



# National Weather Service & General Aviation

## EAA AirVenture Oshkosh

**Brig. Gen. David L. Johnson, USAF (Ret.)**  
NOAA Assistant Administrator for Weather Services  
& National Weather Service Director



*"America's Weather Enterprise: Protecting Lives, Livelihoods, and Your Way of Life"*



**T-43**



**MH-53J**



**C-20**



**C-21**



**C-130**



**F-16**



**F-15**



**MH-60G**



**C-9**



"Good" Weather?





# The Nation's Risks

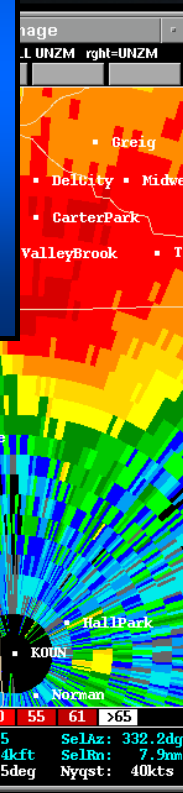
## Extreme Climate, Weather, and Water

- Provide climate, water, weather forecasts and warnings to protect **life** and **property** and enhance the economy

- 76 billion observations
- 4 million aviation forecasts
- **68,127** aviation warnings

### A Typical Year Brings:

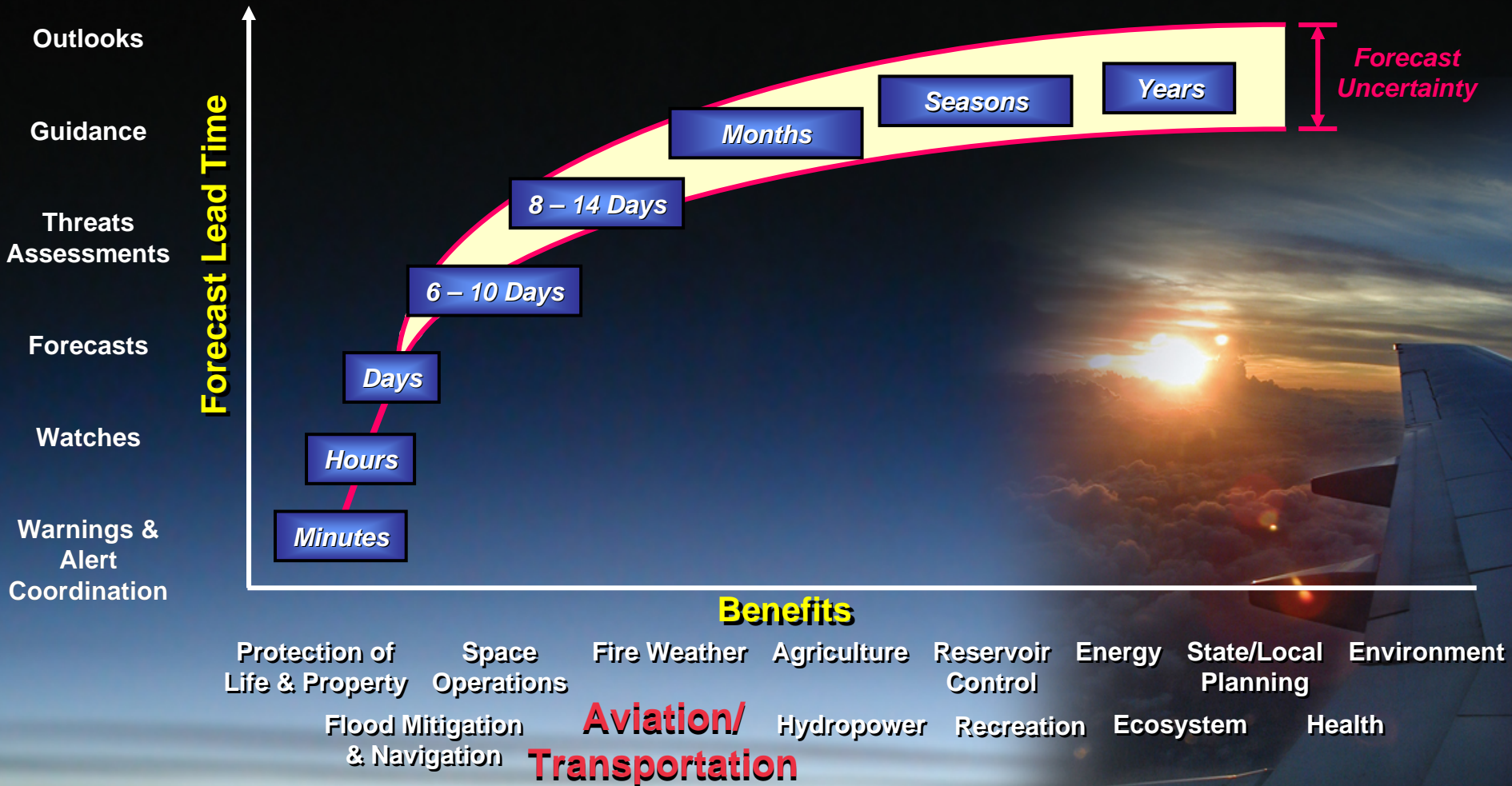
- 7 Hurricanes
- 1,000 Tornadoes
- 5,000 Floods
- 10,000 Violent Thunderstorms
- Drought Conditions
- 500 Deaths; 5,000 Injuries; \$14 Billion in Losses





