METEOROLOGICAL INFORMATION COMPREHENSIVE ANALYSIS PROCESS SYSTEM

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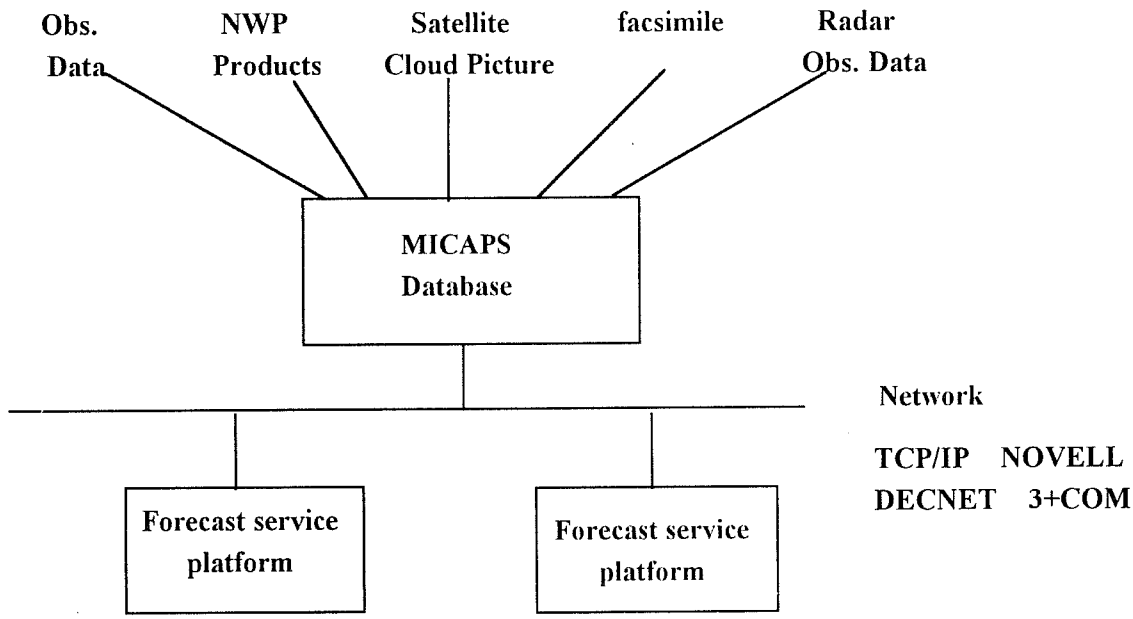
This paper describes the structure , main functions and features of Meteorological Information Comprehensive Analysis Process System (MICAPS) developed by NMC of P.R.C. on platform of UNIX workstation and P.C.
MICAPS has already been put in operational use in NMC of P.R.C. As a service platform for creating forecast products by forecaster based on NWP products and combining other methods like synoptic method, dynamic and statistic interpretation, forecaster's experience etc. MICAPS has been playing an important role in the operational process of weather forecast in NMC of P.R.C.

1. GENERAL DESCRIPTION

Meteorological Information Comprehensive Analysis Process System (MICAPS) is designed for creating weather forecast products by forecaster based on NWP products and combining other methods like synoptic method, dynamic and statistic interpretation, forecaster's experience etc. MICAPS takes client / server structure. It has already put in operational use. The MICAPS structure is as following



The various kinds of meteorological data from telecommunication system, NWP operational system , satellite receiving system , radar observing system and facsimile system etc. are collected and stored in MICAPS database which is set on server.

The client which meteorological information comprehensive analysis process program running on is a service platform for forecaster.

The server and client are connected with network such as TCP/IP,Novell,3+com,Decnet etc.

According to the specification given through the man-machine interface and using MICAPS tools by forecaster, The system retrieves the required data such as observing data 、 NWP products etc. from MICAPS database and carries out analyzing ,graphic processing to create various kinds of synoptic chart ,then display the chart on screen.

According to forecaster's specification, the chart can be overlapped with other relative charts, can be displayed with previous charts animatedly. By combining synoptic theory and methods 、 forecaster's experience, forecaster can compare the chart with historical synoptic chart stored in MICAPS database 、 can also modify the chart and add some new contents (e.g. Frontal line. Synoptic zone . Jet stream axis etc.) on screen interactively to form final objective analysis and weather forecast products and restore them into MICAPS database. Then these products can be disseminated to users by telecommunication system or called by users.

2. THE FEATURES OF MICAPS

2.1 Save time

By using MICAPS , forecaster can save great time of collecting data and making products . Therefor forecaster can spend more time to consider the forecast subject.

2.2 Quick and convenient

With strong functions of data display 、 graphical operating and friendly Man-Machine interface , Forecaster can perform data retrieving 、 graphics displaying 、 comprehensive analyzing 、 forecast products generating etc. very quickly and conveniently.

2.3 Easy to transplant and extend

Providing two versions for UNIX workstation and P.C . With international standard hardware and software interface , MICAPS very easy to be transplanted and extended.

3. THE MAIN FUNCTIONS OF MICAPS

3.1 Data retrieving

- Retrieving by Filename
- Retrieving by combined chart file

A set of relative charts were combined and predefined into a file. MICAPS retrieves the combined chart file and overlaps these charts included in the combined chart file and displays the overlapped chart on screen. This

is the main retrieving mode in MICAPS.

- Retrieving by Parameters (e.g. time ,layers ,elements etc.)
- Retrieving for switching frame

With the function of switching a chart displayed on screen forward or afterward to change the time level of displayed chart for observing the trend of weather variation.

3.2 The main graphics displayed by MICAPS on screen :

- Regular plotting of surface and upper air.
- Scalar and vector plotting for single element on discrete points and grid points.
- Scalar contour chart based on discrete points data and grid points data.
- Vector streamline chart based on grid points data.
- Typhoon track chart.
- Satellite image and radar mosaic image.
- Facsimile chart.
- The above seven kinds of chart overlapped freely and displayed on screen.
- Temperature log-pressure diagram at any upper-air station.
- Any cross-section diagram based on the data of upper-air stations.
- Any cross-section diagram based on the data of grid points.
- The temporal variation curve diagram of surface elements.

3.3 The main functions of graphic editor

- Modifying contour of the chart displayed on screen.
- Adding new lines on the chart displayed on screen.
- Drawing trough line, front line, frost line etc. on the chart displayed on screen.
- Marking various kinds of synoptic symbol on the chart displayed on screen.
- Marking the symbol of strong wind on the chart displayed on screen.
- Marking characters on the chart displayed on screen.

The first version of MICAPS was released and used not only at NMC of P.R.C, but also promoted to provincial weather services in China. The functions of MICAPS are continuously improved and optimized for satisfying the requirements of weather forecast operation.