

CSIRO
Division of Fisheries and Oceanography

REPORT 104

**Satellite-tracked buoy
data report IV.
South west pacific ocean
January—June 1978**

G. R. Cresswell
and
M. A. Greig

1979

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION
DIVISION of FISHERIES and OCEANOGRAPHY
P.O. BOX 21, CRONULLA NSW 2230

Reprint 1048

National Library of Australia Cataloguing-in-Publication Entry

Satellite-tracked buoy data report 4.

(Division of Fisheries and Oceanography report;
104) Bibliography

ISBN 0 643 02205 8

1. Ocean currents — Pacific Ocean — Measurement. 2. Ocean Temperature — Pacific Ocean — Measurement. 3. Oceanographic buoys. I. Greig, M.A., joint author. II. Title. (Series: Commonwealth Scientific and Industrial Research Organization. Division of Fisheries and Oceanography. Report; no. 104)

551.47'5'7

©CSIRO, 1979

Printed by CSIRO, Melbourne

SATELLITE-TRACKED BUOY DATA REPORT IV
SOUTH WEST PACIFIC OCEAN JANUARY-JUNE 1978

G.R. Cresswell and M.A. Greig

CSIRO Division of Fisheries and Oceanography
P.O. Box 21, Cronulla, NSW 2230

CSIRO Aust: Div. Fish. Oceanogr. Rep. 104 (1979)

Abstract

Track, speed, and sea surface temperature data from 11 buoys in the Tasman Sea and two buoys released south of New Zealand and on the equator north of Manus Island respectively are presented. The buoys were tracked by the NASA* weather satellite NIMBUS-6.

INTRODUCTION

This report deals with three new buoys released since the start of 1978 and 10 others which have been covered in earlier reports in the series (Cresswell and Vaudrey 1977; Cresswell and Wood 1977; Cresswell and Golding 1979).

THE BUOYS

The buoys are of two types: 4.5 m 'spars' (Cresswell 1976) and 2 m 'torpedos' (Cresswell, Richardson, Wood and Watts 1979). The 'torpedo' buoys are indicated in the following by a T added to the buoy identification code, e.g. 0107T.

(a) 1978 Releases

0107T was released as part of a WH01/NZ01† experiment on day 110 (20 April) some 400 km south east of New Zealand from where it has drifted eastward to 51°S, 173°W. Fortuitously it passed very close to the WH01 current meter array and may provide

information on spatial scales of the circulation. Its speed showed a curious oscillation of period roughly 15 days; this may be related to atmospheric forcing (N. Streten, personal communication).

0140T was released on day 161 (10 June) as part of an East Australian Current study. The method of its release is noteworthy: the parachute drogue caught the wind at an unfortunate moment and the complete buoy system was carried at speeds of ~15 knots for almost one hour. The buoy then deployed itself and is operating satisfactorily.

0713T was released on the equator north of Manus Island on day 144 (24 May) in a pilot experiment to study the equatorial undercurrent. It had a tether line 250 m long and drifted eastward for two months. At that time its tether line must have parted because the buoy reversed direction, rapidly drifted westward and was recovered on an island in the Ninigo Group (2°S, 144°E).

*National Aeronautics and Space Administration, U.S.A.

†Woods Hole Oceanographic Institution/New Zealand Oceanographic Institute.

(b) *Buoys continuing to operate from 1977*

The information on previous activity of these buoys is contained in the earlier reports.

1054 the lifetime of this buoy is approaching three years. It continues to operate in the Tasman Sea after its release into eddy "A" in 1977.

1132T continues to operate in the Tasman Sea near the northern part of North Island, New Zealand. Its lifetime now exceeds 1½ years.

1202T released into eddy "B" in 1977 continues to operate in the Tasman Sea. The temperature sensor is not operating.

1352 continues to operate in the central Tasman Sea and is making its way south again after drifting to 29°S, 165°E.

1546 released into eddy "A" in March 1977 continued to operate in an area between Lord Howe Island and New Zealand until day 103 (13 April) 1978 when it ceased transmitting. (There is reference to failure of this buoy in Report III).

1570 this buoy with a drogue at 200 m was released in March 1977. The buoy continues to drift east from the Middleton Reef area. The temperature sensor has failed.

1631 continues to operate between Lord Howe Island and the North Island, New Zealand.

1676 released near Sydney in May 1977. This buoy recently drifted in an interesting series of cyclonic loops until day 123 (3 May) 1978 when it ceased operating.

1710 originally released into eddy "B" in the Tasman Sea in October 1977, this buoy continues to operate and is making its way north west towards the east coast of Australia.

1726 released in December 1977, the buoy operated successfully up until April 1978. Transmission from the buoy has been intermittent since then. This buoy has not drifted far from the position of its original release.

DATA HANDLING

The data are received from NASA both on magnetic tapes and computer listings, the latter being more comprehensive. The magnetic tape data are edited to remove obviously bad fixes and when possible, gaps in these data are filled with data from the computer listings.

DATA PRESENTATION

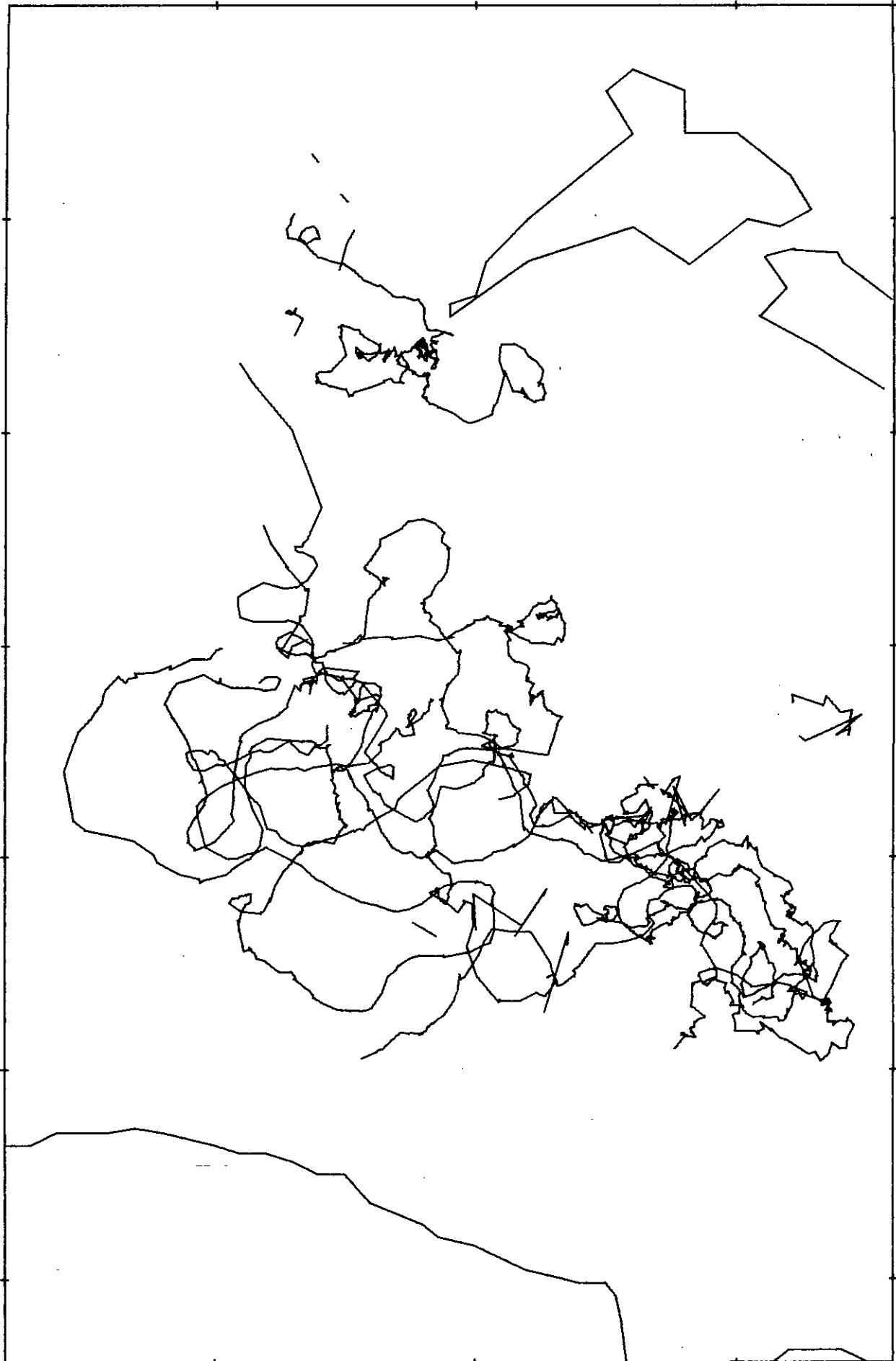
Figure 1 shows a composite track chart of all operating buoys for the period of this report. As in earlier reports the remaining charts cover 90° of latitude and 15° for longitude.

ACKNOWLEDGMENTS

We thank David Crooks, Julie Crawford, Garry Richardson, Alpo Metso, and John Wood for their part in the program. The officers and crews of PNGDF Patrol Boat "Ladava", R.V. "Sprightly" and R.V. "Tangaroa" are thanked for buoy releases. Once again our thanks to NASA for the NIMBUS-6 satellite tracking.

REFERENCES

- Cresswell, G.R. (1976). A drifting buoy tracked by satellite in the Tasman Sea. *Aust. J. Mar. Freshwater Res.* 27, 251-62.
- Cresswell, G.R., and Vaudrey, D.J. (1977). Satellite-tracked buoy data report I. Western Australian releases 1975 and 1976. CSIRO Aust. Div. Fish. Oceanogr. Rep. 86.
- Cresswell, G.R., and Wood, J.E. (1977). Satellite-tracked buoy data report II. Tasman Sea releases November 1976-July 1977. CSIRO Aust. Div. Fish. Oceanogr. Rep. 91.
- Cresswell, G.R., and Golding, T.J. (1979). Satellite-tracked buoy data report III. Indian Ocean 1977. Tasman Sea July-December 1977. CSIRO Aust. Div. Fish. Oceanogr. Rep. 101.
- Cresswell, G.R., Richardson, G.T., Wood, J.E., and Watts, R. (1979). The CSIRO satellite-tracked "torpedo" buoy. CSIRO Aust. Div. Fish. Oceanogr. Rep. 82.

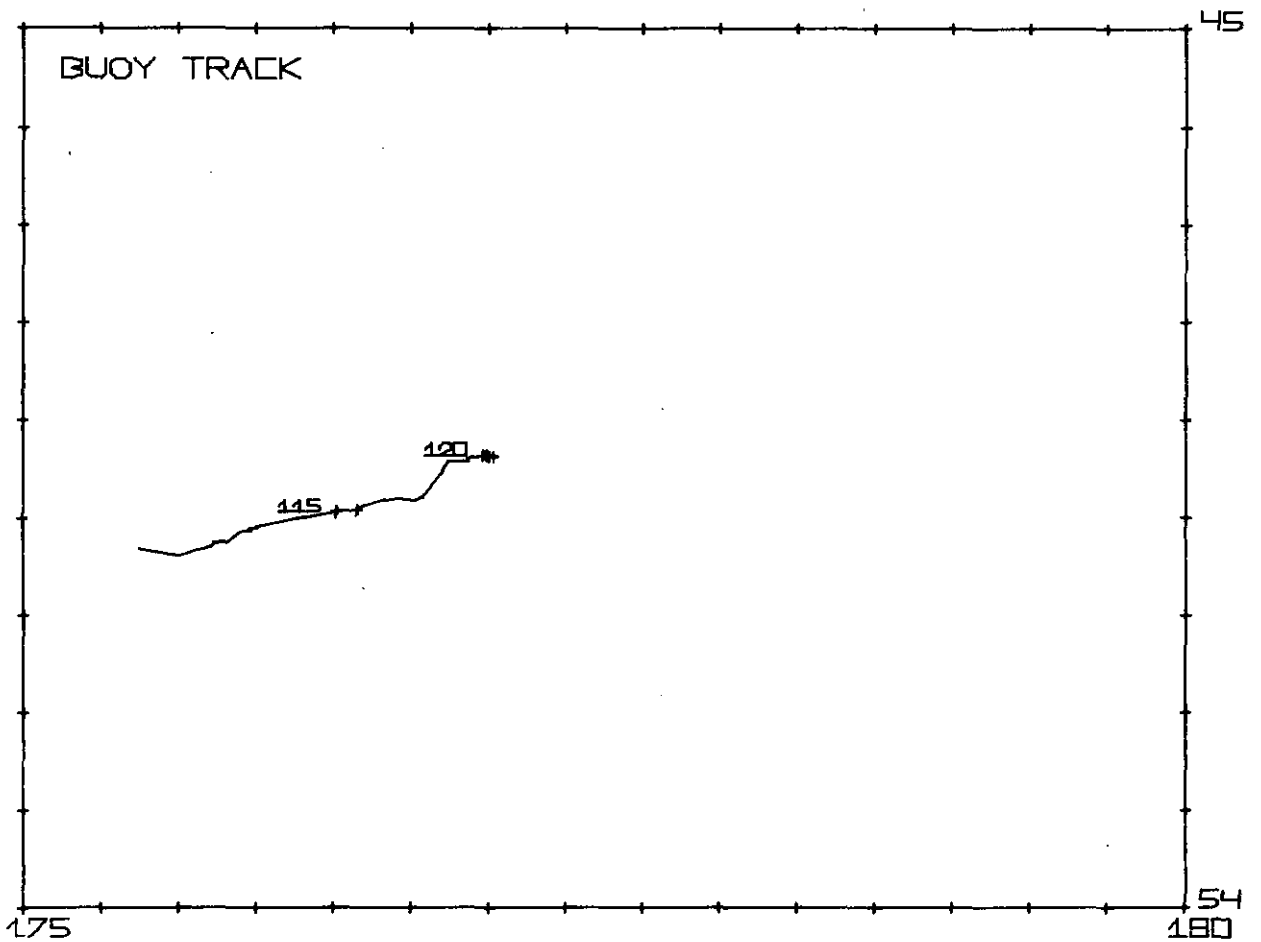
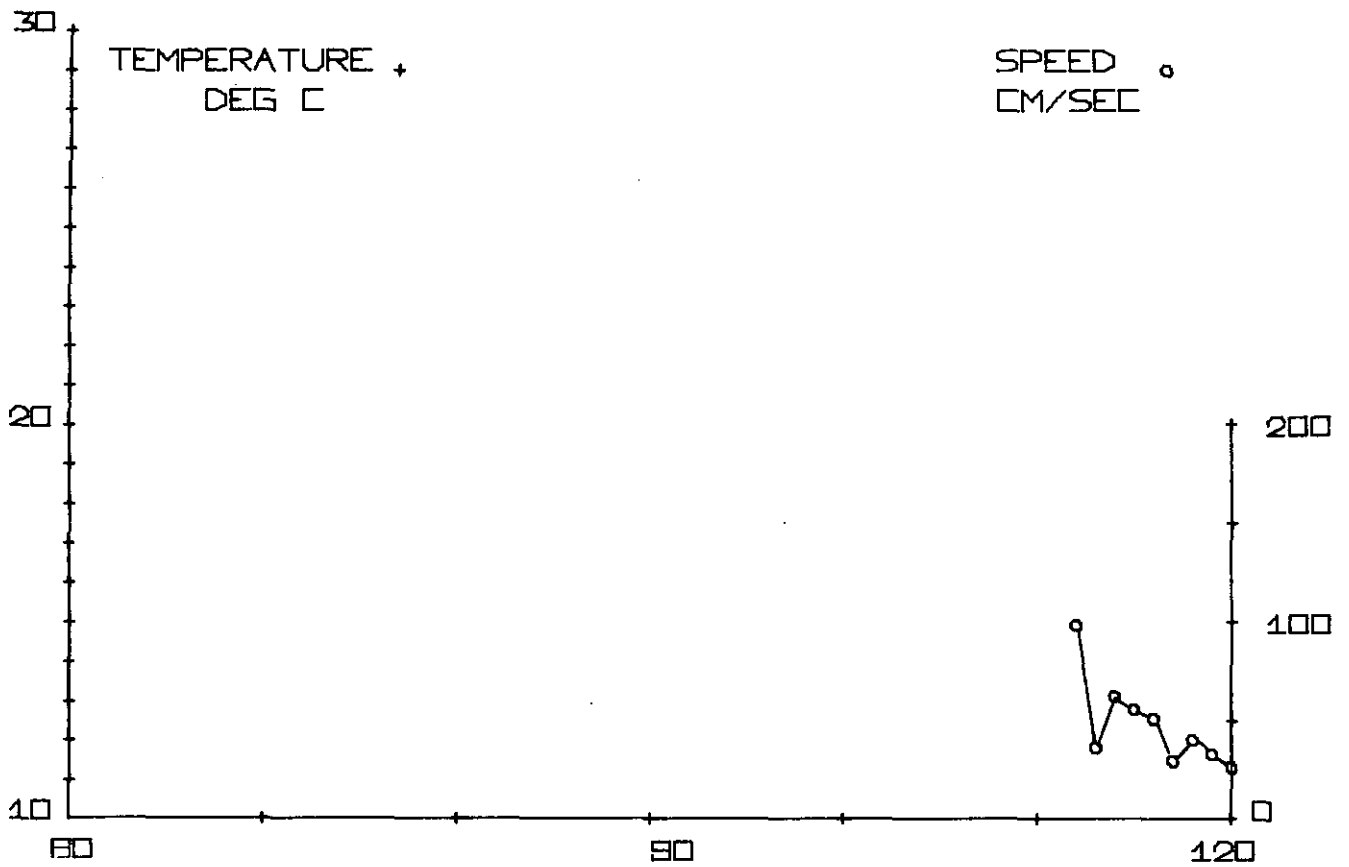


A composite chart of buoy tracks in the Tasman Sea for the first half of 1978.

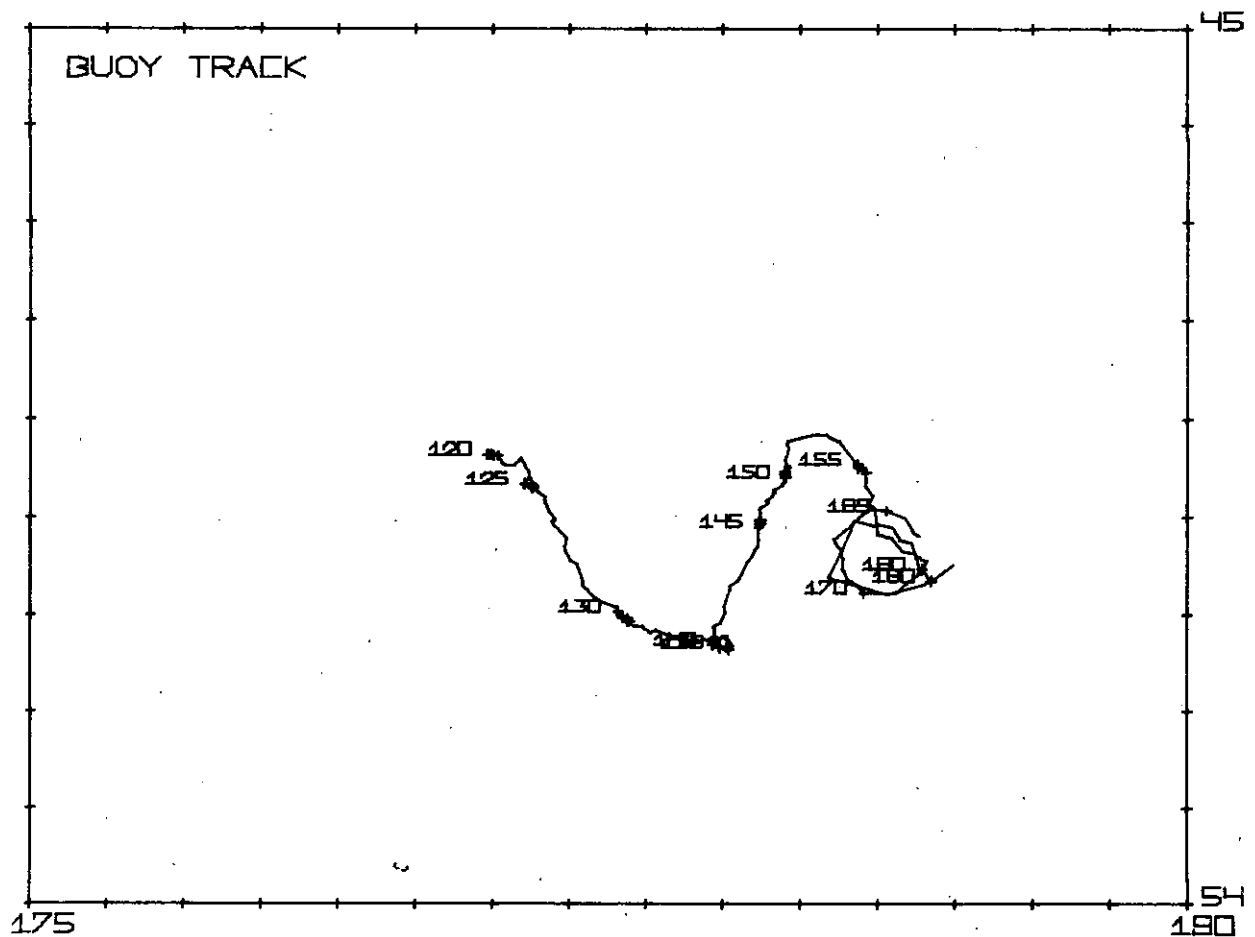
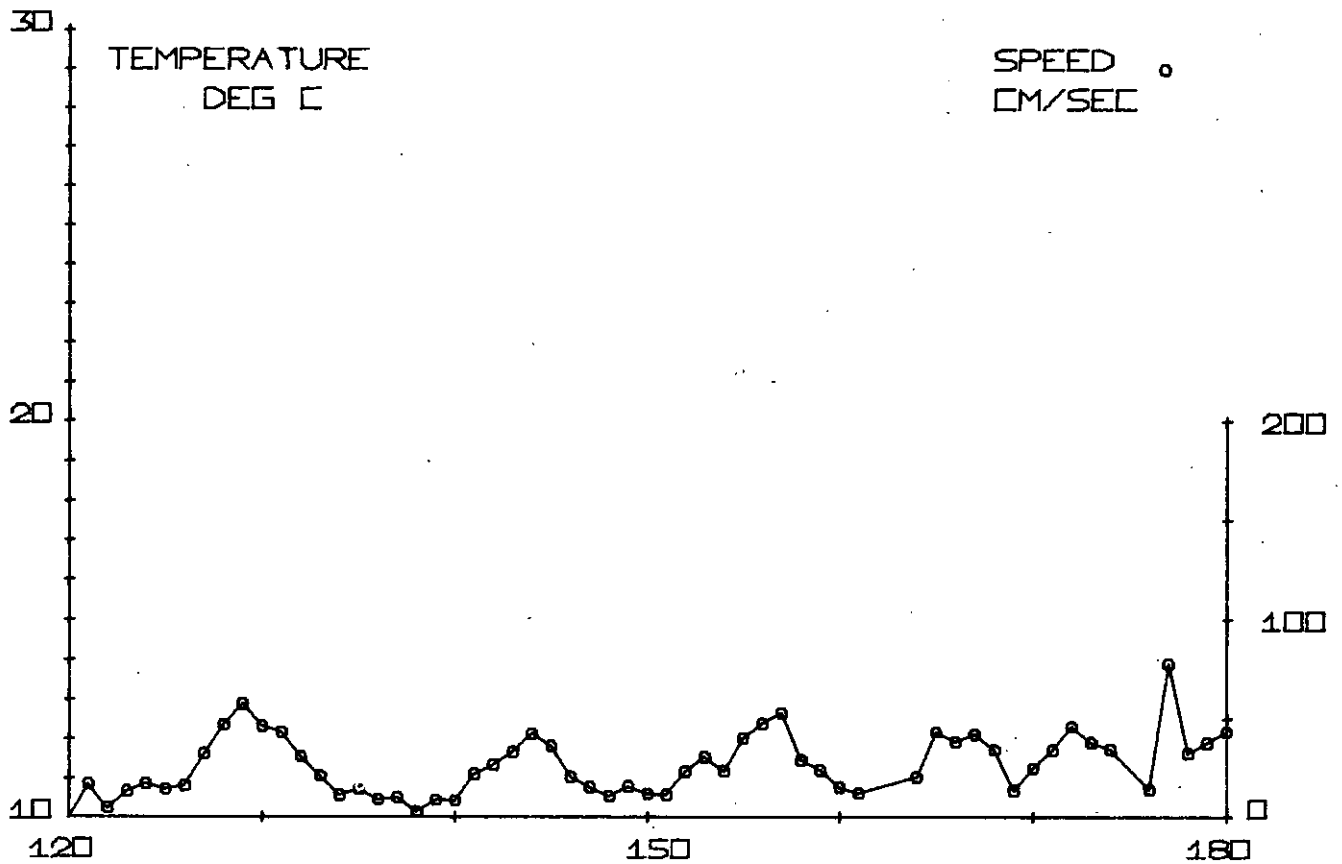
THE BUOY DATA PLOTS

The tracks of 1978 released buoys 0107 and 0713 are presented first, followed by those continuing from 1977. Each chart covers a 60-day period.

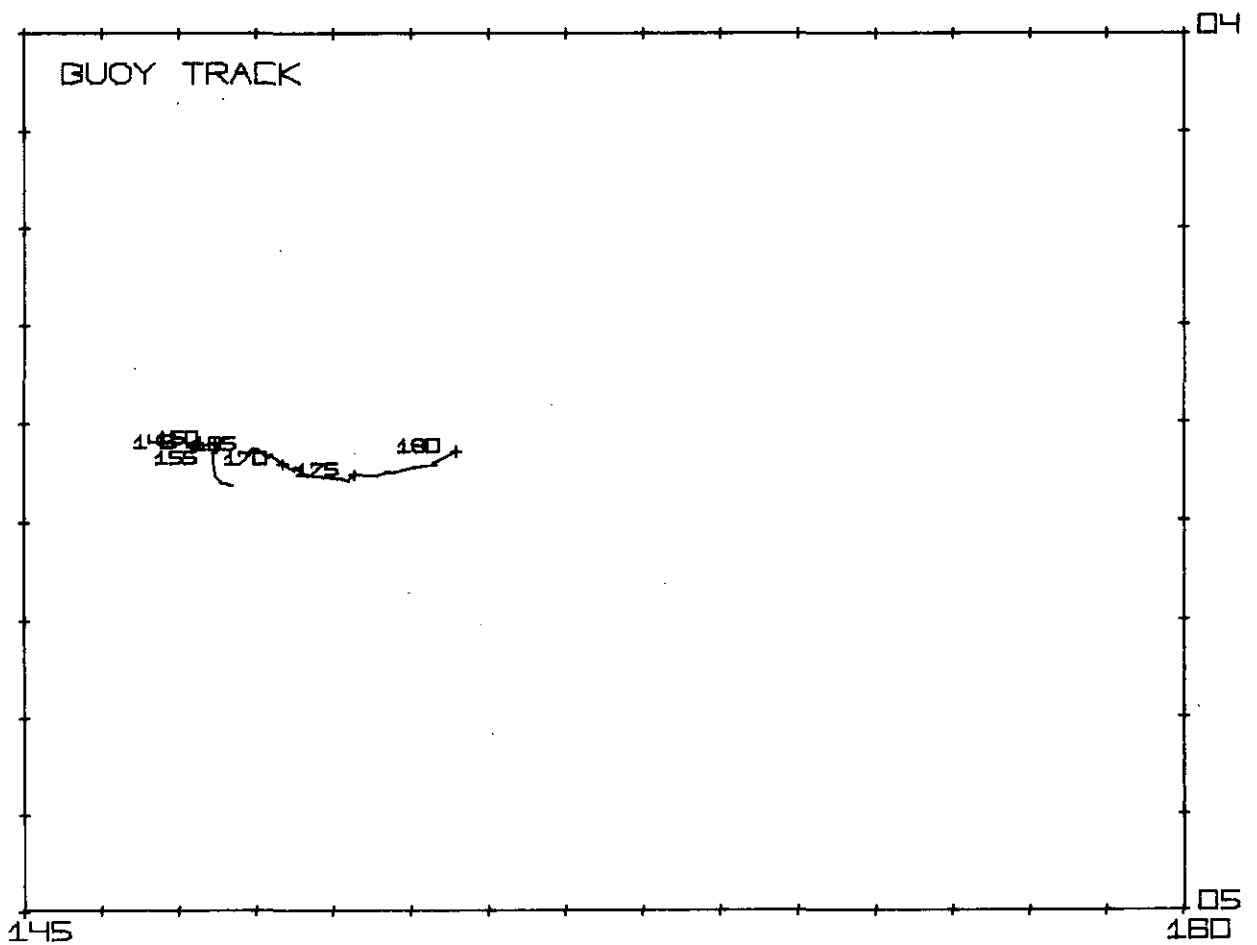
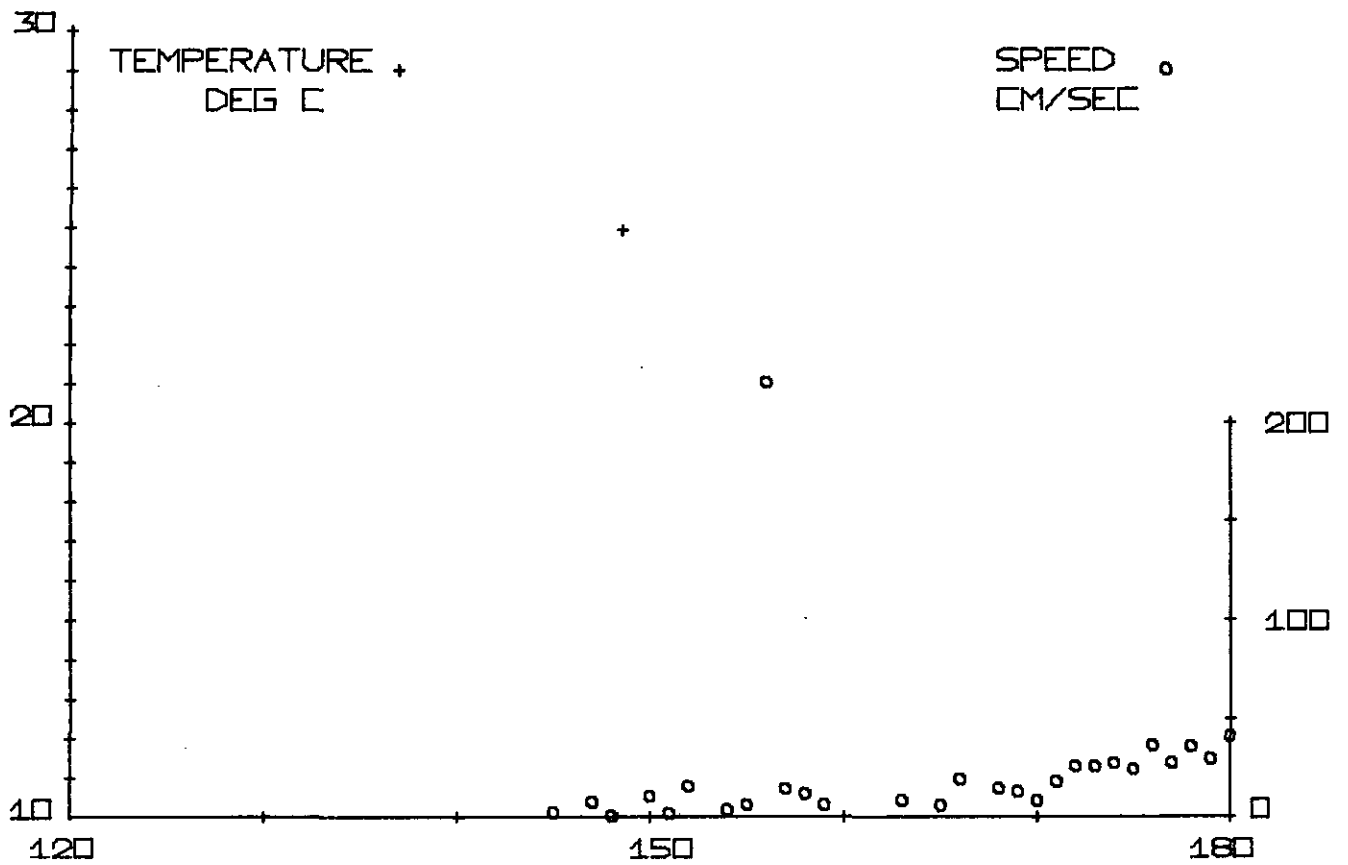
BUOY 107 DAYS 60-120 1978



