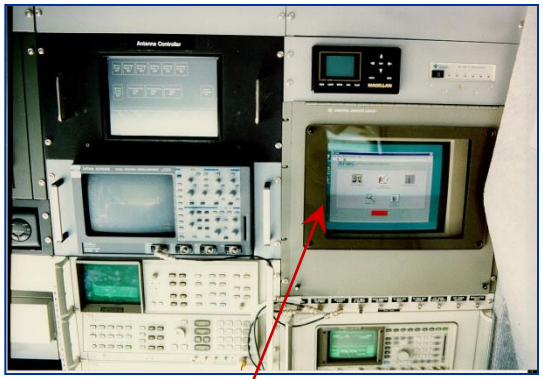
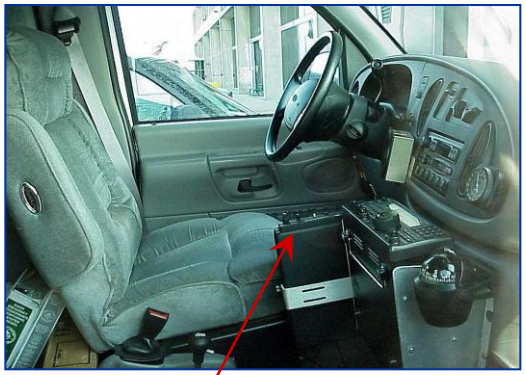
USA NAS RFI Investigation Resources

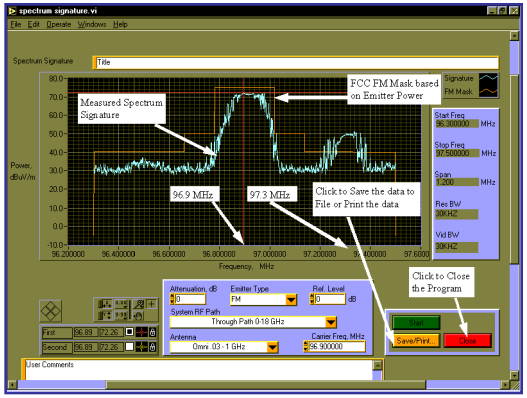
- FAA Personnel and Organizations:
  - ATC Spectrum Engineering Services
    - Headquarters – Washington, DC
    - Technical Center – Atlantic City, NJ
    - Command Center – Herndon, VA
  - Frequency Management Officers (FMO)
    - Three Technical Operations Service Areas
      - Atlanta, GA; Dallas, TX; Seattle, WA
    - Aeronautical Center – Oklahoma City, OK
  - Technical Support Field Specialists (Technicians)
  - Aviation System Standards (Flight Inspection)
    - One International FIO
    - Six National FIOs

USA NAS RFI Resources – RFIM

- **FAA Assets and Software Tools**
- **Radio Frequency Interference Monitoring (RFIM) Vans**







Automated or Manual

Full Equipment Suite

DF Control/Mapping

20 - 3000 MHz

Regional Used mainly by FMOs
Most Complete Measurement System

USA NAS RFI Resources – RFID

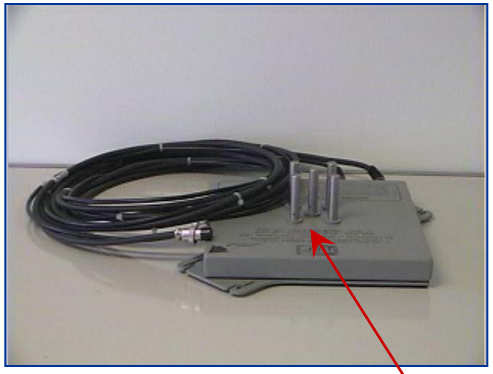
- FAA Assets and Software Tools
- Radio Frequency Interference Detector (RFID) Portable

Service Area

Automated Vehicle mounted Portable mobile DF

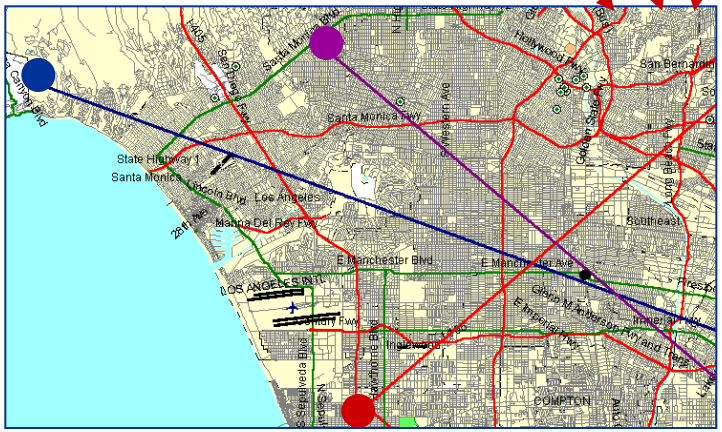
Detection Band 20-2000 MHz

29 RFID Systems



GPS DF Antenna

L1 - 1575.42 MHz



USA NAS RFI Resources – K95-103

- **FAA Assets and Software Tools**
- **Radio Frequency Interference Kit (K95-103) Handheld**

