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REPORT ON CYCLONE " JASON "
August 1987

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Report on Cyclone 'Jason'

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**REPORT
ON
CYCLONE "JASON"**

**Beach Protection Authority
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REPORT ON CYCLONE "JASON"

1.0 INTRODUCTION

Tropical cyclone "Jason" formed in the Gulf of Carpentaria on February 6, 1987 and moved in a westerly direction crossing the north-eastern part of Arnhem Land on February 9. It moved out over the western Gulf and reintensified north of Groote Eylandt on February 11 with a central pressure of 994 hectopascals. The cyclone then tracked in a south-easterly direction and continued to intensify with the central pressure dropping to 970 hectopascals on February 12. The cyclone eventually crossed the coast 40 kilometres north-east of Burketown on February 13 at a time of 1500 hours, after which it degenerated into a rain depression.

The track and central pressure details of the cyclone are shown on Figure 2. Maximum winds near the centre of the cyclone were estimated to be 180 kilometres per hour when the central pressure was the lowest.

Initial calculations of the potential storm surge at Karumba predicted a storm surge of approximately 5 metres. Based on the advice received from the Bureau of Meteorology (Brisbane) on the cyclone's movements, it was expected that the peak surge would occur at or near the time of high tide (2000 hours) which would cause extensive flooding of Karumba.

Fortunately, the forward speed of the cyclone increased and its direction altered to a more southerly track. This had the effect of causing the time of landfall to occur earlier than the time of high tide while the position of landfall was closer to Burketown decreasing the extent of the storm surge at Karumba. Additionally, the cyclone was not as intense as expected and this resulted in a smaller cyclone-generated storm surge.

2.0 DATA RECORDING

The Beach Protection Authority's data recording network in the region provided the following information during the course of cyclone "Jason".

2.1 Storm Surge Recorders

Tide level data was obtained during the cyclone from the Authority's storm surge recorders located at Karumba and Weipa using the telephone interrogation system attached to each recorder.

Cyclone "Jason" crossed the coast some 120 kilometres west of Karumba and the maximum recorded storm surge at Karumba was 2.04 metres at 1500 hours which coincided with the time of landfall of the cyclone. A much smaller maximum storm surge of 0.62 metres was recorded at Weipa which was 630 kilometres north-east from the position of the cyclone's landfall. A maximum storm tide level of 4.70 metres (Low Water Datum) occurred at Karumba at 1700 hours which was just above predicted Highest Astronomical Tide (H.A.T.) of 4.59 metres (L.W.D.). (Reference - Queensland Official Tide Tables 1987, Department of Harbours and Marine.)

The location of the peak storm surge generated by cyclone "Jason" is estimated to have occurred approximately 20 to 30 kilometres east of the position of the cyclone's landfall and approximately 90 to 100 kilometres west of Karumba.

In addition to the above monitoring, the Senior Engineer from the Beach Protection Authority attended the State Emergency Service Headquarters to provide advice on storm surge matters.

2.2 Wave Recording

A wave recording buoy owned by the Department of Harbours and Marine (Ports and Property Management Division) and located 15 kilometres south-west of Weipa operated throughout the cyclone. Significant wave heights ranged from 1.12 to 2.05 metres on February 12 and 13, 1987 while the maximum wave heights recorded during this period ranged from 1.85 to 3.75 metres (refer Table 1 for details). Peak energy wave periods were in the range of 8 to 10 seconds.

2.3 COPE Recordings

The Authority operates no Coastal Observation Programme - Engineering (COPE) stations in the Gulf of Carpentaria and hence no comparison of beach profiles before and after the cyclone is available.

2.4 Aerial Photography

The Authority does not have any recent aerial photography of the Karumba region to allow an assessment of beach conditions prior and subsequent to cyclone "Jason". The Department of Mapping and Surveying does have aerial photography of Karumba captured on May 16, 1986.

The Authority has commissioned aerial photography of the entire section of Queensland coastline in the Gulf of Carpentaria, which is expected to be flown in the latter half of 1987. Additionally, the Authority has established photo control points in the Point area of Karumba subsequent to cyclone "Jason" for future photogrammetry purposes.

