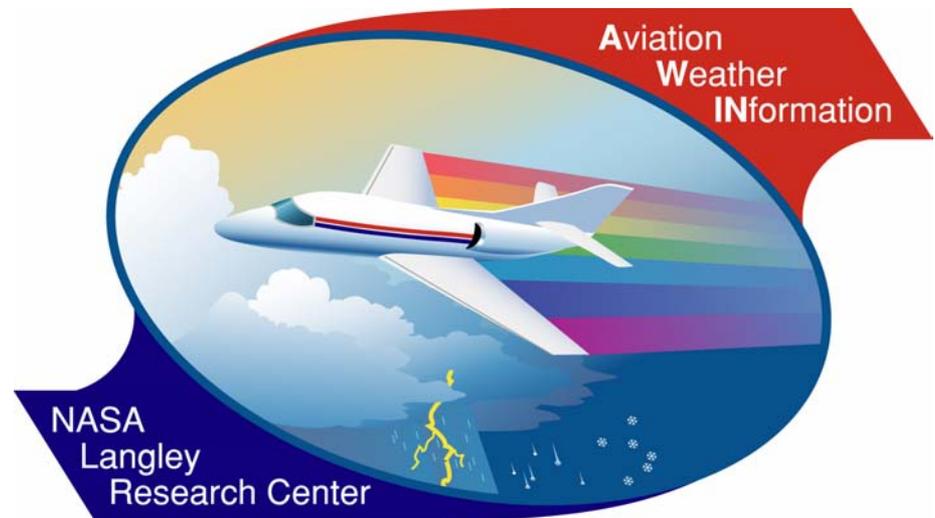


Tropospheric Airborne Meteorological Data Reporting (TAMDAR) Accomplishments, Status, and Plans

Weather Accident Prevention Project Review
June 2004
Las Vegas, NV

Taumi Daniels
NASA Langley Research Center
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Outline



Aviation Weather Information

- Overview
- Flight and Ground Testing
- Development Status
- Great Lakes Flight Experiment
- Schedule
- Summary

Goal of TAMDAR



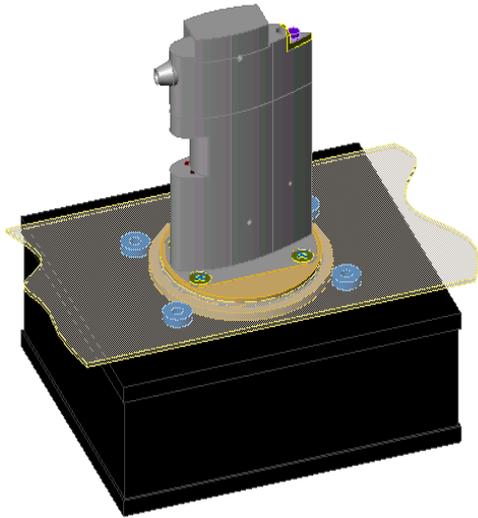
Aviation Weather Information

“Demonstrate a TAMDAR prototype system capability through a fleet experiment in the NAS under a FAA, NOAA, NASA, University, and Industry joint effort.”

