epi and Malekula were destroyed and the loss to the copra trade was put at over \$150,000. Damage to Mission and plantation buildings on Ambrym was flooding resulting from streams being blocked by fallen trees.</p>
13	Gale	13 – 20 February 1954	<p>West southwest through Banks Islands. Gales in Santo; Port Patterson reported pressure 983mb – <i>Minor damage</i></p>
14	Gale	2 – 13 January 1955	<p><i>Eastsoutheast through the Banks Islands – Minor damage</i></p>
15	Storm	26Feb – 7Mar 1955	<p>West southwest through Southern Vanuatu – <i>Minor to Moderate</i></p> <p>Towards the end of February a tropical cyclone developed northwest of Rotuma. Initially it moved to the Southsoutheast but soon turned westward and later to the Westsouthwest. Force 11 winds were reported and, at one station, pressure below 975mb. The storm continued over New Caledonia and across the Coral Sea to the Queensland coast which it reached on 7 March.</p> <p>There is little information concerning damage in the New Hebrides but, at Vila where the wind did not reach Hurricane Force, there was considerable damage to coconut plantations and some rainwater damage. A garage at the meteorological station was destroyed and an observation tower was rendered unsafe.</p>
16	Gale	24 – 29 February 1956	<p>Westsouthwest passing just to the south of Vanuatu – Probably <i>Minor damage</i></p>

No.	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
17	AMANDA (Hurricane)	20 – 31 December 1959	<p>The cyclone which had been moving slowly southsoutheast towards New Caledonia suddenly changed direction to Eastnortheast, accelerated, and in the early hours of 29 December passed just to the south of Vila where the barometer fell to 975mb and NW to W winds of Hurricane Force blew for two or three hours.</p> <p>Damage was reported from most of the southern islands of the New Hebrides, from Epi to Aneityum, but no lives were lost. The southern part of Efate was the most severely affected, and in Port Vila, the cost of repairing and replacing Condominium property, including schools and a hospital, was expected to be about A\$250,000, while the total was thought to be of the order of A\$1,000,000. Copra production in the southern islands of the group was expected to be halved in 1960. (In fact, 24,000 tonnes of copra were exported from the Condominium in 1960, compared with 35,000 tonnes in 1959).</p>
18	BRIGITTE (Storm)	28Dec 1959-4Jan 1960	<p>Eastward through Central Vanuatu – <i>Minor damage</i></p> <p>A second hurricane passed through the New Hebrides on the evening of 1 January 1960. It came from the Coral Sea, moving Eastward to the North of New Caledonia, passed to the north of Efate, and then moved to the southeast well to the south of Fiji.</p> <p>Although the wind at Vila was estimated as force 10 for a time it did not, there or elsewhere in the islands, cause serious additional damage.</p>
19	Gale	16 – 18 January 1963	<p>Eastward through southern part of Group in developing stage. No significant damage – <i>Minor damage</i></p>
20	Gale	1 – 6 March 1963	<p>Southeastward between Vanuatu and Loyalty islands. Passed not far to the south of Aneityum. No damage reported – <i>Minor damage</i></p>
21	Storm	15 – 25 November 1963	<p>South eastward towards Vanuatu but re-curved to the southeast of the group. <i>Moderate damage</i></p> <p>Like January 1947 this storm moved towards the northern islands from the northeast but re-curved gradually to the southeastward keeping just clear of the Group. Nevertheless, it was close enough between 18 and November to cause a considerable amount of damage on the eastern side of Pentecost, the South Malekula, Epi, Efate and Tanna</p>

No.	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
Storm (cont'd)	15 – 25 November 1963	The little island of Tongoa was once again one of the Storm's chief victims: one village on the eastern side was completely destroyed and less than half of the houses in the others were left standing.	
		Forari, the site of a manganese mine of the eastern side of Efate, also suffered heavily with damage to wharves and tug boats, by wave action, estimated at \$150,000.	
		The usual damage to coconut trees was expected to reduce copra production significantly for several years.	
22	EDITH (Storm)	19 – 25 February 1964	Southwestward through northern Vanuatu – <i>Minor damage</i> EDITH moved southwestward through northern New Hebrides on 21 February with gales and torrential rain. The storm then moved southward to the Loyalty Islands where, again, nothing worse than gales and heavy rain were reported. From the Loyalties EDITH moved rapidly eastsoutheast and filled southeast of Tonga. A ship near the centre on 24 February reported force 10 winds and a pressure of 988 mb.
