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Marine Laboratories

REPORT 137

**Satellite-Tracked Buoy
Data Report VI.**

**Bureau of Meteorology Buoys
Tracked in the Southern, Indian and
Pacific Oceans March to June 1979**

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1982

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SATELLITE-TRACKED BUOY DATA REPORT VI,
BUREAU OF METEOROLOGY BUOYS TRACKED IN
THE SOUTHERN, INDIAN AND PACIFIC OCEANS
MARCH TO JUNE 1979

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Abstract

The track, speed and sea surface temperature data received during the period 26 March 1979 to 24 June 1979 from 38 buoys are presented. This report is the second in a series of reports on satellite-tracked buoys released by the Bureau of Meteorology. The features of interest are the number of eddies in which the buoys were tracked for short periods and the extreme variability of currents in the south-east Indian Ocean and Tasman and Coral Seas.

INTRODUCTION

This second report on oceanographic data gathered by free drifting drogued buoys released by the Australian Bureau of Meteorology covers data obtained in the period 26 March 1979 to 24 June 1979. Further reports covering the months up to the end of the year are being prepared.

As in the previous report (Greig 1980), the fifth CSIRO report on drifting buoys, the buoy track, buoy speed and sea surface temperature are presented in five sections (Appendix).

- (i) The zone between the Antarctic Divergence and the Antarctic Convergence.
- (ii) The zone between the Antarctic Convergence and the Sub-tropical Convergence.
- (iii) The south-east Indian Ocean.
- (iv) The Tasman and Coral Seas north of the Sub-tropical Convergence.
- (v) The Great Australian Bight.

In the two southern zones ((i) and (ii)) the buoys followed paths towards the east as would have been predicted by standard current diagrams of that area. The paths are remarkable, however, for demonstrating the eddies which appear from time to time.

In the more northern areas, Coral Sea, Tasman Sea and south-east Indian Ocean the buoy paths are circuitous and convoluted indicating the great variability of currents in those areas.

The overall pattern of the buoy tracks can be seen in Figures 1 and 2.

THE BUOYS

A description of the buoys used is given by Greig (1980) but briefly, the spar buoys are 5 m long and fitted with a parachute drogue set at 20 m. The buoys are not fitted with a device to indicate the loss of the drogue.

Although some 300 buoys were released as part of the Global Weather Experiment, this report deals with data obtained from Australian drogued buoys only.

The buoys in this zone, whose paths were described by Greig (1980), continued to follow the east wind drift. They have been joined by two others, 1117 and 1131, from the zone to the north.

DATA HANDLING

The data were obtained through the French ARGOS system aboard the United States of America TIROS-N satellite and were extracted from magnetic tapes provided by the Australian National Meteorology Research Centre. Editing was necessary to remove some data obtained before launching. These edited files were used to construct the plots of tracks, temperature and speed.

Of these two buoys, number 1131 has followed a path in which it described three clockwise loops between days 100 and 120. The diameter of the loops increased from an initial 10.9 nautical miles to some 60 nautical miles.

The remainder of the buoys continue to follow easterly paths at the fairly high speeds expected in this area.

The track, speed and sea surface temperature data received during the period 26 March 1979 to 24 June 1979 from 38 drogued satellite-tracked buoys are presented in this report. The buoy tracks are presented individually in charts constructed on the Mercator projection. Each chart (see Appendix) in this report covers the entire buoy track, the scales not having been adjusted to suit the length of the track and to keep the plot within page limits. In the interests of clarity, few day numbers have been provided for these plots.

All buoys previously reported have remained in this zone with the exception of buoy number 1117 whose path has taken it below the Antarctic Convergence. This second report on data gathered by five drifting drogued buoys, 1132 and 1137, whose paths were in a northward direction when south of the Great Australian Bight have followed tracks towards the northwest tip of Tasmania and have then turned southward along the west coast of that island before drifting off to the east again.

Plots of the sea surface temperature at each fix and the daily buoy speed are also provided. Figures 1 and 2 are orthographic projections of the globe (the world viewed from space). Figure 1 shows the tracks of the buoys covered by this report and Figure 2 the tracks covered by both the previous report and this report.

Two buoys, 1132 and 1137, whose paths were in a northward direction when south of the Great Australian Bight have followed tracks towards the northwest tip of Tasmania and have then turned southward along the west coast of that island before drifting off to the east again. Buoy number 1105 grounded on Stewart Island south of New Zealand. (see Appendix).

The other buoys in this zone have all progressed towards the east with the exception of buoys 1122 and 1127. Buoy number 1127 has moved north-east towards the Great Australian Bight but the data available at present show this track finishing with two clockwise spirals. The data for buoy number 1122 show the buoy completing three circles before moving to the east and then north towards New Zealand.

A description of the buoy used (1980) is given in the Appendix. THE BUOY TRACKS (i) Zone Between the Antarctic Divergence and the Antarctic Convergence

(iii) *South-east Indian Ocean*

The nine Australian buoys originally launched in this area have been joined by four others; 1104 from the Southern Ocean and 1113, 1124, 1145 all launched since March 1979. No information is available on buoys 1103 and 1136 both of which were previously in the area.

In general the buoys are drifting towards the west along circuitous paths. Buoy number 1130 continues to follow a path similar to that of buoy number 1104 in 1977 (Cresswell and Golding 1979) and in June 1979 was on its way west across the Indian Ocean towards the African coast. Buoy number 1150 may also be headed along a similar track.

The paths of the remaining buoys in the area are circuitous and convoluted with an overall progression to the west.

(iv) *Tasman and Coral Seas North of the Sub-tropical Convergence*

All the buoys in this area including two newly released buoys 1106 and 1148 continue to drift along circuitous paths. Buoy number 1110

has set off towards the west after initially describing a series of loops after launching (Greig 1980). The paths followed by these buoys indicate the highly variable nature of the currents in this area.

(v) *Great Australian Bight*

No buoys have entered this region and those buoys whose tracks previously suggested that they would enter or remain in the area have moved out or ceased reporting.

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- Greig, M.A. (1980). Satellite-tracked buoy data report V. Bureau of Meteorology buoys tracked in the Southern, Indian and Pacific Oceans January to March 1979. *Australia CSIRO Division of Fisheries and Oceanography Report No. 120.*

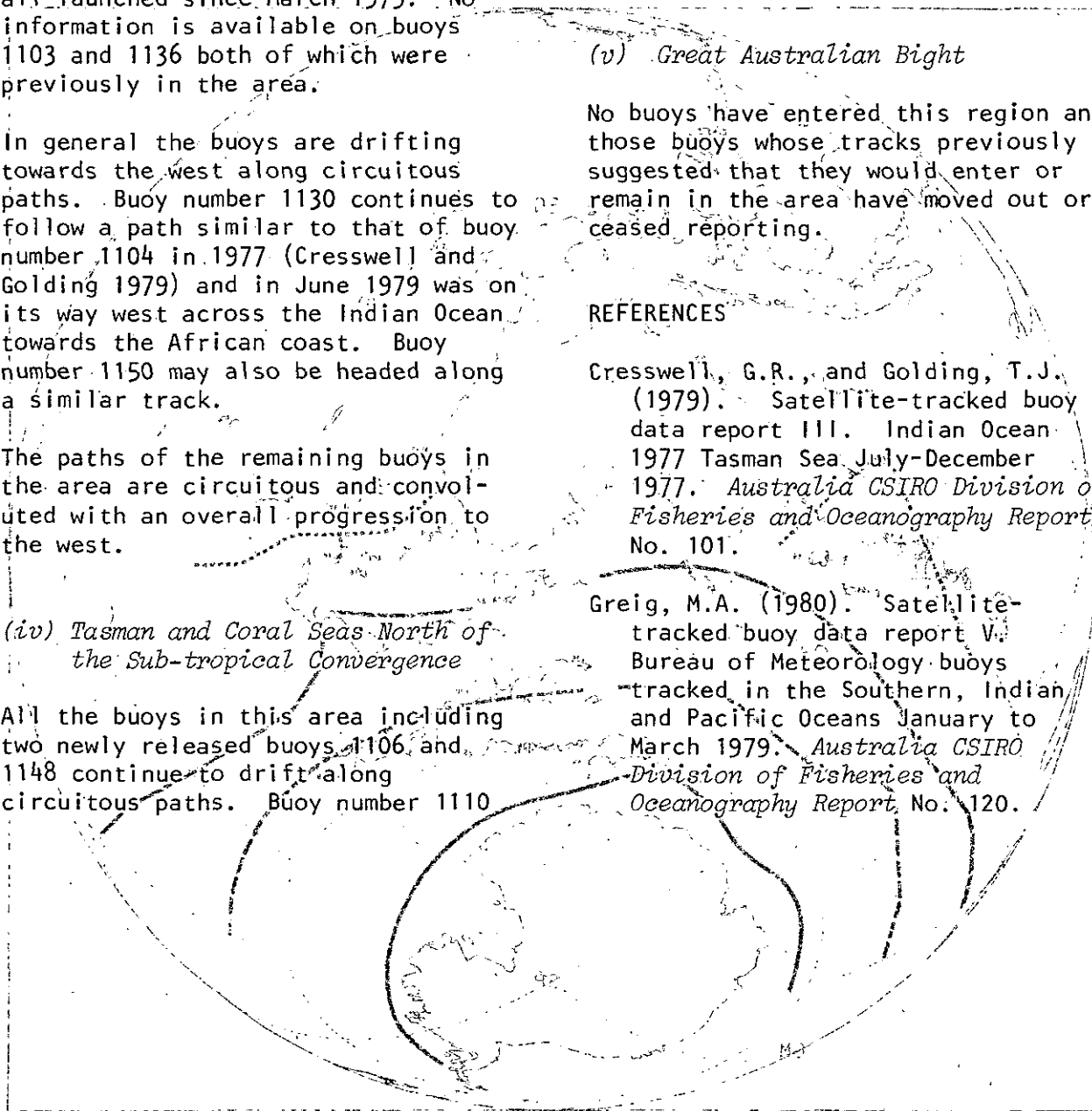


Figure 1. Orthographic projection of the eastern hemisphere showing all buoy tracks for the period March to June 1979.

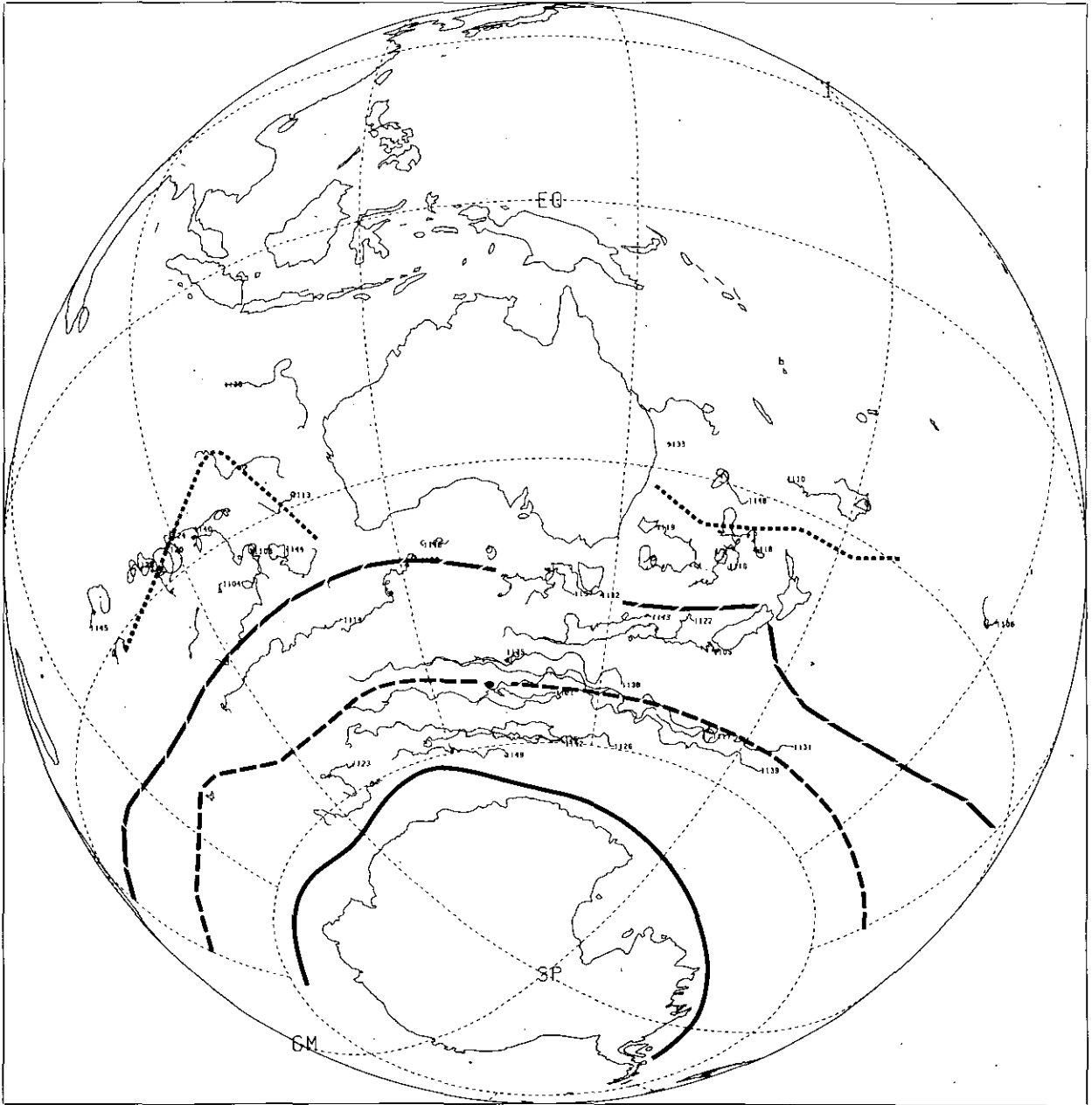


Figure 2. Orthographic projection of the eastern hemisphere showing all buoy tracks for the period December 1978 to June 1979.

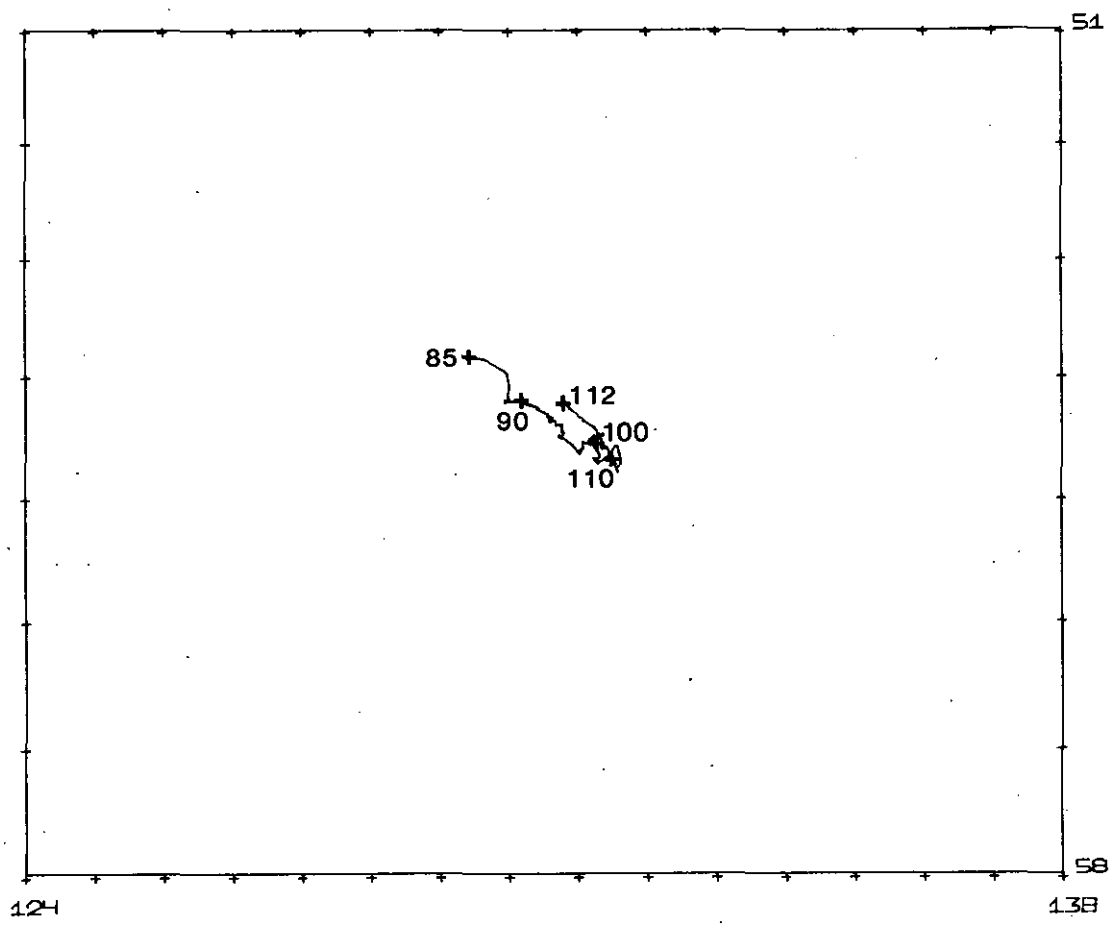
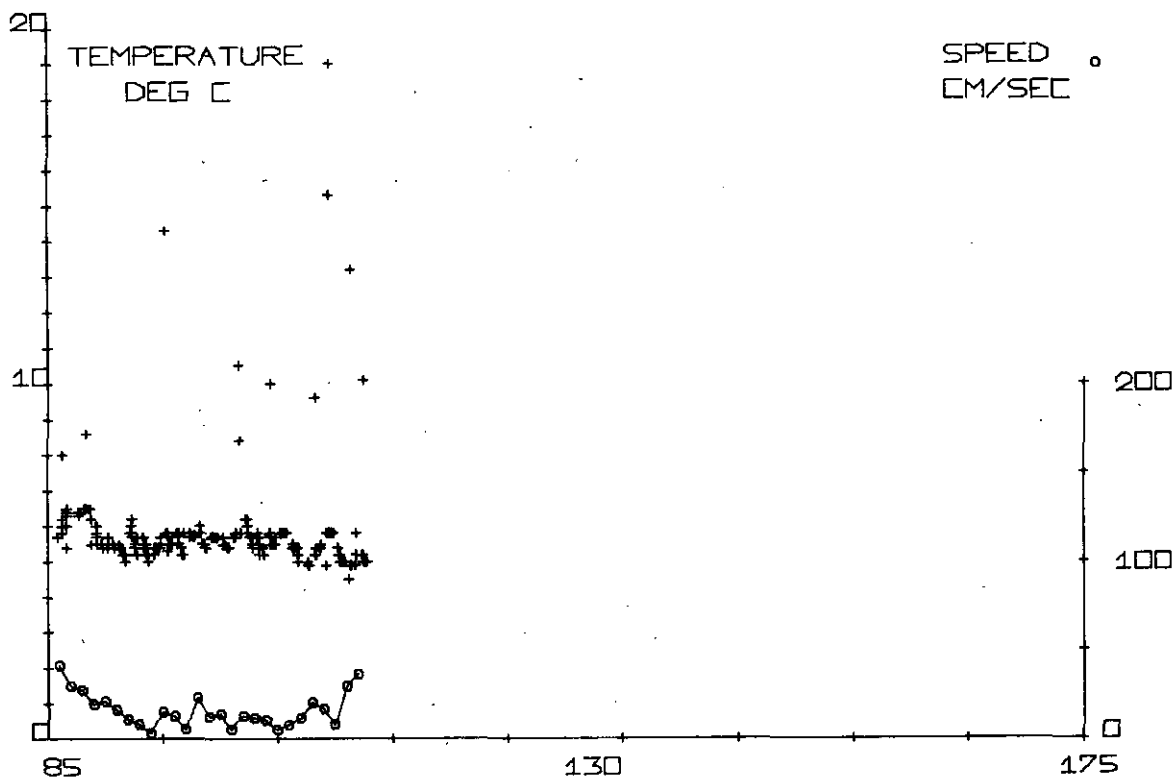
APPENDIX

BUOY TRACKS, BUOY SPEED AND SEA SURFACE TEMPERATURE PLOTS

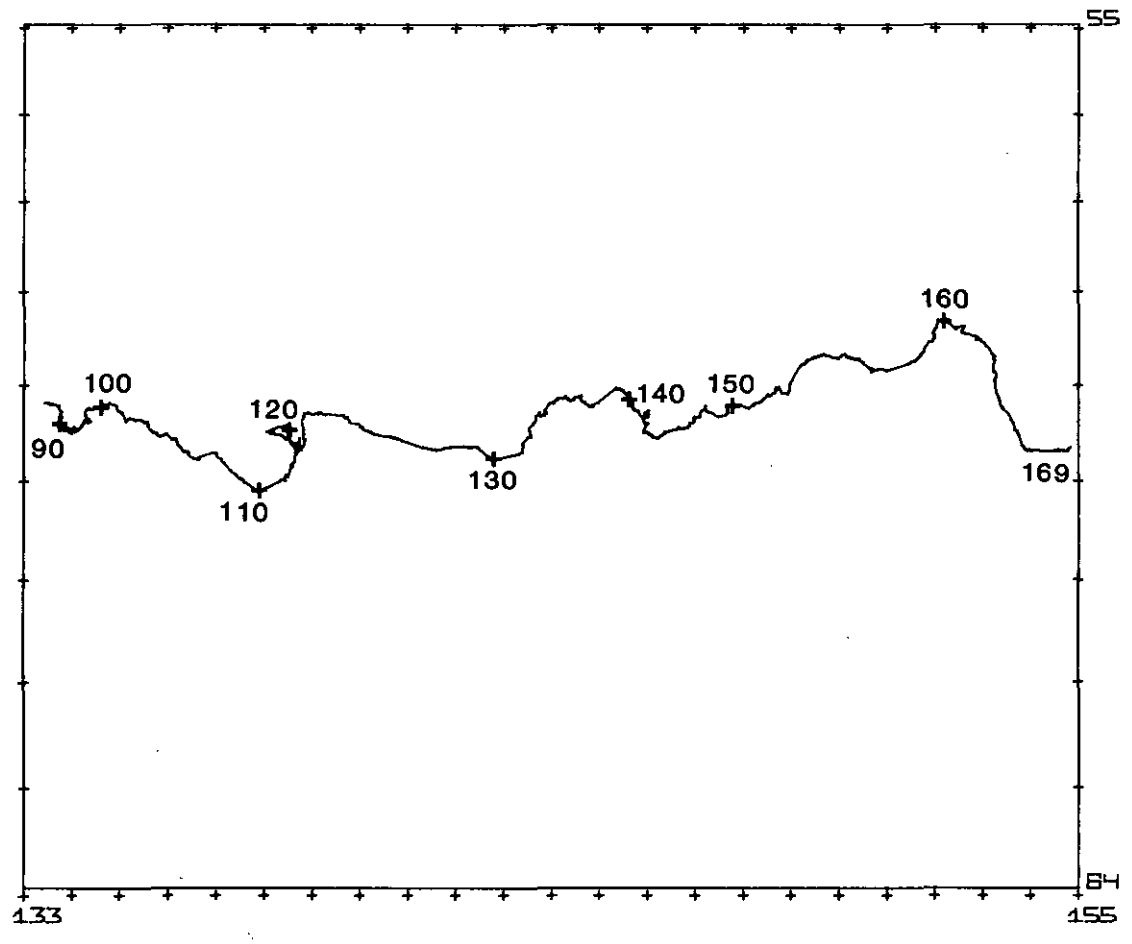
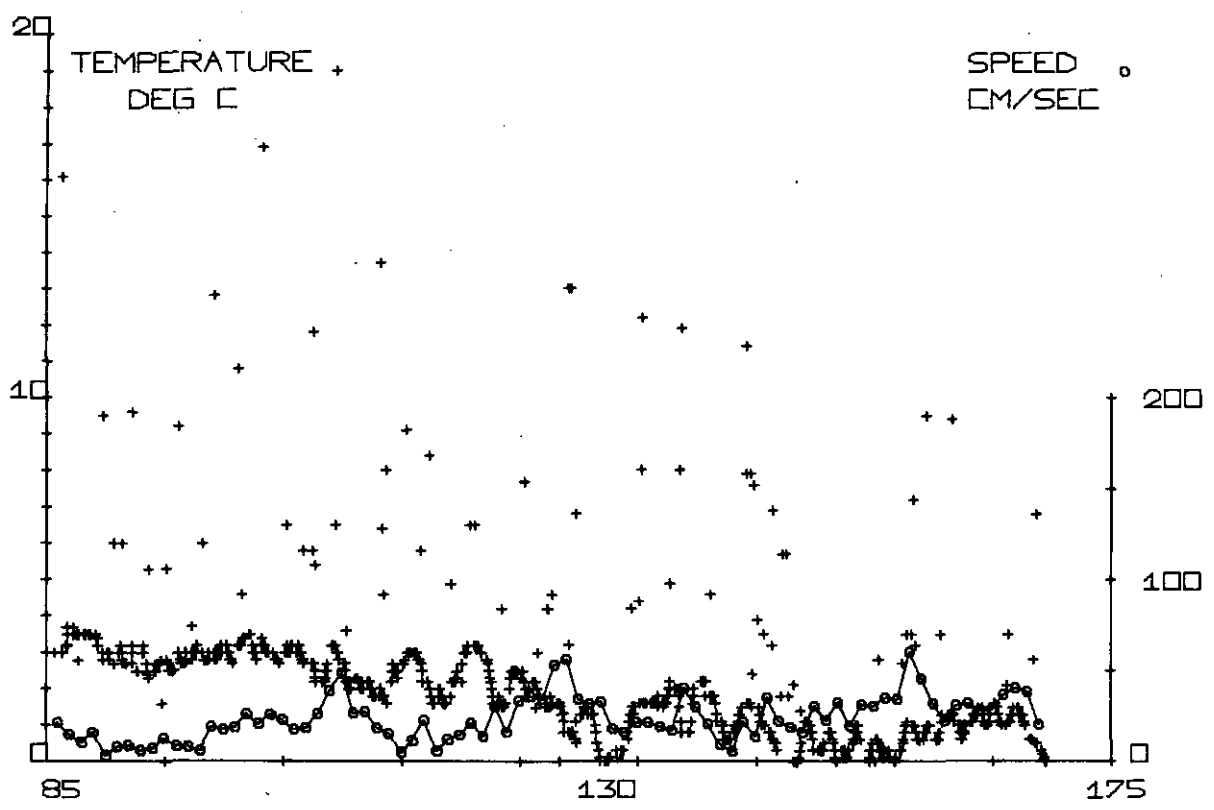
- (i) Buoys tracked between the Antarctic Divergence and the Antarctic Convergence (pp. 7-14).
- (ii) Buoys tracked between the Antarctic Convergence and the Sub-tropical Convergence (pp. 15-22).
- (iii) Buoys tracked in the South-east Indian Ocean (pp. 23-33).
- (iv) Buoys tracked in the Tasman and Coral Seas (pp. 34-40).
- (v) Buoys tracked in the Great Australian Bight (no plots).

