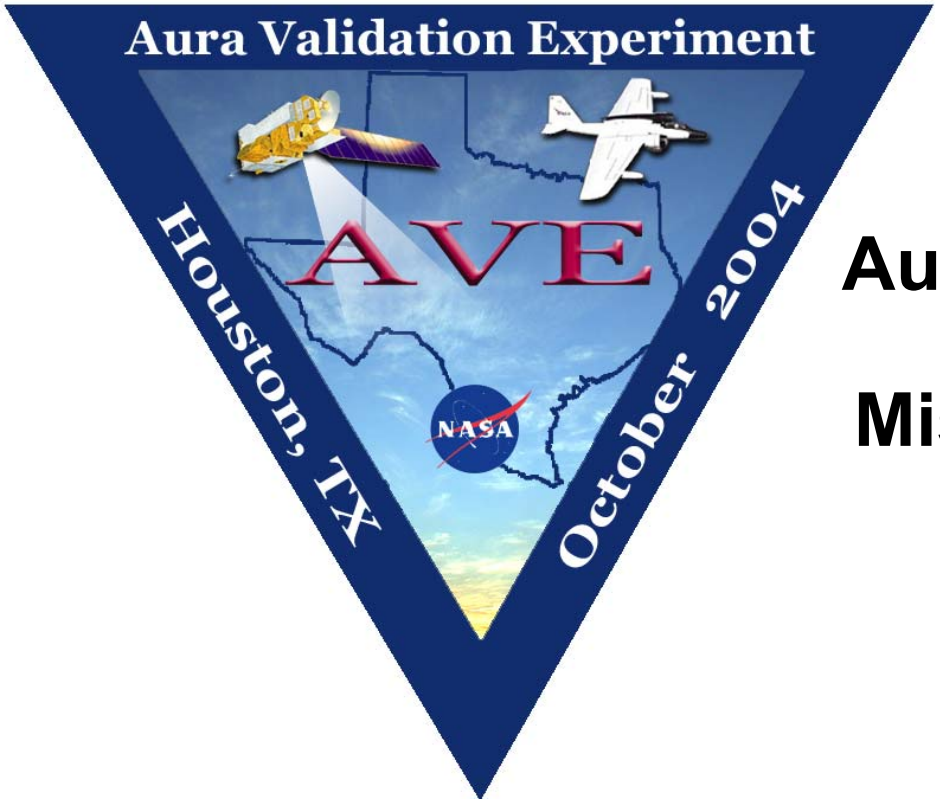


Aura Validation Experiment (AVE) Mission Readiness Review

Mike Gaunce
AVE Mission Project Manager
October 25, 2004

AVE Mission Description

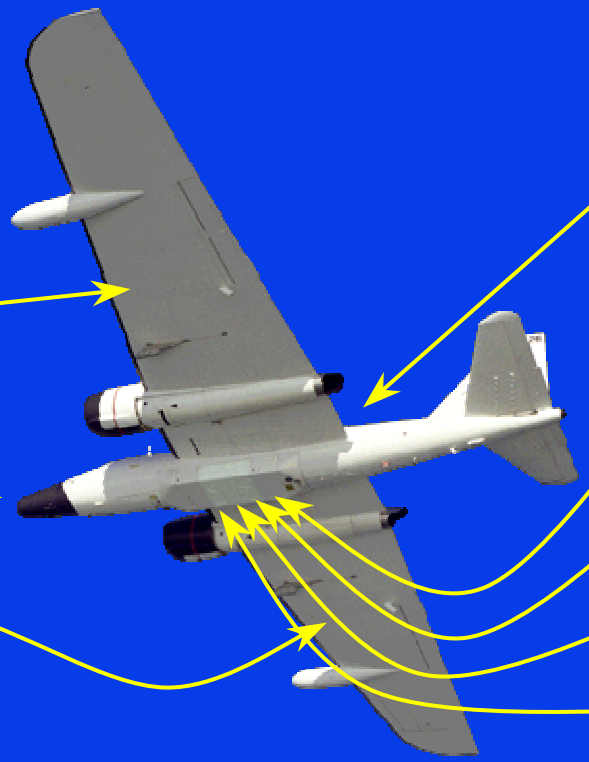
- Suite of eight in situ and three remote sensing instruments flown from WB-57F.
- Based at JSC Ellington Field, Houston, TX
- Total science and support personnel: 90 approx
- 8 science flights from 10-28-04 to 11-12-04.
- Total flight hours: 60

- For more information, AVE mission web site:
  - http://cloud1.arc.nasa.gov/ave-houston/