23	HENRIETTA (Storm)	28Mar – 7Apr 1964	Southwestward through northern Vanuatu – <i>Moderate to Severe damage</i> Moving southwestward through the northern islands of the New Hebrides on 31 March HENRIETTA caused extensive damage to houses, schools and other buildings in the Banks Islands and in Santo which was said to have had its worst spell of bad weather for several years. Some small vessels loaded with copra from the outer islands had to jettison their cargoes.
24	AGNES (Gale)	1 – 8 February 1967	Westward through northern Vanuatu; hovered for 36 hours before moving southeastward to pass close to Aneityum – <i>Minor damage</i>
25	FLORENCE (Gale)	1 – 7 March 1968	Southeastward to south of the group. Passed over Aneityum which, along with Tanna, sustained some damage – <i>Minor damage</i>
26	BECKY (Hurricane)	11 – 15 December 1968	Rather erratically southeastward through central Vanuatu – <i>Moderate damage</i>

No.	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
BECKY (cont'd)	11 – 15 December 1968	BECKY developed north of the Solomons and moved over the islands on a rather erratic course on the 11 and 12 December. I then moved southeast passing through the New Hebrides on the 14 <sup>th</sup> , between Malekula and Efate. Considerable damage resulted particularly in Lamap (Malekula and in the Shepherd islands, south of Epi.	
		From the New Hebrides BECKY moved very rapidly southeastward, at more than 35 knots, and passed very close to the ship "Waimate" which reported an estimated wind speed of 90 knots and pressure of 971 mb at 1200 GMT on 14 December	
27	HORTENSE ?? (Gale)	17 – 20 February 1969	Westsouthwest through southern Vanuatu – <i>Minor damage</i>
28	DOLLY (Storm)	12 – 24 February 1970	Southeastward first, then eastward more quickly. DOLLY crossed Vanuatu on the 14 <sup>th</sup> near Erromango, becoming a Hurricane.
29	ROSIE (Storm)	30Dec 1970–4Jan 1971	Heavy rain over Vanuatu – <i>Minor damage</i>
30	URSULA (Storm)	3 – 15 December 1971	On 8 December, winds over 50 kt and a pressure of 989 mb were recorded on Malekula. 322 mm of rain fell in Port Vila – <i>Minor damage</i>
31	CARLOTTA (Hurricane)	7 – 26 January 1972	On the 18 <sup>th</sup> , CARLOTTA became a Hurricane Force cyclone between Tanna and Aneityum. The pressure trace went below the limits of the chart (950mb). The estimated pressure was about 945 mb with winds over 90 kt. <i>Four people died.</i>
32	WENDY (Hurricane)	29Jan – 9Feb 1972	Named as a Hurricane on 1 February, WENDY completely destroyed the Meteorological station in Sola just after 0500 GMT on 2 February as it passed between Vanua Lava and Gaua in the Banks Islands. The estimated wind (by a Government ship in the area) on 2 February was 120 to 150 kt with an estimate pressure of 910 mb.
	33	11 – 20 April 1972	Named as a hurricane on 13 April GAIL crossed Vanuatu near Efate on the 17 <sup>th</sup> . At 1200 on 17 <sup>th</sup> a wind of 64 kt and a pressure of 996 mb was recorded Vila. The centre of the cyclone passed North Efate and through the Shepherd islands where very much damage was done. Minimum pressure on Tongoa was 948 mb with 942 mb recorded on Emae.

No.	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
34	DIANA (Hurricane)	8 – 18 December 1972	Named DIANA on the 8 <sup>th</sup> . During the period 8-13 December there was heavy rainfall over the north of Vanuatu, but no notable damage. Estimate pressure was 975 mb with a mean wind of 65 kt.
35	MONICA (Gale)	17 – 20 January 1974	With a minimum pressure of only 997.8 mb and maximum wind of 35 kt at Aneityum (0300 GMT on 18 January) MONICA was probably only a just a Tropical Cyclone. <i>No special damage was reported.</i>
36	PAM (Hurricane)	31Jan – 8 Feb 1974	This Hurricane caused heavy rainfall over the whole of Vanuatu between 1 and 8 February – 237.2mm Santo, 170.8 mm Efate, 166.1 mm Tanna. Minimum pressure recorded (at Efate 0800 local time on 3 February) was 968.6 mb with a maximum wind of 80 kt recorded at Tanna at the same time.
