

GRAPHICAL PRODUCTS AT THE NATIONAL METEOROLOGICAL
CENTRE OF ROME

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Summary: Graphical products developed at the National Meteorological Centre of Rome are presented. Different displays for analysis, nowcasting and forecast data are shown.

1. INTRODUCTION

In the last few years the use of powerful computers has enabled both the acquisition of thousands of meteorological observations and the production of large amount of forecasted data. Therefore, meteorologists have to analyse large amounts of information. This might prove very difficult due to the short times available. Thus, there is the need for an automatic system to present the information quickly, efficiently and simply; furthermore such system must be able to choose and synthesize the most significant meteorological input. The information included into the images are incisive, easy to be understood, not liable to be misinterpreted and able to give a complete description of all phenomena.

2. GRAPHICAL PRODUCTS

At present the nowcasting can be improved by an efficient weather watch that is the continuous control of every meteorological phenomenon, which generally can only be done with a graphical informative system. In this way it is possible to give a broad idea of the development of meteorological situations. At the same time it is possible to keep meteorologists on the alert about mesoscale phenomena.

At the end of 1983, a new computer IBM 4341 together with some graphical display terminals were set up at the Italian Meteorological Service and an APL written graphical package could be developed using a standard IBM product (GRAPHPAK). The package includes weather report representations with the aim of detecting and alerting on oncoming weather events, and several kinds of forecast output.

The possible selections are listed below:

1. Weather observations on Italy (METAR report)
2. Regional weather observations
3. Hourly radar observations (RSD report)
4. Three hourly radar observations (RADOB report)
5. Radiosoundings (TEMP report)
6. Analysed and forecasted fields
7. Meteogrammes
8. Pictorial forecasts on Italy
9. Worded and pictorial regional forecasts

To give some examples of the products mentioned above we shall use a few images which were available to forecasters on November the 8th and 9th 1987.

3. WEATHER WATCH

It is possible to examine all the standard levels being easy to overlap two chosen available fields.

For the 8th November 1987 12 UTC, in the middle troposphere a weak cyclonic circulation is present in the western mediterranean, while a trough line crossing Normandy (Fig. 1). A detailed examination of the vertical structure of the atmosphere over single stations can be obtained by using radiosoundings. The Stüve's diagram over Cagliari (in Sardinia) shows moderate south-easterly winds in the low levels, while south-westerly winds are occurring in the middle and upper troposphere (Fig.2) Weak southerly winds are shown in the low and middle troposphere over Rome (Fig. 3). A wind rotation to north-west is occurring in the upper levels. The weather conditions over Italy during the afternoon are well represented by metar at 6 p.m. UTC (Fig.4): the wind is weak everywhere, there is low visibility in the Po valley and no precipitation. It is possible to present details of the meteorological situation asking the package to present output on a regional scale (Sardinia Fig.5). In Fig.6 the 850 mb height at 12 UTC of November the 8th (white lines) and the one (green lines) of 12 hours later are represented. A deepening of the field in the western and central Mediterranean is clearly shown. The metar presentation 00 UTC shows the beginning of thunderstorm activity over Sardinia and intensification of south-easterly winds along the Tyrrhenian coasts (Fig.7). In the morning of November the 9th an overlapped METAR-RADOB report presentation (Fig. 8) shows moderate echoes in central Italy moving towards the South-east with a 4000 meters top. Thunderstorms are observed in some stations in Sardinia and near the coast of Lazio, while rainfalls occur over some central Italian regions.

At 09 UTC (Fig.9) the thunderstorm activity reaches the peninsula, rainfalls begin to appear over the Adriatic side and in

the southern regions. Moderate echoes are reported by the radars of Rome and Naples.

4. FORECASTS

A post-processing model which is used to produce local forecasts, has been in operation in Italy for several years. The model uses P.P.M. and is based on ECMWF forecasts. The model produces predicted data of cloudiness, ceiling, visibility, relative humidity, wind, probability of precipitation, probability of thunderstorm, minimum and maximum temperature and sunshine duration. These forecasted parameters are available on 63 Italian sites for a period of 5 days with a resolution of 12 hours. Graphical representations of predicted data were also available on November the 8th. The figure 10 shows the meteo-gramme of Rome indicating cloudiness (octas), probability of precipitation and thunderstorm (%), visibility (Km), minimum and maximum temperature (°C).

