GRAPHICAL FACILITIES AT ECMWF

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Figure 1 shows the configuration diagram of the ECMWF Computer System, Figure 2 outlines the organisation of the graphical software. The Centre has four Tektronix 4014 storage tubes connected to the Cyber via 9600 baud lines. These are connected to three Tektronix 4631 hard copy units (two 4014's share one hard copy device).

Unlike a national meteorological office, the Centre does not have a limited number of operational charts, but instead has a wide range of charts (Figures 3-6 show some examples). Because of this factor, it was decided about four years ago to have only electrostatic plotters and no pen plotters. Currently the Centre has two identical electrostatic plotters - Versatec model 8122's which have 100 nibs per inch and are approximately 22" wide (about 50 cm). These are connected on-line to the Cyber via a Logical Signal Processor, and although the capability exists to drive both plotters simultaneously, in practice only one is used at a time - the other being available as a standby.

The main graphical software is the Contour Package which can produce coastlines, lat/long grids, windflags etc. in addition to contour plots. This package was written at the Centre originally for use with an offline Varian electrostatic plotter. To use the current electrostatic plotters, one uses a library VARLIB in conjunction with CONTLIB, the library for the Contour Package. The name of the library for the electrostatic plotters thus reflects its history.

Although a long term aim of the Centre has been to replace the low-level software with software based on the GKS proposed standard, it has been necessary to provide interim libraries to support other devices. These are TEKLIB (for the 4014's) and FR80LIB for the Rutherford Laboratory's FR80 graphical COM device. In addition, a version of CONTLIB and VARLIB are available on the Cray.

Some software is also available at the Centre which is of higher level than the Contour Package. Some examples are shown in Figure 2. Typically these programs would be data driven and might produce standard maps, but based on different archived data.

Lastly, it should be mentioned that the Centre has a 1024x1024 Aydin colour raster device which was bought as an experimental device. This has its own disc, and may obtain data from the Cyber over a 9600 baud link. However, it is not currently available to all users. A demonstration of the new device will be given during the course of the seminar.
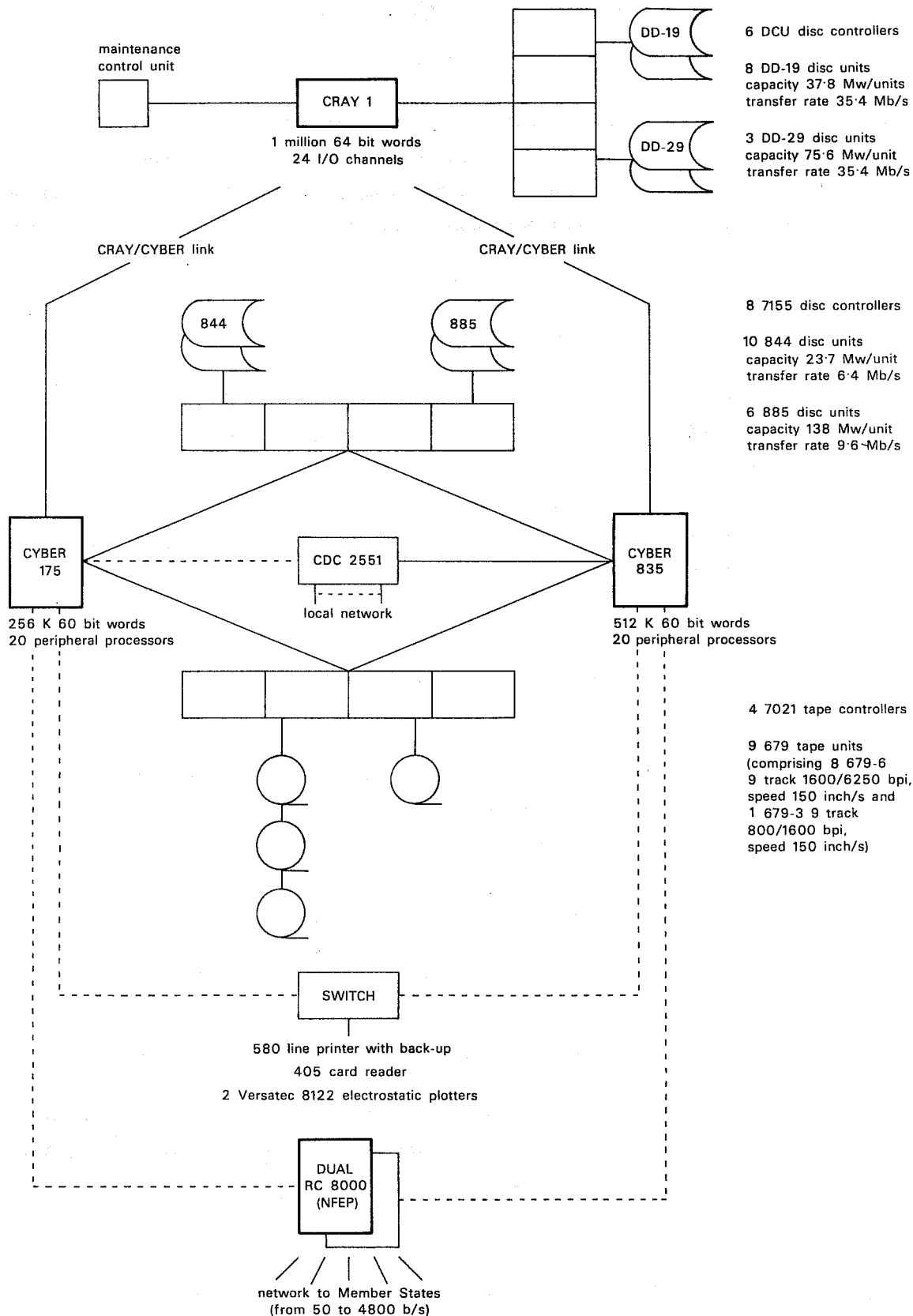
maintenance
control unit

