

FLIGHT SUMMARY REPORT

Flight Number: 99-005-08
Calendar/Julian Date: 5 June 1999 • 156
Sensor Package: MASTER Airborne Simulator (MASTER)
Area(s) Covered: Phoenix, AZ (Site #961)

Investigator(s): Christensen, ASU

Aircraft #: 798
Department of Energy
King Air B200

SENSOR DATA

Accession #: ----
Sensor ID #: 124
Sensor Type: MASTER
Focal Length: ----
Film Type: ----
Filtration: ----
Spectral Band: ----
f Stop: ----
Film Speed: ----
of Frames: ----
% Overlap: ----
Quality: ----
Remarks:

Airborne Science and Applications Program

The Airborne Science Branch at NASA's Dryden Flight Research Center, Edwards, California, operates two ER-2 high altitude aircraft in support of NASA earth science research. 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.

Department of Energy Remote Sensing Laboratory

The NASA Airborne Science and Applications Program at Ames Research Center contracted with the Department of Energy Remote Sensing Laboratory (RSL) in Las Vegas, Nevada to fly the RSL Multispectral Scanner (MSS) and the NASA Thermal Infrared Multispectral Scanner (TIMS) over the desert southwest. The scanners were flown on the DOE Cessna Citation.

The Cessna Citation is a low and medium altitude, moderate speed aircraft. It can operate from 4,000 to 35,000 feet above sea level at speeds between 135 and 225 knots. There are two instrument ports in the aircraft. The RSL 1268 Multispectral Scanner was mounted over the aft port and the NASA Thermal Infrared Multispectral Scanner was mounted over the forward port.

MASTER (MODIS/ASTER Airborne Simulator)

The MASTER is similar to the MAS, with the thermal bands modified to more closely match the NASA EOS ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer) satellite instrument, which is scheduled for launch in 1998. It is intended primarily to study geologic and other Earth surface properties. Flying on

both high and low altitude aircraft, the MASTER became operational in early 1998. Its fifty spectral bands are configured as follows:

Spectral Channel	Band center (μm)	Bandwidth (μm)	Spectral Range
1	0.460	0.04	0.440-0.480
2	0.500	0.04	0.480-0.520
3	0.540	0.04	0.520-0.560
4	0.580	0.04	0.560-0.600
5	0.660	0.06	0.630-0.690
6	0.710	0.04	0.690-0.730
7	0.750	0.04	0.730-0.770
8	0.800	0.04	0.780-0.820
9	0.865	0.04	0.845-0.885
10	0.905	0.04	0.885-0.925
11	0.945	0.04	0.925-0.965
12	1.625	0.05	1.600-1.650
13	1.675	0.05	1.650-1.700
14	1.725	0.05	1.700-1.750
15	1.775	0.05	1.750-1.800
16	1.825	0.05	1.800-1.850
17	1.875	0.05	1.850-1.900
18	1.925	0.05	1.900-1.950
19	1.975	0.05	1.950-2.000
20	2.075	0.05	2.050-2.100
21	2.160	0.05	2.135-2.185
22	2.210	0.05	2.185-2.235
23	2.260	0.05	2.235-2.285
24	2.3295	0.065	2.297-2.362
25	2.3945	0.065	2.362-2.427

Spectral Channel	Band center (μm)	Bandwidth (μm)	Spectral Range
26	3.150	0.15	3.075-3.225
27	3.300	0.15	3.225-3.375
28	3.3450	0.15	3.375-3.525
29	3.600	0.15	3.525-3.675
30	3.750	0.15	3.675-3.825
31	3.900	0.15	3.825-3.975
32	4.050	0.15	3.975-4.125
33	4.200	0.15	4.125-4.275
34	4.575	0.6	4.275-4.875
35	4.500	0.15	4.425-4.575
36	4.650	0.15	4.575-4.725
37	4.800	0.15	4.725-4.875
38	4.950	0.15	4.875-5.025
39	5.100	0.15	5.025-5.175
40	5.250	0.15	5.175-5.325
41	7.900	0.4	7.70-8.10
42	8.300	0.4	8.10-8.50
43	8.700	0.4	8.50-8.90
44	9.100	0.4	8.90-9.30
45	9.700	0.4	9.50-9.90
46	10.100	0.4	9.90-10.30
47	10.625	0.65	10.30-10.95
48	11.300	0.7	10.95-11.65
49	12.050	0.5	11.80-12.30
50	12.750	0.5	12.50-13.00