The pictorial forecasts over Italy (Fig. 11), for the central hours of November the 9th, are successful in reproducing area of thunderstorms and of highly probable rainfall; while is misleading showing snowfalls over the Northern Appennines.

An example of regional pictorial forecast is presented over Sardinia (Fig. 12). In the bottom of the display short worded forecasts are reported for some stations of island.

Editor's Note:

The original figures were received in colour but have been reproduced here in black and white. References to colour in the text should therefore be ignored.

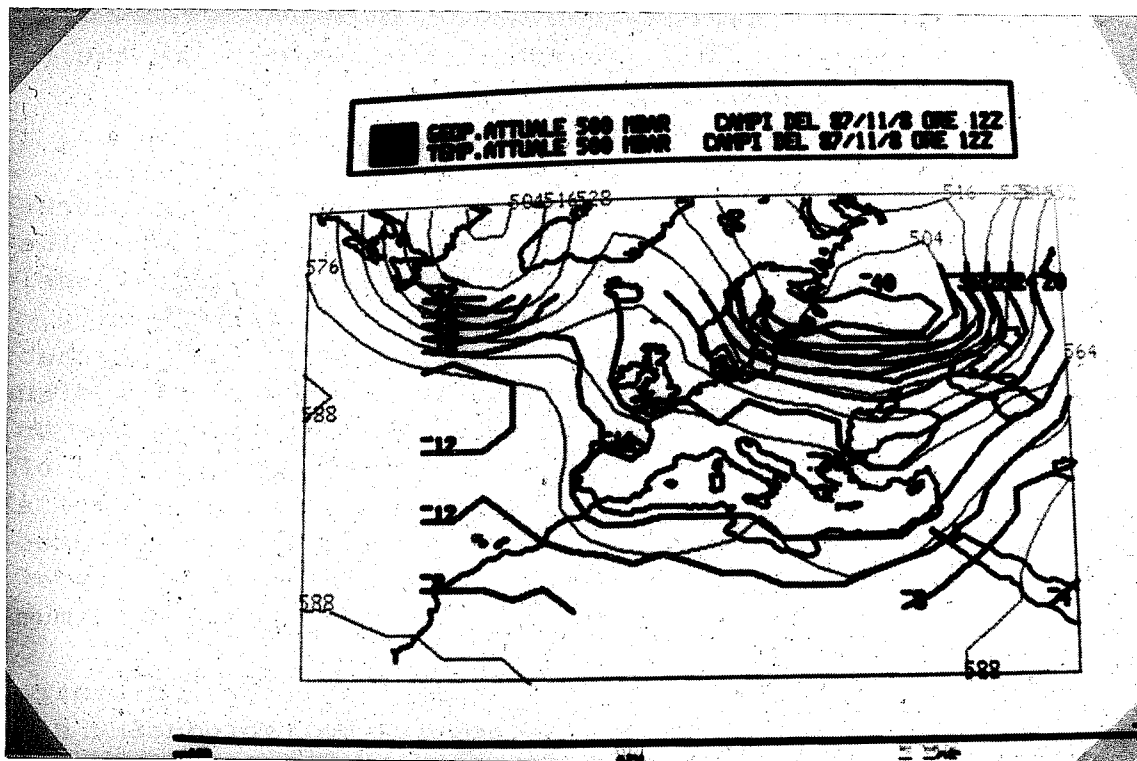


Fig. 1 8 November 1987 - 12 UTC. Analysed fields.