37	FLORA (Storm)	13 – 21 January 1975	As FLORA crossed over Tanna (at 0830 DMT on 16 January) a minimum pressure of 979.5 mb and a maximum wind of 45 kt was recorded.
38	ALISON (Hurricane)	3 – 12 March 1975	Heavy rainfall recorded over the whole of Vanuatu. Principal damage in Malekula and Emae. Some people stranded in Emae, Paama, Tongariki and Efate. Minimum recorded pressures – Lamap: 988.8mb (5 <sup>th</sup> at 1130 Local time; Emae: 984.0mb (5 <sup>th</sup> at 0830 local time. Maximum winds – 65 kt at Emae and 50 kt at Lamap.
39	BETTY (Hurricane)	31Mar - 12Apr 1975	Minimum recorded pressure: 995.3mb on 1 April in both Pekoa and Sola.
40	DAVID (Hurricane)	10 – 21 January 1976	Hurricane DAVID crossed Vanuatu (1800 GMT on 13 January) over the north of Malekula. Minimum recorded pressures were: 986.1mb (14 <sup>th</sup> at 1500 GMT) Pekoa; 987.4mb (14 <sup>th</sup> at 1620 GMT) Lamap; 988.9mb (15 <sup>th</sup> at 0500 GMT) Port Vila with maximum winds of 50 kt (16 <sup>th</sup> at 0000 GMT) Lamap and 49 kt (15 <sup>th</sup> at 0005 GMT) at Tanna.
41	ELSA (Storm)	20 – 26 January 1976	A minimum pressure of 991.5 mb was recorded (22 <sup>nd</sup> at 0445 GMT) at Pekoa and maximum winds of 45kt being experienced at Tanna (23 <sup>rd</sup> at 0050GMT) and Aneityum 22 <sup>nd</sup> at 1200 GMT). <i>No special damage reported</i>

No.	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
42	HOPE (Gale)	10 – 19 March 1976	Again probably only just a Tropical Cyclone. Minimum recorded pressure: 998.7 at Pekoia on 10 <sup>th</sup> with estimated gale force winds over the sea.
43	IAN (JAN) Gale	16 – 19 April 1976	Similar to HOPE with maximum wind of 39 kt being measured at TANNA on 17 April with a minimum pressure of 997.3 mb.
44	MARION (Hurricane)	12 to 21 January 1977	MARION crossed Vanuatu near Luganville on 12 January between 2200 and 200 GMT and then moved some 70 to the west, reaching south of Aneityum on the 15 <sup>th</sup> where a minimum pressure of 979.0 mb and a maximum wind of 66 kt were recorded.
45	JUNE (Hurricane)	17 to 25 January 1977	Hurricane JUNE crossed near the north of Efate on 20 January between 1100 and 1130 GMT. A minimum pressure of 977.6 mb was reported at Bauerfield (1100 GMT on 20 <sup>th</sup> ) with a maximum wind of 41 kt (gusts to 62 kt) at 1200 GMT on the same day.
46	NORMAN (Storm)	9 – 24 March 1977	The centre of NORMAN crossed Vanuatu to the south of Erromango between 0900 GMT and 1000 GMT on 16 March. The minimum pressure recorded was at Port Vila (987.0mb on 16 <sup>th</sup> ) with maximum winds of 45 kt being experienced at both Tanna and Aneityum.
47	BOB (hurricane)	31Dec 1977-12Jan 1978	Hurricane BOB passed within 50 nautical miles to the southeast of the night of Aneityum during the 5 January where a minimum pressure of 975.2 mb was recorded together with a maximum wind of 65kt. <i>Damage was reported in the central and southern islands.</i>
48	GORDON (Hurricane)	3 – 12 January 1979	Hurricane GORDON crossed the north of Vanuatu over the Torres islands. Santo reported the lowest pressure (991.0 mb on 6 <sup>th</sup> ) with a wind of 51 kt on the 7 <sup>th</sup> ). <i>Severe damage in occurred in the Bank islands, Santo and Malekula.</i>
49	HENRY (Storm)	29 Jan – 5 Feb 1979	Had little affect to land areas in Vanuatu. The minimum recorded pressure was at Aneityum (991.7mb on 2 February) and a reported wind of 45 knots.
50	JUDITH (Storm)	3 – 6 February 1979	Similar to HENRY – little affect. Minimum pressure (at Lamap) 999.4 mb on 4 <sup>th</sup> , also with a reported wind of 45 knots.