TAMDAR Concept



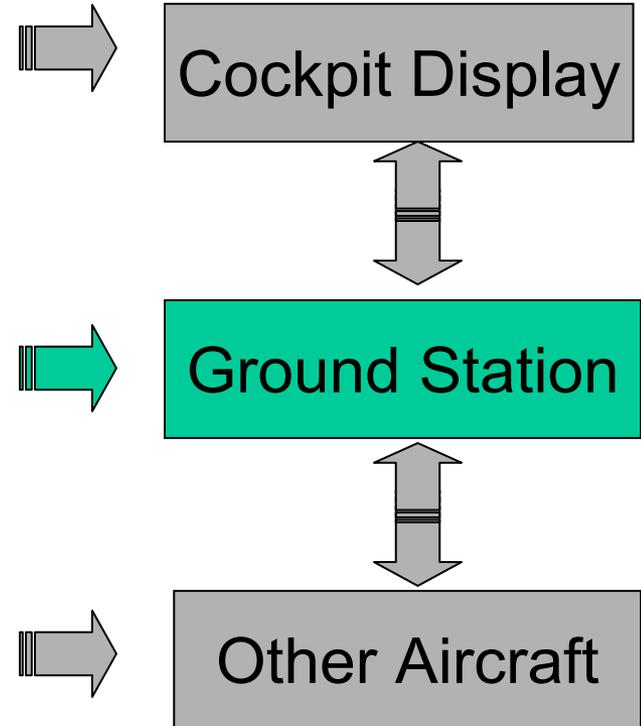
Aviation Weather Information



Icing
Temperature
Pressure Altitude
Humidity
Time
Lat / Long
Winds*
Turbulence*
True Airspeed*