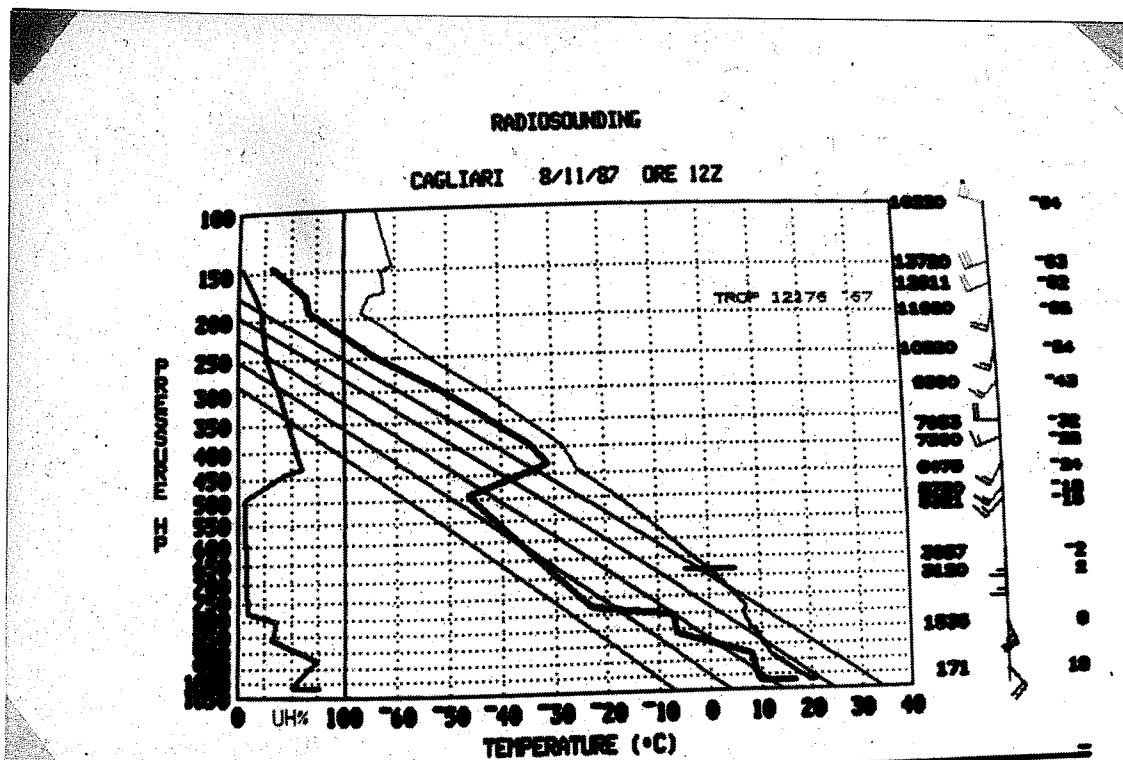


Fig. 2 Stüve's diagram over Cagliari - 8 November 12 UTC

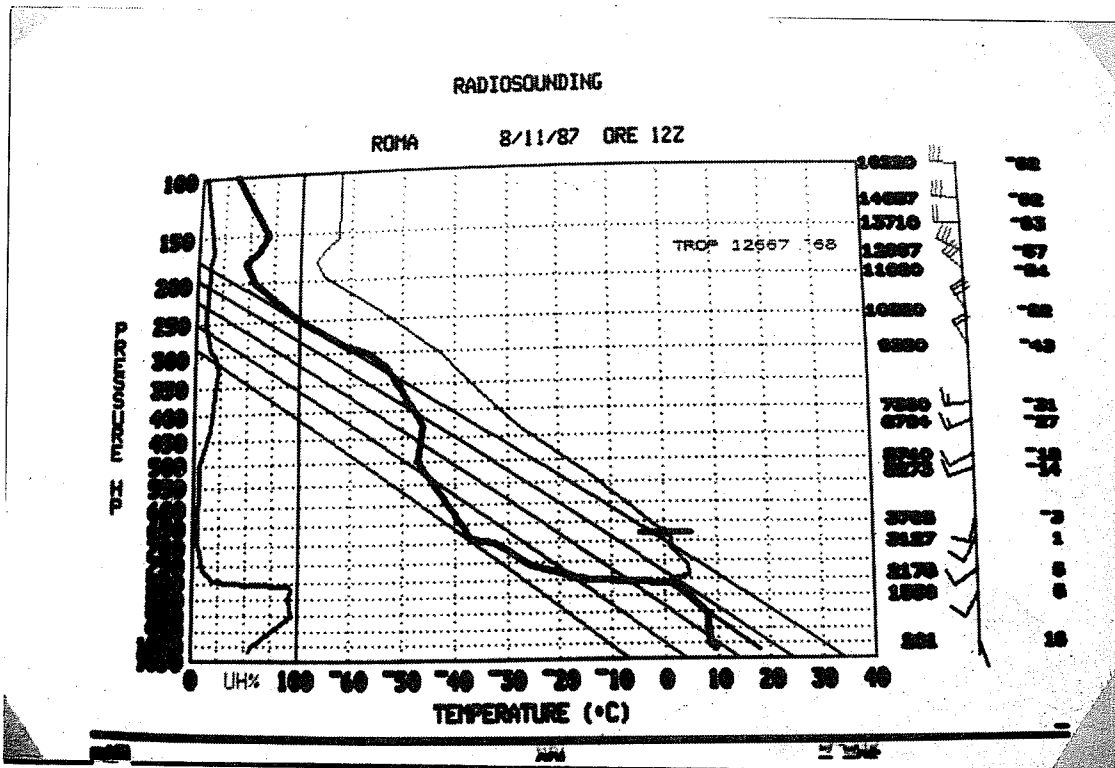


Fig. 3 Stüve's diagram over Rome 8 November 12 UTC.