No.	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
51	NINA (Gale)	31 Mar – 3 Apr 1979	NINA passed to the east, then to the south of Vanuatu. Aneityum recorded a minimum pressure of only 1001.4mb a mean wind of 25 knots. <i>No particular damage reported.</i>
52	RAE (Gale)	2 – 5 February 1980	A minimum pressure of 999.0 mb was measured at Sola. There were not reports of any significant winds.
53	CLIFF (Hurricane)	8 – 15 February 1981	CLIFF crossed to the southwest of Pentecost and passed close to Port Vila. Lamap reported both the minimum pressure (987.5mb) and the mean maximum wind (30 knots) on the 11 <sup>th</sup> .
54	GYAN (Hurricane)	18 – 29 December 1981	GYAN passed to the north of Vanuatu. The maximum force developed after leaving the Vanuatu area.
55	KINA (Gale)	6 – 12 November 1982	KINA crossed Efate on 16 <sup>th</sup> November – <i>No special damage reported</i>
56	BETTY (BETI) Hurricane	1 – 6 February 1984	BETTY passed between New Caledonia and Vanuatu – <i>Little or no serious damage reported.</i>
57	ERIC (Hurricane)	13 – 20 January 1985	Between 14 and 21 January three Hurricane Force cyclones affected the south west pacific. Fiji and Vanuatu were particularly affected by all three. On 17/18 January a minimum pressure of 987.9mb and winds gusting to over 85 knots were experienced on Santo. ERIC and NIGEL followed almost identical easterly tracks across the south of Santo within 48 hours of each other. ODETTE passed further to the south over Erromango.  <i>Considerable damage was inflicted to most of the northern islands and to Erromango</i>
58	NIGEL (Hurricane)	14 – 28 January 1985	
59	ODETTE (Hurricane)	16 – 21 January 1985	
60	GAVIN (Storm)	2 – 8 March 1985	GAVIN was named as a tropical cyclone some 150 miles east of Efate but quickly moved away from Vanuatu southeastwards reaching storm force winds over the sea well south of Fiji. – <i>No damage reported</i>
61	HINA (Hurricane)	10 – 20 March 1985	HINA marginally affected Vanuatu while its winds were still of gale force. A maximum wind of 32 knots being reported on the 12 <sup>th</sup> at Santo whilst a minimum pressure of 994.6mb reported at Sola on the 15 <sup>th</sup> .

No.	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
62	KELI (Storm)	8 – 14 February 1986	KELI was named at 2200 GMT on 8 February some 60nm southwest of Eafate. It passed between Tanna and Aneityum and then reached marginal storm force intensity (50 knots sustained wind speed) over the sea. <i>There was minor damage to crops and some flooding which caused a bridge to be washed away.</i>
63	ALFRED (Storm)	3 – 11 March 1986	Tropical Cyclone ALFRED originated in the Coral Sea before reaching marginal storm intensity about 300 miles westsouthwest of Port Vila around 2100 GMT on 7 March. It passed south of Aneityum. <i>Minor damage was caused to food crops (bananas) on both Tanna and Aneityum.</i>
64	LUSI (Gale)	2 – 11 March 1986	Affected Tanna and Aneityum. <i>No significant damage was reported</i>
65	OSEA (Storm)	21 – 25 November 1986	Tropical Cyclone OSEA formed about 350 miles northnortheast of Port Vila on 21 November. It moved on a southerly track – parallel to Vanuatu – spending most of its time over the sea. <i>No significant damage was reported.</i>
66	PATSY (Storm)	12 – 20 December 1986	Tropical Cyclone PATSY developed about 120 miles northeast of Santo on 14 December. It passed through the Banks islands and northwest Santo before hitting New Caledonia. Although reaching storm intensity (55 knots) only minor damage to houses and root crops were reported from Santo. Banana plantations seemed to have suffered considerable damage due to the strong winds and heavy rain
67	UMA (Hurricane)	3 – 8 February 1987	Hurricane UMA was the most destructive cyclone ever to have affected the capital of Vanuatu – Port Vila. It originated in the southern part of the Solomons group, attaining hurricane intensity just west of Santo on 6 February. At its peak intensity UMA is estimated to have attained mean wind speeds of 90 knots with gusts up to 120 knots. It passed within about 30 miles of Port Vila, where a pressure 957 mb was recorded. Efate was battered by storm and hurricane winds for about 7 hours.  UMA left 50 people dead and close to 15,000 people homeless. Considerable damage was inflicted to building, shipping, infrastructure and crops by wind, torrential rain and storm surge. The associated heavy rains also did much damage to the island of Tanna where roads and bridges were washed away. Out of the 50 or so people, a large number died due to the sinking three inter-island vessels. More than 40 other boats were lost in Vila harbour. Massive damage was done to restaurants, shops and coastal structures. Vila was declared a disaster area. The total damage to the country was estimated to be US\$150 million.