District Field Offices
33 Offices in the FAA NAS

K95-103 Detection Coverage
20 – 3000 MHz
Typically 2 miles

Approx. 300
K95-100 Systems

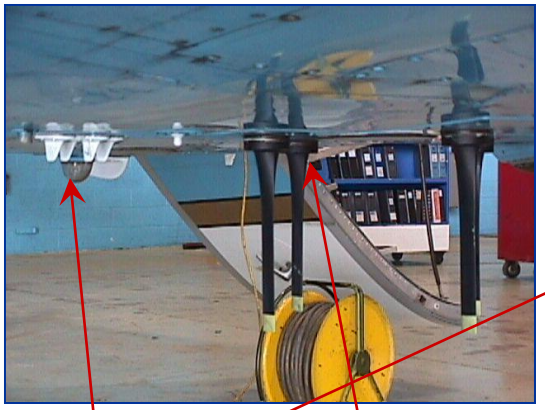
GPS DF Antenna
L1,L2,L5

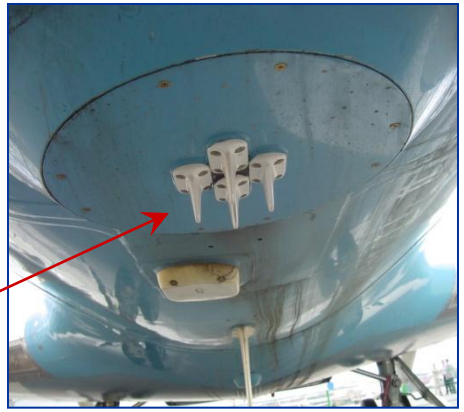
VHF Yagi Antenna
Directional

Service Area

Most Cost effective First choice instrument for technicians

USA NAS RFI Resources – NASE-RFI





AVN

Flight Check NASE/RFI Program to assist in locating RFI/GPS sources

First Choice when High Altitude PIREPS ONLY

DF Control/Mapping Operated Automation

GPS DF Array & VHF DF Array L1,L2,L5 & 108 - 174 MHz

USA NAS RFI Resources – IMDS

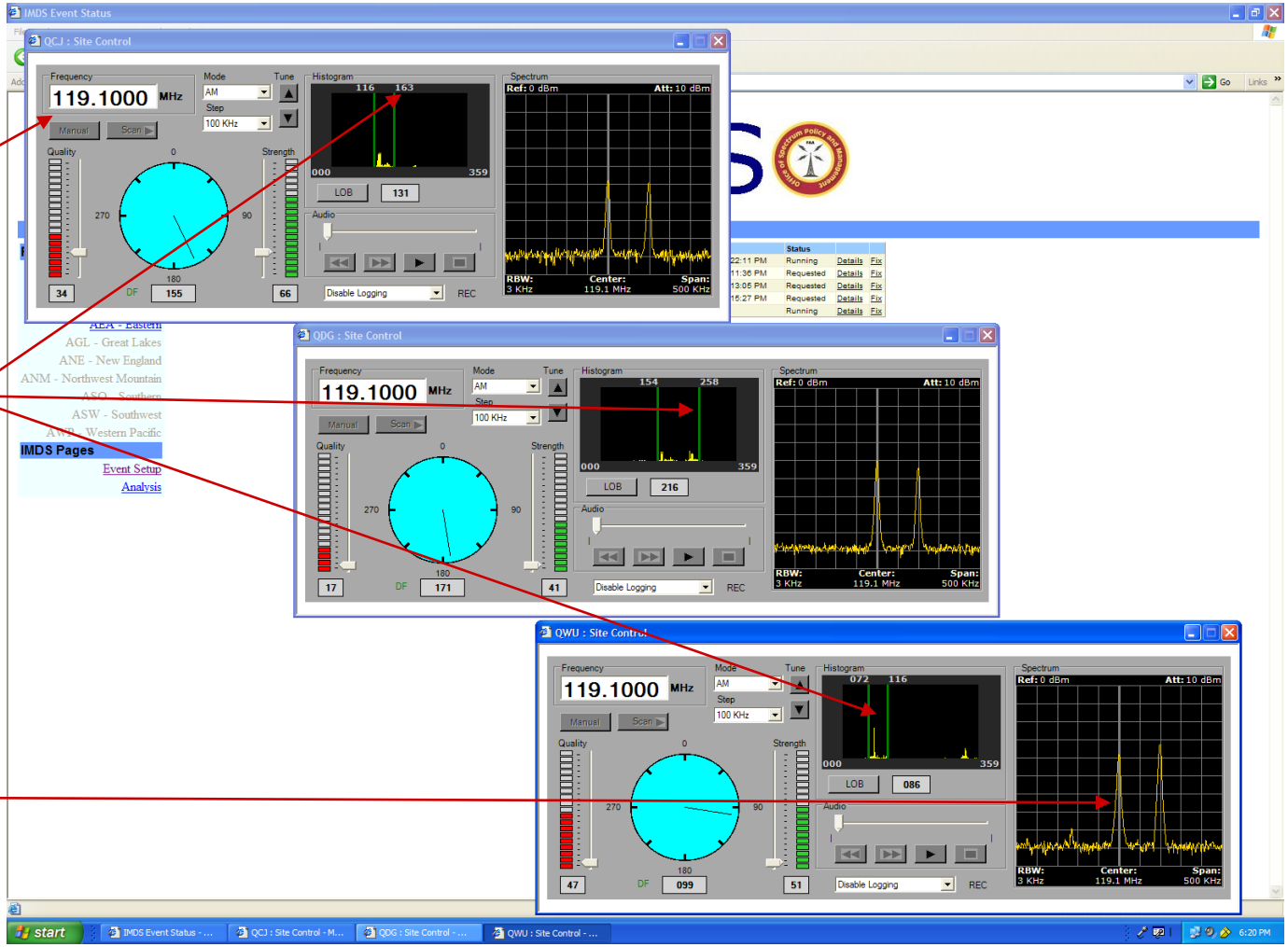
WEB IMDS

Receiver Tuned Frequency

DF Processor Bearing Averaging Triangulation

Multiple Audio Playback Capability

