THE UPDATE OF WORKSTATION DEVELOPMENT AT FMI

Juha Kilpinen* and Annakaisa Sarkanen

Finnish Meteorological Institute (FMI)

Helsinki, Finland

1. INTRODUCTION

A new meteorological information and visualization system is under development at Finnish Meteorological Institute (FMI) (*Kilpinen*, 1995; *Nyfors*, 1995; *Kilpinen* et al. 1996). The purpose is to built a new workstation environment for weather service including features for data editing and generation of different end products. The main task during the last few years has been the database and application interface for database. Now this work is almost ready and applications can be built.

One of these new applications is a workstation software for aviation forecasters, especially for those who take care of TAFs (Terminal Aerodrome Forecast). The system is able to help forecasters in their actual work, not just in visualization of different data. Some attention has also been given to briefing features for pilots.

Other new applications are used for visualization of special observations using same platforms and development tools. All these new software tools are coded in C++ -language with an object oriented interface for database. The graphical user interface is compatible with Windows95/NT system.

2. THE AVIATION WORKSTATION

The most important features of the new software are the display of METARs, TAFs and AutoTAFs and the editor with message checking. Special attention has also been given to the reliability of telecommunication.

The present version (1.0) can display the status of METARs, TAFs and AutoTAFs (Kilpinen, 1994) on a map. The coverage area of data on map display is Europe and user can zoom in and out. Also individual decoded METARs and TAFs are displayed on time/vertical cross-section diagram in the same window (Figure 1.). The message window is able to display the data in ASCII format and this window is synchronized with other display windows.

The messages are checked against syntax errors and feasibility errors. TAFs are checked also against METARs and SPECIs in real time. If a TAF is not valid with the METAR or SPECI observations, the particular aerodrome is colored on the map display and the corresponding elements are highlighted on message display. A short declaration about the error is also included. Also syntax errors are highlighted in the same way but with different colors (Figure 2.).

These monitoring features include also the check of syntax and feasibility errors in METAR and SPECI messages.

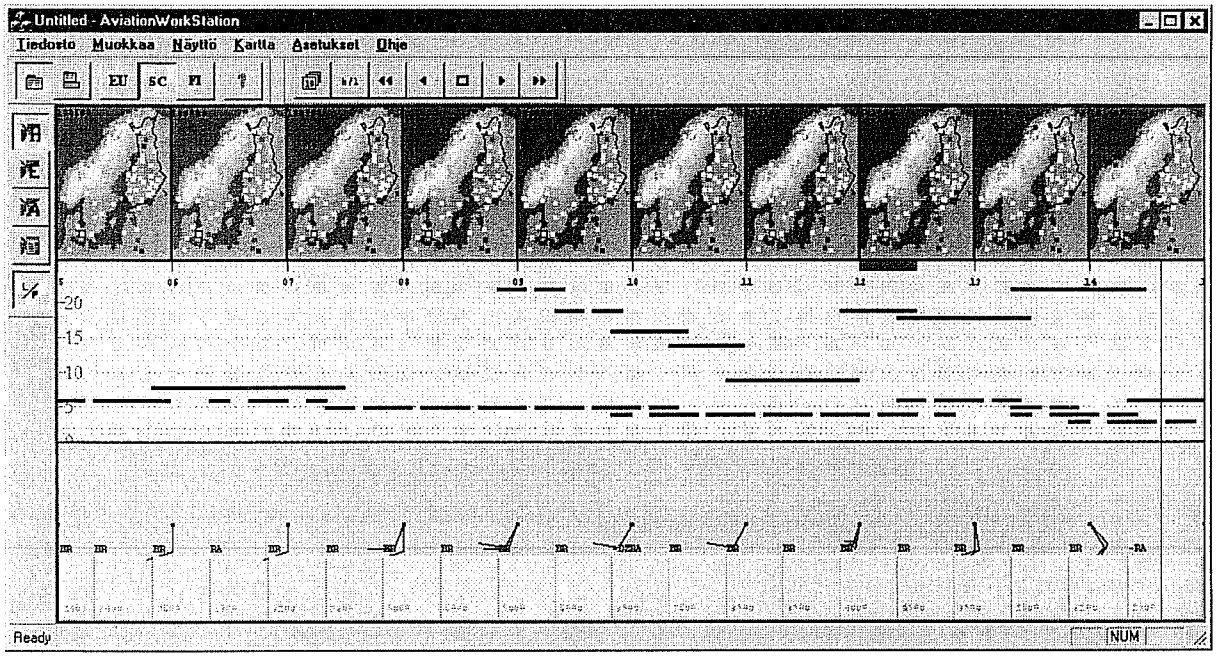

Figure 1. The main window of AviationWorkStation. The system has a map view and a parameter view for TAF's and METAR's. The status of observations and forecasts is highlighted with different colors. The different windows are synchronized in time.

