

# FLIGHT SUMMARY REPORT

**Flight Number:** 93-134  
**Calendar/Julian Date:** 10 July 1993 • 191  
**Sensor Package:** Wild-Heerbrug RC-10  
Hycon HR-732  
Modis Airborne Simulator (MAS)  
**Area(s) Covered:** New England

**Investigator(s):** Handley, USFWS

**Aircraft #:** 708

## SENSOR DATA

<b>Accession #:</b>	04590	04591	-----
<b>Sensor ID #:</b>	034	038	108
<b>Sensor Type:</b>	RC-10	HR-732	MAS
<b>Focal Length:</b>	12" 304.66 mm	24" 609 mm	-----
<b>Film Type:</b>	High Definition Aerochrome IR SO-131	High Definition Aerochrome IR SO-134	-----
<b>Filtration:</b>	cc.10B	cc.10B	-----
<b>Spectral Band:</b>	510-900 nm	510-900 nm	-----
<b>f Stop:</b>	4	8	-----
<b>Shutter Speed:</b>	1/150	1/75	-----
<b># of Frames:</b>	22	41	-----
<b>% Overlap:</b>	60	60	-----
<b>Quality:</b>	Excellent	Good	Good
<b>Remarks:</b>	Camera clock offset 5.7 seconds from navigation data	Camera clock offset 26.3 seconds from navigation data	

## Airborne Science and Applications Program

The Airborne Science and Applications Program (ASAP) is supported by three ER-2 high altitude Earth Resources Survey aircraft. These aircraft are operated by the High Altitude Missions Branch at NASA-Ames Research Center, Moffett Field, California. The ER-2s are used as readily deployable high altitude sensor platforms to collect remote sensing and in situ data on earth resources, celestial phenomena, atmospheric dynamics, and oceanic processes. Additionally, these aircraft are used for electronic sensor research and development and satellite investigative support.

The ER-2s are flown from various deployment sites in support of scientific research sponsored by NASA and other federal, state, university, and industry investigators. Data are collected from deployment sites in Kansas, Texas, Virginia, Florida, and Alaska. Cooperative international scientific projects have deployed the aircraft to sites in Great Britain, Australia, Chile, and Norway.

Photographic and digital imaging sensors are flown aboard the ER-2s in support of research objectives defined by the sponsoring investigators. High resolution mapping cameras and digital multispectral imaging sensors are utilized in a variety of configurations in the ER-2s' four pressurized experiment compartments. The following provides a description of the digital multispectral sensor(s) and camera(s) used for data collection during this flight.

### Modis Airborne Simulator

The Modis Airborne Simulator (MAS) is a modified Daedalus multispectral scanner. It records up to twelve 8-bit channels, which can be selected from an array of fifty available spectral bands. The band selection is made prior to flight and the instrument is hard-wired to that configuration. Channel 1 is used to store additional bits which provide 10-bit resolution for channels 9 through 12. The following MAS band combination (configuration SCARP1) was used on this flight for Smoke, Cloud, and Radiation (SCAR) experiments:

<u>Data System Channel</u>	<u>MAS Channel</u>	<u>Band edges <math>\mu\text{m}</math></u>
1	--	
2	1	
3	2	0.529 - 0.572
4	7	0.635 - 0.688
5	9	0.852 - 0.893
6	15	0.926 - 0.969
7	20	1.855 - 1.905
8	31	2.126 - 2.173
9*	42	3.659 - 3.810
10*	45	8.342 - 8.738
11*	48	10.791 - 11.239
12*	46	13.023 - 13.375
		11.799 - 12.246

\* 10-bit resolution

### Sensor/Aircraft Parameters:

Spectral Channels: 50  
Output Channels: Seven 8-bit and four 10-bit  
IFOV: 2.5 mrad

Ground Resolution:	163 feet (50 meters at 65,000 feet)
Total Scan Angle:	85.92°
Pixels/Scan Line:	716
Scan Rate:	6.25 scans/second
Ground Speed:	400 kts (206 m/second)
Roll Correction:	Plus or minus 3.5 degrees (approx.)

### Camera Systems

Various camera systems and films are used for photographic data collection. Film types include high definition color infrared, natural color, and black and white emulsions. Available photographic systems are as follows:

- Wild-Heerbrug RC-10 metric mapping camera
  - 9 x 9 inch film format
  - 6 inch focal length lens provides area coverage of 16 x 16 nautical miles from 65,000 feet
  - 12 inch focal length lens provides area coverage of 8 x 8 nautical miles from 65,000 feet
- Hycon HR-732 large scale mapping camera
  - 9 x 18 inch film format
  - 24 inch focal length lens provides area coverage of 4 x 8 nautical miles from 65,000 feet
- IRIS II Panoramic camera
  - 4.5 x 34.7 inch film format
  - 24 inch focal length lens
  - 90 degree field of view provides area coverage of 2 x 21.4 nautical miles from 65,000 feet

The U.S. Geological Survey's EROS Data Center at Sioux Falls, South Dakota serves as the archive and product distribution facility for NASA-Ames aircraft acquired photographic and digital imagery. For information regarding photography and digital data (including areas of coverage, products, and product costs) contact EROS Data Center, Customer Services, Sioux Falls, South Dakota 57198 (Telephone: 605-594-6151).

