

FIJI METEOROLOGICAL SERVICE

TROPICAL CYCLONE REPORT 96/9

TROPICAL CYCLONE IAN

17 - 19 April 1997

Issued by

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INTRODUCTION

Ian was the ninth tropical cyclone to occur in the area of responsibility of the Nadi Regional Specialised Meteorological Centre (RSMC) during the 1996/97 cyclone season.

It spent all of its lifetime over the oceans. Since the strongest maximum sustained winds during its lifetime was 45 knots¹ and it did not make any landfall, damage sustained was minimal.

HISTORY

For the first ten days of April, a trough persisted in the area extending from the Solomon Islands southwards along the Vanuatu archipelago. With the sea surface temperatures in the area well above 26°C, this was a good breeding place for depressions and as such there was often small low level circulations appearing along the trough during this time.

At 0600 UTC² on the 12th, a circulation was deduced from land station reports in the area between Santa Cruz and Rotuma. A depression was first analysed at 1800 UTC on the 13th to the east of Santa Cruz. As the depression moved east-southeast, it intensified very slowly. By the 15th, the depression was well organised with a structured cloud band associated with it. The depression then moved to the southeast at about 12 knots and was named **IAN** by Nadi RSMC at 0600 UTC on the 17th when it was about 160 miles³ to the southwest of Nadi.

As the upper sub-tropical ridge moved to the north it helped steer Ian to the southeast. Ian reached peak intensity around 1800 UTC on the 17th with 45 knot winds near its centre, gusts up to 55 knots and the lowest central pressure estimated at 987 hPa.

From 1200 UTC on the 18th, Ian moved rapidly to the east-southeast at about 15 knots. With increasing westerly shear and weakening feeder bands, Ian fell below tropical cyclone intensity around 0000 UTC on the 19th when it was east of the dateline and about 165 miles southeast of Tongatapu.

¹ 1 knot = 1.85 kilometres per hour = 0.51 metres per second.

² UTC = Universal Time Coordinate. All times UTC.

³ miles = nautical miles throughout this publication. 1 nautical miles = 1.85 kilometres.

WARNINGS AND ADVISORIES

Nadi RSMC had the primary responsibility for monitoring and issuing of marine, aviation and public warnings in relation to Ian during its entire lifespan.

Other Meteorological Centres such as Joint Typhoon Warning Centre in Guam, US Global Weather Centre, Brisbane Tropical Cyclone Warning Centre, Tontouta Meteo France and Honolulu were also issuing warnings and advisories.

Guidance for the warnings was provided by the global forecast centre in Bracknell, United Kingdom.

(i) International Marine Warnings issued by Nadi

The first international marine warning on the depression that was to become Ian was issued by Nadi RSMC at 0145 UTC on the 17th of April. At this time the depression (1000 hPa) was 170 miles west of Nadi and moving south-southeast at about 12 knots. Gale force winds were expected within 100 miles of the centre in the sector from east through south to southwest.

After the depression was named Ian at 0600 UTC on the 17th, subsequent gale warnings were issued every 6 hours thereafter as the system moved to the southeast. From the evening of the 18th, Ian showed signs of weakening. At 0000 UTC on the 19th, Ian was downgraded to a tropical depression when it was located 165 miles southeast of Tongatapu. The depression was now moving east at about 20 knots.

(ii) Tropical Disturbance Advisories issued by Nadi

Nadi issued 4 tropical disturbance advisories on Ian every 12 hours from 0800 UTC on the 17th of April.

Advisories were issued for general information to all national meteorological services within the region and beyond. They contained information on the location, movement and the intensity of the system plus the expected changes.

EFFECTS

Ian did not pass close to any landmass but most of the Fiji Group experienced strong and gusty winds with the highest gust of 49 knots recorded at Nadi Airport on the 17th.

The area of gales spread just short of Kadavu and Southern Lau. Since the maximum sustained winds was no more than 45 knots and the centre did not make any landfall, damage was minimal.

OPERATIONAL ASPECTS

During the tropical depression stage there was some confusion about the positioning of the system, mainly due to the poor organisation of the cloud mass.

On the whole, Ian was moving to the southeast at a relatively good pace. From the track, we can see that between 1200 and 1800 UTC on the 17th, Ian moved only for a short distance. During this stage, Guam and Washington relocated their centres about 120 miles to the northwest. It is also possible that Ian was making a loop during this time.

The naming of the tropical cyclone took place about 5 hours after the issuance of the first gale warning on the depression. This was mainly due to the poor organisation of the cloud band and the system was developing at a very rapid pace. The other major disadvantage was that the area of development scarcely had any reporting ships or land stations in the vicinity.

From the small sample of warnings issued, the verification statistics (see Appendix 1) show that forecast errors were slightly lower than persistence errors.

CONCLUSION

Ian was not an intense tropical cyclone in never reaching storm force intensity, and was also short-lived. Ian did not come close enough to land to cause any significant damage. At all stages of its lifetime, Ian was moving to the southeast at about 10 to 15 knots.