TAMDAR Sensor

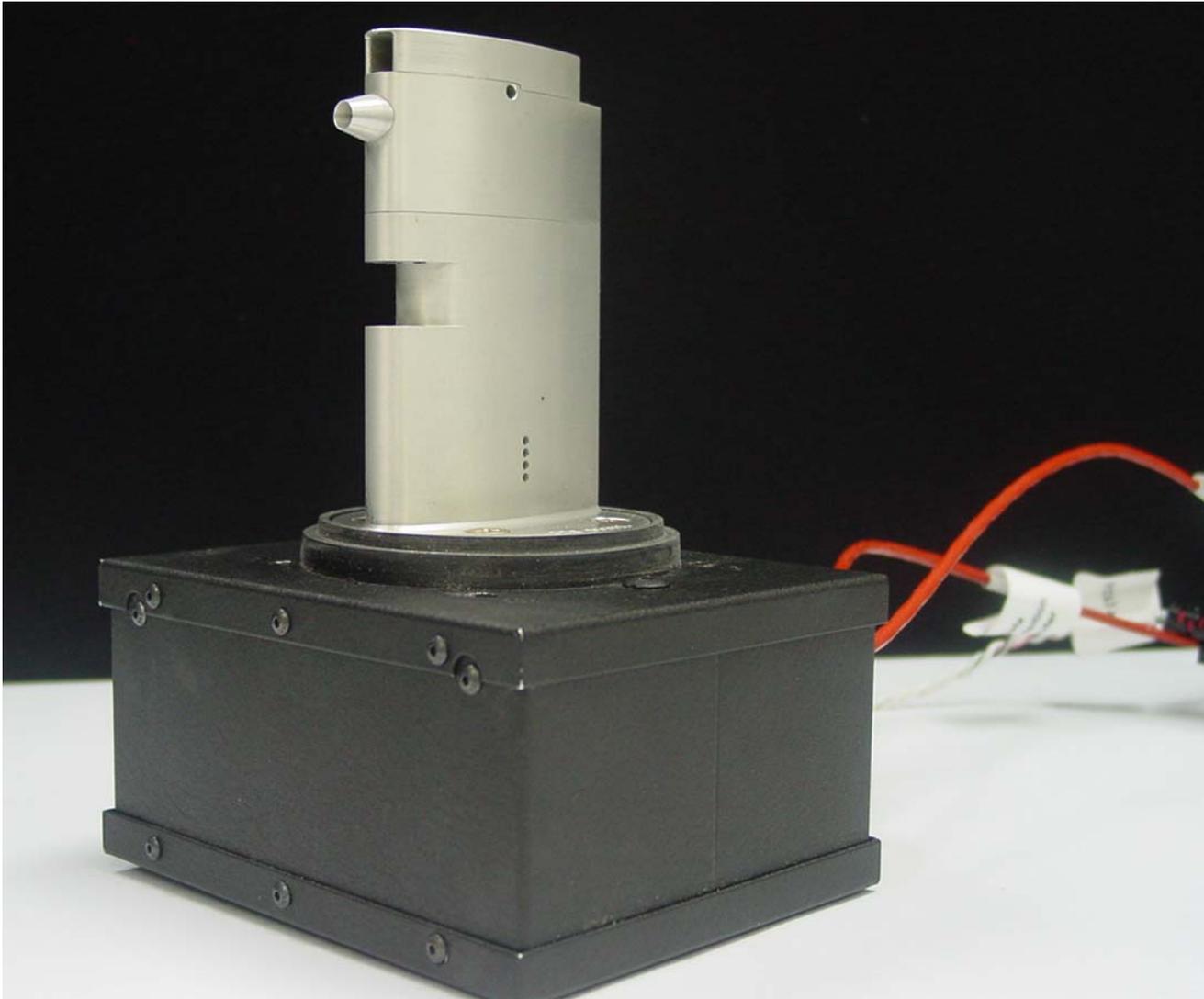
*computed



TAMDAR Sensor



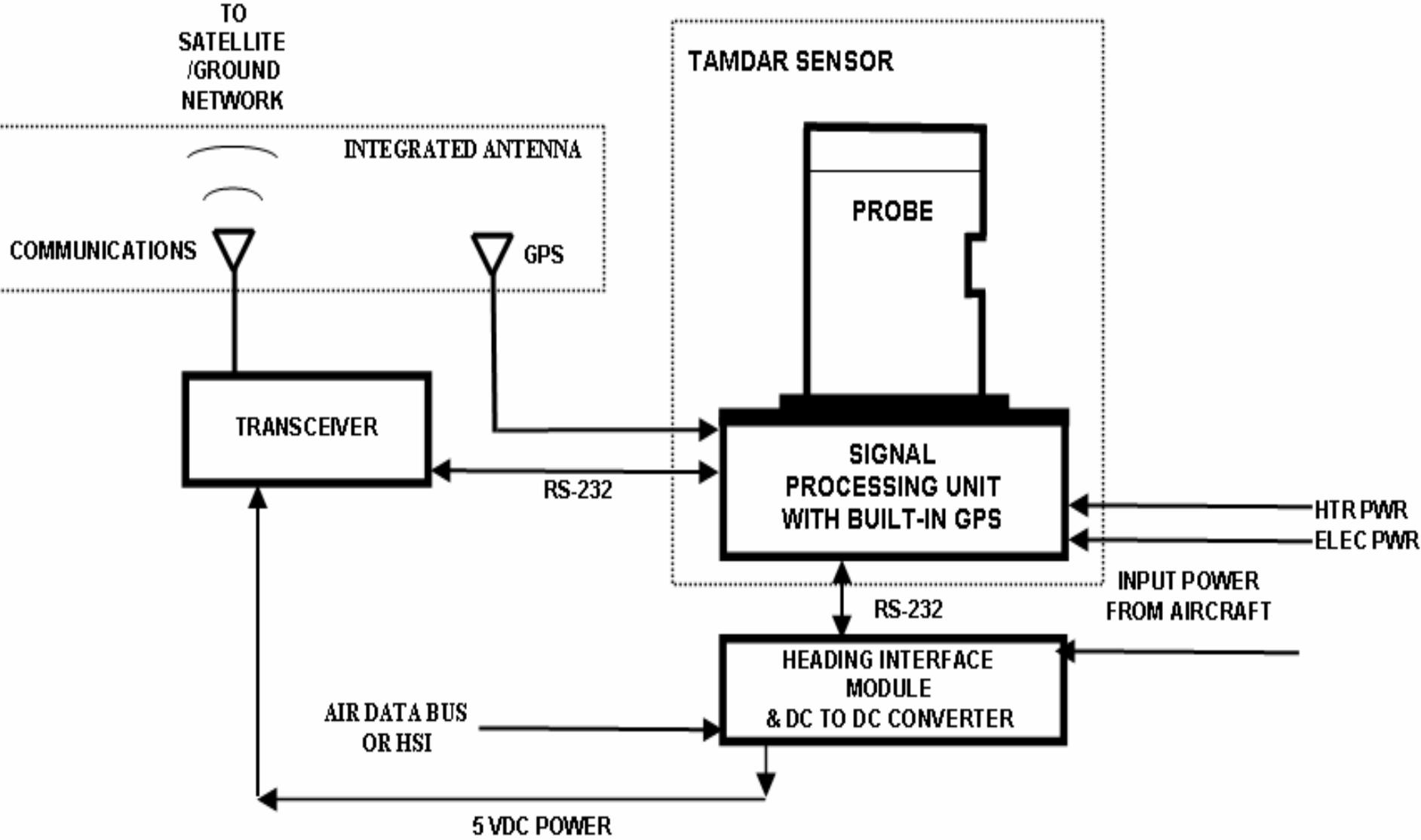
Aviation Weather Information



TAMDAR System



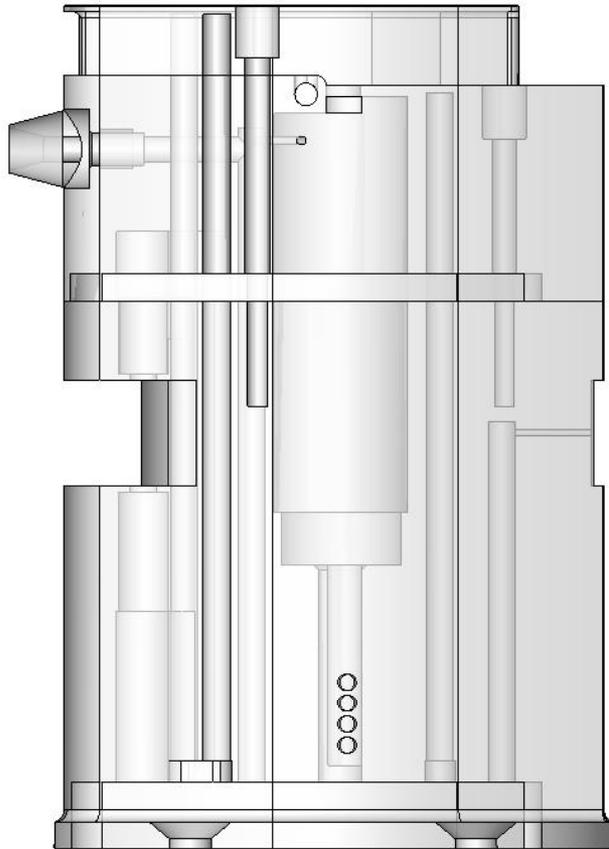
Aviation Weather Information



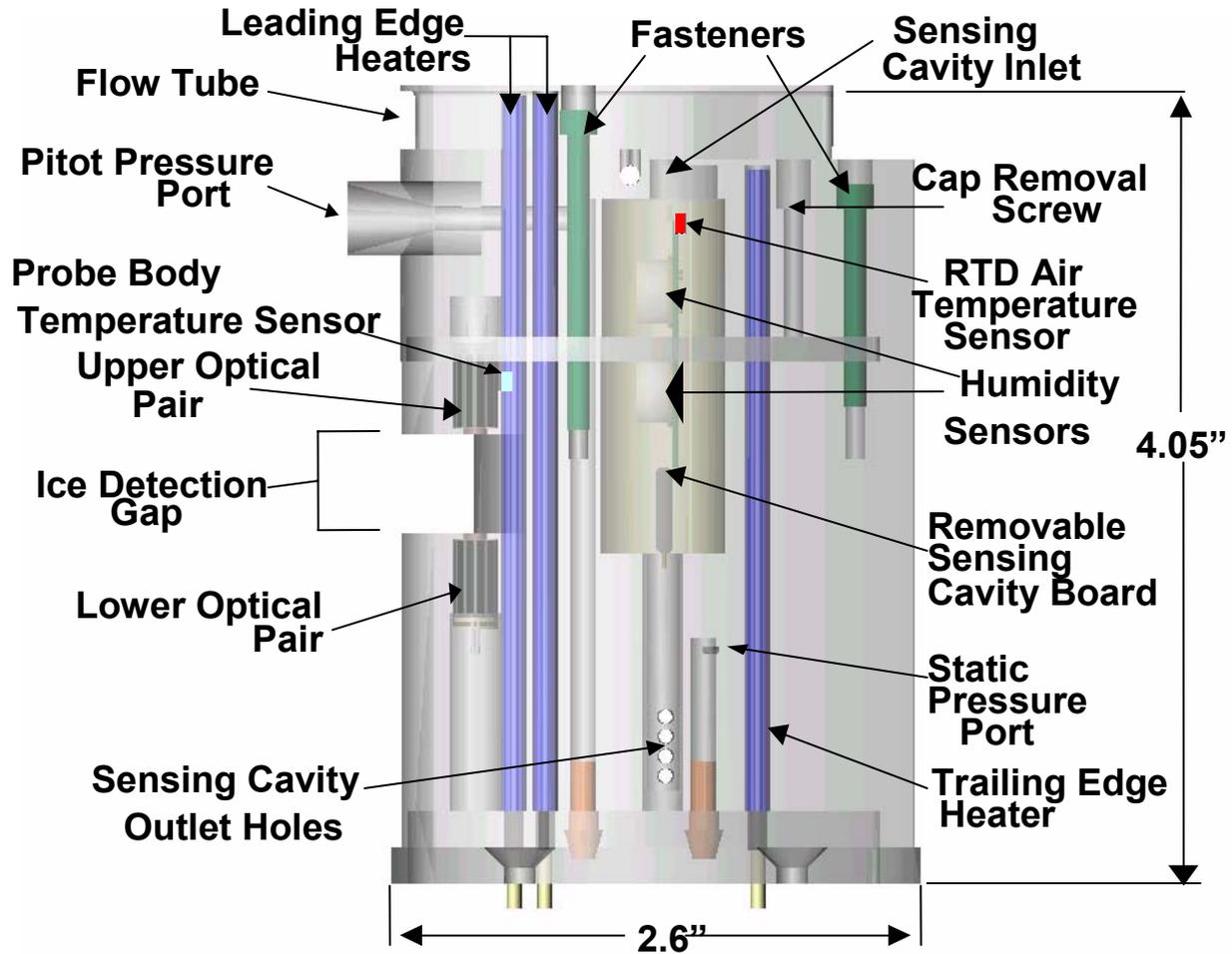
Probe Detail, Side View



Aviation Weather Information



Current Version



Previous Version

Research Aircraft



Aviation Weather Information



NOAA P3



UND Citation



NPGS Twin Otter



UND Seminole

NASA LaRC Cessna 206H



Aviation Weather Information



- Shakedown, calibration, and verification flights
- Prep for cockpit display evaluation in 2005

Relative Humidity Sensor Testing



Aviation Weather Information

- Evaluation of Hygrometrix MEMS sensors
- Calibrations of Honeywell HIH sensors
- Long term calibrations
- Deicing fluid effects
- Effects of other chemicals