Synchronized Spectrum Analyzer Spectral View



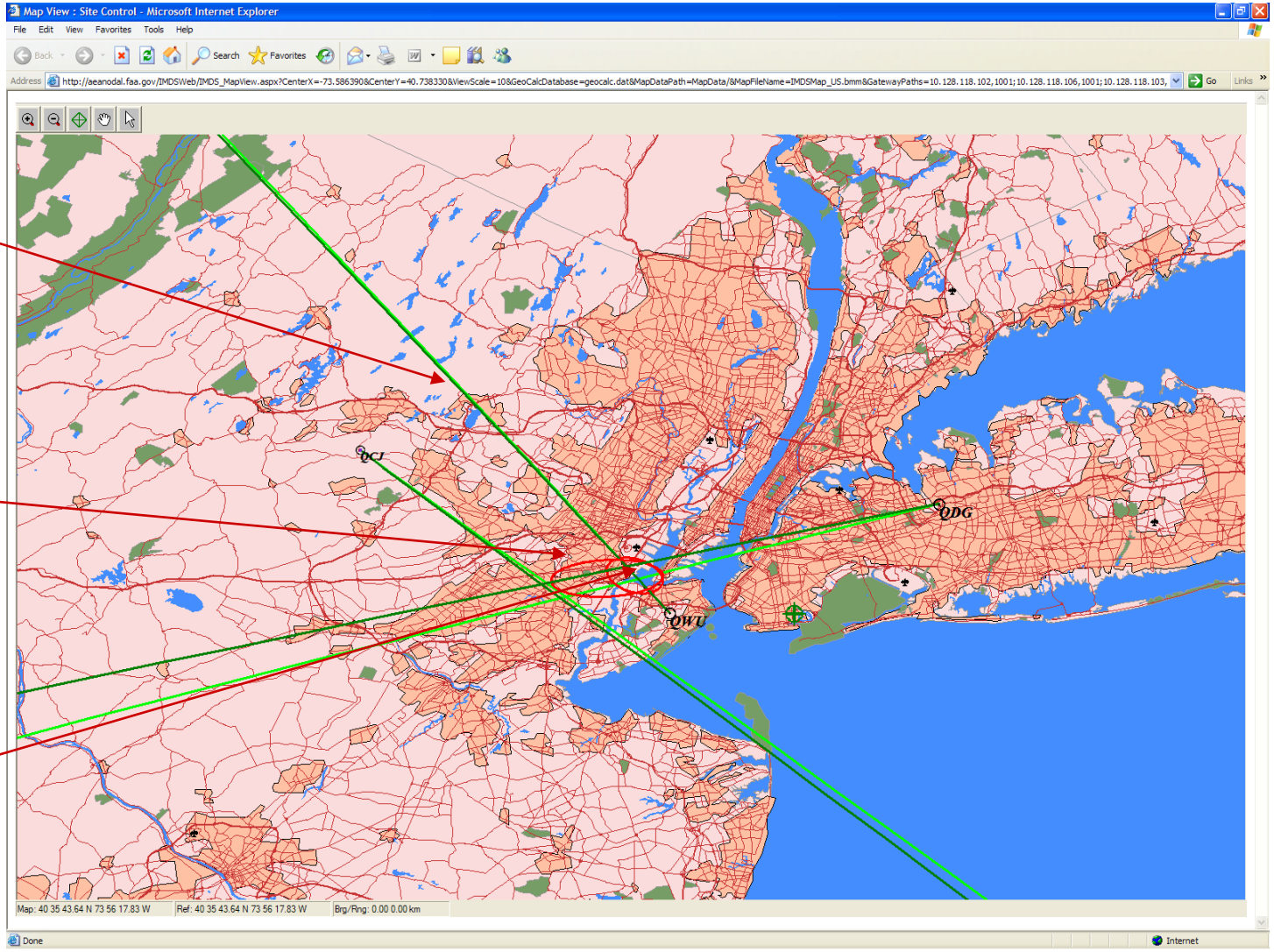
USA NAS RFI Resources – IMDS

WEB IMDS

Triangulated Bearing Averages Overlay on Map

Increases Fix Calculation Ellipse Accuracy

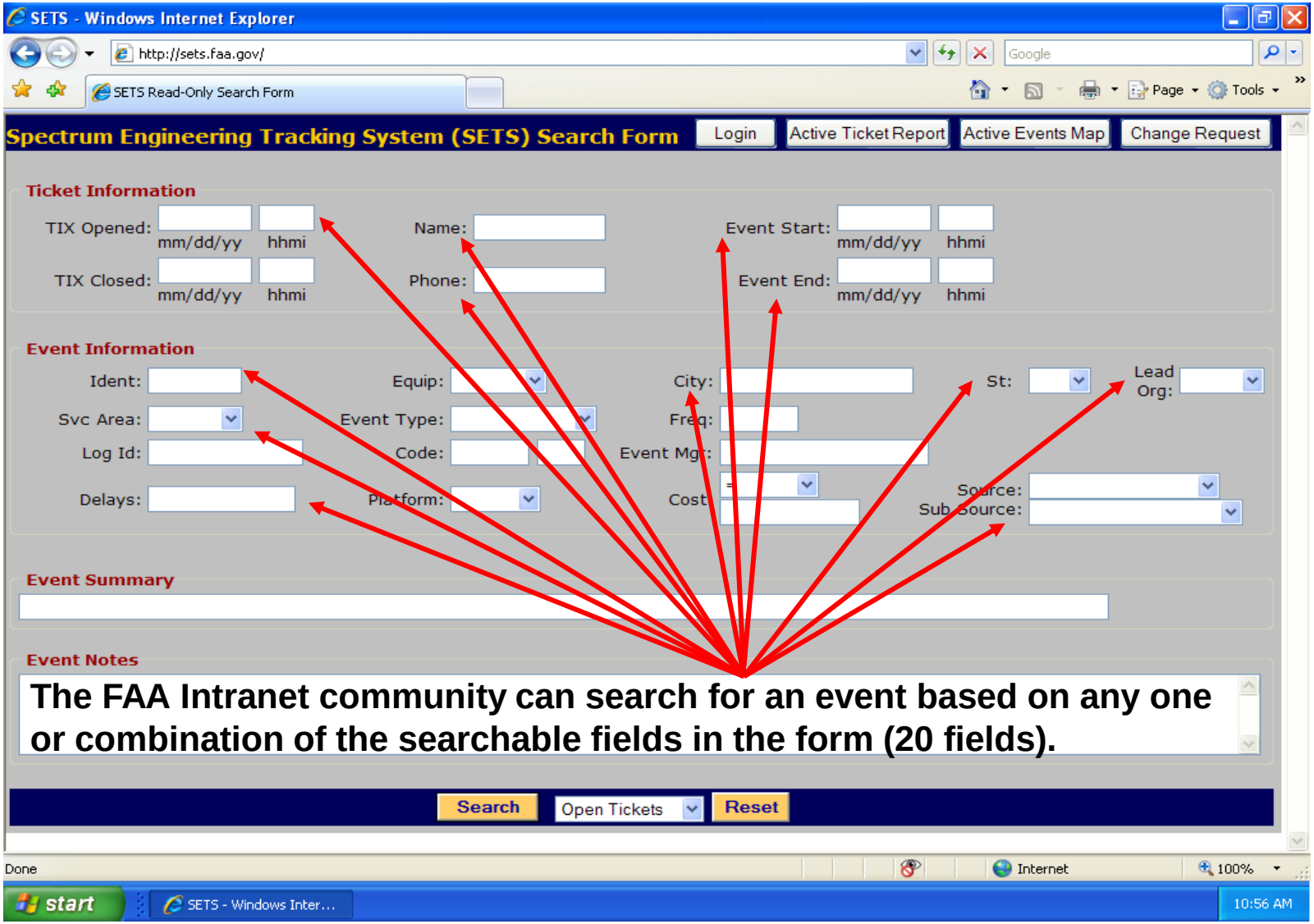
Multiple Ellipse Calculation for Smaller Ellipse



Software Engineering Analysis Tools

- FAA ATC Spectrum Engineering Services:
  - Spectrum Engineering Tracking System (SETS)
  - Automated Frequency Manager (AFM)
  - Flight Explorer Aircraft Situation Display (FE ASD)
  - Integrated Common Analytical Viewer (iCAV)
  - GPS Interference Navigation Tool (GiANT)
  - Enhance Traffic Management System (ETMS)
  - Space Loss Calculator (SPLC)
  - Google Earth 3-Dimensional Analysis
  - Government Master File (GMF)