BUOY 107 DAYS 120-180 1978



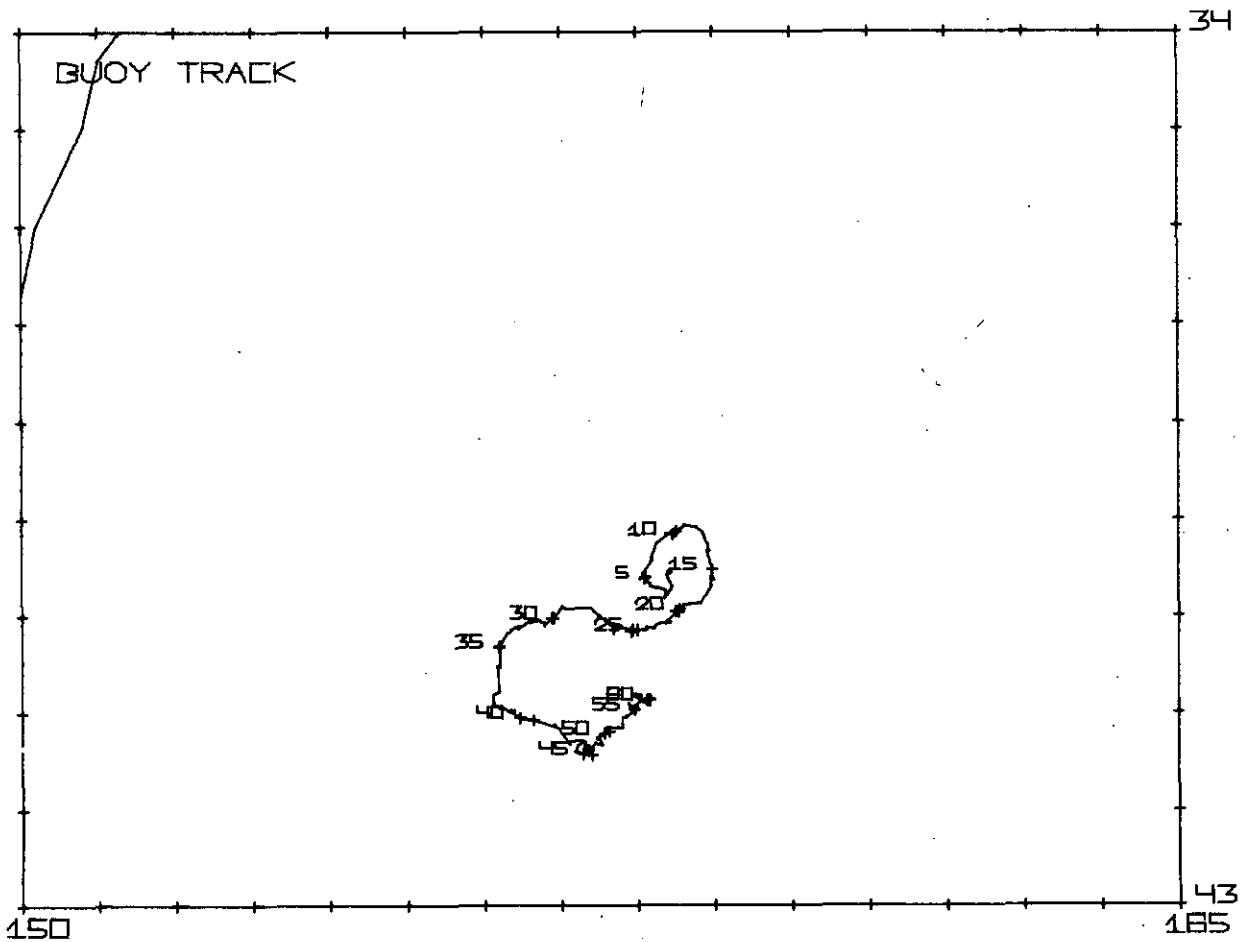
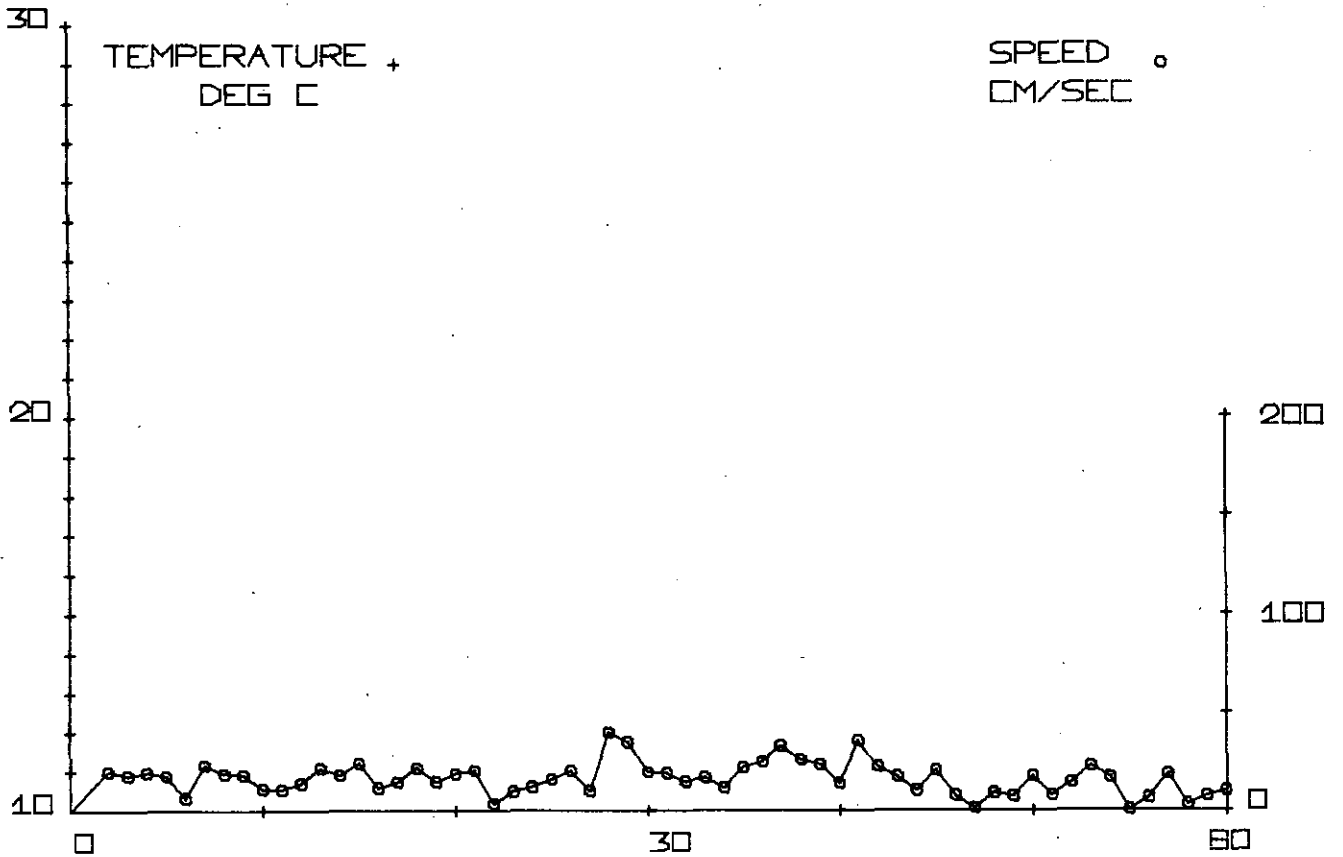
BUOY 713 DAYS 120-180 1978



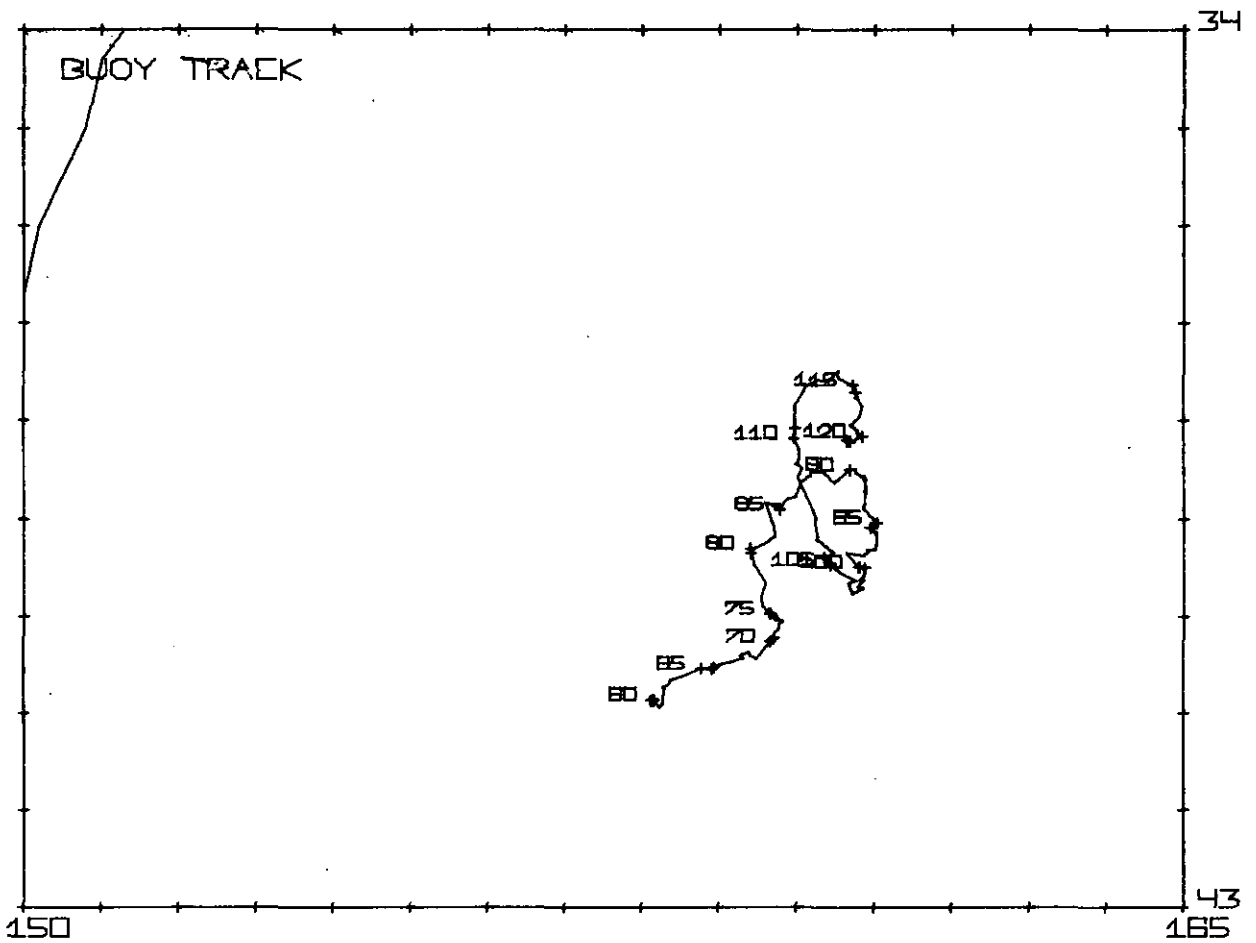
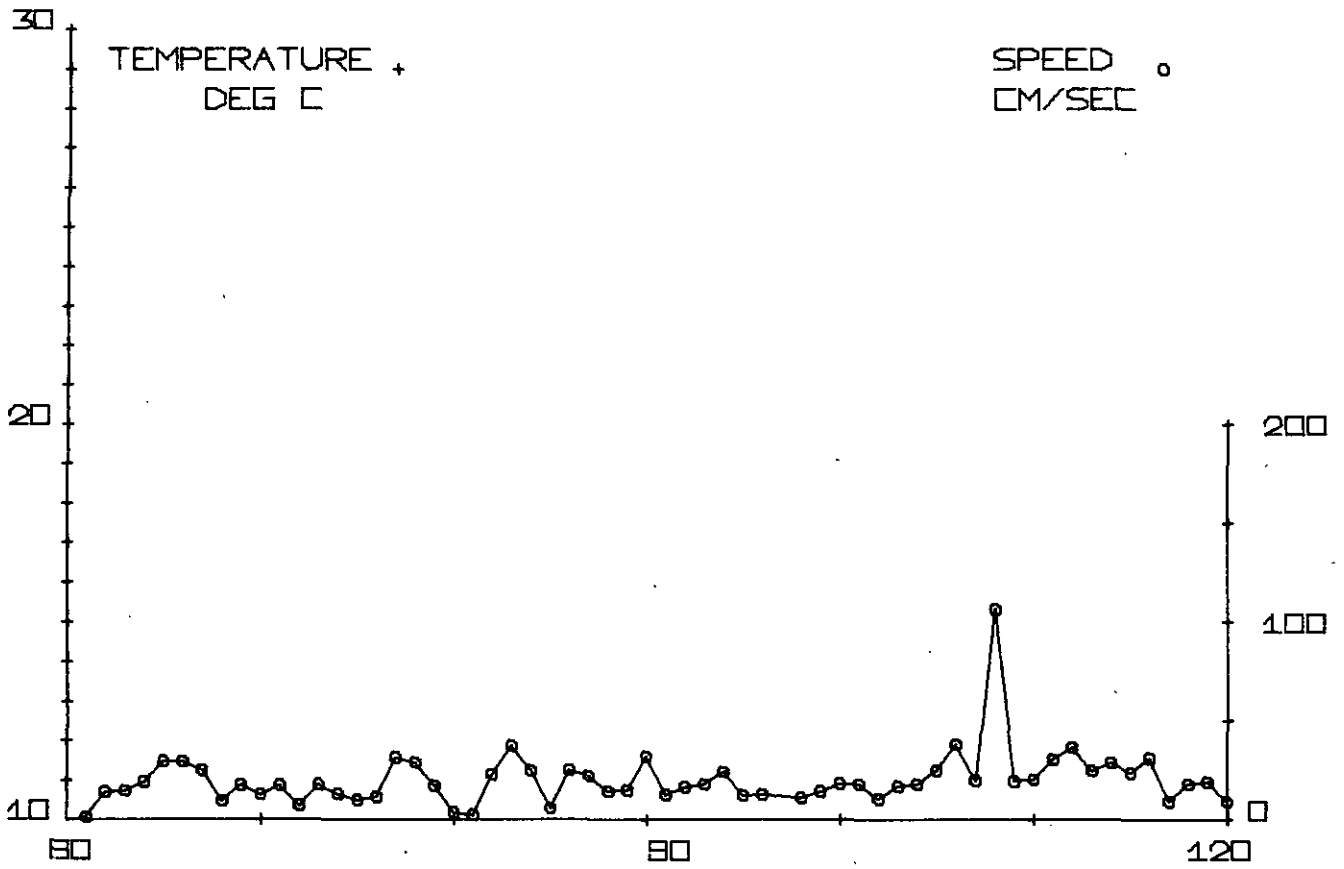
BUOY 1054

DAYS

0 - 60 1978

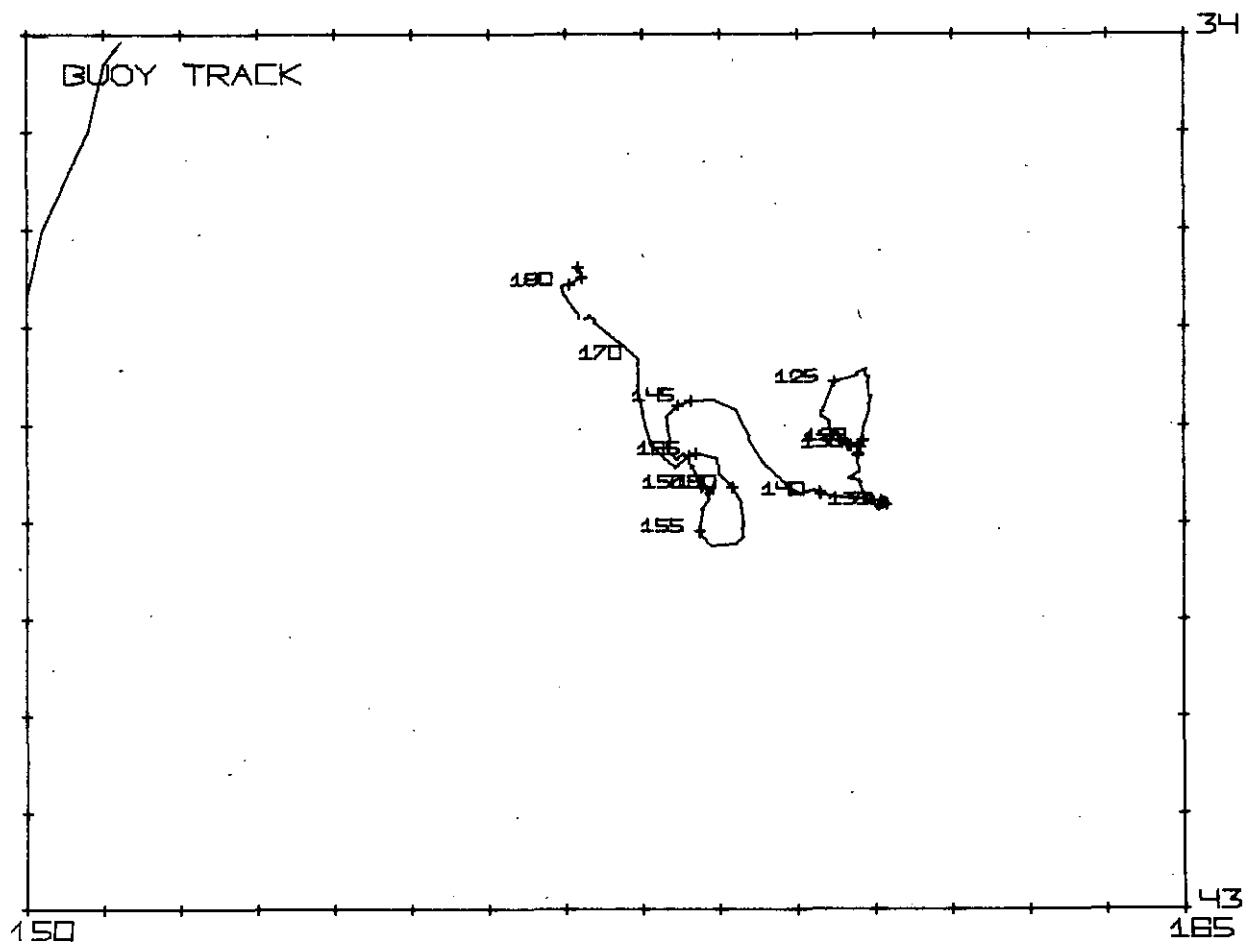
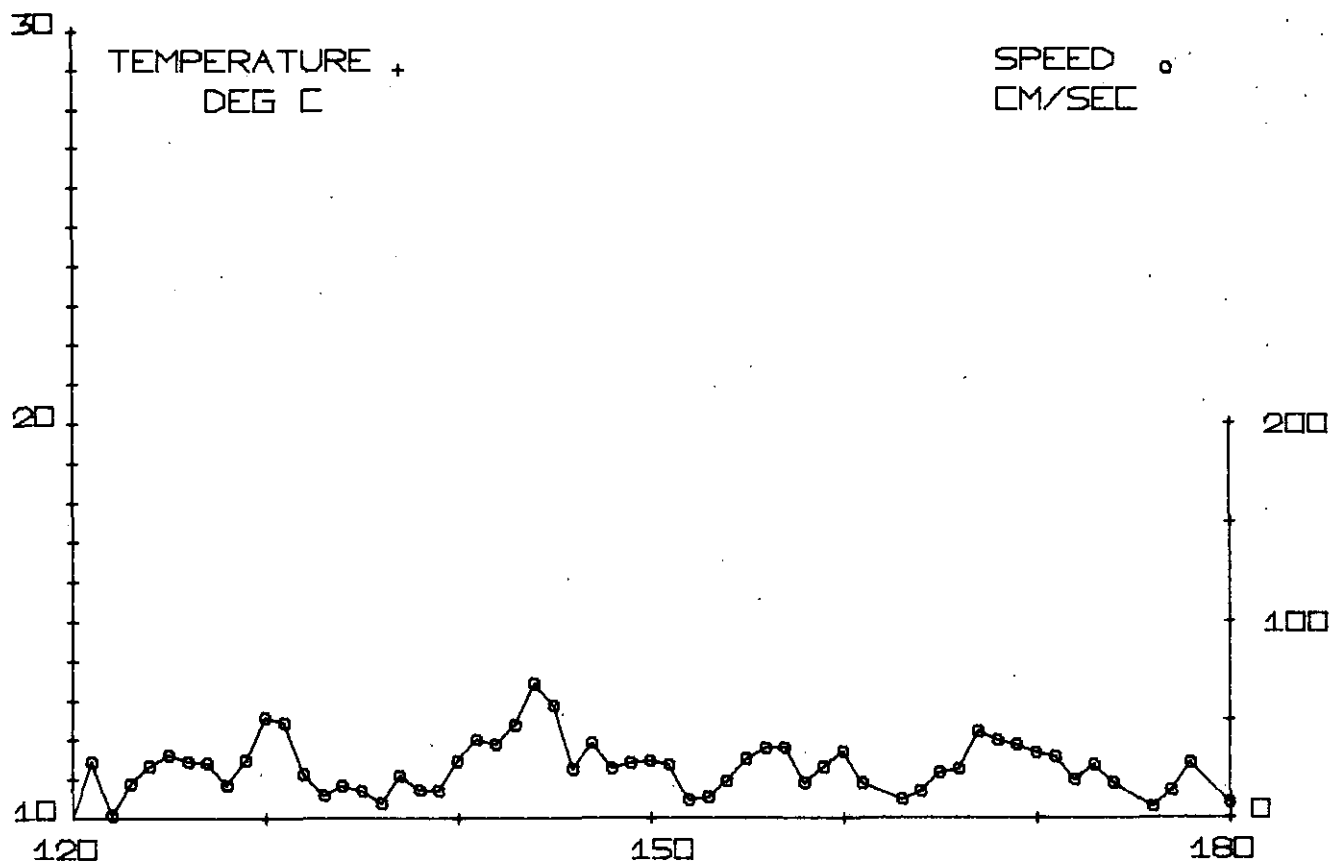


BUOY 1054 DAYS 60-120 1978



BUOY 1054

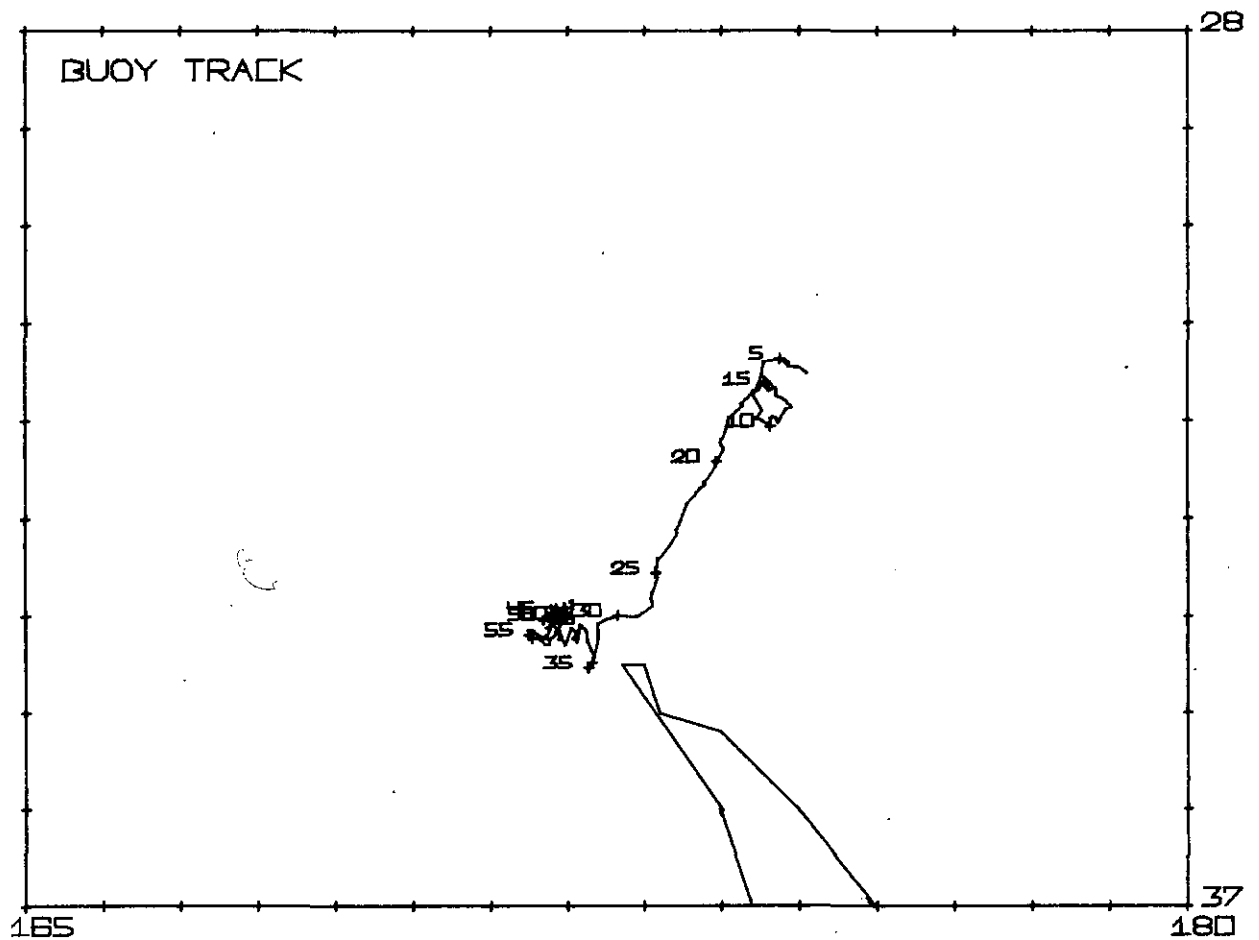
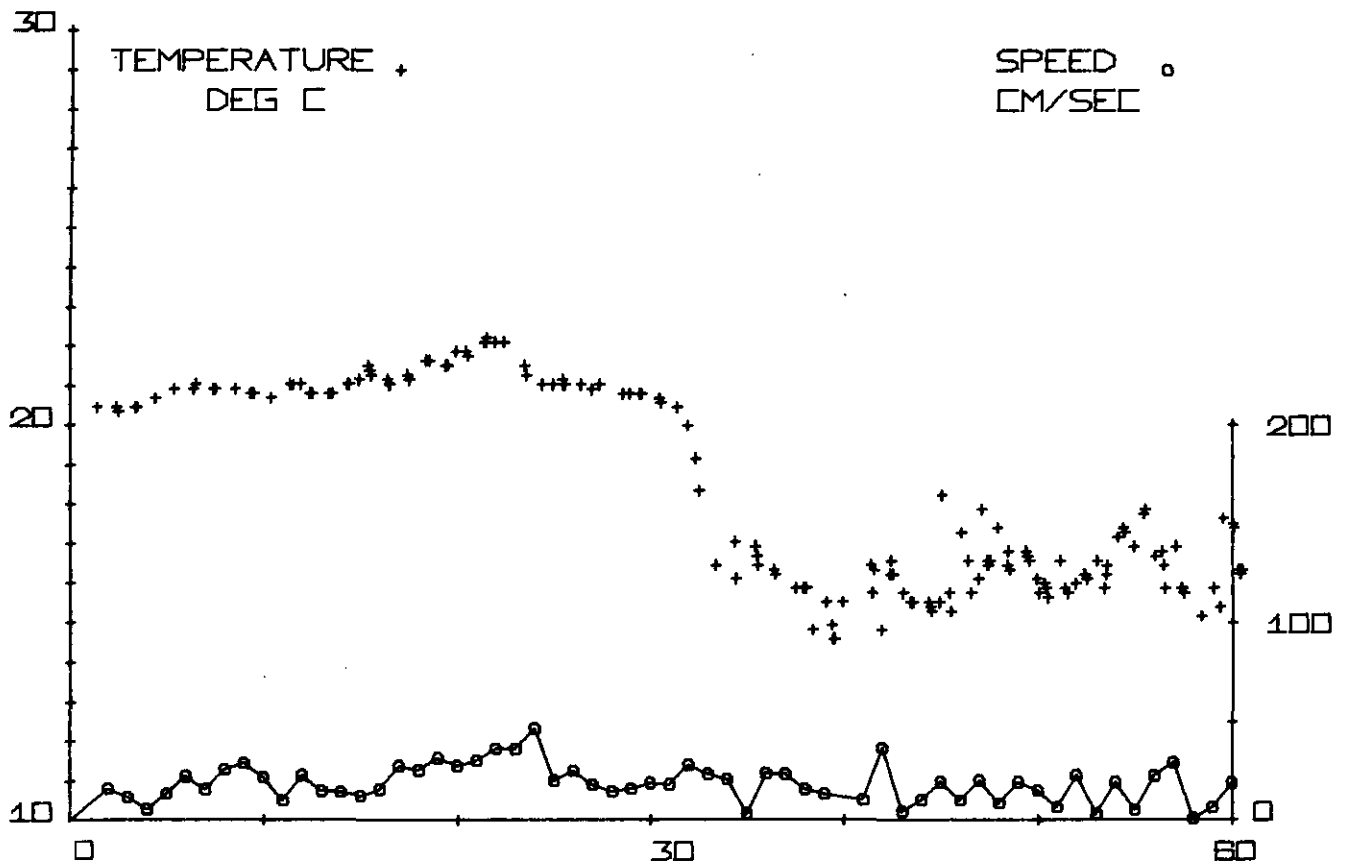
DAYS 120-180 1978



