**Atmospheric Environments for Modeling and Simulations**

**Naval Research Laboratory, Monterey, CA, 93943-5502**

See also ADM002252.
Atmospheric Environments for Modeling and Simulations

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LONG-TERM GOALS

The goal of this NRL base project is to develop a capability to quickly visualize the impact of the atmospheric environment on tactical operations.

OBJECTIVES

Provide a visualization tool kit to analyze and interpret tactical impacts due to environmental conditions. Utilize the popular client – server model but develop methods to minimize the network bandwidth required for graphics intensive operations.

APPROACH

Develop a layered, distributed software application to efficiently render environmental data located at remote sites over the network. Separate the data engine from the rendering package and build the network communication layer. Allow the end-state user full control over the visualization without re-transmitting the same data over the network. (Pedro Tsai (NRL), Brian Doty (COLA), and Audrey Wakefield (A&T) performers.)

WORK COMPLETED

A prototype JAVA-based environmental graphics tool kit was developed from the public domain Grid Analysis and Display System (GrADS) software package. GrADS was developed by the non-profit Center for Ocean-Land-Atmosphere Interactions (COLA) and is widely recognized in the meteorology community as a well-designed, efficient two-dimensional interactive graphics package. The design of GrADS which isolates the data engine from the rendering layer, makes it well suited for adaptation to the JAVA schema.

RESULTS

The ability of an inexperienced user to visualize environmental data located on a remote server has been improved. The prototype client application was demonstrated live at the American Meteorological Society (AMS) meeting in Phoenix, AZ, January 1998. The JAVA client application was run on a PC which was connected over the internet to the GrADS data server running at COLA. The user was able to locally render (and re-render) the remote data set with a single network transfer. Traditional network
applications require the remote server to re-render the data and re-transmit the graphics, thus unnecessarily consuming network bandwidth critical to the Navy.

**IMPACT/APPLICATIONS**

Visualization techniques that minimize network bandwidth have direct application to the On-Scene Tactical Atmospheric Forecast Capability (STAFC) and TESS/NC projects.

**TRANSITIONS**

The JAVA-GrADS technology has transitioned to the 6.4 SPAWAR PMW 185 project PE 0603207N X0513-05 (STAFC).

**RELATED PROJECTS**

Related projects within PE 0602435N are award numbers N0001498WX30164 (EM/EO Testbed) and N0001498WX40077 (Tactical Atmospheric Modeling System/Real-Time). The related 6.4 project under PE 0603207N is X0513-05 (STAFC).

**REFERENCES**


**IN-HOUSE/OUT-OF-HOUSE RATIOS**

51% in-house, 49% out-of-house based on funding level.