

FLIGHT SUMMARY REPORT

Flight #: 91-054
Date: 19 January 1991
Sensor Package: Wild-Heerbrug RC-10
 Dual Hycon HR-732
 Airborne Ocean Color Imager (AOCI)
Area(s) Covered: Puerto Rico

Investigator(s): Miller, NASA-SSC
 Griffin, USDA **Aircraft #:** 708
Flight Request: 91D256 and 91R255 **Julian Date:** 019

SENSOR DATA

Accession #:	04183	04184	04185	-----
Sensor ID #:	076	018	019	090
Sensor Type:	RC-10	HR-732	HR-732	AOCI
Focal Length:	12" 304.89 mm	24" 609.6 mm	24" 609.6 mm	-----
Film Type:	Aerial Color SO-242	Aerial Color SO-242	High Definition Aerochrome IR SO-131	-----
Filtration:	None	None	cc.20B	-----
Spectral Band:	400-700 nm	400-700 nm	510-900 nm	-----
f Stop:	4	8	8	-----
Shutter Speed:	1/200	1/75	1/75	-----
# of Frames:	227	108	108	-----
% Overlap:	60	60	60	-----
Quality:	Excellent	Excellent	Excellent	-----
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 used for data collection during this flight.

Airborne Ocean Color Imager

The Airborne Ocean Color Imager (AOCI) is a high altitude multispectral scanner designed for oceanographic remote sensing. It provides 10-bit digitization of eight bands in the visible/near-infrared region of the spectrum, plus two 8-bit bands in the near and thermal infrared. The bandwidths are as follows:

<u>Channel</u>	<u>Wavelength, μm</u>
1	0.436 - 0.455
2	0.481 - 0.501
3	0.511 - 0.531
4	0.554 - 0.575
5	0.610 - 0.631
6	0.655 - 0.676
7	0.741 - 0.800
8	0.831 - 0.897
9	0.989 - 1.054
10	8.423 - 12.279

Sensor/aircraft parameters are as follows:

I FOV:	2.5 mrad
Ground Resolution:	163 feet (50 meters) at 65,000 feet
Total Scan Angle:	85°
Swath Width:	19.6 nmi (36.3 km) at 65,000 feet
Pixels/Scan Line:	716
Scan Rate:	6.25 scans/second
Ground Speed:	400 kts (206 m/second)
Digitization:	8-bit channels 9-10 10-bit channels 1-8

NOTE: Information on data tape format, logical record format, and scanner calibration data may be obtained from the NASA-Ames Aircraft Data Facility at (415) 604-6252 or FTS 464-6252.

CAMERA FLIGHT LINE DATA
FLIGHT NO. 91-054

Accession # 04183

Sensor # 076

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
A - B	3346-3363	14:25:40	14:33:56	65000/19800	Very minor cumulus (frames 3348-3349); 10-30% scattered cumulus (frames 3357-3363)
C - D	3364-3382	14:37:33	14:45:20	"	10-30% scattered cumulus (frames 3364-3373)
E - F	3383-3399	14:48:55	14:56:08	"	10-30% scattered cumulus (frames 3391-3399)
G - H	3400-3417	14:59:27	15:07:03	"	10-40% scattered cumulus (frames 3402-3414)
I - J	3418-3434	15:10:53	15:17:58	"	10-40% scattered cumulus (frames 3426-3434)
K - L	3435-3453	15:21:12	15:29:10	"	10-40% scattered cumulus (frames 3435-3448); minor smoke obstruction (frame 3449); minor cumulus (frames 3450-3452)
M - N	3454-3470	15:32:41	15:39:41	"	10-50% scattered cumulus

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Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
O - P	3471-3489	15:43:09	15:51:03	65000/19800	10-60% scattered cumulus
Q - S	3490-3506	15:54:49	16:01:45	"	10-30% scattered cumulus (frames 3494-3506)
T - V	3507-3514	16:04:39	16:07:28	"	10-30% scattered cumulus
W - X	3515-3522	16:13:08	16:15:57	"	10-20% scattered cumulus (frames 3517-3522)
-----	3523-3524	16:16:24	16:16:51	"	Oblique frames; 20% cumulus
X - Y	3525-3544	16:17:19	16:25:57	"	10-50% scattered cumulus (frames 3525-3536); 10% cumulus (frames 3542-3544)
Z - 1	3545-3559	16:28:48	16:34:47	"	10-20% scattered cumulus (frames 3554-3559)
2 - 3	3560-3572	16:39:15	16:44:19	"	10-40% scattered cumulus (frames 3560-3566); 10% cumulus (frame 3572)

**CAMERA FLIGHT LINE DATA
FLIGHT NO. 91-054**

Accession # 04184

Sensor # 018

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
R	0001-0003	15:58:14	15:58:25	65000/19800	10% scattered cumulus
U - V	0004-0006	16:06:46	16:07:15	"	10% cirro-cumulus
W - X	0007-0021	16:12:42	16:15:49	"	10-20% scattered cumulus (frames 0008-0021); frame 0021 "soft"
----	0022	16:16:03	-----	-----	Oblique frame in turn; 20% scattered cumulus
X - Y	0023-0060	16:16:49	16:25:42	65000/19800	10-50% scattered cumulus (frames 0025-0044); 10% cumulus (frames 0056-0060)
Z - 1	0061-0086	16:28:22	16:34:22	"	10% minor cumulus (frames 0076-0078); 10-20% scattered cumulus (frames 0081-0086)
2 - 3	0087-0108	16:38:50	16:43:52	"	10-40% scattered cumulus (frames 0087-0096); minor cumulus (frame 0108)

