

AFPS Quarterly Report (96Q3)

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1. FY96 Q3: April - June 1996 Introduction

The AWIPS Forecast Preparation System (AFPS) is being developed jointly by the Enhanced Forecaster Tools (EFT) 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).

Most of this report covers FSL work; "we" here generally refers to FSL. The TDL Activities section is based on information provided by Matt Peroutka of TDL.

2. Accomplishments

EFT staff concentrated their efforts on the following activities this quarter:

- Defining the architecture for the new graphical forecast editor (GFE)
- Designing the new GFE.
- Assessing AFPS initialization quality.
- Finishing up the exploratory development of graphical/gridded forecast products and grid-based text formatters.
- Beginning the implementation of several components of the new GFE including: Message Handler, Data subsystem, and Graphics subsystem.
- Finished the design and implementation of the new Graphical Forecast Viewer which is now available on the World Wide Web.

2.1 Architecture/Design of GFE

Much of our focus was dedicated to the design of the new Graphical Forecast Editor (GFE). During the design process, the design team meets for several hours per day to discuss the various objects that comprise the overall system and their responsibilities. As decisions are made they are documented in the design document which implementors use to understand the requirements of each object and the functions inside them. The document was reviewed by several staff members to identify design flaws so that these flaws could be fixed before implementation began.

Now that the design is complete, implementation has begun on all of the major components of the GFE including: the Message Handler, Data subsystem, the User Interface, and the Graphics subsystem. We hope to complete implementation by early September in order to give the AFPS

Forecast Working Group time to learn the new system before the next Working Group meeting planned for late September.

2.2 Initialization Quality

Most of the initialization work this quarter has been devoted to converting initialization code to AFPS design and coding conventions using C++. The present initialization code is a prototype using code written for other purposes, mostly in FORTRAN. Key meteorological code in FORTRAN will not be converted to insure its integrity. It will be linked to a typical AFPS object-oriented C++ data handling wrapper. Simple FORTRAN routines have been converted to C++.

Tests of the quality of the automatic computer-generated initial forecasts against surface observations continued in preparation for a presentation at the Weather Analysis and Forecasting Conference in Norfolk Virginia in August 1996. A complete copy of the paper to be presented - more than will actually be presented - is already available on the AFPS WWW homepage ("Surface Forecasts Derived from Eta, NGM, and RUC Numerical Model Output, and Comparisons to Surface Observations Across the U.S.").

This paper also tells in some detail exactly how the surface forecasts are derived from atmospheric model output.

One of the great advantages of this approach to providing surface-based guidance from models is that a forecast can be made for ANY point in the area covered by the models, including remote locations, areal averages, and even offshore. (Wier)

2.3 Exploratory Development of Formatters and New Products

During this quarter, we finished up our exploratory work on rule-based formatters. The results of this work and our recommendations are documented in a report called "Formatter Recommendations".

In this report we discuss the advantages of the rule-based approach to text formatting and present some examples. We go on to suggest that since forecasters are so particular about the words generated from a text formatter, a better approach might be to present these products as a first draft. The phrases in these type of products would be simple but accurate. Forecasters would always have the capability to enhance them whenever they deemed necessary, but left untouched, the products could be sent out as is without concern over their accuracy.

The report concludes with a recommendation that we continue to pursue this rule-based approach to text product generation. The advantages include a high degree of configurability by forecasters, the ability to develop new products with minimal effort, the inclusion of local effects automatically, and simpler integration with AFPS system.

2.4 The Graphical Forecast Viewer

A complete redesign and reimplementaion of the Graphical Forecast Viewer (GFV) was completed and demonstrated at the NOAA World Wide Web Workshop in Silver Spring, MD. The GFV allows anyone with WWW access to view AFPS gridded data forecasts in spatial or temporal format. This prototype demonstrates how the public might access gridded weather forecasts in the future. (Bacco)

2.5 Other Activities

Papers titled Surface Weather Forecasts Derived from Eta, NGM, and RUC Numerical Model Output (Wier) and Gridded Forecast Products and Services (LeFebvre, Bacco, Romberg) were prepared for the 15th Conference on Weather Analysis and Forecasting to be held in Norfolk.

Paper titled Using WWW to Access Forecast Products and Services was presented at Webshop96, a NOAA sponsored conference. (Bacco)

Reference Guide and User's Manual outlines were created. (Watkins)

Participated in CD-ROM training on Object-Oriented Methods (whole staff).

Jason George, our new quality assurance specialist, was hired in June. He's responsible for user documentation and training materials.

3. Presentations/Visitors/Travel

Visitors:

1. Mary DesJardins, NCEP (Apr 17-18) to discuss possible use of AFPS at NCEP.
2. Todd Dankers and Chad Gimmestad, WSFO Denver (Apr 18) to provide local effect wording guidance.
3. William Mehuron, Director, NOAA Systems Acquisition Office (May 9).

Travel and presentations:

1. Mark Mathewson traveled to NCEP to install AFPS evaluation software (Apr 29-30)
2. Corby Bacco traveled to Washington DC to attend and present the Using WWW to Access Forecast Products and Services paper at Webshop96 (June 25-27).

4. TDL Activities

TDL and FSL developers continued to work toward integrating TDL's MOS ingest and product formatting code into the AFPS development system in Boulder. The source codes have been checked in and built. FSL developers were able to provide a source of MOS guidance from the WFO Advanced system, and a MOS ingest for AFPS will be running on FSL machines this summer.

TDL continued to work on expanding the product suite into aviation and Fire Weather areas. The product generation software for TAFs was enhanced, and a graphic editor for TAFs will be available this summer. Forecasters at the Boise, ID forecast office will be generating automated Fire Weather products as part of the Fire Weather Risk Reduction exercises this summer. The Zone Forecast program generated its first local effects phrases. This feature will be on-line this fall.

5. Plans Next Quarter

Our main effort for the next quarter will be to finish the implementation of the GFE and to present it to the AWIPS Forecaster Working Group (AFWG).

We will produce drafts of the AFPS User's Guide and the AFPS reference manual.

Initialization algorithms will continued to be improved.

The FSL AFPS Team

Corby Bacco *Programmer (database, network, 303-938-2067 new products)* bacco@fsl.noaa.gov

Dave Howard *Quality Assurance Specialist (testing, 303-938-2088 bug tracking, configuration management)* dhoward@fsl.noaa.gov

Tom LeFebvre *Meteorologist/Programmer (design, 303-938-2086 graphic editors, database)* lefebvre@fsl.noaa.gov

Jennifer Longstaff *Programmer (graphics, data samplers)* 303-938-2069 longstaff@fsl.noaa.gov

Mark Mathewson *Project Manager Meteorologist/303-938-2061 Programmer/Lead Designer* mathewson@fsl.noaa.gov

Bob Mayer *Programmer (user interface, design, 303-938-2075 graphics)* rmayer@fsl.noaa.gov

Mike Romberg *Programmer (graphics, user interface, 303-938-2084 network, new products)* romberg@fsl.noaa.gov

Jason George *Quality Assurance Specialist (user 303-938-2089 documentation, training material)* george@fsl.noaa.gov

Stuart Wier *Programmer (initialization, 303-938-2078 interpolation, graphics displays)* wier@fsl.noaa.gov