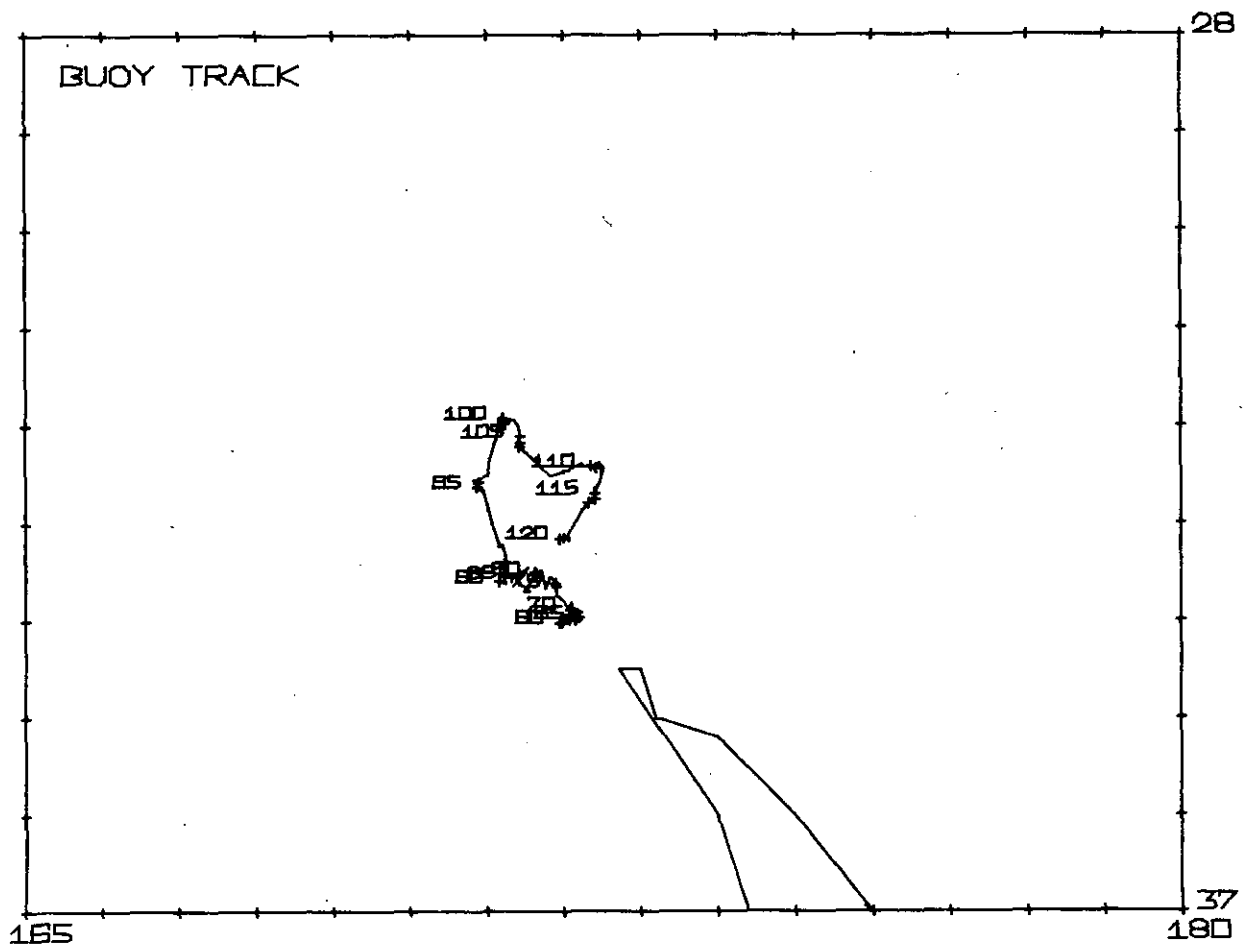
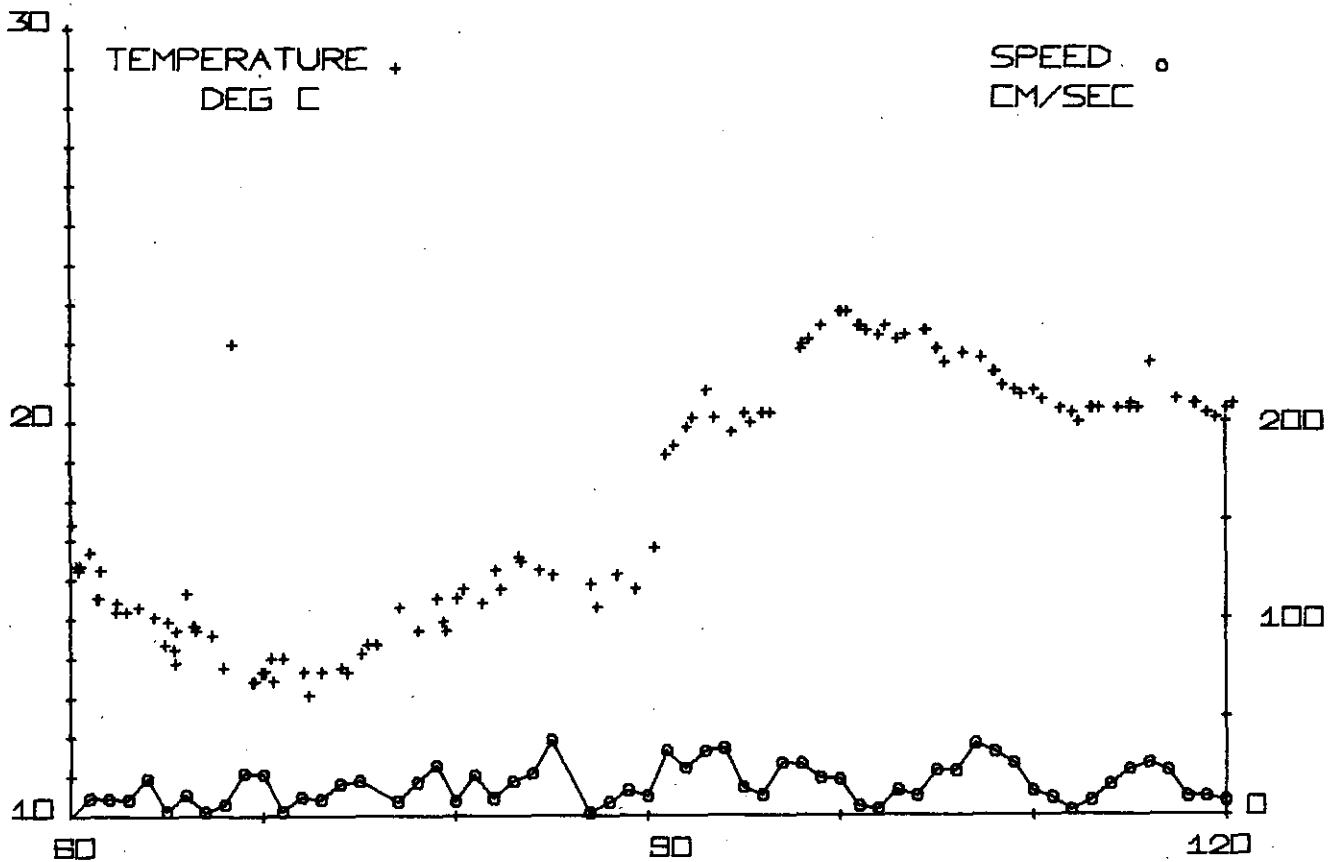
BUOY 1132

DAYS

0- 60 1978

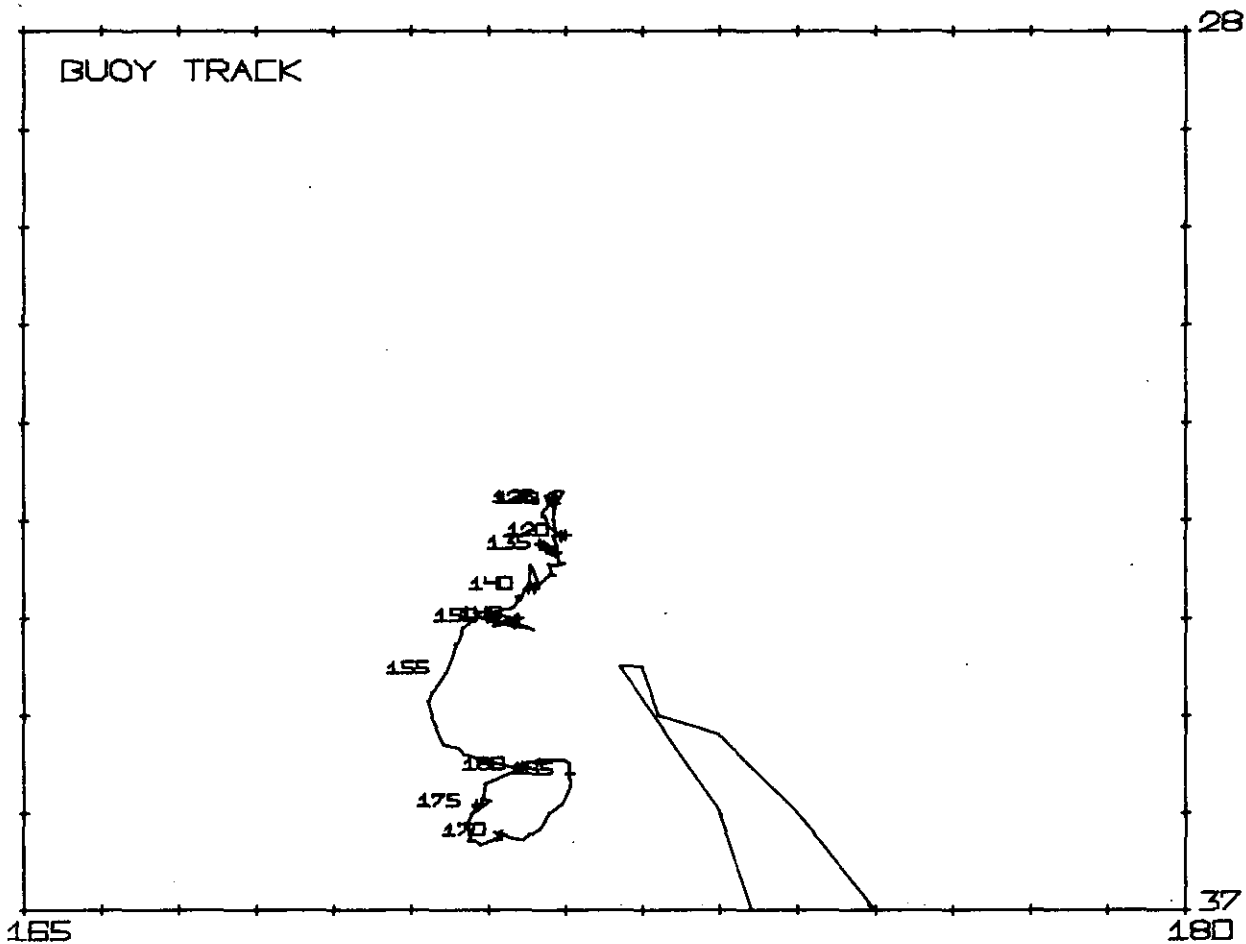
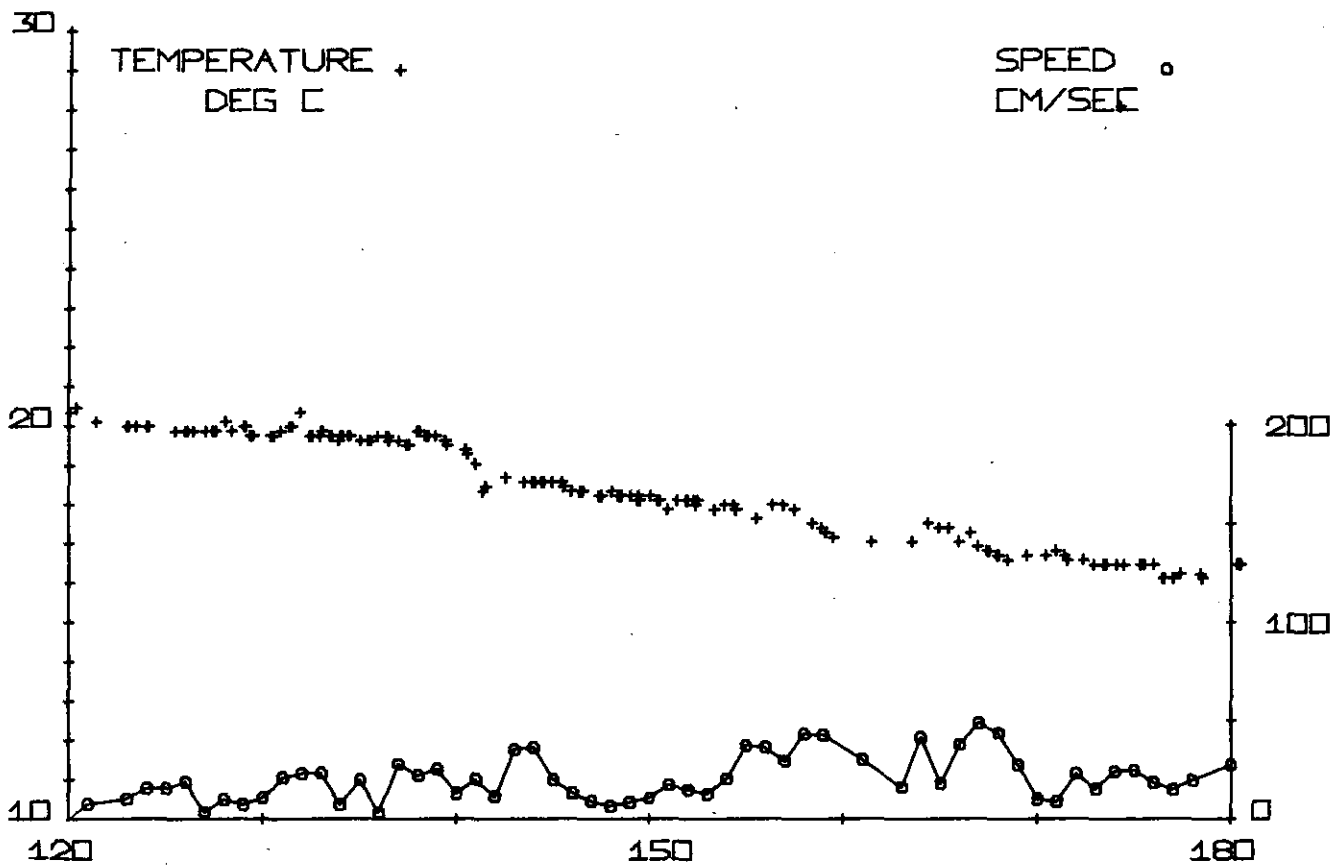


BUOY 1132 DAYS 80-120 1978

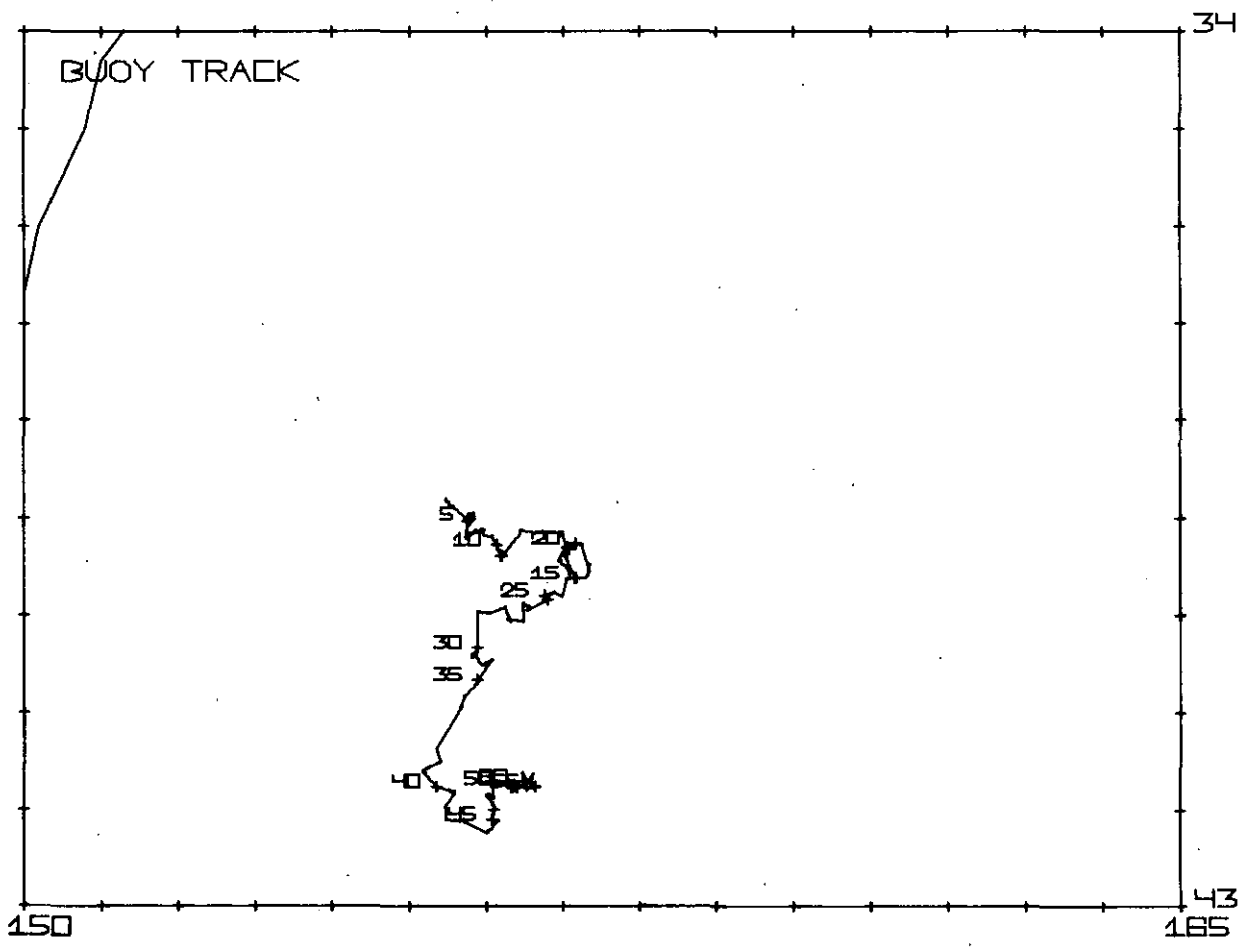
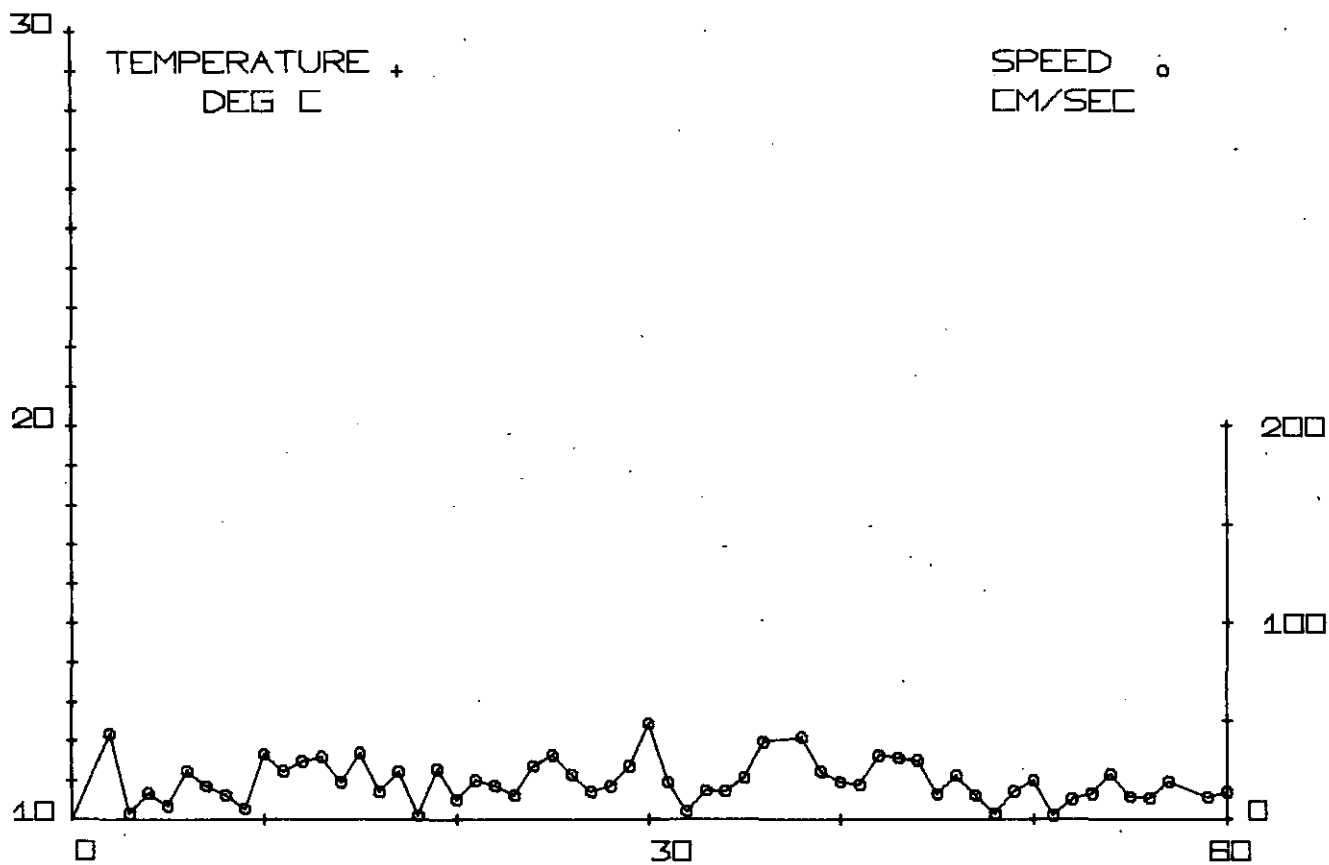


BUOY 1132

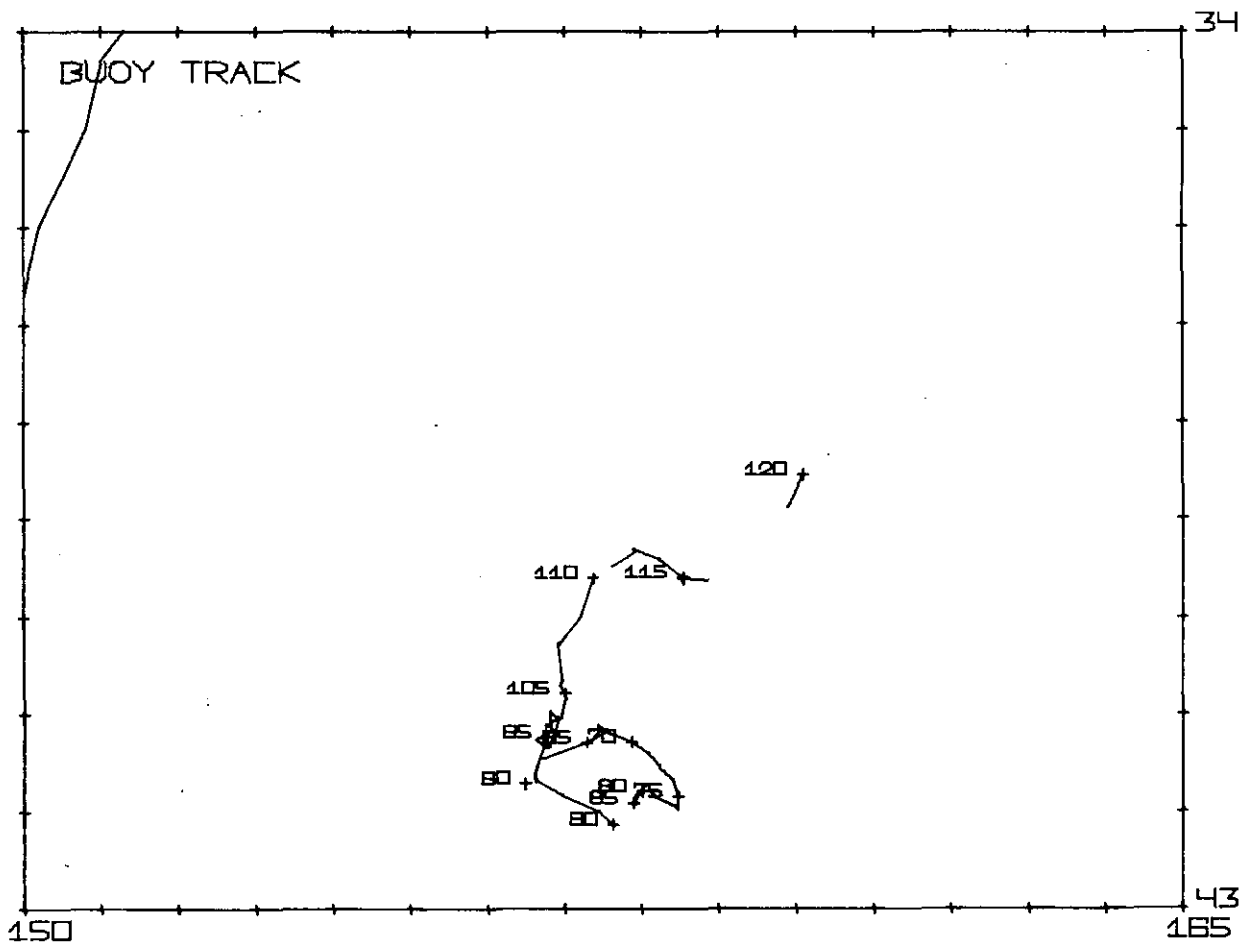
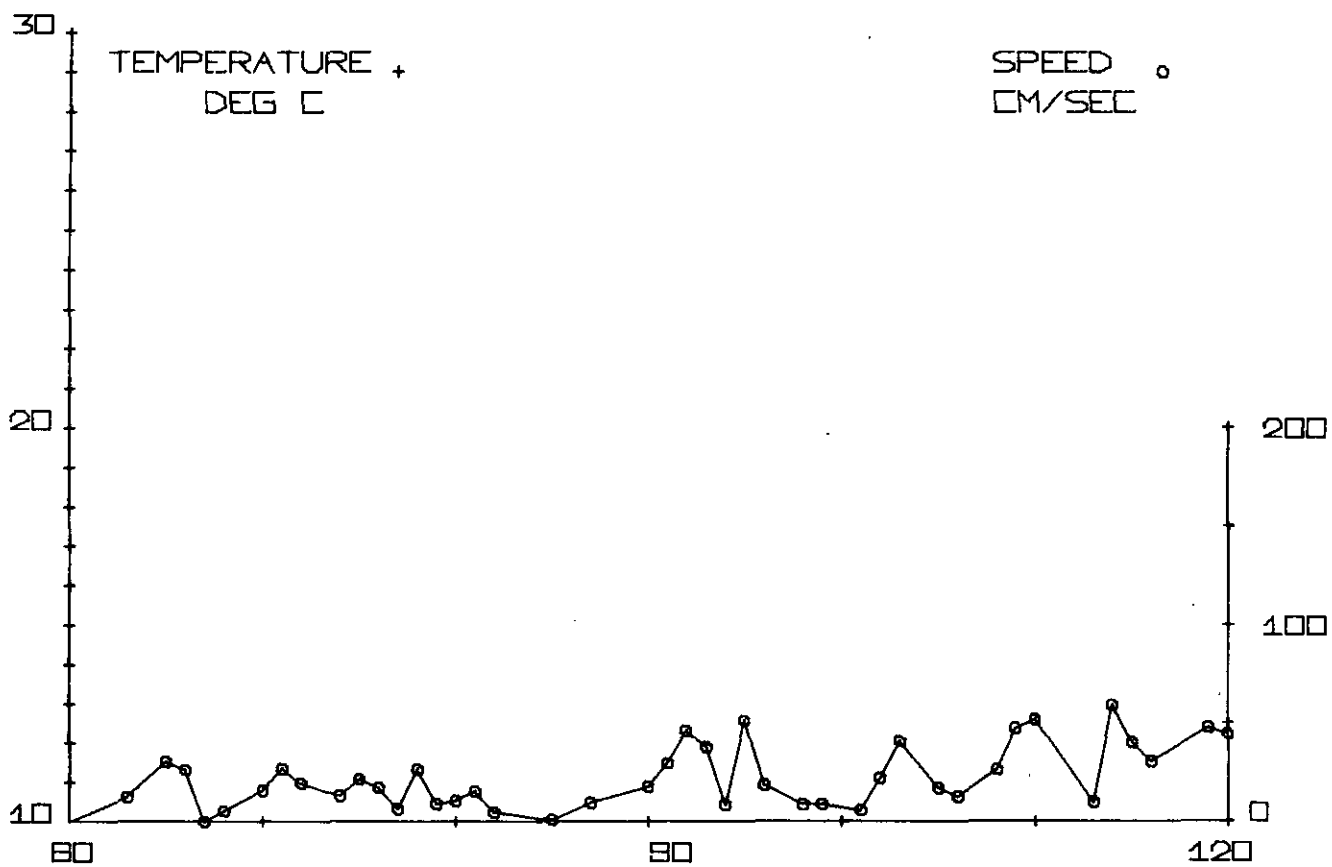
DAYS 120-180 1978