3.0 INSPECTION OF BEACHES

The Authority received verbal reports of the condition of beaches in the Karumba region from local residents. A charter pilot who undertook an aerial inspection of the foreshore between Burketown and Karumba soon after the passage of the cyclone, reported that substantial damage to mangrove areas east of Burketown had occurred. There was also evidence of overtopping of the frontal dune in the beach areas north of Karumba, with debris seen in the casuarinas inland from the beach. He also reported that local scouring of some beaches was also visible.

A local Queensland Boating and Fisheries Patrol Officer from Karumba undertook a ground inspection of the beaches surrounding the town. Sand had been pushed over the rocks situated on the foreshore east of the Point area with sand being deposited in front of the houses. No major damage to dunal vegetation was evidenced. The worst erosion was at the Point where major scouring of the beach occurred with the beach receding by up to 8 metres. However, the erosion did not endanger any structures.

Surveyors from the Harbours and Marine Department carried out surveys of the beach and nearshore areas around the Point area of Karumba following cyclone "Jason". The location and details of the beach profiles are shown on Figures 3 and 4 attached. No survey information of the Karumba region is available prior to cyclone "Jason".

Advice received from the Director of the State Emergency Service on the damage assessment due to cyclone "Jason" estimated the total damage and loss bill at \$1.24 million. The bulk of this damage occurred to public and private buildings on Mornington Island and was due to the severe winds. Other damage took place on Bentinck Island. There were no reported serious injuries due to cyclone "Jason".

