



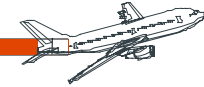
Metrics/Benefits for Thunderstorm Delay Mitigation



- **Who cares: OMB, ATO Metrics, ASD**
- **What is the available benefits pool for thunderstorm delay reduction?**
- **What will current and planned programs achieve in delay reduction?**
- **Program/initiatives impacted**
 - OEP Free Flight Flight Plan Safe Flight**
 - Weather Programs TFM ERAM CTAS**
 - Communications RE & D NAS perf. metrics**



Quantify Shortfall - Delays



Annual Aviation Wx Delay - Costs

- Estimated Weather (All) Delay (Enr & Term): \$2.1B - \$2.3B
- TS comprises 40% of all Wx Delay Costs: \$840M - \$920M
 - ✓ 40% (30%-50% range) of TS Delays possibly avoidable
 - ✓ \$336M - \$368M = TS avoidable Delays Costs
- Domain breakout of these cost savings

En Route

24% of avoidable delays

\$80.3M - \$88.3M

Terminal

76% of avoidable delays

\$255M - \$280M



Claimed Thunderstorm Delay Reduction



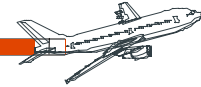
Program	Domain	ADOC (\$M)	Benefits Start*
ITWS	T, E	118-238	1994
CIWS	E,T	46-86	2001
WARP	E	150	2003
CRCT	E	4-12	2003-2015
TFM-M	T,E	29-300	2007-2016
SF-21	T,E	55	2010
ERAM	E,T	14-20	2010-2020
MIAWS	T	2-4	2001

TOTAL= \$ 486-865 M per year

* By demonstration system or, production system



Issues for a Process



Issues:

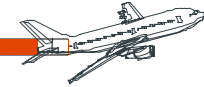
- **Estimate weather delay including “downline”**
 - Compare (2 sided) delay on “wx” days with delay on “wx free” days]
- **Estimating “avoidable” delay**
 - Do we need to allocate wx delay to terminal and en route?
 - OMB very interested in program performance vis a vis pool
- **How to determine contributions of various systems**
 - Warning: system performance may be non linear function of subsystem contribution
- **How to normalize for differences in weather and NAS between different time periods**

Process/data/analysis capability issues

- **A forum to discuss issues and provide peer review of results**
- **Data sources and/or analysis packages that may help**



Identify Shortfall - Efficiency



Aviation Weather – Delays in Different Weather Conditions

