

AFPS Quarterly Report (94Q4)

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AFPS Quarterly Report FY94 Q4: July - September 1994

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The FSL AFPS Team

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1. Introduction

The Enhanced Forecaster Tools Branch of the Forecast Systems Laboratory (FSL) Modernization Division and some of the staff of the NWS Office of Systems Development Techniques Development Laboratory (TDL) are jointly developing the AWIPS Forecast Preparation System (AFPS).

Most of this report covers FSL work. Except in the TDL Activities section (based on information provided by Matt Peroutka of TDL), the use of "we" below refers to FSL staff.

FSL welcomed Mike Romberg on board at the beginning of August. Mike is a recent graduate of the University of Colorado, with a B.S. in mathematics. He worked with a virtual reality group at CU during his senior year, and his C++ expertise has proven to be most valuable.

2. Accomplishments

Key activities this quarter included commencement of Level 1c design and implementation, completion of Level 1b documentation, and upgrading our software to C++ version 3.

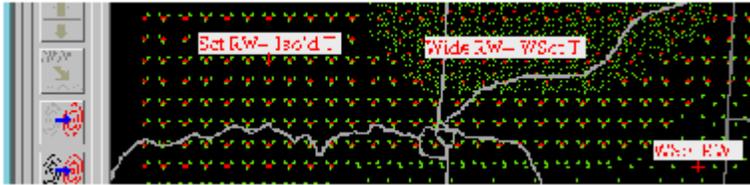
One of the new features of C++ is templates, a method of collecting similar functions for multiple data types into one body of software, rather than writing largely duplicate modules. For our earlier work, we had simulated this feature. In coordination with FSL's FX-ALPHA (FSL X-based AWIPS-Like Prototype for Hydrometeorological Applications) developers, a set of templates has been developed and incorporated in the Level 1c code. This will simplify and improve future maintenance efforts.

The significant features of the AFPS Level 1c prototype include the worksheet and improvements to the temporal editor. As discussed in recent reports, implementation of the worksheet concept is fundamental to creating an AFPS which will successfully support forecast office operations. The worksheet will be the forecaster's control mechanism for the AFPS, providing access to and information on the state and content of the database. The worksheet requirements have been completed, including modifications based on comments received from members of the AFPS Forecaster Working Group (AFWG).

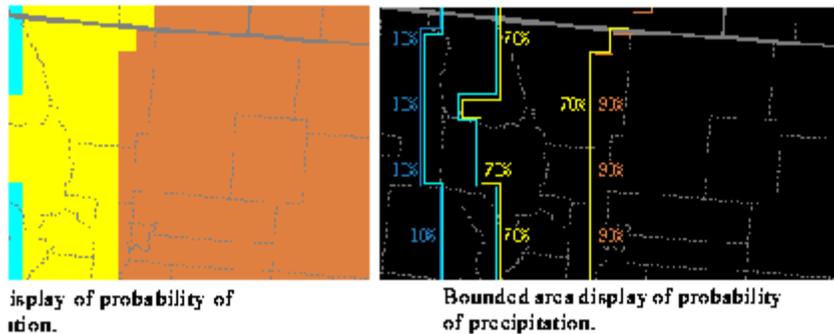
Adding the worksheet concept to our graphical forecast editor (GFE) is a complex task, requiring extensive design, not only of the worksheets themselves (Mathewson, LeFebvre, Mayer), but

also of internal communications between the GFE and database servers (Mathewson, LeFebvre, Bacco). While this design work was under way (and it will continue into the next quarter), several other activities were undertaken or continued. These include:

- In response to comments from AFWG members, several temporal depictions were deemed unnecessary and have been removed, and a new technique was implemented to display weather coverages (Romberg).



- Several editing tools (e.g., smooth, spray can) are being extended to work with discrete weather elements whose "discreteness" is artificial (visibility and PoP) (Mathewson, Romberg).
- Prototypes of several aspects of the worksheets have been created (Mayer).
- Investigative work on interpolation continues (Wier).
- An alternate depiction for discrete fields, bounded areas, has been implemented, as shown in the examples above (Mathewson, Romberg). Bounded areas allow discrete fields to be overlaid on image depictions of other weather elements (e.g., to display PoPs



with weather).