Sensor/Aircraft Parameters:

Spectral Bands: 50 (16-bit resolution)
 IFOV: 2.5 mrad
 Swath width: 19.9 nmi (36 km) at 65,000 ft
 Ground Resolution: 12-50 meters (variable w/ altitude)
 Total FOV: 85.92 degrees
 Pixels/Scanline: 716
 Scan Rate: 6.25 - 25 Hz

(See the homepage at asterweb.jpl.nasa.gov)

Information on data tape format, logical record format, and scanner calibration data may be obtained from the Aircraft Data Facility, NASA-Ames Research Center, Mail Stop 240-6, Moffett Field, California 94035-1000 (Telephone: 650-604-6252).

MODIS/ASTER AIRBORNE SIMULATOR (MASTER) FLIGHT LINE INFORMATION FOR 05-JUN-1999
 NASA FLIGHT NUMBER 99-005-08

FILE	SITE	LINE	RUN	START OF FLIGHT LINE			END OF FLIGHT LINE			FLIGHT DATA				
				TIME HH:MM:SS	LAT DEG	LON DEG	TIME HH:MM:SS	LAT DEG	LON DEG	SCAN LINES	SOLAR ZEN AZIM		HEAD DEG	ALT M (GPS)
1	961	101	1	17:31:49	33.765	-111.976	17:41:04	33.291	-111.976	6889	26.5	107.4	180.03	4785
2	961	102	1	17:44:26	33.265	-111.927	17:53:56	33.741	-111.927	7074	23.9	111.1	180.02	4824
3	961	103	1	17:57:12	33.765	-111.877	18:06:10	33.292	-111.877	6676	21.5	115.3	179.93	4802
4	961	104	1	18:09:44	33.264	-111.827	18:18:50	33.741	-111.827	6776	19.1	120.5	179.99	4823
5	961	105	1	18:22:12	33.767	-111.778	18:31:01	33.290	-111.778	6577	17.0	126.6	180.00	4826
6	961	106	1	18:34:46	33.261	-111.728	18:43:33	33.742	-111.728	6541	14.9	134.6	179.97	4832
7	961	107	1	18:46:58	33.767	-111.679	18:55:34	33.288	-111.679	6405	13.3	143.9	179.95	4835
8	961	108	1	18:59:05	33.262	-111.629	19:07:42	33.743	-111.629	6419	11.9	155.7	180.02	4831
9	961	109	1	19:11:13	33.767	-111.579	19:19:42	33.291	-111.579	6319	11.2	169.1	179.98	4833
10	961	110	1	19:23:13	33.261	-111.530	19:31:45	33.743	-111.530	6357	11.0	183.9	179.99	4838
11	961	111	1	19:34:56	33.771	-111.480	19:43:26	33.292	-111.480	6342	11.5	197.6	179.98	4817
12	961	201	1	20:09:48	33.830	-111.519	20:14:23	33.685	-111.519	6859	15.3	226.2	180.00	2002
13	961	202	1	20:17:03	33.667	-111.507	20:21:29	33.816	-111.506	6610	16.5	230.8	0.10	2008
14	961	203	1	20:24:33	33.837	-111.494	20:27:08	33.757	-111.494	3874	17.6	234.3	179.73	1992
15	961	203	1	20:27:10	33.757	-111.494	20:29:33	33.686	-111.494	3577	18.0	235.7	180.12	1994
16	961	204	1	20:31:54	33.668	-111.482	20:36:29	33.814	-111.481	6883	19.0	238.5	0.15	1995

NUMBER OF FILES FOR THIS FLIGHT = 16
 TOTAL NUMBER OF SCAN LINES = 100178
 DATE THESE FILES WERE PROCESSED = 30-Jul-99
 DATE THIS LIST WAS CREATED = 02-Aug-99
 GRANULE VERSION = 9