Buoys tracked between the Antarctic Divergence and the Antarctic Convergence

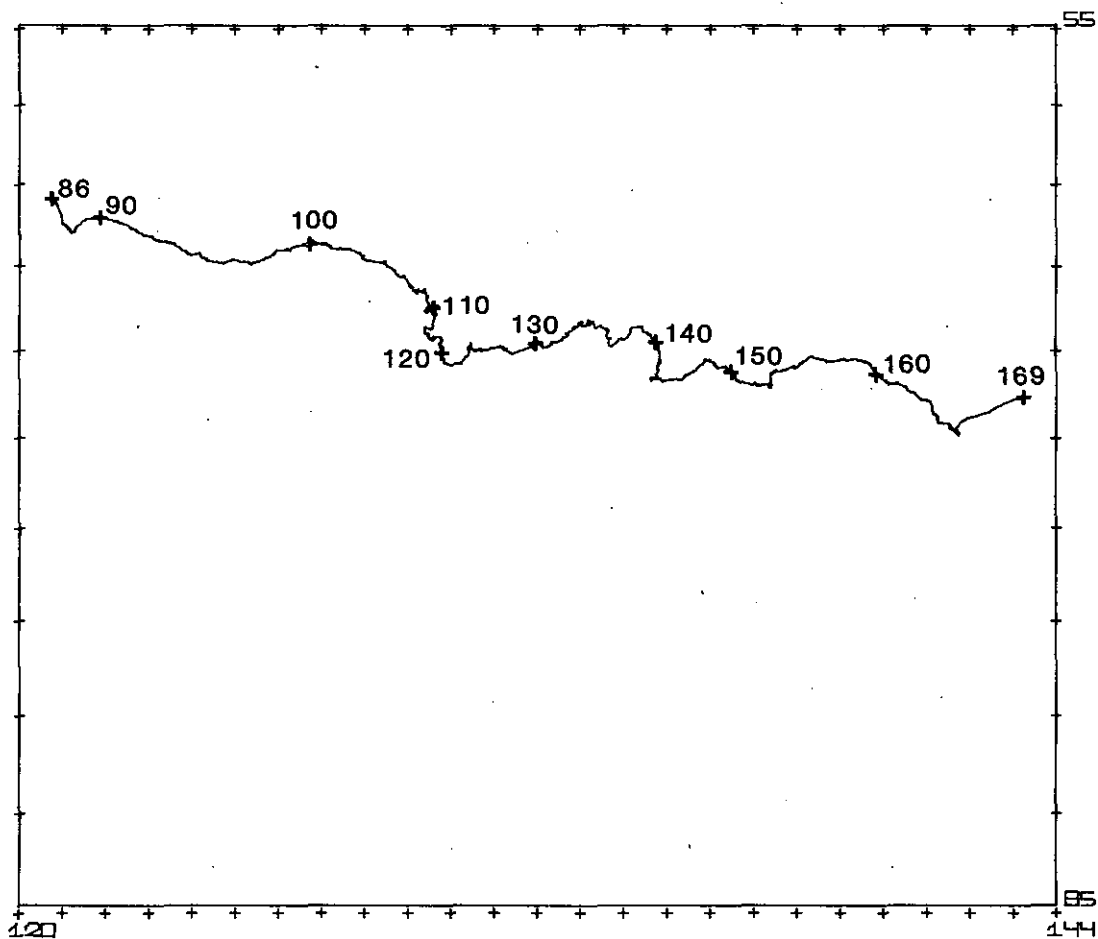
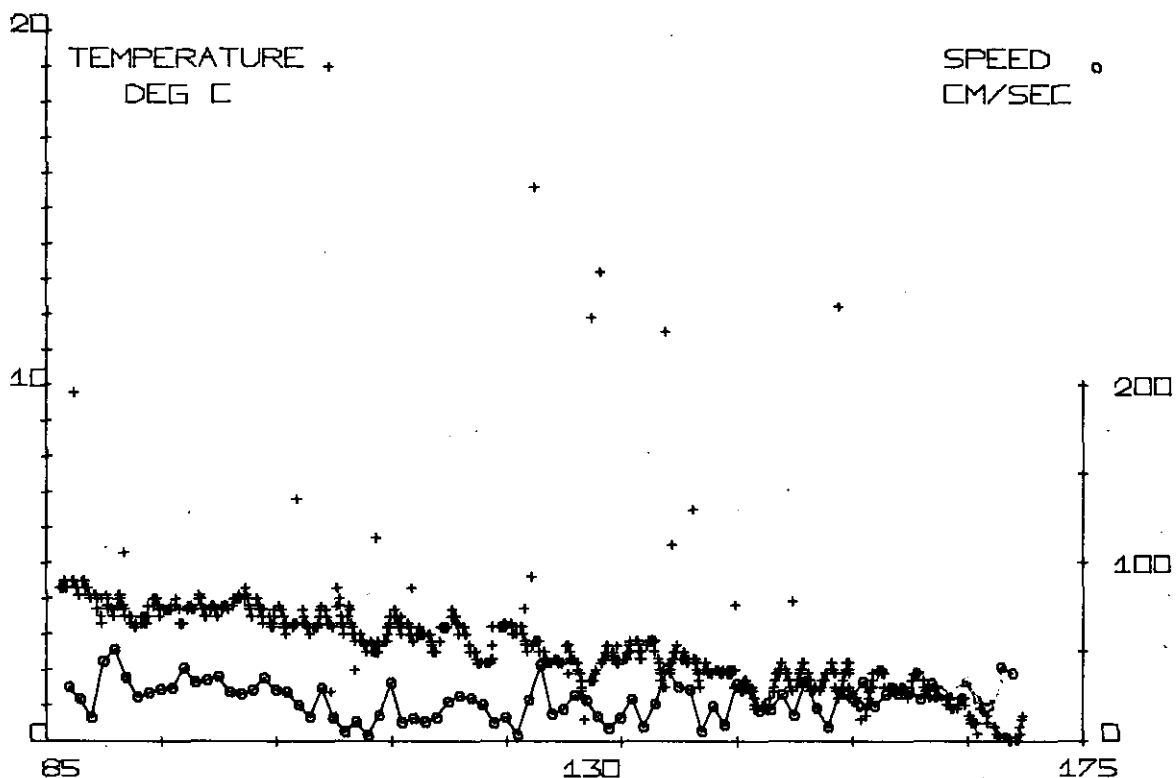
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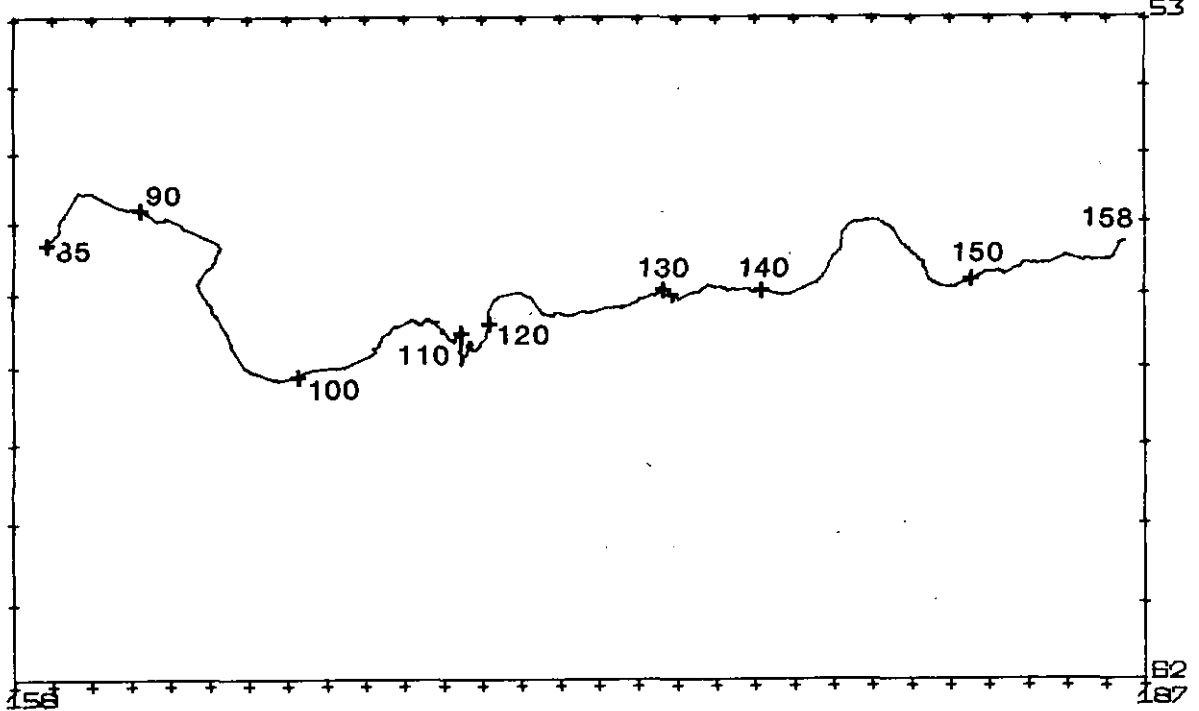
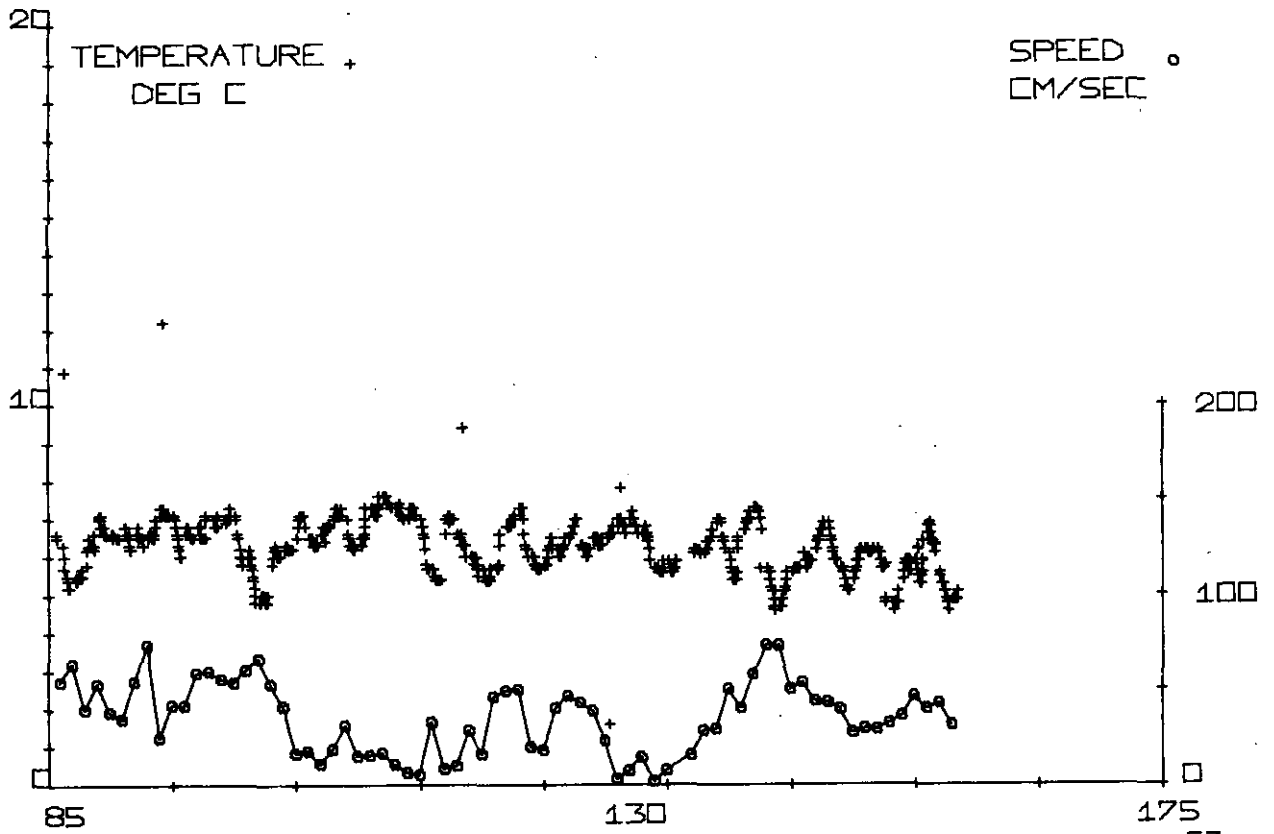
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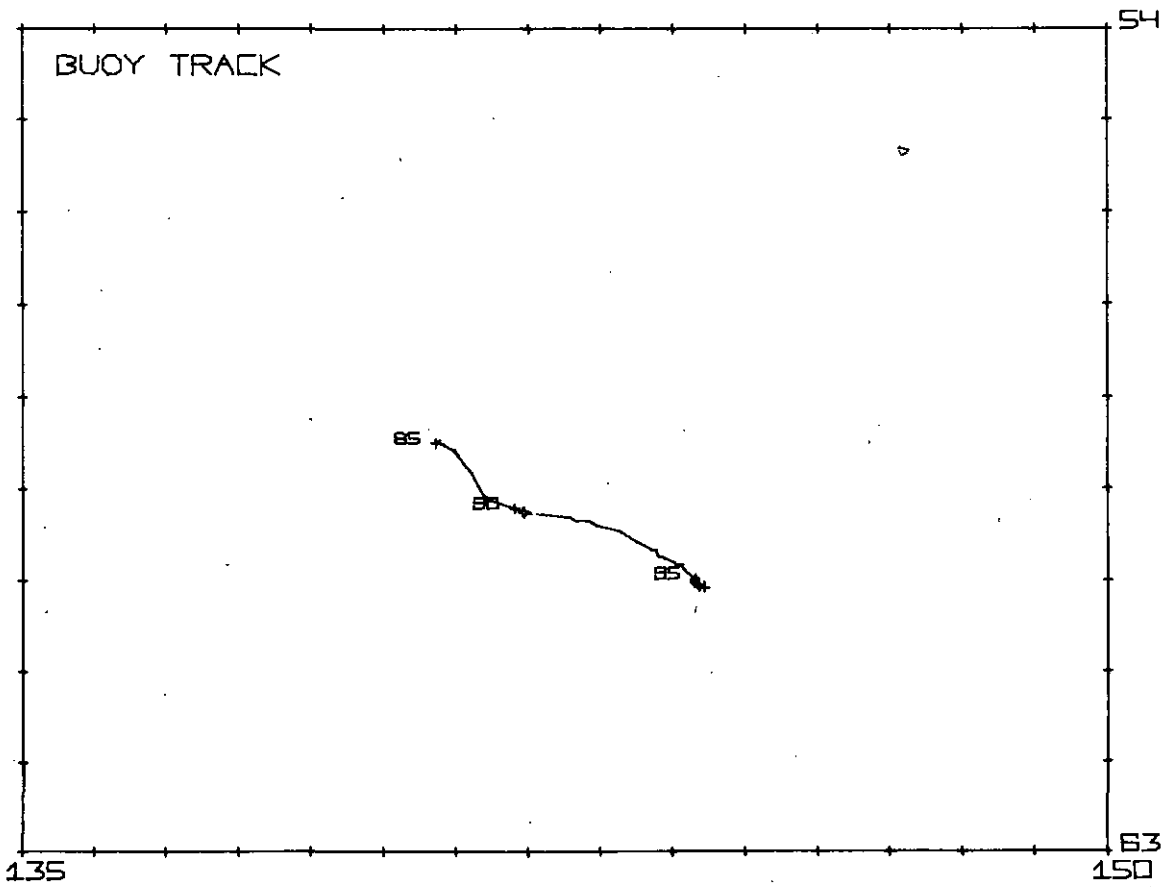
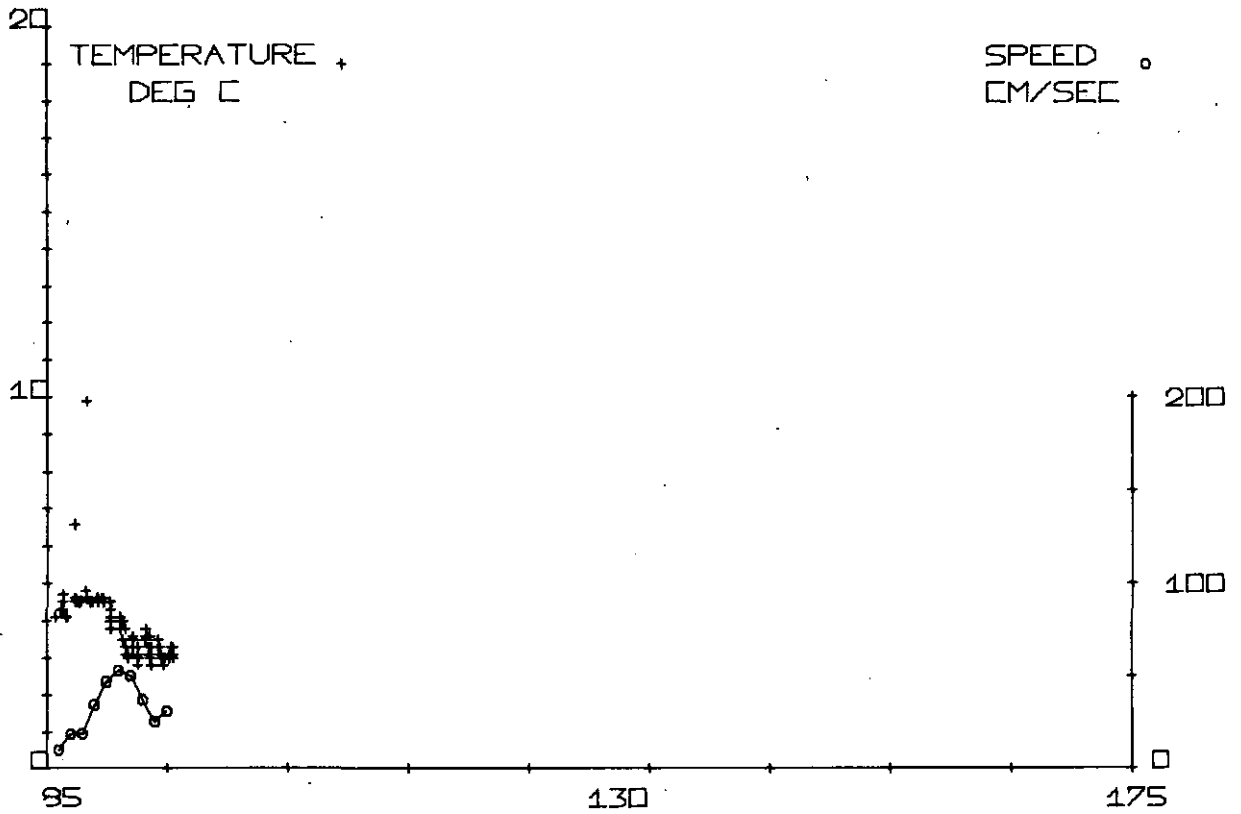
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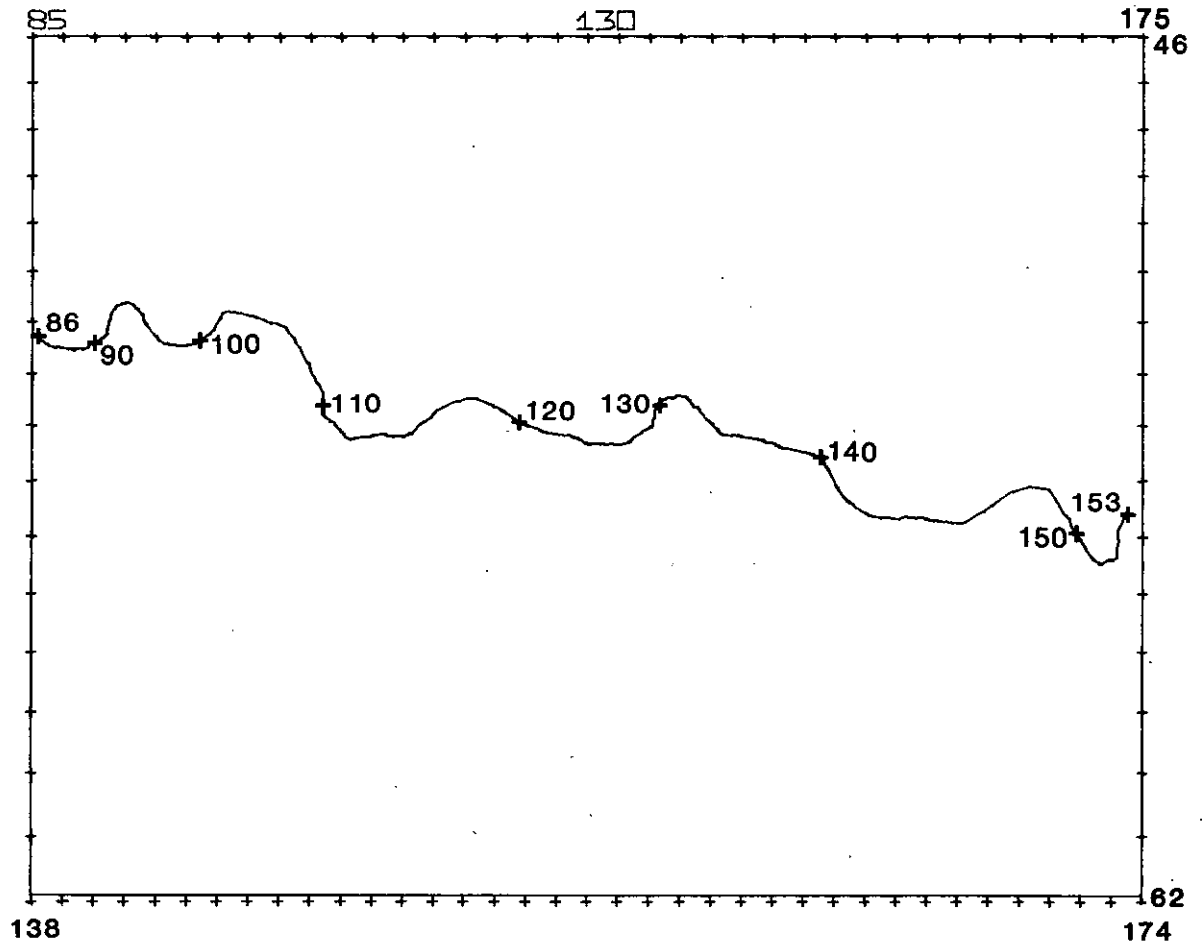
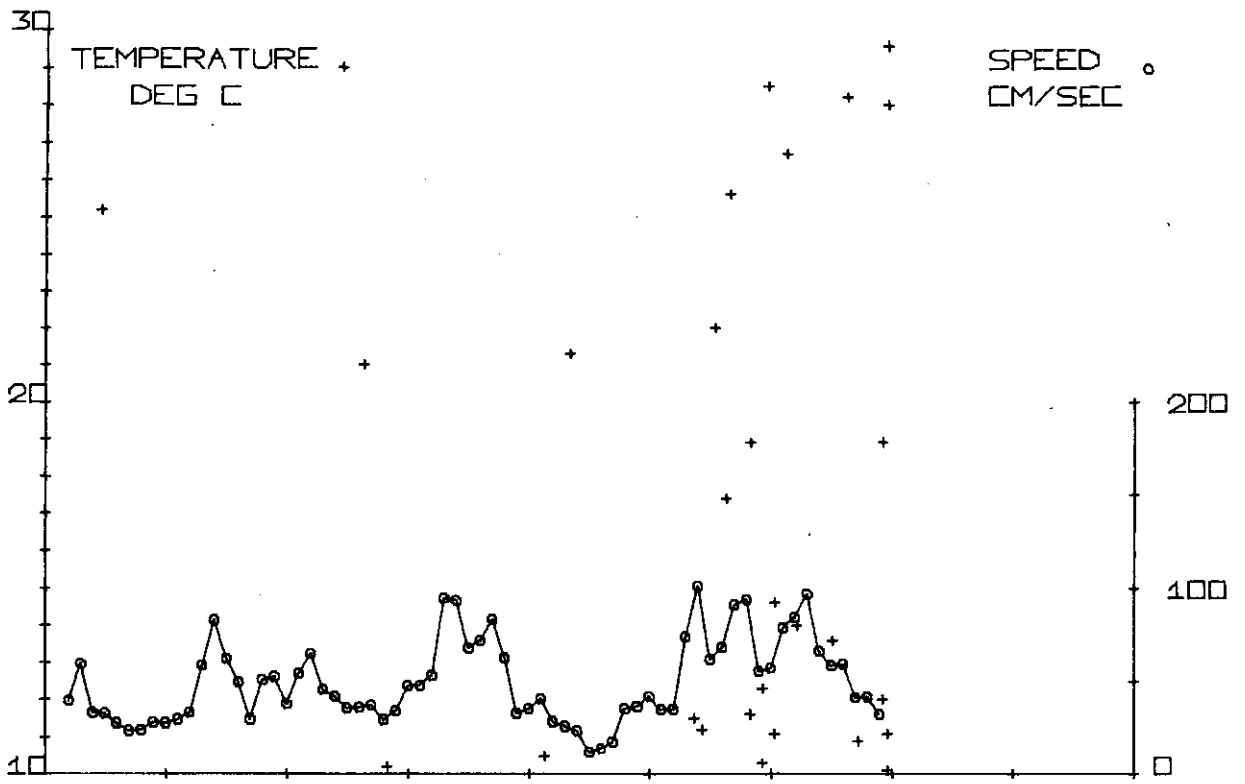
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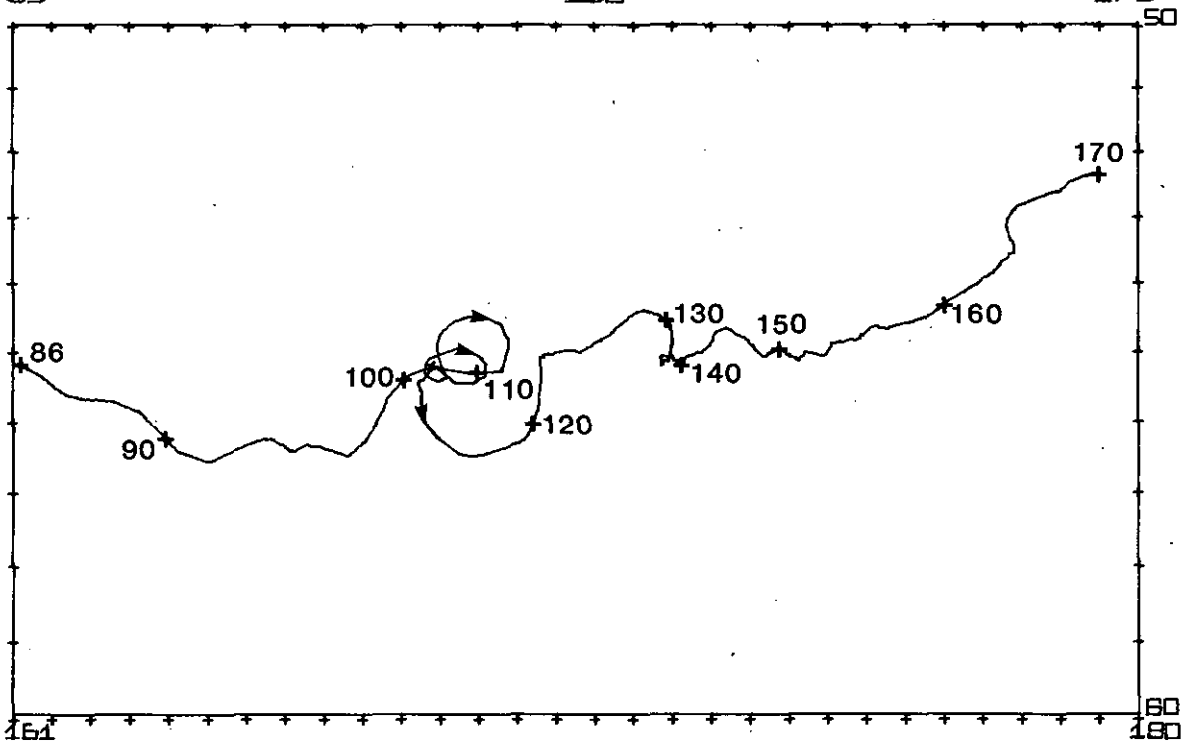
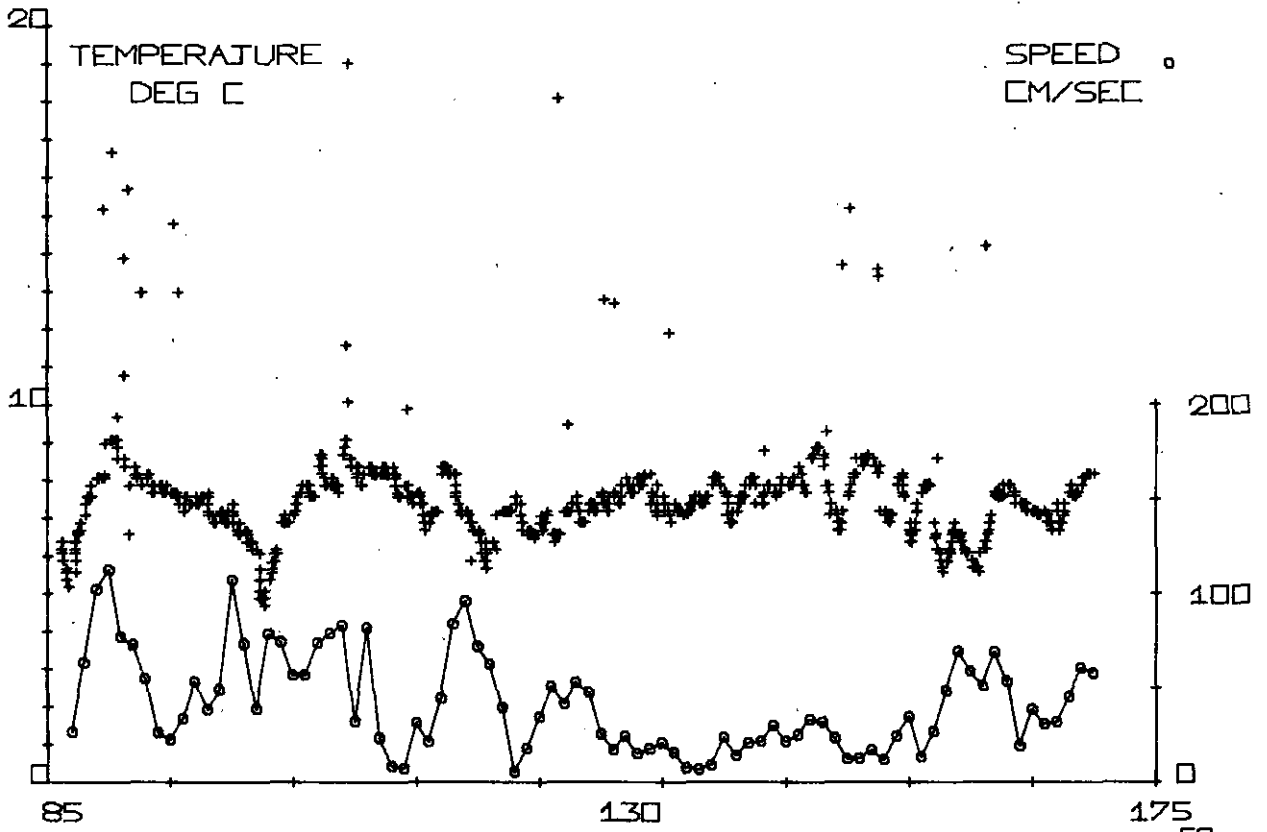
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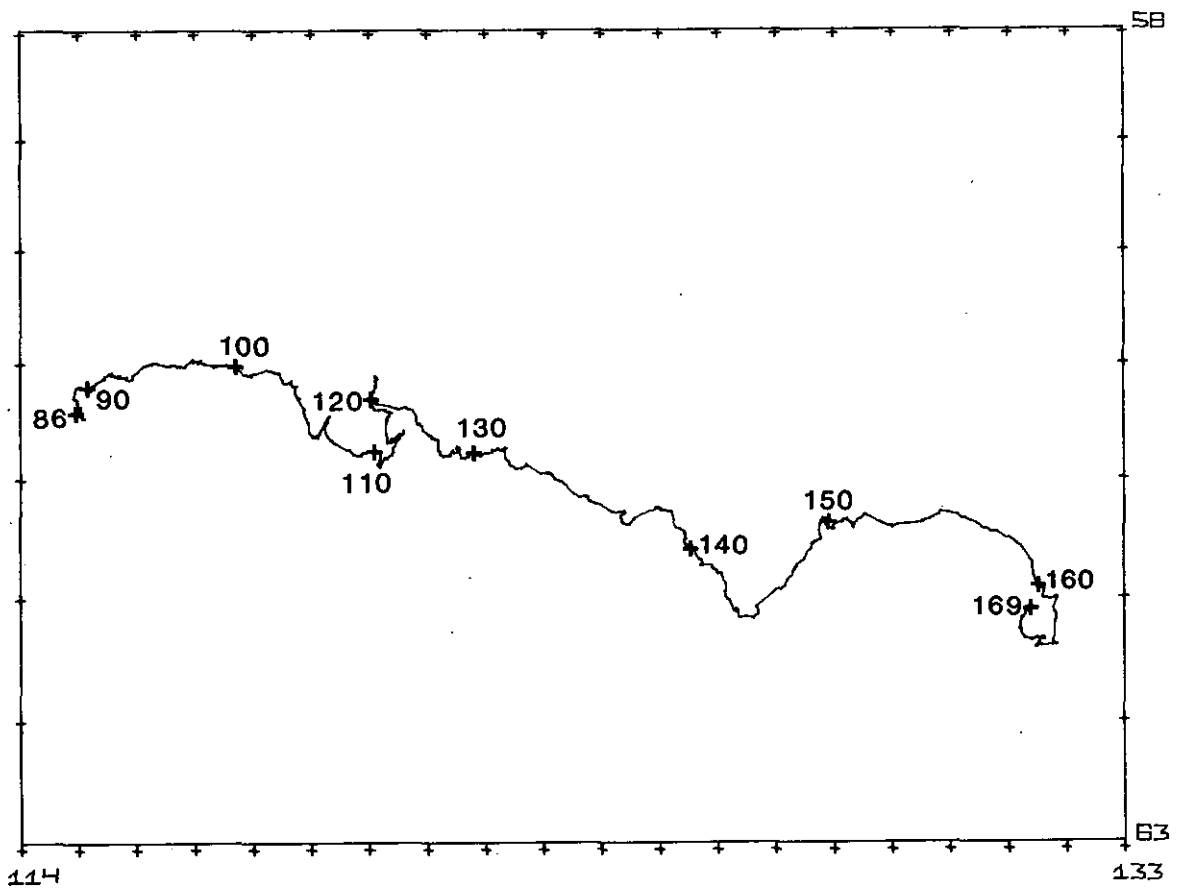
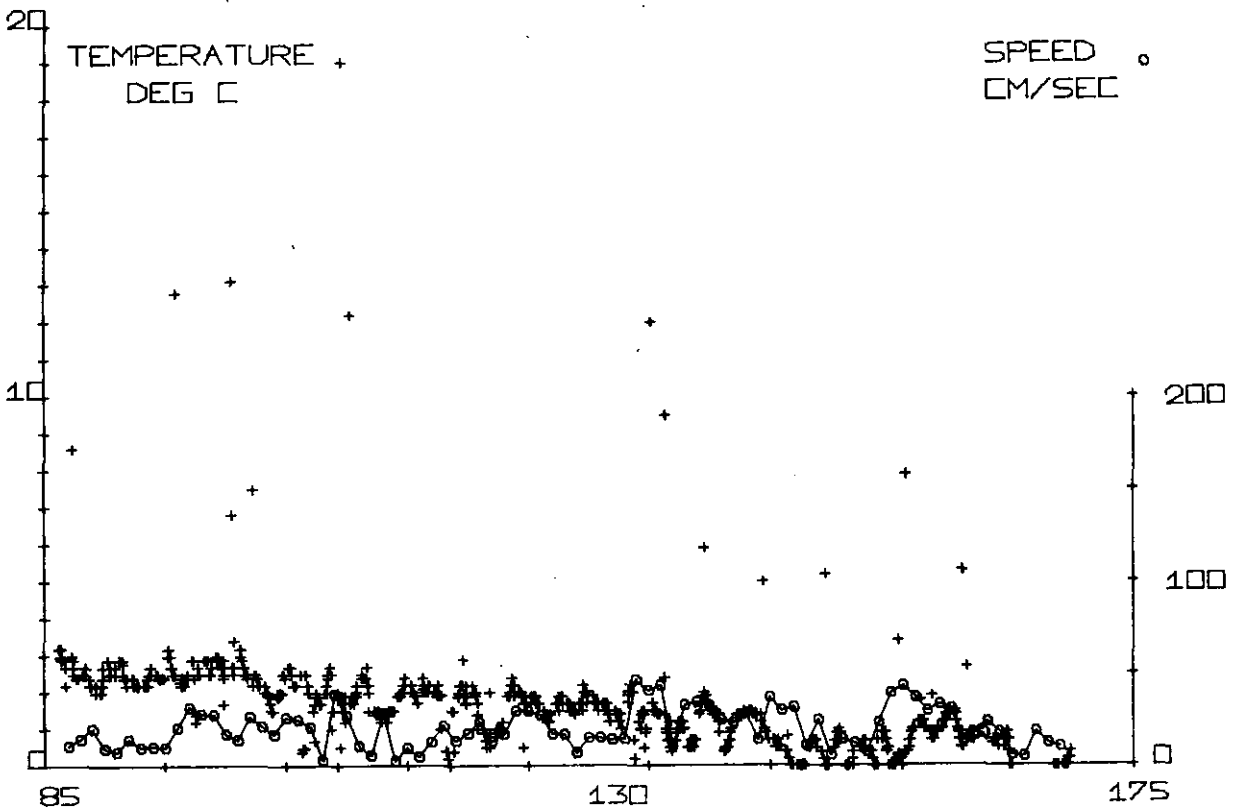
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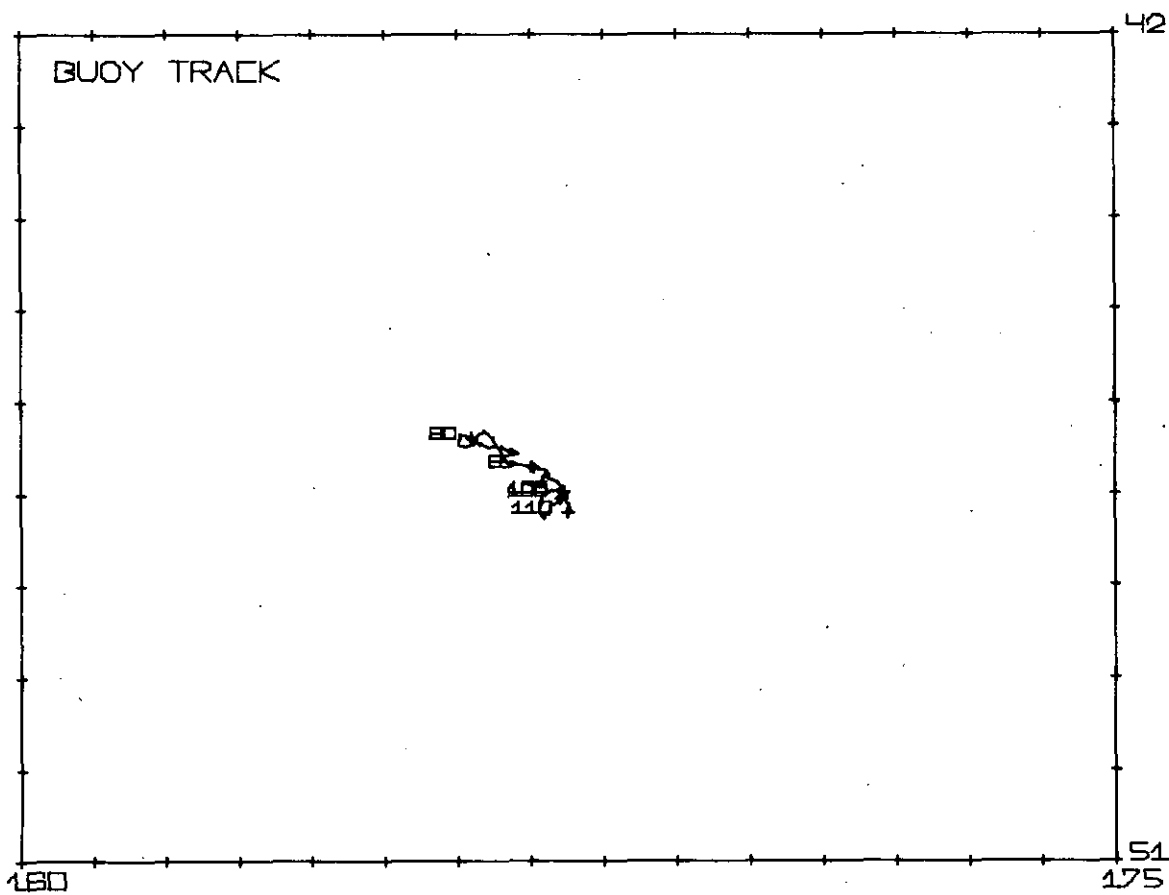
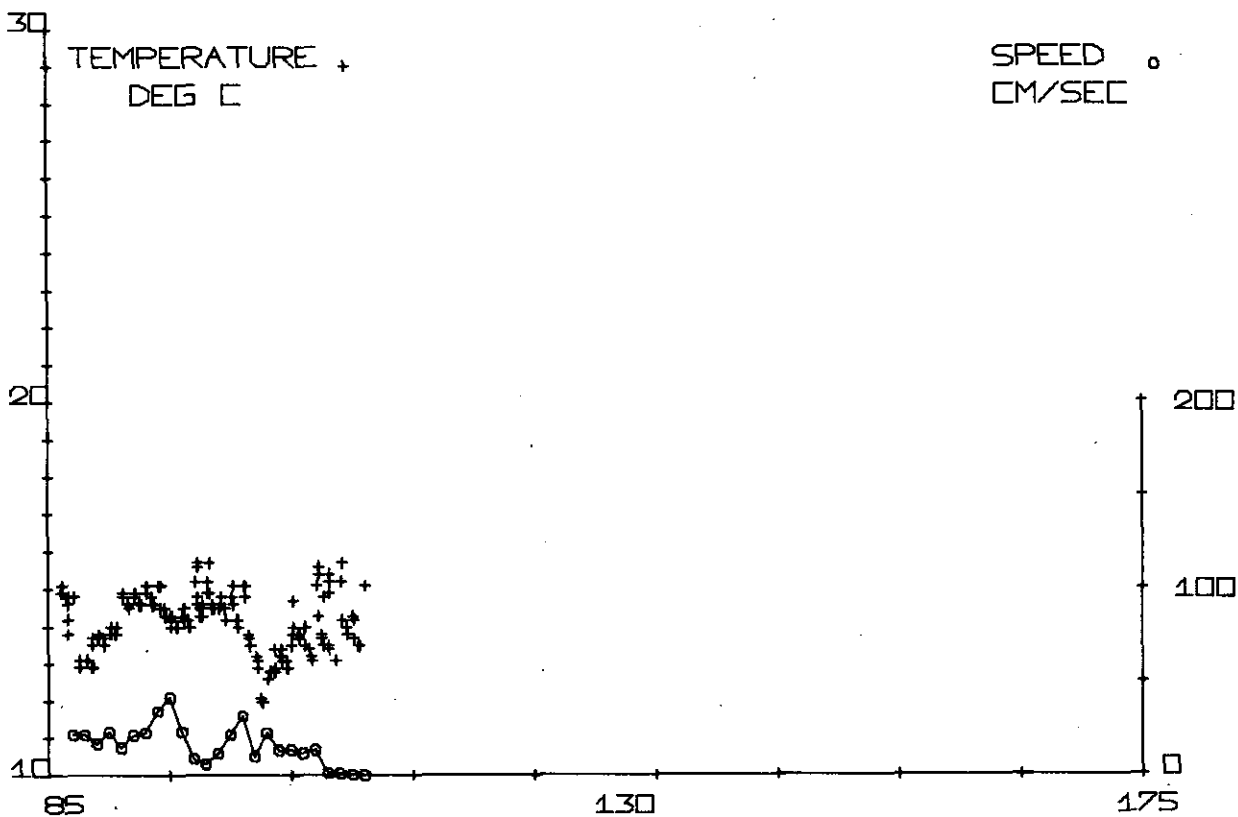