Sensor Development Status



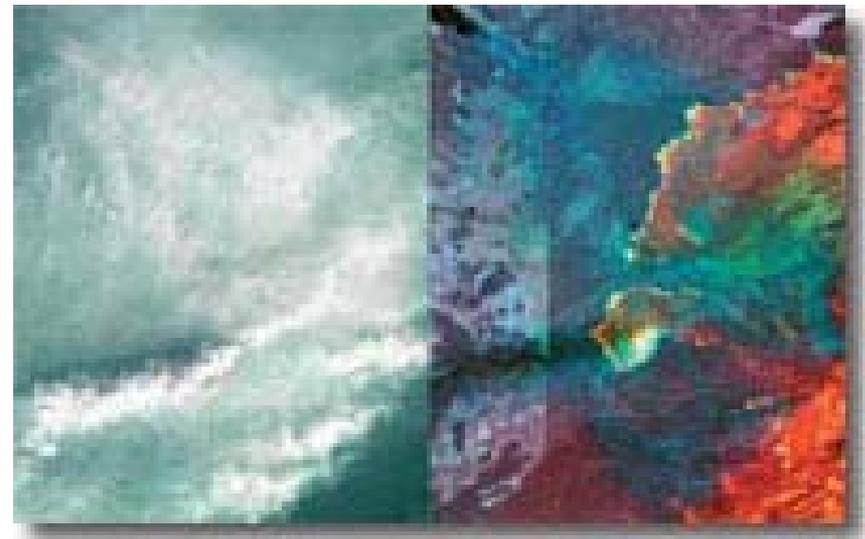
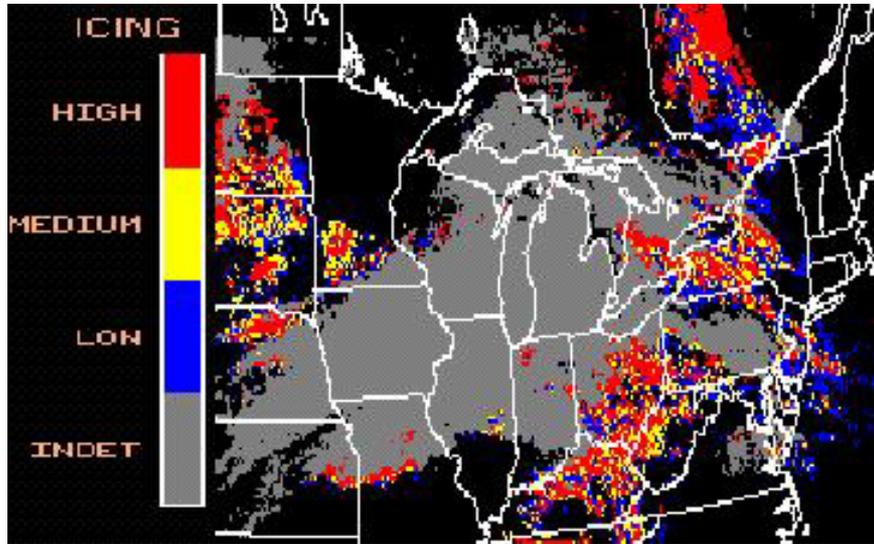
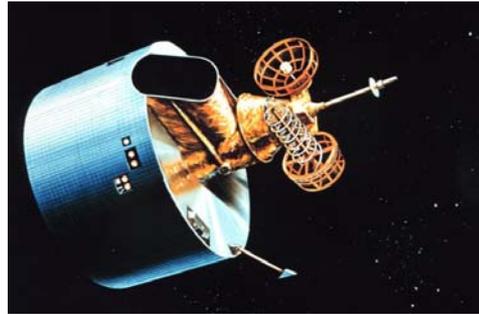
Aviation Weather Information

- Optical Detection Systems Became Airdat, LLC.
- Flight and Ground Facility Testing Performed
- Development Completed
- DO-160D Testing Completed
- FAA Certification (Supplemental Type Certificate)

Atlantic THORPEX Regional Campaign (ATReC) Alliance Icing Research Study (AIRS II)



Aviation Weather Information



Related Efforts



Aviation Weather Information

- World Meteorological Organization AMDAR Panel
 - Mod to ARINC 620
 - Meteorological Service of Canada / First Air deploying TAMDAR
- Other Collaborations:
 - FAA AWRP, Flight Standards, FISDL, SafeFlight21, and Capstone, FSS
 - NOAA FSL, NWS, and AWC