# NWS Overview

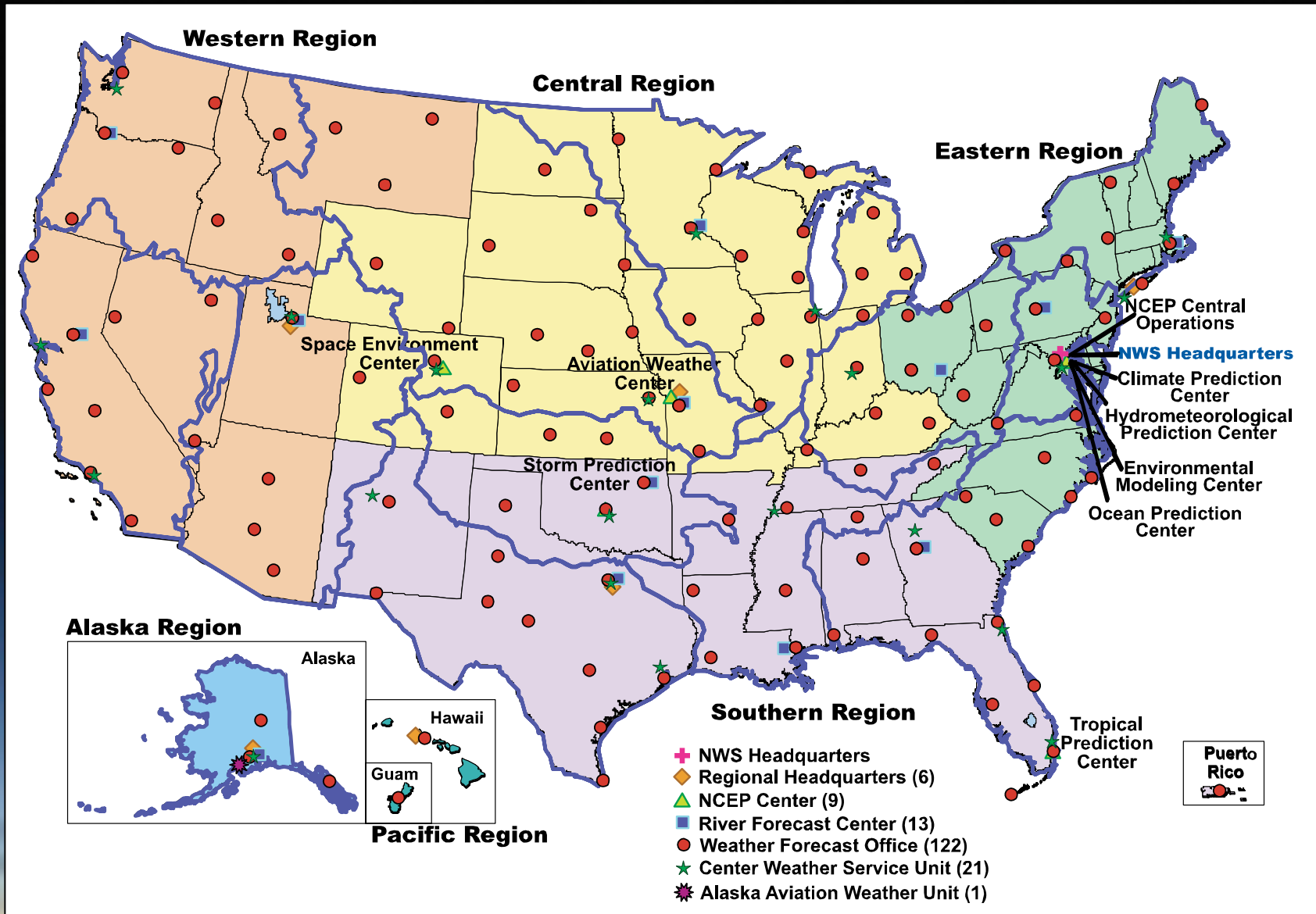
## Seamless Suite of Products





# NWS's Aviation Services

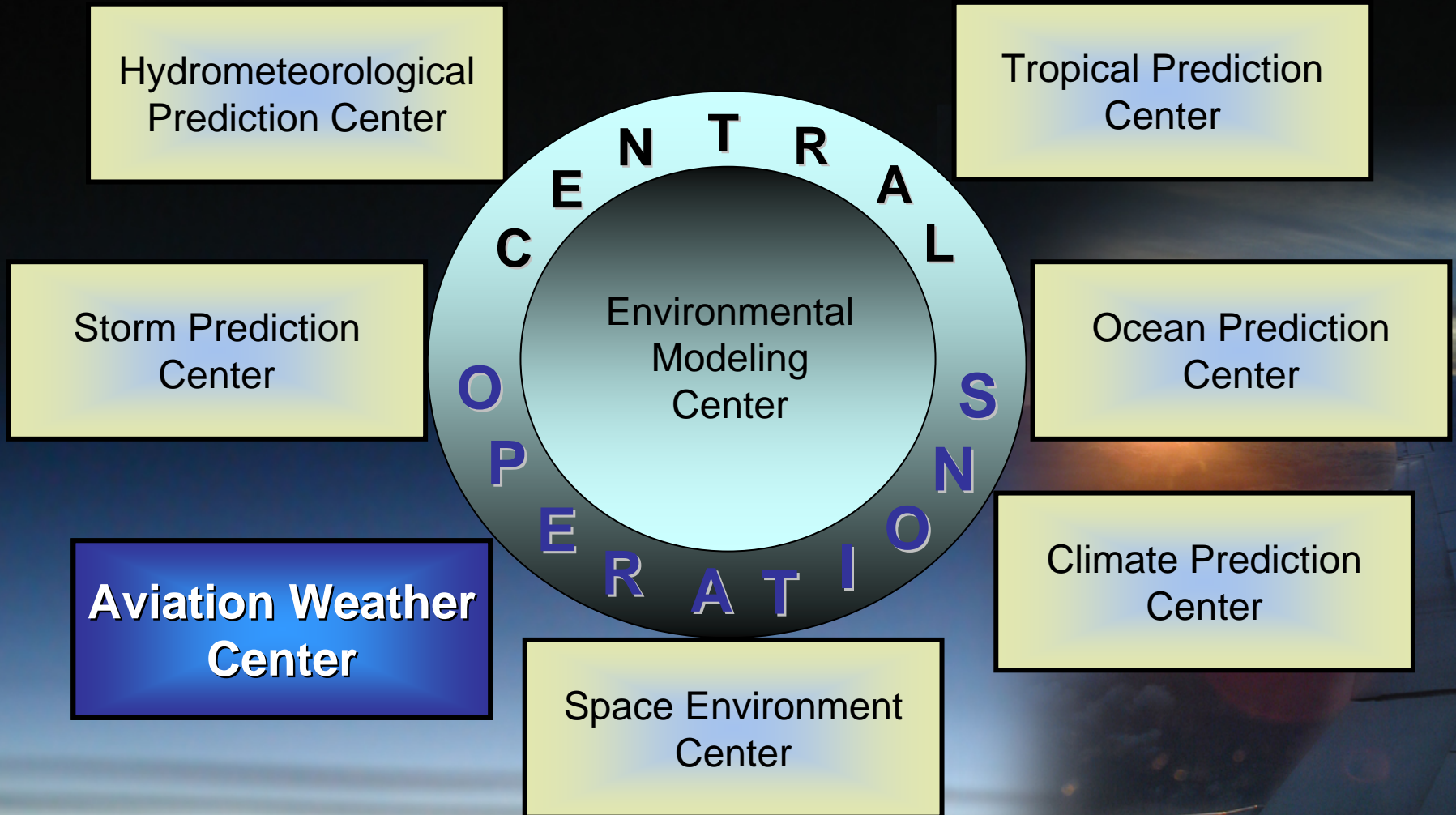
## Facilities





# NWS's Aviation Services

## National Centers for Environmental Prediction



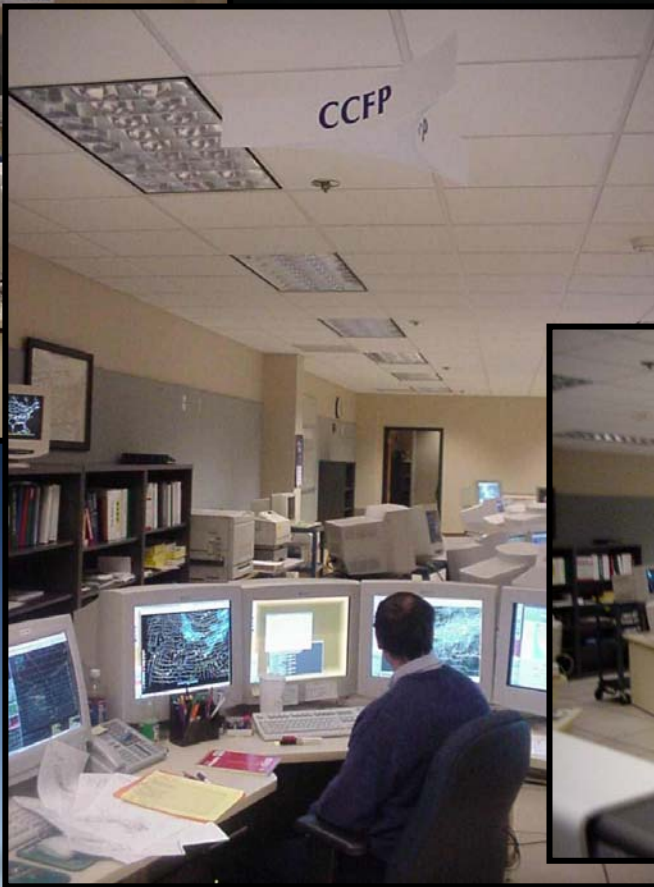


# NWS's Aviation Services

## Aviation Weather Center



7X24 Surveillance



CCFP



Global Graphics



Area Forecasts