AVE Mission Objectives

- Aura Satellite validation
  - TES validation
    - Overflight of clear sky, open water and radiation ground sites.
  - OMI validation
    - Overflight of urban areas for pollution & aerosol detection.
  - MLS validation
    - Spiral profiles between 20 and 60 kft.
  - Observations under a variety of cloud conditions
- Integrate new instruments/capabilities onto WB-57 to support Aura validation flights.
- Observations of atmospheric conditions during the Oct.-Nov. period in Gulf region to U.S. Midwest

AVE October 2004 Payload



October 18 - November 12, 2004

AVE Instrument Summary

Instrument	PI	Org	Instrument Name	Principal Measurements	Location
Argus	M. Loewenstein	ARC		CO, CH4, N20	Pallet 2
CAFS	R. Shetter	NCAR	CCD Actinic Flux Spectroradiometers	O3 (total column)	UEB & Aft Trans
CH4	E. Richard	NOAA-U Colo/CIRES	Methane Near IR Tunable Diode Laser Absorption Spectrometer	CH4	Pallet 3
CIMS	D. Fahey	NOAA	Chemical Ionization Mass Spectrometer	HNO3, HCl	Pallet 3
Frostpoint	K. Kelly	NOAA		RH	Left Wing Hatch
JLH	R. Herman	JPL	JPL Laser Hygrometer	H2O	Right Wing Hatch
O3	E. Richard	NOAA-U Colo/CIRES	Ozone Photometer	O3	Pallet 3
PT	T. Thompson	NOAA	Pressure-Temperature	Pressure and temperature	Nose
SP-2	R. Gao	NOAA	Soot Photometer	Soot	Pallet 4
CPL	M. McGill	GSFC	Cloud Physics Lidar	Cloud physics (backscatter)	Pallet 1
S-HIS	H. Revercomb	Univ of Wisconsin	Scanning High-resolution Interferometer Sounder	Temperature and H20 profiles	Left Wing Pod

Typical AVE Flight Plan

Aura Overpass

QuickTime™ and a
PNG decompressor
are needed to see this picture.

AVE WB-57F MISSION 2004

18 Oct – 12 Nov

Sun	Mon	Tue	Wed	Thur	Fri	Sat
17 NOAA, CPL, UV-VIS Mission Management arrival	18	19 Laser Revs: CPL, SP2 Mechanical and electrical checks	20 TRRs: CPL, SP2, UV-VIS	21	22 JLH, S-HIS ARGUS Arrive PT, O3, CIMS FP, CH4, SP2 CPL, UV-VIS Test Flight 1	23 SHIS cable In L wing Pod Attach
24 Mechanical and electrical checks	25 SHIS Reviews	26 Full Payload Test Flight 2	27 NASA Safety and Total Health Day No Fly Day	28 Science Flight 1	29	30 Science Flight 2
31	NOV 01 Science Flight 3	02	03 Science Flight 4	04	05 Science Flight 5	06
07	08 Science Flight 6	09	10 Science Flight 7	11	12 Science Flight 8 End of Mission	13

- 2 test flights (~ 8 hrs)
- 8 science flights (~ 48 hrs)
- ~ 56 total flight hours

vers 20040925

AVE Mission Management Team

Paul Newman	GSFC	Project Scientist	C: 301-793-4591
David Fahey	NOAA	Co-Project Scientist	
Mike Gaunce	ARC	Project Manager	C: 650-269-5536
Marty Ross	Aerospace Corp	Payload Scientist	
Hal Maring	HQ	Program Manager	
Mike Kurylo	HQ	Program Manager	
Kathy Thompson	CSC	Project Coordinator	C: 303-818-4174

WB-57 Instrument & Aircraft Readiness

- Instrument
  - Four new instruments integrated. TRRs complete.
  - Integration & Checkout of all instruments complete.
  - Test flights on 10-22-04 and 10-25-04.
  - Payload ready for science flights beginning 10-28-04.

- Aircraft
  - Avionics upgrade complete.
  - Functional Check Flight 10-20-04.
  - Two SEOs available.
  - Ready to support mission.

AVE Mission Assurance

- **Safety Briefings**
  - Provided to all mission participants.

- **Mission Success Criteria**
  - Minimum: One coincident TES overpass under cloud-free conditions.
  - “Maximum”: Eight coincident Aura overpasses under clear and cloudy conditions.

- **Flight Go-NoGo Criteria**
  - Variable dependent on specific target for each flight.
    - Example: S-HIS operation required for TES overpass under cloud-free conditions.
  - Project Scientists will identify Go-NoGo for each flight based on met conditions and instrument status.

Mission Status

- First Science flight schedule for 10-28-04.
- No Open Items.
- Mission Ready to Proceed.