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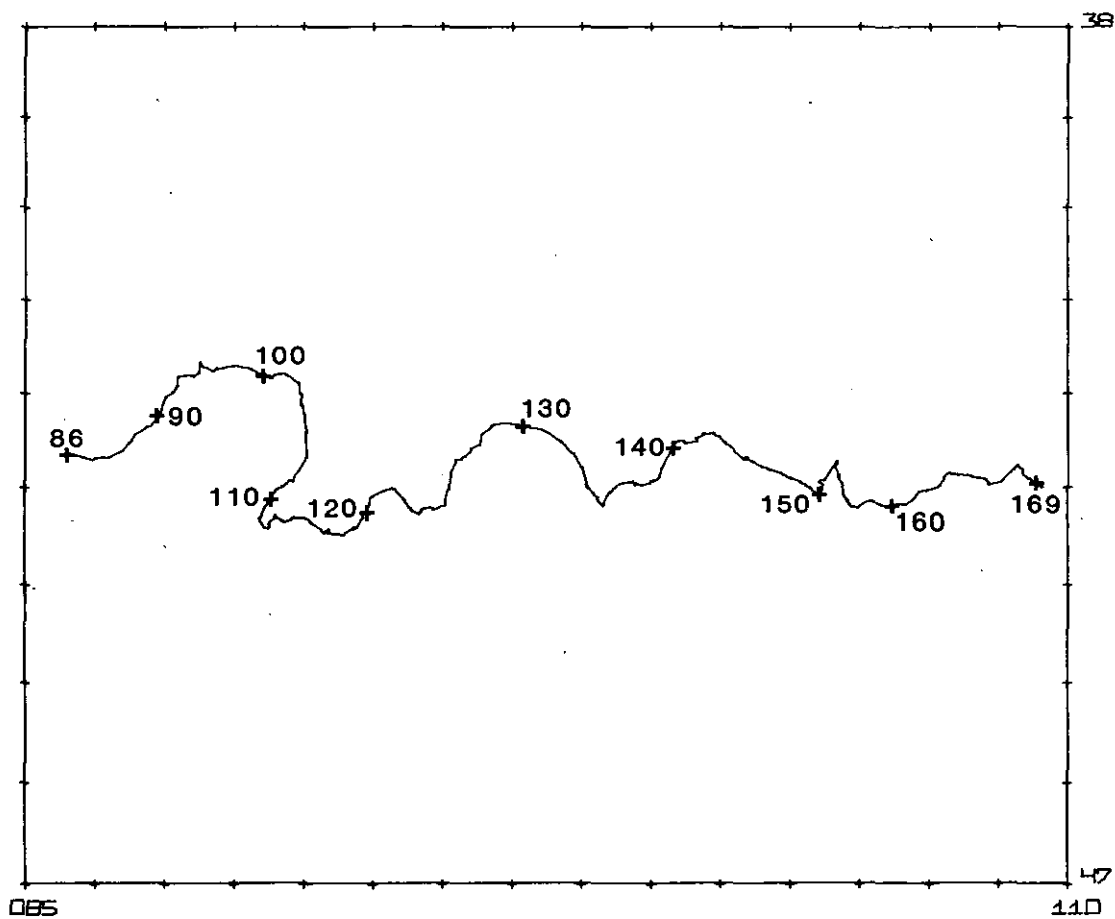
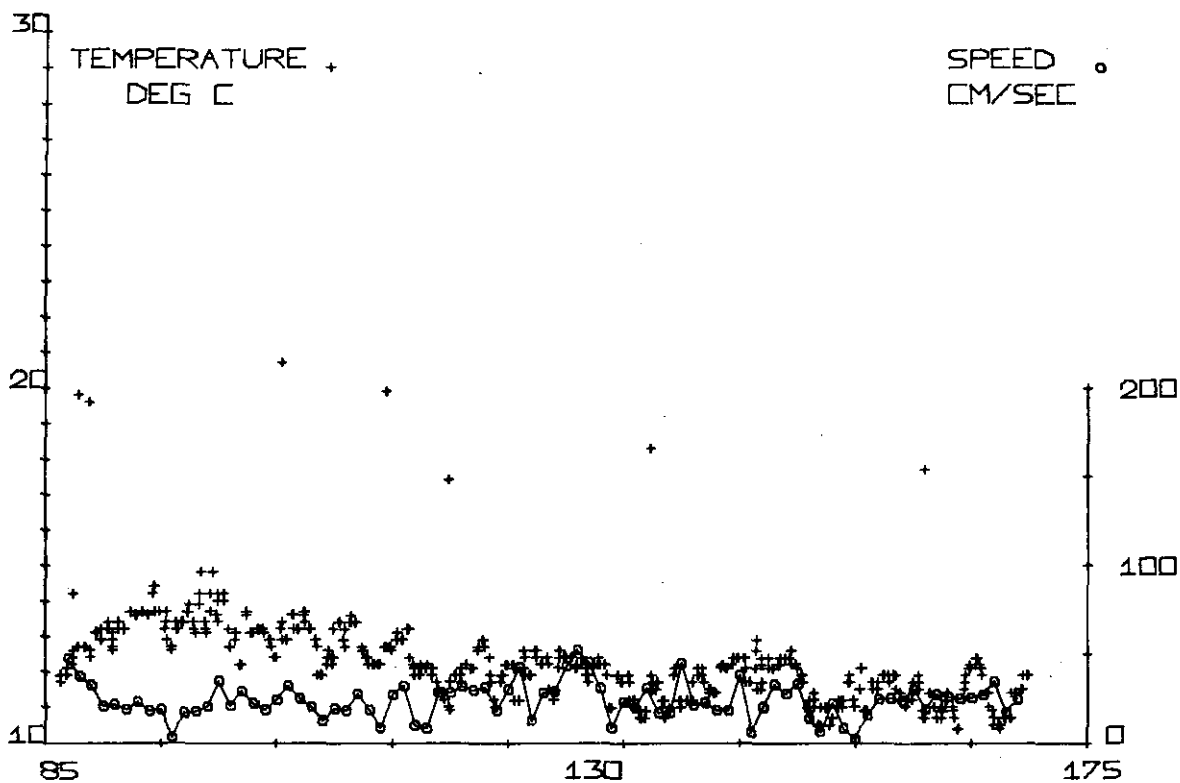