# NWS's Aviation Services

## CWSU & ARTCC





# NWS's Aviation Services

## Extensive Observation System

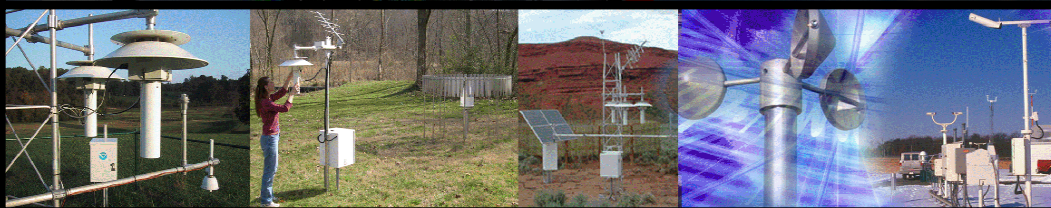
### Discipline Specific View

### Whole System View

Atmospheric Observations



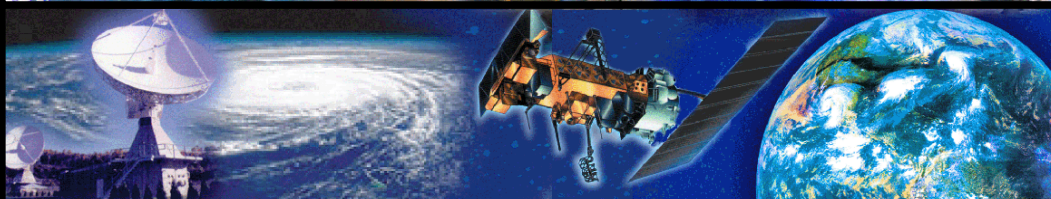
Land Surface Observations



Ocean Observations



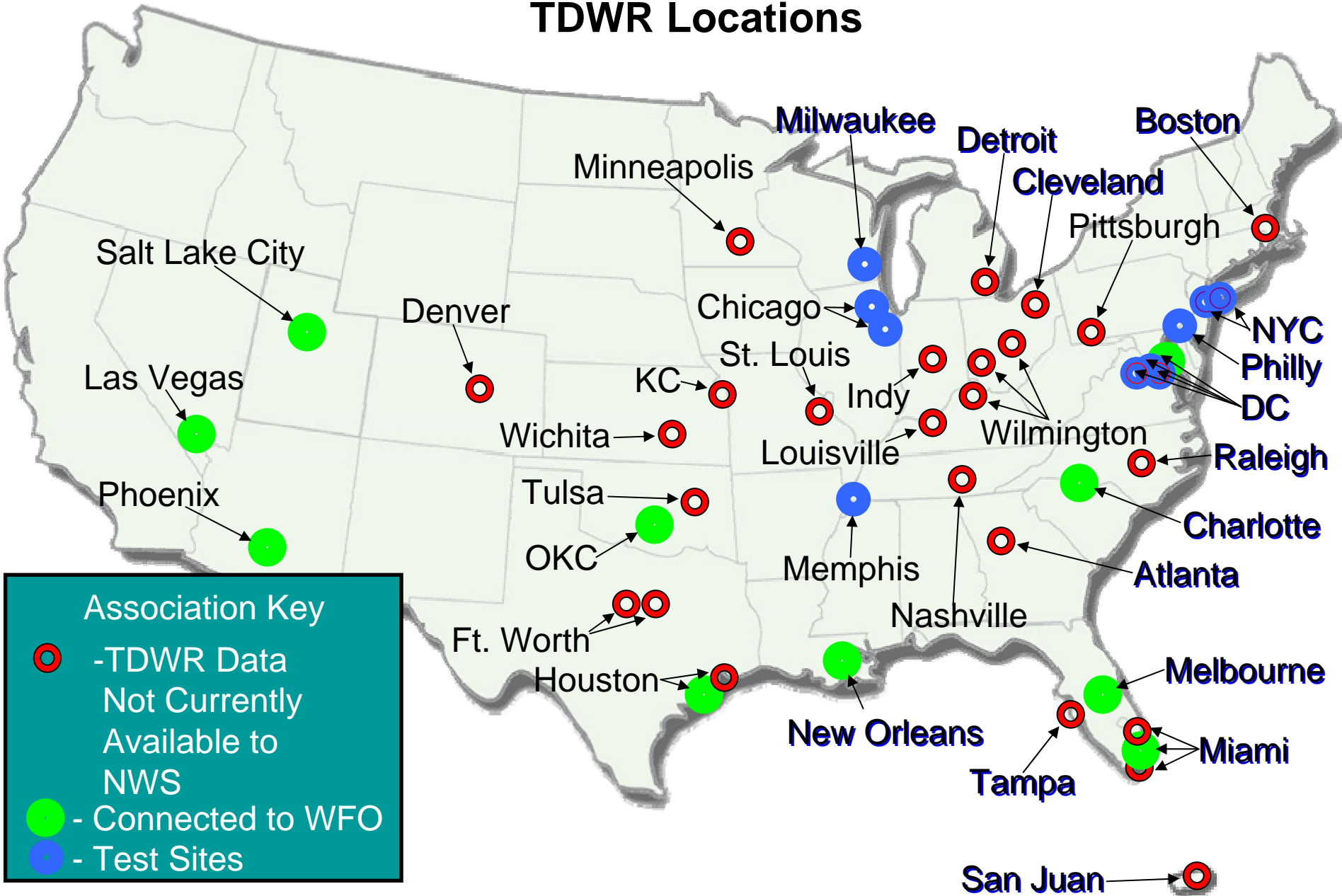
Space Observations





# NWS's Aviation Services

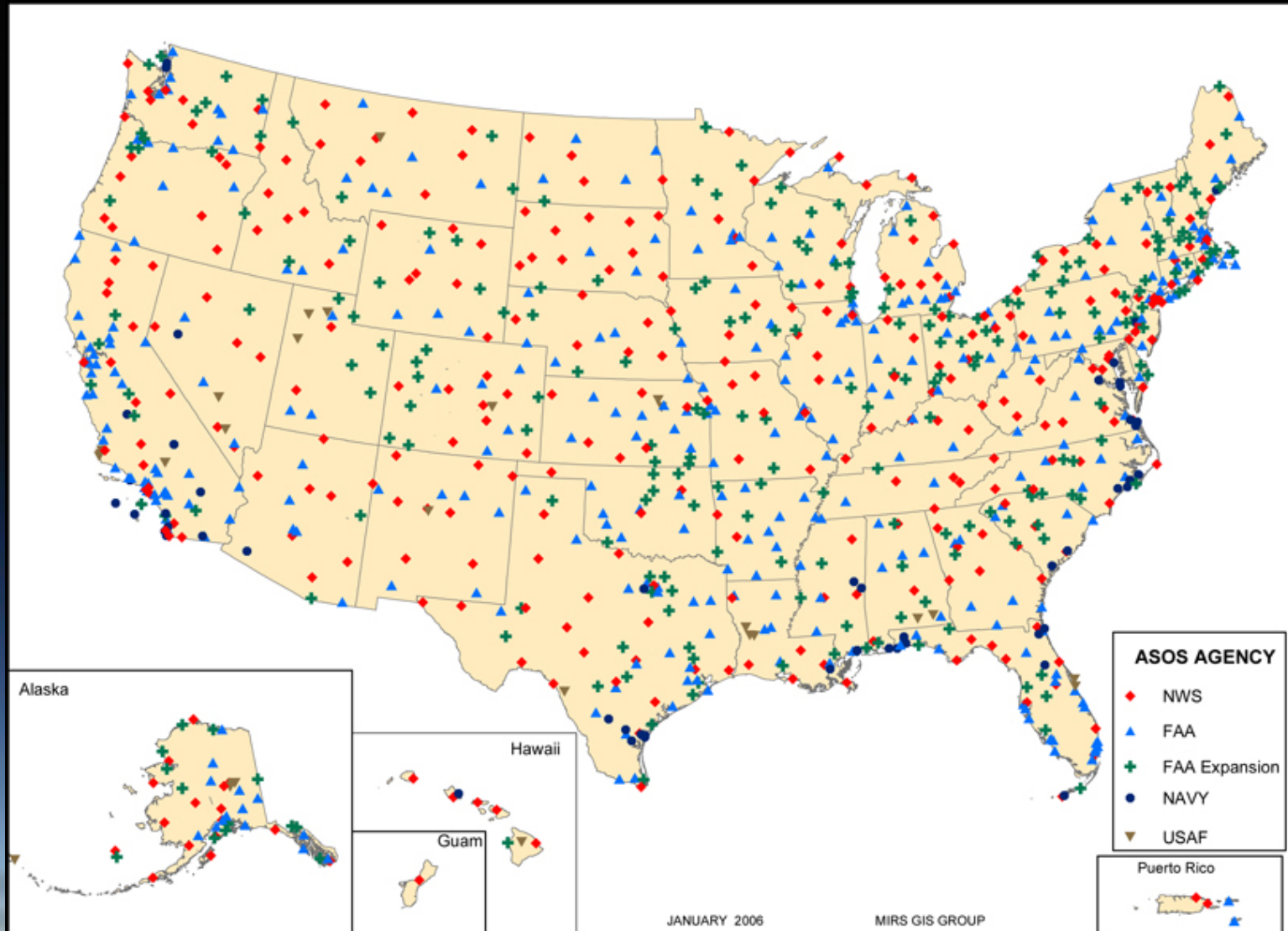
## TDWR Locations





# NWS's Aviation Services

## ASOS Sites

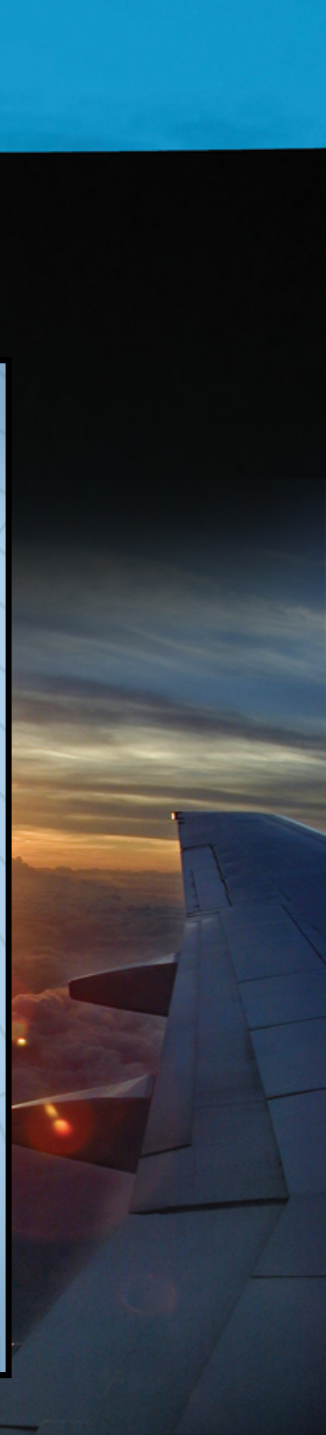