No.	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
68	VELI (Gale)	6 – 11 February 1987	UMA was followed closely by another tropical cyclone – VELI which crossed Vanuatu north of Santo. Fortunately VELI was a very fast moving system and only developed gale force winds, but with considered rainfall – Damage was minimal – <i>or went unreported</i> – Vanuatu being much more concerned with the effects of UMA at this time.
69	YALI (Hurricane)	8 – 11 March 1987	YALI developed about 300 miles northwest of Vanuatu on 5 March and moved southwards. Although it reached peak intensity of about 65 knots it did not pass close any inhabited islands – <i>There were no reports of damage.</i>
70	ANNE (Hurricane)	7 – 14 January 1988	<p>ANNE ranks as one of the most intense cyclones in recent years in the South West Pacific. It originated just east of Tuvalu and moved to the southwest. While still moving steadily and nearing its peak intensity it passed over the Torres and Banks islands and northwest Santo before changing to a more southerly direction and to New Caledonia. Its peak intensity was estimated to have maximum winds at its centre of 100 knots.</p> <p>ANNE was the fourth major cyclone to have affected Vanuatu within four years (ERIC, NIGEL and UMA). It caused severe damage in the Torres islands almost the entire population lost their houses as well as their cash crops. Damage to Ureparapara and northwest Santo was equally severe. Flooding, landslides and storm surge augmented the damage to property and crops. In all approximately 1,600 were made homeless and a further 1,600 badly affected. Total relive and reconstruction was estimated as US\$1.2 to 1.5 million.</p> <p><i>Although two deaths were reported from New Caledonia there were no fatalities in Vanuatu.</i></p>
71	BOLA (Hurricane)	25Feb – 4 Mar 1988	<p>Like UMA, tropical cyclone BOLA is well remembered in Vanuatu because of its very erratic track (it did two clockwise loops, one north of Efate, one south); and its rather long life span (it maintained storm intensity close to Efate for 4 days). It was the second cyclone of the 1987/88 season and the fifth major cyclone since 1985 to have hit the Republic of Vanuatu.</p> <p>Its impact was mostly on the Shepherds islands, Epi, Paama and the Southern parts of Malekula and Ambrym. At least 3,000 households and more than 15,000 people were affected. There was widespread damage to local housing and local government offices. Heavy rain caused landslides and some roads and bridges were washed away. The cost of reconstruction was put at US\$.5 million. Rain affected many local gardens and sea spray and storm surge had an adverse affect on crops, particularly copra plantations. A couple of ships went aground (later re-floated) and one barge carrying building materials from Fiji for a new wharf in Malekula sand (estimated loss AU\$4 million).</p> <p><i>There was again no loss of life reported.</i></p>

No	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
72	DOVI (Storm)	8 – 15 April 1988	DOVI was the last of the four cyclones of the 1987/1988 T/C Season and third to affect Vanuatu. Although of moderate strength DOVI did not cause any significant damage since it spent most of its life over the sea to the west of Vanuatu. It could be argued that ANNE and BOLA had already caused such extensive damage to crops and structures in Vanuatu that DOVI's effects went unnoticed.
73	ESETA (Storm)	16 – 25 December 1988	ESETA was a relatively minor cyclone with a very short life span. It did produce considerable rainfall throughout most of Vanuatu whilst in its formative tropical depression stage. <i>There were no reports of damage to property or crops.</i>
74	DELILAH (Storm)	1 – 4 January 1989	Tropical cyclone DELILAH formed in the Coral Sea on 1 January. It lasted about four days, initially moving towards Vanuatu, but happily curving southeast to pass between New Caledonia and the Loyalty islands. At one stage winds were estimated to have reach 60 knots with gusts to 80 knots.
75	HARRY (Hurricane)	7 – 19 February 1989	HARRY evolved from a depression about 400 miles west of Port Vila. At one time it appeared to be threatening Vanuatu but it fortunately reversed its track, passed over the northern tip of New Caledonia and moved towards Australia. Although HARRY was one of the major cyclones of the 1988/1989 season and maintained hurricane intensity for a long period of time there were not reports of damage to property or crops in Vanuatu but some damage was reported from New Caledonia.