BUOY 1202 DAYS 0 - 60 1978

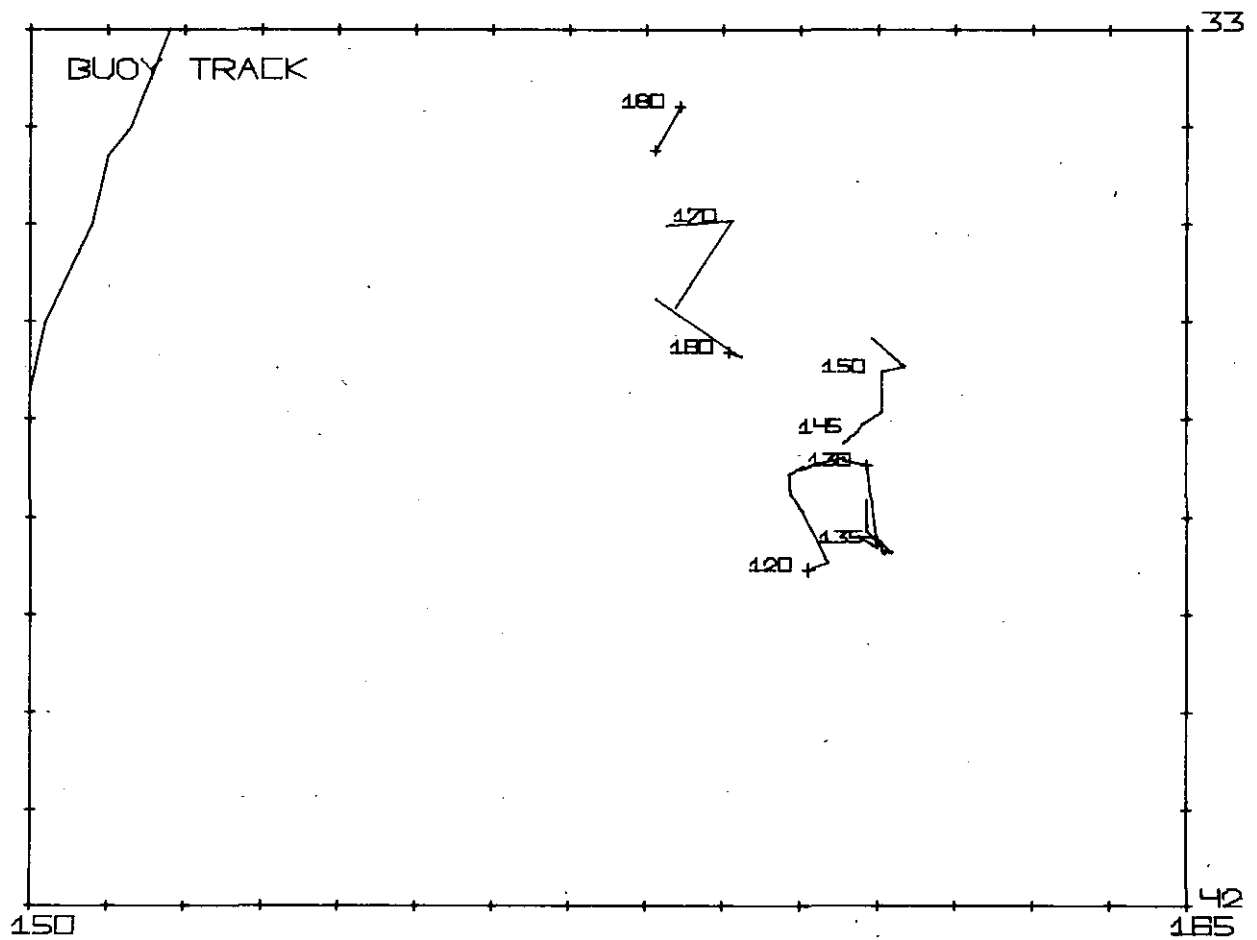
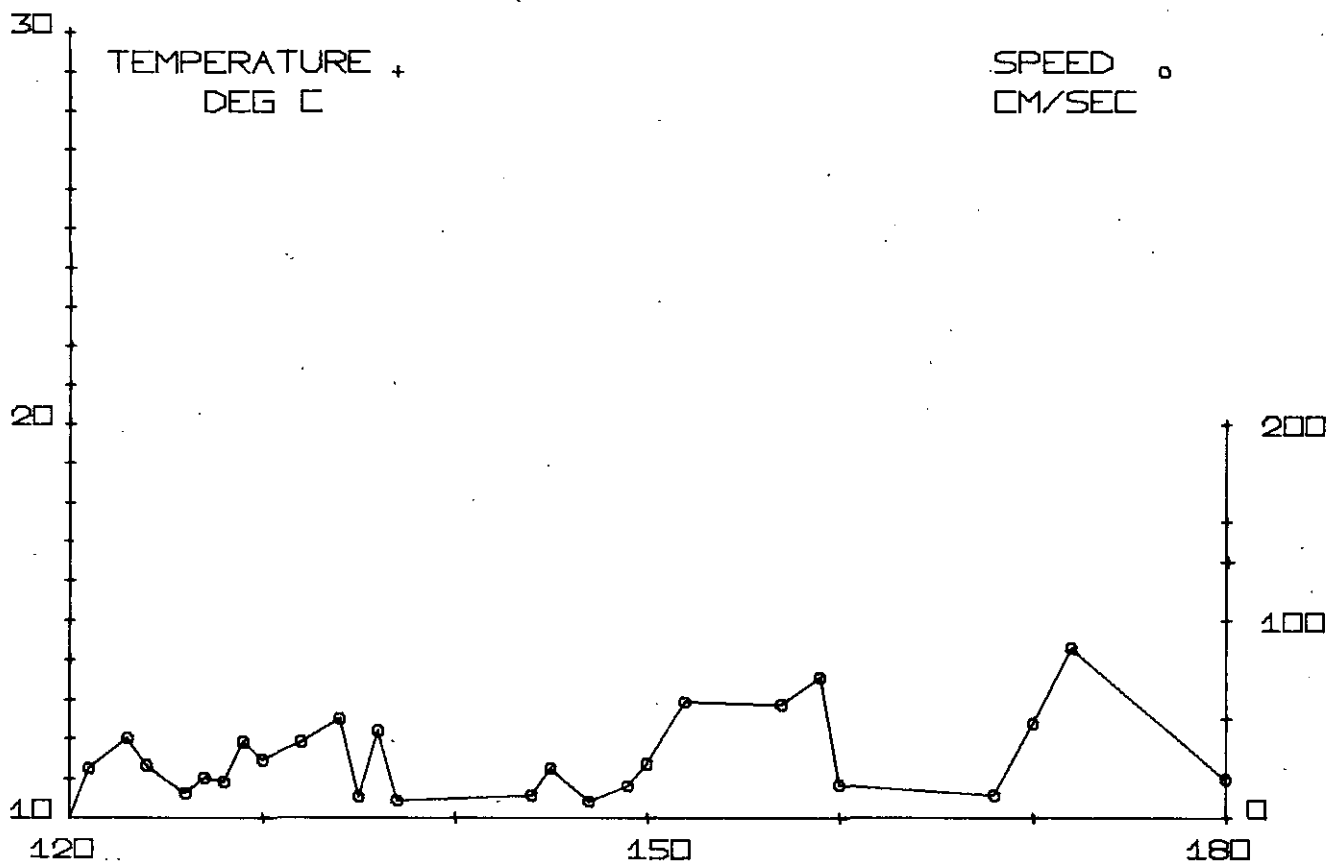


BUOY 1202 DAYS 60-120 1978



BUOY 1202

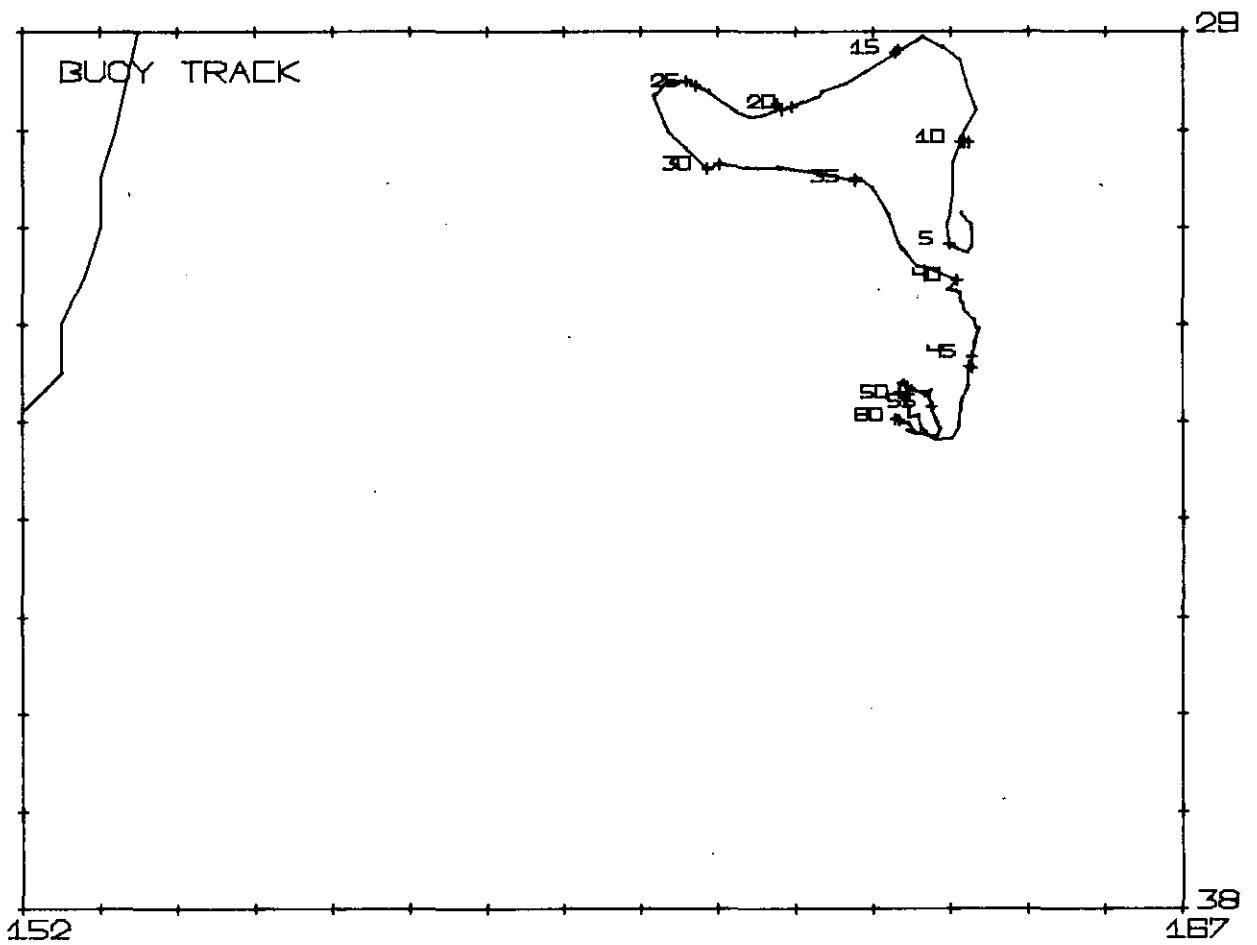
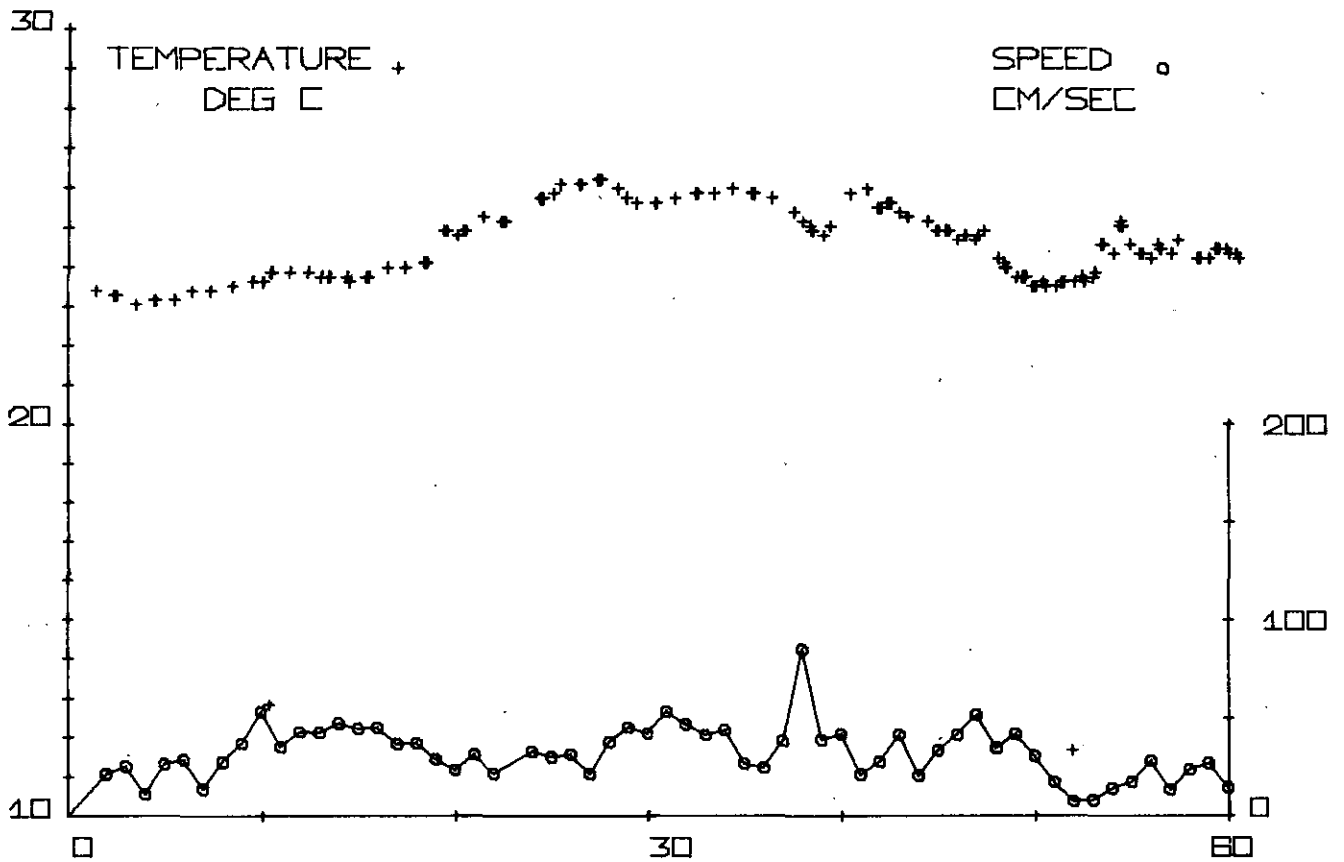
DAYS 120-180 1978



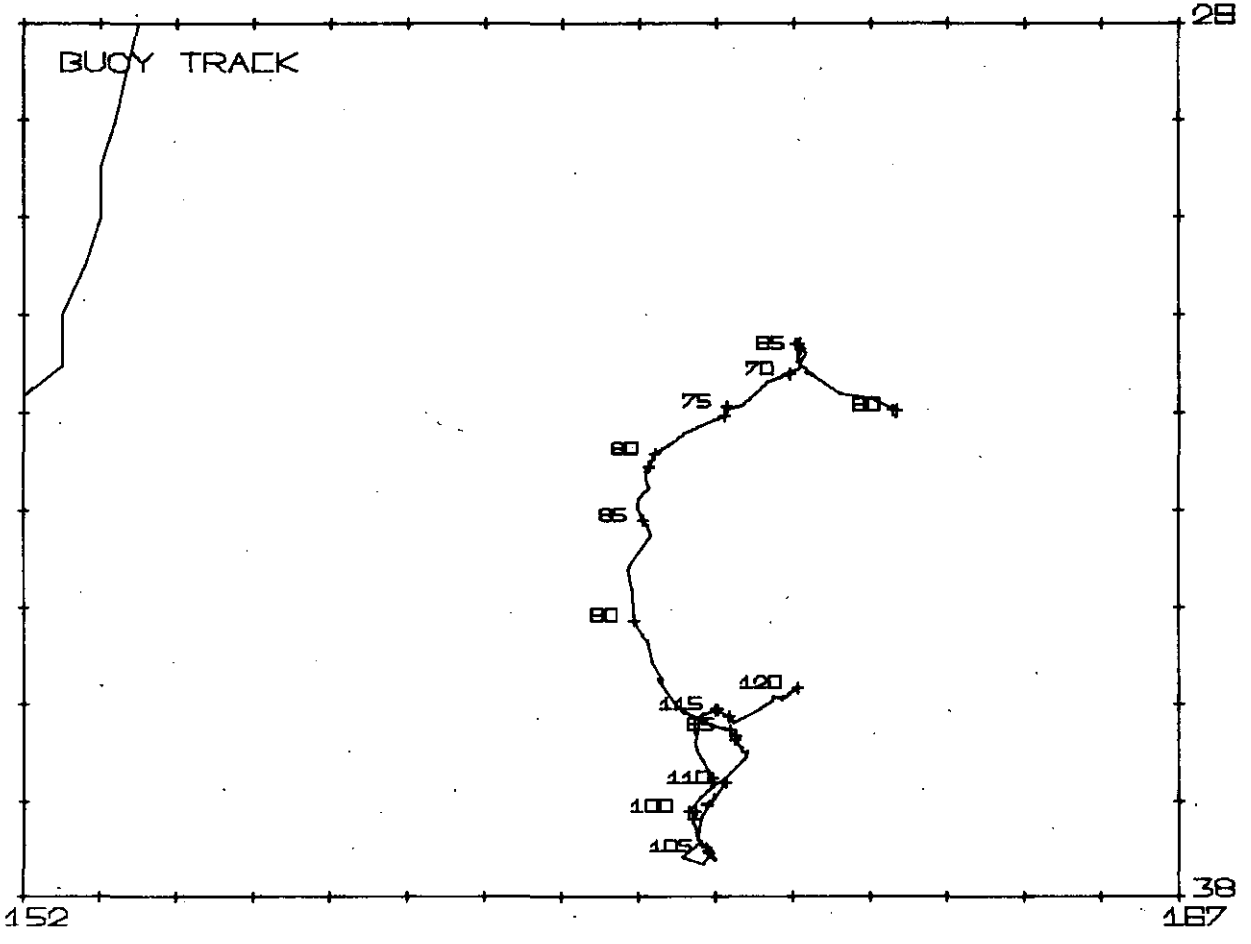
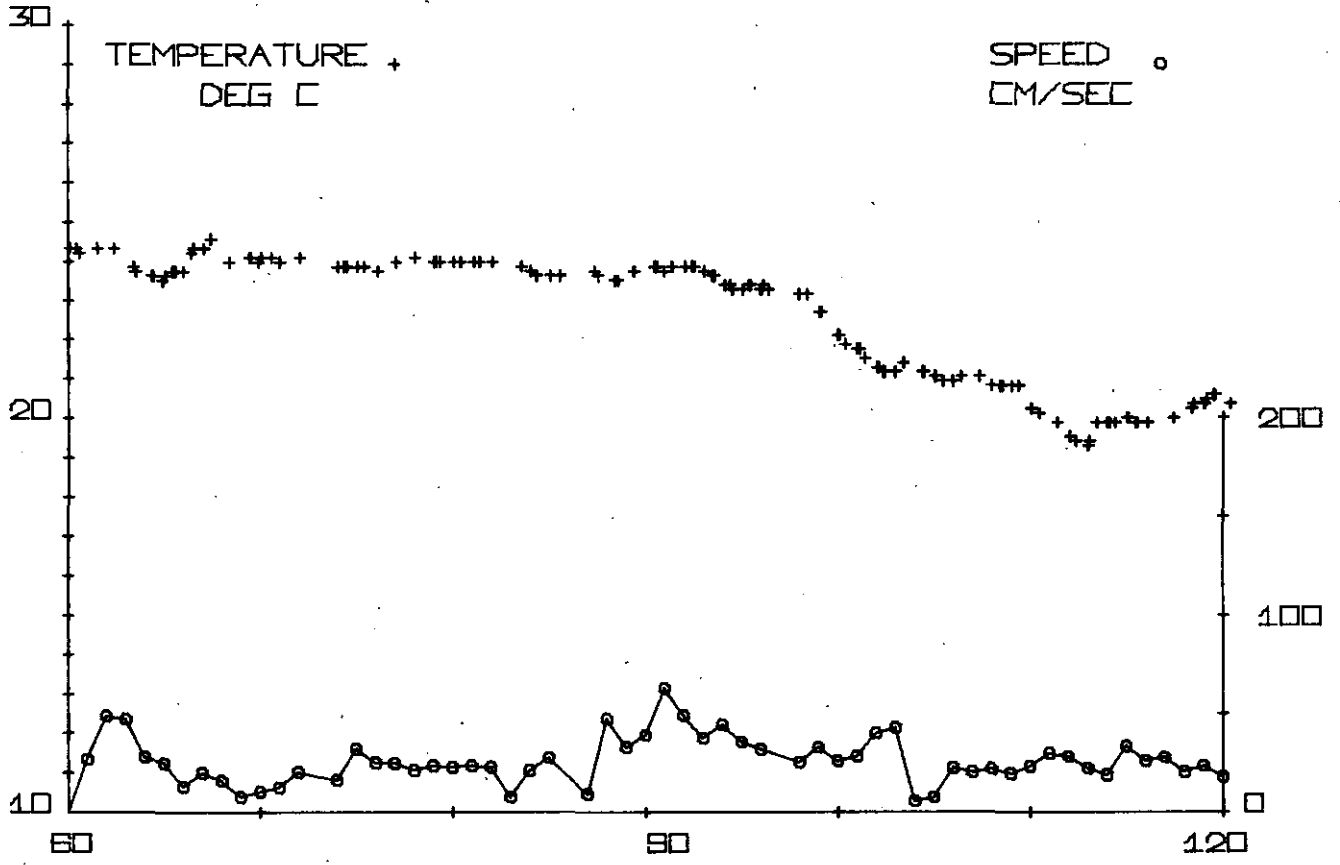
BUOY 1352

DAYS

0 - 60 1978

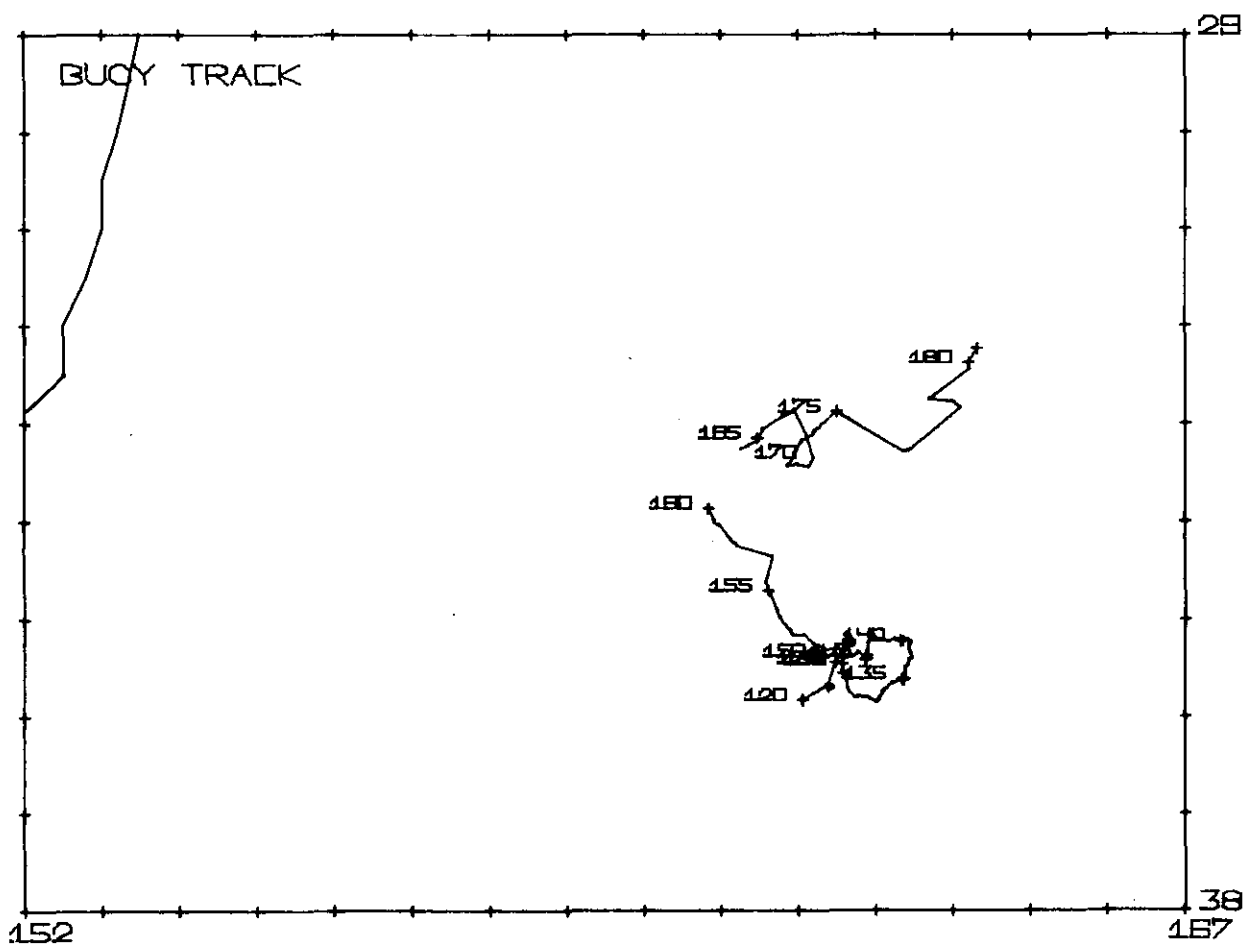
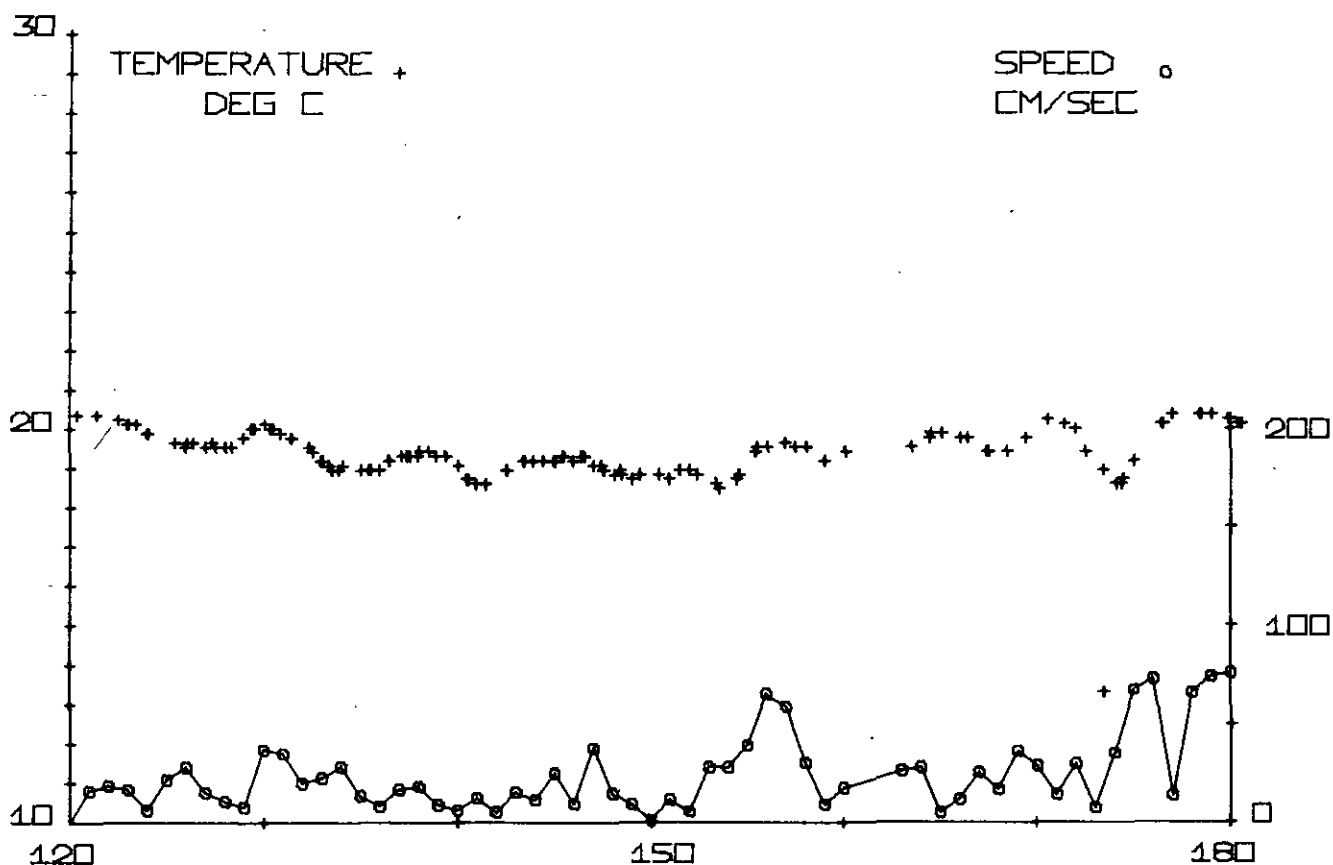