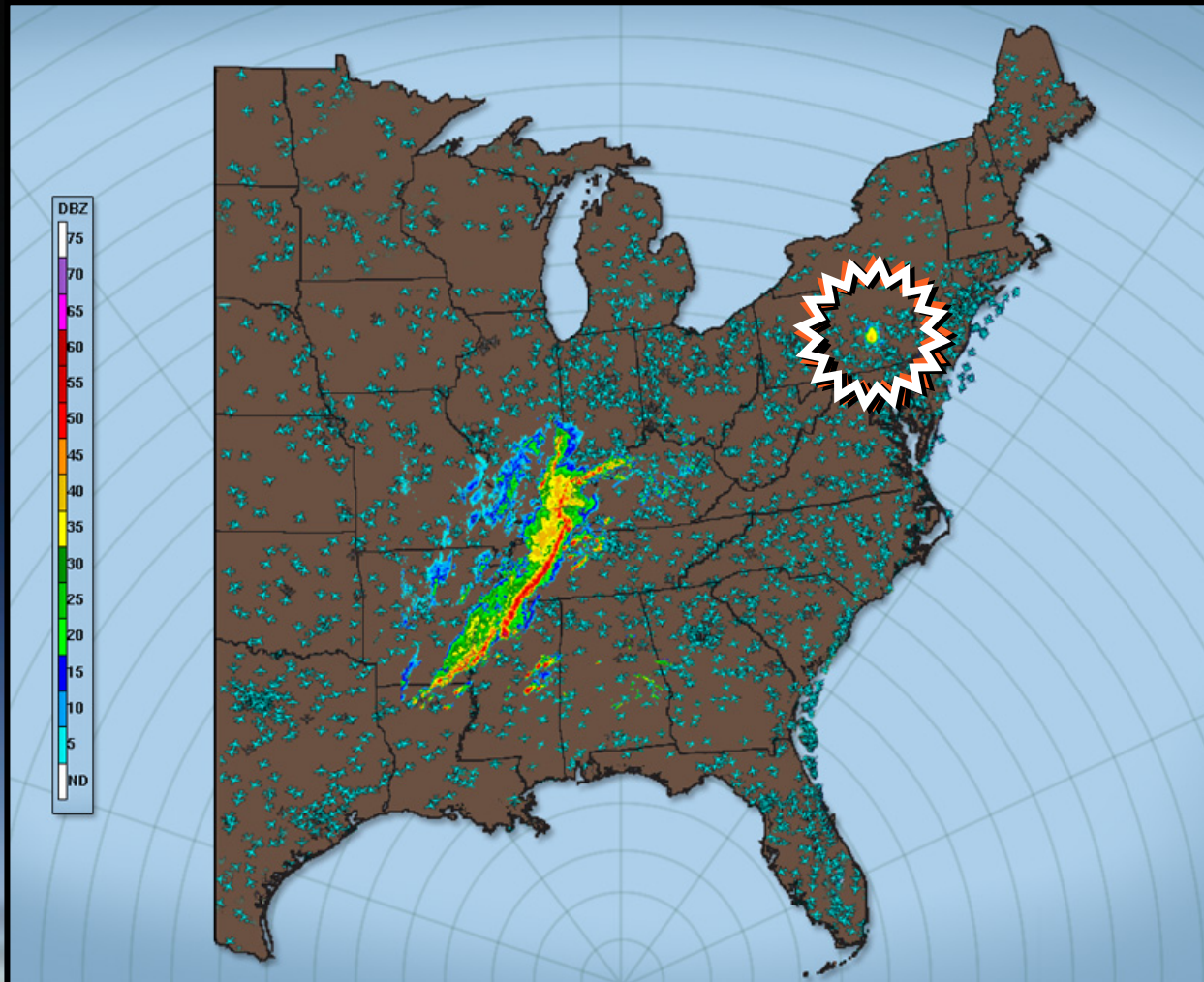




# NWS's Aviation Challenges

## *Weather & Traffic Density*

### QUIZ





# NWS's Aviation Challenges

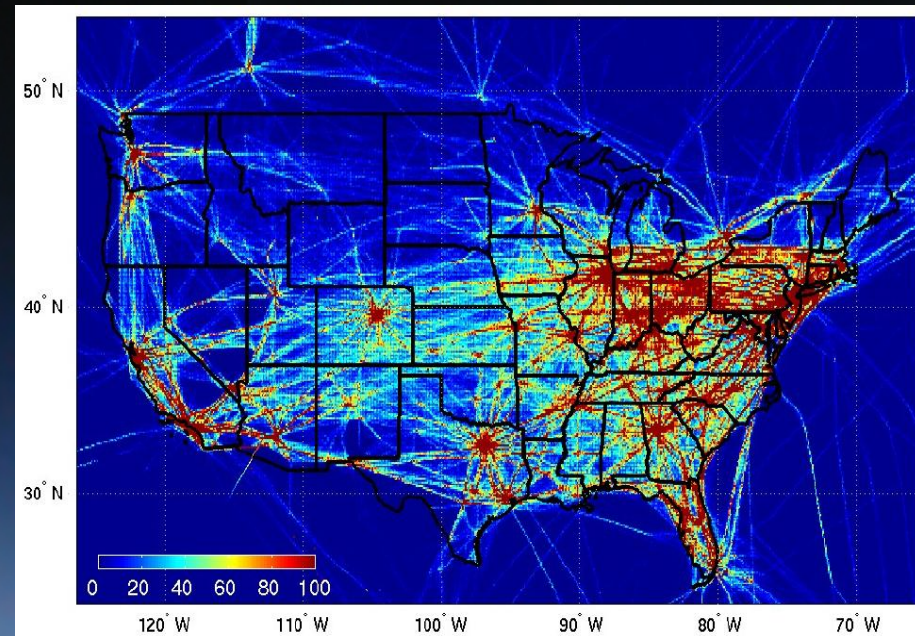
## Weather & Traffic Density

### Aviation Weather Risks

#### Thunderstorm Impacts

- Thunderstorms cause fatalities and severe injuries at a cost of \$8.1M/yr
- Convection responsible for 40% of delay costs: \$840 – 920 M/yr
- Approximately 40% of thunderstorm delay possibly avoidable (\$336-368 M/yr)