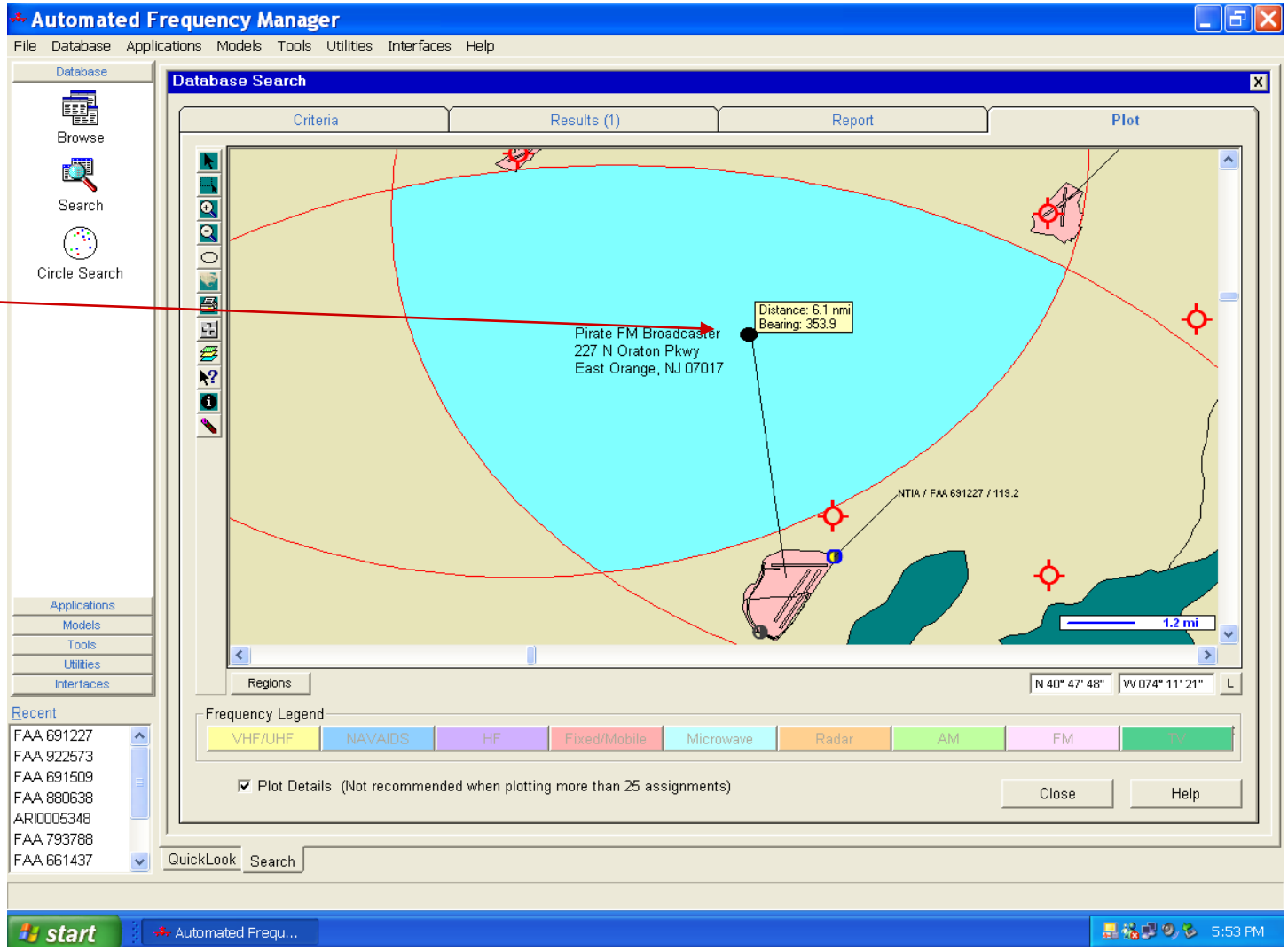
Spectrum Engineering Tracking System



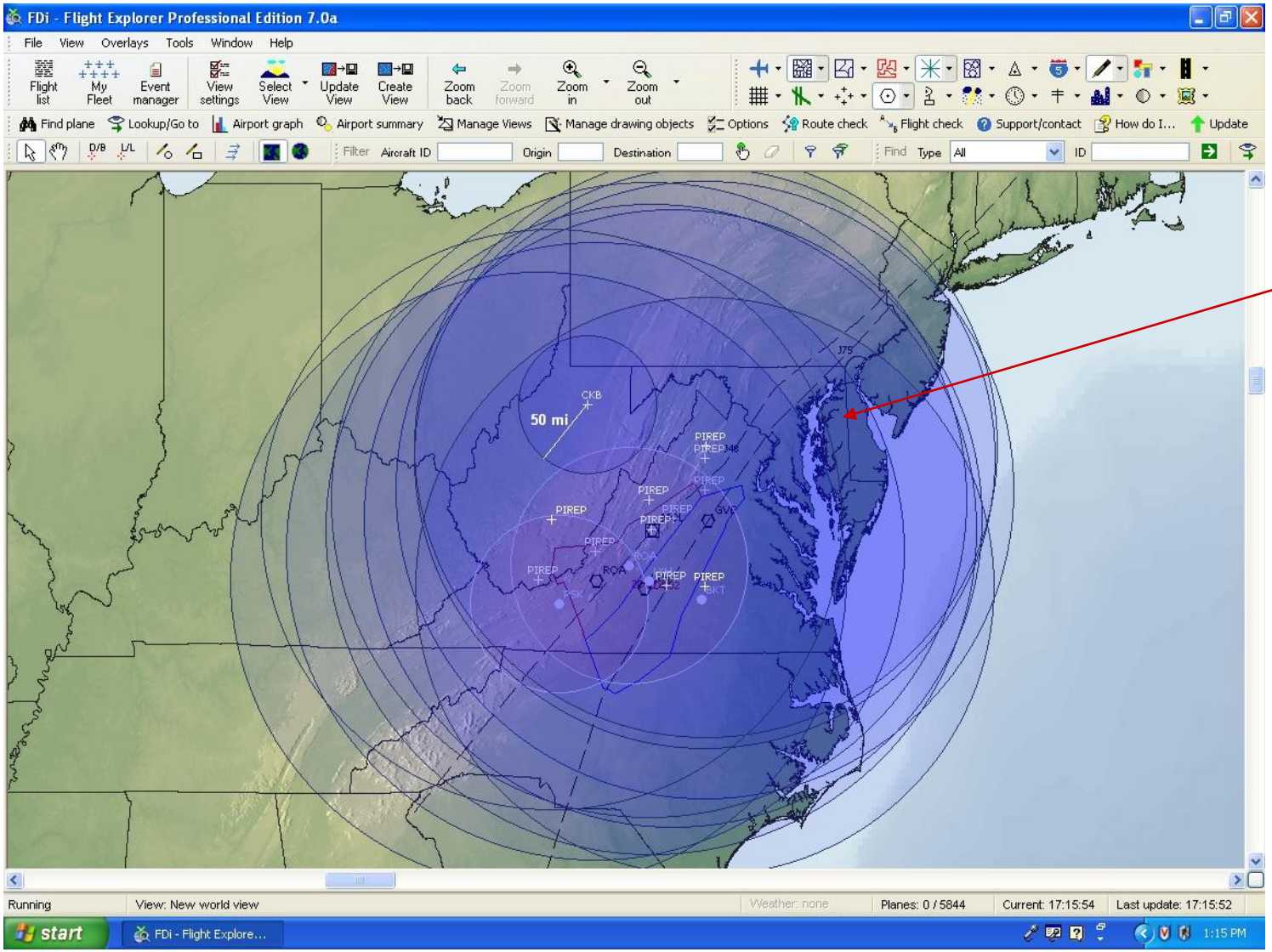
Automated Frequency Manager

VENN Area Centric Approximation

Provides a High Probability of Source Location



Flight Explorer Aircraft Display



Cumulative RLOS with Aircraft or Drawing Objects Range Rings Tool

VENN Technique with FE ASD

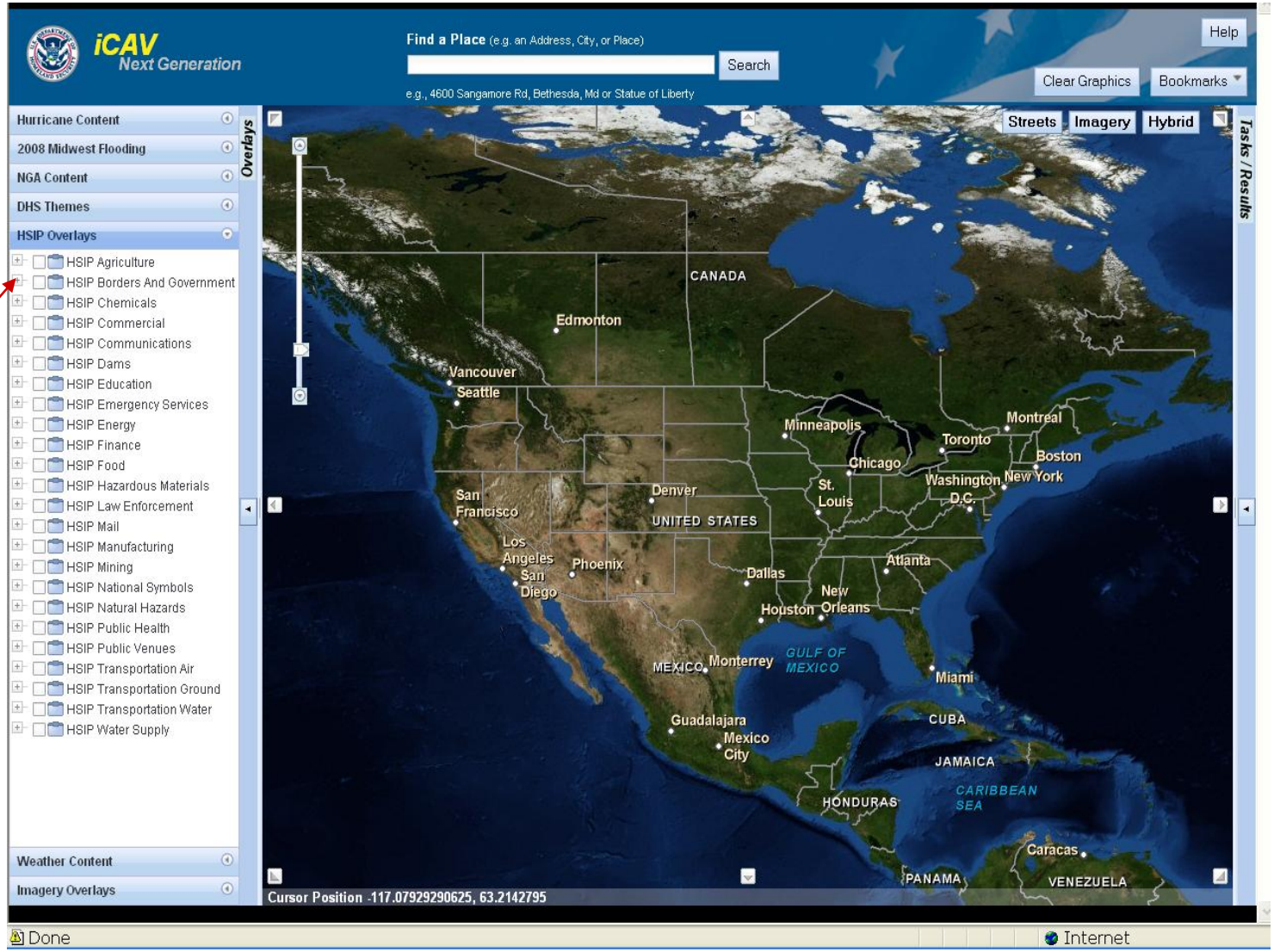
Optional for Seamless Support Requirement

