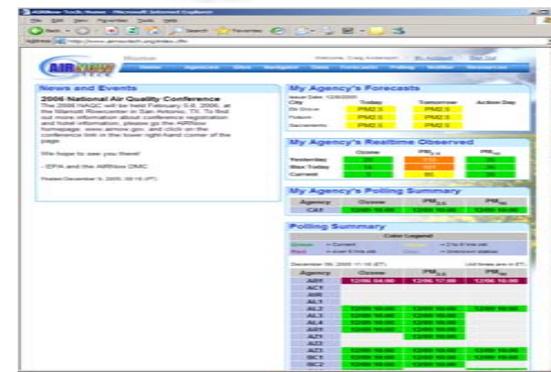


E-BAM Telemetry

Past to Present

Neelson Watkins
US EPA – OAQPS
RTP, NC



In response situations, people want data!

- The EBAM is widely used in “response” activities
- EBAM data from fire/smoke monitoring and emergency response are in high demand with lots of visibility
- Data quality, control and ownership is often a major concern
- ❖ The top priority is obtaining, transmitting, and displaying data for health & safety decision making purposes



Original EBAM Telemetry System

- Met One partnered with AIRSIS to allow EBAMs to move data via satellite
- Data is stored by AIRSIS and shared through AIRSIS web applications
- ORBCOM is the original satellite network used by AIRSIS
 - The associated telemetry package is the AQEB-2000
 - This modem is comprised to two pieces that attach to the EBAM

Problems with ORBCOM

- Through experience, AIRSIS and EBAM users discovered several issues in using ORBCOM for near-real time data transfer:
 - Poor performance at high latitudes
 - Latency: the time of transfer from EBAM to satellite(s) to AIRSIS was often inconsistent and slow
 - Missed reporting: as opposed to the latency issue; data sometimes wouldn't make it into the system queue at all

Introducing the “Iridium” network

- Due to ORBCOM issues, AIRSIS engaged Iridium in 2007, and entered into an agreement at the first of 2008
- Iridium allows for consistently fast transfers, anticipated to be less than 20 seconds
- Requires only one piece of hardware on the EBAM
- Should have less problems in higher latitudes
- All new EBAMs from Met One now have Iridium units (if you order the telemetry system option)

Take-home Notes for EBAM users

- AIRSIS still supports ORBCOM hardware and data submissions
- AIRSIS is may offer a deal for \$1000 to upgrade from ORBCOM to Iridium hardware
- New Iridium hardware for the EBAM currently costs approximately \$2400

Iridium Satellite Airtime

- There are 3 flavors of airtime plans:
 1. 4 month plan: actually 120 days of the year, a user can submit data (used in 24 hour increments); \$40 activation, \$600 for airtime
 2. 8 month plan: same concept as the 4 month plan, but has 240 days; \$40 activation, \$1200 for airtime
 3. 12 month plan, same concept; \$40 activation, \$1800 for airtime
- AIRSIS will aid customers in tracking their airtime usage (like a cell-phone plan) through the year

Data Handling & Storage

- AIRSIS airtime plans come with password protected web access
- AIRSIS can work with customers to migrate data to customized websites, such as the Forestry Service website at:
<http://www.satguard.com/usfs/>
- AIRSIS can also automatically migrate data into AIRNow-Tech

AIRNow-Tech Connection

- In 2005, AIRNow-Tech was enabled to receive AIRSIS data
- “Connection” was broken in 2007 as Iridium system was being investigated
- The linkage is being re-established now (anticipated April launch)
- Once re-established EBAM data can be directed, at will of the EBAM operator, through AIRSIS to AIRNow-Tech

Mobile Networking

- AIRNow-Tech has the capability to handle temporary and mobile data sources
- Temporary sites can be displayed tabular or in Navigator
- The temporary site feature was first used in Hurricane Katrina response efforts
- Data needs to be tied in with GPS coordinates for each data point

AIRNow-Tech Capabilities

- Beyond viewing the tabular EBAM data online, users can visualize their data by using AIRNow-Tech Navigator:
 - View EBAM data overlaid with meteorology (SLT data and NWS data)
 - View EBAM data with existing air quality data
 - View known fire locations and smoke plumes derived from the Hazard Mapping System (HMS)
 - Overlay HYSPLIT trajectories

Navigator Welcome, Neal Conatser! | [My Account](#) | [Sign Out](#)

Home Agencies Sites Navigator Data Forecasts Polling Notifier Resources

Trajectory Parameters

Hours: 24hr Forward

Heights (m agl): 1. 10, 2., 3.

