

Senior Project - RAPID Weather

A Real Time Graphical Airport Weather Display

Senior Project: 1990-1991

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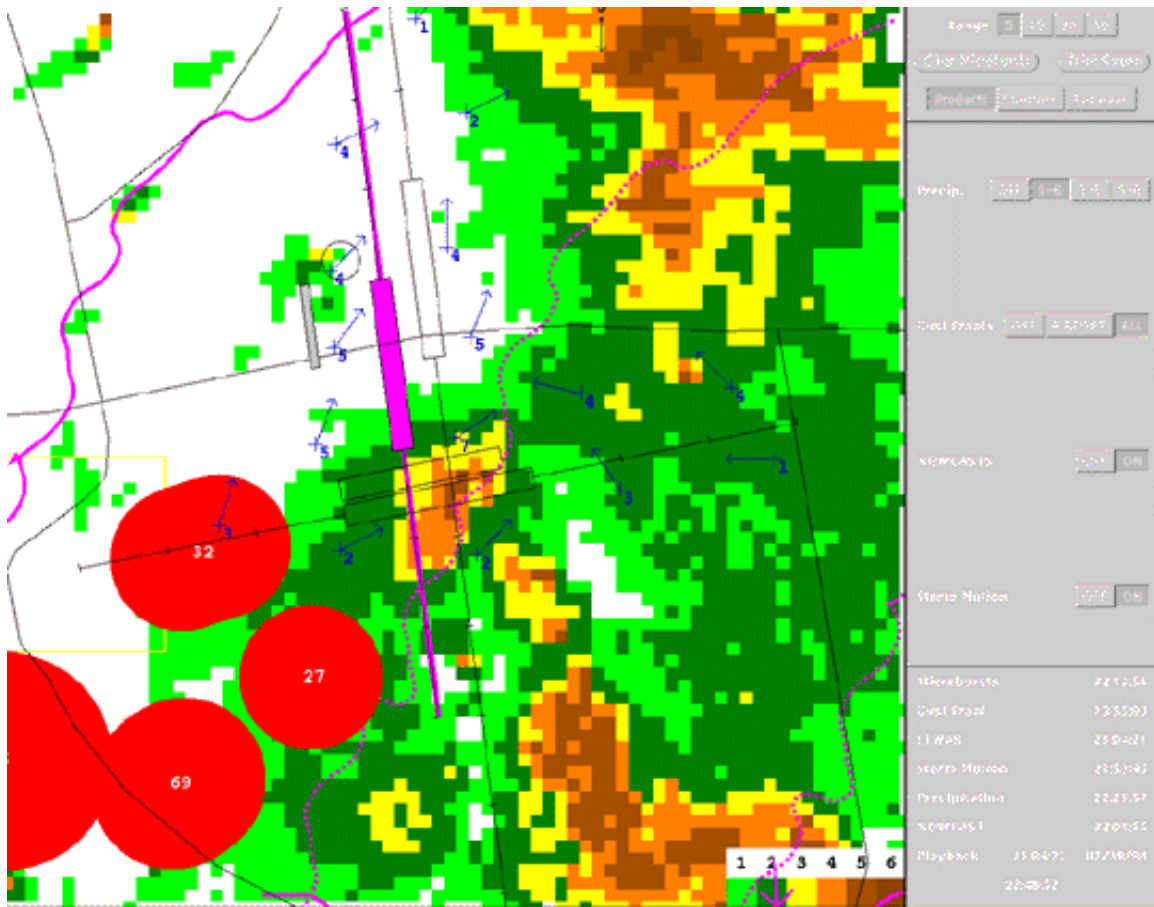
Research Applications Laboratory

Boulder, CO

NCAR Research Applications Program (RAP) supports a graphical weather display that is used by the Federal Aviation Administration at Stapleton International Airport in Denver. The display runs on a Sun 3/60, Sun OS4.0, under SunView and allows the controllers at Stapleton to view hazardous weather in the vicinity of the airport in real-time. This display shows weather products such as microbursts, precipitation, low-level wind shear, and gust fronts as they occurred, the data being received continuously from instrumentation at the airport and in the vicinity.

For a variety of reasons, NCAR was interested in seeing a different approach to such a display. First, SunView is a proprietary system, limiting portability of the display to other hardware platforms. A display based on the X Window System was desired. A second issue was system extensibility. When the initial system was designed, the ability to easily add new weather products was not a priority. A new system should be explicitly designed for extensibility. Finally, RAP wanted to see any new approaches and ideas a student team might have for the design and implementation of a solution to the problem, particularly with respect to the user interface.

The new display consists of a main window displaying the weather products, along with surface features such as major highways, airport runways, outlying airports, and the location of navigational equipment such as VORTACs and FIXes. The display also has a control panel, which allows the user to manage the display, turning on and off the visibility of individual weather products and surface features, controlling the surface area under consideration from 5 to 50 nautical miles in radius, as well as the management of runway assignments for controllers in the tower. The resulting software provided a simple, consistent interface, while meeting rather stringent speed requirements. It also allowed for easy incorporation of new weather products, and provided further extensibility to different airports through run time configuration files. The project was implemented in C and UNIX to run on Sun SPARCstation 2 workstations.



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