Integrated Common Analytical Viewer

Department of Homeland Security Geographical Tool

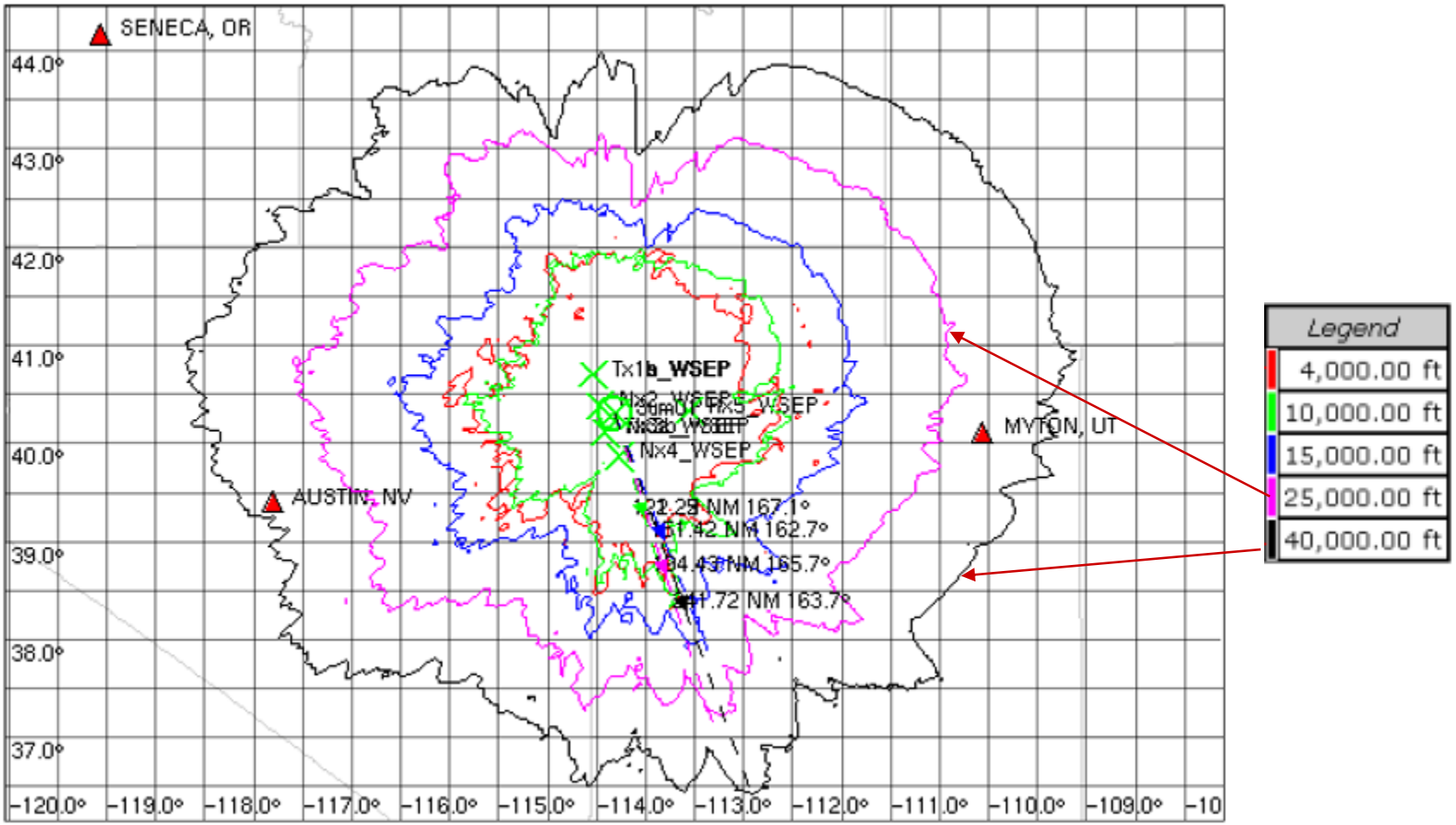
Most Extensive Layer Data Sets

Event Common Operational Picture



GPS Interference Navigation Tool

Airborne Receivers

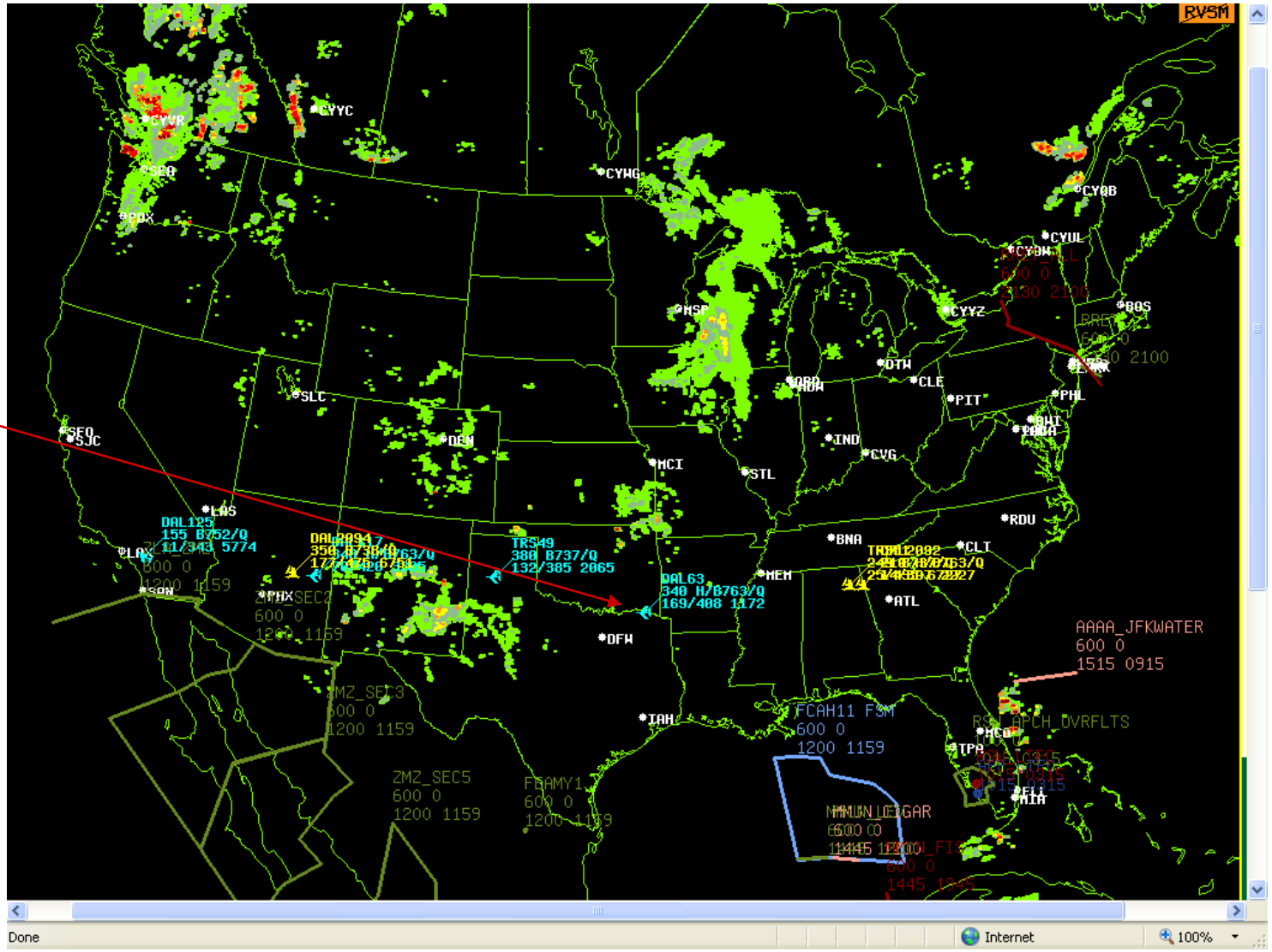


Enhance Traffic Management System