Buoys tracked between the Antarctic Convergence and the Sub-tropical Convergence

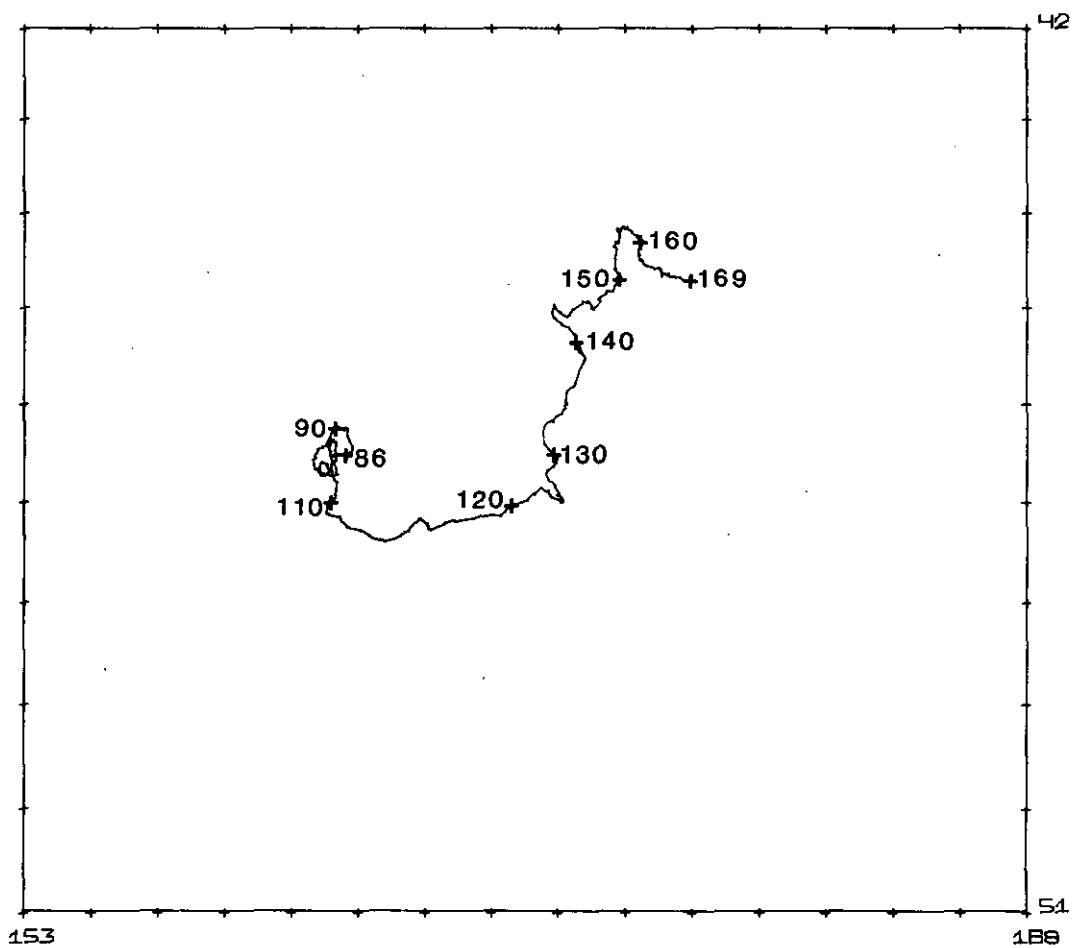
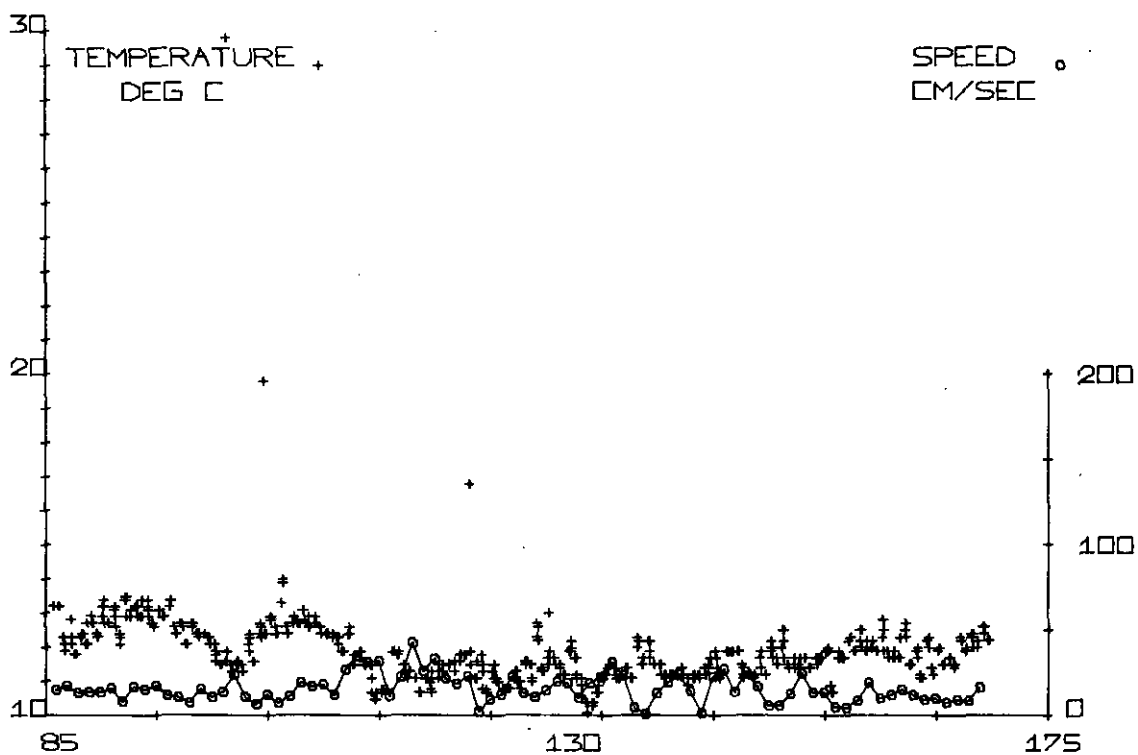
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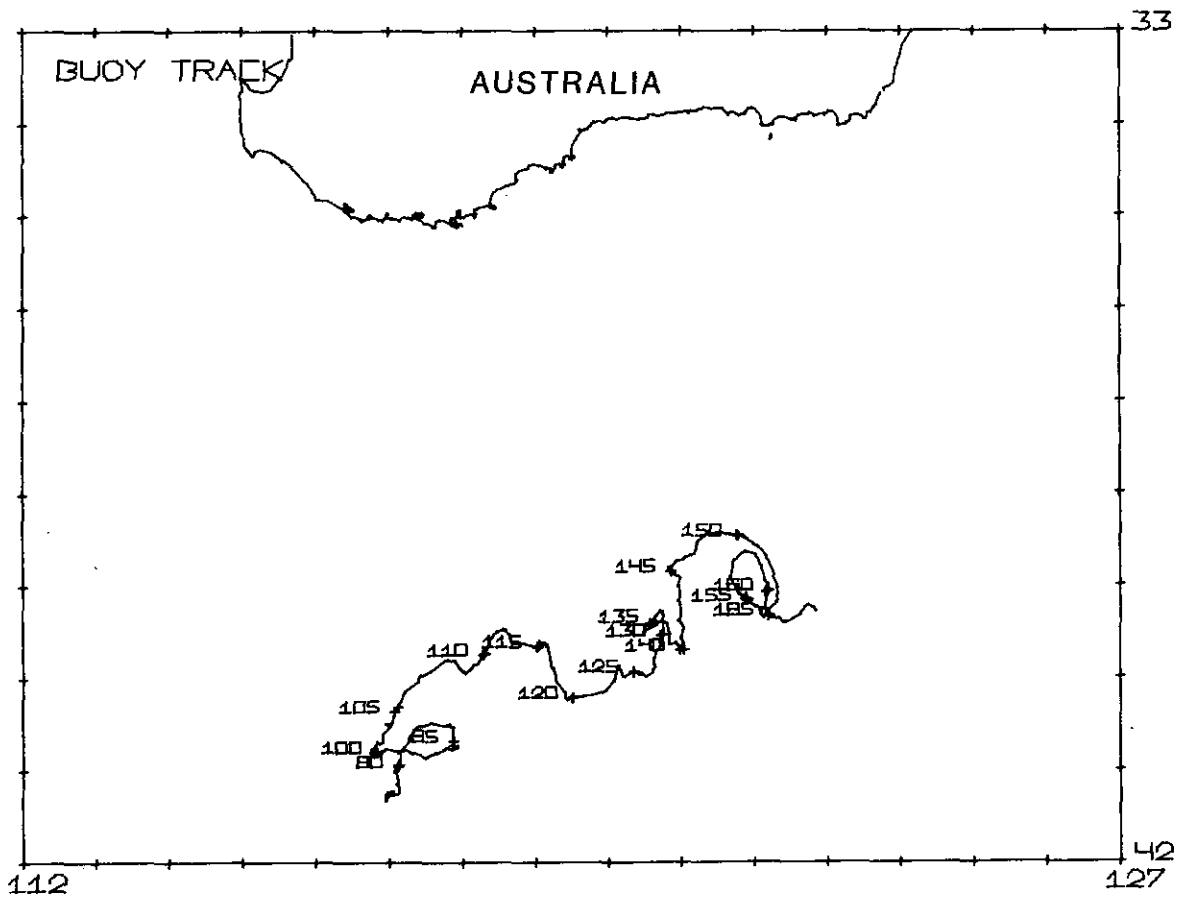
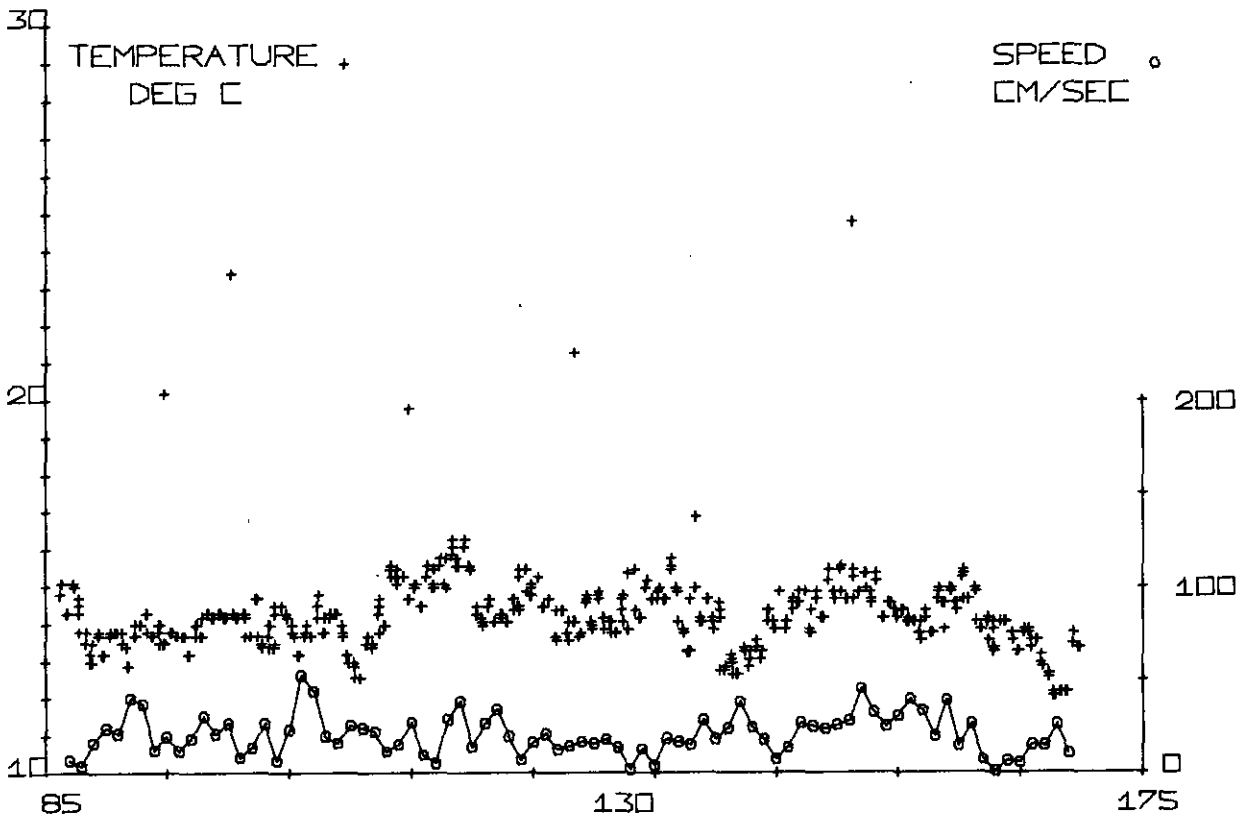
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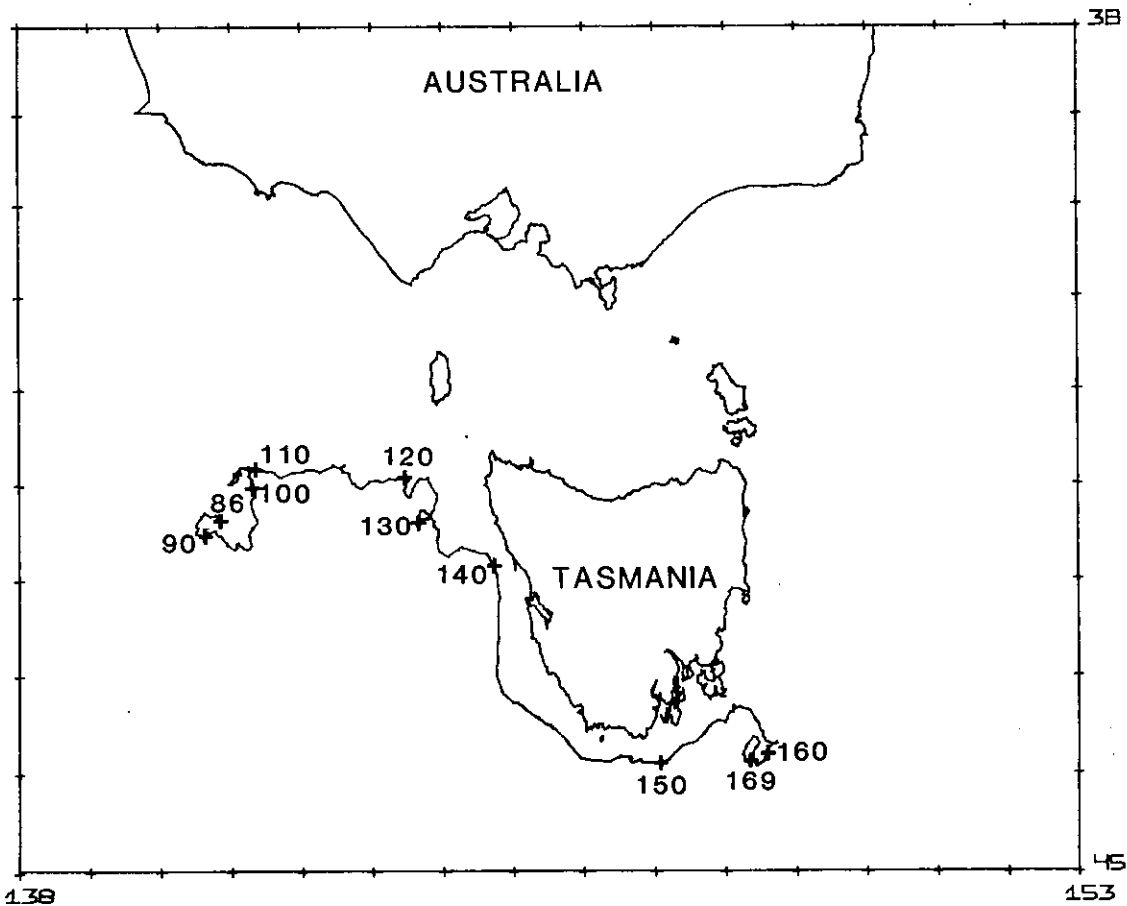
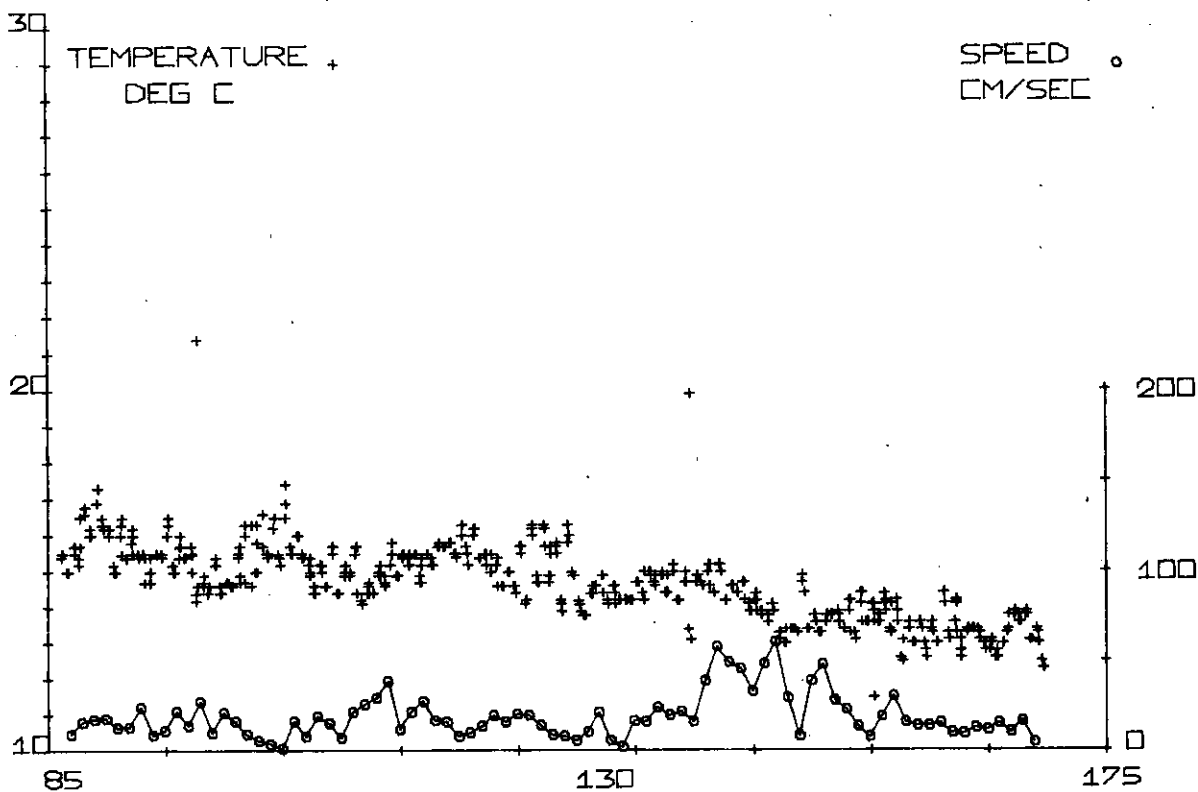
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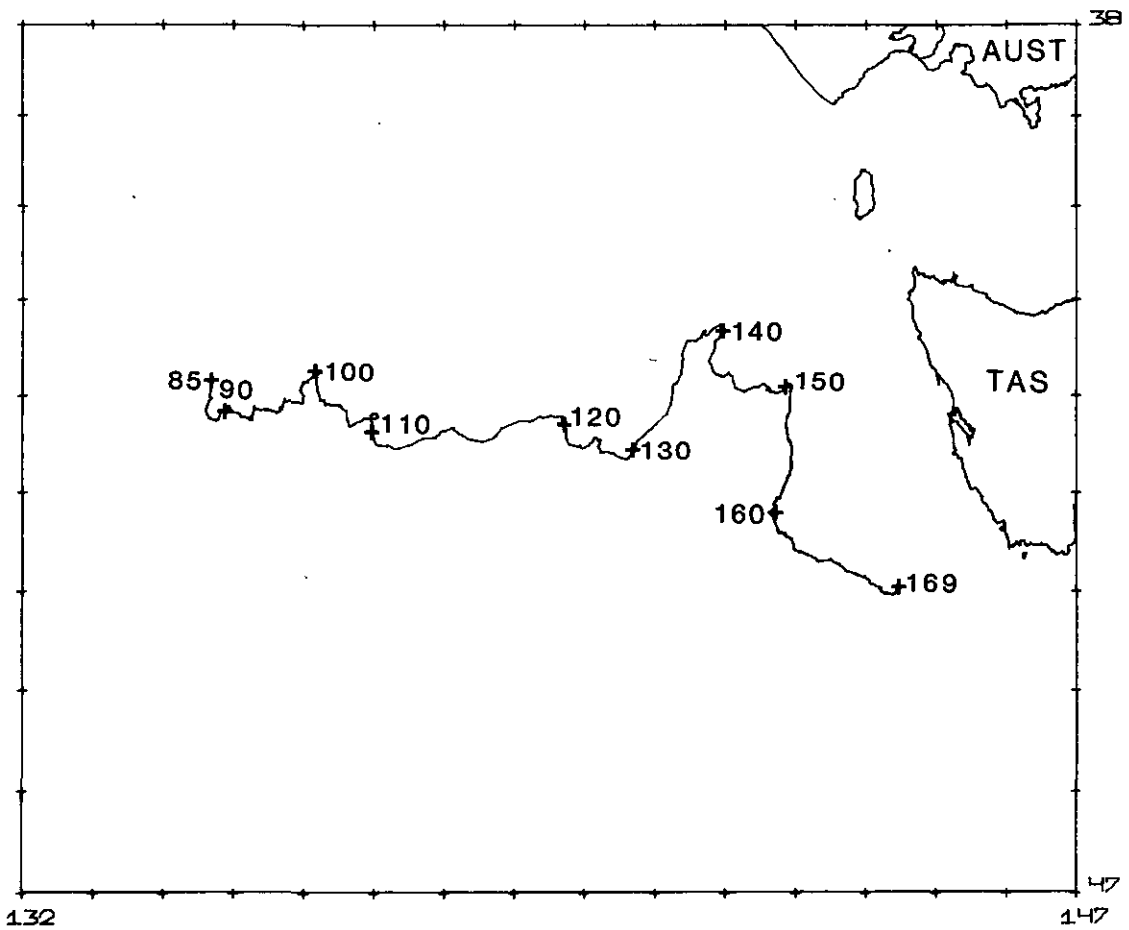
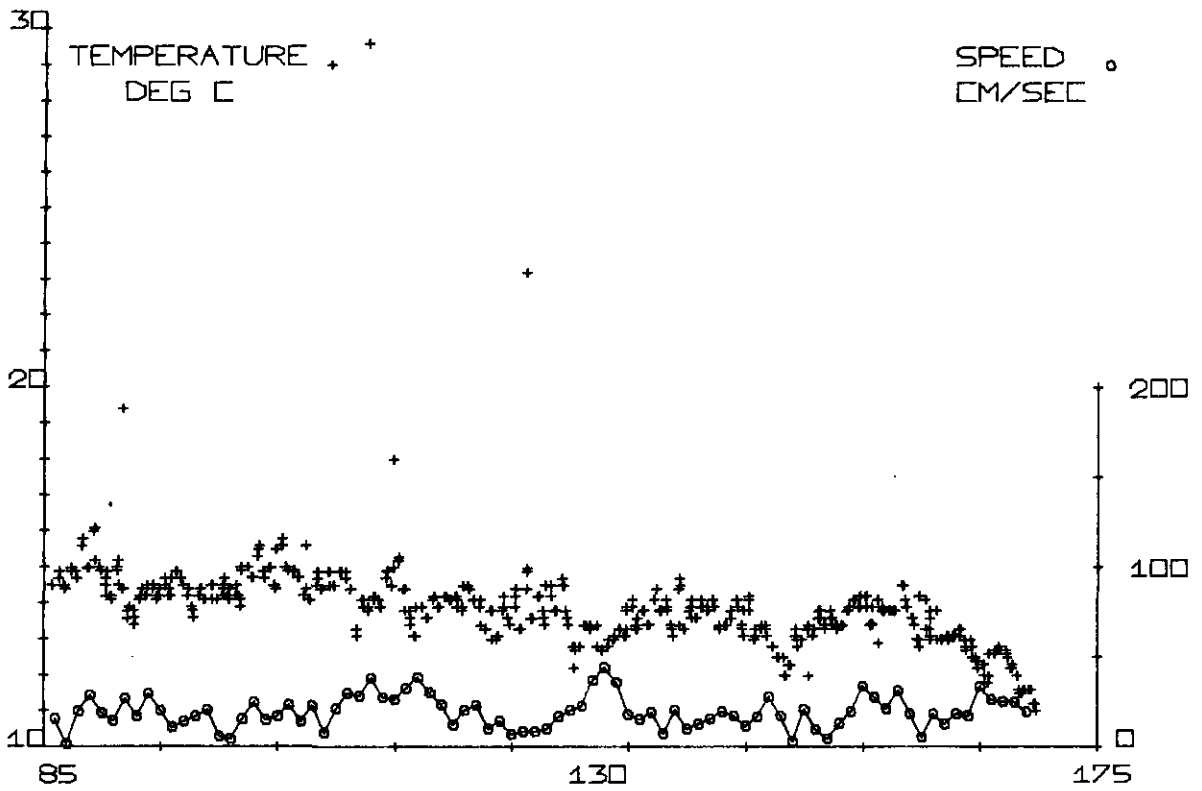
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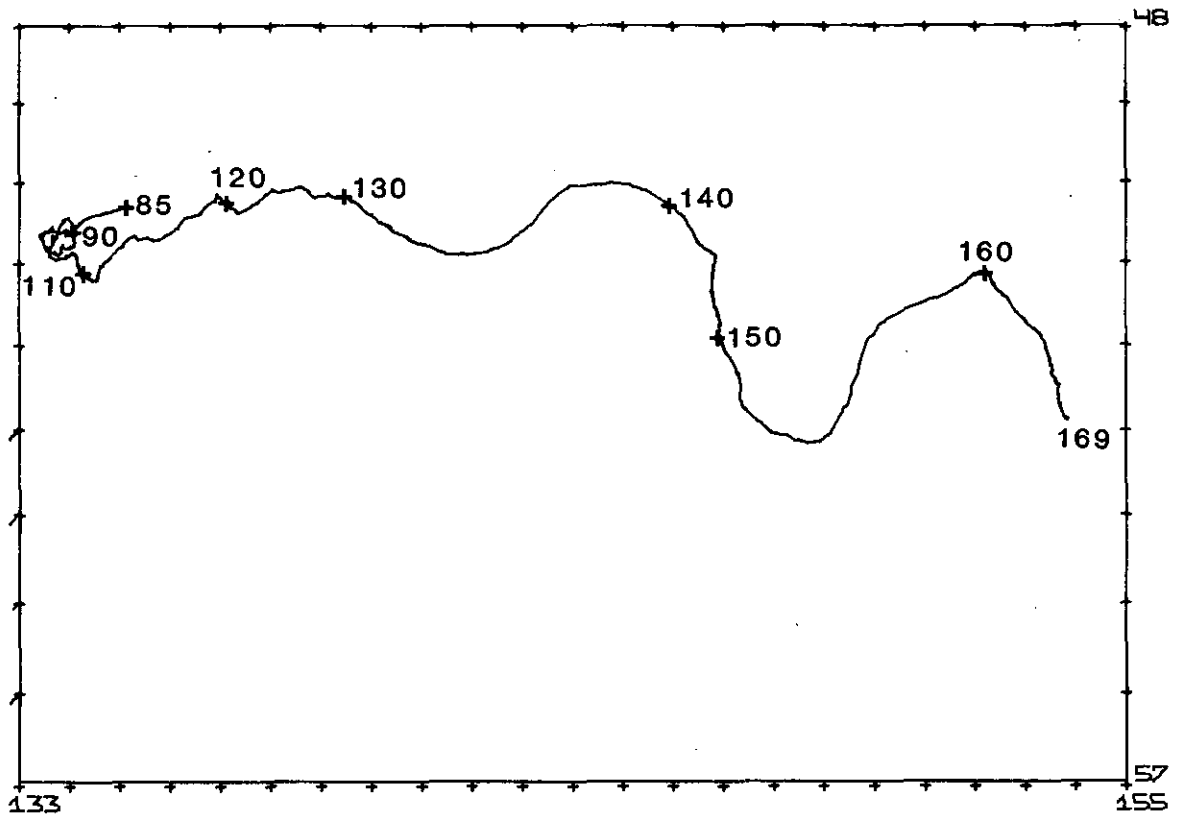
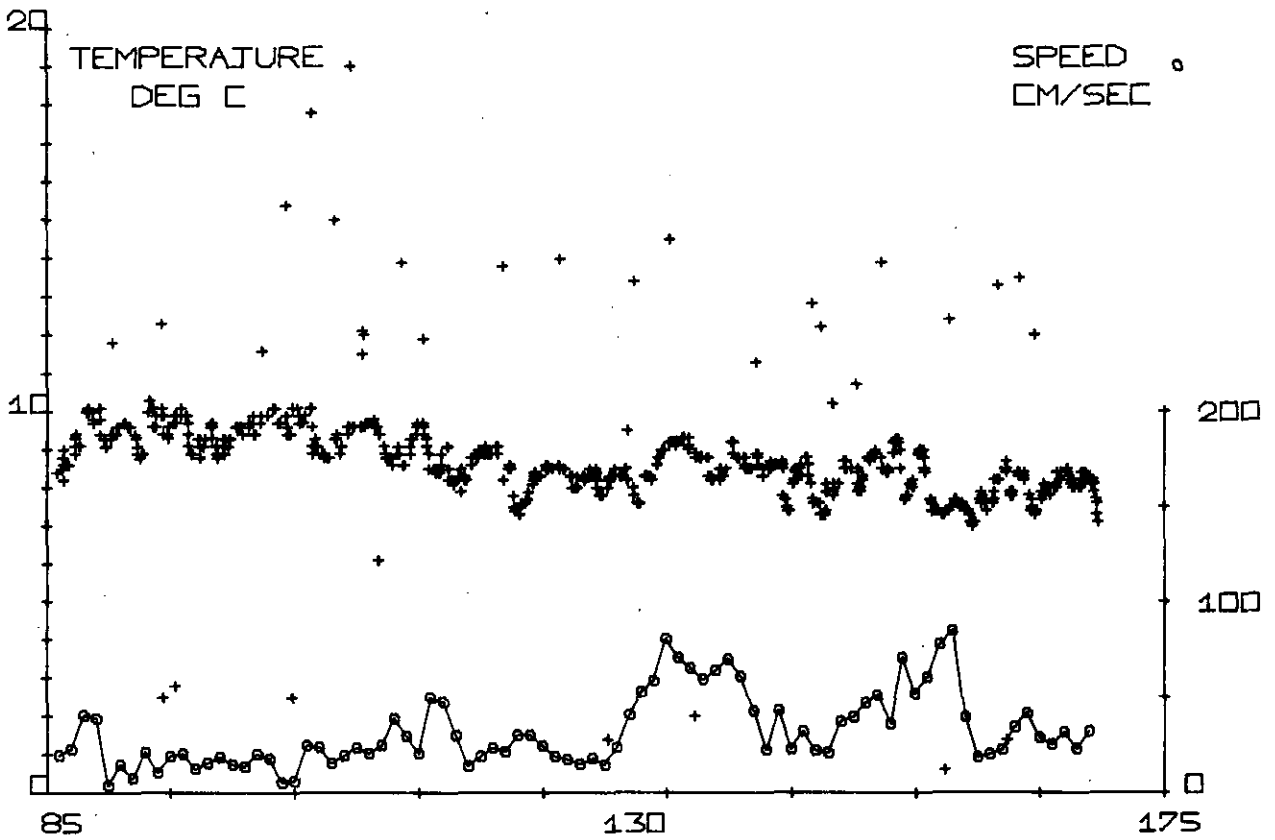
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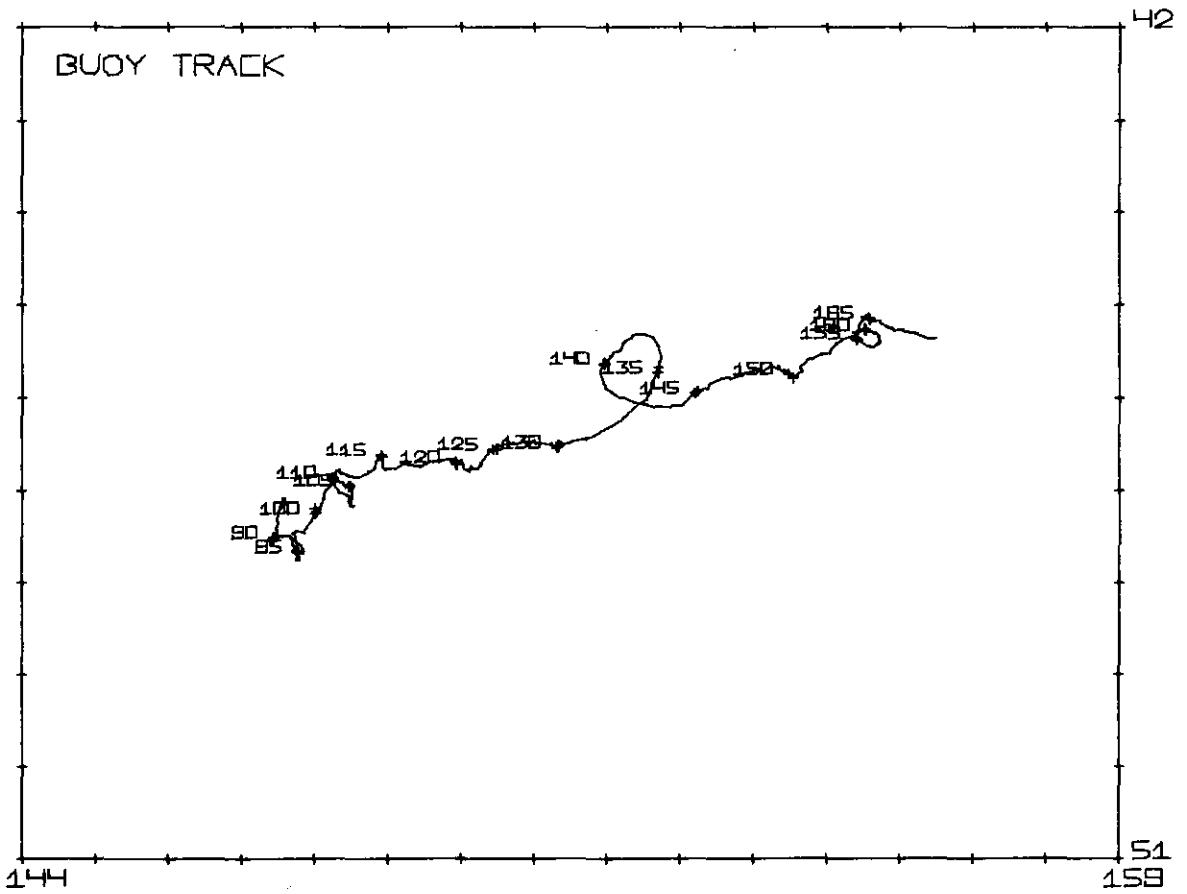
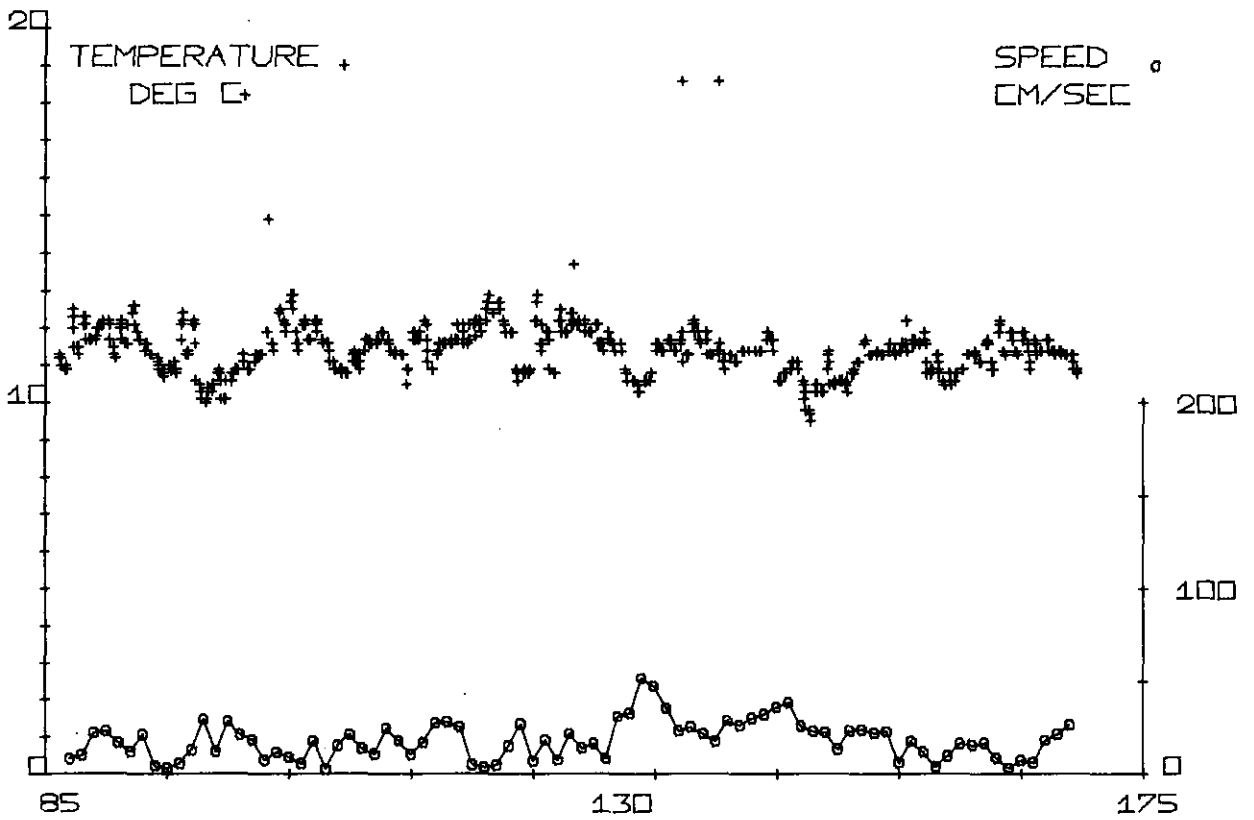
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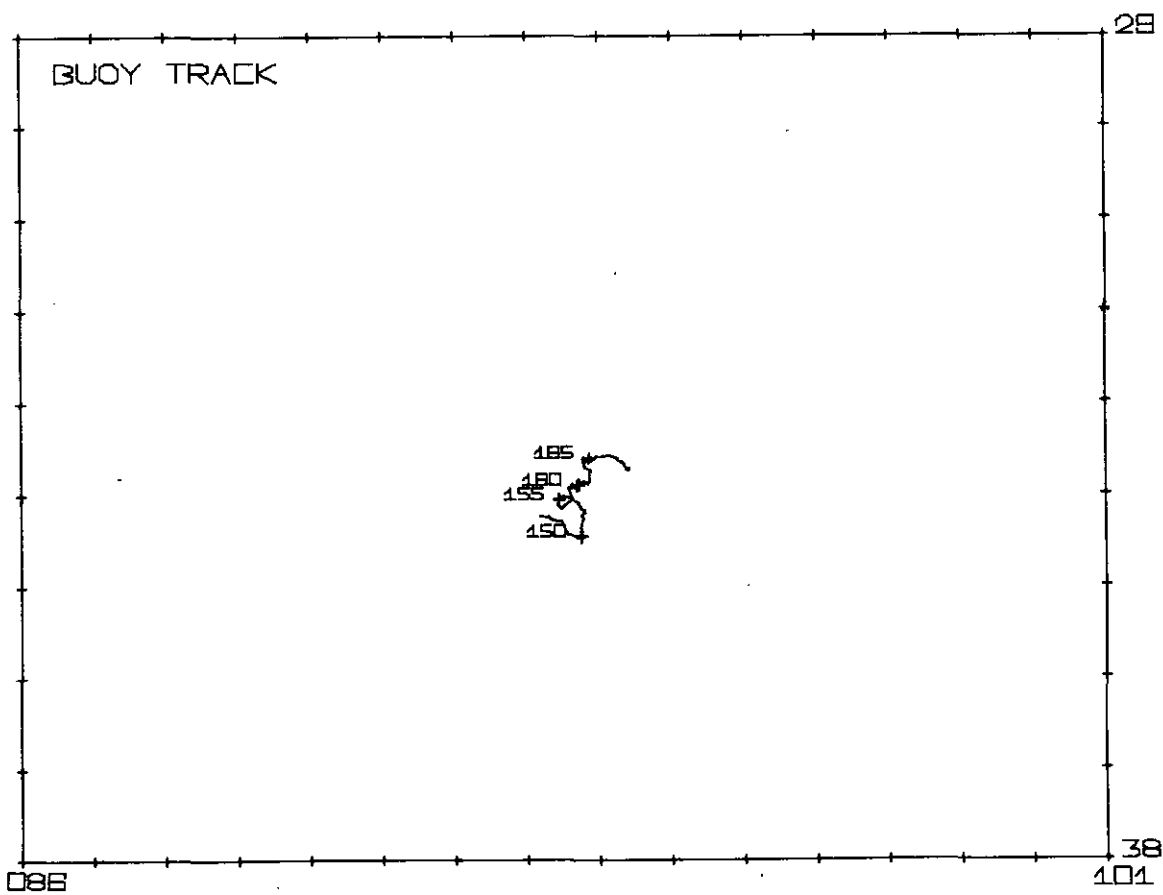
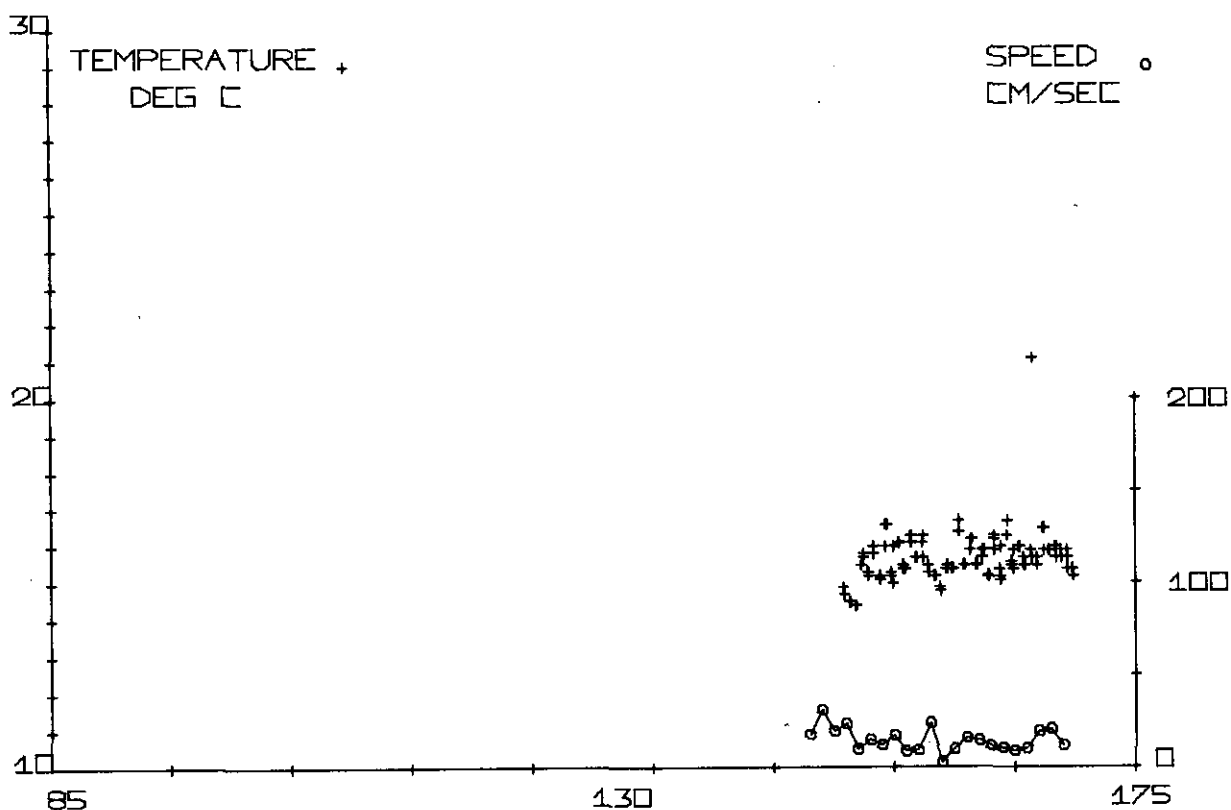
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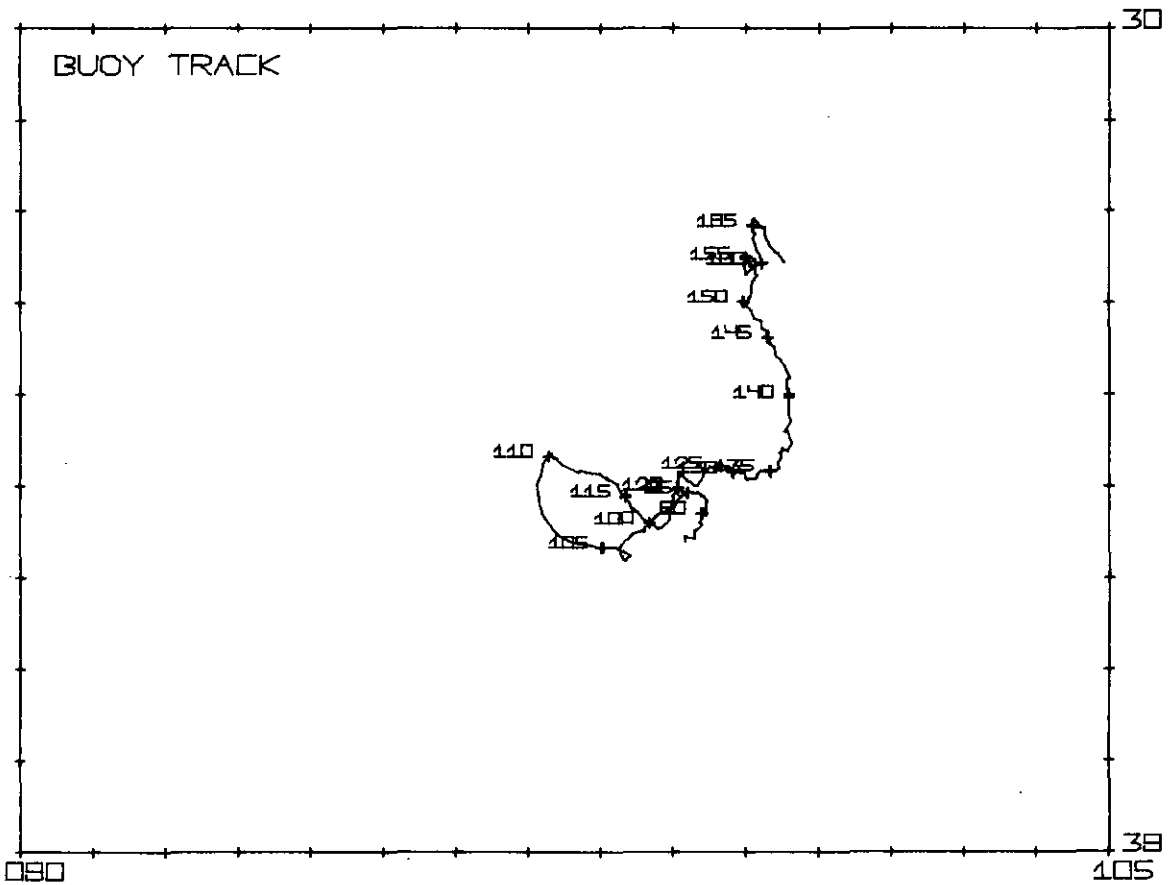
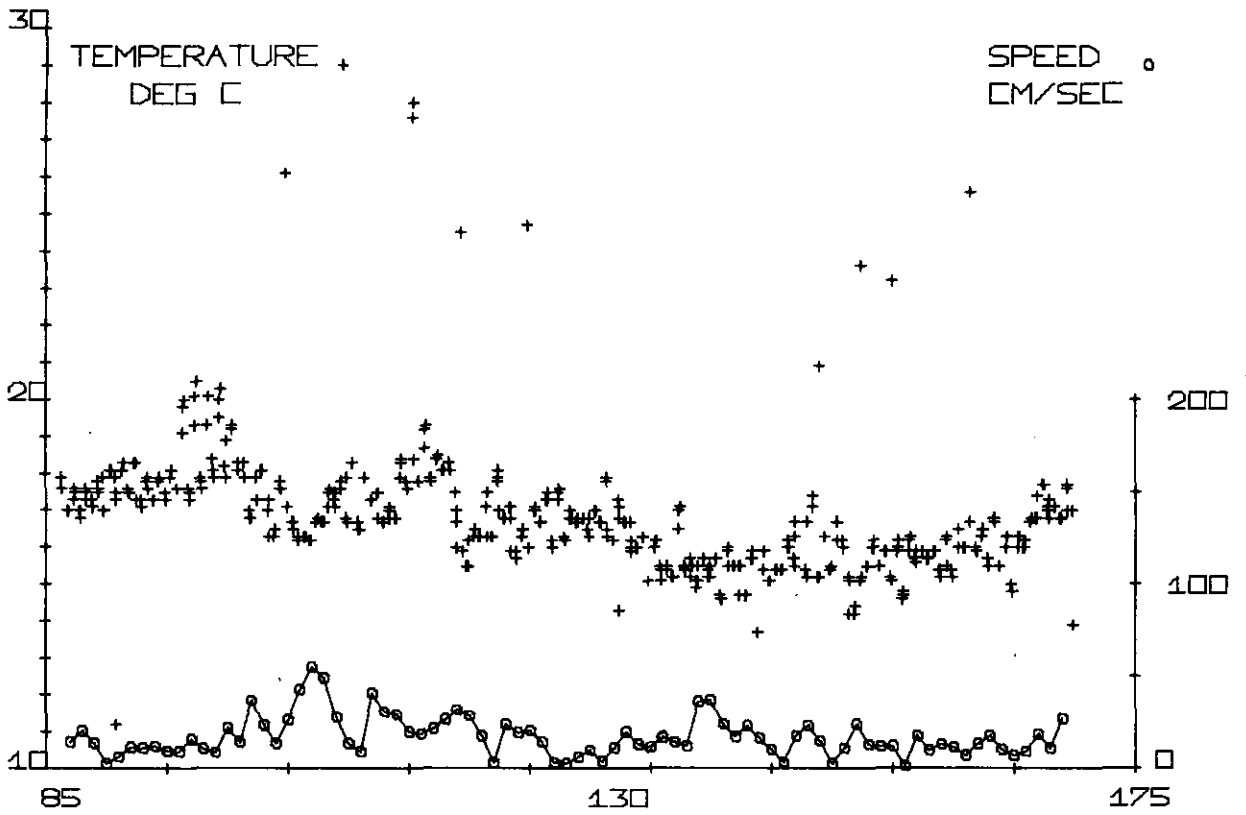
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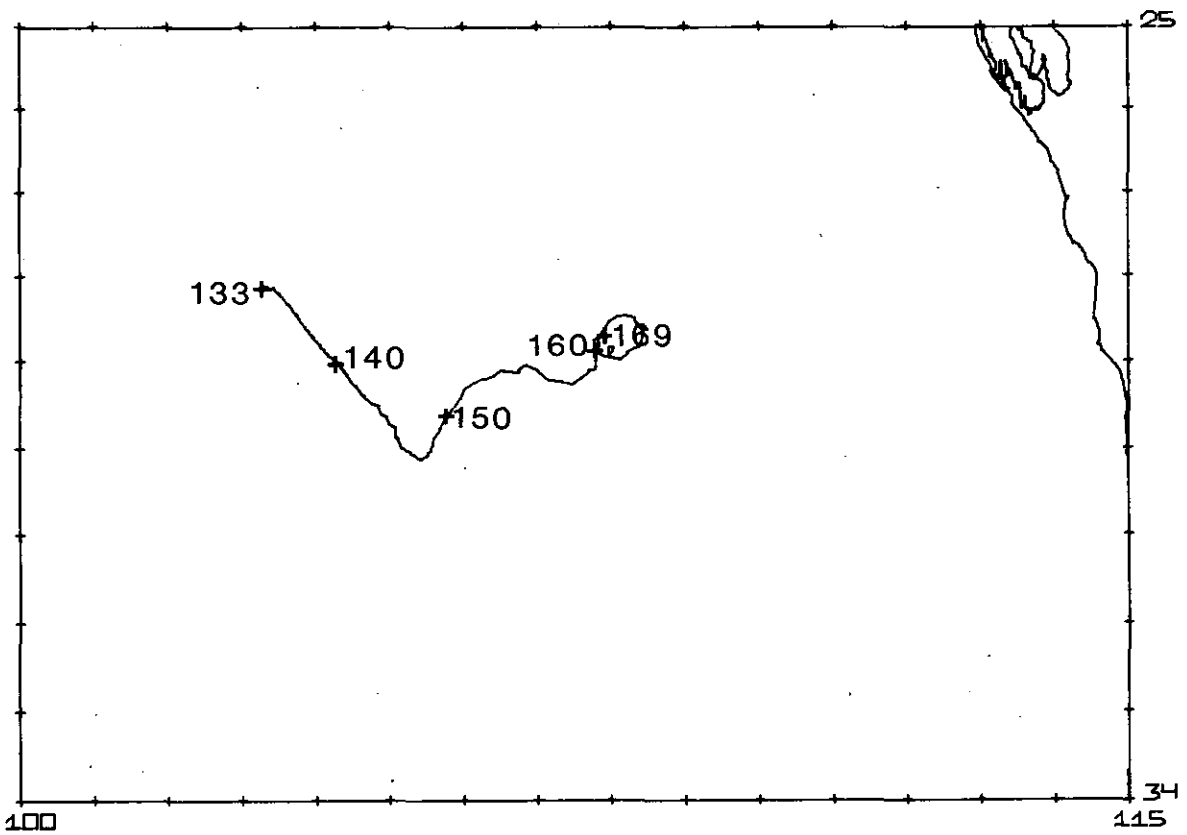