CAMERA FLIGHT LINE DATA
FLIGHT NO. 91-054

Accession # 04185

Sensor # 019

Check Points	Frame Numbers	Time (GMT-hr, min, sec)		Altitude, MSL feet/meters	Cloud Cover/Remarks
		START	END		
R	0001-0003	15:58:39	15:58:50	65000/19800	10% scattered cumulus; light struck (frame 0001)
U - V	0004-0006	16:07:10	16:07:40	"	10% cirro-cumulus; light struck (frame 0004)
W - X	0007-0021	16:13:07	16:16:15	"	10-20% scattered cumulus (frames 0009-0021); light struck (frame 0007); frame 0021 "soft"
-----	0022	16:16:26	-----	-----	Oblique frame in turn; 20% scattered cumulus
X - Y	0023-0060	16:17:19	16:26:00	65000/19800	10-50% scattered cumulus (frames 0025-0044); 10% cumulus (frames 0056-0060) light struck (frame 0023)
Z - 1	0061-0086	16:28:47	16:34:46	"	10% minor cumulus (frames 0076-0078); 10-20% scattered cumulus (frames 0081-0086); light struck (frame 0061)
2 - 3	0087-0108	16:39:15	16:44:18	"	10-40% scattered cumulus (frames 0087-0096); minor cumulus (frame 0108); light struck (frame 0087)

SCANNER FLIGHT LINE DATA

FLIGHT NO. 91-054

DAEDALUS FLIGHT DATA
FLIGHT NUMBER: 91-054

Check Points	A c t u a l t i m e (GMT) b e g i n e n d	A c t u a l s c a n l i n e b e g i n e n d	A l t i t u d e f e e t / m e t e r	S c a n S p e e d (rps)	t o t a l G o o d s c a n l i n e s	t o t a l I n t e r p o l a t e d s c a n l i n e s	t o t a l R e p e a t e d s c a n l i n e s
A-B	14:25:44.0 14:34:1.0	12039 15145	65000/19812	6.25	3101	0	6
C-D	14:37:31.0 14:45:16.0	16453 19360	65000/19812	6.25	2901	0	7
E-F	14:48:44.0 14:56:13.0	20662 23466	65000/19812	6.25	2801	0	4
G-H	14:59:26.0 15:07:11.0	24672 27581	65000/19812	6.25	2901	0	9
I-J	15:10:56.0 15:17:53.0	28987 31593	65000/19812	6.25	2601	0	6
K-L	15:21:6.0 15:29:7.0	32797 35807	65000/19812	6.25	3001	0	10
M-N	15:32:36.0 15:39:49.0	37109 39817	65000/19812	6.25	2701	0	8
O-P	15:43:17.0 15:51:2.0	41119 44023	65000/19812	6.25	2901	0	4
Q-S	15:54:47.0 16:01:44.0	45429 48037	65000/19812	6.25	2601	0	8
T-V	16:04:40.0 16:07:37.0	49139 50241	65000/19812	6.25	1101	0	2
W-X	16:13:14.0 16:15:55.0	52349 53353	65000/19812	6.25	1001	0	4
X-Y	16:17:15.0 16:25:53.0	53853 57089	65000/19812	6.25	3231	0	6
Z-1	16:28:44.0 16:34:53.0	58159 60465	65000/19812	6.25	2301	0	6
2-3	16:39:25.0 16:44:14.0	62167 63975	65000/19812	6.25	1801	0	8

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FLIGHT NO. 91-054

DAEDALUS FLIGHT DATA
FLIGHT NUMBER: 91-054

Check Points	A c t u a l t i m e (GMT) b e g i n e n d	A c t u a l s c a n l i n e b e g i n e n d	A l t i t u d e f e e t / m e t e r	S c a n S p e e d (r p s)	t o t a l G o o d s c a n l i n e s	t o t a l I n t e r p o l a t e d s c a n l i n e s	t o t a l R e p e a t e d s c a n l i n e s
A-B	14:25:44.0 14:34:1.0	12039 15145	65000/19812	6.25	3101	0	6
C-D	14:37:31.0 14:45:16.0	16453 19360	65000/19812	6.25	2901	0	7
E-F	14:48:44.0 14:56:13.0	20662 23466	65000/19812	6.25	2801	0	4
G-H	14:59:26.0 15:07:11.0	24672 27581	65000/19812	6.25	2901	0	9
I-J	15:10:56.0 15:17:53.0	28987 31593	65000/19812	6.25	2601	0	6
K-L	15:21:5.0 15:29:7.0	32797 35807	65000/19812	6.25	3001	0	10
M-N	15:32:36.0 15:39:49.0	37109 39817	65000/19812	6.25	2701	0	8
O-P	15:43:17.0 15:51:2.0	41119 44023	65000/19812	6.25	2701	0	4
Q-S	15:54:47.0 16:01:44.0	45429 48037	65000/19812	6.25	2601	0	8
T-V	16:04:40.0 16:07:37.0	49139 50241	65000/19812	6.25	1101	0	2
W-X	16:13:14.0 16:15:55.0	52349 53353	65000/19812	6.25	1001	0	4
X-Y	16:17:15.0 16:25:53.0	53853 57089	65000/19812	6.25	3231	0	6
Z-1	16:28:44.0 16:34:53.0	58159 60465	65000/19812	6.25	2301	0	6
Z-3	16:39:25.0 16:44:14.0	62167 63975	65000/19812	6.25	1601	0	8