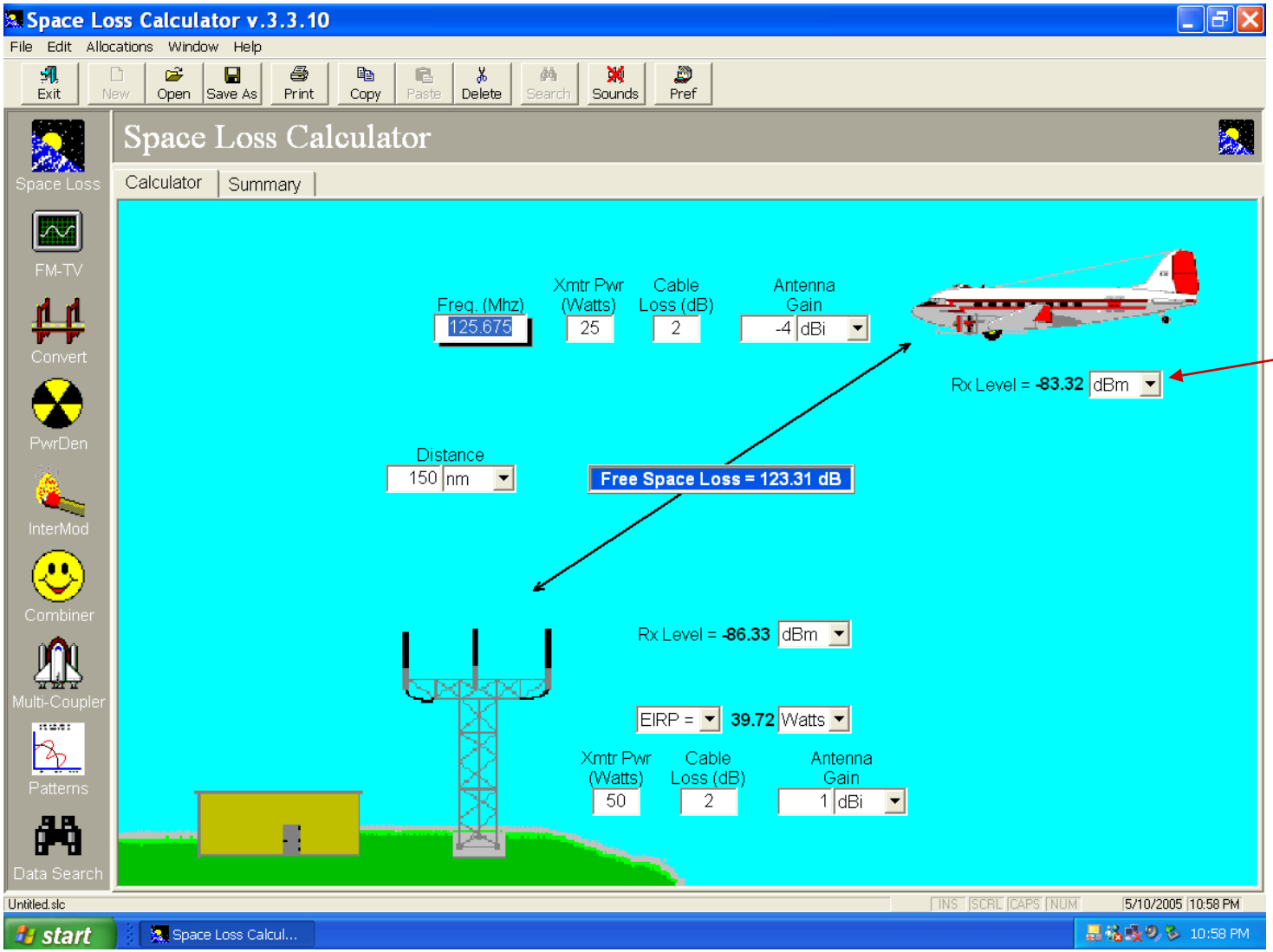
FAA Traffic Flow Management

Commercial Military and FAA Flight Check

Real Time Weather and TFM Initiatives



Space Loss Calculator Analysis



Propagation Loss

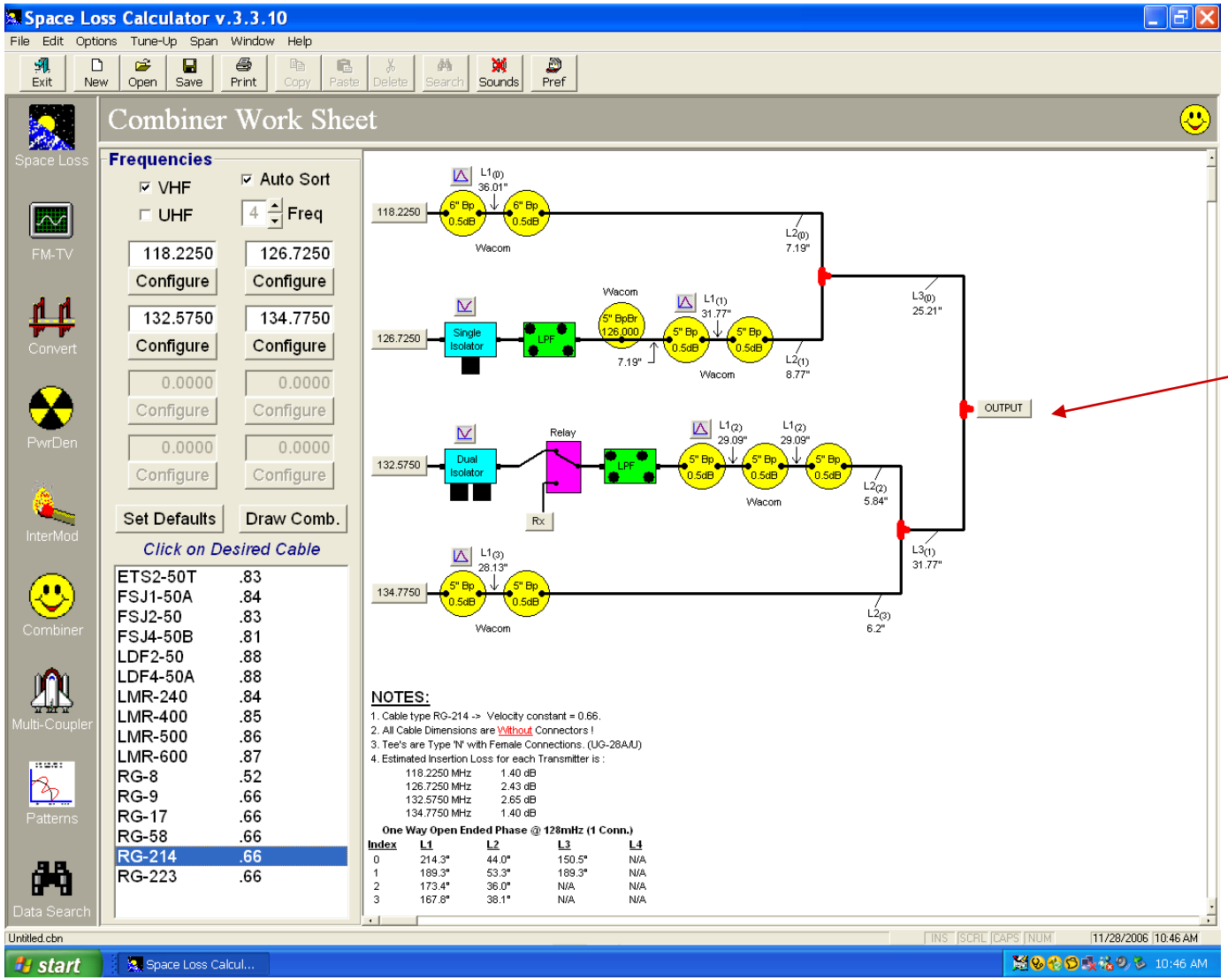
Determine the potential signal levels received by Aircraft

Analyze:

Intermodulation
FM Worksheet
Site Specs
Soil Conductivity

Optional for Seamless Support Requirement

Space Loss Calculator Filter Design



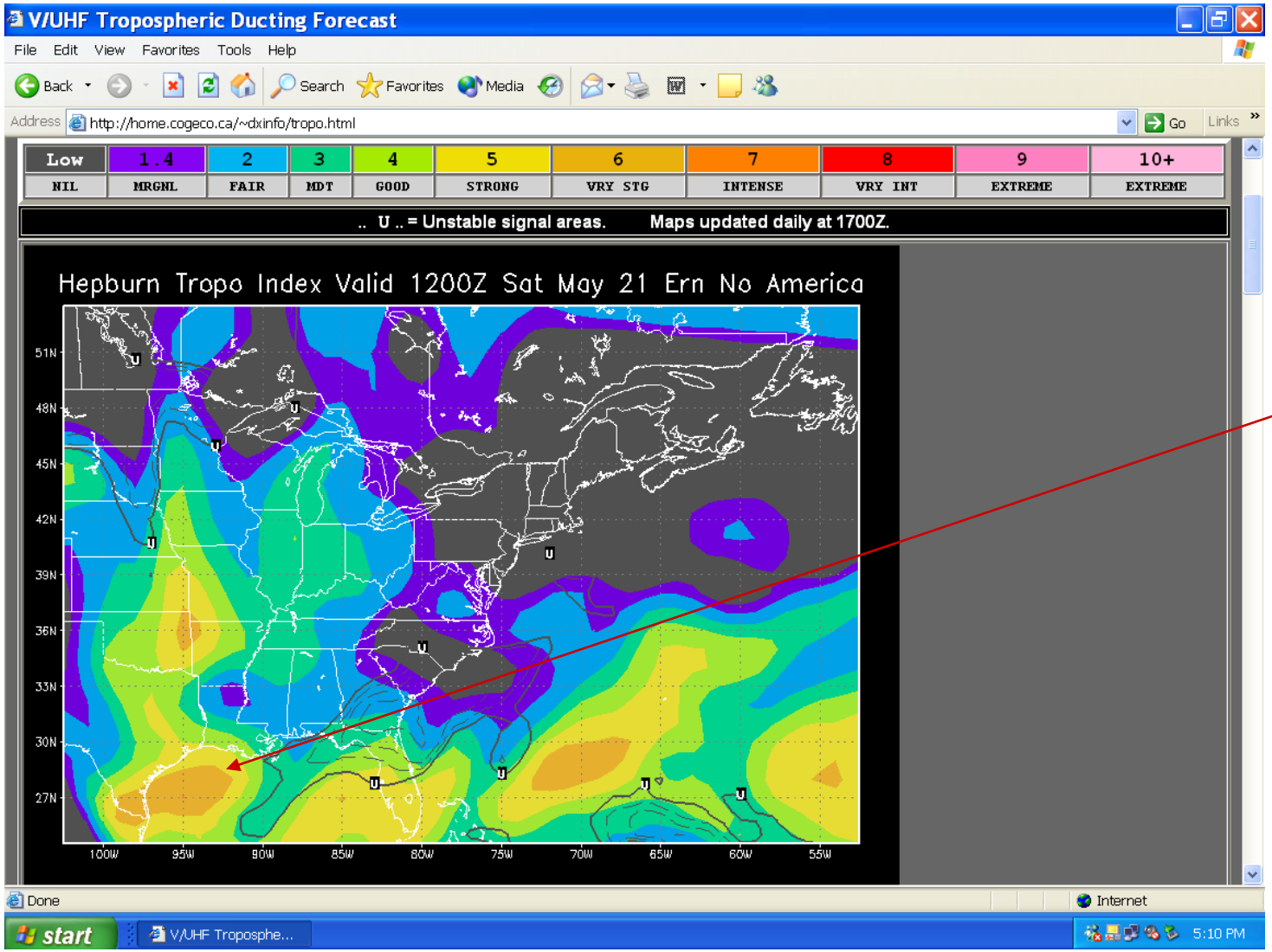
Combiner Design

Determine the filter parameters to avoid site RFI

Analyze:

