

# **AFPS Quarterly Report (94Q3)**

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## 1. Introduction

The AWIPS Forecast Preparation System (AFPS) is being developed by 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 (OSD) Techniques Development Laboratory (TDL).

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.

In mid-April, Sue Young left FSL to enter private consulting. Also, Stuart Wier, who had been working as a contractor to FSL, was selected for the Civil Service programmer position we mentioned in previous reports. We hope to fill one of these vacancies in the next quarter.

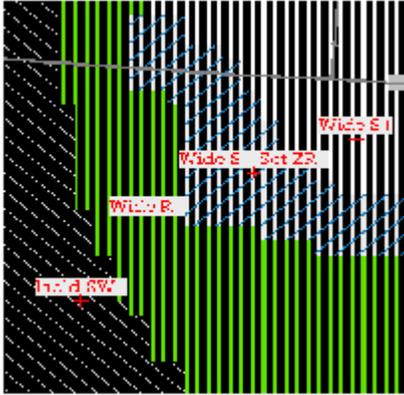
## 2. Accomplishments

Key activities during this quarter were the completion of the AFPS Level 1b milestone and the third meeting of the AFPS Forecaster Working Group (AFWG).

Most of the new features of Level 1b were listed in the last report; specifically, image depiction of spatial continuous data, samples, labeled contour fields, freehand tools (paint, spray, bulldozer), point and area selection tools, gridpoint tools (push-pull and copy), and time series.

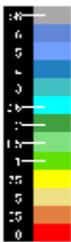
Additional tools and features implemented this quarter include everything listed in the previous report except the undo function. Specifically,

- Three types of wind display are now available colored wind barbs, colored arrows, and a combination speed-component image with overlaid monochrome barbs.
- Weather fields can be viewed in image form. Our prototype depiction uses horizontal, vertical, and diagonal lines to indicate weather coverage; color for type (e.g., green for liquid precipitation, blue for freezing, and white for frozen); and brightness for intensity. Patterns and colors are combined for mixed weather. An example is shown here.



**Note:** AFWG members suggested a slightly different approach to weather depictions, using various densities of fill patterns instead of lines. The basic concept shown here is still valid.

- A vector tool allows the user to modify wind data by dragging a vector indicating speed and direction. Changes may be applied to an area in absolute or relative (vector addition to original data) mode.
- A new smoothing function can be applied to selected areas. Local maxima or minima may be smoothed away or preserved.
- The partially-implemented copy command is now complete, along with a similar move tool.
- A value can be applied to selected grid points using the set value tool.
- Several additional temporal depictions have been implemented.
- Legends, showing value-color relationships, are now included in image depictions. This example is from a visibility image.



Once again, we were very pleased with the just-completed meeting of the AFWG. The bulk of the meeting was spent in hands-on sessions, becoming familiar with the AFPS prototype and its displays and editing tools, and doing a forecast-simulation exercise to begin to see how quickly users could become comfortable with the system and how effectively they could use it. While the AFPS prototype is not yet nearly complete enough to simulate an operational environment, we did get much valuable feedback from the group members. We will use this to good advantage as our work progresses to the Level 1c milestone.

In mid-April, our staff gave up the Sun SPARC-station 2GXPlus workstations that we had used for two years, replacing them with HP 9000 mod el 730 and 725s. While not as powerful as the models currently slated for use in AWIPS, these are completely compatible with the Government

Development Platform (GDP) workstations. (TDL's AWIPS development is being done on GDP systems at NWS HQ.) The transition was fairly easy, though it took a while for our staff to get comfortable with the new environment.

Other activities:

- We now have a script which allows us easily to initialize the database with LAPS grids from FSL's data repository.
- We have continued to work with TDL on plans for the work required to merge their extensive ICWF initialization scheme into AFPS.
- We have prepared preliminary worksheet requirements, which were presented to the AFWG at our recent meeting. The worksheet is probably the most significant element of the Level 1c milestone. It will provide status information on the weather element information in the database (e.g., locked by the current or another user, "original" or edited, interpolated), and will also be used to select fields for display and/or editing. It is a critical requirement of the AFPS, necessary for managing the volume of forecast data in the system. A revised version of these requirements is being sent for review to members of the AFWG.

### **3. Presentations/Visitors/Travel**

We hosted a number of visitors this quarter. In addition to the AFWG meeting discussed above, we talked with the following visitors:

- John Jannuzzi, MIC/AM WSFO BOI, visited 2 May to discuss NWS Fire-Weather risk reduction activities, and related aspects of AFPS.
- We gave Glenn Rutledge, OM, an overview of AFPS work, as part of his familiarization visit on 4 May.
- A team from the GAO visited Boulder and Silver Spring in May to "...examine the capability of [TDL and FSL] to develop production quality software." Their report has not yet been issued.
- We gave a demo to the National Research Council NWS Modernization Committee on 26 May.
- Lou Uccellini, acting head of OM, visited Boulder on 1 Jun. The focus of his visit was how work being done in Boulder will be shared with other groups doing preliminary AWIPS work.
- Jim McNamee, Director, Office of Information Policy and Technology; Information Resources Management; Office of Administration; DoC, visited on 8 June.
- Matt Peroutka and Mark Oberfield of TDL visited FSL on 13 June. (See TDL Activities, below.)
- The NWS Modernization Transition committee met in Boulder 22-23 June to consider the move of WSFO SFO from Redwood City to Monterey. We presented an overview and status report on AFPS development to this group.

Mark Mathewson and Joe Wakefield traveled to Silver Spring for two presentations:

- to the AWIPS Independent Review Team, 16 May;
- an OSD Advanced Development and Demonstration Laboratory (ADD Lab) program review, 10 June. We reviewed our progress since the last such review in July, 1993, and outlined our plans through FY95.

Two abstracts have been submitted for 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 of the papers will be attached to the next AFPS Quarterly Report. In addition, Mark Mathewson has submitted an abstract for the NWA conference in Salt Lake City (October) entitled An Integrated Approach to Graphical Forecast Editing.

## **4. TDL activities**

Developers at TDL continue to port the Interactive Computer Worded Forecast (ICWF) program into the UNIX environment. Some of these modules will become the initialization and product formatting components of AFPS. Many of the modules have been successfully ported and testing is underway.

FSL and TDL developers met in Boulder to design the interfaces which they will use to integrate the various modules of AFPS. FSL developers will write C-callable functions which will allow TDL's software to access the AFPS database objects. TDL will develop AFPS-compatible versions of the initialization and summarization modules. For the Level 1c milestone, ICWF formatters will be used virtually "as is."

## **5. Plans for the next quarter**

Although we replaced our Sun workstations with HPs, we are still using our Sun file server. However, since we have to build our software on an HP, we are using one of the GDP workstations for that purpose. We will be working on procuring a new HP server.

When we moved to the HP environment, we began use of an updated version of C++, but did not take advantage of new language features. With FSL's FX-ALPHA team, our staff have developed new support functions. We will be converting our code to use these new, more compact, routines.

We will finish writing documentation of the Level 1b design and software, and begin design activities for the next round of development. The major items to be considered are the worksheet concept, continued work on weather, depiction and editing of clouds, and time interpolation between forecaster-edited fields.

Coding of the Level 1c milestone will commence this quarter, with completion scheduled for late 1994. This work will include the FSL-TDL interface routines noted in the previous section, providing the capability to perform (limited) end-to-end testing of AFPS.

As noted, we expect to fill one of our two programmer vacancies this quarter.

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