BUOY 1352 DAYS 60-120 1978



BUOY 1352

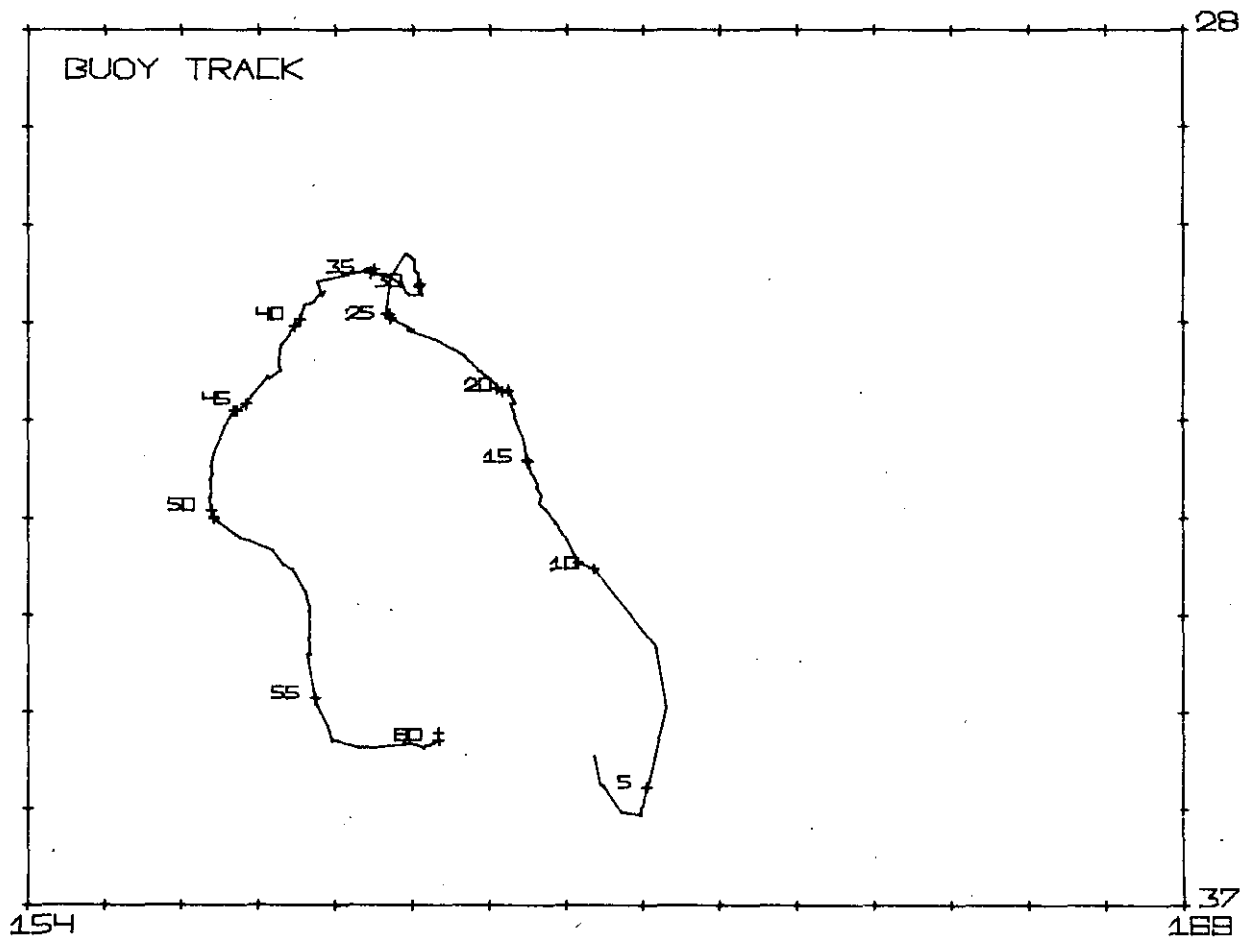
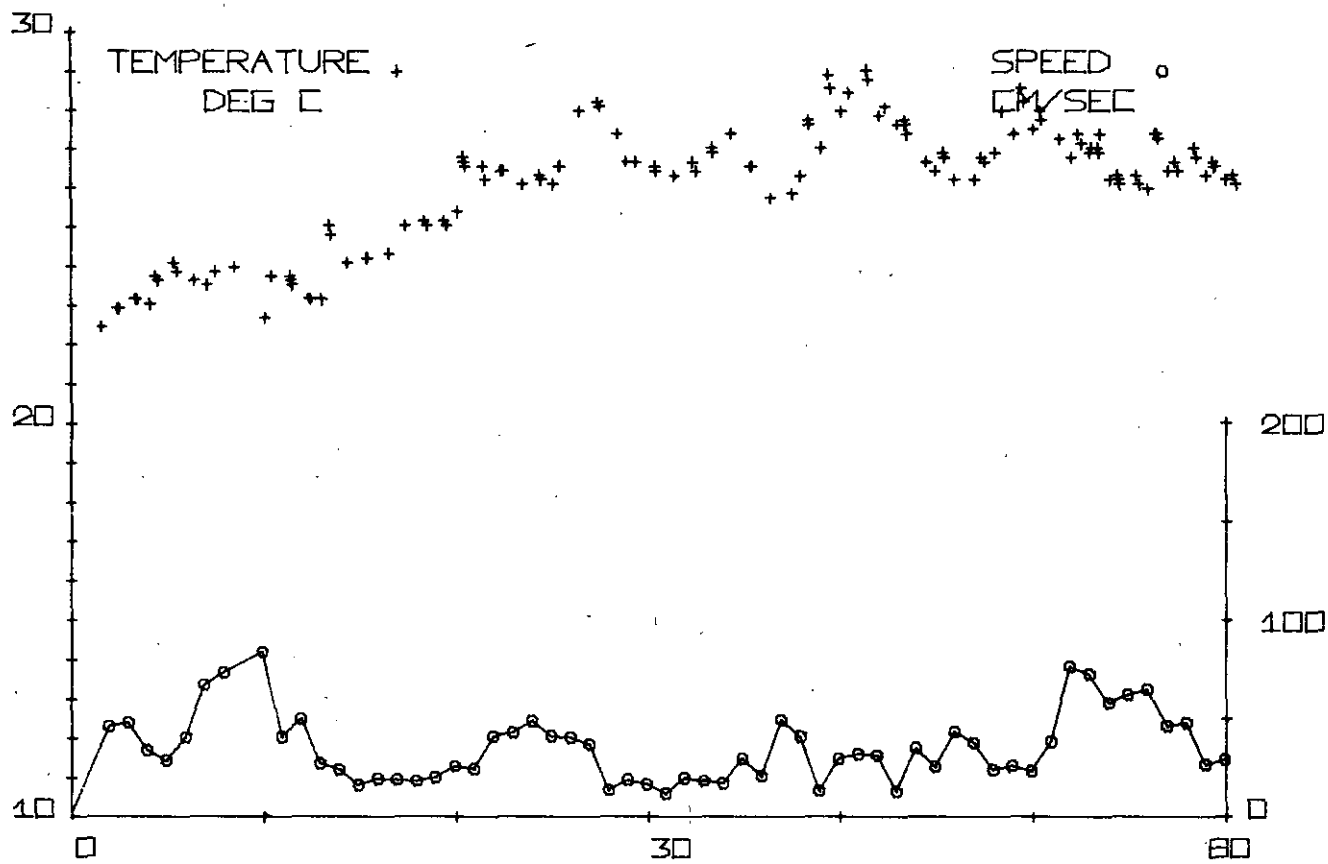
DAYS 120-180 1978



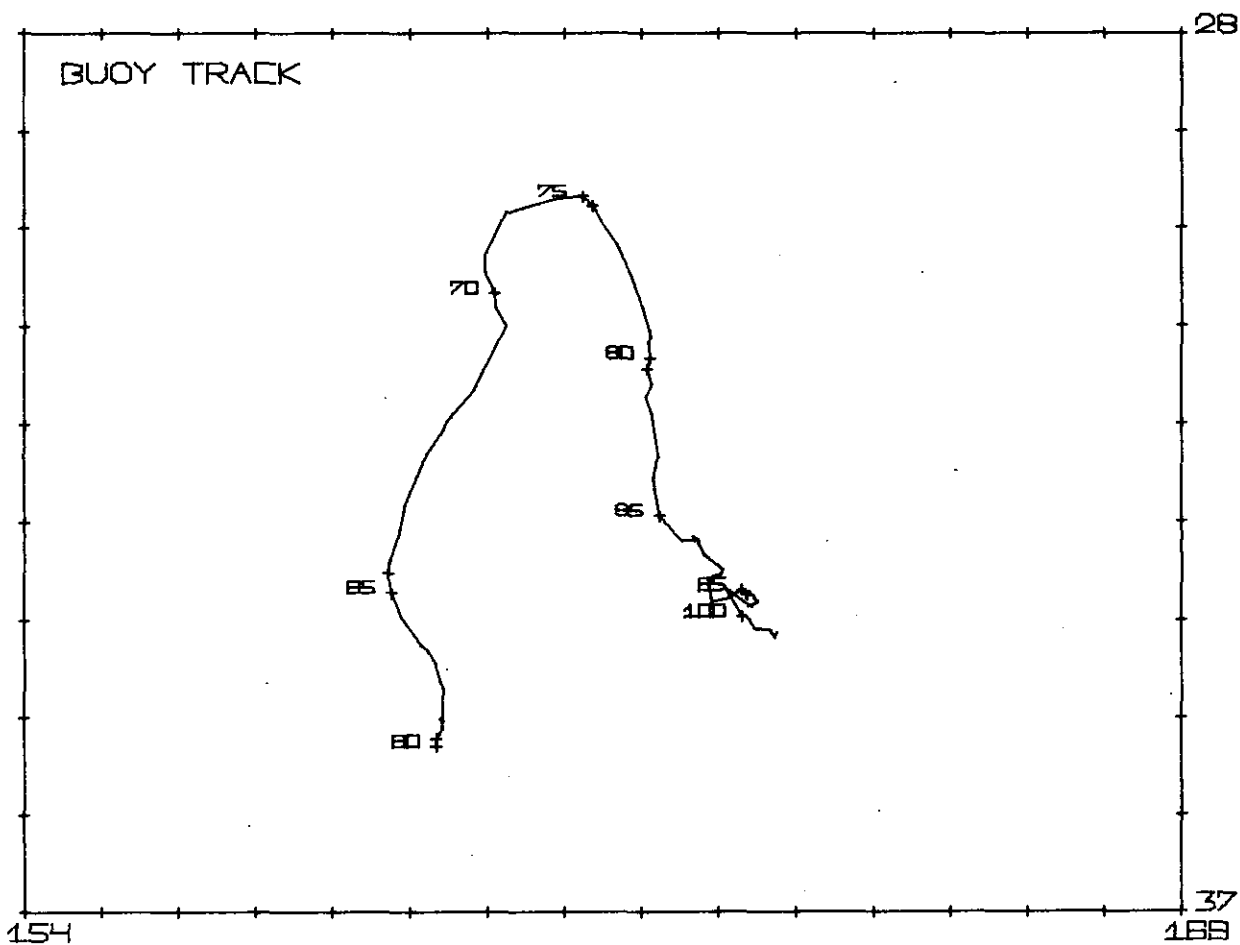
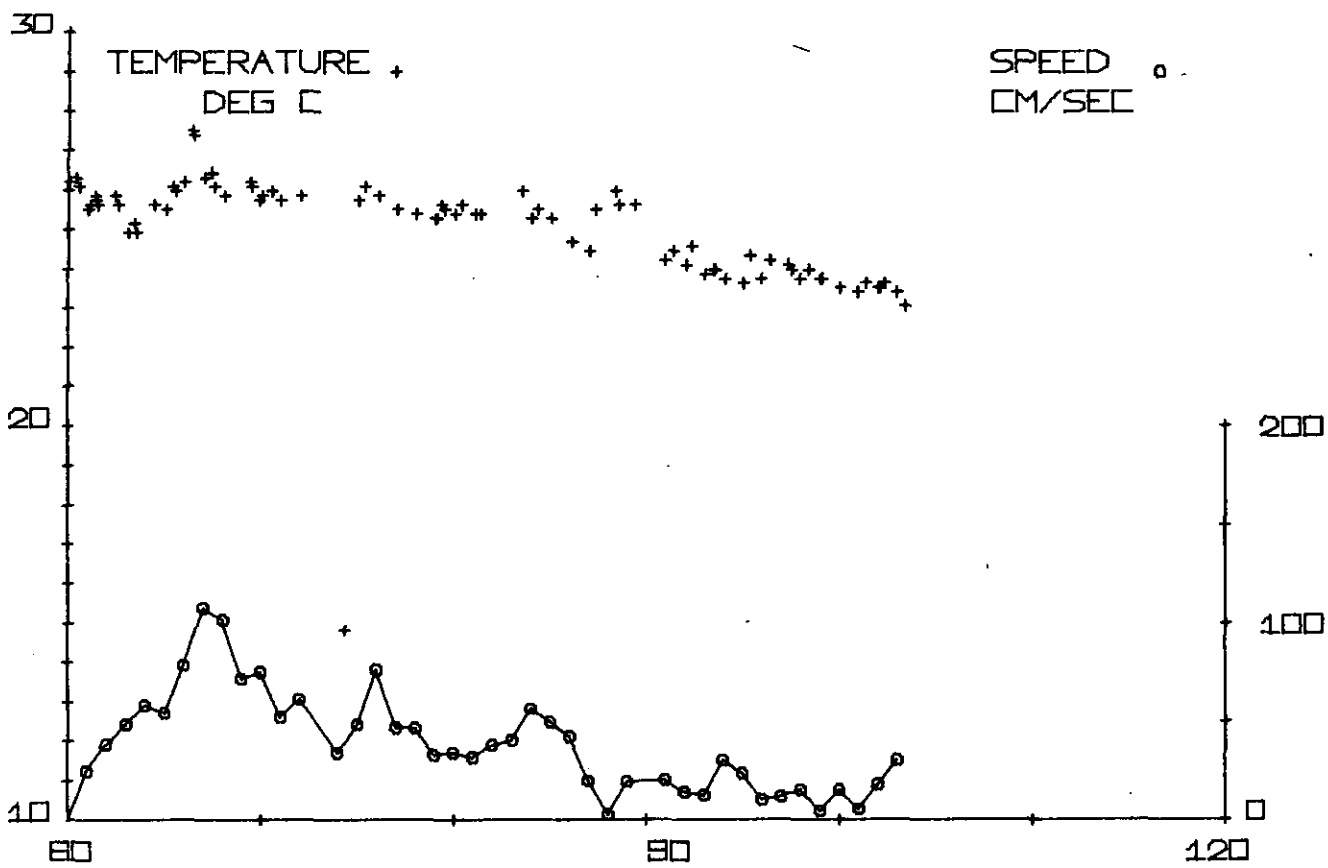
BUOY 154B

DAYS

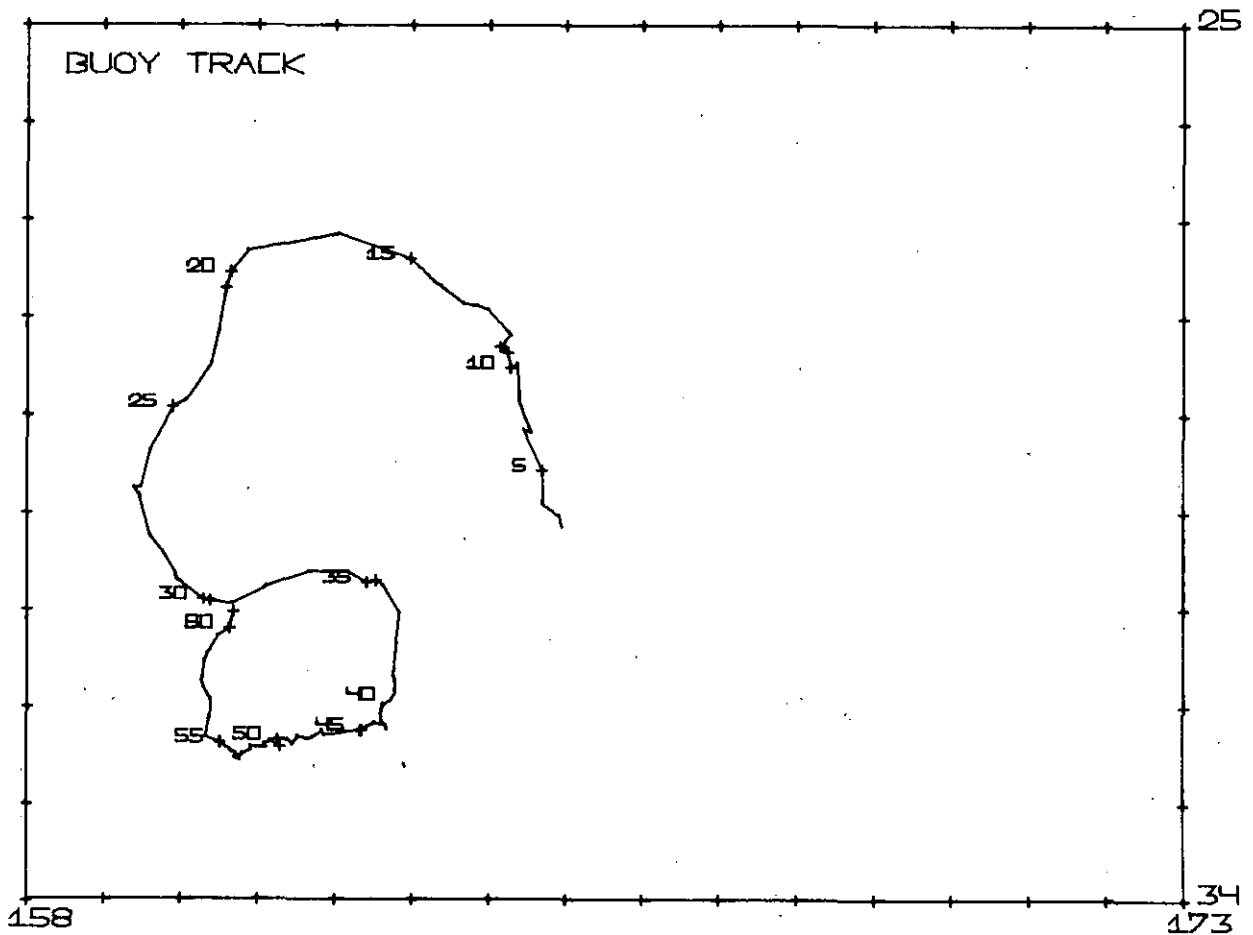
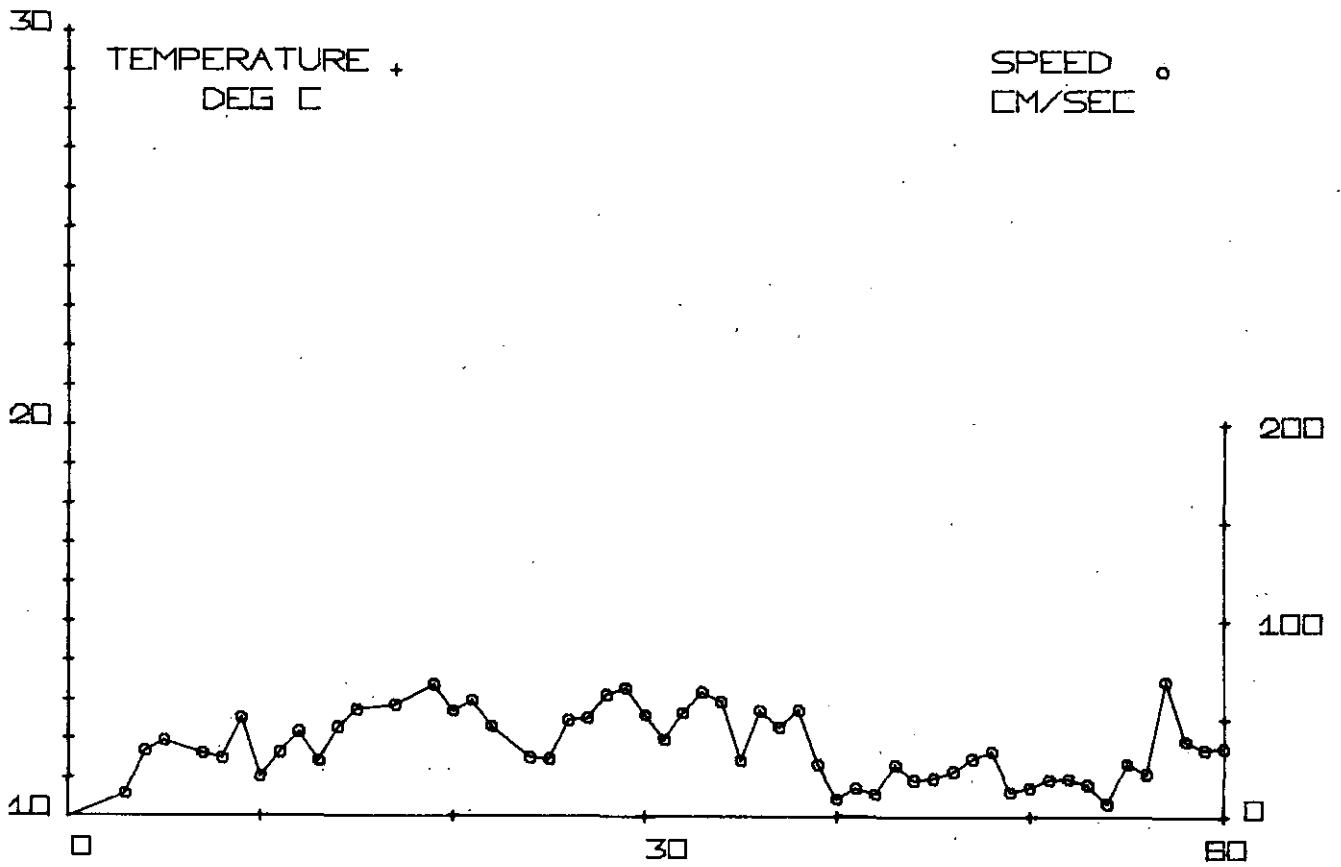
0 - 60 1978



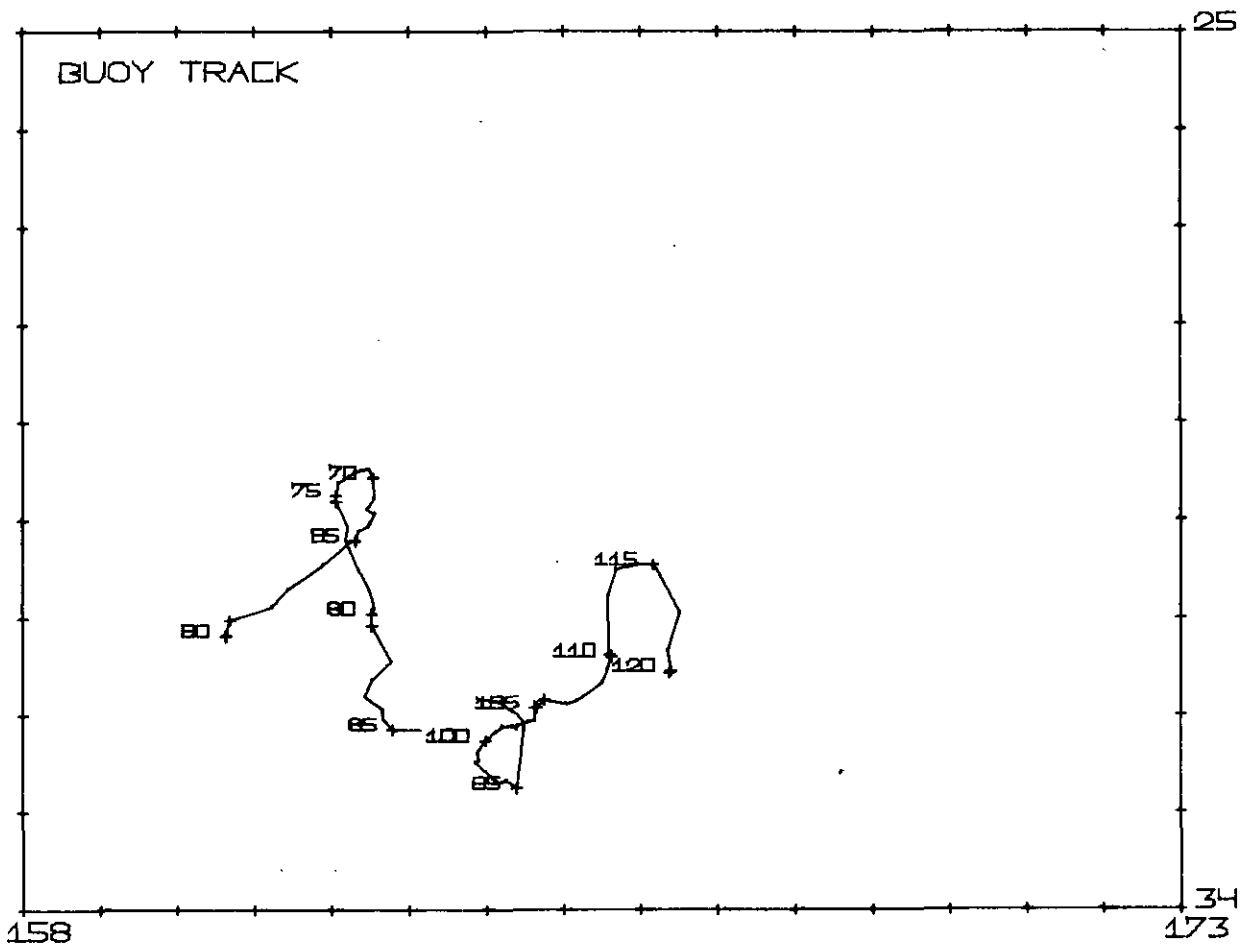
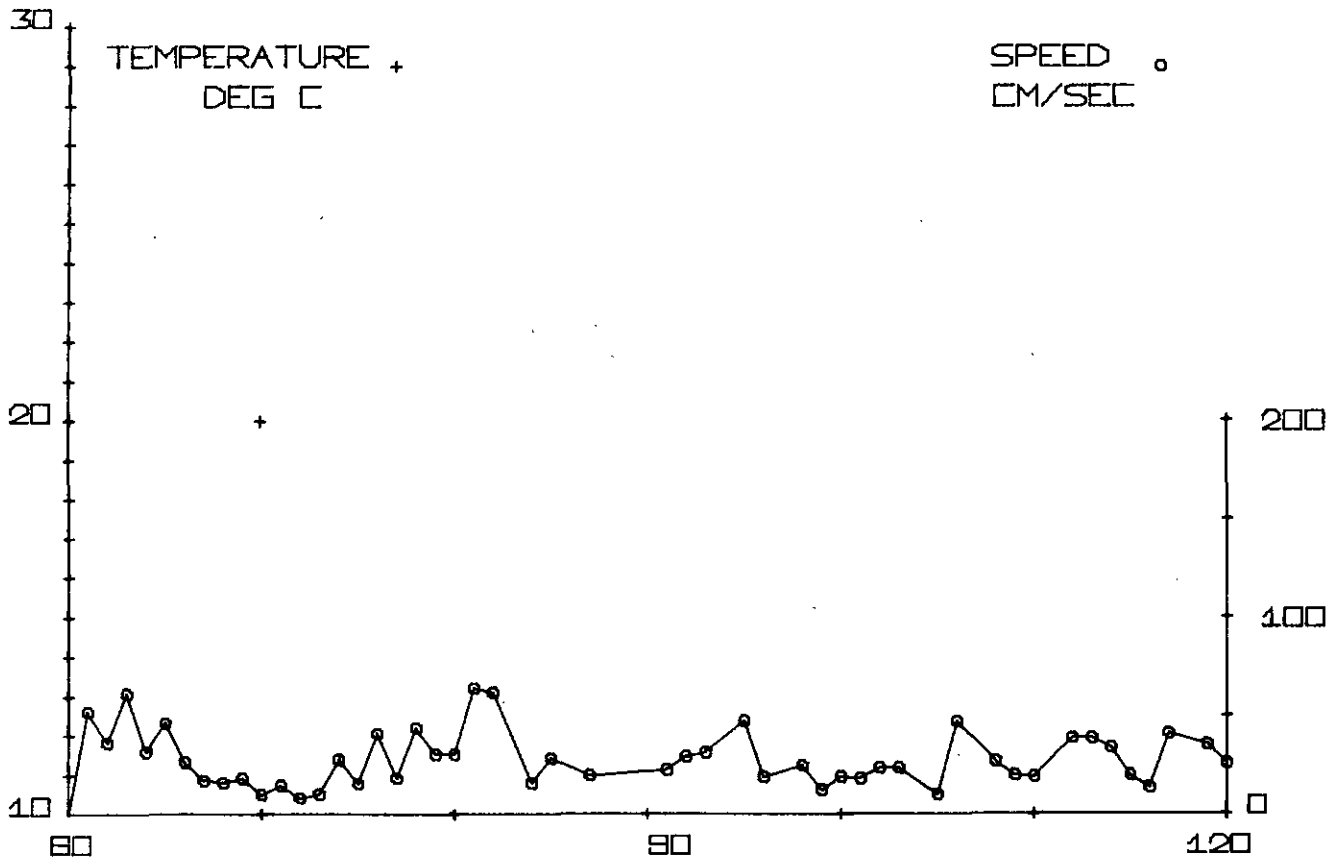
BUOY 154E DAYS 60-120 1978