Intermodulation
FM Worksheet
Site Specs
Antenna
Propagation

Hepburn Ionosphere Skip Analysis

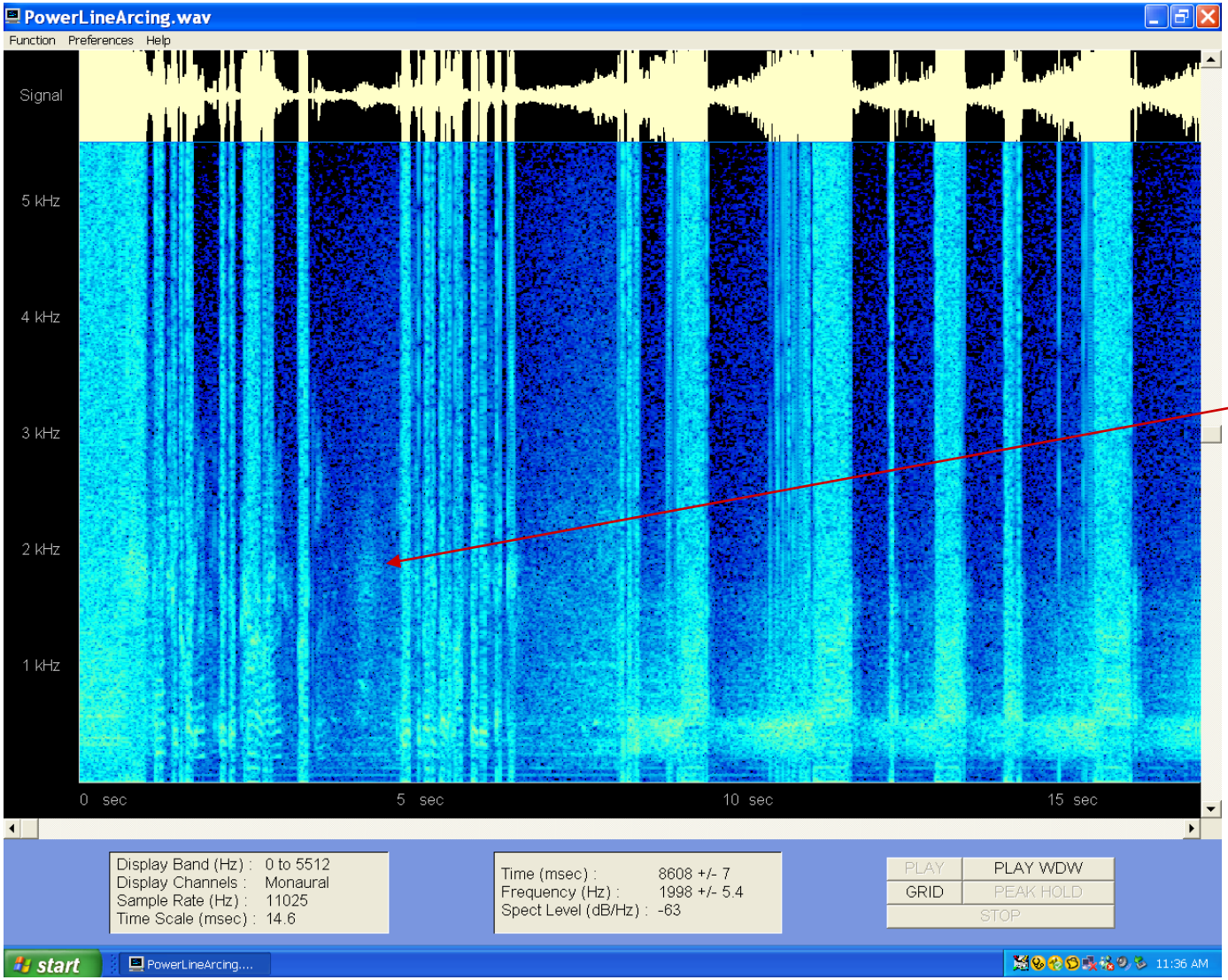


Hepburn VHF Ionospheric Skip Intensities

Also Radio Blackouts

Tropospheric Ducting

Spectrogram Audio Analysis

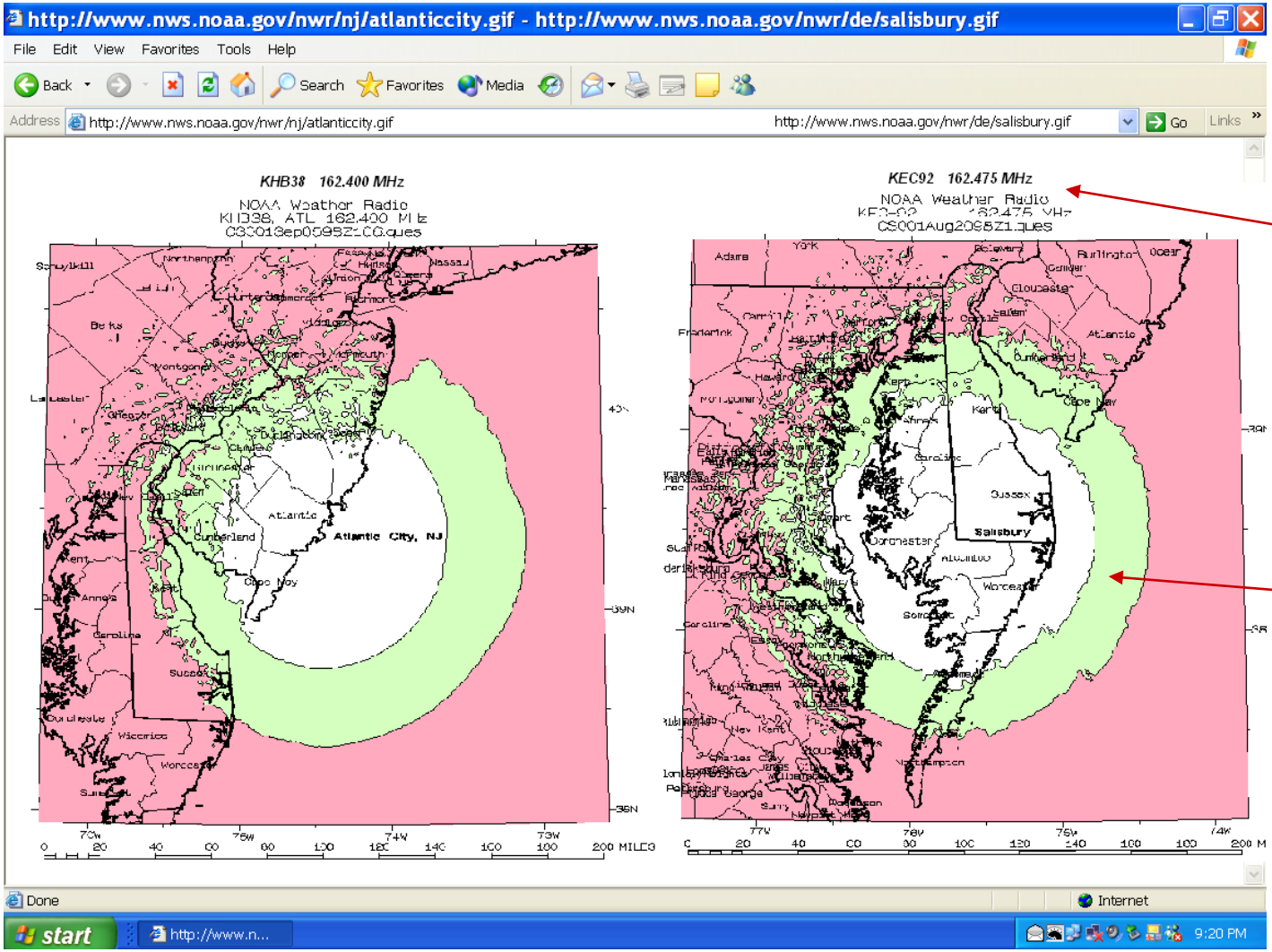


Audio Detection Visual Intensities

Used for Matching with known sources

Audio Spectral Views

Weather Radio Transmitters Analysis



Station Call ID Freq.

Transmit Power Coverage Area

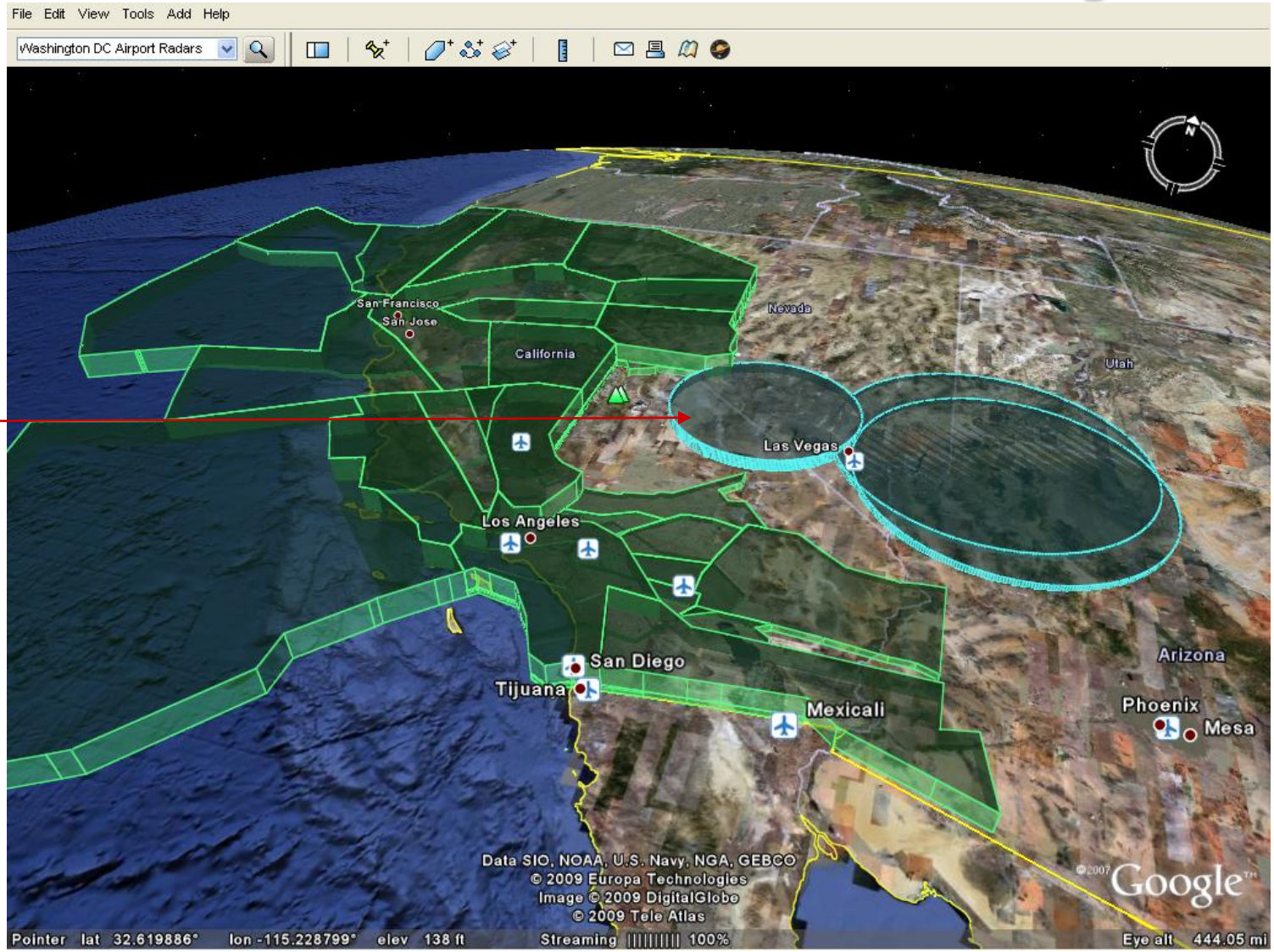
Optional for Seamless Support Requirement

Google Earth 3-Dimensional Analysis

FAA Airspace Sector 3D

Protected Service Volume Visualization

Propagation Models based on ICAO standards



Any Questions ?

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