Fig. 4 Weather conditions over Italy - 8 November 18 UTC

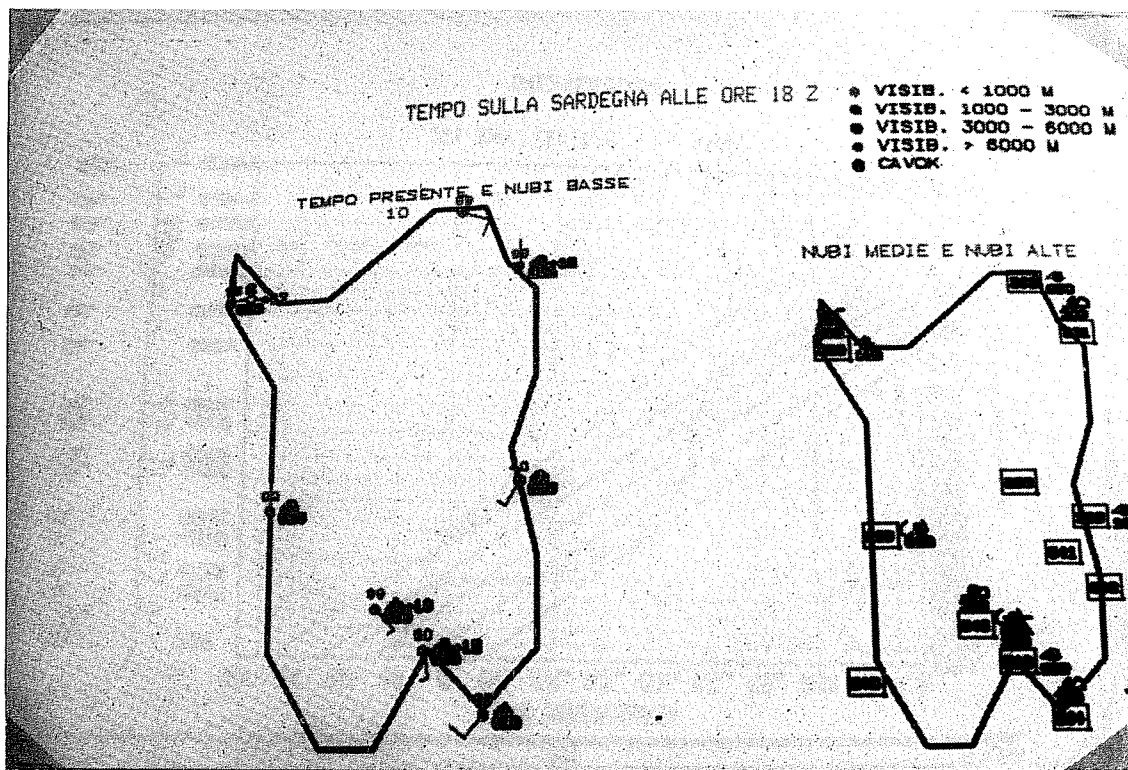


Fig. 5 Details of the weather conditions over Sardinia
8 November - 18 UTC.

