Expanding the Availability of Geo-referenced Weather Observation and Forecast Data

Carissa Brittain, A1C, USAF
Jon Goldtrap, TSgt, USAF
Abstract

Weather phenomenon have far-ranging impacts to both military and civilian activities. While many of these activities can be mapped and planned using GIS, weather information, in a GIS format, is scarce. Beginning in November, 2004, the Air Force Weather Agency (AFWA) began exploring the possibility of making weather observation and forecast data available to GIS users. The creation of AFWA’s GIS team marks a significant milestone on the path to that goal.
The team chose an ArcIMS site as their first proof-of-concept project. For the first time in February, 2005, the team demonstrated the impacts of weather observations and forecasts on a fictitious military mission. The team’s development efforts continue toward a goal of making geo-referenced weather observation and forecast data available to improve both military and civilian planning efforts, ultimately supporting 3-dimensional data.
Acknowledgments

GIS Team Members
SrA Keith Morris  A1C Carissa Brittain
A1C Justin Schmidt

Maj Newton and other AFWA personnel

Steve Richart, AFWA/DNXT

Matt Meyers, Peter Kiewet Institute
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov, 2004</td>
<td>GIS Team Created</td>
</tr>
<tr>
<td>Jan, 2005</td>
<td>Installed ArcIMS</td>
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</tbody>
</table>
<pre><code>              | Began work on Demonstration Website                                   |
</code></pre>
<p>| Mar, 2005  | Completion of Demonstration Website                                   |
| Website Moved to Peter Kiewet Institute                               |
| General Stickford’s Visit and Presentation                            |
| Apr, 2005  | Began Work on Weather Database Population Process                    |</p>
Data

Temperature Observations

Geopotential Height

Wind Speed, Direction and Cloud Cover

LAYERS
- Political
- Forecast
- T02 (CONUS)
- 700mb
- GPH
- Contour
- Raster
- TEMP
- RH
- T04 (Middle East)
- Global Observations
  - TEMP
  - RH
  - DP
  - WIND
- Satellite Imagery
- Radar Imagery
- Geography
- Flight Demo
Data

**Layers**
- Political
- Forecast
- Global Observations
- Satellite Imagery
  - AVHRR
  - GOES
- Radar Imagery
  - 1528Z
  - 1542Z
  - 1557Z
  - 1616Z
- Geography
- Flight Demo

**AVHRR**

**GOES East**

**Geographic/Political**
Data

LAYERS
- Political
- Forecast
- Global Observations
- Satellite Imagery
  - AVHRR
  - GOES
- Radar Imagery
  - 1528Z
  - 1542Z
  - 1557Z
  - 1616Z
- Geography
- Flight Demo

Radar &
GOES

Radar &
Geographic/Political

Integrity - Service - Excellence
Flight Path Demo

Athens – Baghdad No Fly Area

Original Flight Path

New Flight Path

Layers:
- Political
- Forecast
- Global Observations
- Satellite Imagery
- Radar Imagery
- Geography
- Flight Demo
  - Severe Weather - 16000FT
  - Flight Cities
  - Original Flight Path - 16000FT
  - New Flight Path - 16000FT

Integrity - Service - Excellence
Future Efforts

- Global range of observation and model data
- Pre-defined decision aids
- Automatic updates
- Download capability
- 3D imagery capabilities
References

NOAA – GOES & AVHRR Images

http://www.gis.ssd.nesdis.noaa.gov/

HQ AFWA – Observation and Model Data

AFWA ArcIMS Demonstration Website

http://afwa.ist.unomaha.edu/website/imsdemo
Author Information

Primary Author

Carissa Brittain, A1C
Applications Programmer, GIS Team, HQ AFWA/SCSA
carissa.brittain@afwa.af.mil

Secondary Author

Jon Goldtrap, TSgt
NCOIC GIS Team, HQ AFWA/SCSA
jon.goldtrap@afwa.af.mil

AFWA Office of Public Affairs
106 Peacekeeper Ln. Suite 2N3
Offutt AFB, NE 68113

AFWA Office of Public Affairs  (402) 232-8166
http://afweather.afwa.af.mil/