FLIGHT SUMMARY REPORT

Flight Number: 93-119

Calendar/Julian Date: 31 August 1993 • 243

Sensor Package: Thematic Mapper Simulator (TMS)
Modis Airborne Simulator (MAS)

Area(s) Covered: Central California (Sacramento
Night Flight)

Investigator(s): Bornstein, SJSU

Aircraft #: 709

SENSOR DATA

Accession #:	-----	-----
Sensor ID #:	074	108
Sensor Type:	TMS	MAS
Focal Length:	-----	-----
Film Type:	-----	-----
Filtration:	-----	-----
Spectral Band:	-----	-----
f Stop:	-----	-----
Shutter Speed:	-----	-----
# of Frames:	-----	-----
% Overlap:	-----	-----
Quality:	Good	Good

Remarks:

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.

Thematic Mapper Simulator

The Daedalus Thematic Mapper Simulator (TMS) is a multispectral scanner flown aboard the ER-2 aircraft which simulates spatial and spectral characteristics of the seven Landsat-D Thematic Mapper bands. The specific bands are as follows:

Daedalus Channel	TM Band	Wavelength, μm
1	A	0.42 - 0.45
2	1	0.45 - 0.52
3	2	0.52 - 0.60
4	B	0.60 - 0.62
5	3	0.63 - 0.69
6	C	0.69 - 0.75
7	4	0.76 - 0.90
8	D	0.91 - 1.05
9	5	1.55 - 1.75
10	7	2.08 - 2.35
11	6	8.5 - 14.0 low gain
12	6	8.5 - 14.0 high gain

Sensor/aircraft parameters are as follows:

IFOV:	1.25 mrad
Ground Resolution:	81 feet (25 meters) at 65,000 feet
Total Scan Angle:	43o
Swath Width:	8.4 nmi (15.6 km) at 65,000 feet
Pixels/Scan Line:	716
Scan Rate:	12.5 scans/second
Ground Speed:	400 kts (206 m/second)

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. The following MAS band combination (configuration BOREAS) was used on this flight for BOREAS experiments:

Data System Channel	MAS Channel	Band edges µm
1	1	0.529 - 0.572
2	2	0.635 - 0.688
3	4	0.729 - 0.769
4	5	0.770 - 0.810
5	6	0.810 - 0.852
6	7	0.852 - 0.893
7	9	0.926 - 0.969
8	10	1.595 - 1.652
9	20	2.126 - 2.173
10	33	3.975 - 4.125
11	45	10.791 - 11.239
12	46	11.799 - 12.246

Sensor/Aircraft Parameters:

Spectral Channels:	50
Output Channels:	Twelve 8-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.)

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). Additional information regarding ER-2 acquired photographic and digital data is also available through the Aircraft Data Facility.

TMS SCANNER FLIGHT LINE DATA

FLIGHT NO. 93-119

DAEDALUS FLIGHT DATA
FLIGHT NUMBER: 93-119

Check Points	Actual time (GMT) begin	Actual time (GMT) end	Actual scanline begin	Actual scanline end	Altitude feet/meter	Scan Speed (rps)	total Good scanlines	total Interpolated scanlines	total Repeated scanlines
A-B	11:48: 7.0	12:03:21.0	42916	54450	65000/19812	12.50	11445	0	0
B-C	12:03:21.0	12:18:36.0	54351	65785	65000/19812	12.50	11434	1	0
D-E	12:25: 1.0	12:40:51.0	70636	82466	65000/19812	12.50	11830	1	0
E-F	12:40:51.0	12:56:35.0	82467	94297	65000/19812	12.50	11831	0	0