### US Air Traffic Density





# NWS's Aviation Services

## *The Future*

**We are working to overcome these challenges.**

- A. Joint Planning & Development Office & Next Generation Air Transportation System**
- B. NWS Aviation Service Improvement Efforts**





# NWS's Aviation Services

## *The Future*

### A. Joint Planning & Development Office & Next Generation Air Transportation System

**Next Generation Air Transportation System**  
Joint Planning & Development Office

*JPDO Making Change Happen*



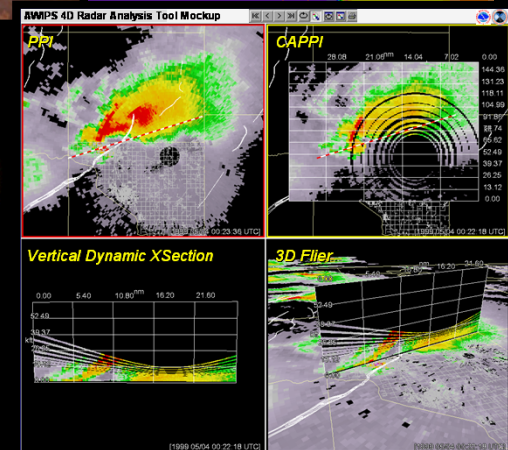
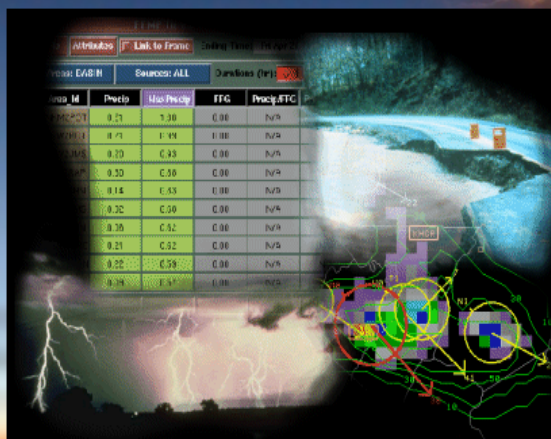
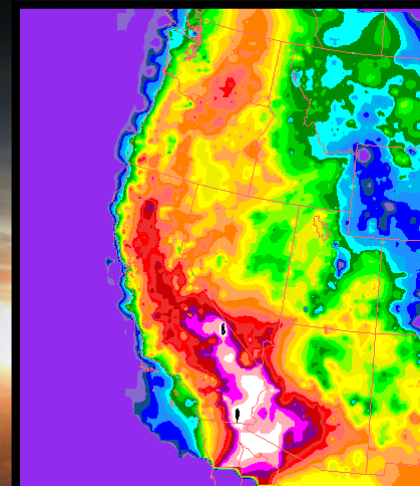


# NWS's Aviation Services

## The Future

### B. NWS Aviation Service Improvements

1. Improved NWS Aviation Operations
2. New Observations Capabilities
3. New Products and Services
4. New Training & Availability





# NWS's Aviation Services

## *The Future*

### 1. Improved NWS Aviation Operations

- Improve end-to-end forecast process
  - *Right concentration of people and technology*
  - *Develop relevant products*
  - *Improve dissemination*
- Integrate research/development and training
  - *Accelerate science improvements to operations*
- Improve Aviation Weather Program management
  - *At all levels.....*





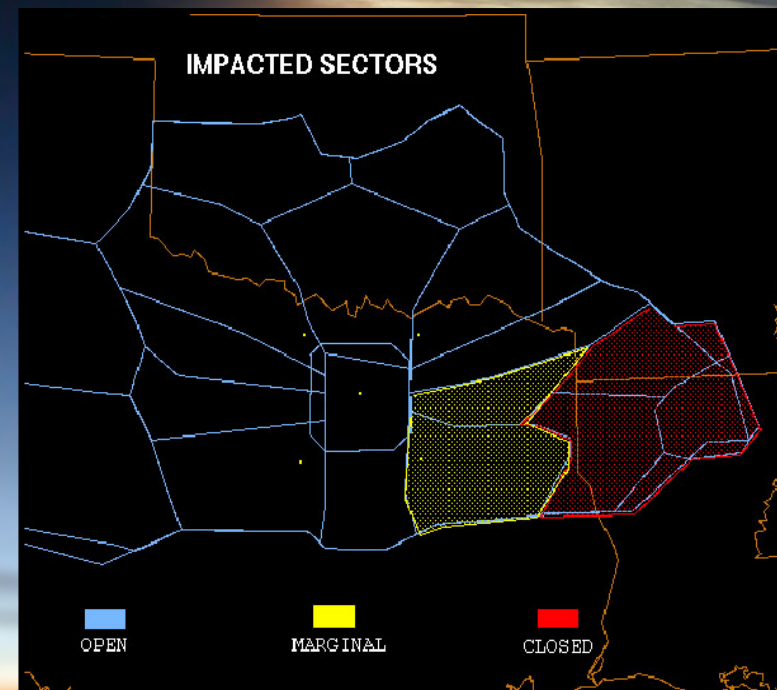
# NWS's Aviation Services

## *The Future*

### 1. Improved NWS Aviation Operations

#### – Pilot Project

- *Decision Aid Products—What's the impact of weather on operations?*
- *End-to-end forecast process*
- *Remote briefings support on-demand info. needs*
- *Human interaction with automated techniques*





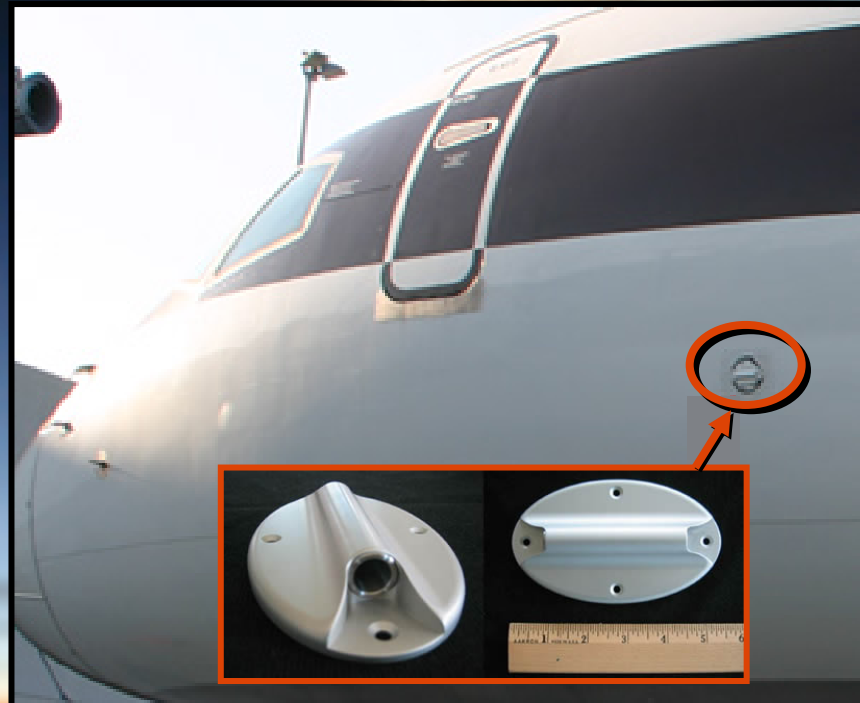
# NWS's Aviation Services

## *The Future*

## 2. New Observations Capabilities

### – New water vapor observations from aircraft

- *Plan to add 50 sensors this year*
- *FY 2007 (requested) 125 additional sensors*
- *Fraction of cost compared to rawinsonde*
- *Provides offset to enable funding of 4D database*