4.0 SUMMARY

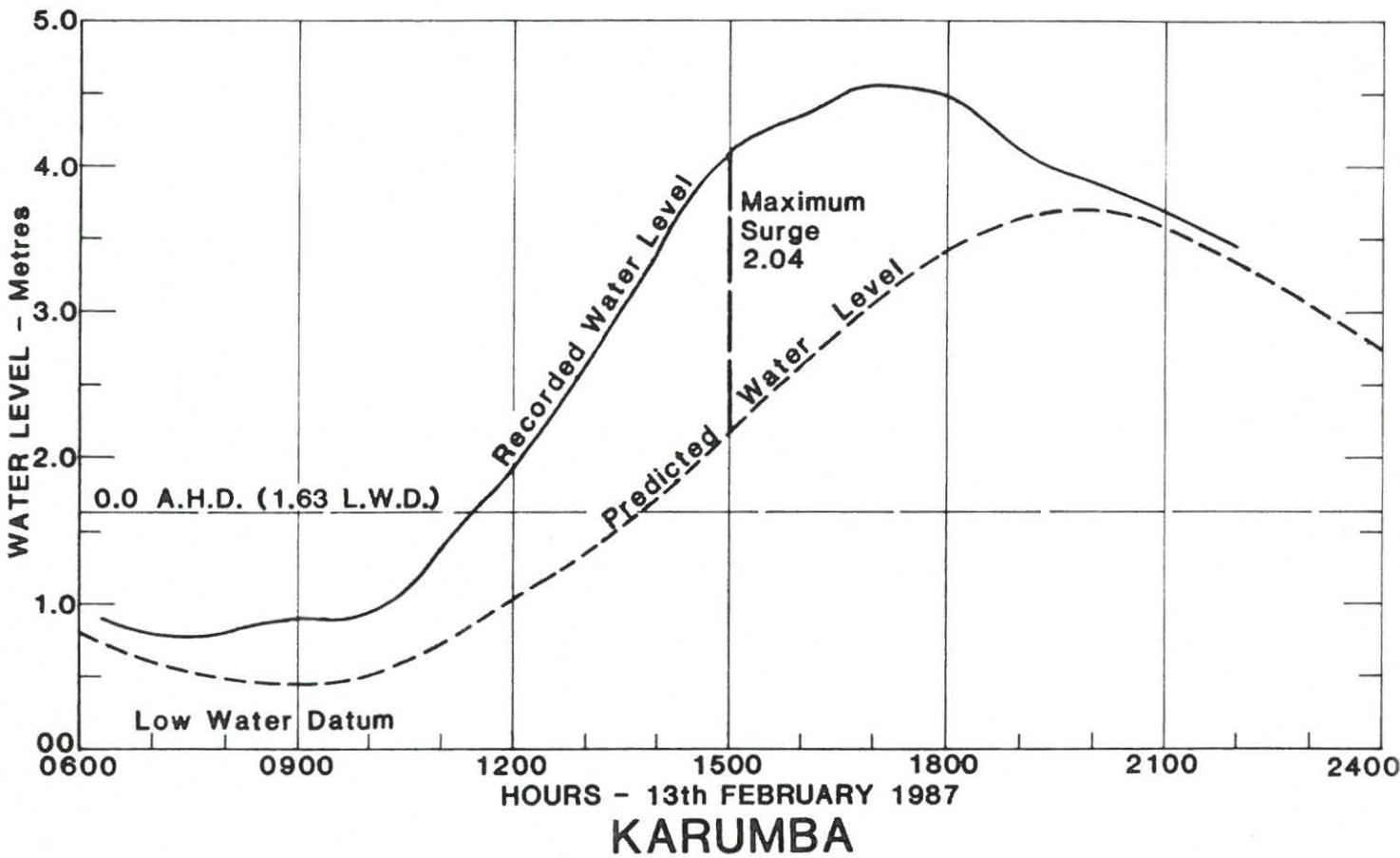
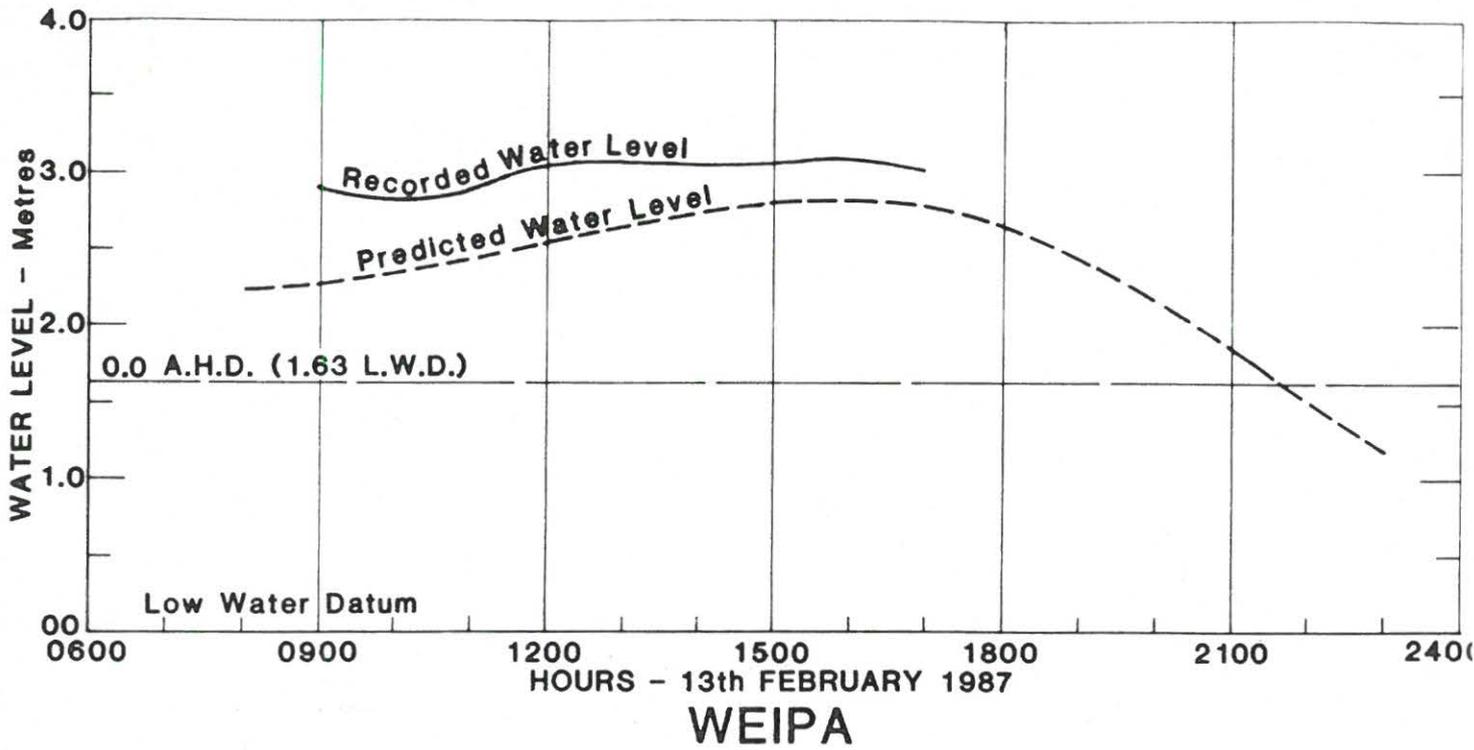
Cyclone "Jason" generated a significant storm surge of 2.04 metres at Karumba. However, this occurred five hours prior to high tide and hence no major flooding of areas around Karumba occurred. The maximum storm tide level recorded at Karumba during the cyclone was 4.70 metres (L.W.D.) which was just above predicted Highest Astronomical Tide (H.A.T.) of 4.59 metres (L.W.D.).