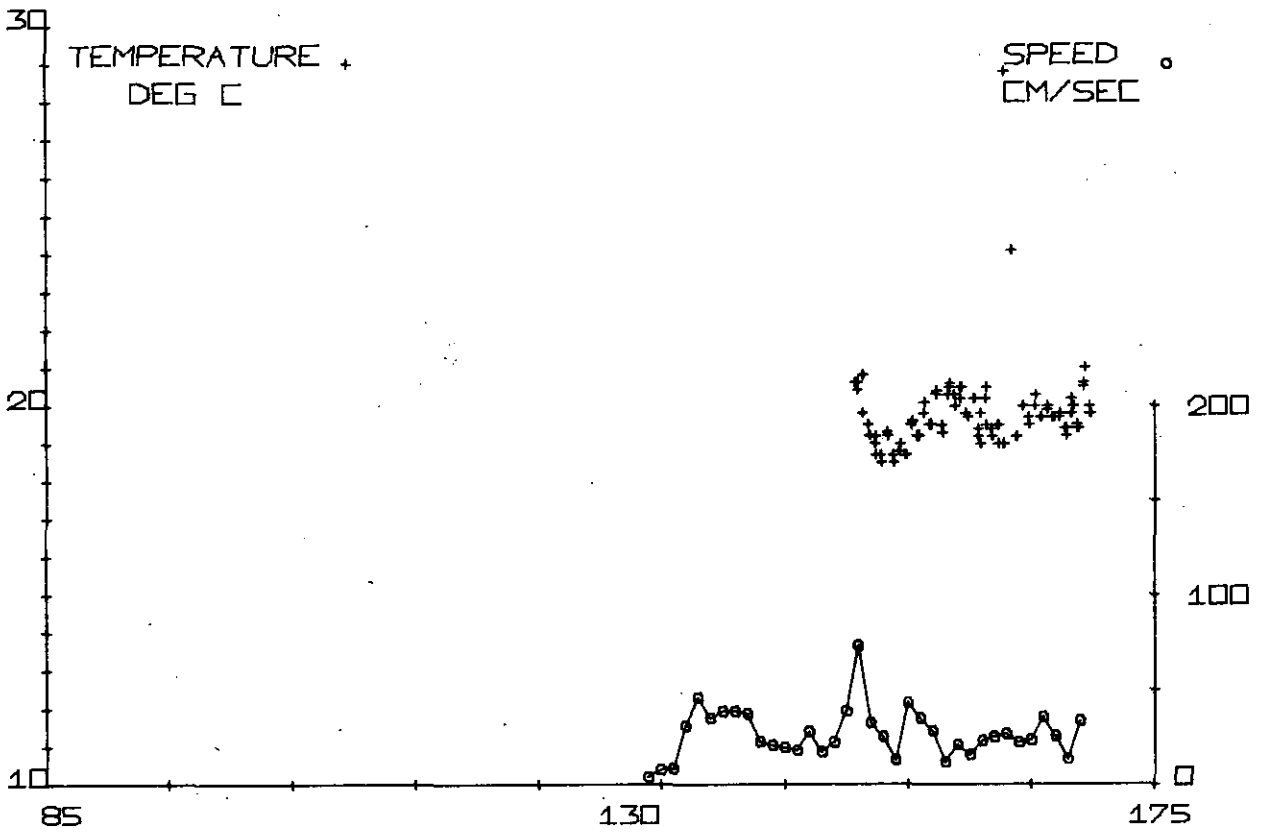
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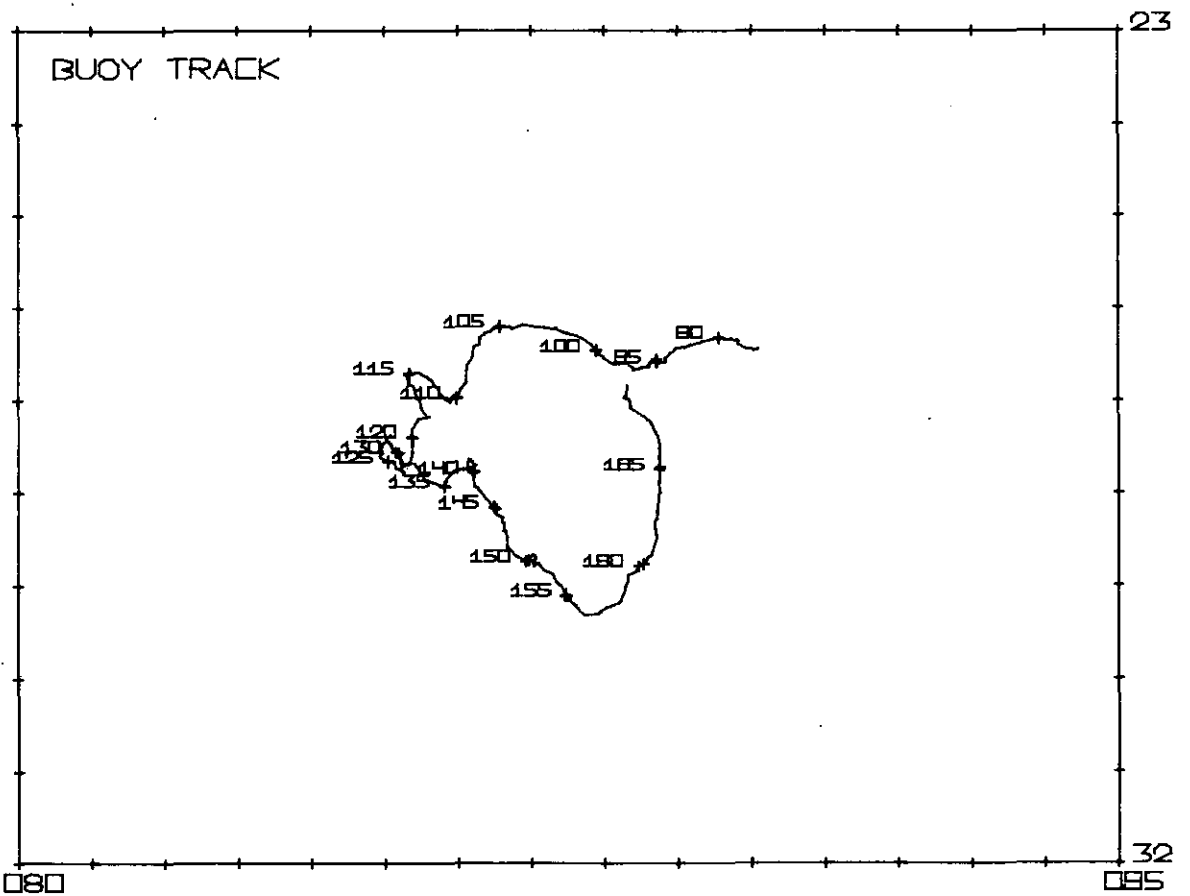
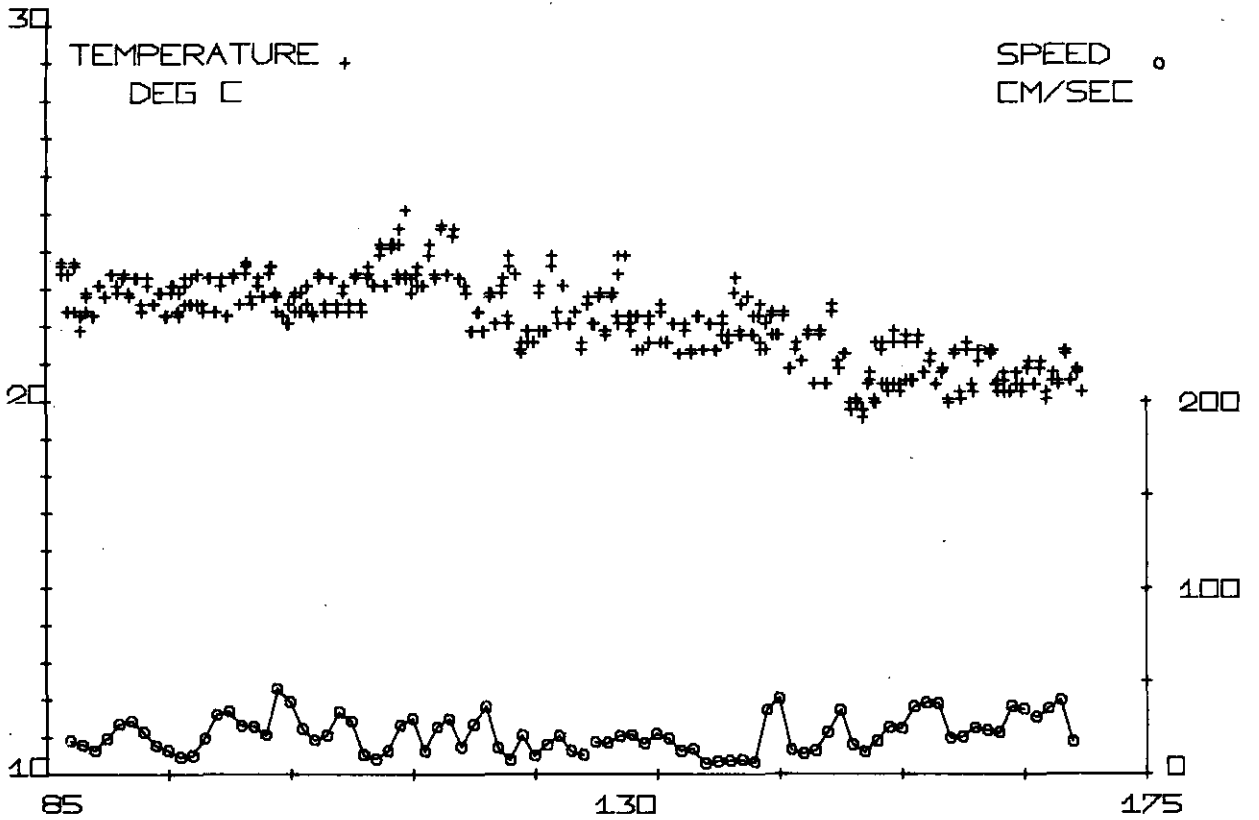
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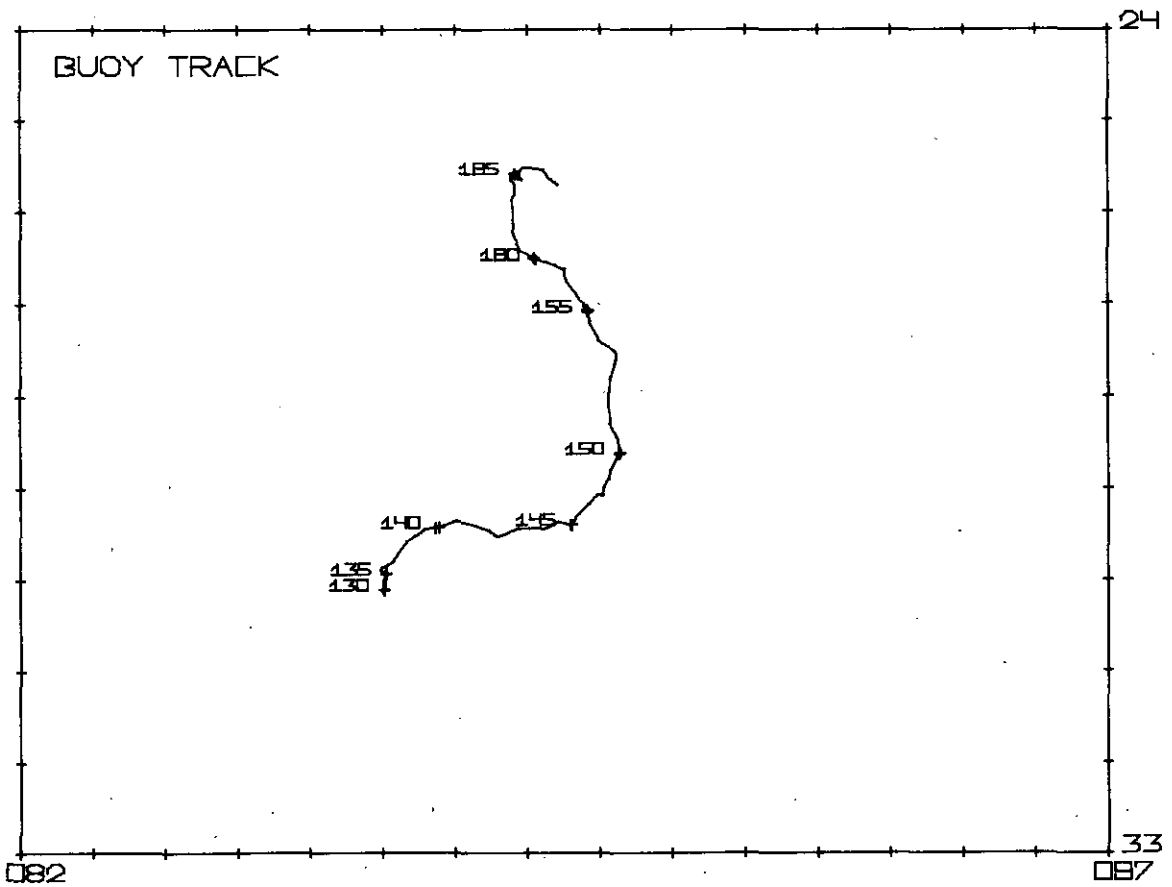
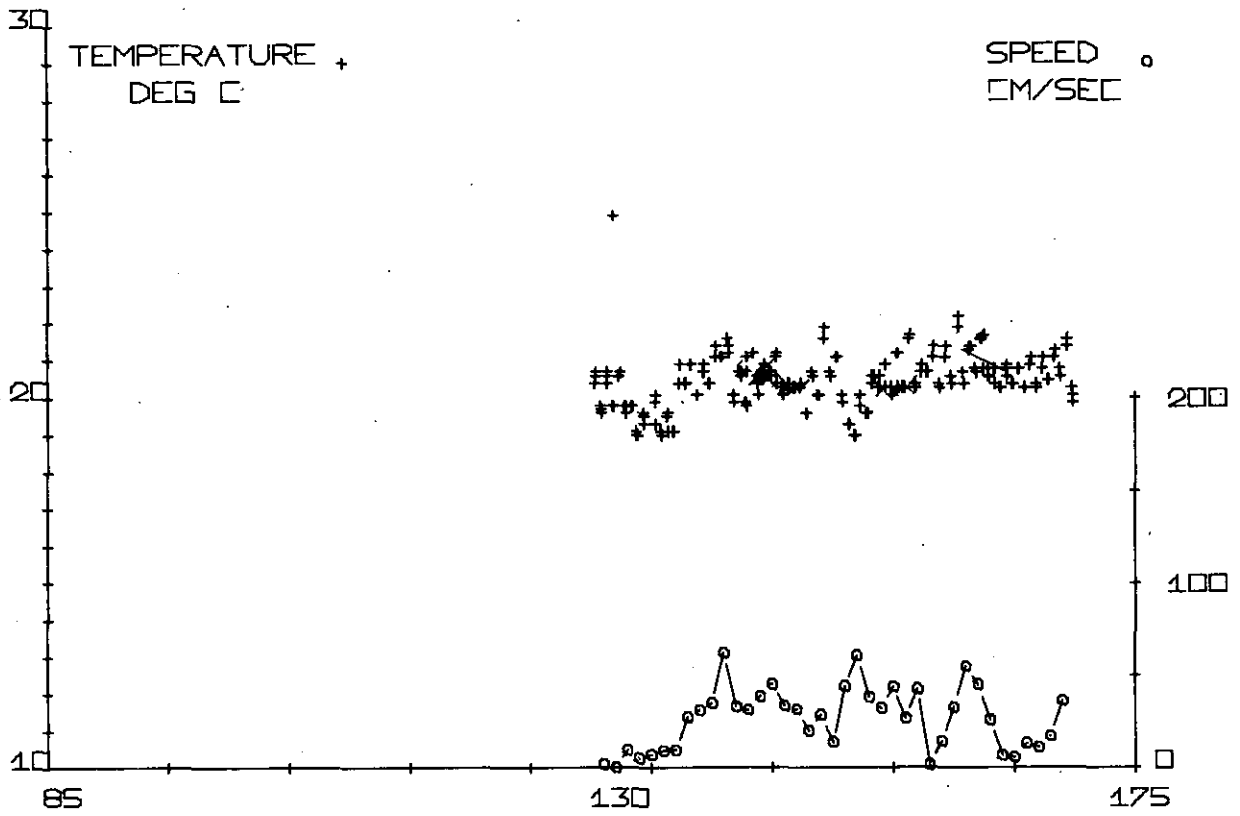
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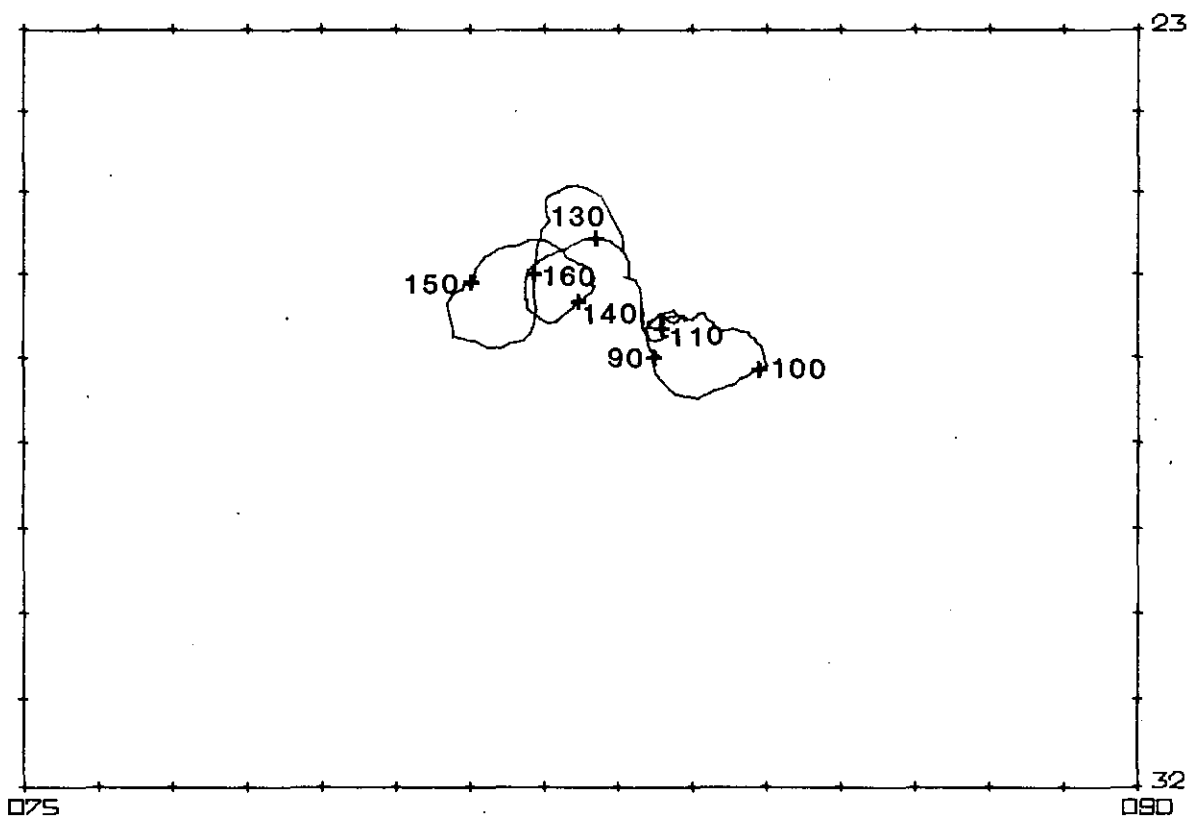
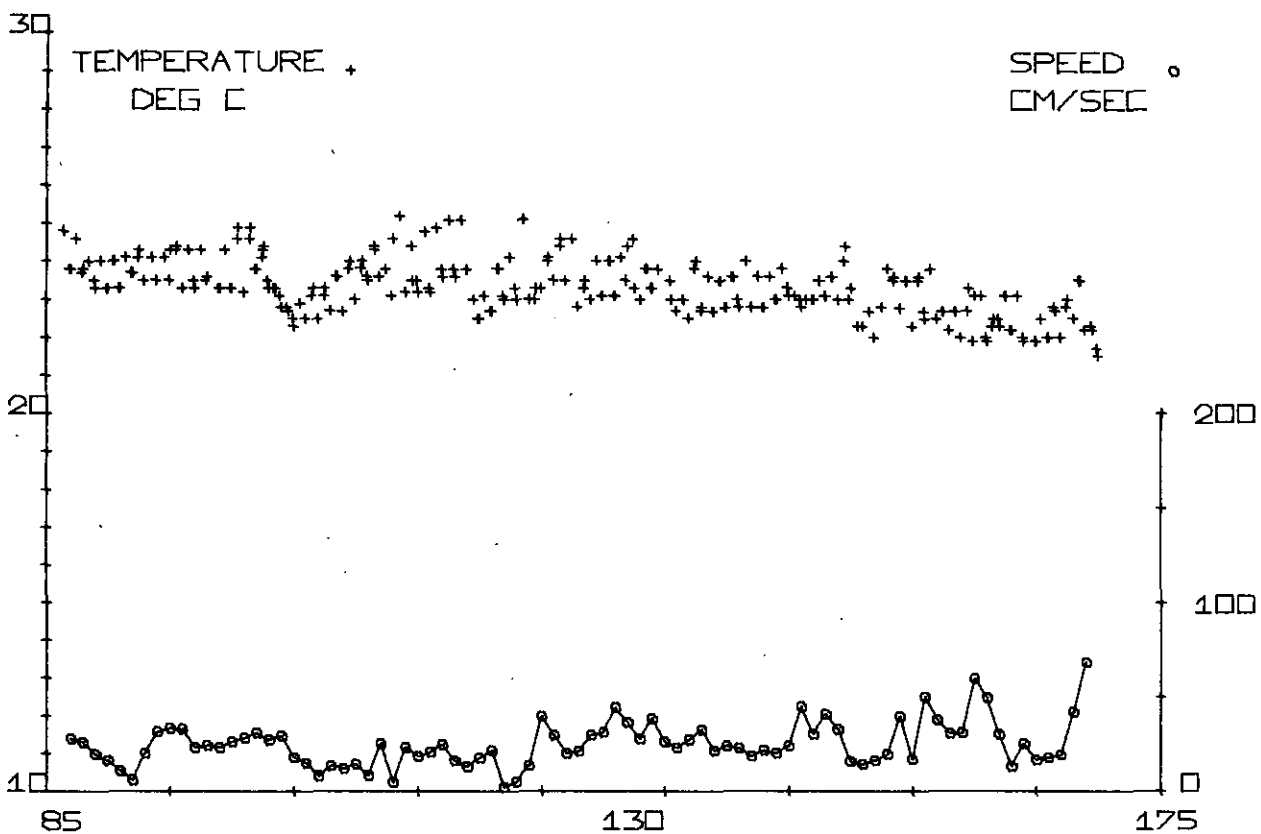
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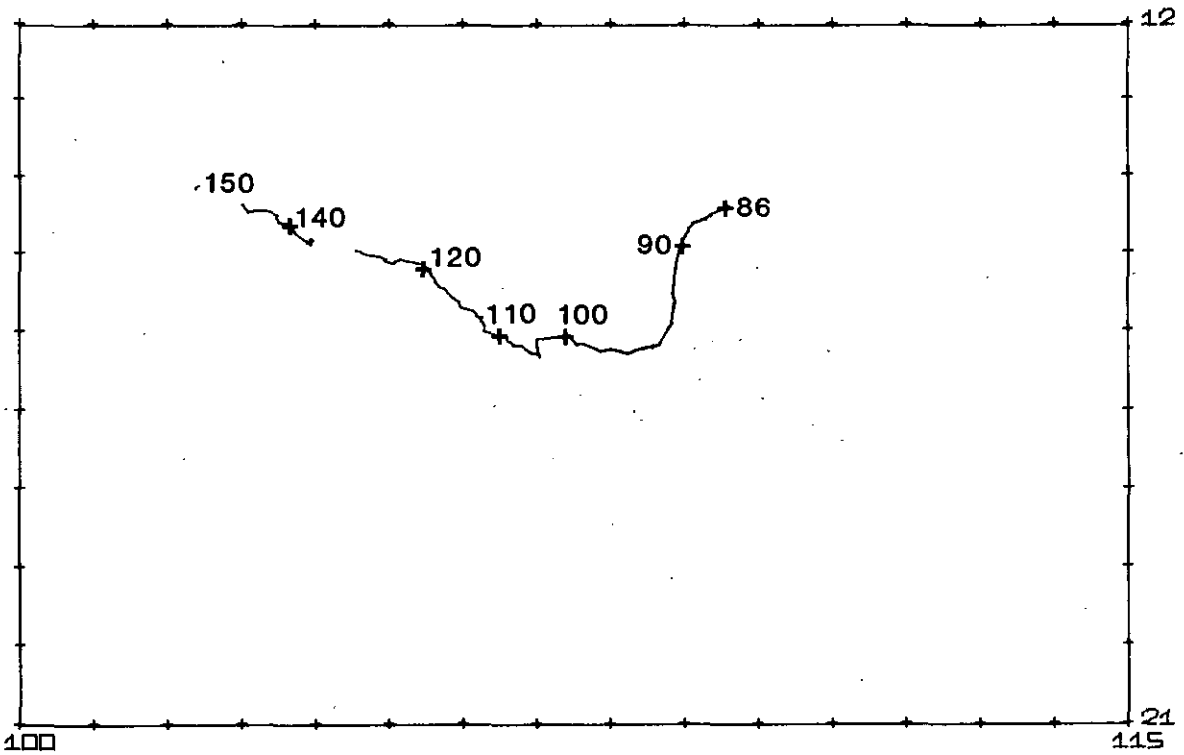
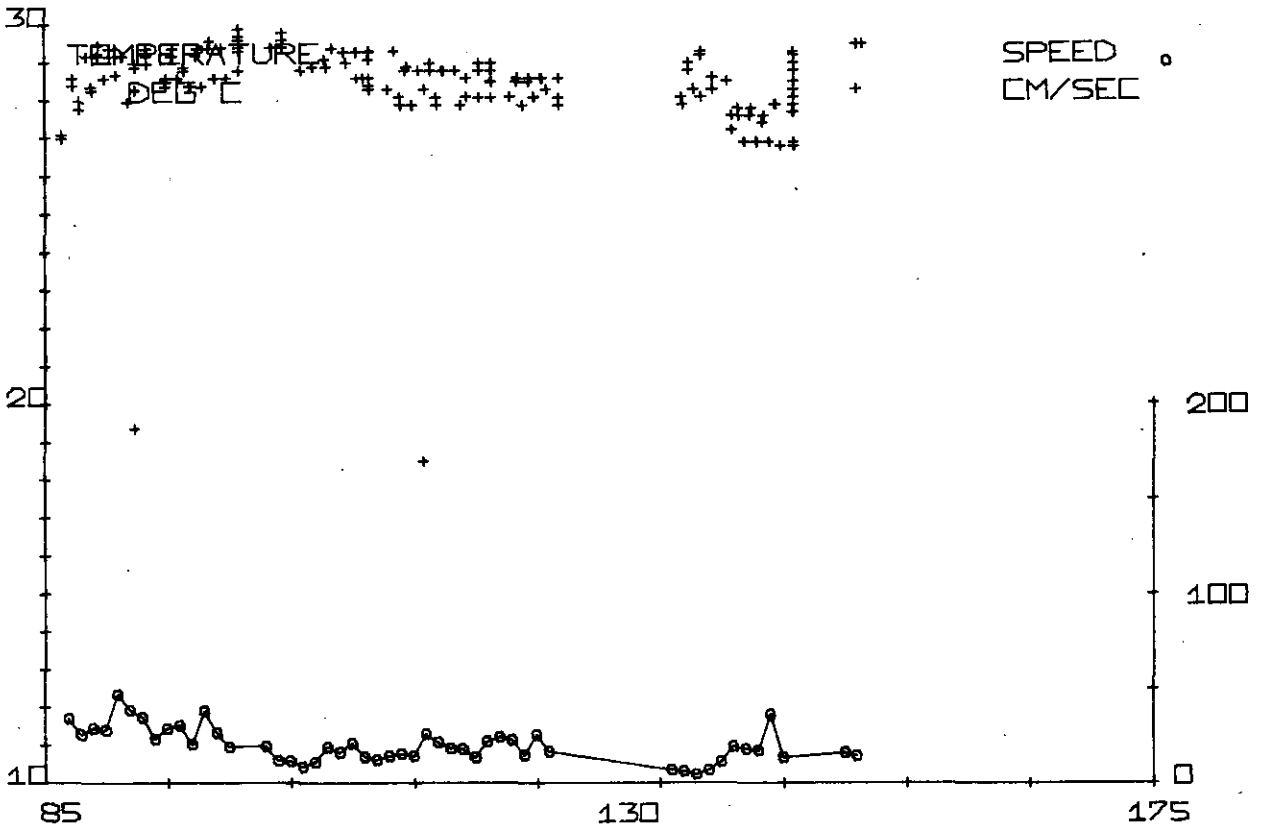
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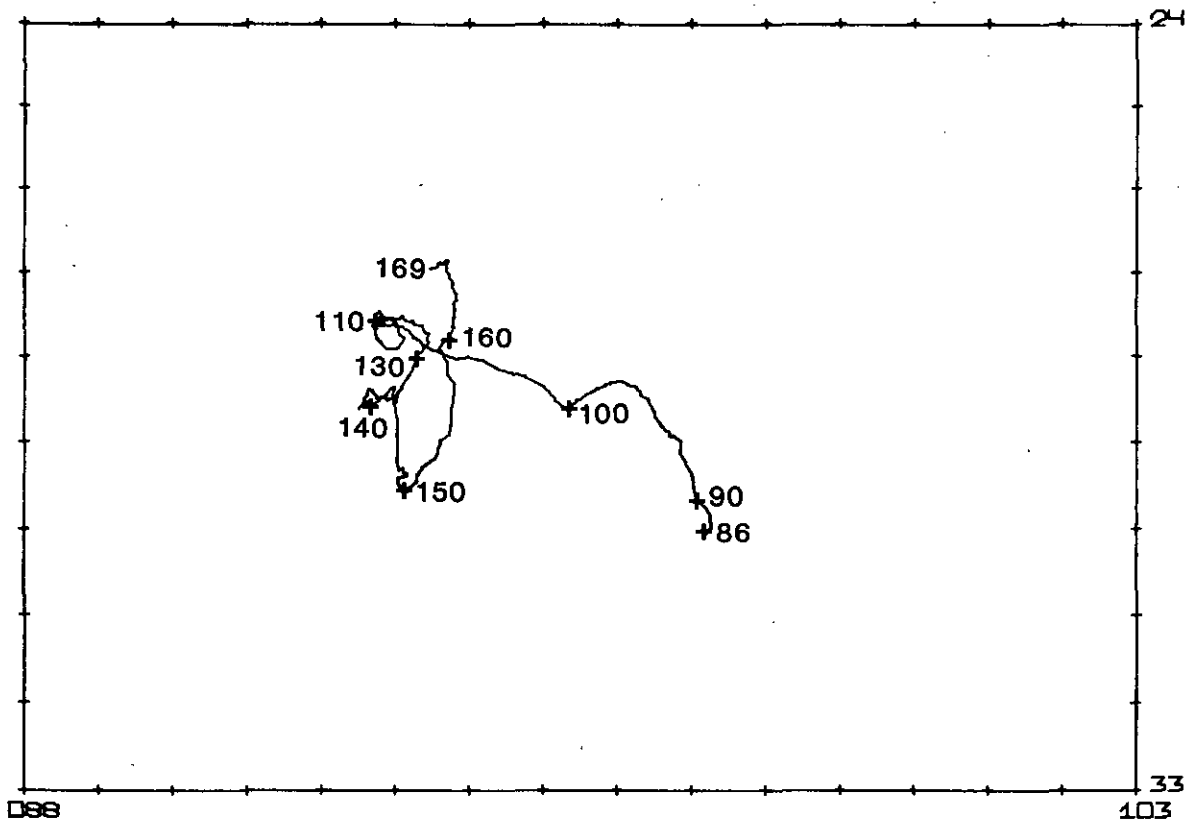
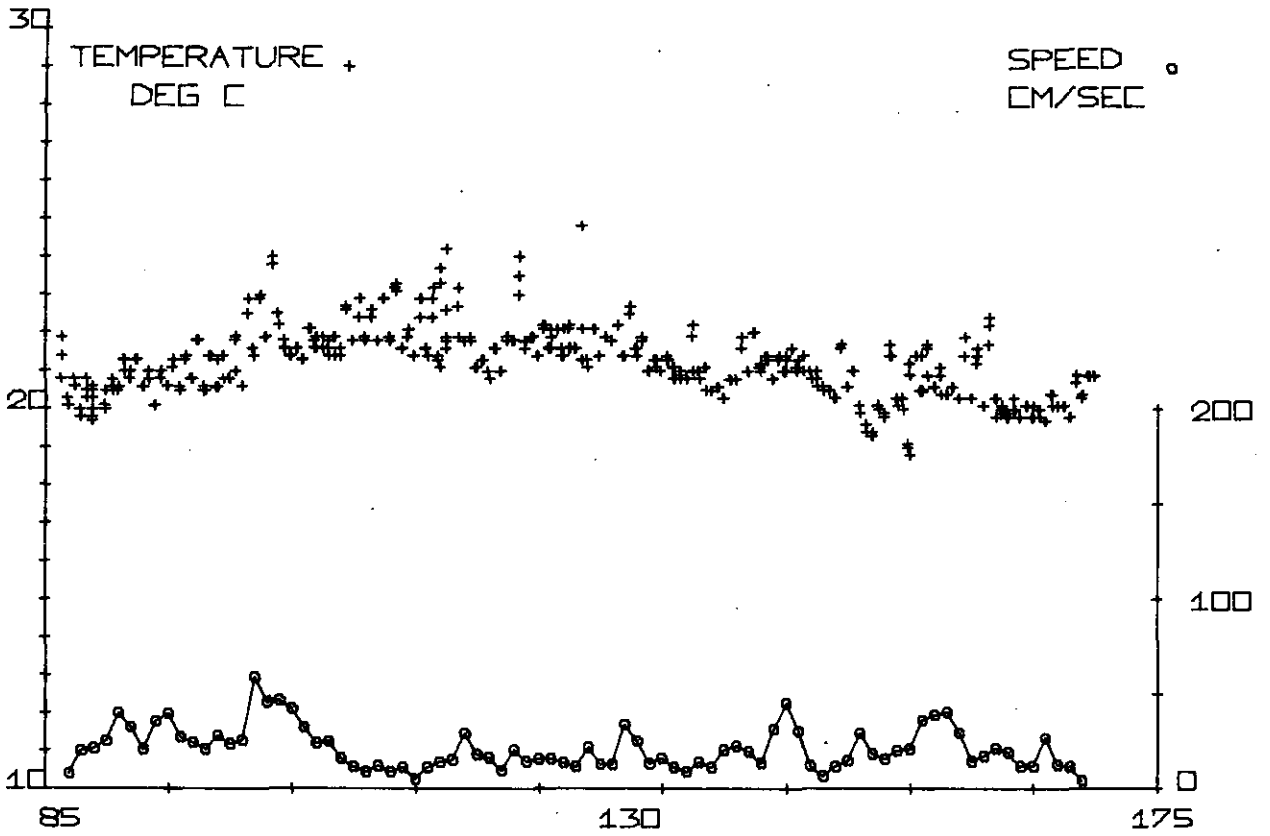
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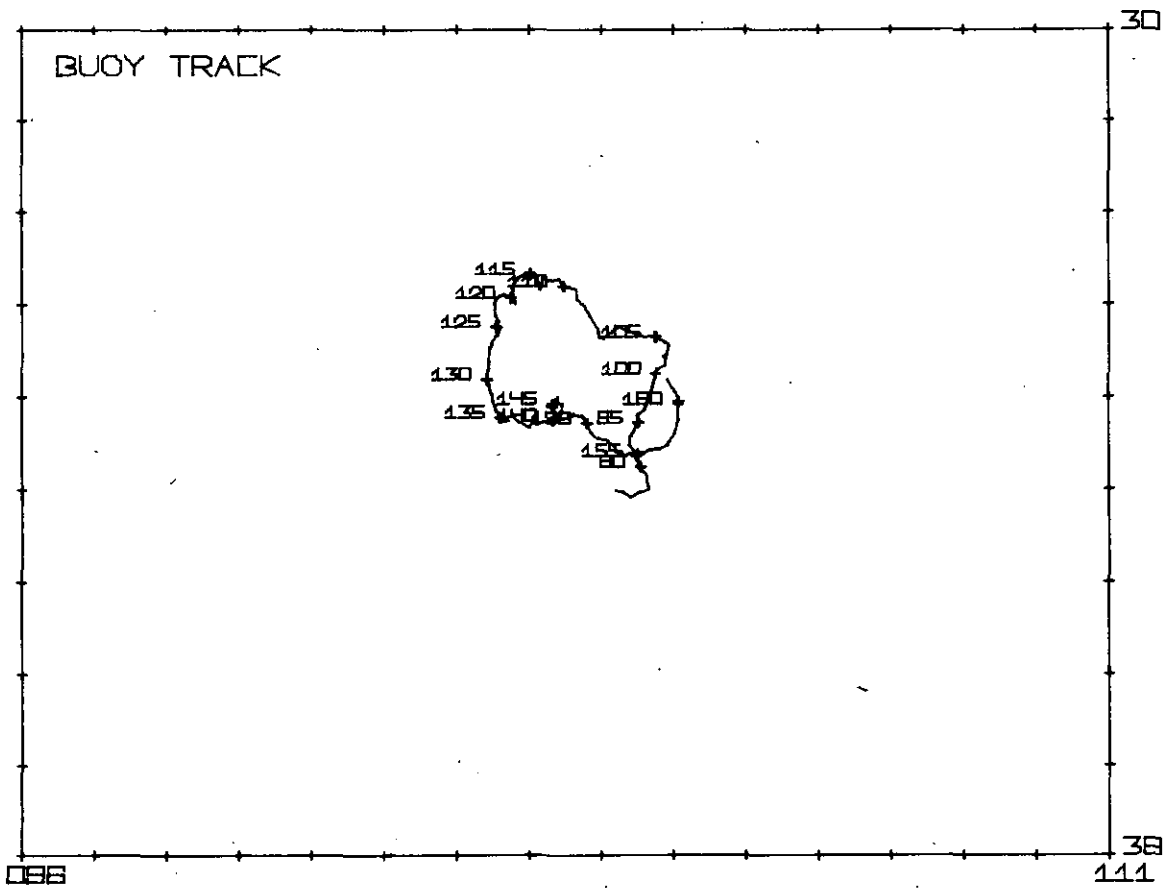
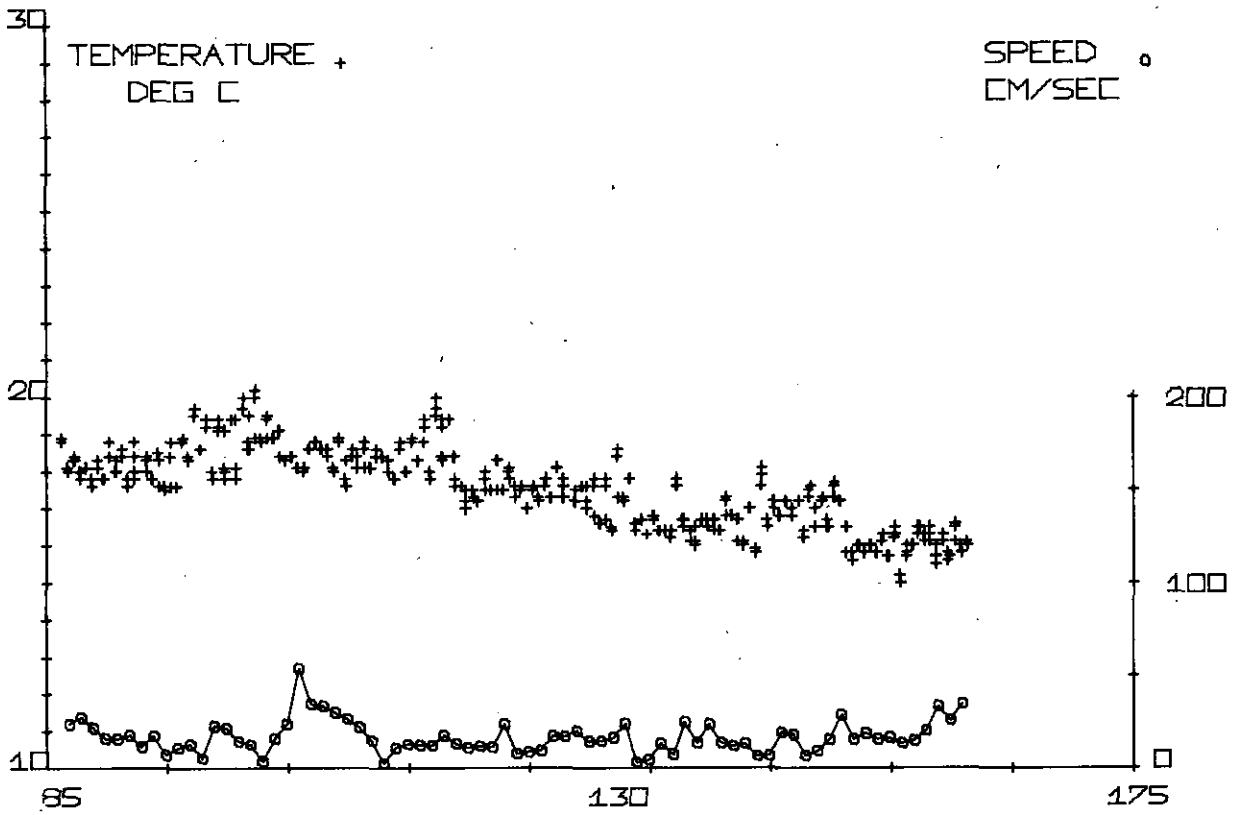
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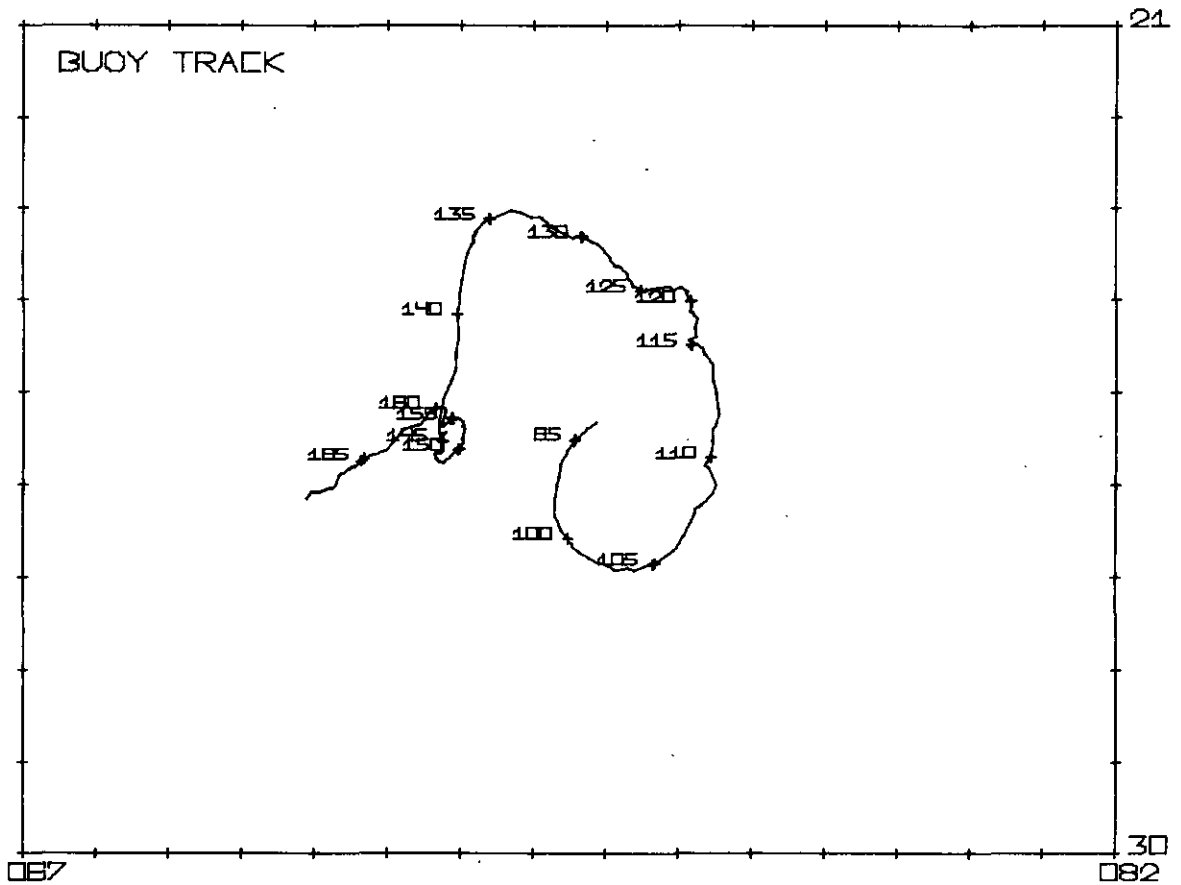
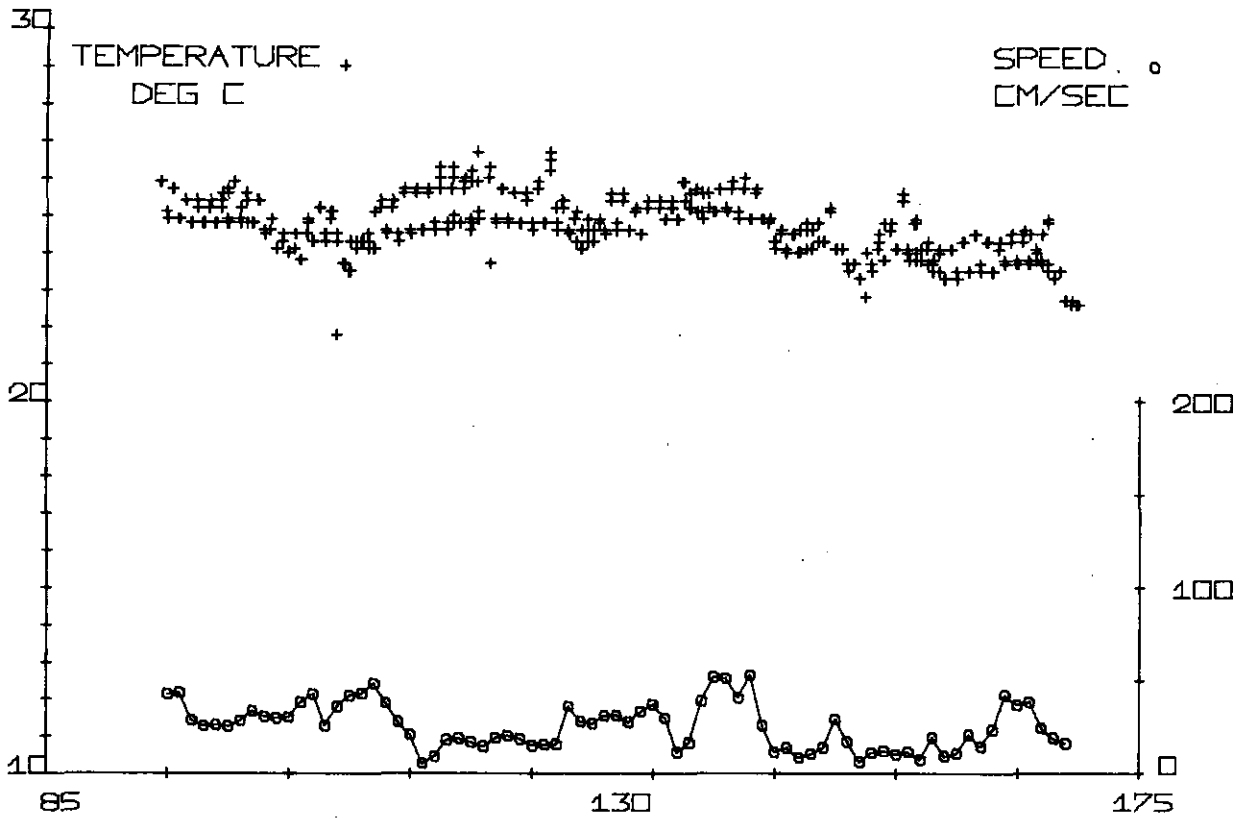
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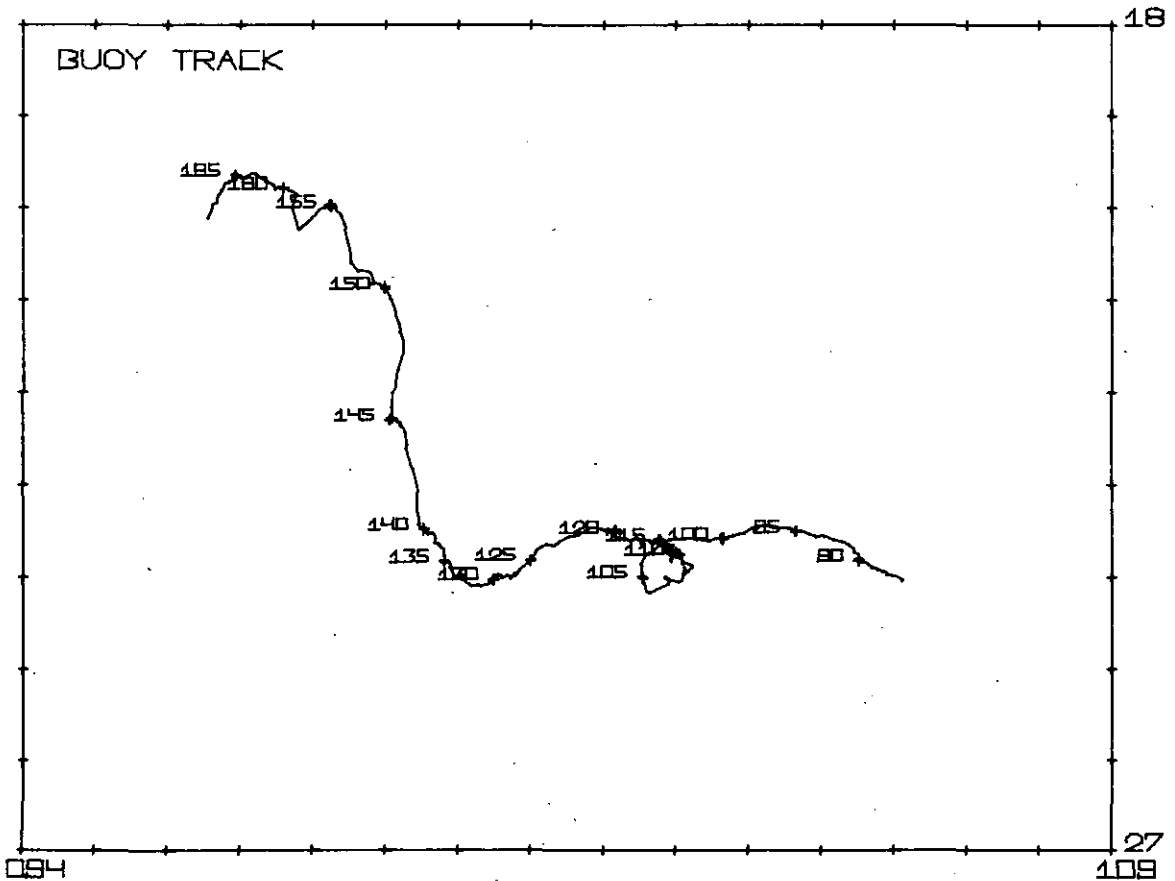
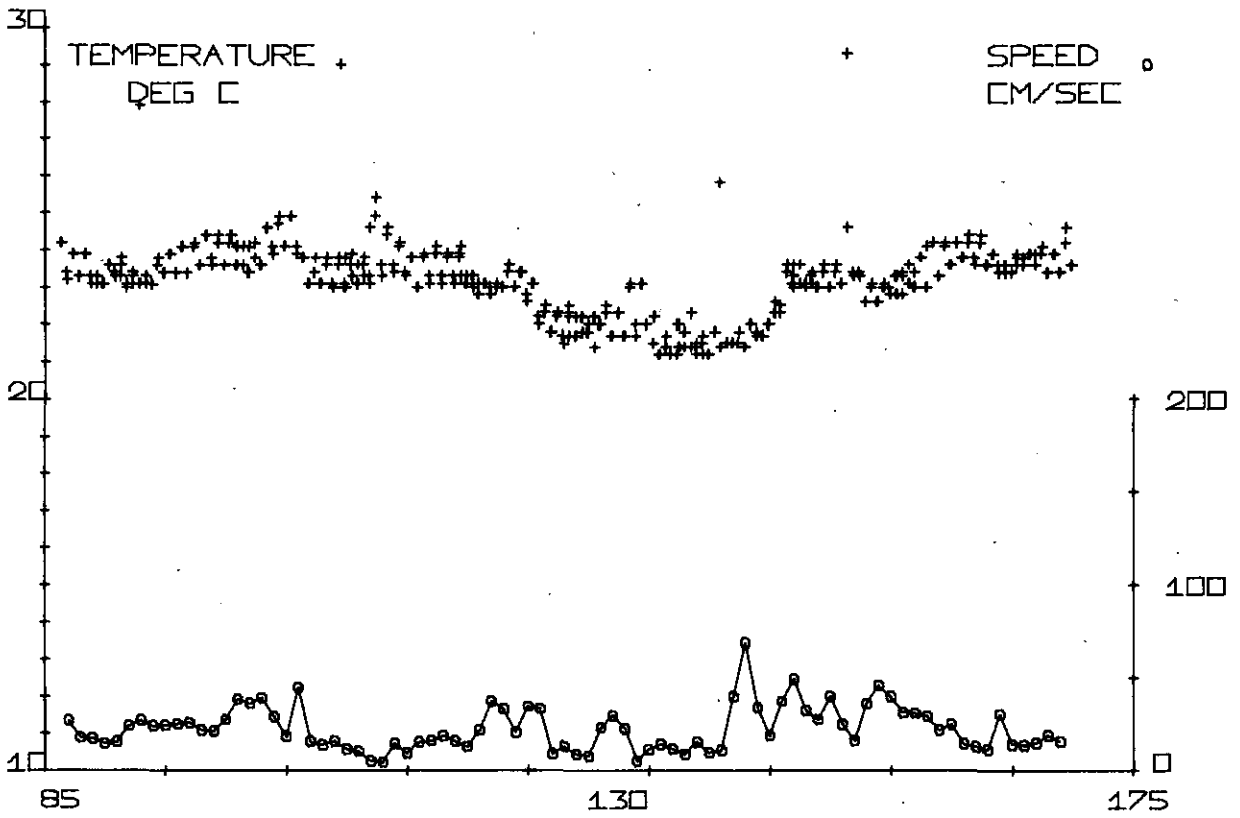
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BUOY 1145 DAYS 85-175 79