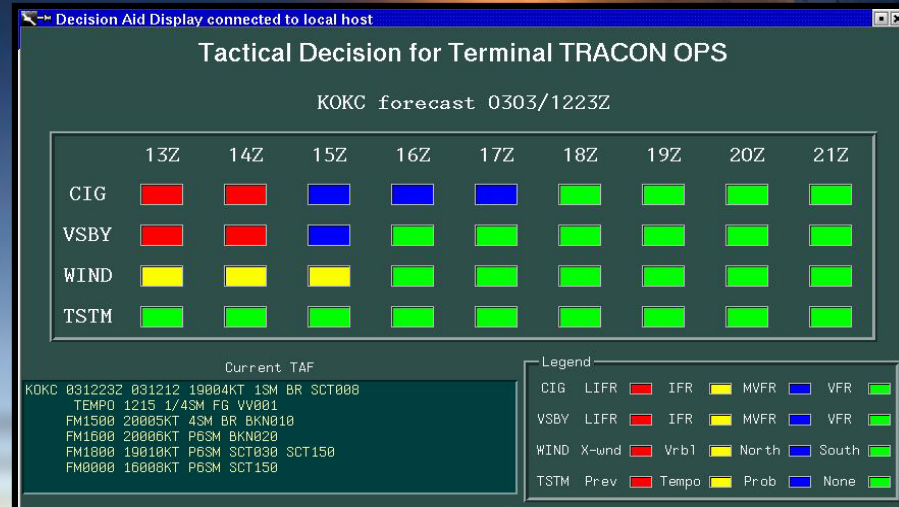
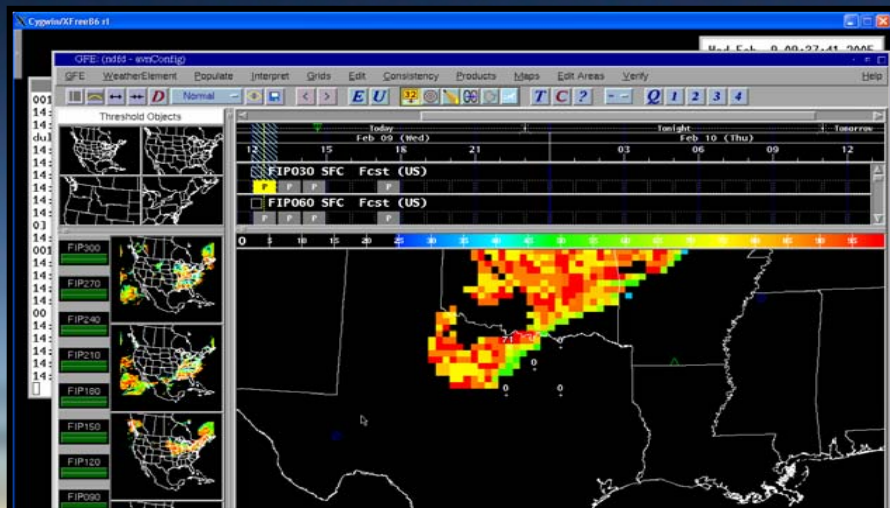


# NWS's Aviation Services

## The Future

### 3. New Products & Services

- Decision Aids (DA) are developed through understanding the user and their needs.
  - *DAs Create consistency for multiple users.*
  - *DAs Allow users to interpret weather information at a glance.*
  - *DAs Concisely depict impacts to operations.*



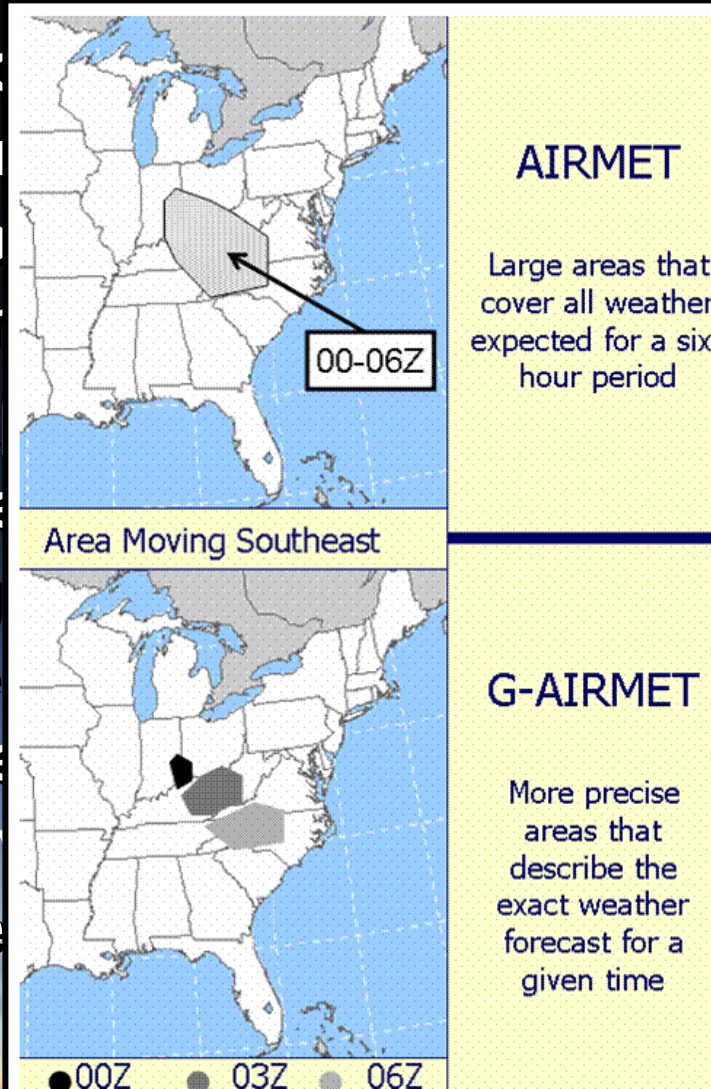


# NWS's Aviation Services

## The Future

### 3. New Products & Services

- Ceiling and Visibility
  - IFR Ceiling
  - IFR Visibility
  - Mountain
- Icing (Gra)
  - Moderate
  - Freezing
- Turbulence
  - Moderate
  - Non-con
  - Sustaine