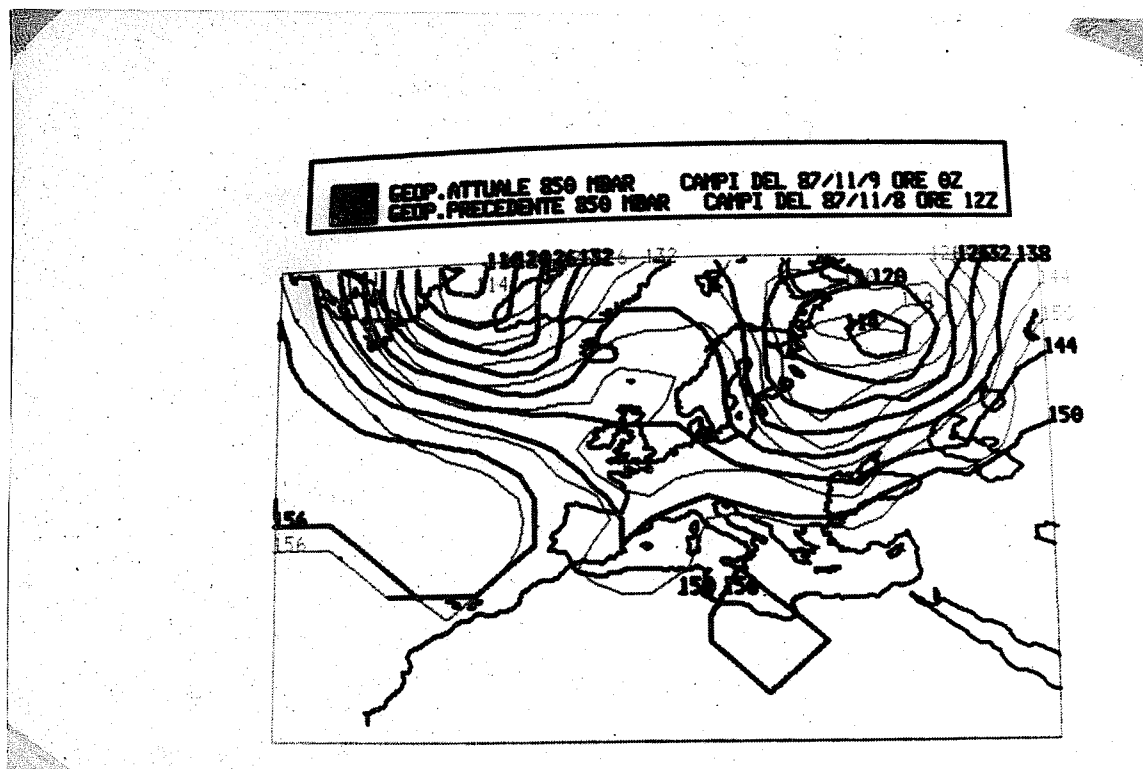


Fig. 6 850 mb analysed fields. White - 8 November 12 UTC
Green - 9 November 00 UTC