Airline Installations



Aviation Weather Information



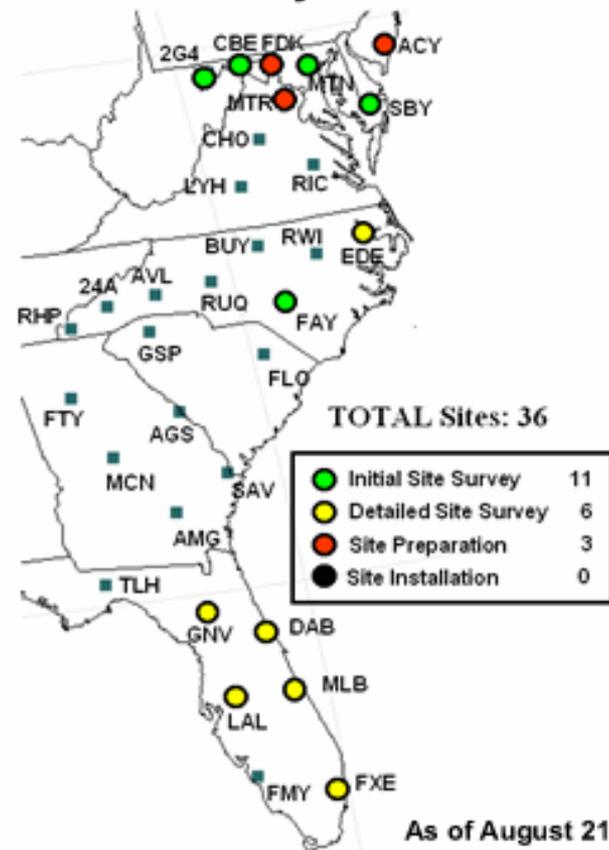
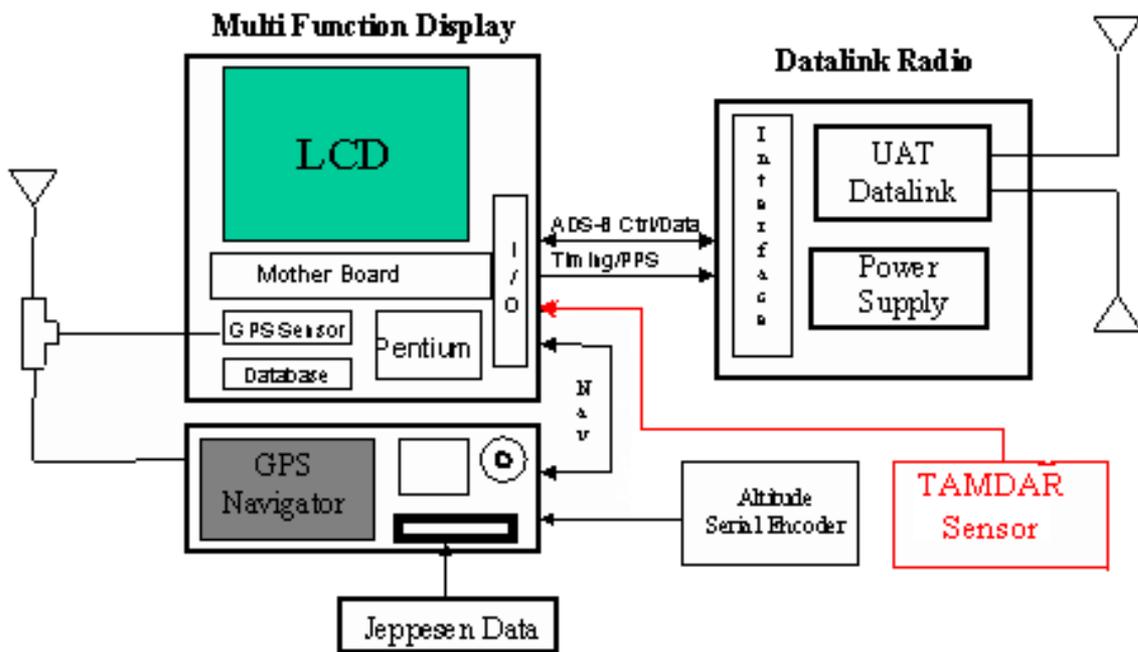
FAA Safe Flight 21