Label: (Only appears when map scale is less than 22 mi)
 Hour
 Height (m agl)
 Pressure (mb)
 None

Source: NOAA HYSPLIT model
 NAMNDAS models (40km)
 Most Recent: 13 Jul 2006 12Z
 Model vertical velocity

Select Data

Air Quality Parameter: PM10 (UG/M3)
 Meteorology Parameter: WIND (BARBS)

Time Select

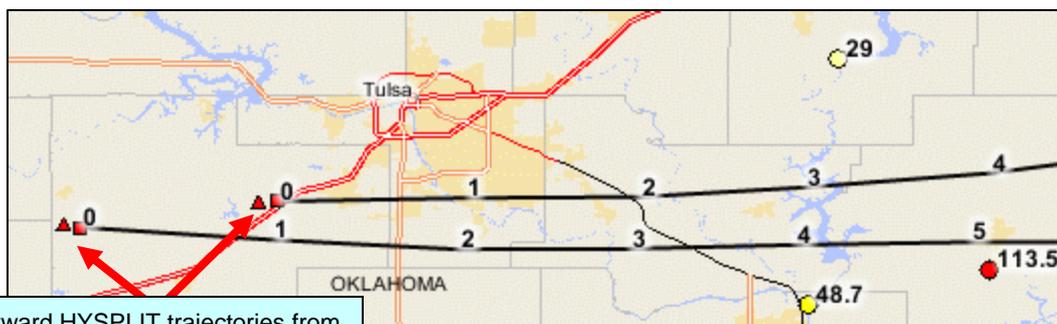
Date: 7/11/2006
 Hour: 9 PST

Advance Hour

-24 -8 -1 +1 +8 +24

Apply Changes

HMS smoke plumes with forward HYSPLIT trajectories



Select Data

Air Quality Parameter: PM10 (UG/M3)
 Meteorology Parameter: None

Time Select

Date: 1/1/2006
 Hour: 21 EST

Advance Hour

-24 -8 -1 +1 +8 +24

Toggle through previous or future hours and days to view changes in air quality, fire locations, and trajectory parcel locations



Navigator

Welcome, Tim Dye! | [My Account](#) | [Sign Out](#)

- Home
- Agencies
- Sites
- Navigator
- Data
- Forecasts
- Polling
- Notifier
- Resources

Tools Tool Options Site Info



Trajectory Parameters

Hours
24hr Forward

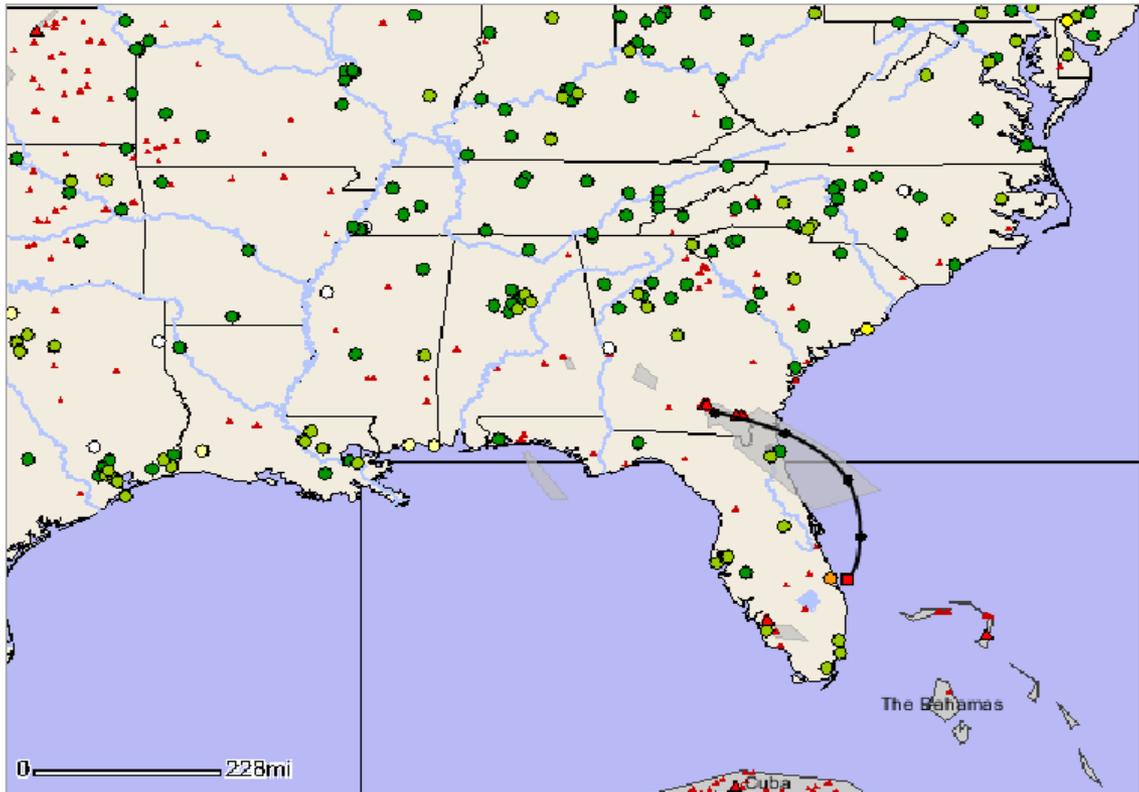
Heights (m agl)

- 200
-
-

Label
(Only appears when map scale is less than 22 mi)

- Hour
- Height (m agl)
- Pressure (mb)
- None

Source:
[NOAA HYSPLIT model](#)
 NAMNDAS models (40km)
 Most Recent: 7 May 2007 00Z
 Model vertical velocity



Options Layers Legend

Select Data

Air Quality Parameter
PM2.5 (UG/M3)

Meteorology Parameter
None

Time Select

Date 4/29/2007

Hour 14 PST

Shift Hour

-24 -8 -1 +1 +8 +24

Apply Changes

Thanks to AIRSIS and Sonoma Technologies for their assistance on ensuring that we had the latest information on this topic.

Questions?