At the June meeting of the AFWG, several modifications to the temporal editor were considered. Work has begun on these, mostly layout changes to make more efficient use of display real estate and to make the temporal displays consistent with the spatial displays (Longstaff).

3. Presentations/Visitors/Travel

The two conference papers mentioned in the last report have been completed. These papers will be presented at the 11th annual IIPS conference (Dallas, January) -- Operational Forecasting with AFPS, by Tom LeFebvre, and Interpolating Between Grids of Meteorological Data, by Stuart Wier. Copies are attached.

Visitors this quarter included:

- In late August, Denny Walts brought a group to Denver and Boulder for familiarization with AWIPS risk reduction and development work in this area. Included were Dick Braun, AWIPS Program Manager, PRC; Doug McVicar, AWIPS System Engineer, PRC; Donna Rhine, Pathfinder team leader, PRC; Eric Mandel, AWIPS Tech Management Team, NWS; and Stu Williams, Chief, AWIPS Acquisition Office.
- Also in late August, Joe Wakefield gave a briefing on AFPS development and a demo of the Level 1b prototype to a visiting class from the Cooperative Program for Operational Meteorology, Education, and Training (COMET).
- Mike Sierchio of the Boise, Idaho WSFO visited FSL in early September to learn about AFPS. Mike is working on plans to modernize NWS fire weather forecast procedures. We have provided Mike with a copy of the Level 1b prototype for further hands-on familiarization.

Most staff members attended a two-day presentation on object-oriented design and coding methods in July.

In September, Mark Mathewson attended the NOAA Software Symposium in Silver Spring, which focused on building high-quality software through use of design reviews, code walkthroughs, etc.

Information about FSL, including AFPS, is now available on the World-Wide Web (WWW), via URL <http://www.fsl.noaa.gov>.

4. TDL activities

TDL developers continued to work on the initialization and formatting modules which AFPS will use. The programs which initialize grids from NGM MOS (Model Output Statistics) bulletins were finished. Development is underway to ingest MRF MOS. The first modules have been written which can load initialized grids into the AFPS database, but they remain untested.

The UNIX (HP) version of the Interactive Computer-Worded Forecast (ICWF) will be installed at NWS Forecast Offices in Charleston, WV, and Norman, OK this winter. The programs which summarize data from grids for the ICWF are nearing completion; these algorithms will be used within AFPS. Modules which combine and average digital zone forecasts have been reworked.

The formatter which generates zone forecasts is being tested. New algorithms for generating snow accumulation phrases have been designed. The port of the Agricultural Forecast formatter is under way.

5. Plans for the next quarter

The chief goal for the next three months is the completion of the AFPS Level 1c prototype. Activities leading to this milestone will include:

- complete the detailed design of the worksheet and associated changes to the GFE;
- implement the new database server, worksheet, and GFE;
- complete improvements to the temporal display.

Included in the design of the new database server and GFE is an extensive crash-recovery and undo capability. We will defer implementation of these until next year.

Interpolation investigation will be completed, and work on cloud displays will commence. Both of these also will probably not be added to the GFE until next year.

FSL's FX-ALPHA project is being modified into a new system known as WFO-Advanced. The purpose of the WFO-Advanced work is to demonstrate AWIPS capabilities in an operational setting, sufficient to meet NWS modernization goals. WFO-Advanced is to be tested at FSL in the second half of 1995, and is intended to be installed at the Denver WSFO in early 1996, replacing the current DARE system. One component of WFO-Advanced will be AFPS; in this next quarter, we will begin coordination activities with WFO-Advanced staff.

We mentioned in the last report that we had ordered a new Hewlett-Packard server for our network. The server is due to be delivered around the end of October, and it should be installed and in use within a few weeks thereafter. We anticipate that the transition will not be very disruptive.

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