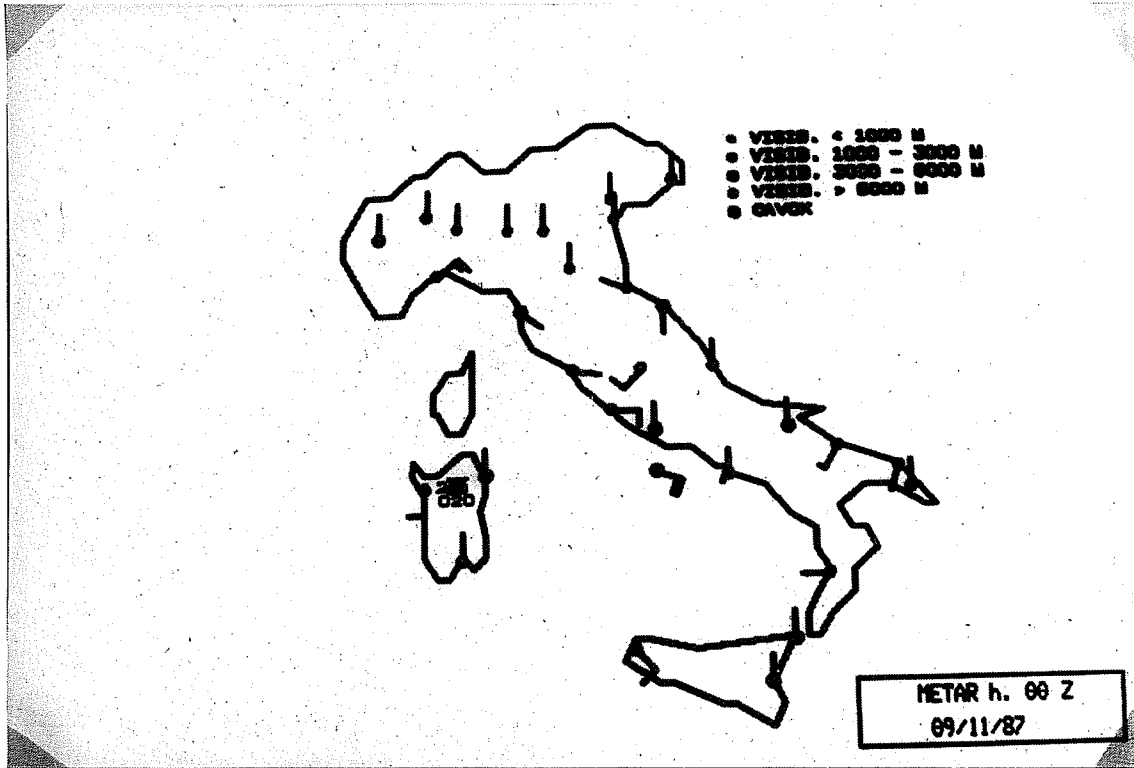


Fig. 7 Weather conditions over Italy - 9 November 00 UTC

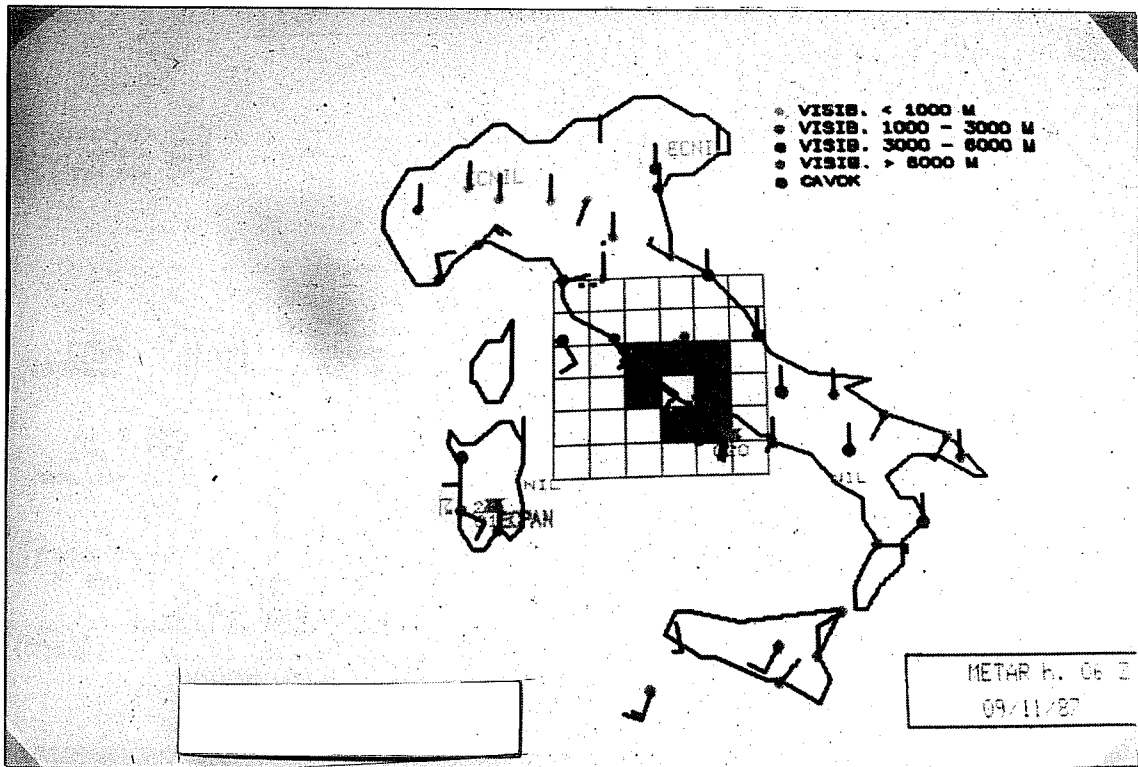


Fig. 8 Overlapped METAR-RADOB representation.
9 November 06.00 UTC