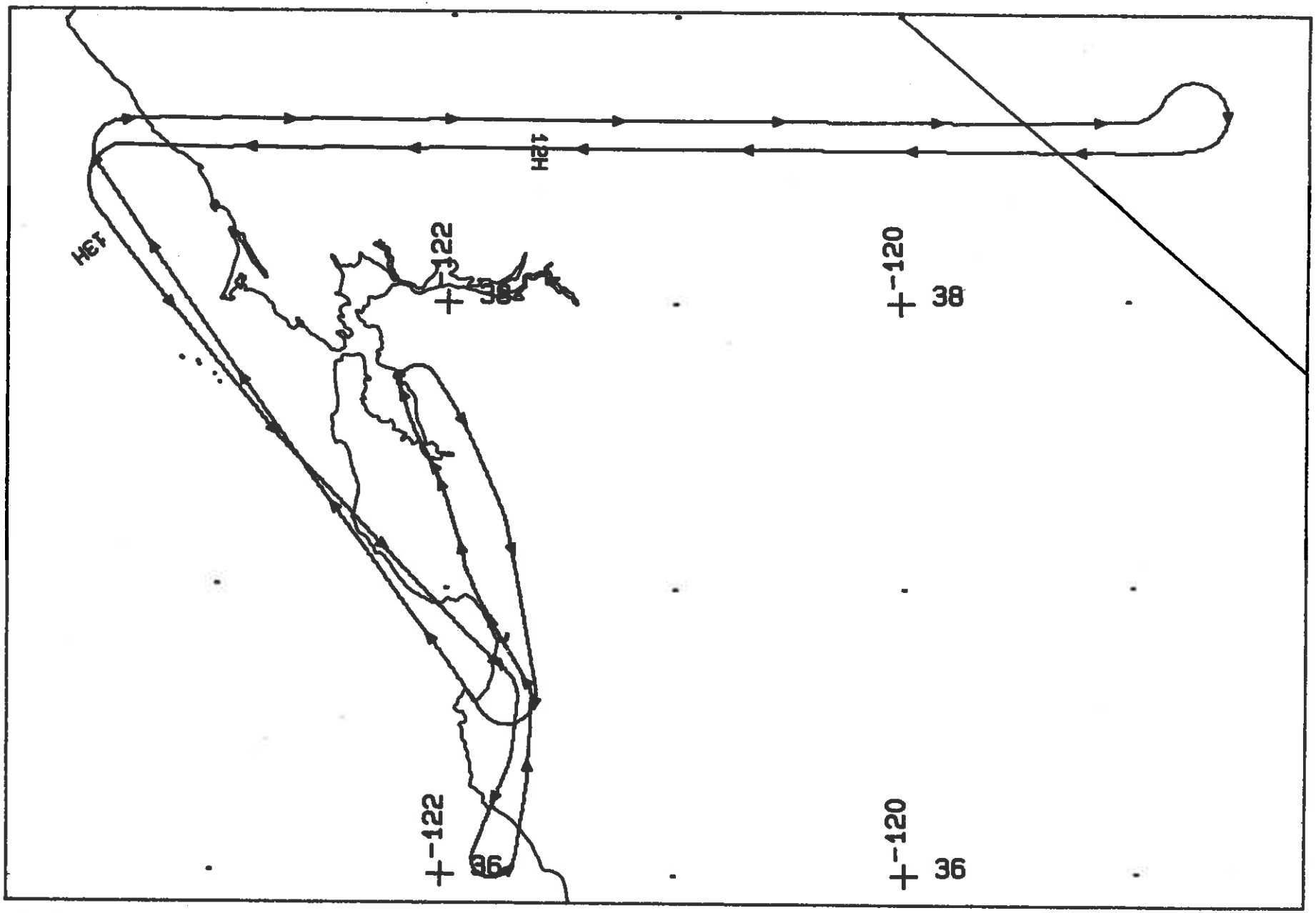
MAS SCANNER FLIGHT LINE DATA

FLIGHT NO. 93-119

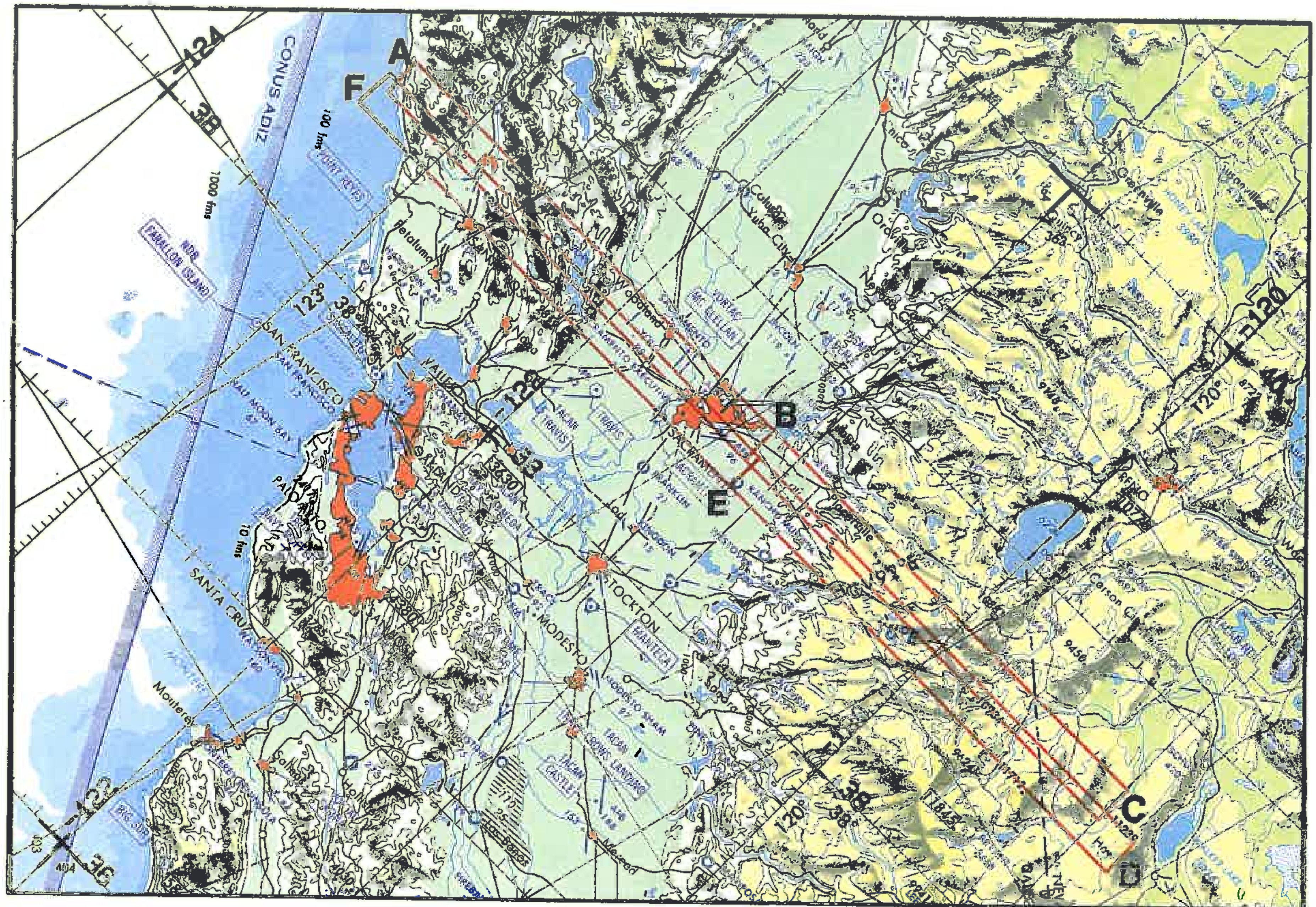
DAEDALUS FLIGHT DATA
FLIGHT NUMBER: 93-119

Check Points	Actual time (GMT) begin	Actual time (GMT) end	Actual scanline begin	Actual scanline end	Altitude feet/meter	Scan Speed (rps)	total Good scanlines	total Interpolated scanlines	total Repeated scanlines
A-C	11:48: 4.Ø	12:18:33.Ø	2132Ø	327Ø5	65ØØØ/19812	6.2Ø	11385	1	Ø
D-F	12:25:1Ø.Ø	12:56:43.Ø	3518Ø	46961	65ØØØ/19812	6.2Ø	11781	1	Ø

NOTE: Scan Speed (rps) is 6.25 NOT 6.20



FLIGHT 93-119 31 AUGUST 1993 A/C 709 MAS / TMS



FLIGHT 93-119 31 AUGUST 1993 A/C 709 TMS / NAS JNC 43