The cyclone's path took it to within 450 kilometres of the Weipa wave recording buoy and above average wave heights of up to 3.8 metres were recorded.

Local residents reported that some erosion occurred to the beach areas surrounding Karumba with the worst affected area being at the Point where erosion of up to 8 metres occurred. It would also appear that wave overtopping of the frontal dunes took place in some beach areas near Karumba.

List of Attachments

Figure 1	Storm Tide Levels recorded at Weipa and Karumba
Figure 2	Cyclone "Jason" Track
Figure 3	Location of Karumba Sounding Lines
Figure 4	Beach Profiles - Karumba
Figure 5	Details of Erosion at Karumba
Table 1	Weipa Wave Data Summary



CYCLONE 'JASON'
STORM TIDE LEVEL
RECORDED AT WEIPA and KARUMBA

Figure 1

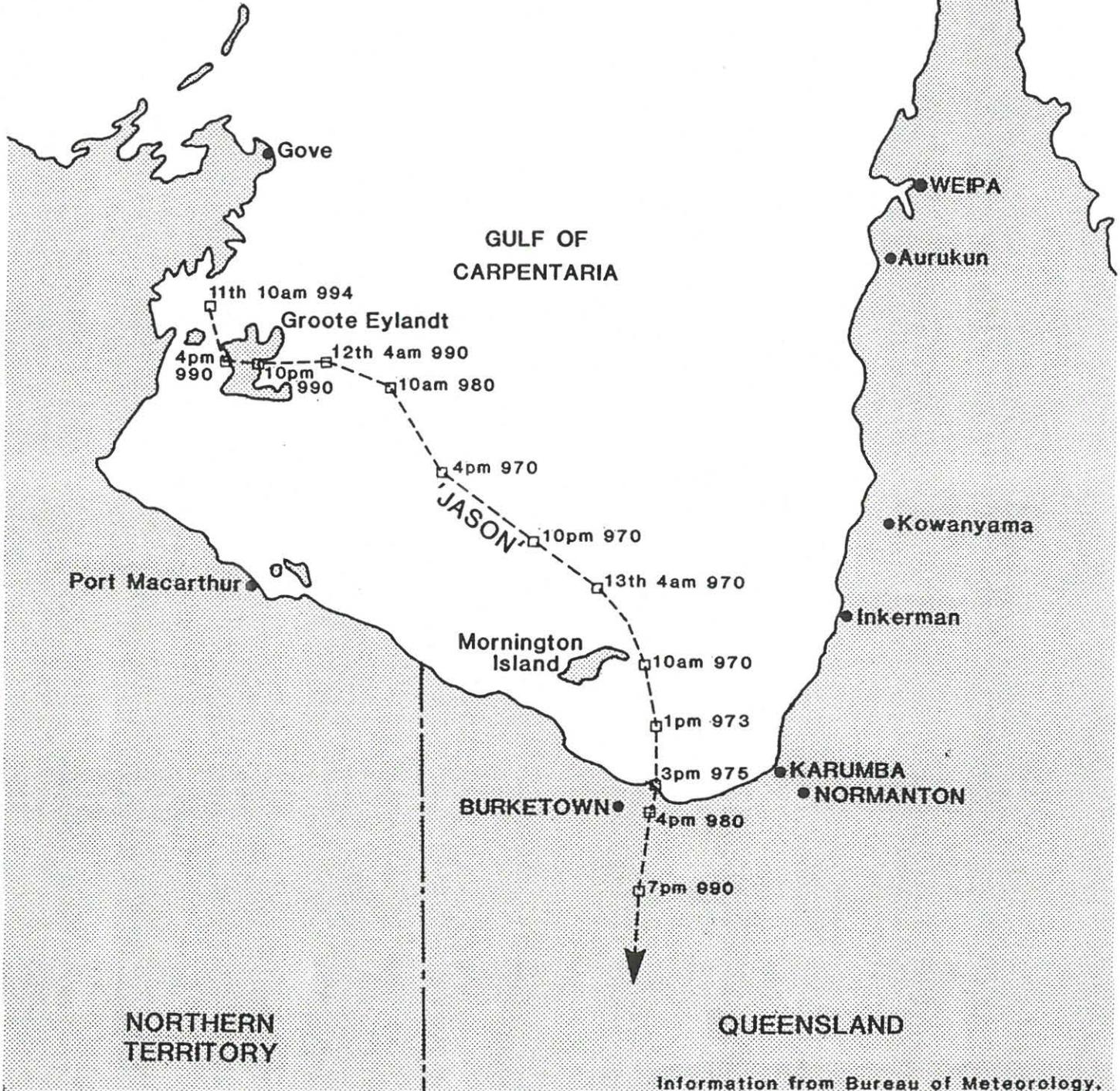
0 50 100 150
Kilometres

Eastern Standard Times.
Pressure in Hectopascals.