76	IVY (Hurricane)	23Feb – 2Mar 1989	Tropical cyclone IVY formed near northern Vanuatu on 23 February. It moved away for a while but later re-curved to the southeast and passed very close to Aneityum with Hurricane intensity. Like DELILAH and HARRY it initially posed a serious threat to the whole of Vanuatu but fortunately only affected the southernmost islands before reaching peak intensity over the open waters to the southeast to the Group. <i>IVY caused considerable damage to the island of Aneityum. There was substantial damage to food crops, houses, tourist facilities and forestry plantations. Flooding and landslides augmented the damage done by high winds, but fortunately there were no casualties.</i>
77	LILY (Hurricane)	6 – 12 April 1989	Tropical cyclone LILI started life in the Coral Sea and initially moved southeastwards towards Vanuatu. As it reached hurricane intensity (mean winds of 75 knots) it fortunately curved to the south some 130 miles westnorthwest of Santo. It continued southwards later causing havoc over New Caledonia. LILI originally posed a threat to Vanuatu but in turning south as it intensified only gales force winds were experienced in western sea areas. <i>There were no reports of serious damage</i>

No	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
78	LISA (Storm)	19 – 13 May 1991	<p>LISA began as a tropical depression in the Solomon islands. The depression moved south and intensified and was named as a Cyclone on 10 May at ... UTC. Under the influence of an upper trough LISA began to move SE. It weakened on 12 May – north of New Caledonia – and passed near to Aneityum during the night of 12 May as a marginal tropical cyclone. Pressures did not get below 1004 hPa at any station, reported winds only reaching 22 knots at Aneityum. Little or no rainfall was measured during LISA's passage.</p> <p><i>There were no reports of damage.</i></p>
79	TIA (Hurricane)	16 – 19 November 1991	<p>The first cyclone on the 1991/1992 season began as a depression in the Solomon islands to the north of Vanuatu. It first started moving eastwards and was named tropical cyclone TIA at 160000 UTC. Some 24 hours later it turned south and headed towards Vanuatu. AT 171600 UTC the newly installed automatic weather station at Anuta island (Solomon islands – 11.5°S 169.9°E) reported a pressure of 987.9 hPa (mean wind 090°65 kt, max gust 83 kt). Later the AWS reported a mean wind of 64kt with a gust of 93 kt).</p> <p>TIA moved SSW then S down the eastern side of Vanuatu later turning SE – away from Vanuatu – as it passed the Shepherds. Gales force winds were experienced in the Banks, Maewo and Pentecost.</p> <p><i>There were some reports from the northern islands of minor crop damage (Banks), houses blown over (Mota) and one man hurt by flying corrugated iron (Mota). Slight damage to fruit trees Maewo, Ambae, Epi and Tongoa.</i></p>
80	BETSY (Hurricane)	7 – 11 January 1992	<p>The tropical low that became Betsy initially seemed to move slowly west or southeast, but after being named Betsy early on the 7<sup>th</sup> it moved southeasterly, then southerly, before re-curving abruptly southwest overnight on the 8<sup>th</sup>. Betsy passed close to the islands of Ambrym and Epi before passing over the southern tip of Malekula during the afternoon of the 9<sup>th</sup>.</p> <p>Betsy was a major cyclone and caused extensive damage to crops and houses in Ambrym, Epi, the Shepherds, parts of Efate and southern Malekula. The highest winds were recorded at Pekoa, and on a 10 minute mean scale were about 64 knots with gusts in excess of 90 knots (the highest the instrument could record). Pekoa also recorded the lowest pressure of 958.7 hPa. A large relief operation of food and medical supplies was carried out in the ensuing weeks. Storm force winds also reached Port Vila which suffered light to moderate damage.</p> <p>Maximum wind gust recorded was 78 knots at Bauerfield. The storm surge on NE Efate was the worst in living memory, probably 2 to 3 metres and wiped out sections of the WW2 built roads almost completely.</p> <p>The only fatality directly caused by Betsy was a small child killed by falling coconut.</p>

No	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
81	DAMAN (Storm)	15 – 16 February 1992	<p>Daman only affected Vanuatu for a brief period and was in the developing stages at that time. A report from a ship near the island of Ureparapara indicated that the centre moved over the island about midnight on the 15<sup>th</sup> causing winds up to 45 to 50 knots for about 15 to 20 minutes. The lowest pressure recorded by the ship was 985 hPa. It was known from satellite imagery that the circulation was very small and the position and timing fits in well with other known observations. The wind estimates are also reasonable, and would represent the upper limit considered likely.</p> <p><i>The damage caused by Daman was limited to crops and gardens in parts of the Banks and Torres.</i></p> <p>Whilst it was rather minimal, coming so soon after Betsy it did cause difficulties.</p> <p>After moving away to the southwest away from Vanuatu, Daman continued to intensify to hurricane strength, but also continued to move further away from the country.</p>