REFERENCES

1. MONTHLY WEATHER SUMMARY FOR FIJI - April 1997, Fiji Meteorological Service.
 2. CYCLONE TROPICAL "IAN", 16-20th April, Meteo France.
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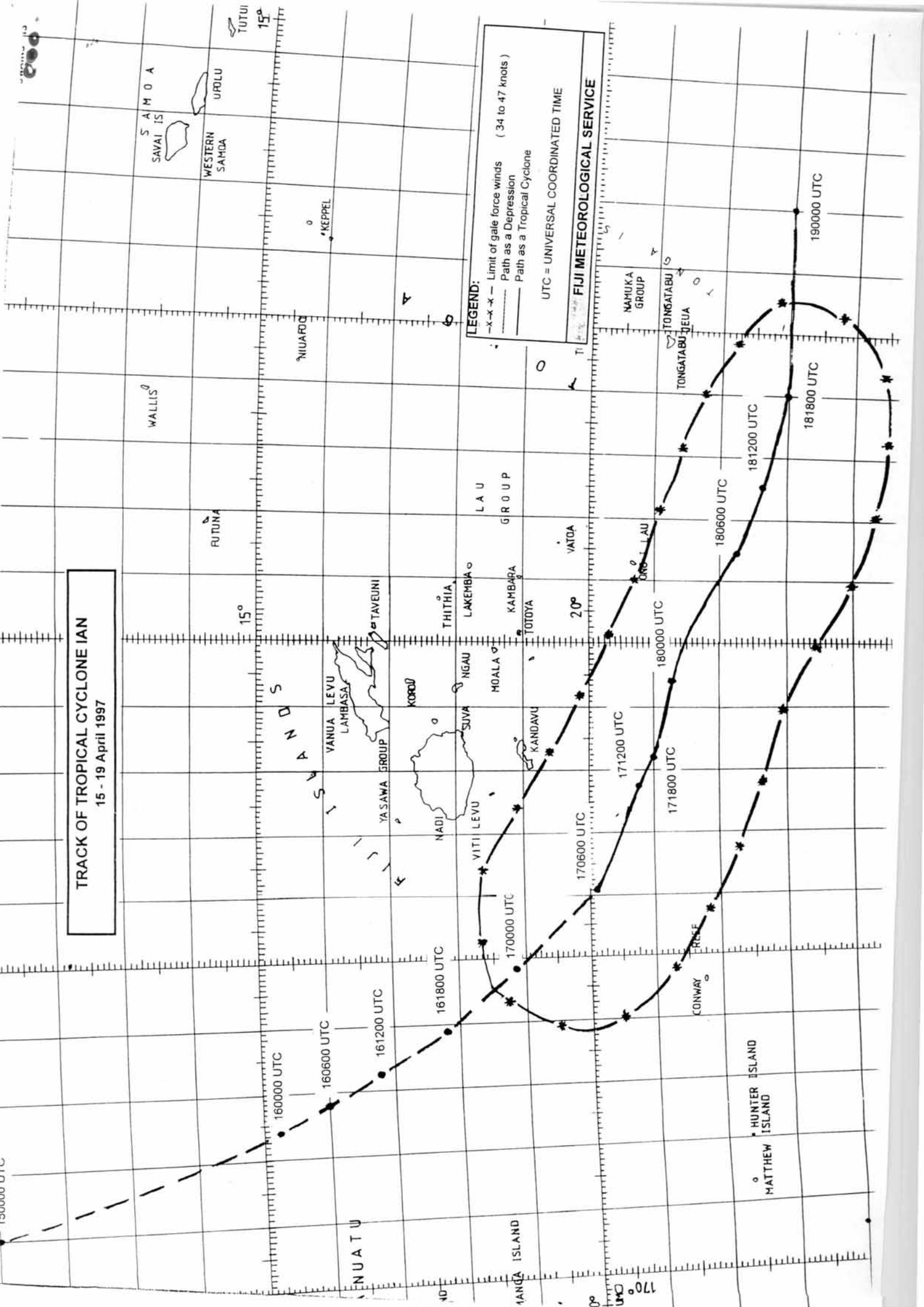
VERIFICATION STATISTICS

Position forecast verification statistics are shown in Table 1 for Ian. For comparison, verification statistics are compared with forecasts based on a simplistic track movement over the previous 12 or 24 hours (known as persistence forecasts). The forecasts are generally perceived to be of some use or skill if they have smaller errors than persistence forecasts.

Table 1. Verification statistics for Tropical Cyclone Ian

Forecast Period	Number of warnings	Forecast error (km)	Persistence error (km)
0 hr	9	13	-
12 hr	5	134	153
24 hr	1	175	206

TRACK OF TROPICAL CYCLONE IAN
15 - 19 April 1997



LEGEND:

- x-x-x- Limit of gale force winds (34 to 47 knots)
- Path as a Depression
- Path as a Tropical Cyclone

UTC = UNIVERSAL COORDINATED TIME

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