BUOY 1570 DAYS 0- 80 1978

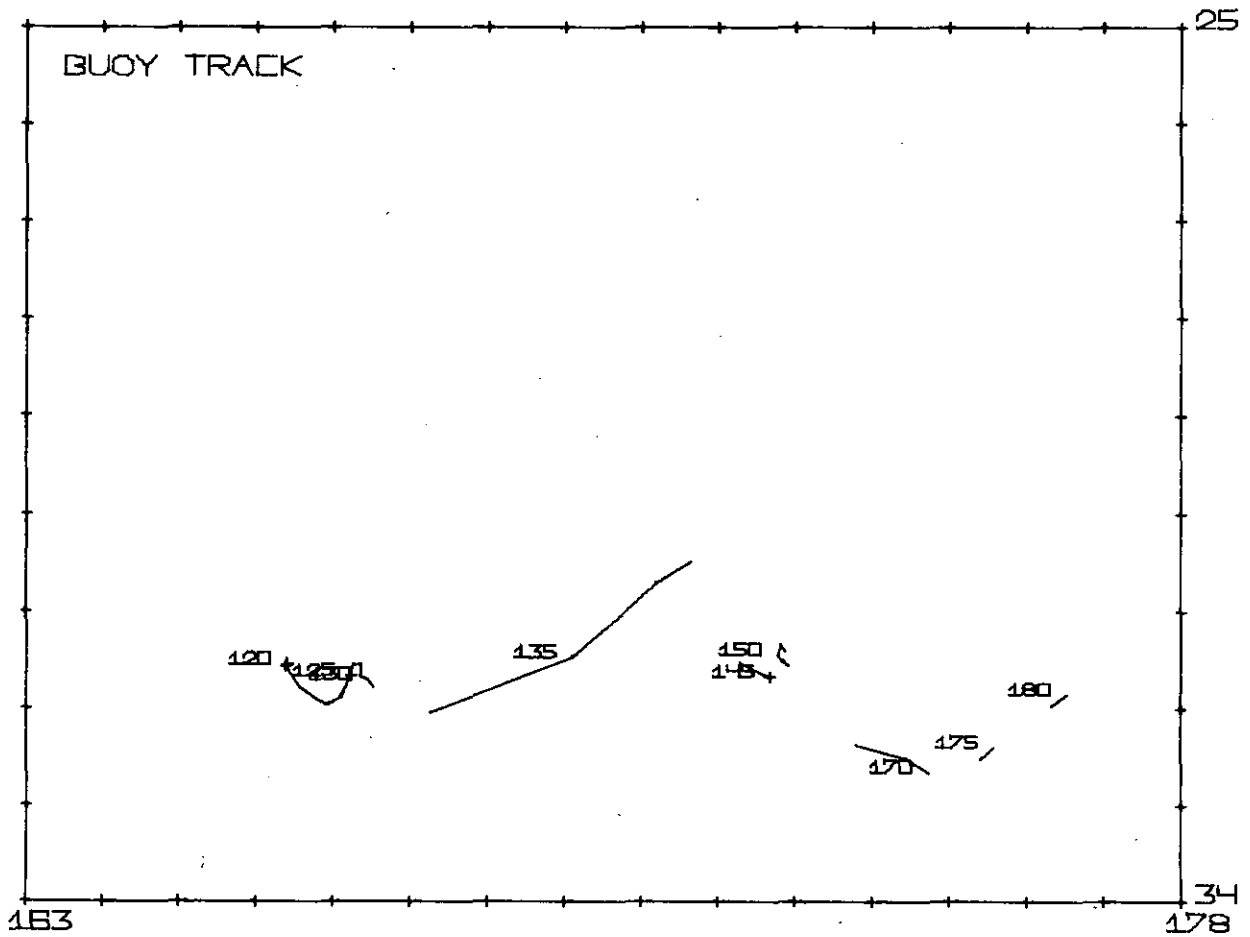
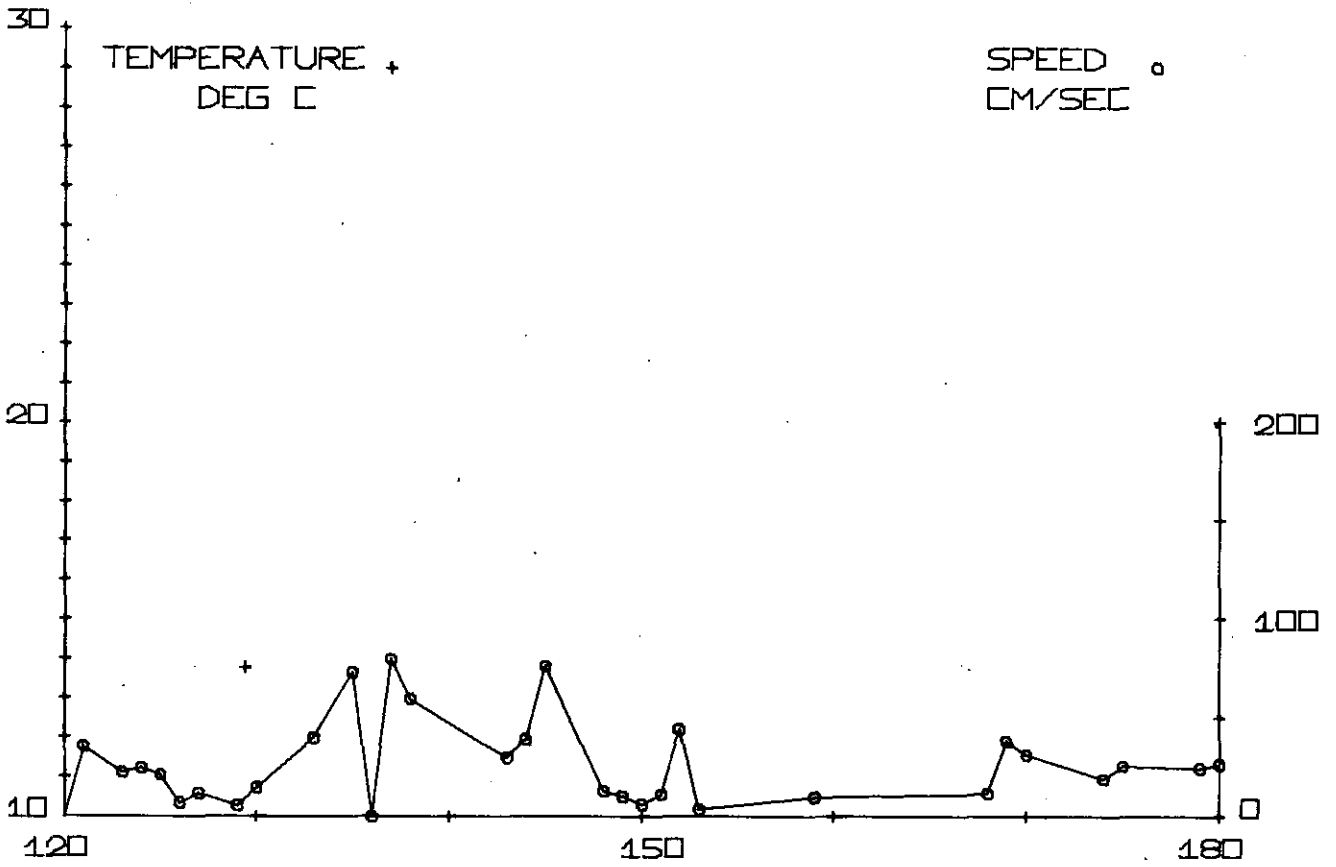


BUOY 1570 DAYS 80-120 1978



BUOY 1570

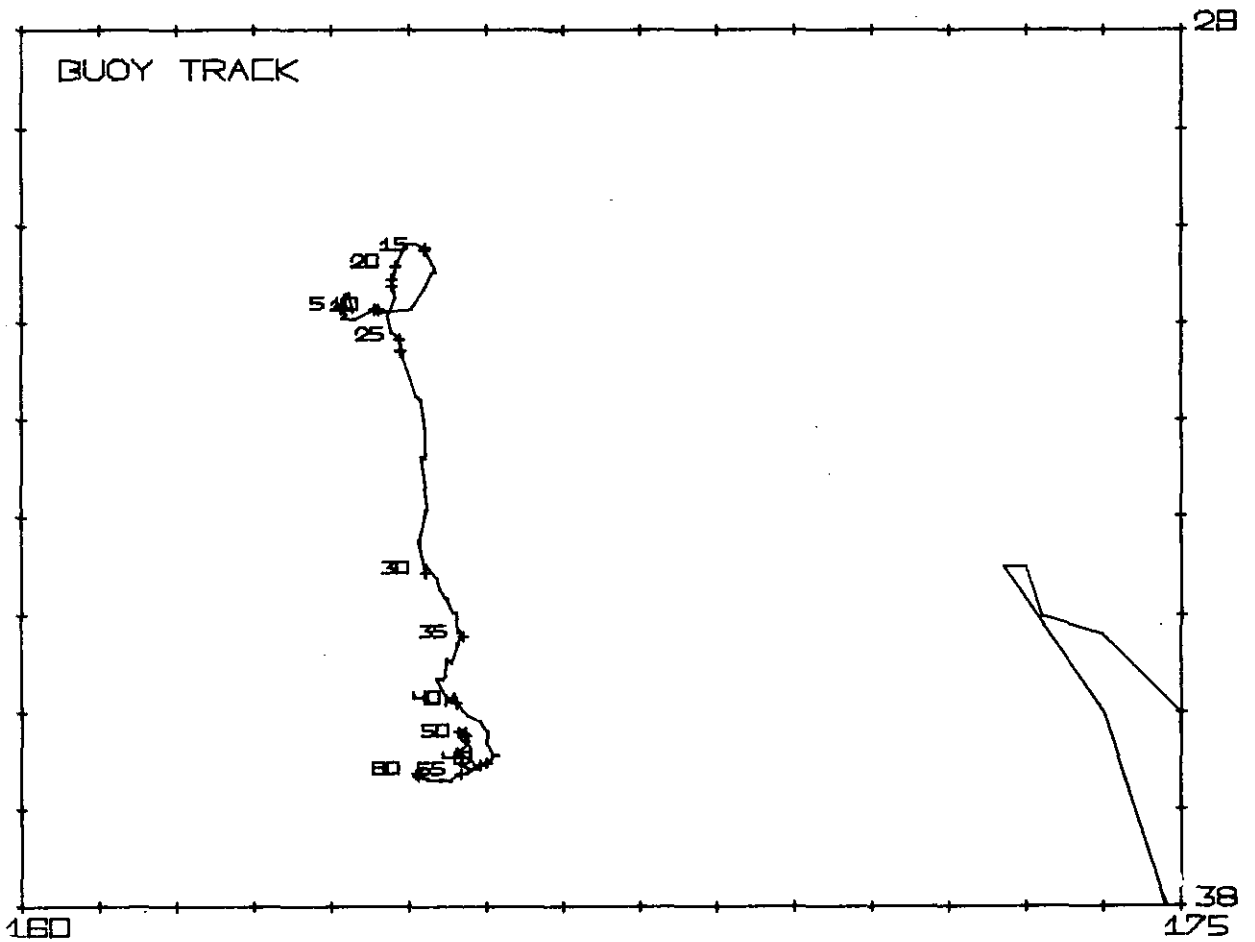
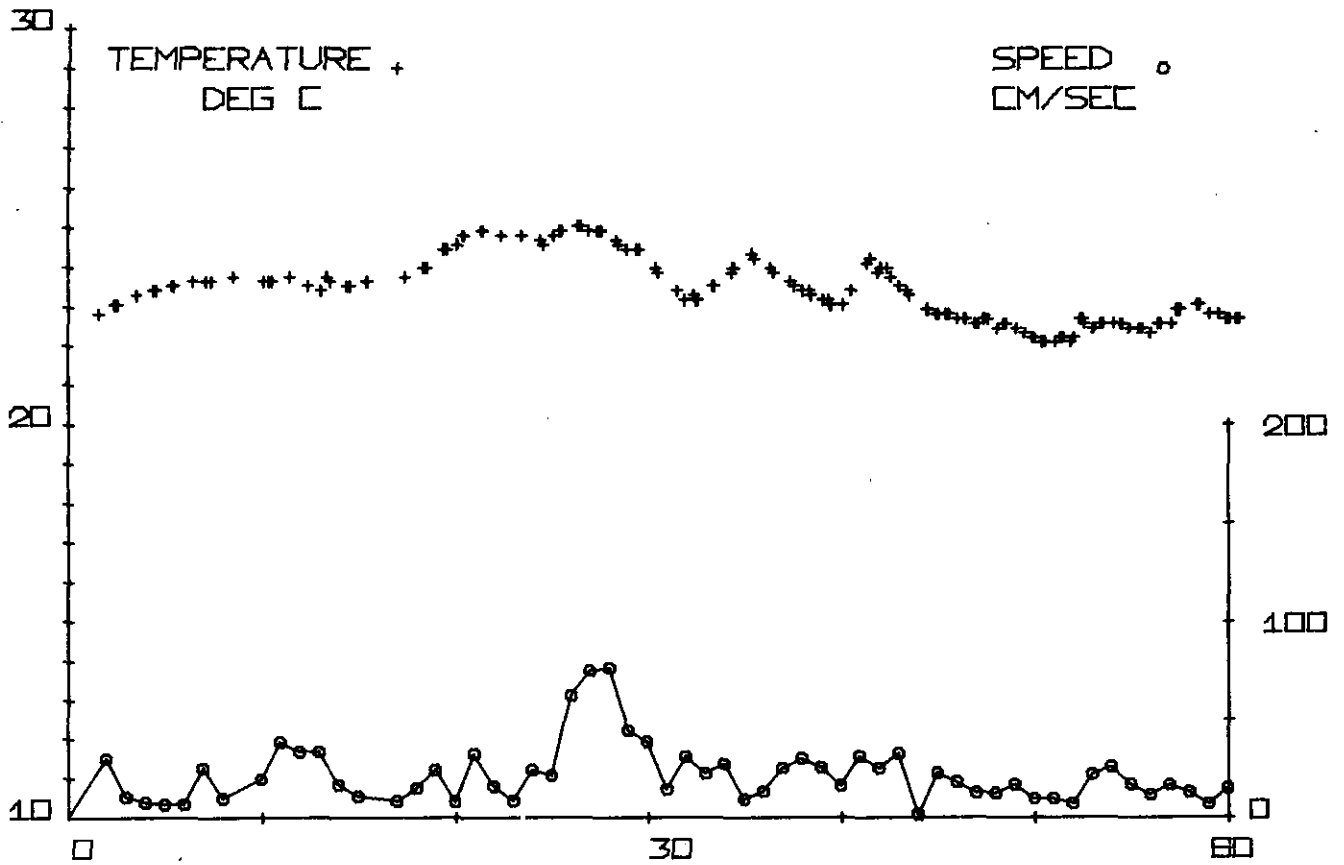
DAYS 120-180 1978



BUOY 1631

DAYS

0- 60 1978

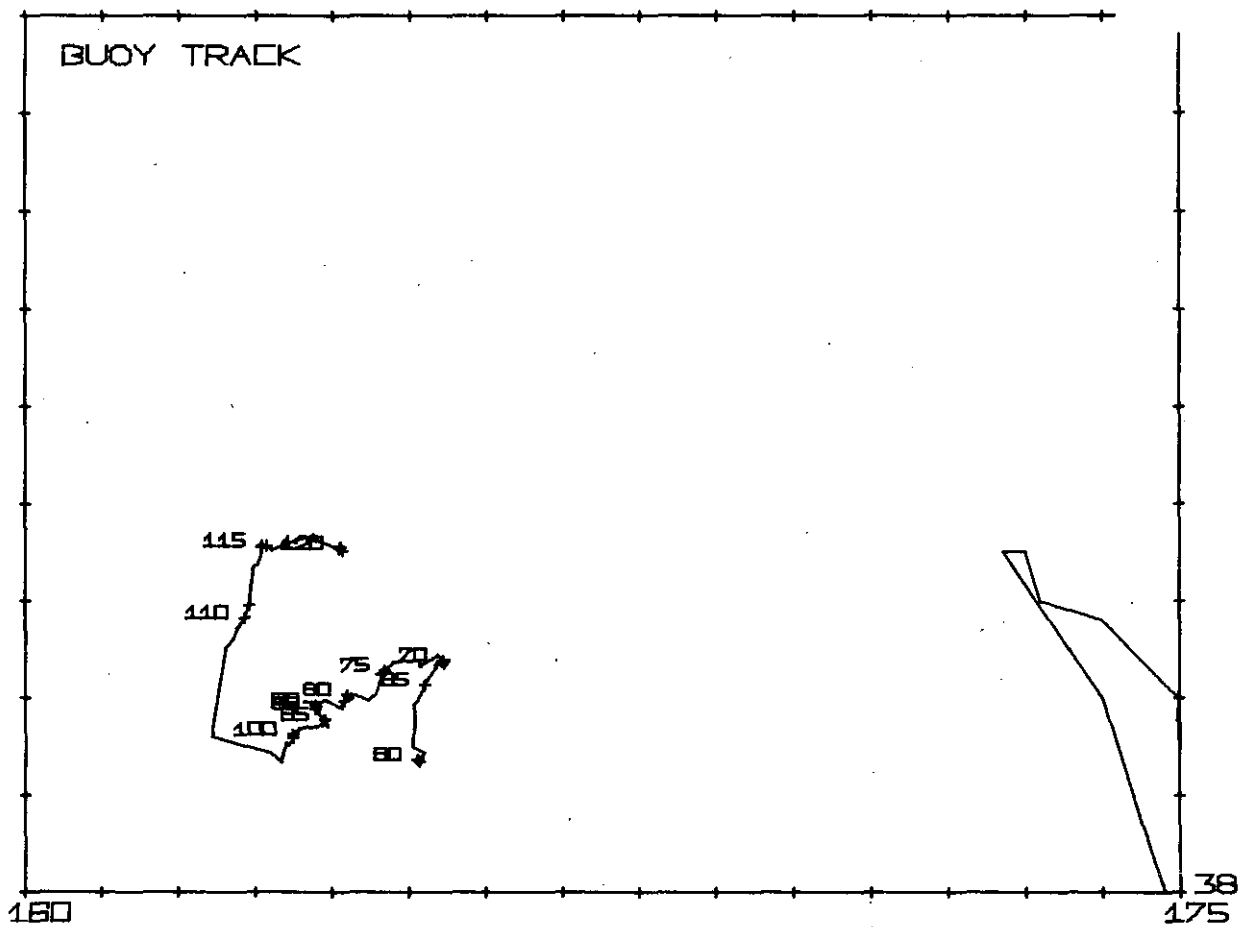
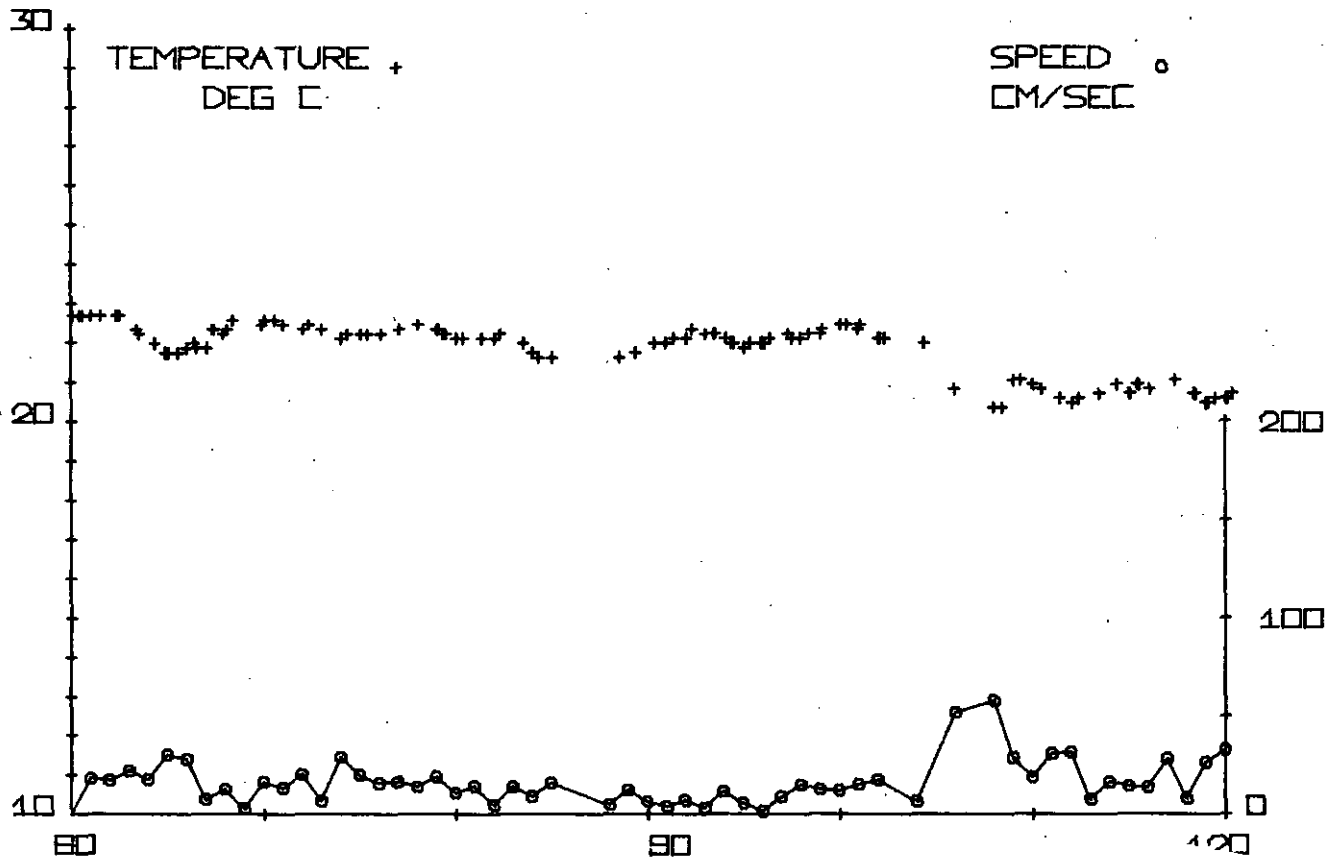


BUOY 1631

DAYS

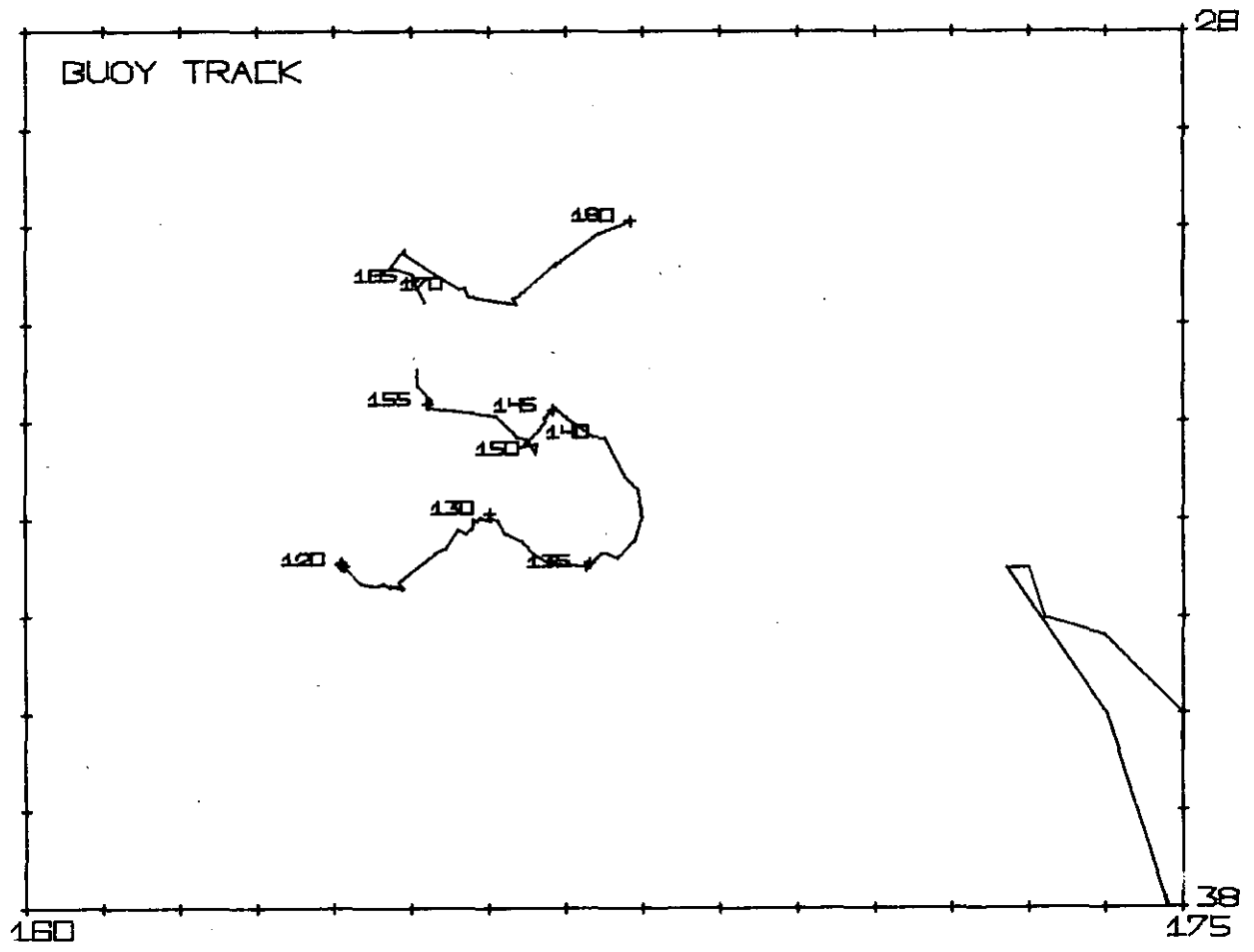
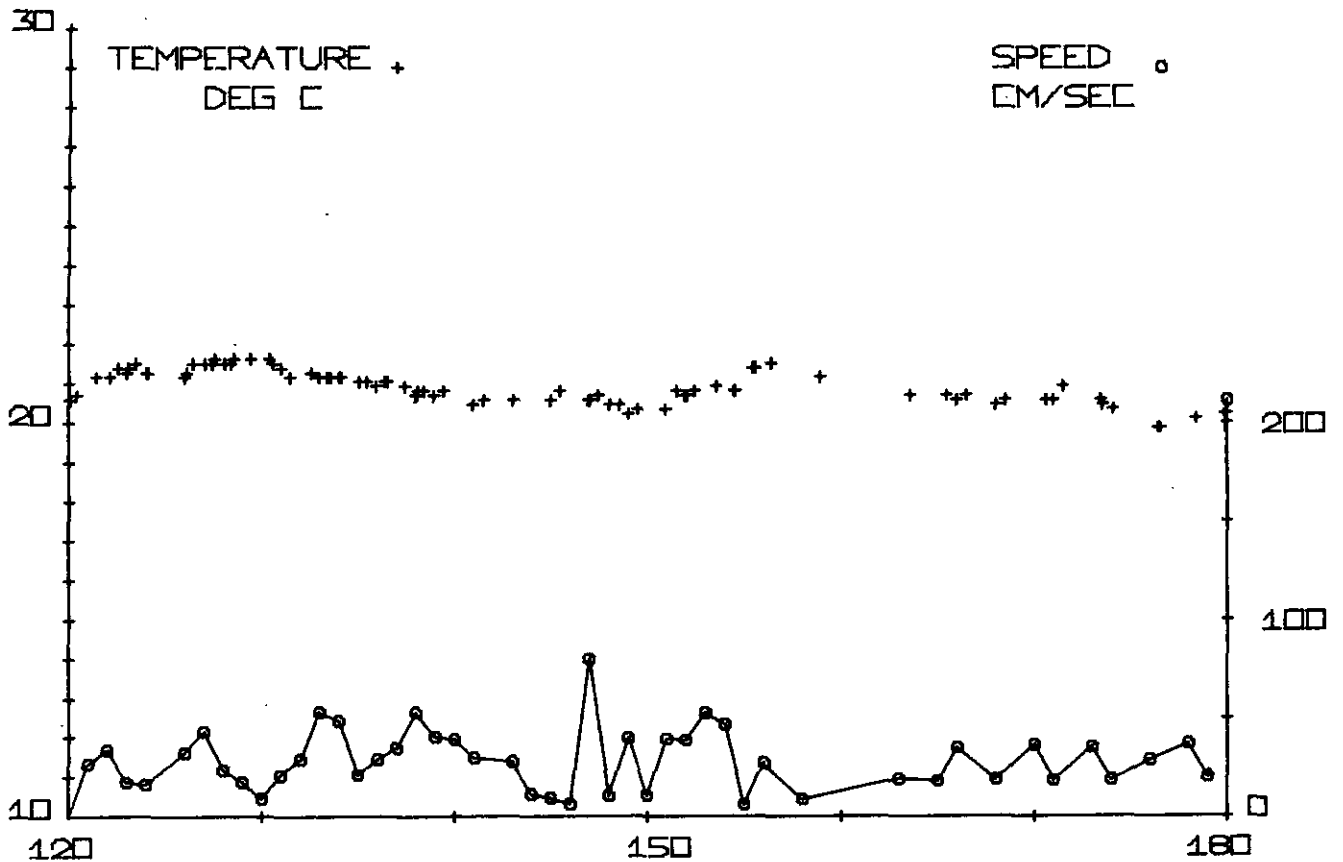
60-120