82	ESAU (Storm/Hurricane)	25-27 Feb, also 2-3 Mar 1992	<p>Esau proved to be a difficult cyclone to forecast because of its unusual track. As a deepening tropical depression it moved from the NE over Pentecost in the early hours of Wednesday 26<sup>th</sup>.</p>
83	FRAN (Hurricane)	8 – 10 March 1992	<p>Fran originated in the Fiji area and was already an intense cyclone when it crossed the date line, at which time it was approaching Vanuatu at the rapid speed of 15 knots. Fran posed a major threat to Efate and islands in the Tafea group, eventually passing about 15 miles north of Erromango and about 50 miles south of Port Vila in the late afternoon of the 9<sup>th</sup> March. Storm force winds were experienced in Efate, maximum mean 10 minute winds at Bauerfield 260/49 knots, gusts to 79 knots. Winds at Erromango estimated to be about 70 knot mean 10 minute winds. Lowest pressure recorded during Fran was at Bauerfield, 971 hPa.</p> <p>Over 200 mms of rain was experienced in most parts of Efate during the passage of Fran.</p> <p>Damage was widespread but variable to Efate. Places exposed to the south and west were worst hit, such as Pango village (outside Port Vila). There was some major damage to buildings in Port Vila, but in general most substantial swellings escaped major damage. If Fran had passed another 20 miles to the north, undoubtedly, the situation would have been much worse.</p>

No	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
84	INNES (Storm)	29 April – 1 May 1992	<p>Innes was the last cyclone of the year and proved to be of minimal intensity. Its effect on Vanuatu was limited to rain and strong winds in northern and central islands. No gales were reported.</p> <p>Innes developed rapidly at a time when consensus was the cyclone season was probably over. Initially Innes was located as a tropical depression 160 miles NW of Touma.</p> <p>Innes moved WSW until about 140 miles NE of Vanua Lava, then re-curving, through SW, SSW, and finally SE and accelerating away from the Vanuatu group during the 1 May. Innes encountered a strong upper level northerly which sheared the system as it approached and the Banks and Torres, both preventing further development of the system and making it more difficult to locate on satellite imagery. Innes did no significant damage to the country.</p>
85	PREMA (Hurricane)	29 – 30 March 1993	<p>Prema was a rapid developing and small but very intense cyclone with mean wins of about 100 knots very close to the centre. Prema developed as a cloud cluster well to the northeast of the country and moved southwest finally changing to move almost southwards as it passed to the northnorthwest of Efate. Prema moved very slowly from the evening of the 28<sup>th</sup> to the evening of the 29<sup>th</sup>, and moved through the Shepherds group on the evening of the 29<sup>th</sup>, causing massive devastation. On Tongoa it was almost complete devastation with a large percentage of the coconuts trees destroyed.</p> <p>Virtually all swellings on the islands were destroyed. Most dwellings were also destroyed on the islands just north of Efate. After moving across Tongoa, the eye of Prema moved southwards just west of Efate, passing approximately 20 miles west of Port Vila at about 4 am in the morning of the 30<sup>th</sup> March. Damage to western and northern Efate, including Hat Island and Lelepa was extensive. Damage to Vila was extensive, and in recent times only exceeded by UMA in 1987. Prema continued to move southwards passing well to the west of the islands in southern Vanuatu, before passing east of New Caledonia. Lowest pressure recorded during Prema was 979 hectopascals at Bauerfield shortly after 3 am on 30<sup>th</sup> March. The maximum wind gusts recorded at Buerfield during Prema were 80 knots, which is as high as the anemometer could record. Highest mean winds recorded were around 50 knots. However, the mast was damaged before or during the highest winds which were</p>

No	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
	PREMA – cont'd		Therefore not recorded properly. It is believed that maximum winds averaged 50 to 55 knots in most of Vila, reaching as high as 60 to 65 knots in elevated exposed sites, where some gusts of 100 to 110 knots were likely. Amazingly, no lives were lost in Vila, and only a few people are believed to have perished in the worst affected islands.