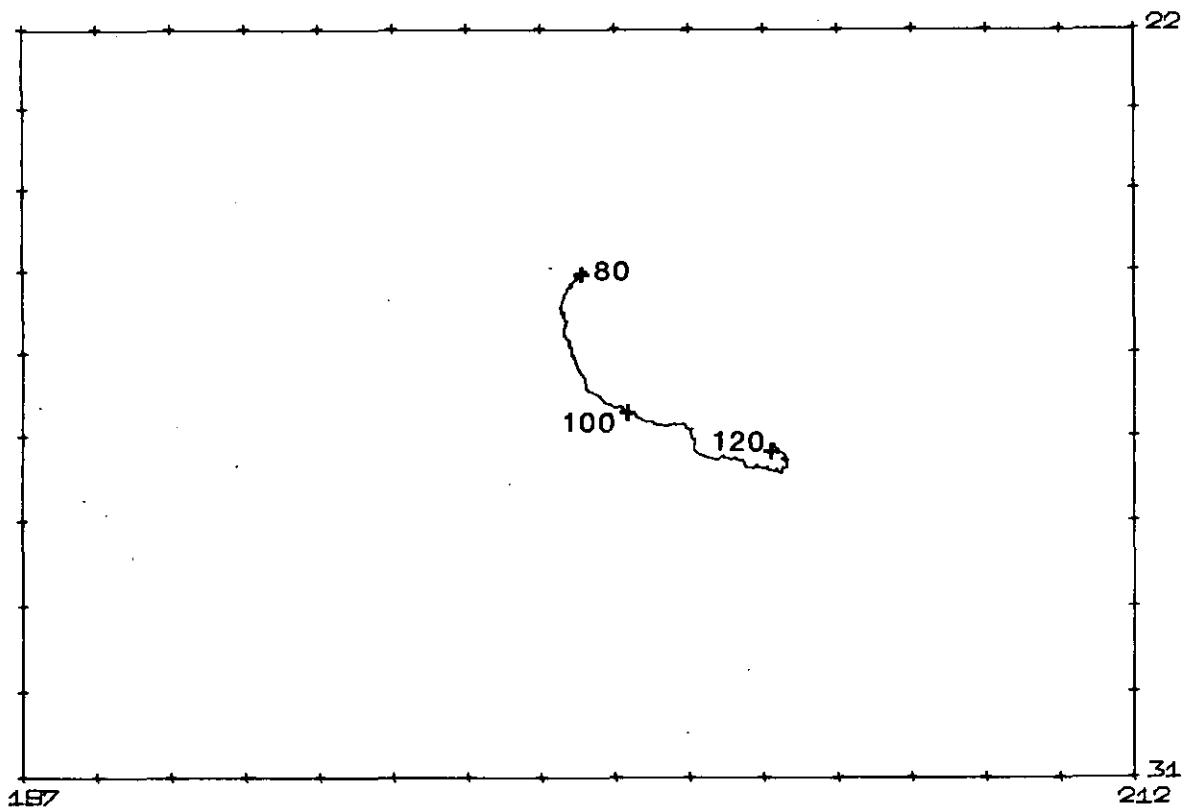
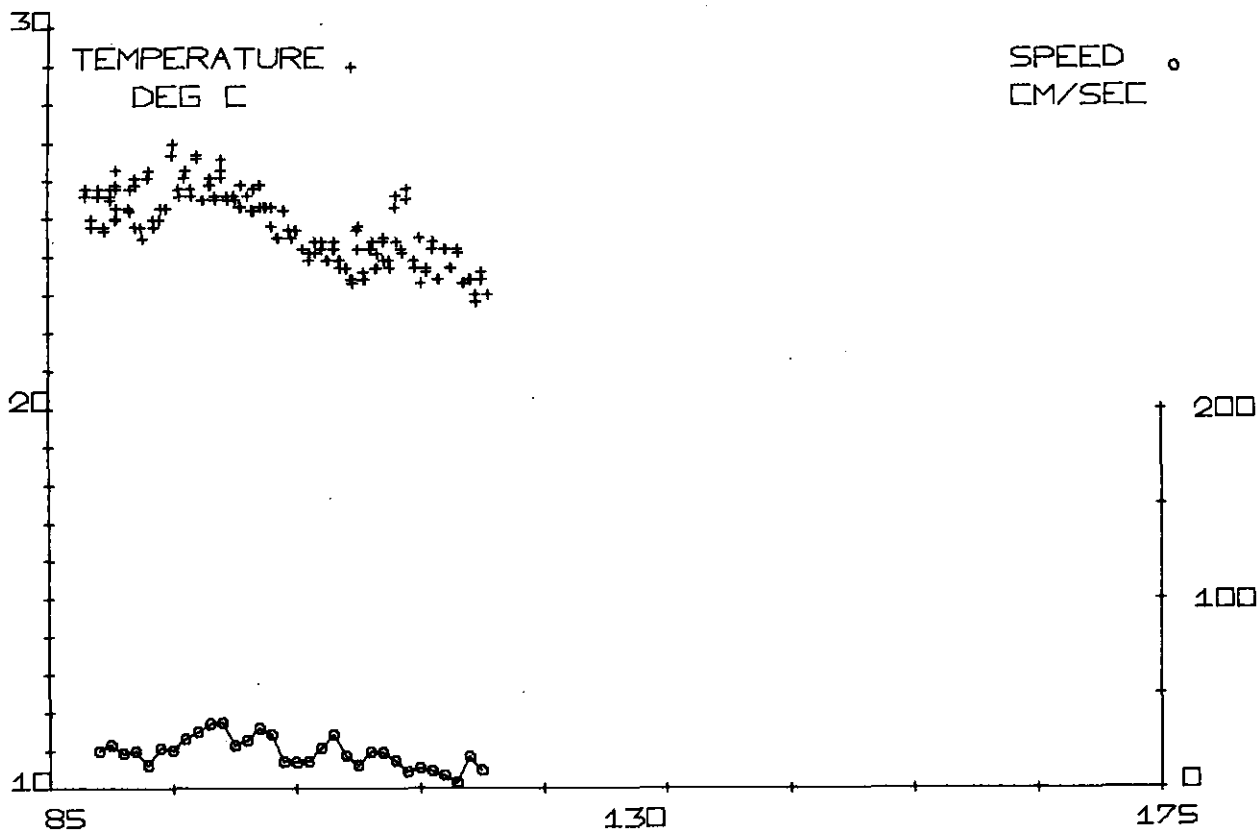