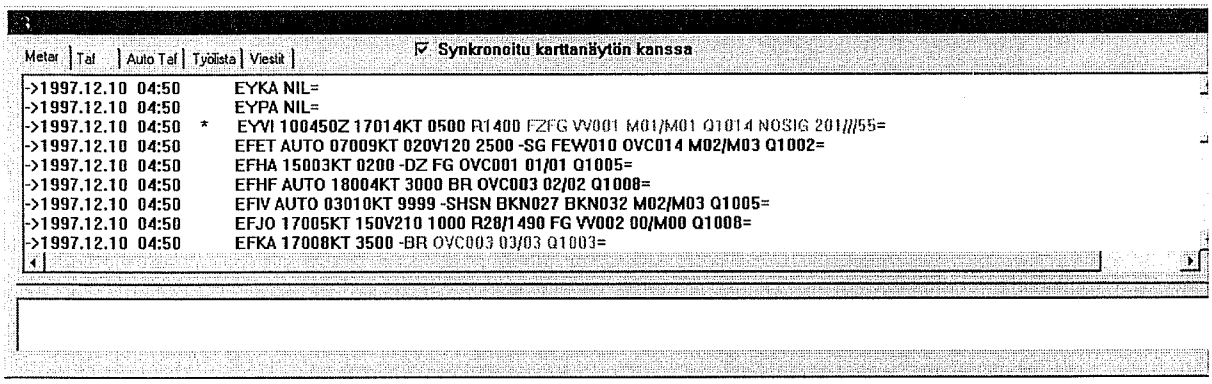

Figure 2. The outlook of message display window. The user can choose between different observations, forecasts and the task list.

The system keeps record of the task lists and time tables of all local offices. So a warning is given for the forecaster when he has to do his next TAFs. In the editor the user can choose between first guess TAFs. These possibilities are the previous TAF, AutoTAF (computer generated TAF) or a TAF based on latest METAR observation.

If the editor finds a syntax error or a conflict between the TAF and the ICAO regulations, the particular erroneous string is highlighted and a short description of the error is given. After the correction of the message, it can be send out to AFTN network.

The system is running operationally in four local offices: Helsinki-Vantaa (EFHK), Tampere (EFTP), Kuopio (EFKU) and Rovaniemi (EFRO). The next version (version 2.0) will include also display of satellite and radar data. Meso scale numerical model (HIRLAM) data and other observation types will be included in the system. Statistical verification part

will also be implemented to the same database. The verification scheme has been adapted together with other Nordic countries.

3. OTHER APPLICATIONS

Another new visualization application is the system for the weather observation mast of Finnish nuclear power plants. This visualization software has been made for experts monitoring our nuclear plants at FMI and in Finnish Center for Radiation and Nuclear Safety. In case of emergency in our nuclear power plant the experts get a real-time estimate of short-range plume transport.

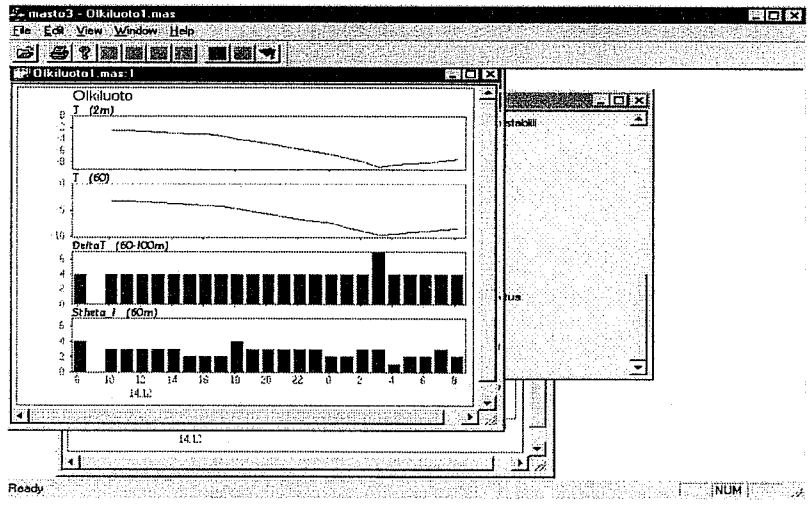

Figure 3. The display of weather observation mast data and derived parameters.

The system has a time series display (Fig. 3) and text display of weather observations (temperature and wind at many levels, surface pressure and humidity) and calculated boundary-layer mixing parameters. The real-time data consists of 24 hourly observations. This software is based on the classes that are used in an earlier meteogram -software.

4. CONCLUSIONS

We have a lot of expectation for this new aviation workstation software. It will bring a modern and ,we hope, a more effective environment for aviation forecasters. The monitoring features will also increase the quality of forecasts. The next version (2.0) of the workstation will have radar data and model data and so it will also be the heart of the next generation meteorological workstation. The strategy in the future is such that there will be no single software but a group of smaller special application which are integrated to the same database. This will allow us to change development tools and platforms more easily.

5. REFERENCES

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