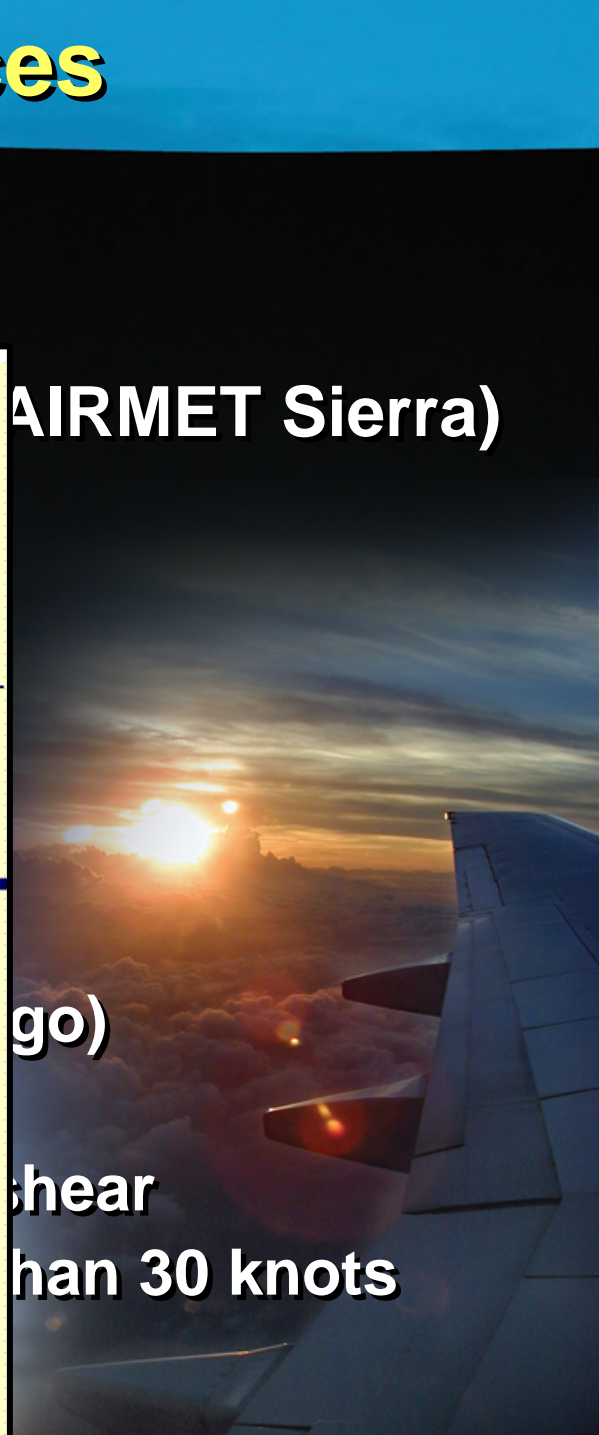


**AIRMET Sierra)**

**go)**

**shear**

**than 30 knots**



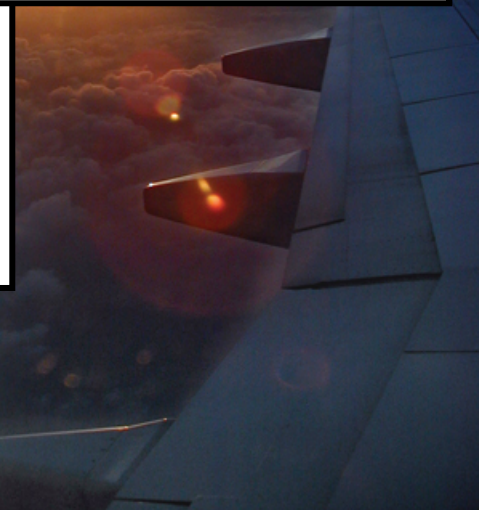
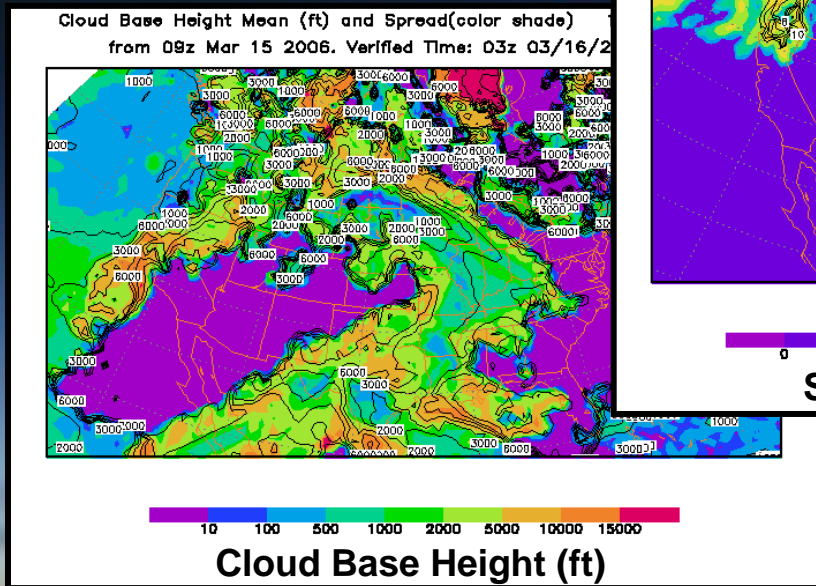
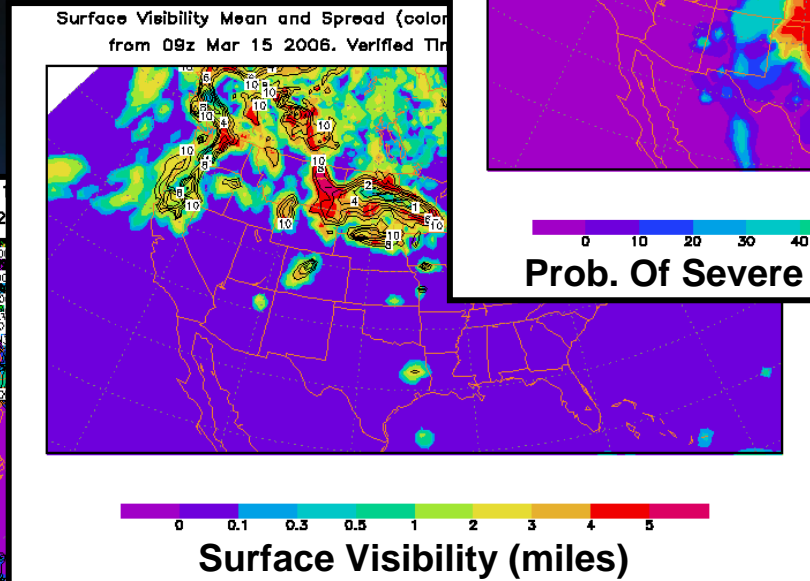
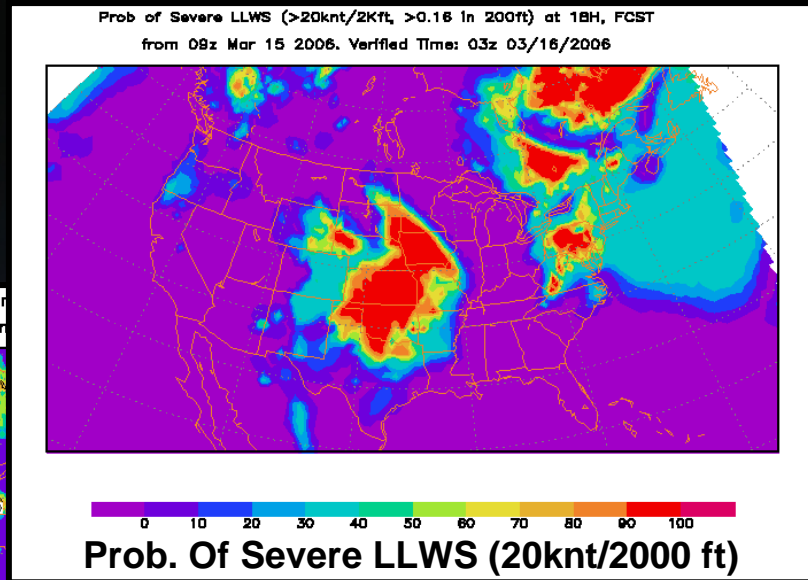