TORRES STRAIT

ARAFURA SEA



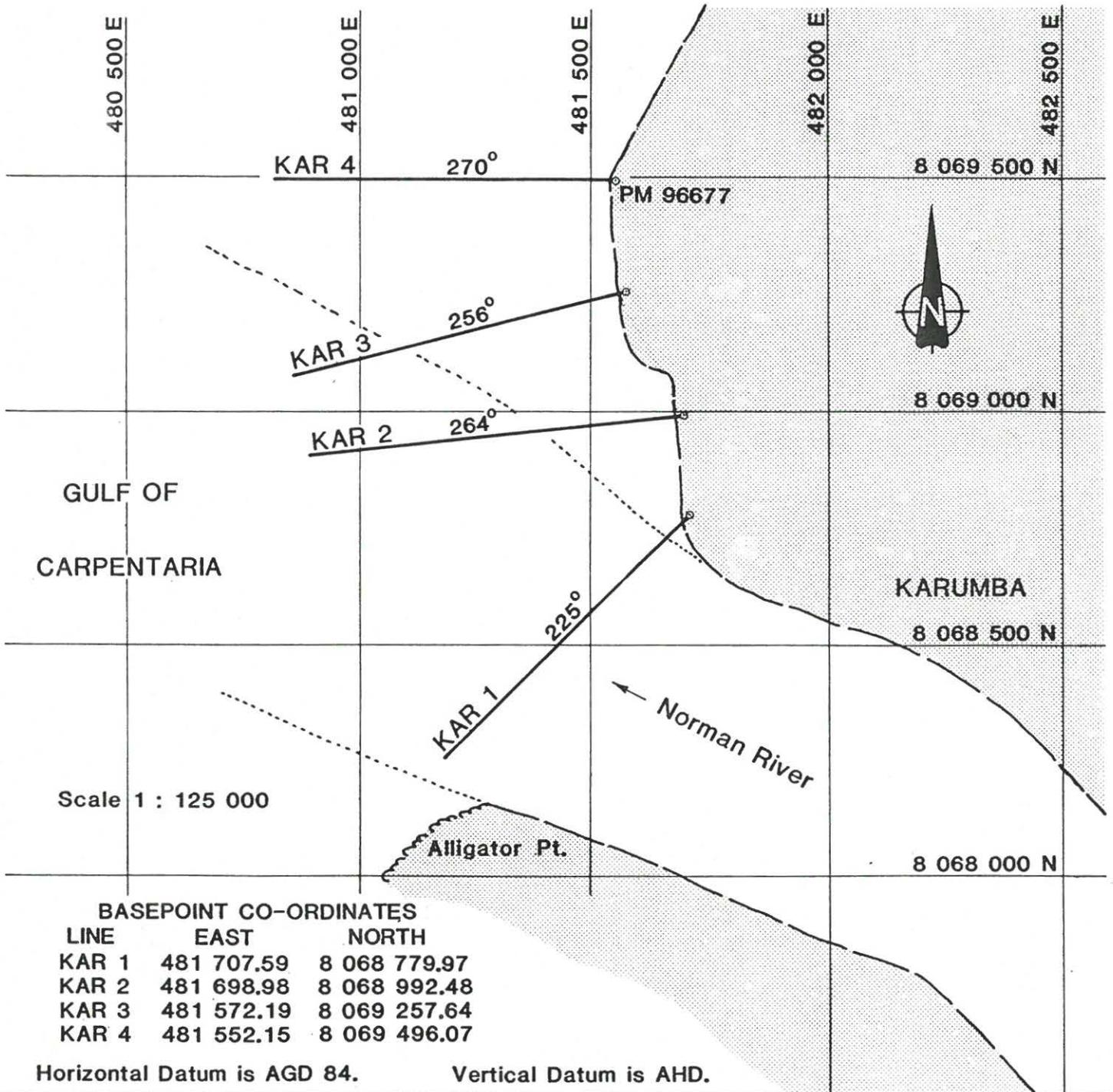
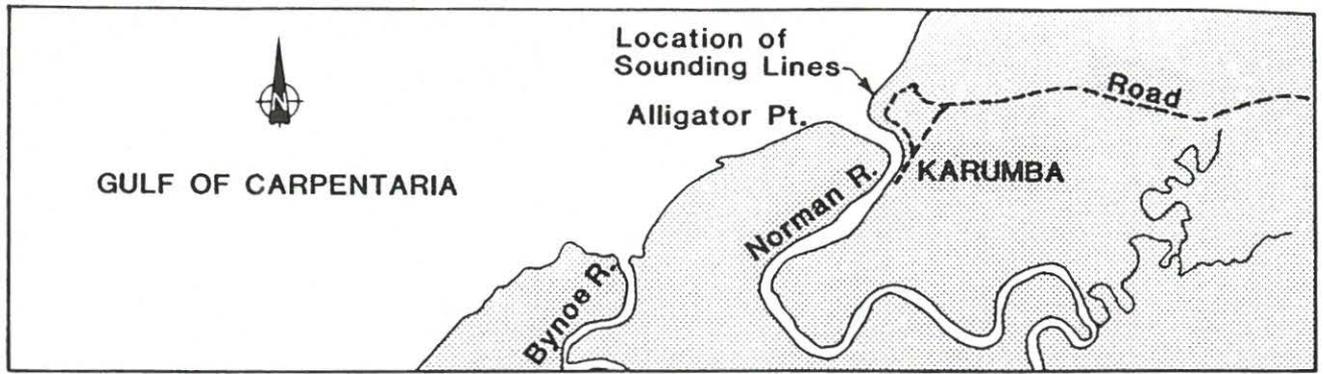
Information from Bureau of Meteorology.