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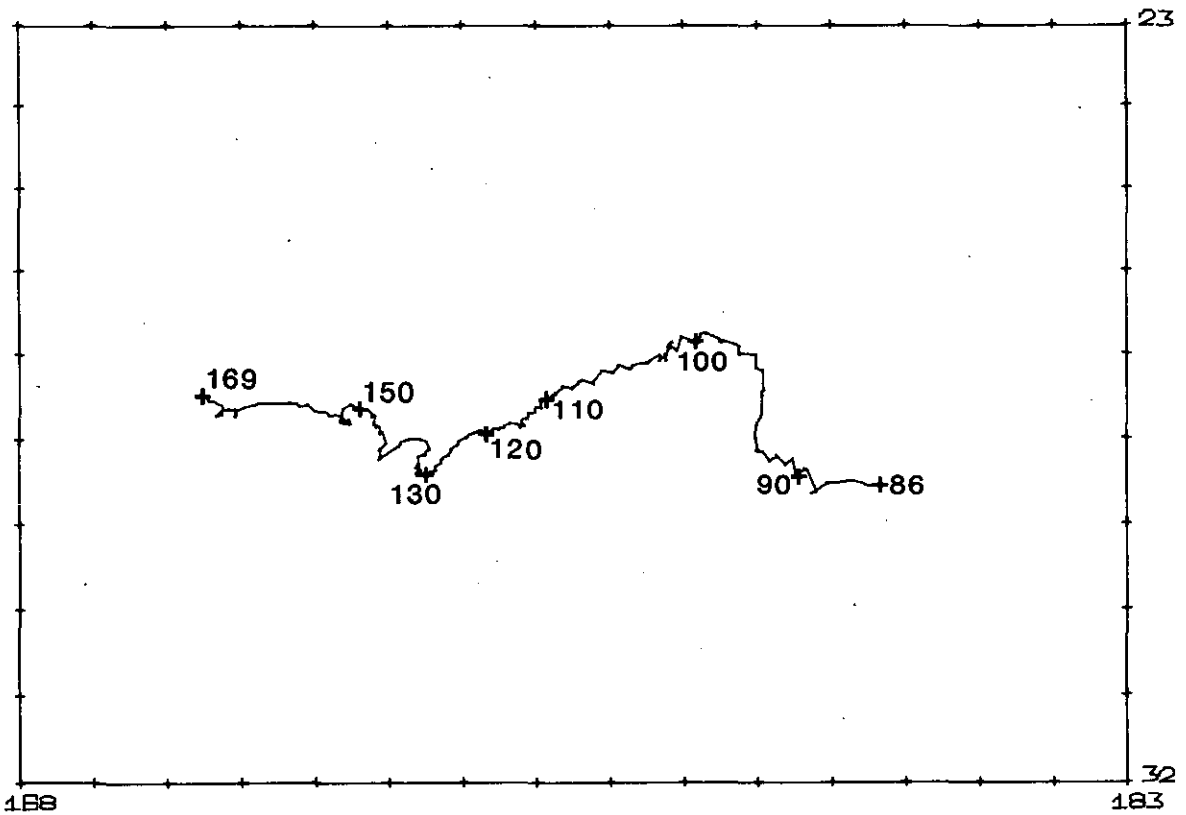
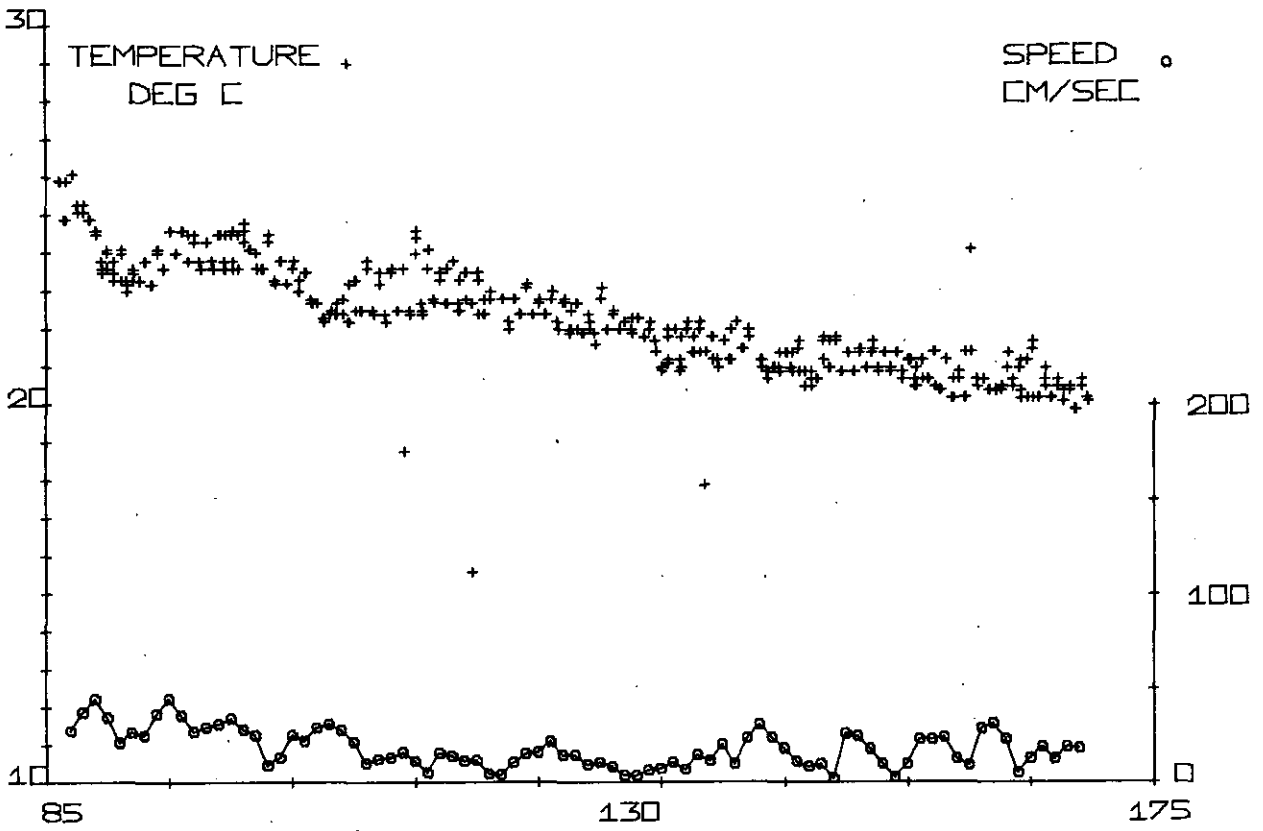