86	REWA (Tropical Cyclone / Depression)	5 – 8 January 1994 Full life as a cyclone approx 29Dec 1993 –21Jan 1994	This system was distinguished for its incredible track and the length of its life cycle. It originally passed well north of the country as a developing cyclone and had no effect on Vanuatu. Subsequently, about one week having affected islands of the extreme SE of PNG and then moving south well off the QLD Coast Rewa deepened to hurricane strength and re-curved to the east. It rapidly approached New Caledonia overnight on the 5 <sup>th</sup> January, where it slowed and weakened and then turned northwards as a tropical depression causing strong but probably not gale force winds to the Tafea Group on the 6 <sup>th</sup> , 7 <sup>th</sup> , and 8 <sup>th</sup> January. Still as strong a tropical depression it then moved to the northwest after passing close to Tanna and causing strong northwesterly winds over Efate on the 8 <sup>th</sup> and 9 <sup>th</sup> January. The centre passed about 70 miles southwest of Port Vila. Lowest pressure reported in Port Vila was about 1000 hPa. Heavy seas caused some damage to the foreshore in Port Vila Harbort. After this the track became complicated and prolonged but there was no further effect on Efate.
87	SARAH (Hurricane)	25 – 28 January 1994	Sarah started as a tropical depression just east of Vanuatu and moved to Central islands of the Group causing some minimal inconvenience for 20 <sup>th</sup> to 21 <sup>st</sup> January as it moved westwards through central islands of the group. It described a complex track to the west and northwest of the country over the next 3 days, forming into a cyclone on the 22 <sup>nd</sup> January and then began re-curing to the east or eastsoutheast on 25 <sup>th</sup> January by which time it had become a severe tropical cyclone (Hurricane) Eventually Sarah passed about 110 miles SSW of Efate, causing near gale force winds over much of Efate. Doubtless in exposed sites gales would have been experienced. A ship in Vila Harbour unofficially reported a 70 knots gust, but the highest official gust recorded in the MMO in Port Vila was 50 knots. Overall minimal damage was recorded in Efate. Storm force winds were recorded in Tanna and Aneityum where

No	Name of Cyclone (where given category)	Date of its lifespan	Damage Report
	SARA (cont'd)		there was damage to crops and some buildings. The most severe damage was to the wharf at Lenakel where the estimated cost of repairing the docking facility was of the order of US\$500,000. Even so, the effects of the cyclone on the Tafea were not considered to be major.
88	THEODORE (Hurricane)	26-27 February 1994	Theodore was an intense cyclone but only of average size. It accelerated to the southeast from a position approximately 300 miles south of Honiara on the 26 <sup>th</sup> February eventually passed between the New Caledonia mainly and the Loyalty islands. The zone of maximum winds is believed to have passed east of the mainland of New Caledonia. Strong squally northerly winds were experienced over much of the island chain during the 26 <sup>th</sup> and early on the 27 <sup>th</sup> . <i>No damage was reported.</i>
89	TOMAS (Hurricane)	22 – 25 March 1994	Tomas was detected as a westward moving tropical depression north of the Wallis islands on about 19 <sup>th</sup> March. It was named as a cyclone on the morning of the 23 <sup>rd</sup> March when the centre was about 270 miles eastnortheast of the Banks and it had begun to move in a southerly direction. Until about 6 am on the 24 <sup>th</sup> March Tomas moved in a southwest or SSW direction directly towards the islands chain, before suddenly and fortunately re-curving to the southeast and accelerating away from the country. Tomas was a large circulation and was intensifying rapidly just prior to and after re-curvature. Gales were reported on the eastern side of Efate by unofficial observers. Some damage was reported to coastal sea walls at Banana Bay on Efate due to very heavy seas, and the road for some distance was impassable over eastern Efate due to deposited sand.
90	USHA (Storm)	25 – 27 March 1994	Usha developed in the wake of cyclone Tomas. Although it was never a severe cyclone it did cause strong winds particularly over Ambrym, Epi, the Shepherds and Efate. After causing strong winds over Efate, approaching gale force on eastern Efate, Usha gradually curved to the SSE and moved close to Erromango and Tanna with minimal effect apart from strong to gale force winds. The rainfall produced by Usha was highly beneficial to most of the central and southern islands of the group. It relieved very low river levels and very low ground water levels resulting from the 3 <sup>rd</sup> year of low rainfall.