1978

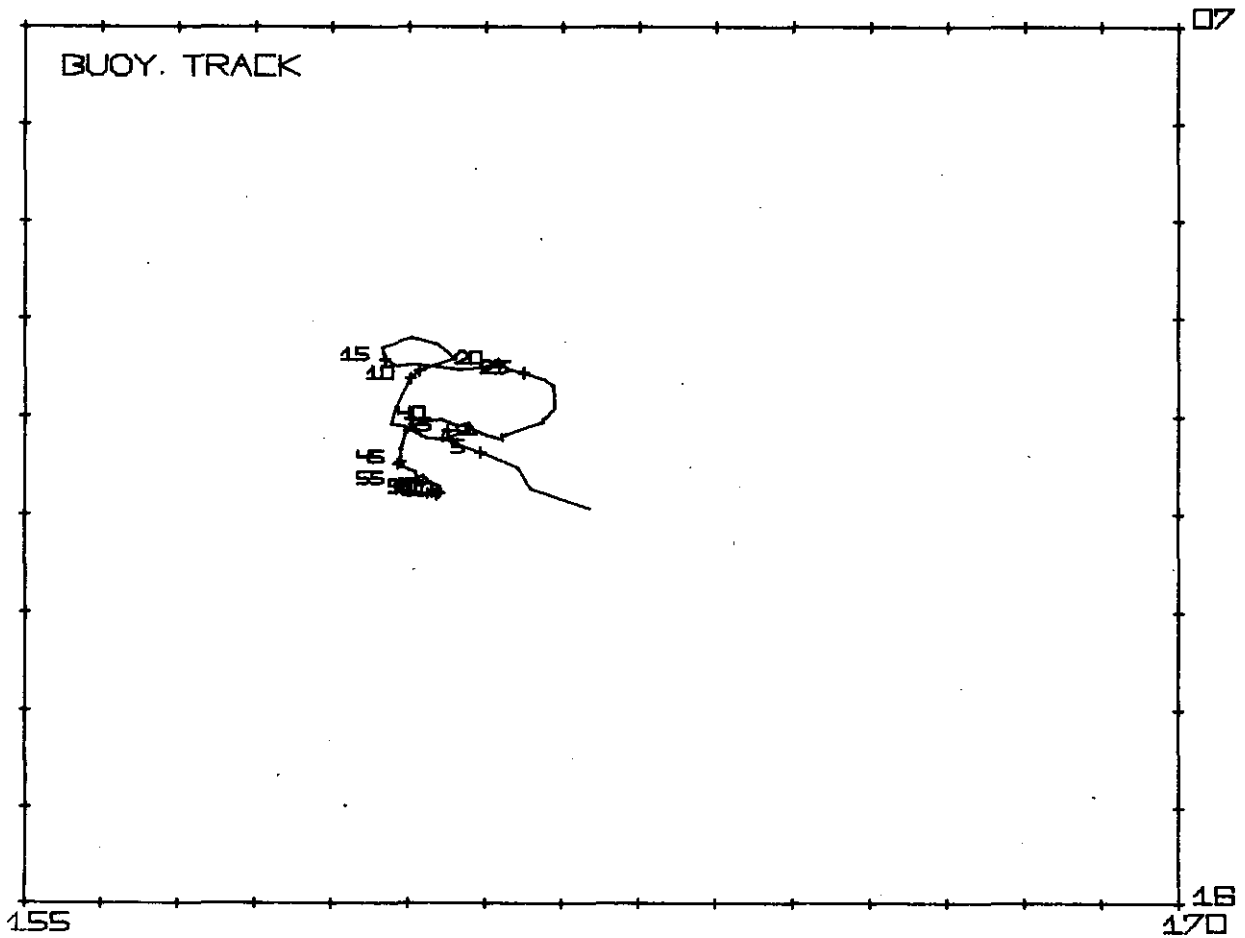
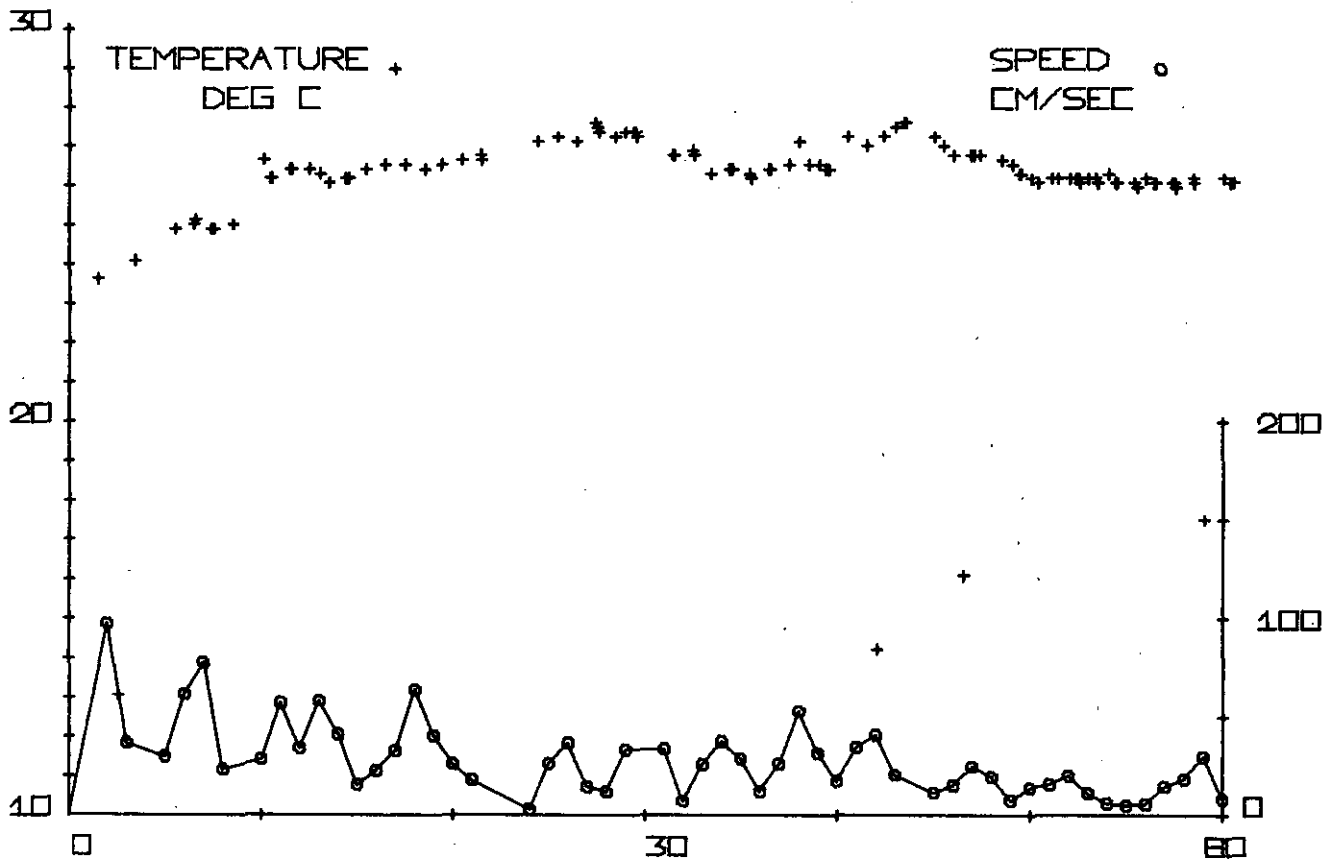


BUOY 1631

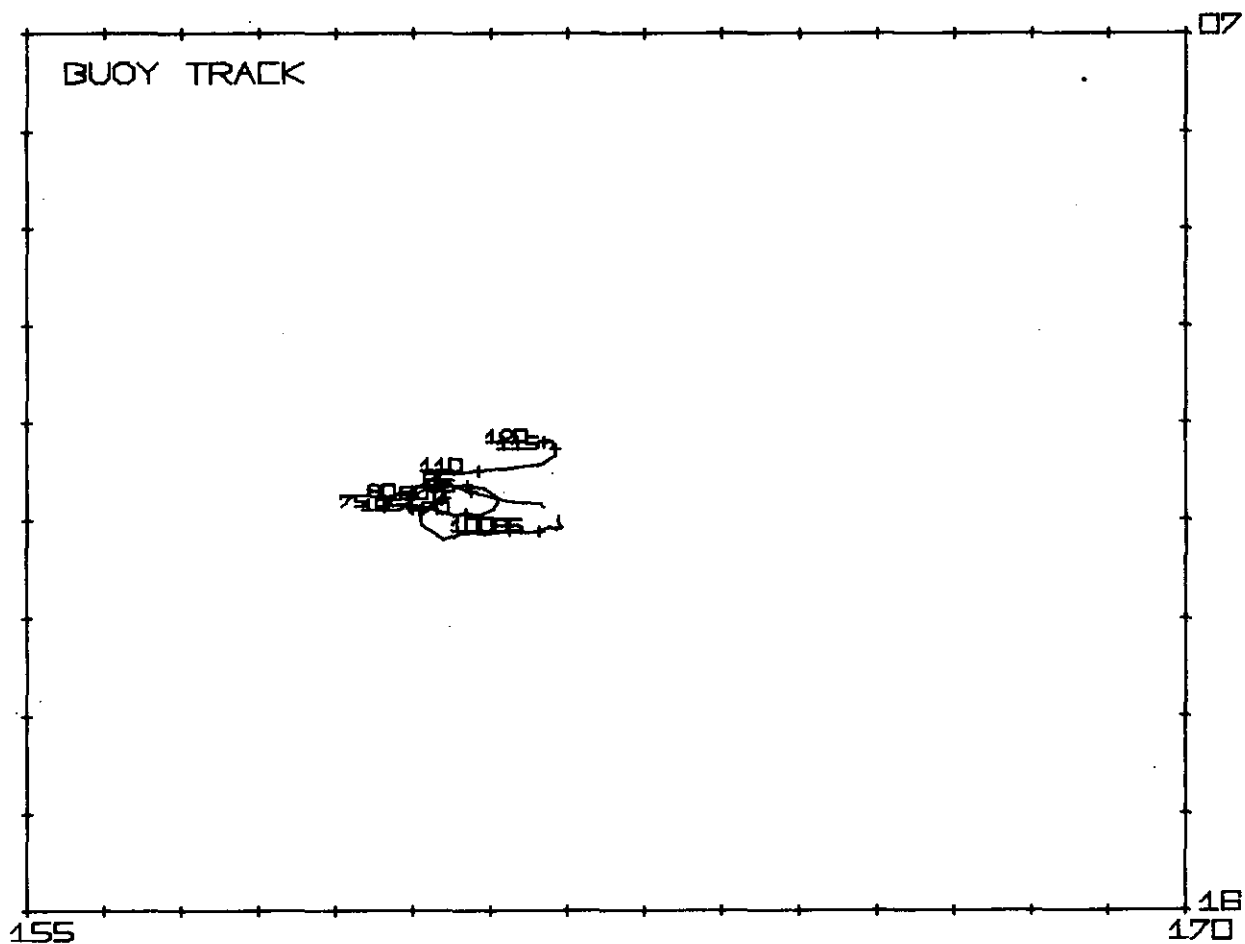
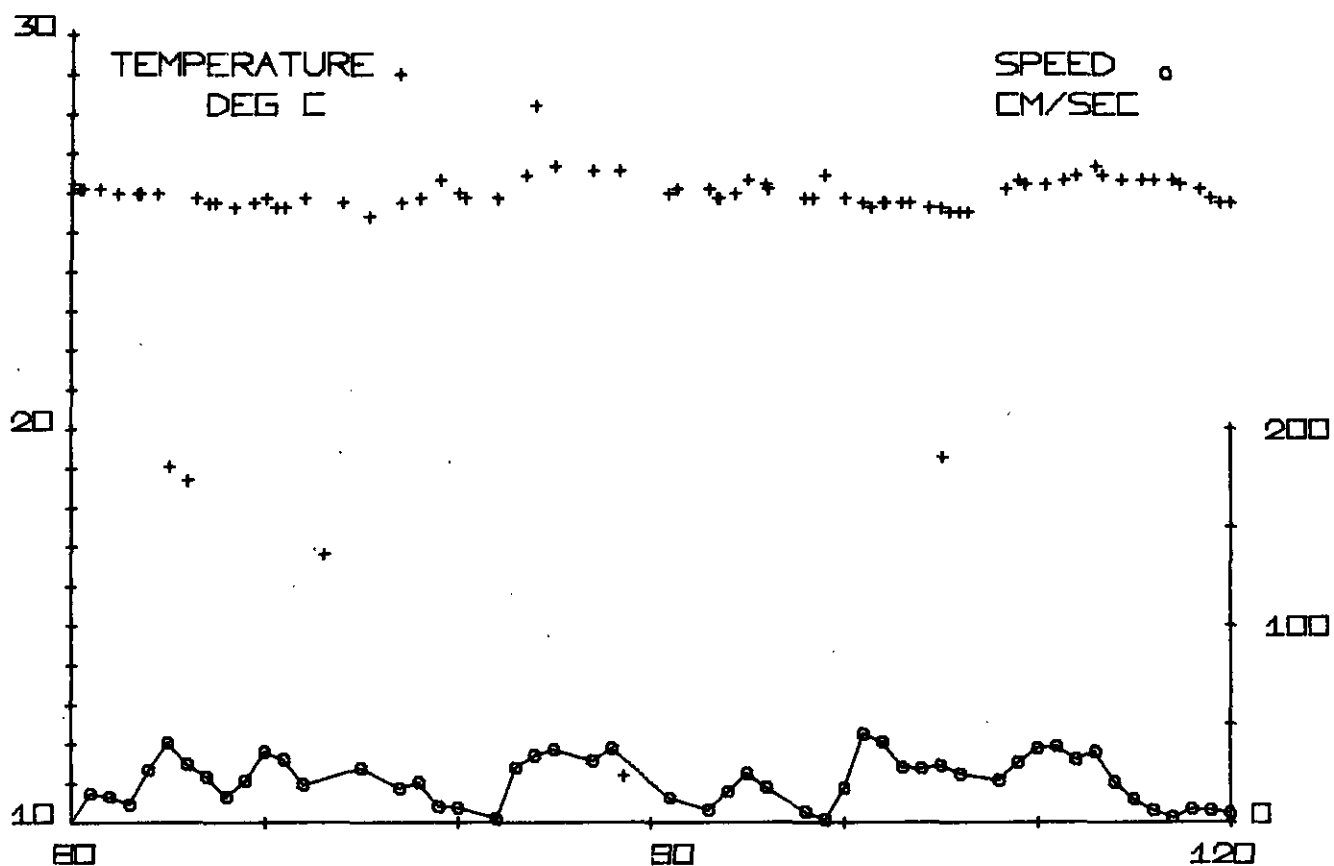
DAYS 120-180 1978



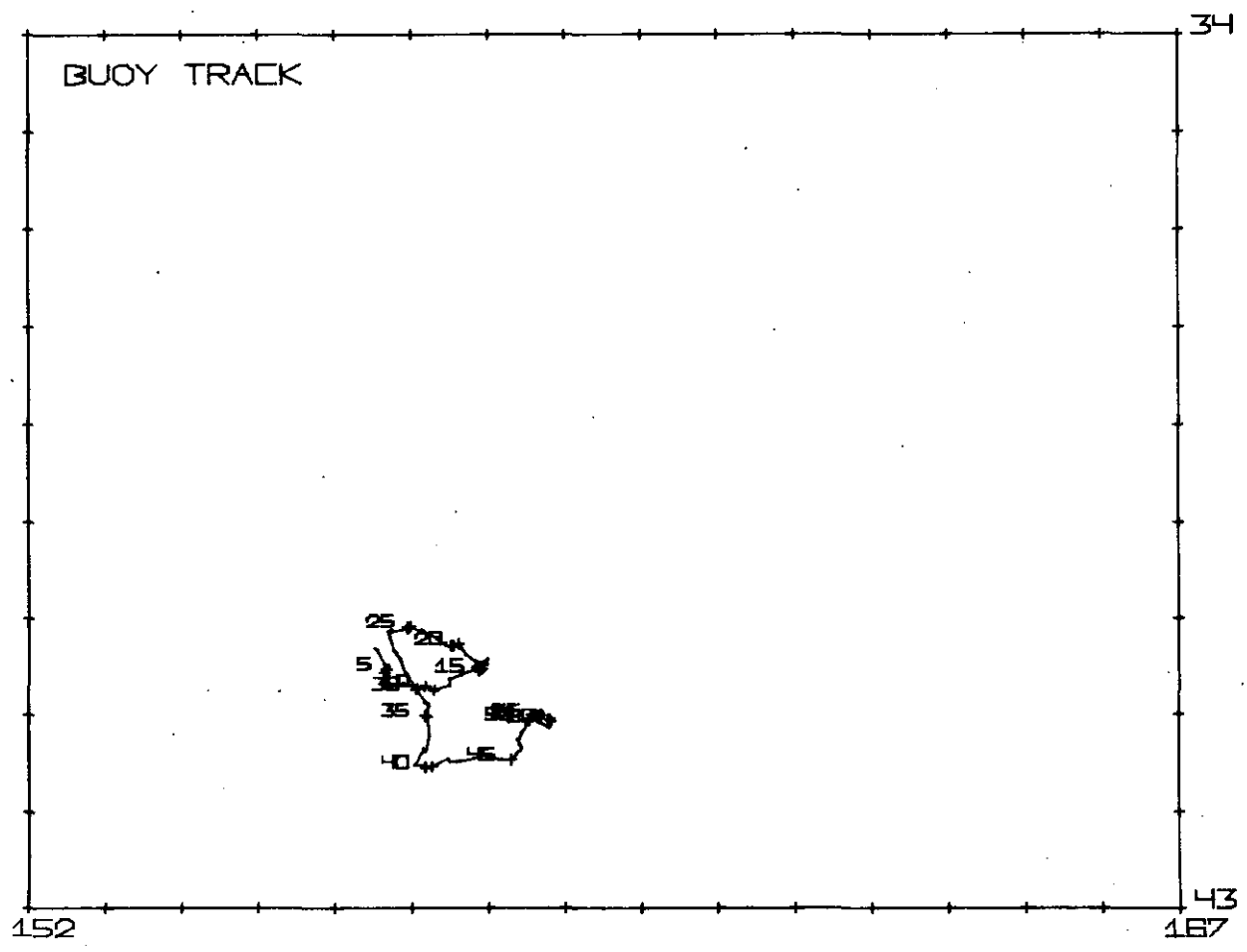
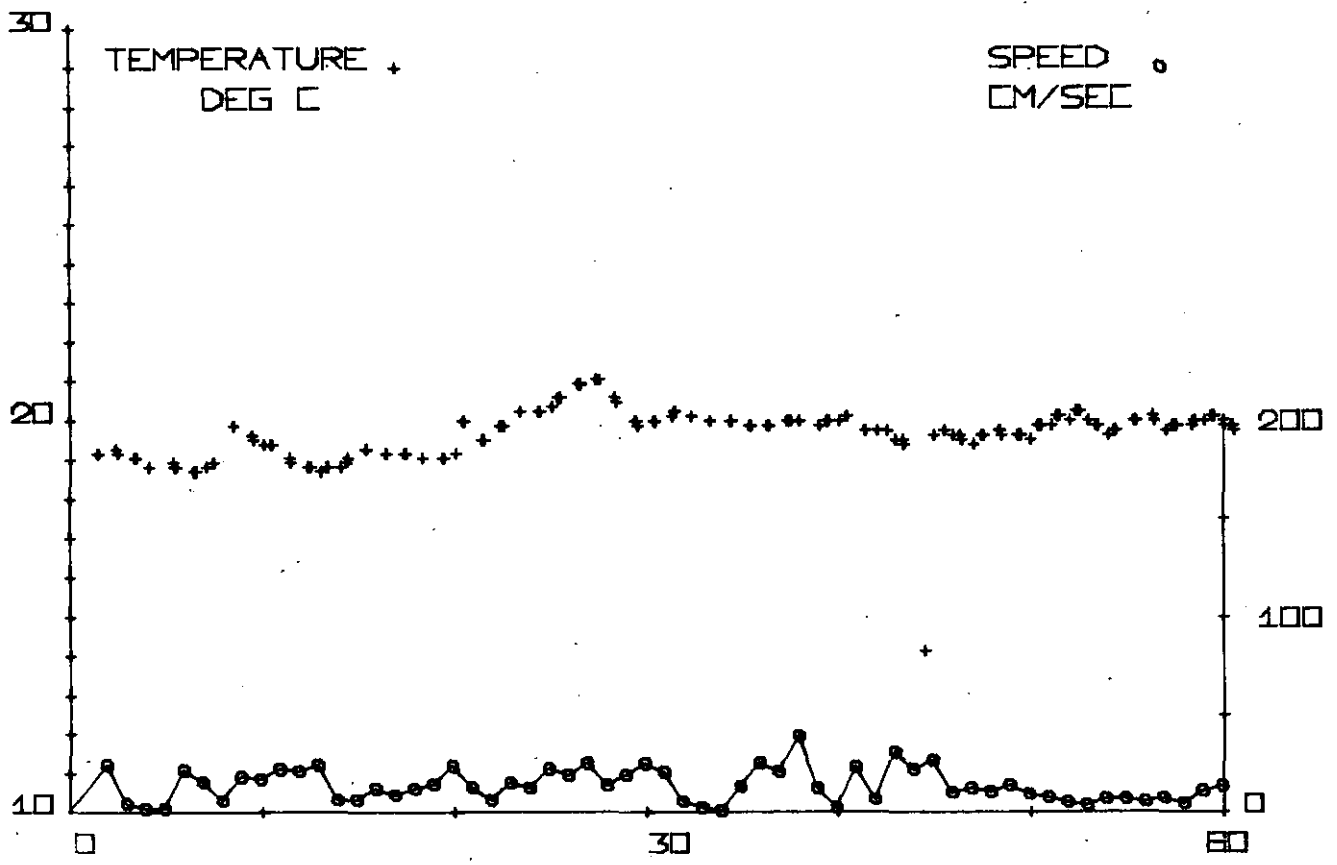
BUOY 1676 DAYS 0- 60 1978



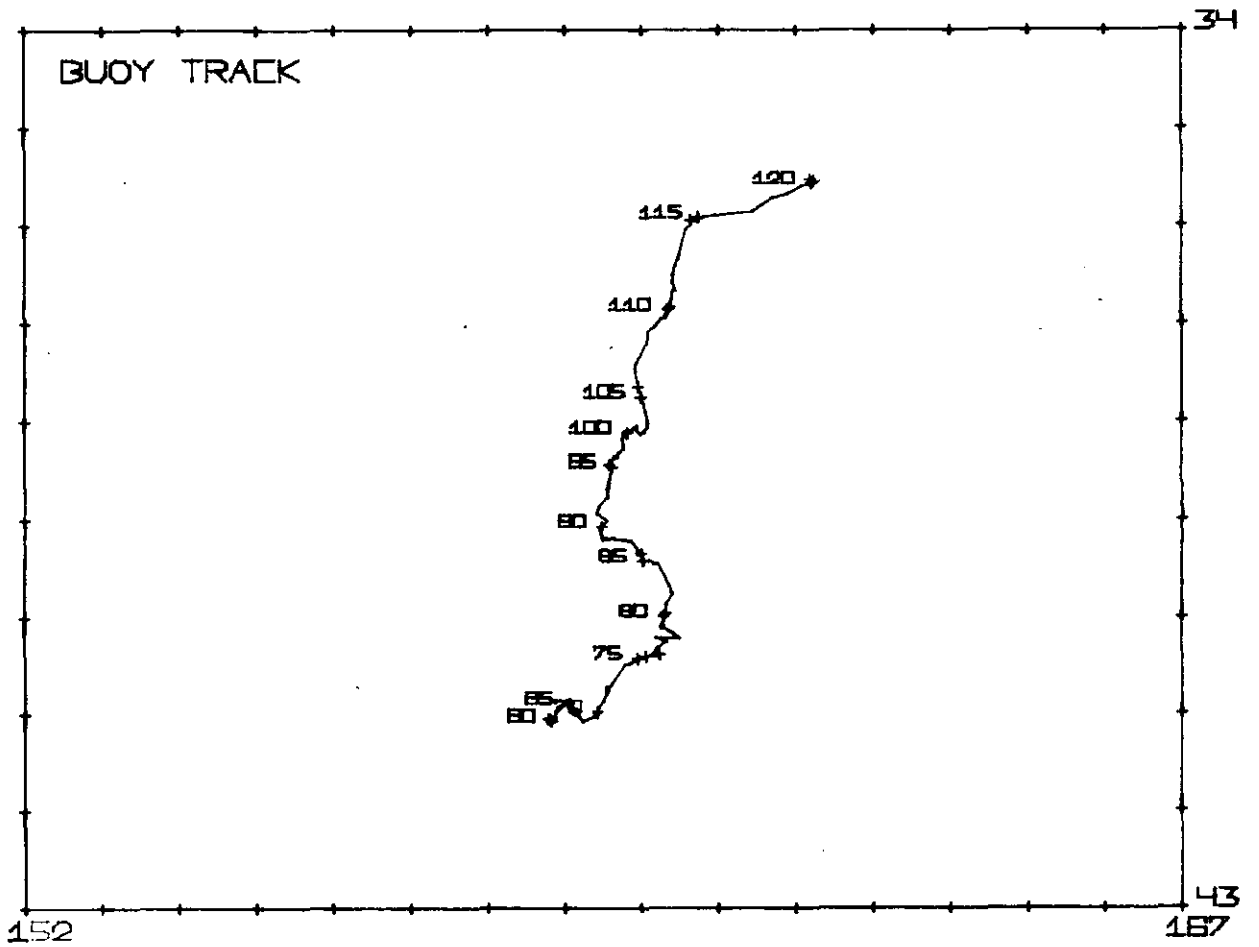
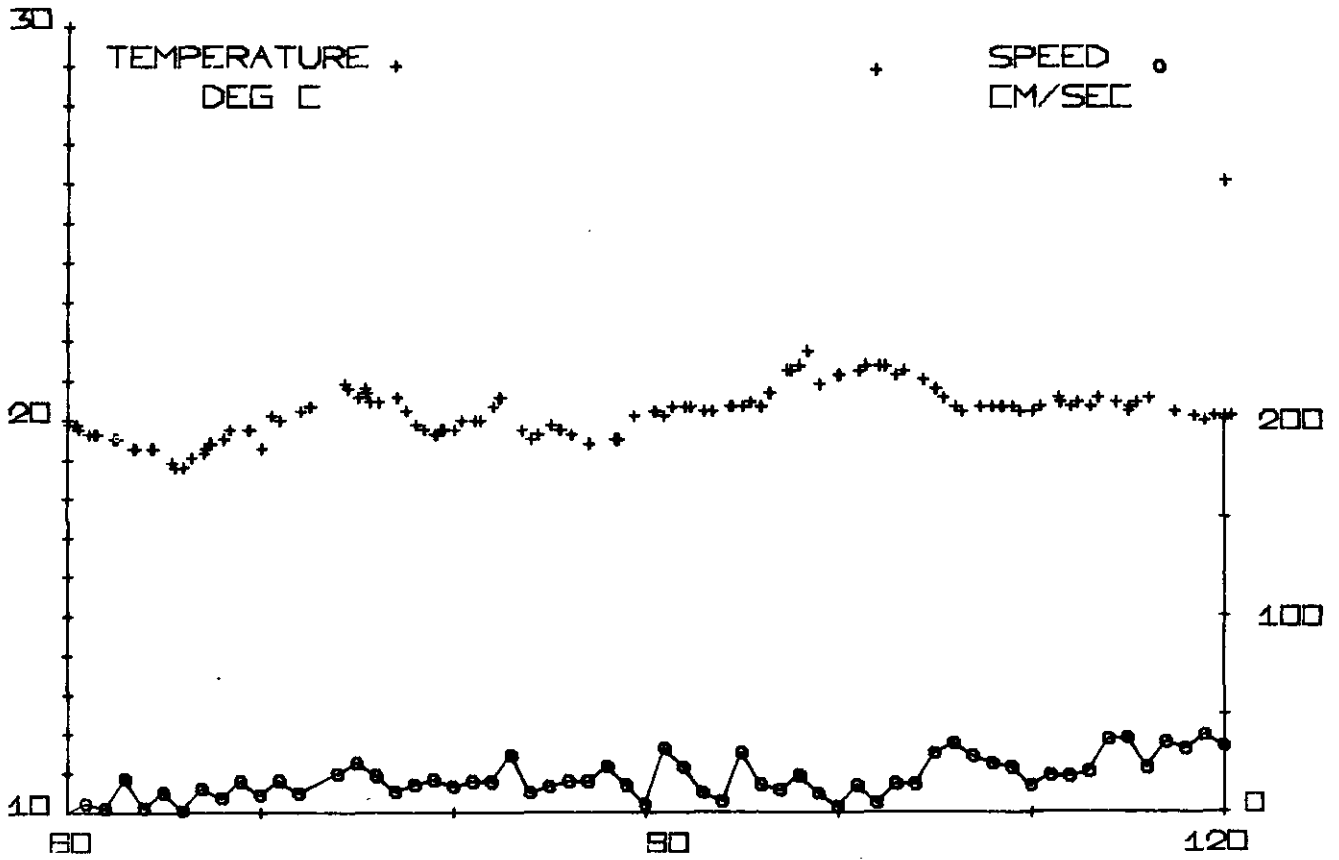
BUOY 1676 DAYS 60-120 1978