Additional information regarding ER-2 acquired photographic and digital data is available through the Aircraft Data Facility at Ames Research Center. For specific information regarding flight documentation, sensor parameters, and areas of coverage contact the Aircraft Data Facility, NASA-Ames Research Center, Mail Stop 240-6, Moffett Field, California 94035-1000 (Telephone: 415-604-6252).

**CAMERA FLIGHT LINE DATA  
FLIGHT NO. 93-134**

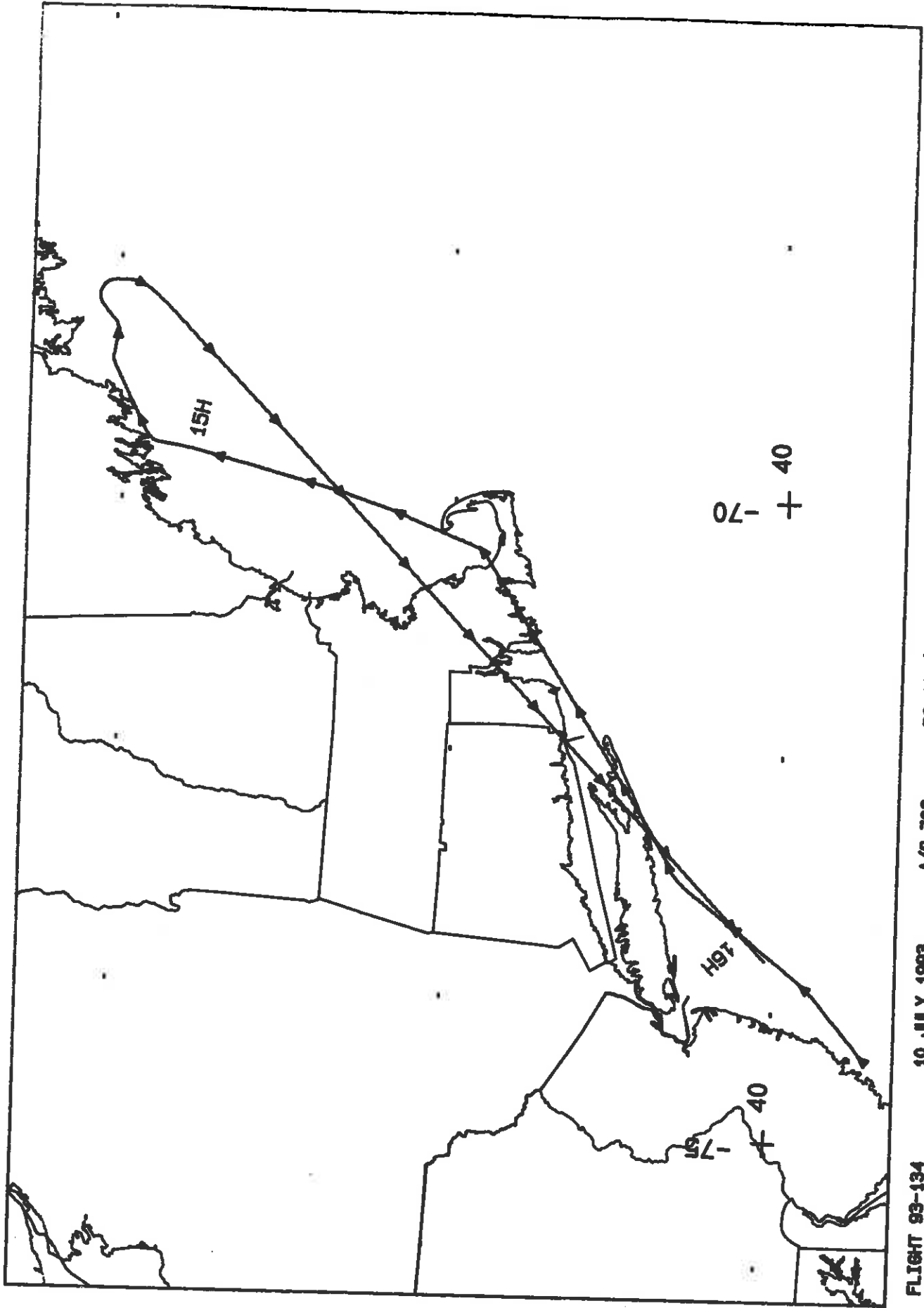
Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
Accession # Sensor #	04590 034				
A - B	8893-8907	14:37:12	14:43:25	65000/19800	Clear
C - D	8908-8914	15:04:10	15:07:02	"	Clear
Accession # Sensor #	04591 038				
A - B	0001-0028	14:36:17	14:42:55	65000/19800	Clear
C - D	0029-0041	15:03:45	15:06:40	"	Clear

# MAS SCANNER FLIGHT LINE DATA

## FLIGHT NO. 93-134

DALYALUS FLIGHT DATA  
 FLIGHT NUMBER: 93-134

Check Points	Altitude (ft)	Altitude (m)	Scan Speed (rpm)	Total Ground Scanlines	Total Interpolated Scanlines	Total Repeated Scanlines
A-B	14:55:20.0	14:53:55.0	6.20	2773	0	0
C-D	15:03:27.0	15:06:53.0	6.20	1788	0	0



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