Fig. 11 Pictorial forecast over Italy.
36 hr VT 12.00 UTC 9 November 1987

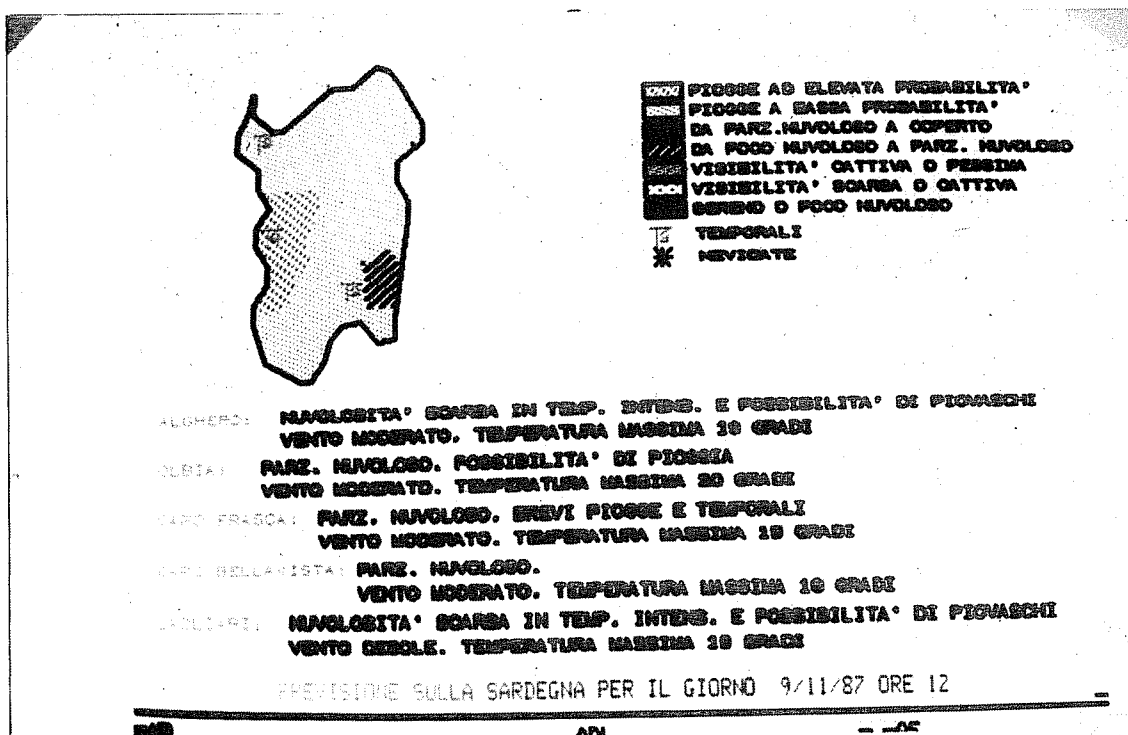


Fig. 12 Worded and pictorial forecast over Sardinia.
36 hr VT 12.00 UTC 9 November 1987