BUOY 1710 DAYS 0 - 60 1978

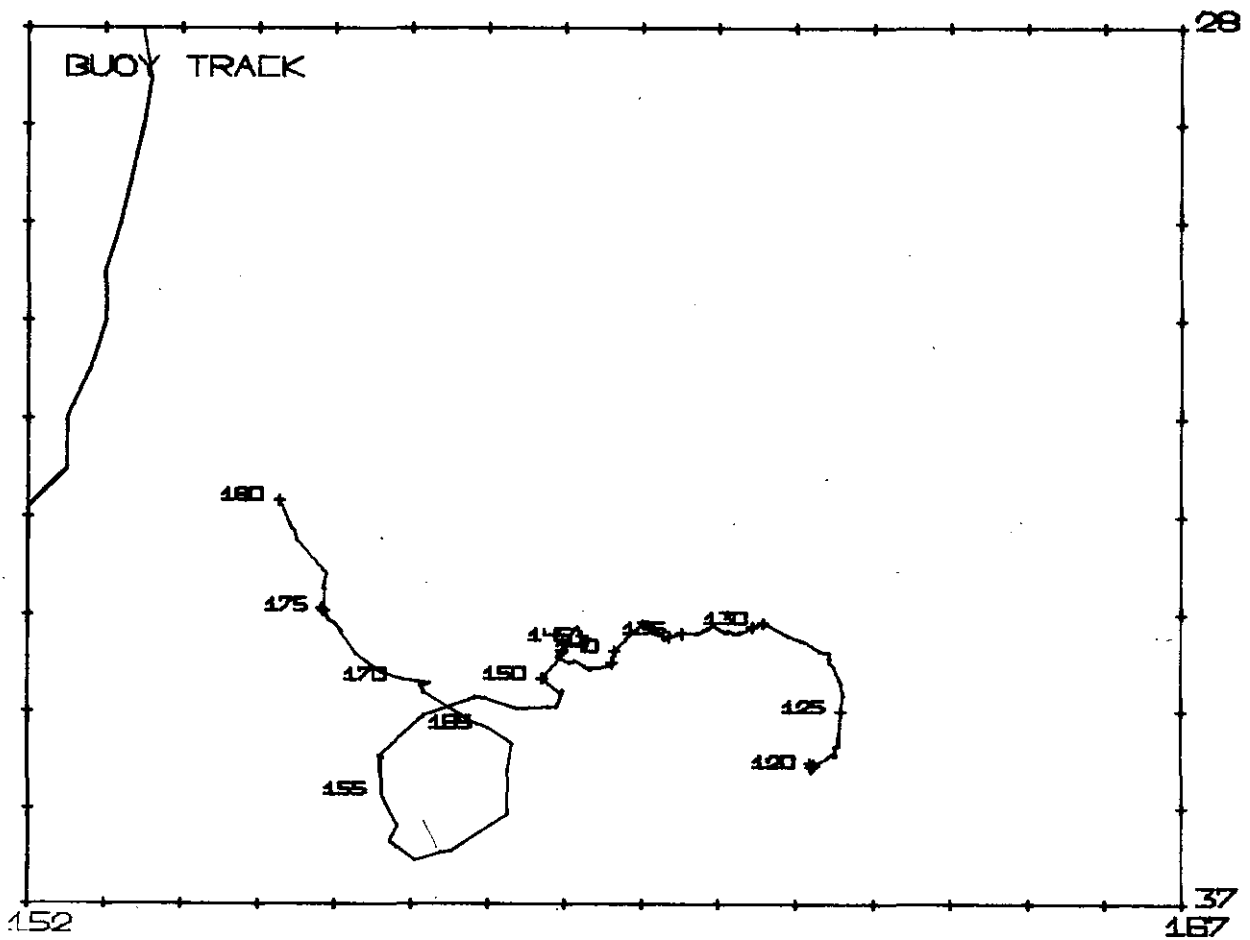
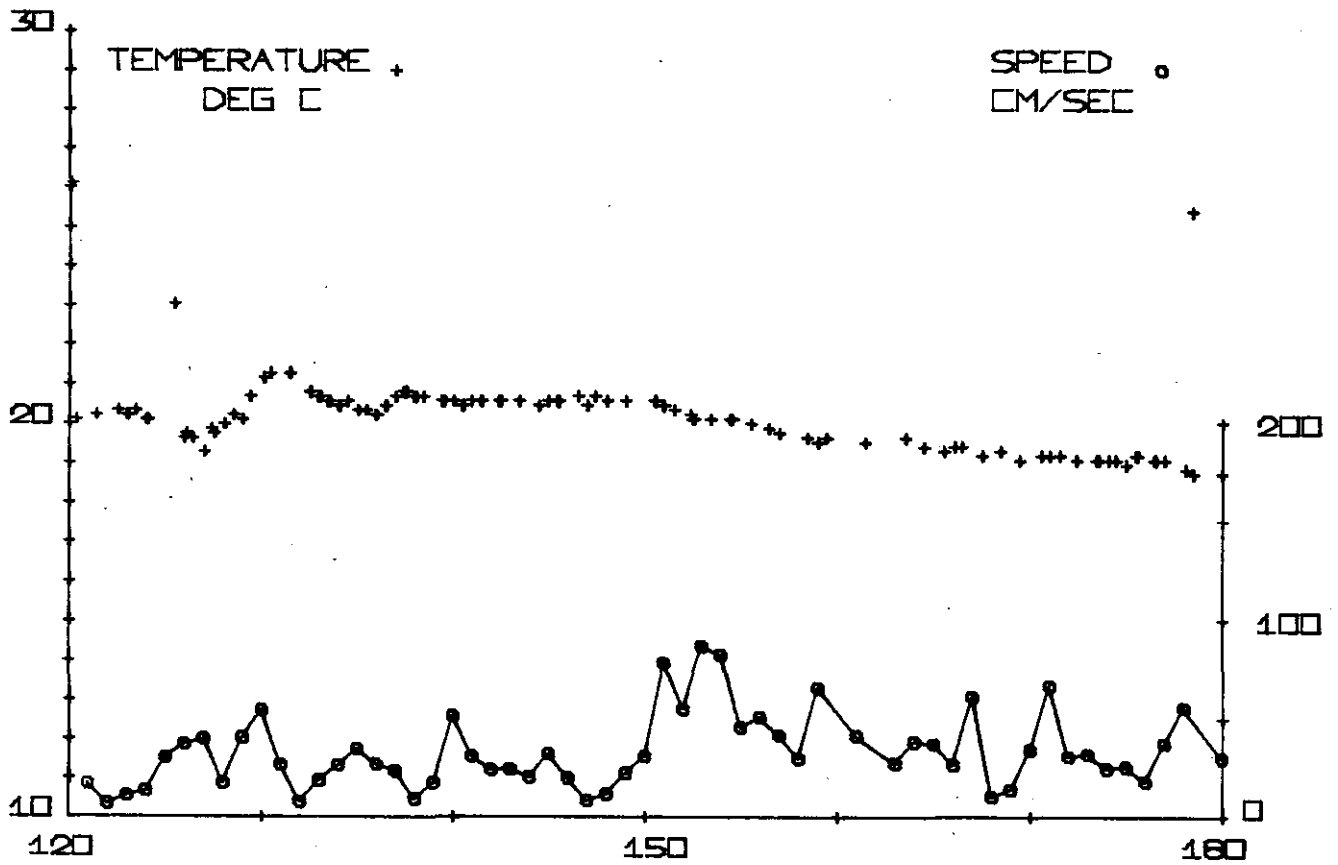


BUOY 1710 DAYS 60-120 1978



BUOY 1710

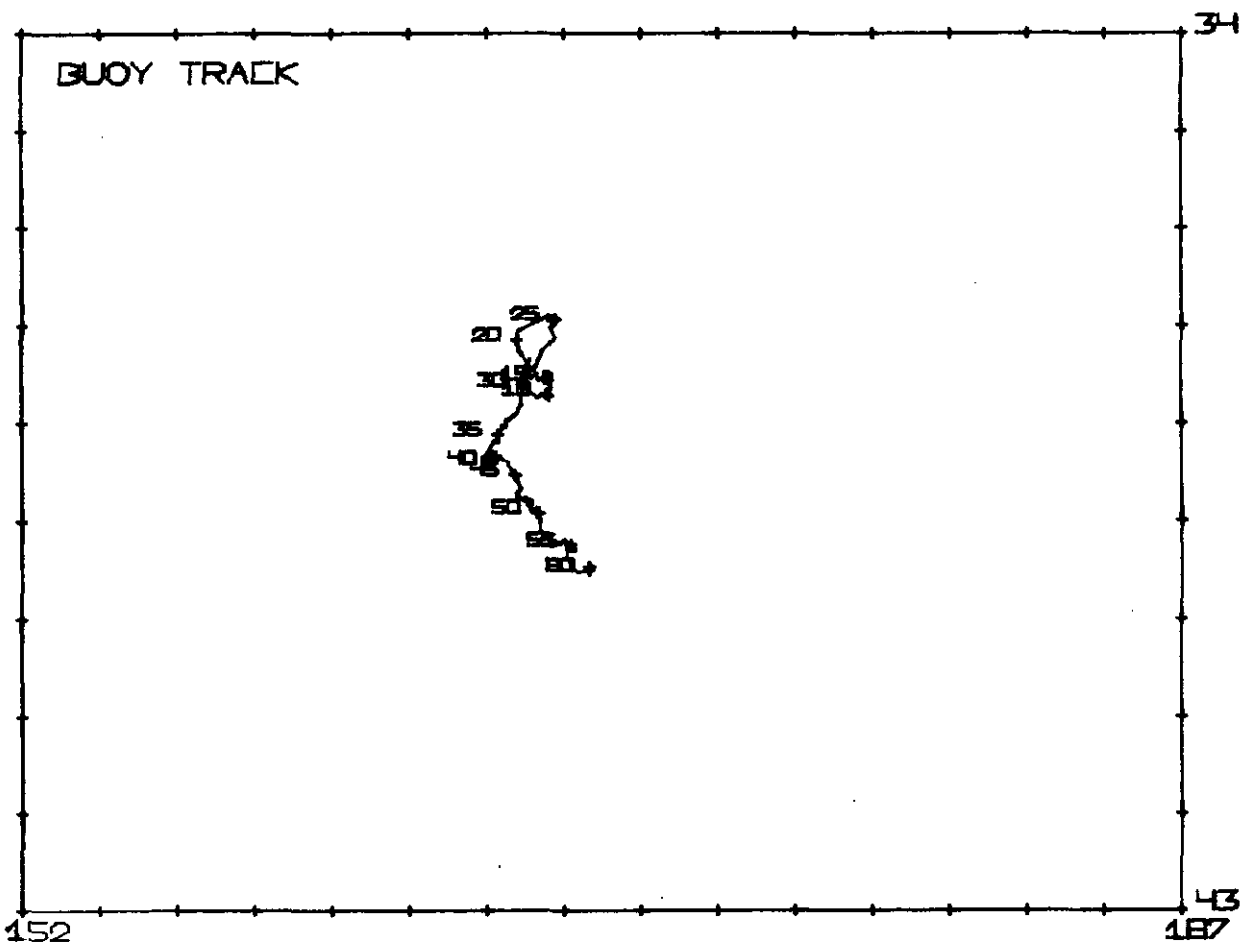
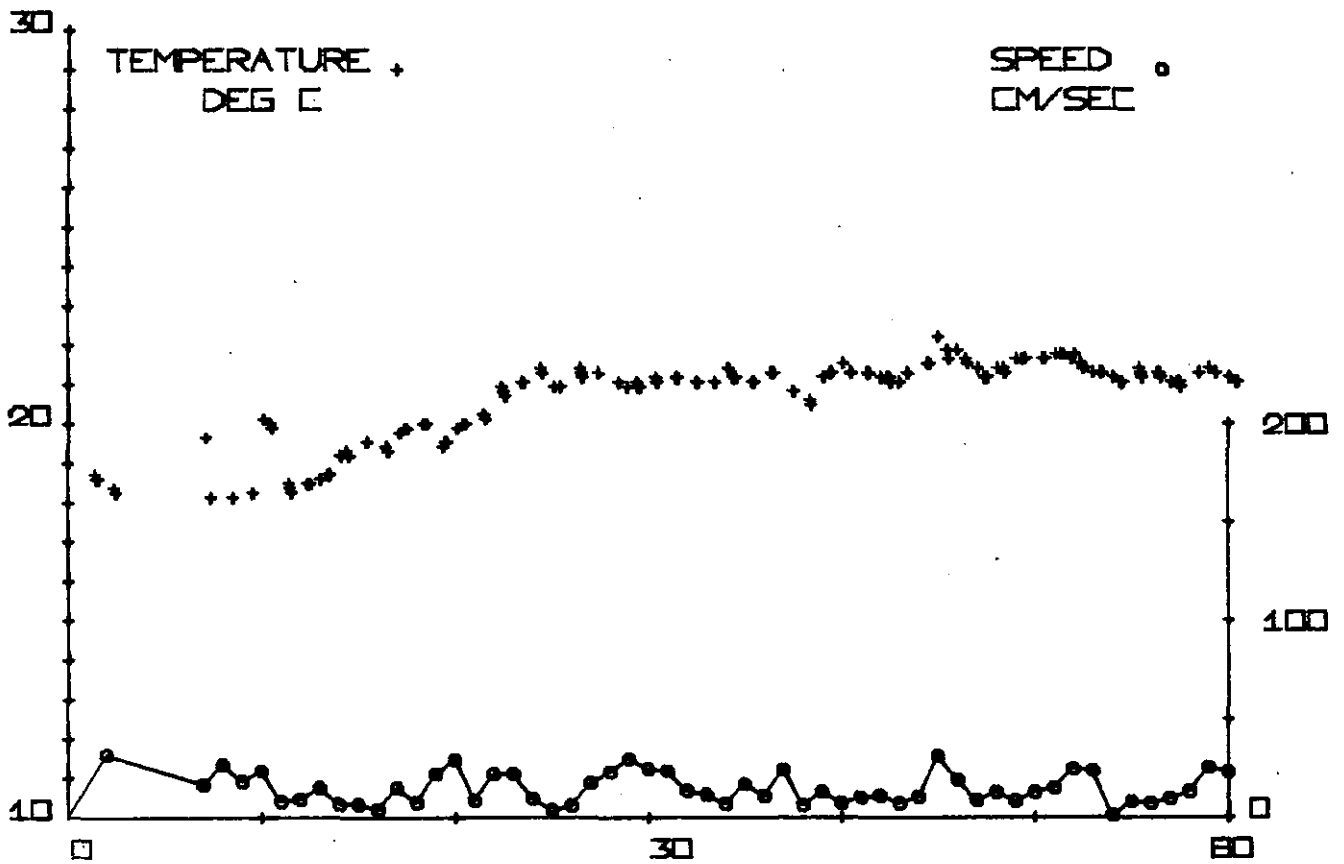
DAYS 120-180 1978



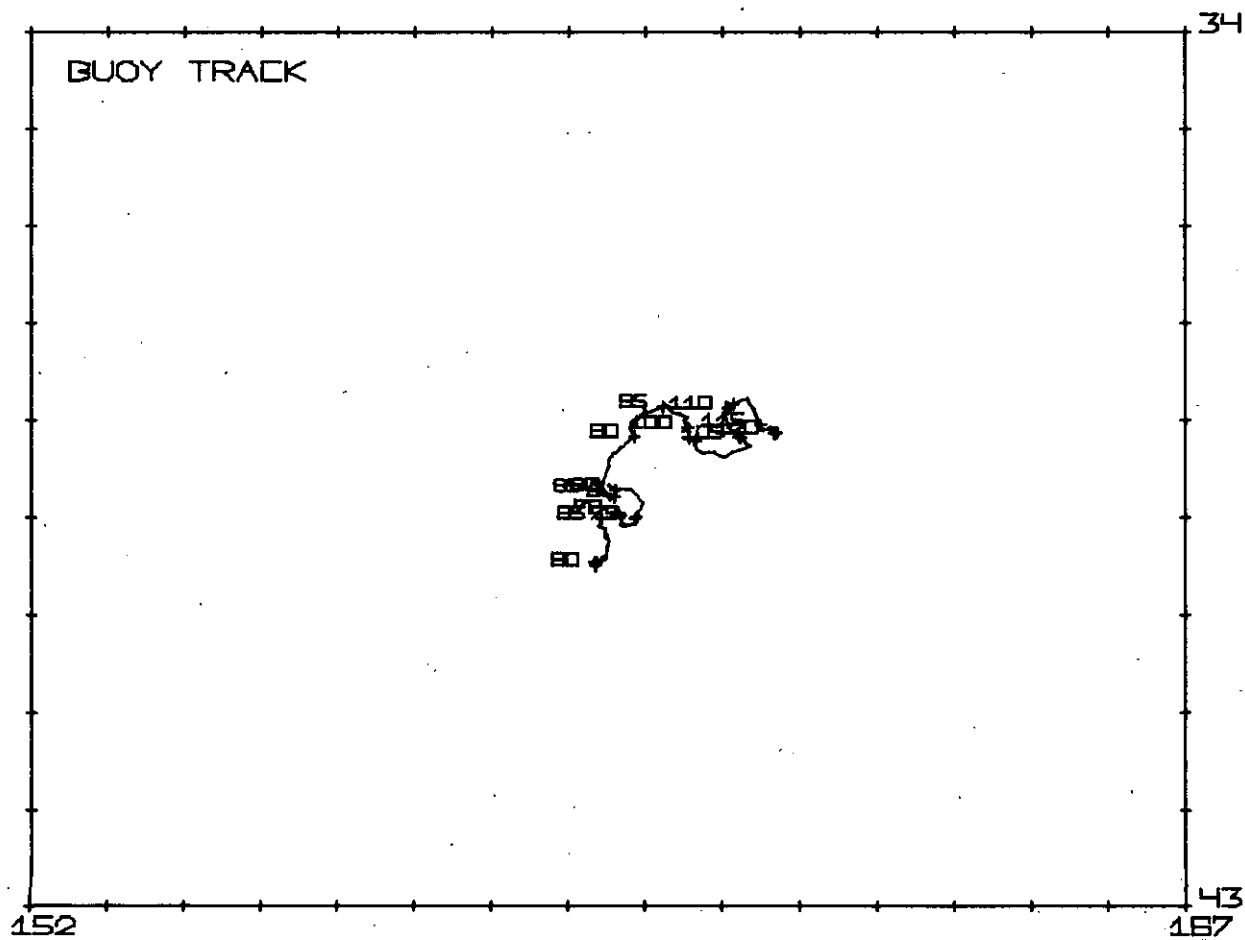
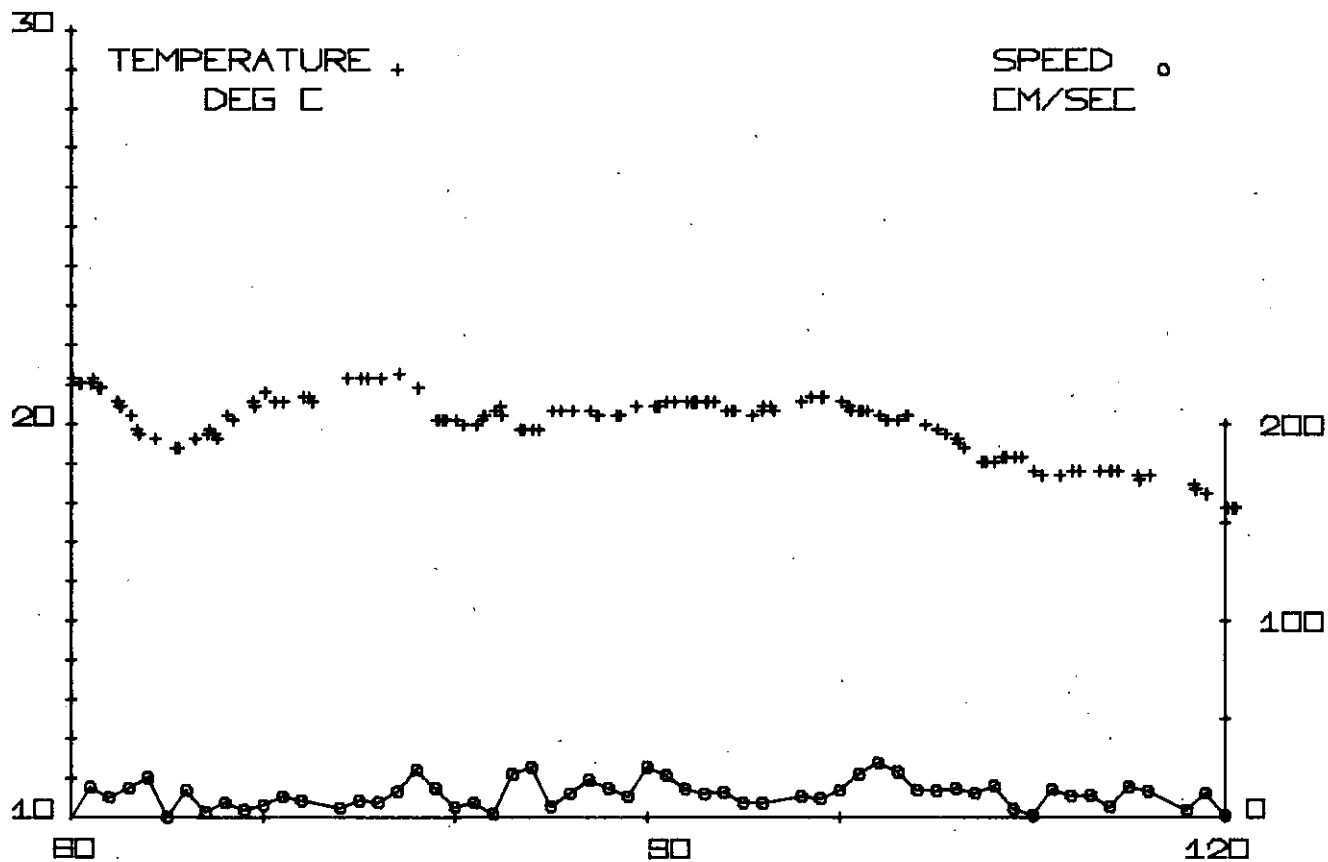
BUOY 1726

DAYS

0 - 60 1978



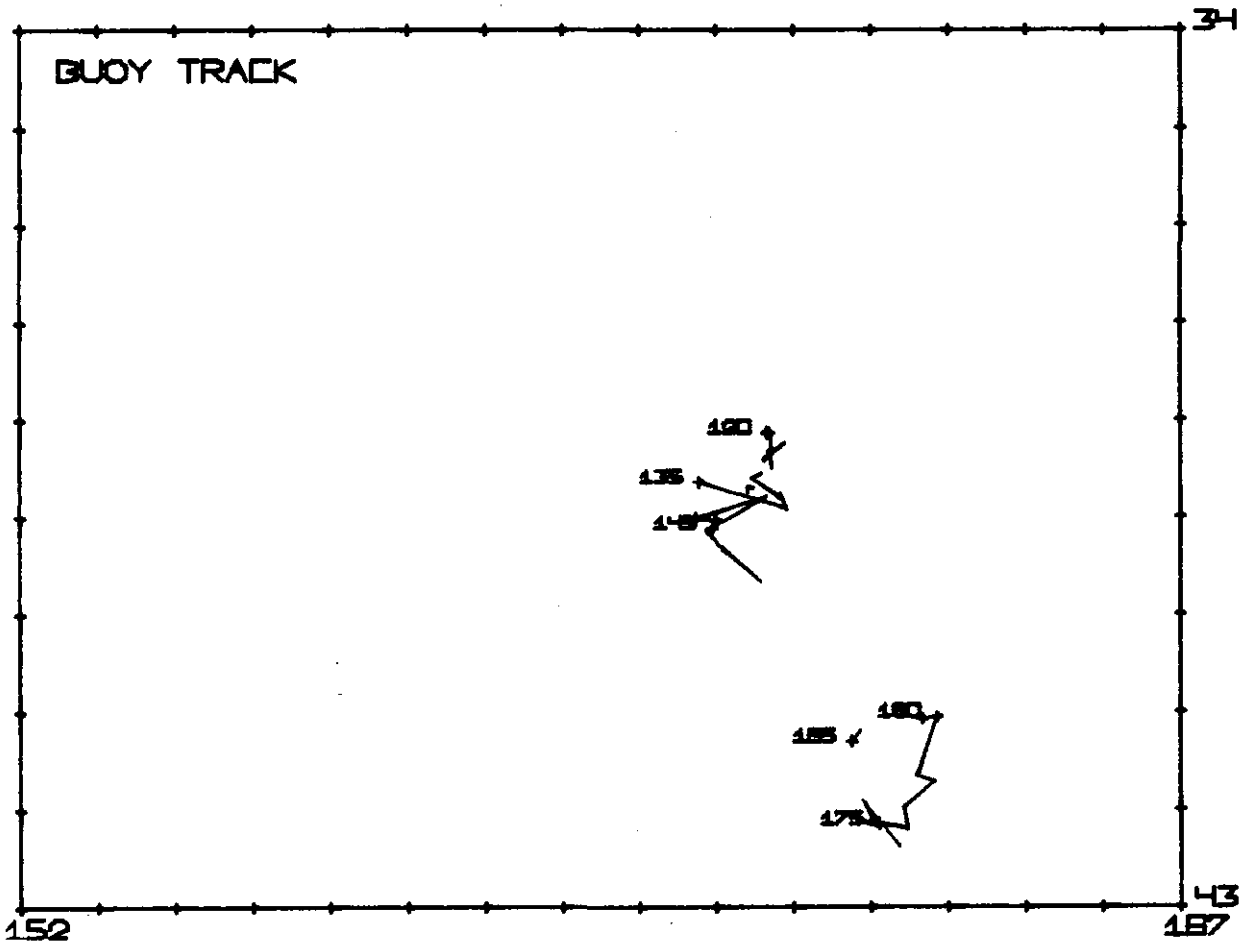
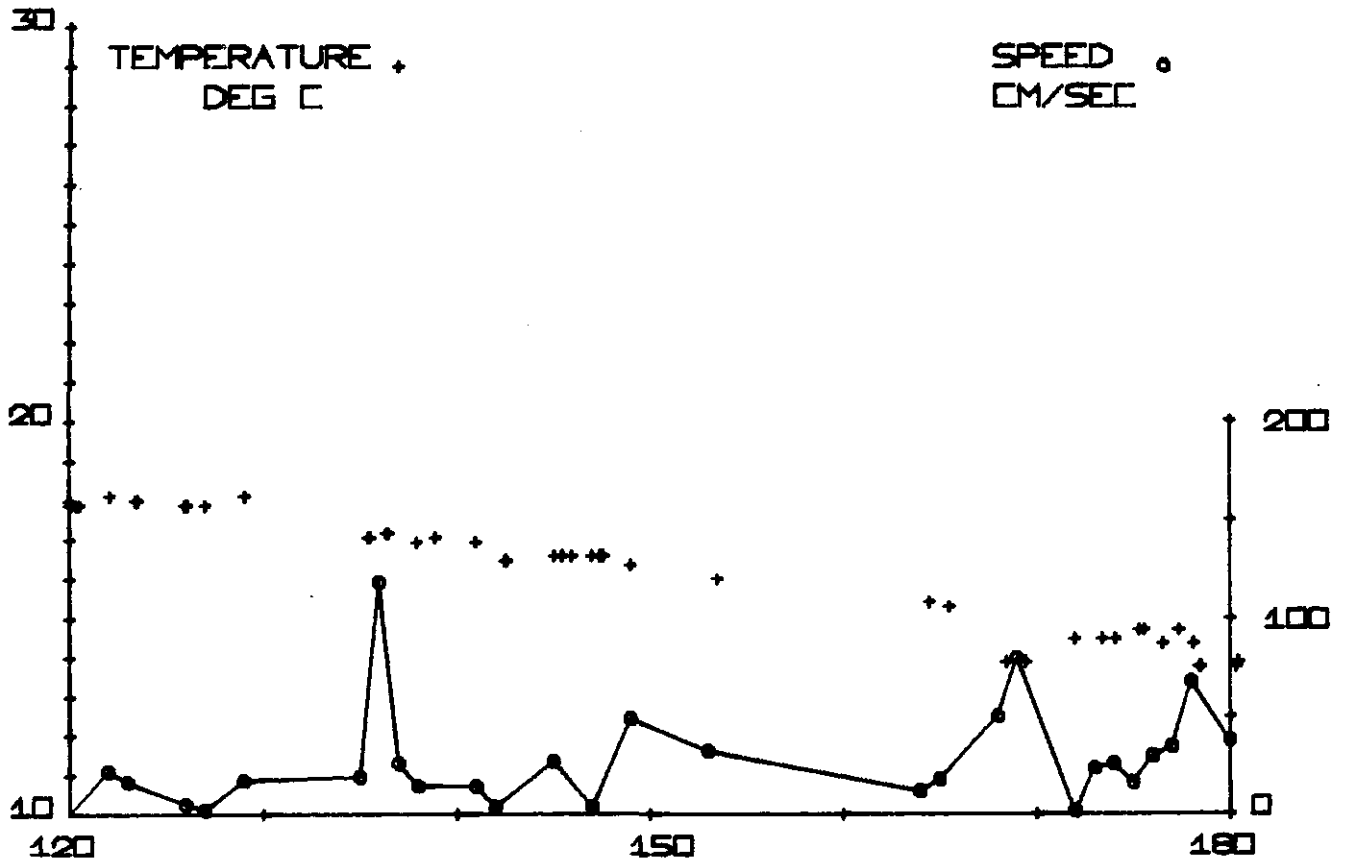
BUOY 1726 DAYS 60-120 1978



BUOY 1726

DAYS 120-180 1978

BUOY TRANSMISSION ERRATIC



CSIRO
Division of Fisheries and Oceanography

HEADQUARTERS

202 Nicholson Parade, Cronulla, NSW

P.O. Box 21, Cronulla, NSW 2230

NORTHEASTERN REGIONAL LABORATORY

233 Middle Street, Cleveland, Qld

P.O. Box 120, Cleveland, Qld 4163

WESTERN REGIONAL LABORATORY

Leach Street, Marmion, WA 6020

P.O. Box 20, North Beach, WA 6020