CRAY 1

1 million 64 bit words
24 I/O channels

DD-19

DD-29

6 DCU disc controllers

8 DD-19 disc units
capacity 37·8 Mw/units
transfer rate 35·4 Mb/s

3 DD-29 disc units
capacity 75·6 Mw/unit
transfer rate 35·4 Mb/s

CRAY/CYBER link

CRAY/CYBER link

844

885

8 7155 disc controllers

10 844 disc units
capacity 23·7 Mw/unit
transfer rate 6·4 Mb/s

6 885 disc units
capacity 138 Mw/unit
transfer rate 9·6 Mb/s

CYBER
175

CDC 2551

local network

CYBER
835

256 K 60 bit words
20 peripheral processors

512 K 60 bit words
20 peripheral processors

4 7021 tape controllers

9 679 tape units
(comprising 8 679-6
9 track 1600/6250 bpi,
speed 150 inch/s and
1 679-3 9 track
800/1600 bpi,
speed 150 inch/s)

SWITCH

580 line printer with back-up
405 card reader
2 Versatec 8122 electrostatic plotters

DUAL
RC 8000
(NFEP)

network to Member States
(from 50 to 4800 b/s)

Fig. 1   Configuration diagram of ECMWF Computer System
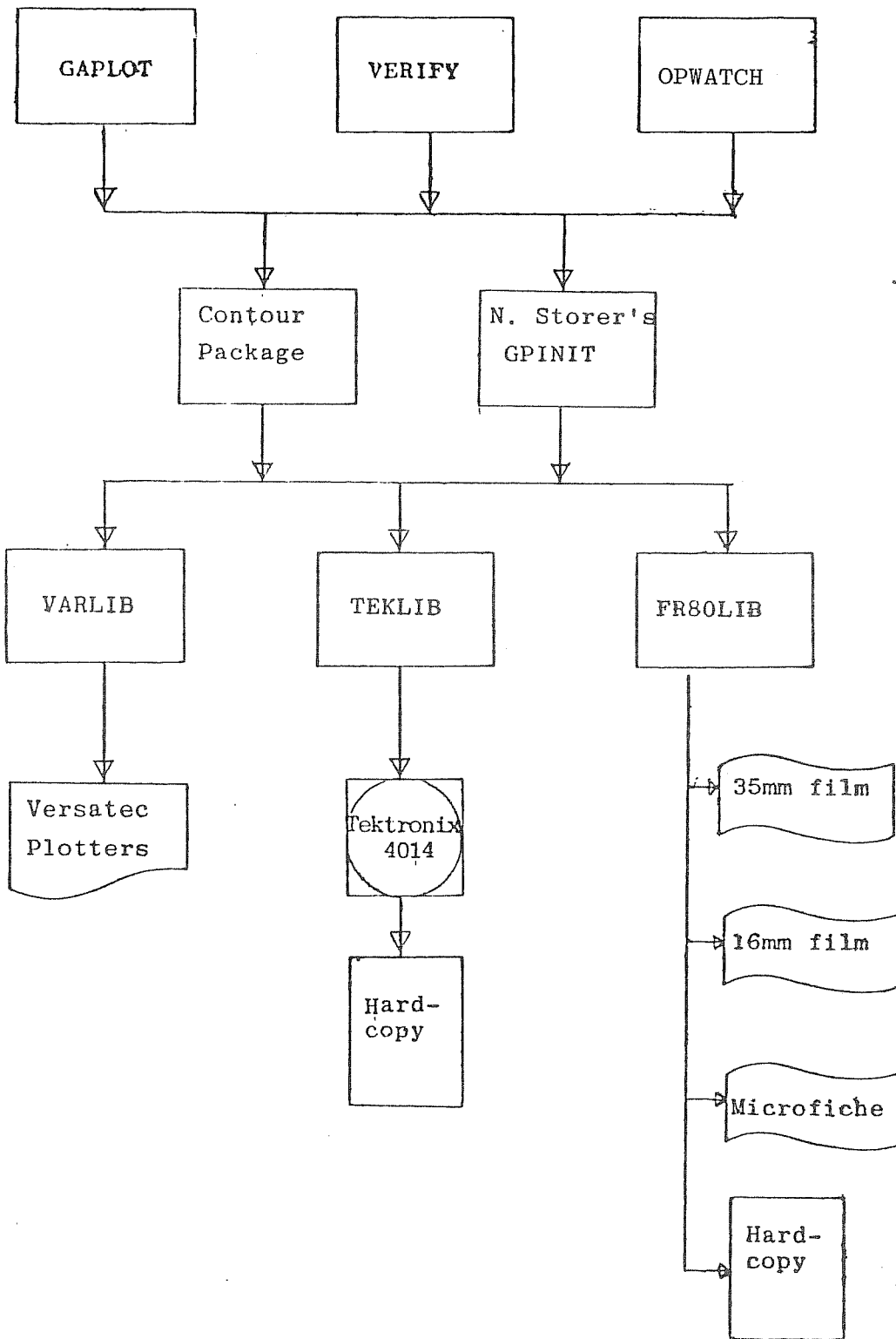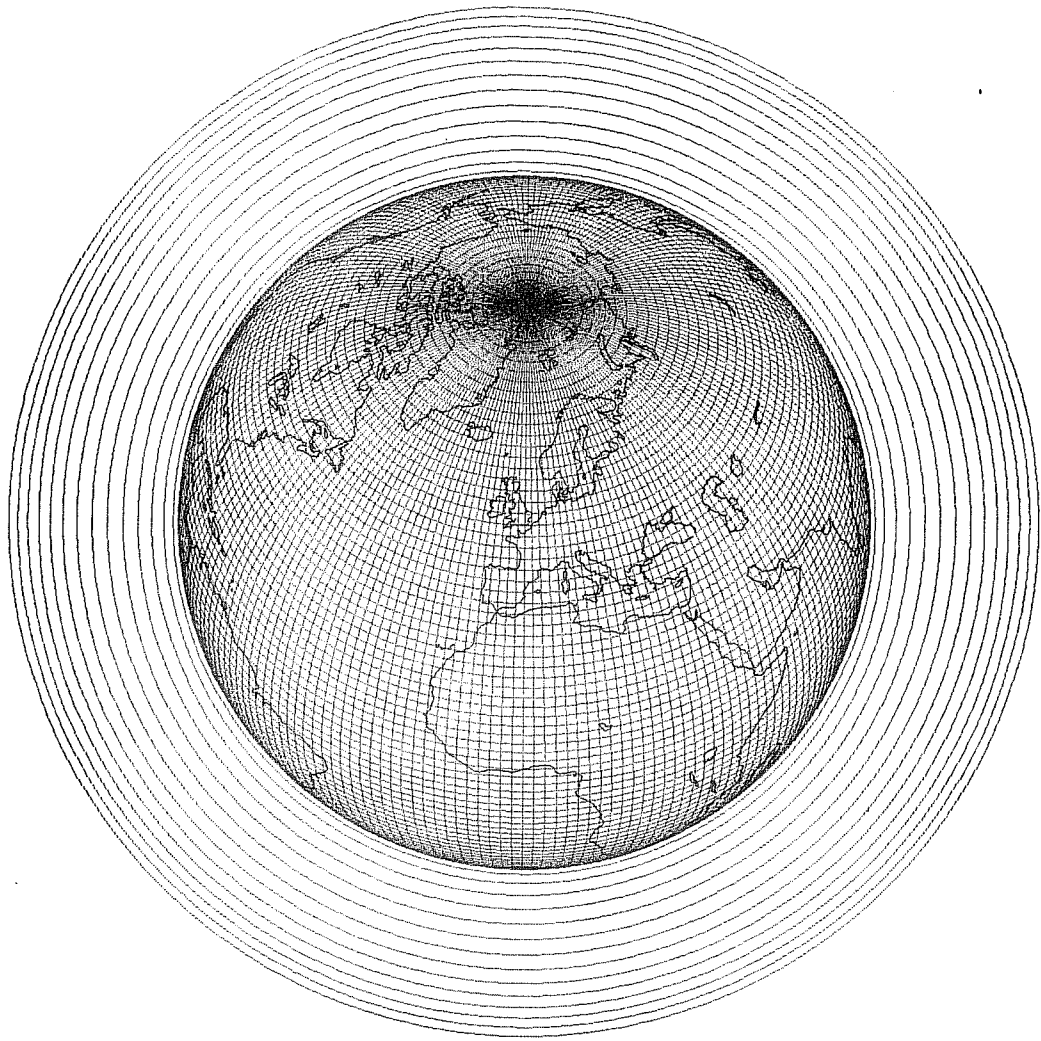
Fig. 2   Graphical Software at ECMWF