Appendix (iv)
Buoys tracked in the Tasman and Coral Seas

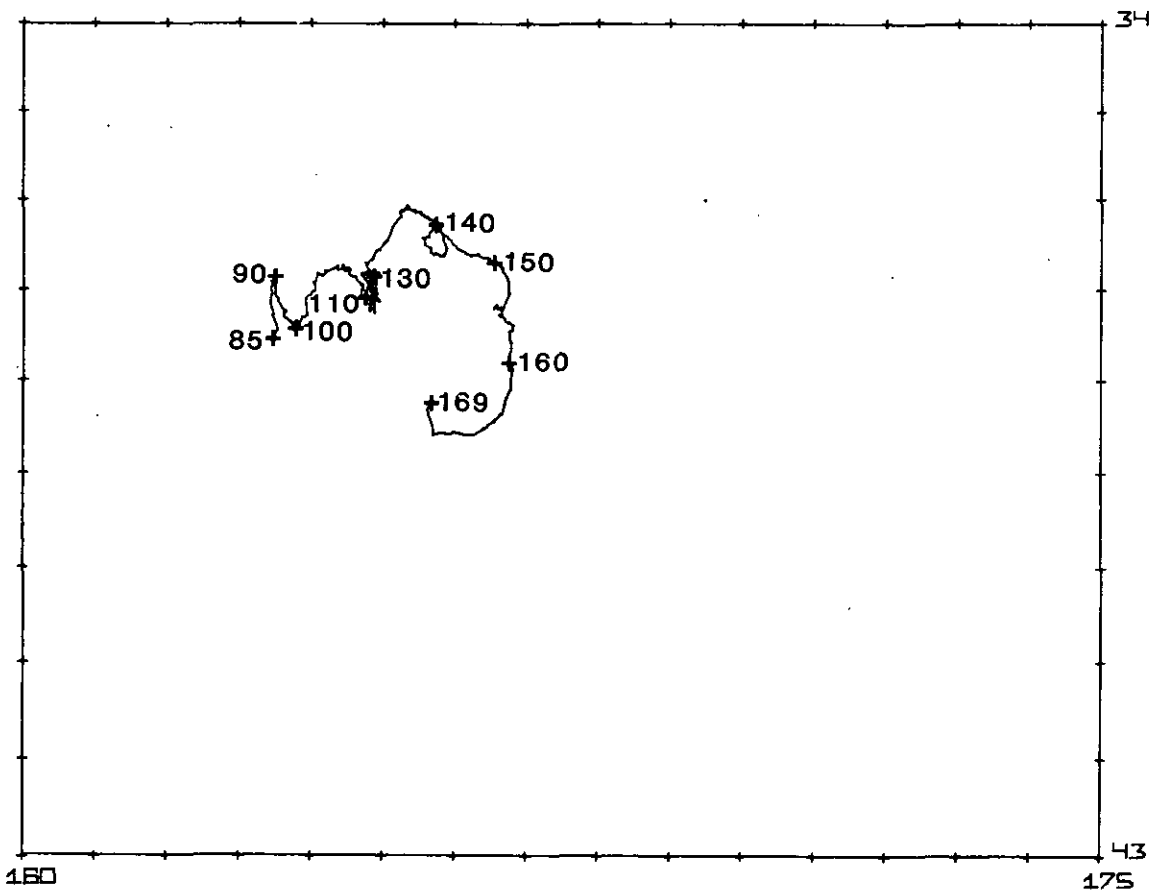
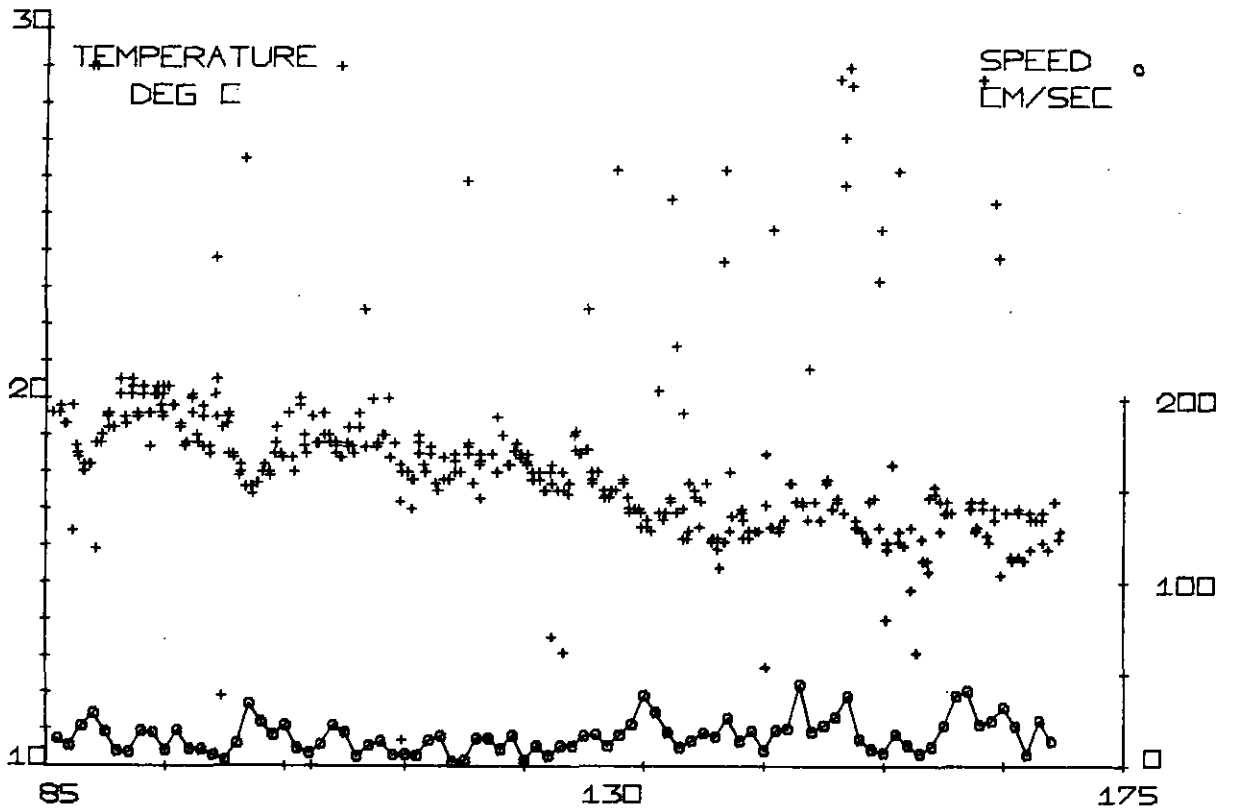
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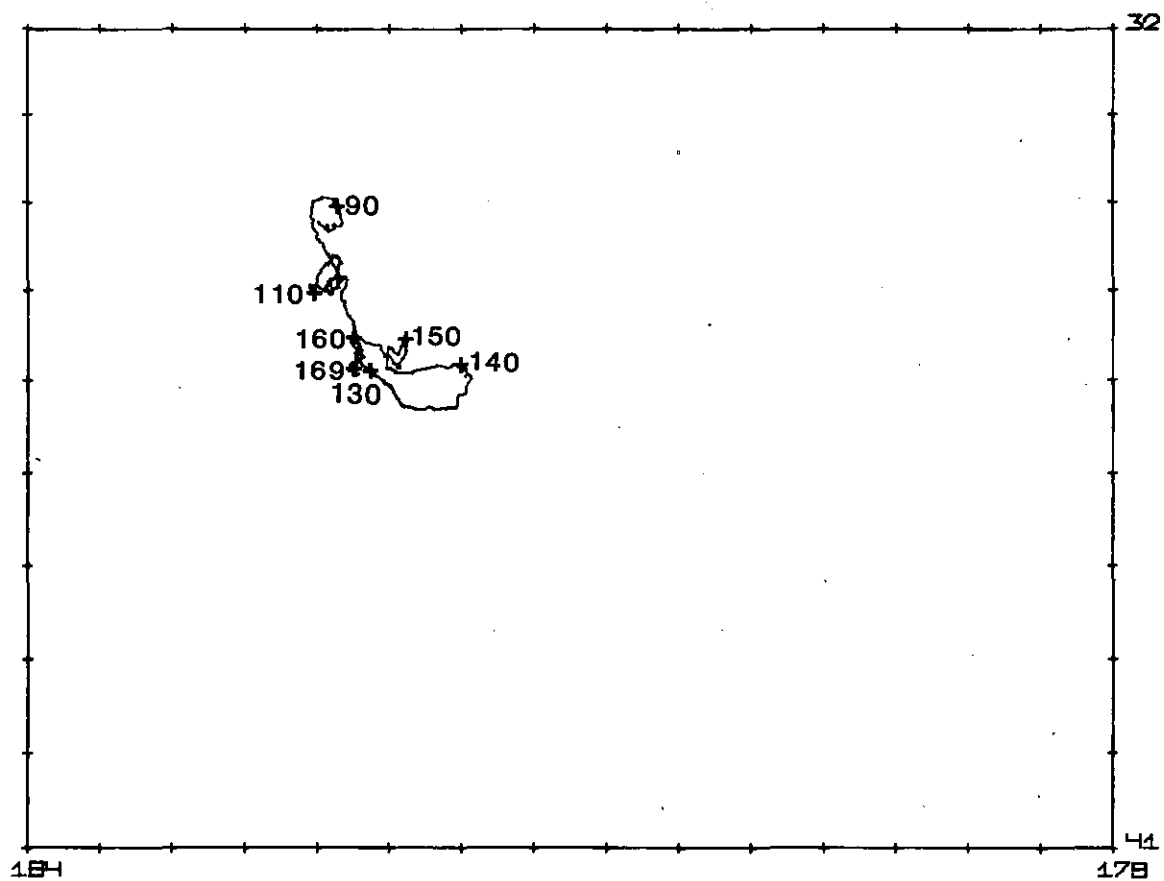
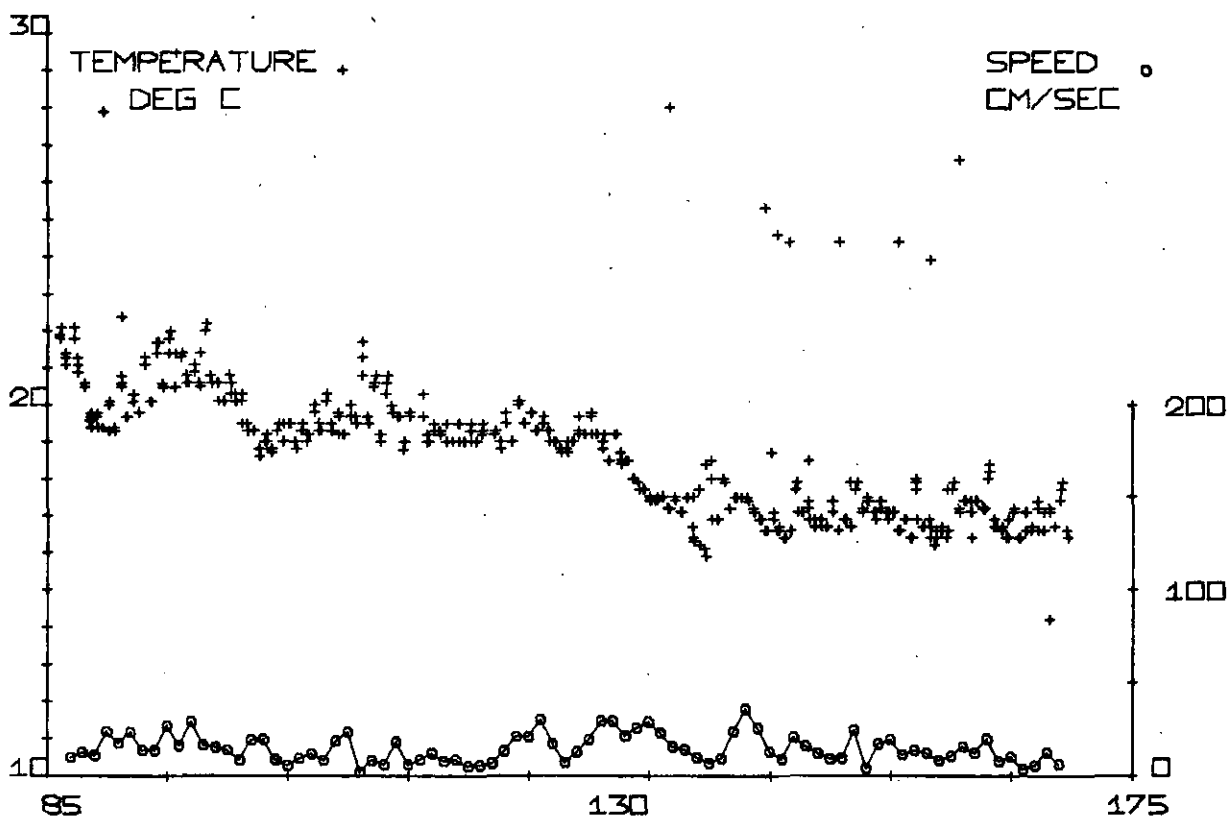
BUOY 1110 DAYS 85-175 79



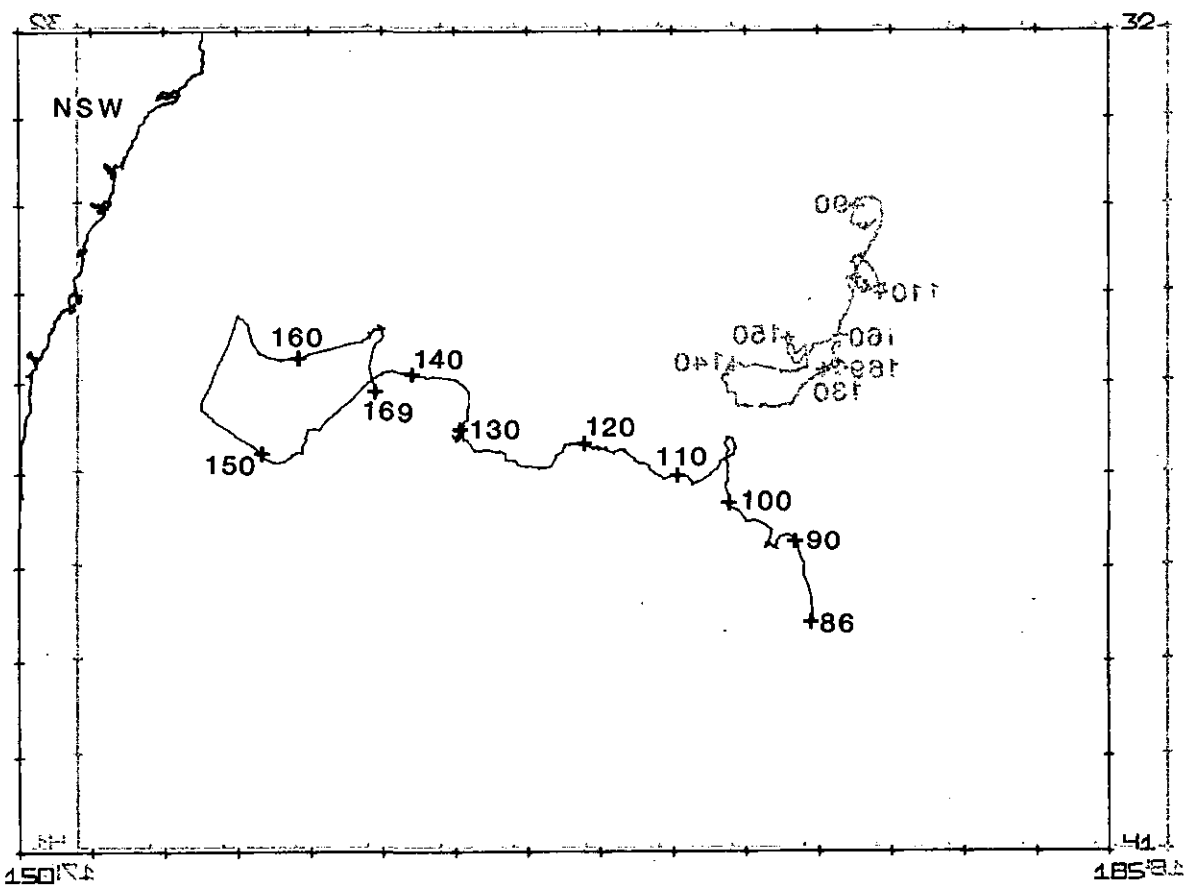
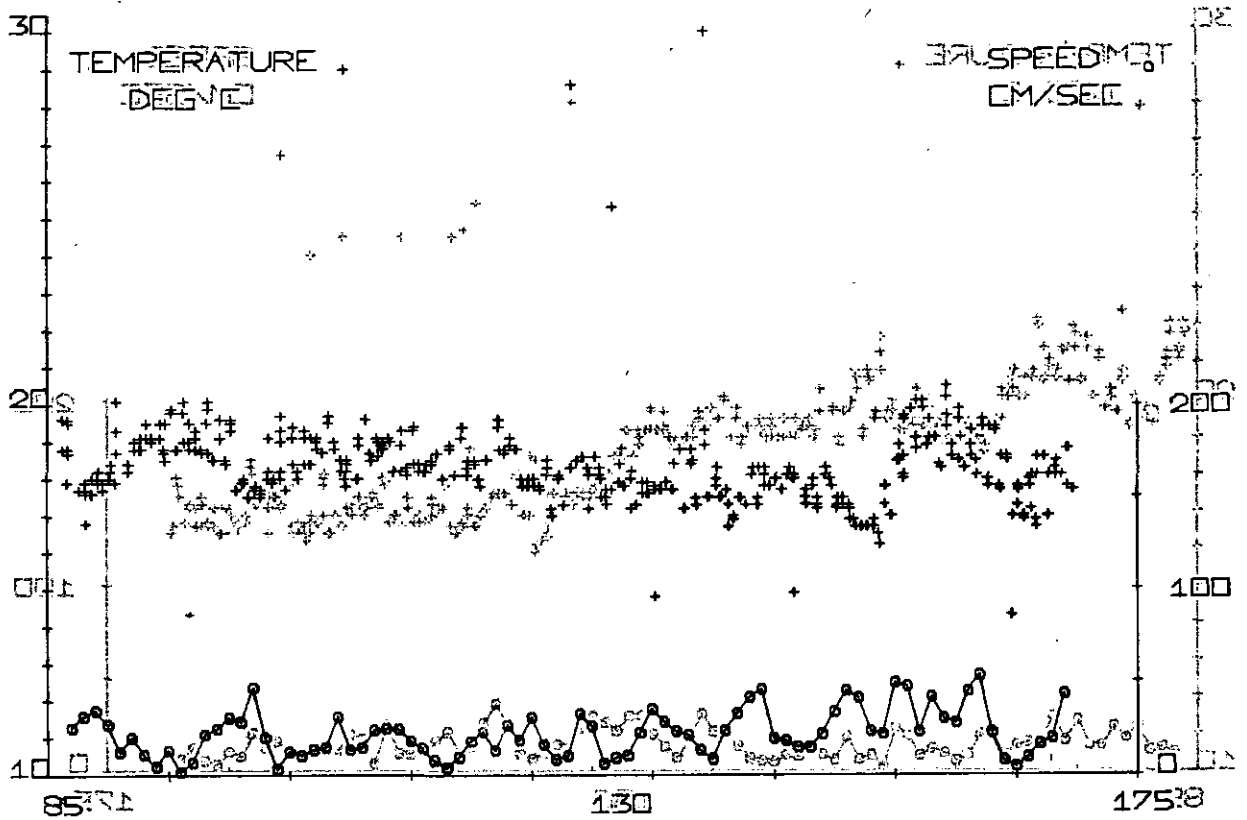
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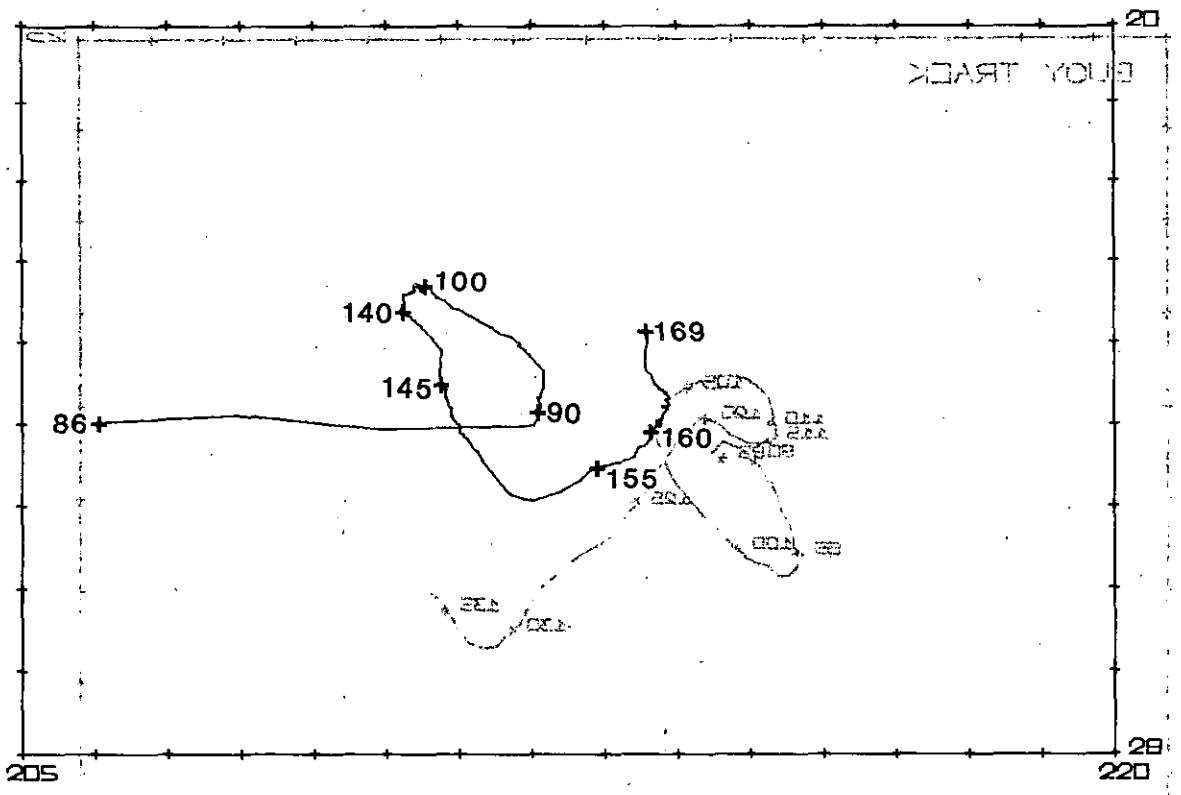
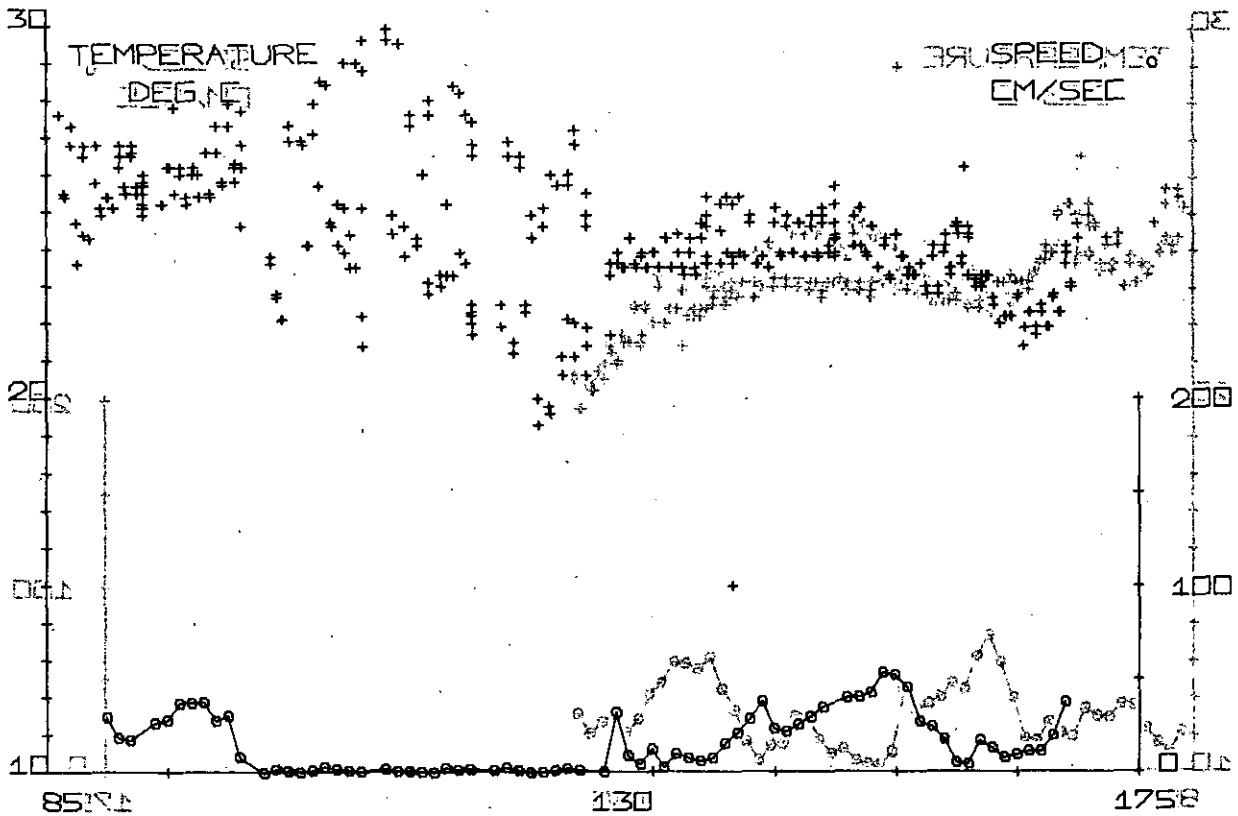
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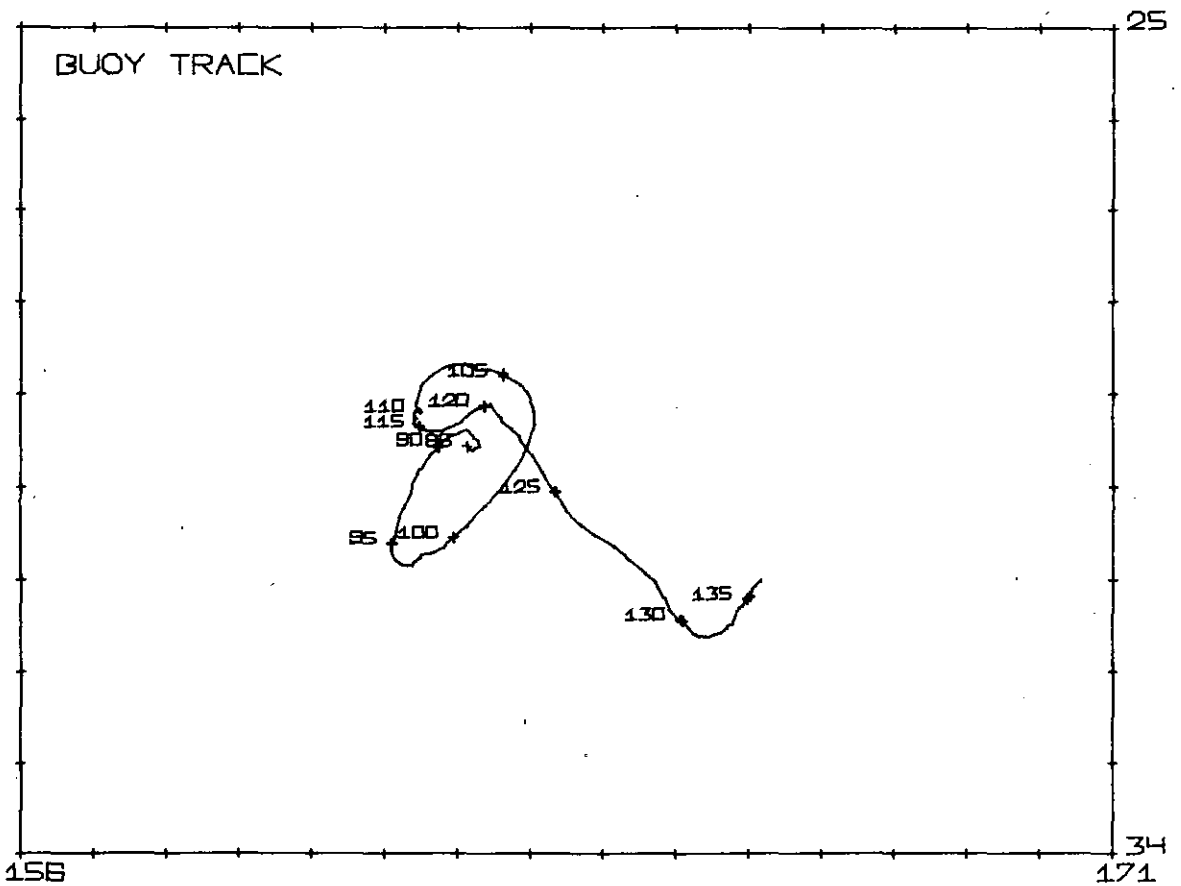
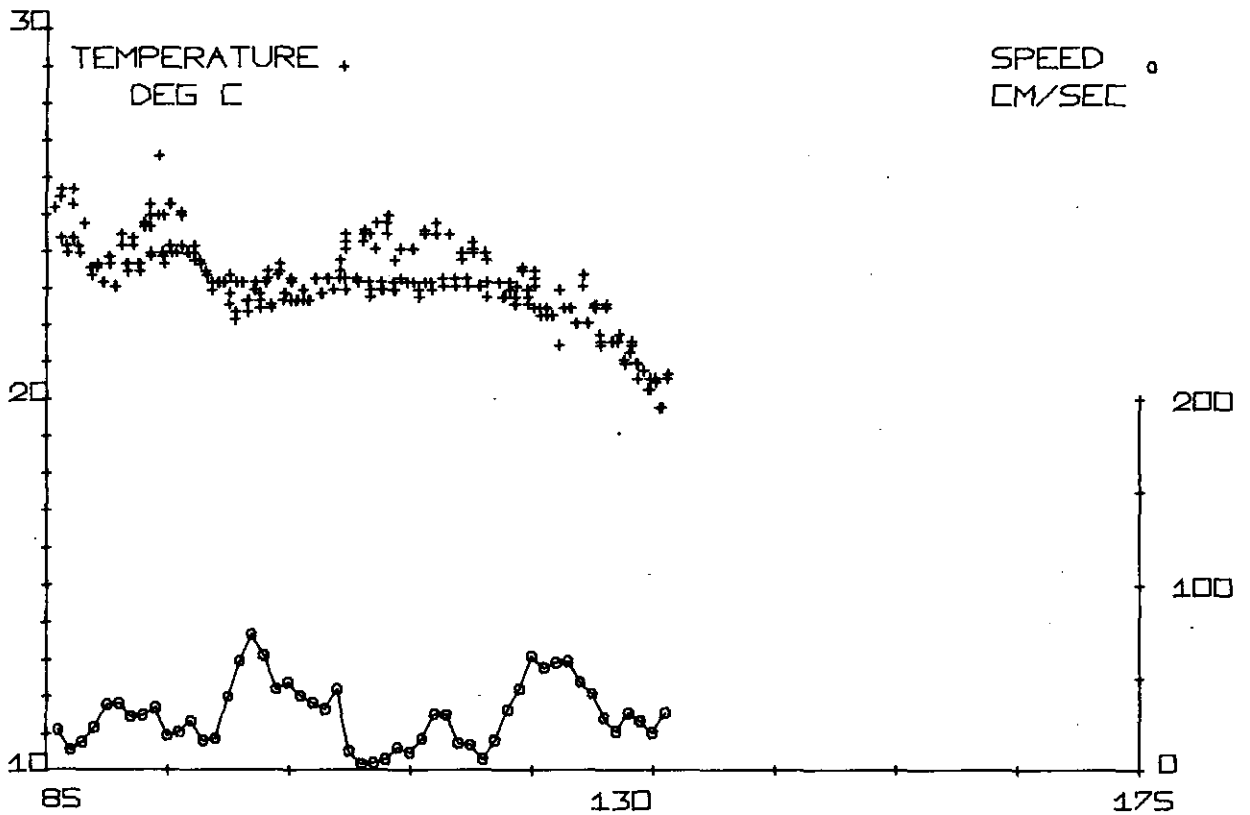
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BUOY TRACK - DAYS 85-175-78 YOUS



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