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CYCLONE 'JASON' TRACK

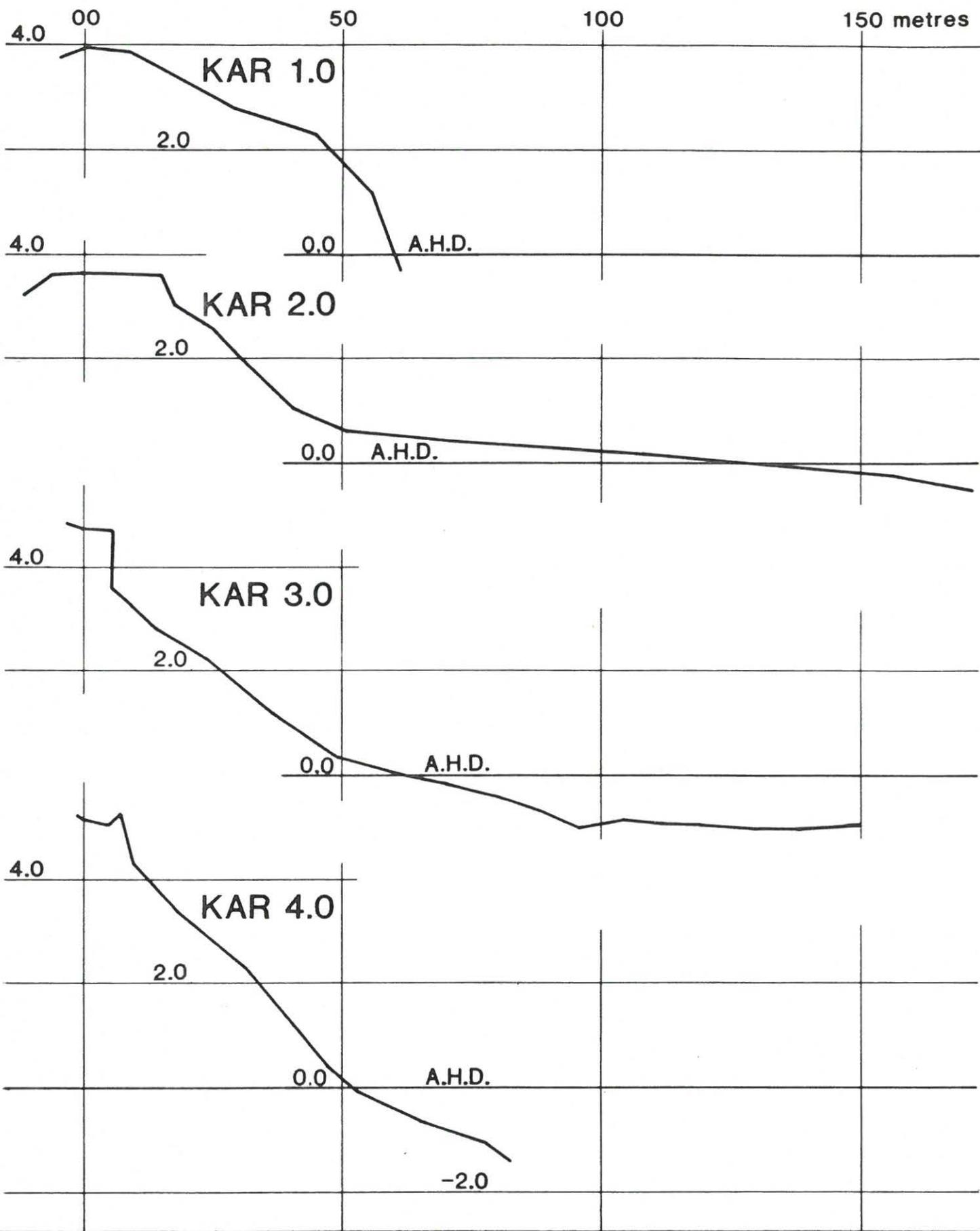
Figure 2



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LOCATION OF KARUMBA SOUNDING LINES

Figure 3



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KARUMBA
BEACH PROFILES - KAR 1 to 4
MARCH 1987

Figure 4



100 0 100 200 300 400 500
metres



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**DETAILS OF EROSION AT KARUMBA
DUE TO CYCLONE 'JASON'**

Figure 5

TABLE 1

WEIPAWAVE DATA SUMMARY

Date	Time	Hsig (m)	Hmax (m)	Tpeak (sec)
11.2.87	0300	1.43	1.87	9.46
11.2.87	0900	1.82	2.89	9.91
11.2.87	1500	1.56	2.24	9.87
11.2.87	2100	1.34	2.28	9.60
12.2.87	0300	1.27	2.06	9.34
12.2.87	0900	1.12	1.85	8.40
12.2.87	1500	1.38	2.32	8.20
12.2.87	2100	1.95	3.21	9.30
13.2.87	0300	2.01	3.03	9.55
13.2.87	0900	2.05	3.75	9.46
13.2.87	1500	2.02	3.69	9.46
13.2.87	2100	1.51	2.24	9.24
14.2.87	0300	1.30	2.08	9.11
14.2.87	0900	1.06	1.85	8.94

NOTE: Data is from a waverider buoy located in 8.5 metres of water approximately 15 kilometres south-west of Weipa.