Fig. 3

Fig. 4

1.59
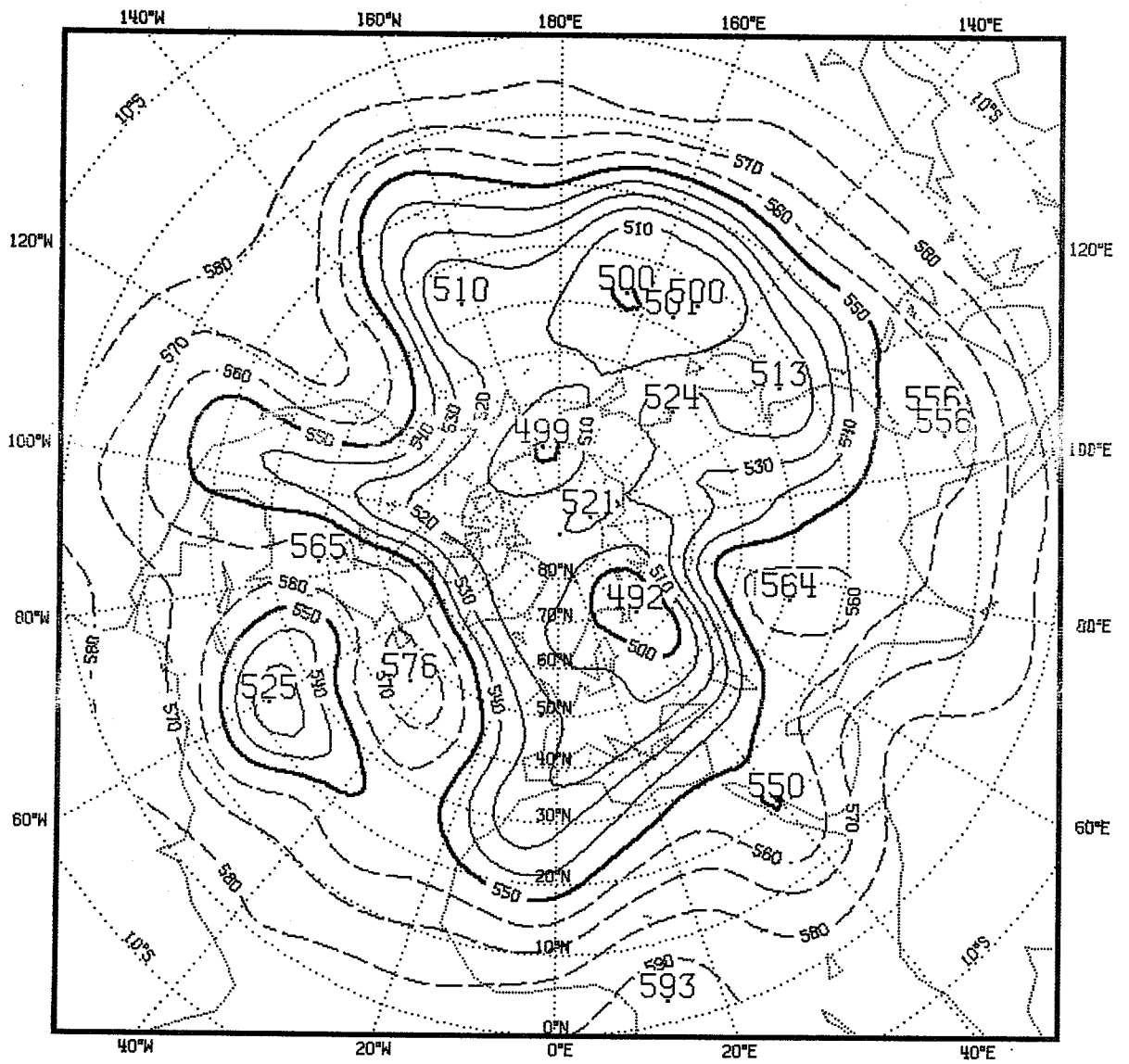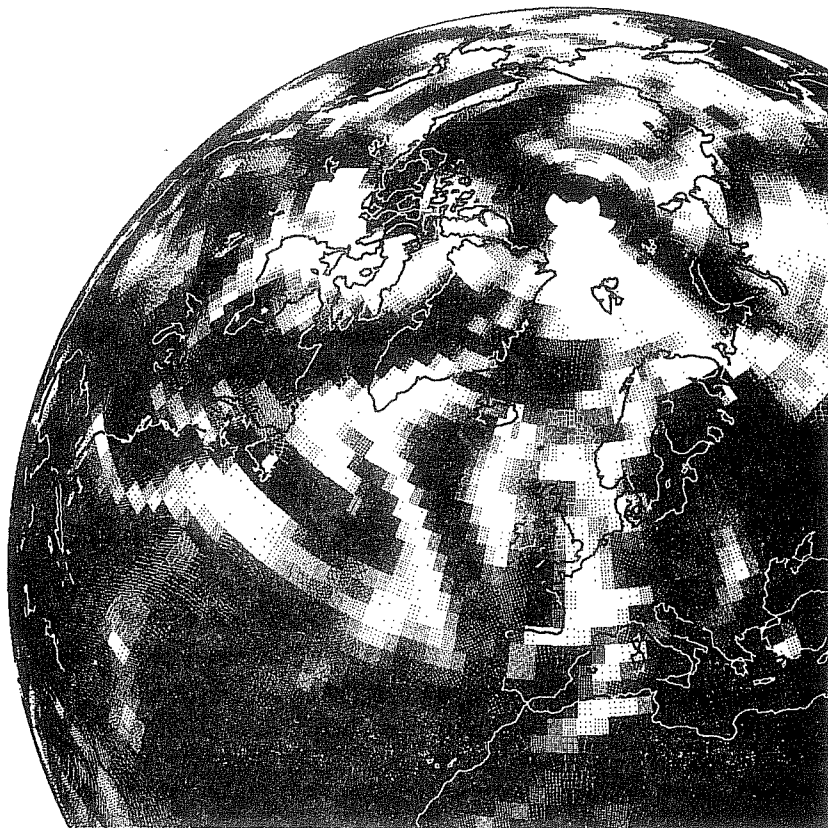
WEATHER OUTLOOK FOR THE WEEKEND SATURDAY 24TH & SUNDAY 25TH OCTOBER 1981.