# NWS's Aviation Services

## The Future

### 3. New Products & Services

#### Short Range Ensemble Forecast System (SREF)

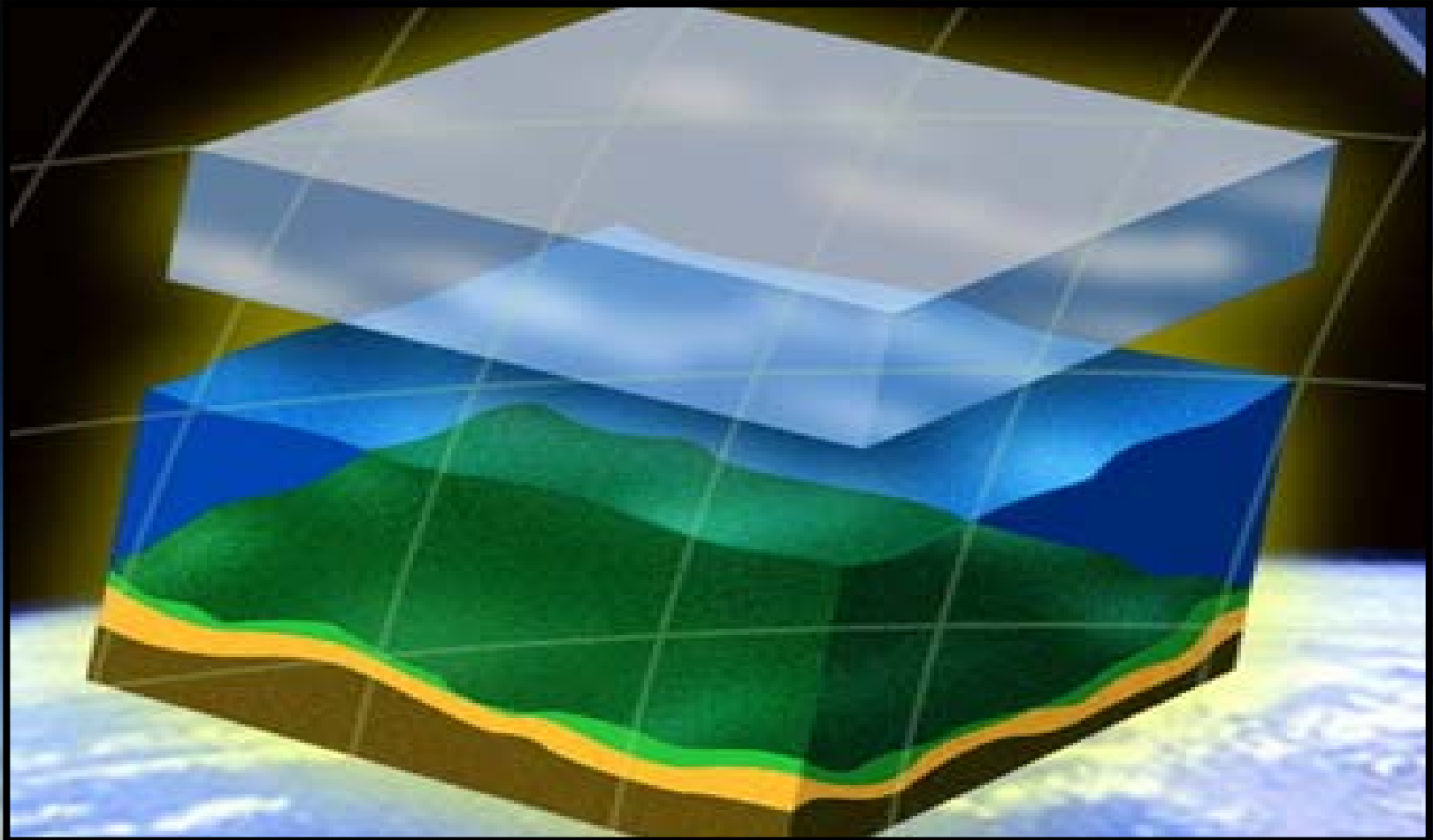




# NWS's Aviation Services

## *The Future*

### 3. New Products & Services









# NWS's Aviation Services

## *The Future*

### 4. Improved Training & Availability



DLAC1 - Low Cloud & Fog Forecasting  
Impact of Weather on Air Traffic  
Management Module



AOPA Pilot  
Weather Training

#### In-House:

- Online Aviation Operations Course
- Regional/National Aviation Workshops





# NWS's Aviation Services

## Training Tools: Partners W/ AOPA

**WEATHER AOPA WISE**  
**THUNDERSTORMS & ATC**

**1: Introduction** | 2 | 3 | 4 | 5 | Quiz

[ 1 ] [ 1.2: Goals ] [ 3 ]

### Goals

This course will help you steer clear of thunderstorms by explaining the weather services available through ATC and how to talk to controllers to get the best service possible.

Help & FAQ | Previous | Next

[http://flash.aopa.org/asf/wxwise\\_thunder/](http://flash.aopa.org/asf/wxwise_thunder/)



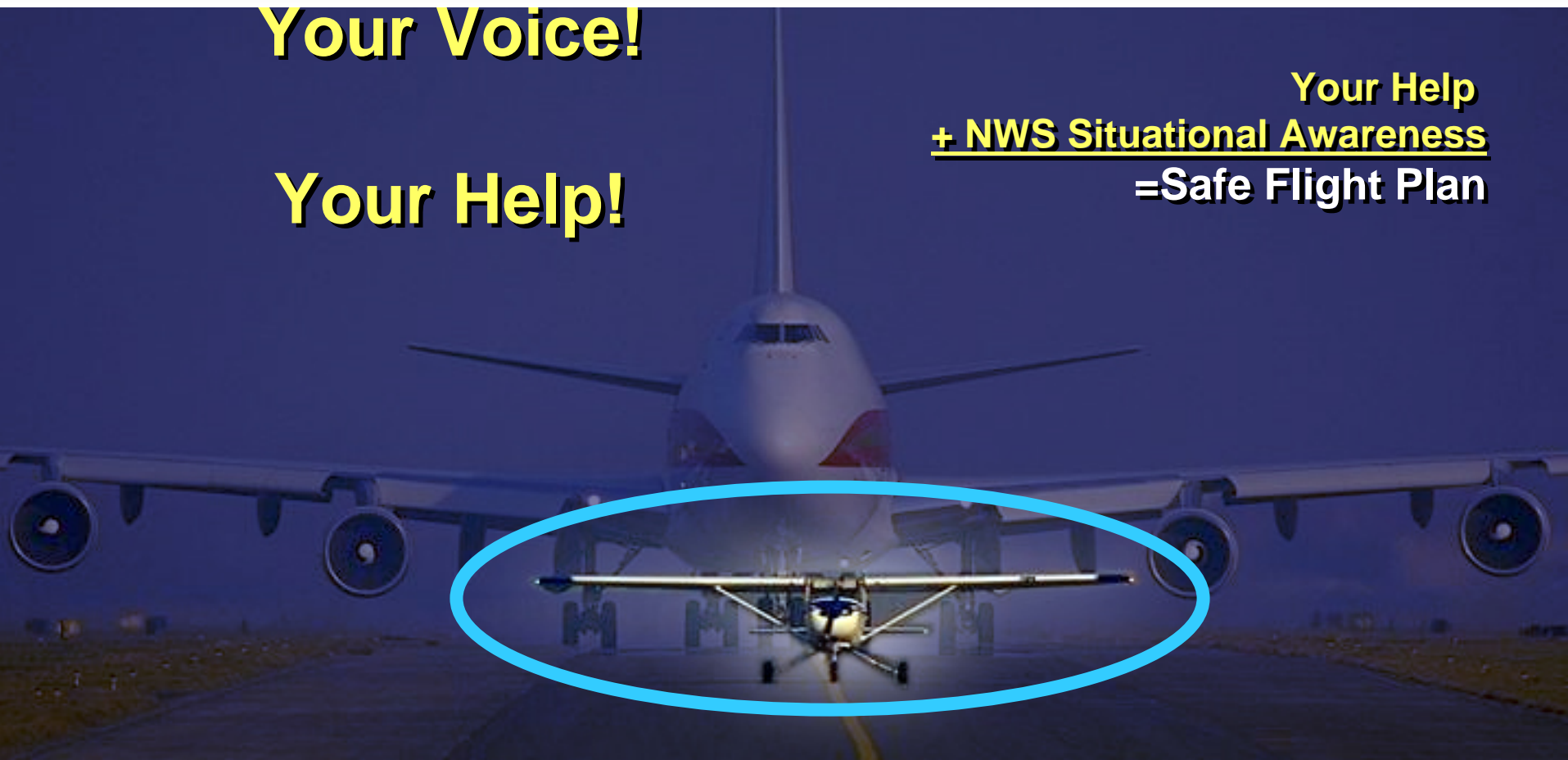
# Your Role

## *NWS's Future Aviation Services*

**Your Voice!**

**Your Help!**

**Your Help  
+ NWS Situational Awareness  
= Safe Flight Plan**





# NWS's Aviation Services

## *FY07 Budget Request*

**Total NOAA Request: \$3.684 billion**

**Total NWS Request: \$881.9M**

**Aviation Weather Increase: \$1.2M**





**2005**  
**AIRVENTURE**  
**OSH K OSH**  
**EAA**