Aviation Weather Information

Alaskan Region
Capstone
Investment in Safety

East Coast ADS-B Deployment Site Survey Status



As of August 21, 2003

Great Lakes Flight Experiment



Aviation Weather Information



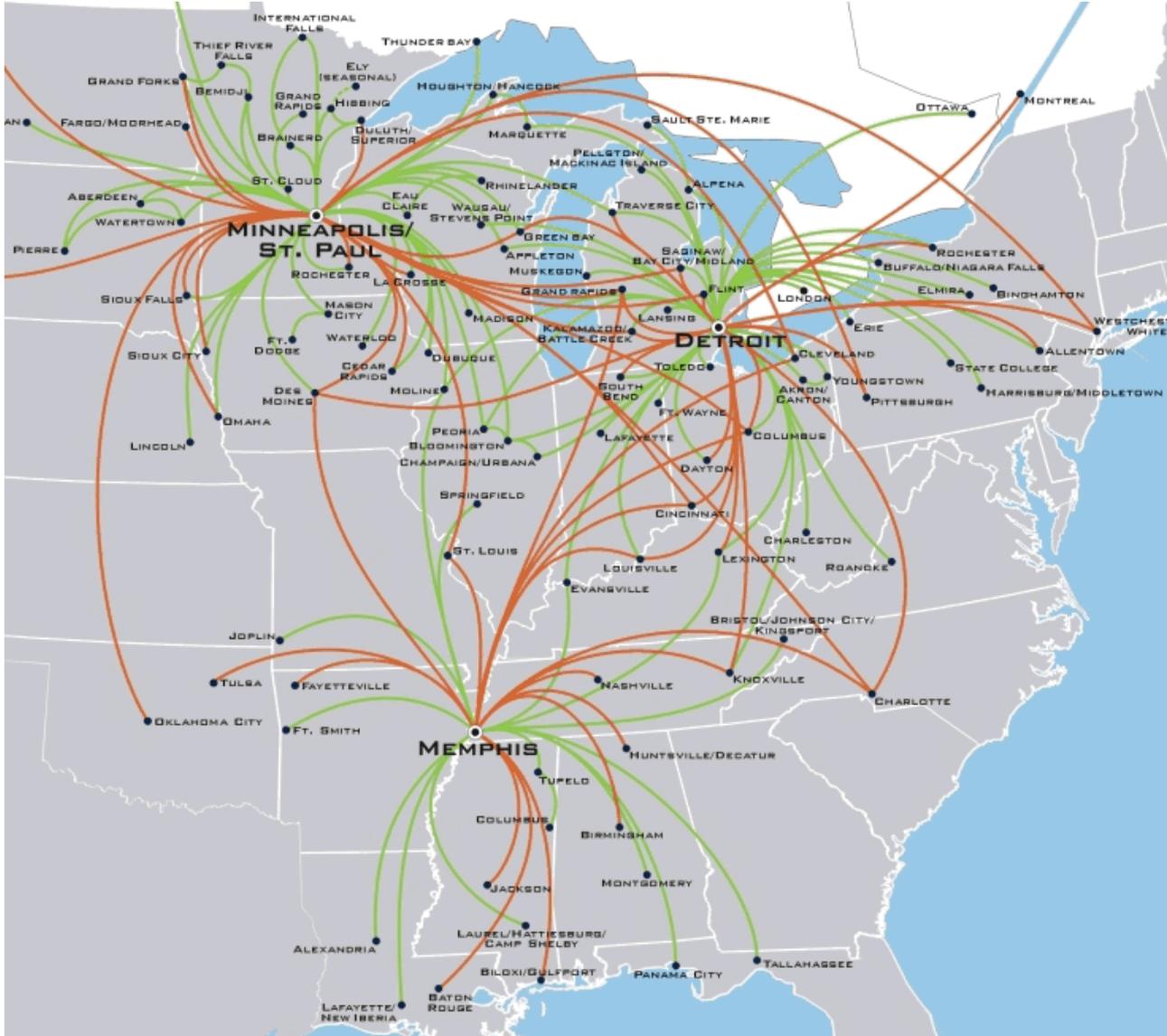
AIRDAT



Mesaba Airlines Routes



Aviation Weather Information



Partner Roles



Aviation Weather Information

- NOAA Forecast Systems Lab
- National Weather Service
- National Center for Atmospheric Research
- Mesaba Airlines
- UWisc Madison CIMMS

TAMDAR Schedule



Aviation Weather Information

- 11/02 – TAMDAR FDR
- 01/03 – Version C Sensor
- 03/03 – TAMDAR on NOAA P3
- 12/03 – ATReC and AIRS II
- 01/04 – TAMDAR PPRR
- 02/04 – DO-160D tests successful
- 05/04 – FAA STC achieved
- 09/04 – Initiate Great Lakes Flight Experiment
- 06/05 – TAMDAR Workshop

Summary



Aviation Weather Information

- TAMDAR Sensor Development
- Flight and Ground Testing
- Interagency Collaborations
- Great Lakes Flight Experiment