METEOGRAMS
=========
THESE PLOTS OF METEOROLOGICAL
VARIABLES(CLOUD,PRECIPITATION,
PRESSURE AND WIND) ARE DIRECT
MODEL OUTPUT INTERPOLATED FROM
THE FOUR NEAREST GRIDPOINTS.
THE PRECIPITATION IS ACCUMULATED
OVER 12-HR INTERVALS, THE OTHER
PARAMETERS ARE INSTANTANEOUS VALUES.

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FC FROM 811022   READING   (GB)
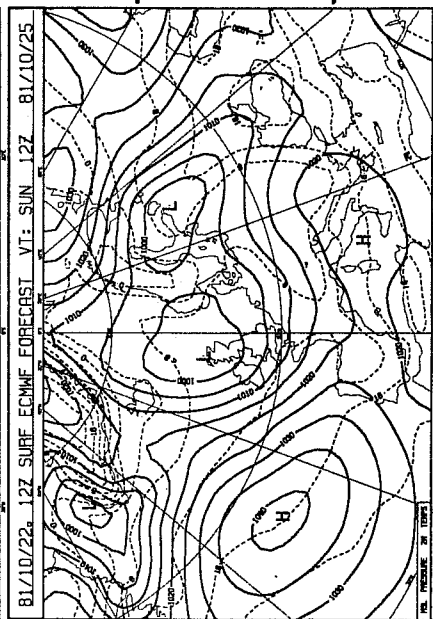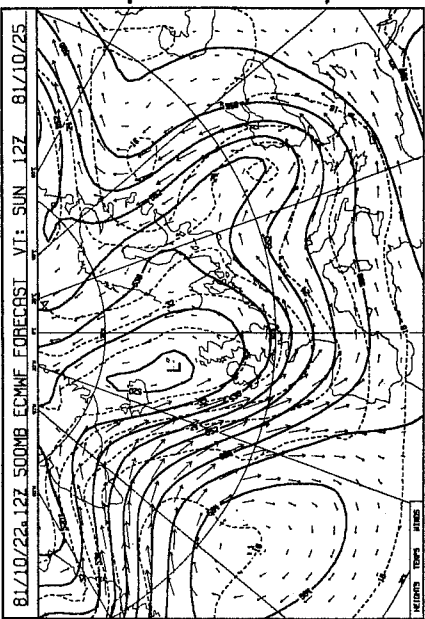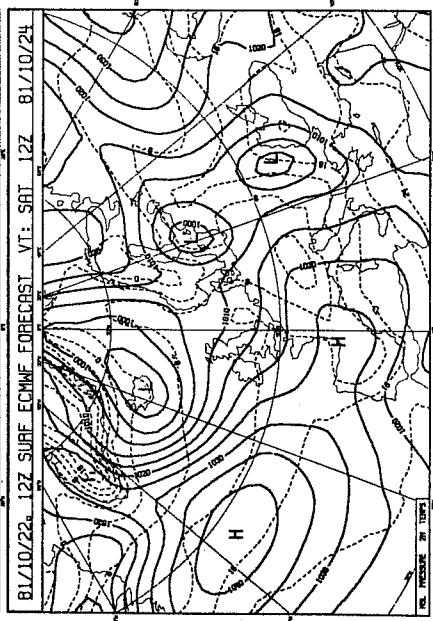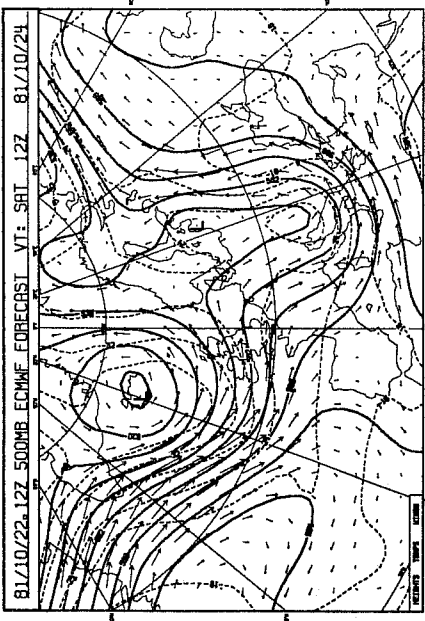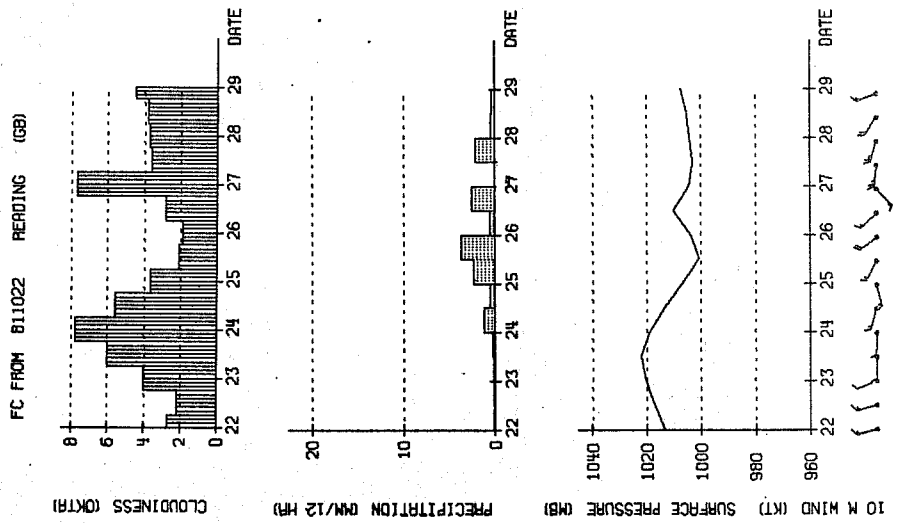
ECMWF   81/10/22.FORECAST   D+2

ECMWF   81/10/22.FORECAST   D+3

Fig. 5

1.60

Fig. 6