FLIGHT SUMMARY REPORT

Flight Number: 99-002-02

Calendar/Julian Date: 17 January 1999 • 017

Sensor Package: MASTER Airborne Simulator (MASTER)

Area(s) Covered: Salton Sea, CA (Site #934),
Ivanpah Playa, CA (Site #956)

Investigator(s): Palluconi, JPL

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).

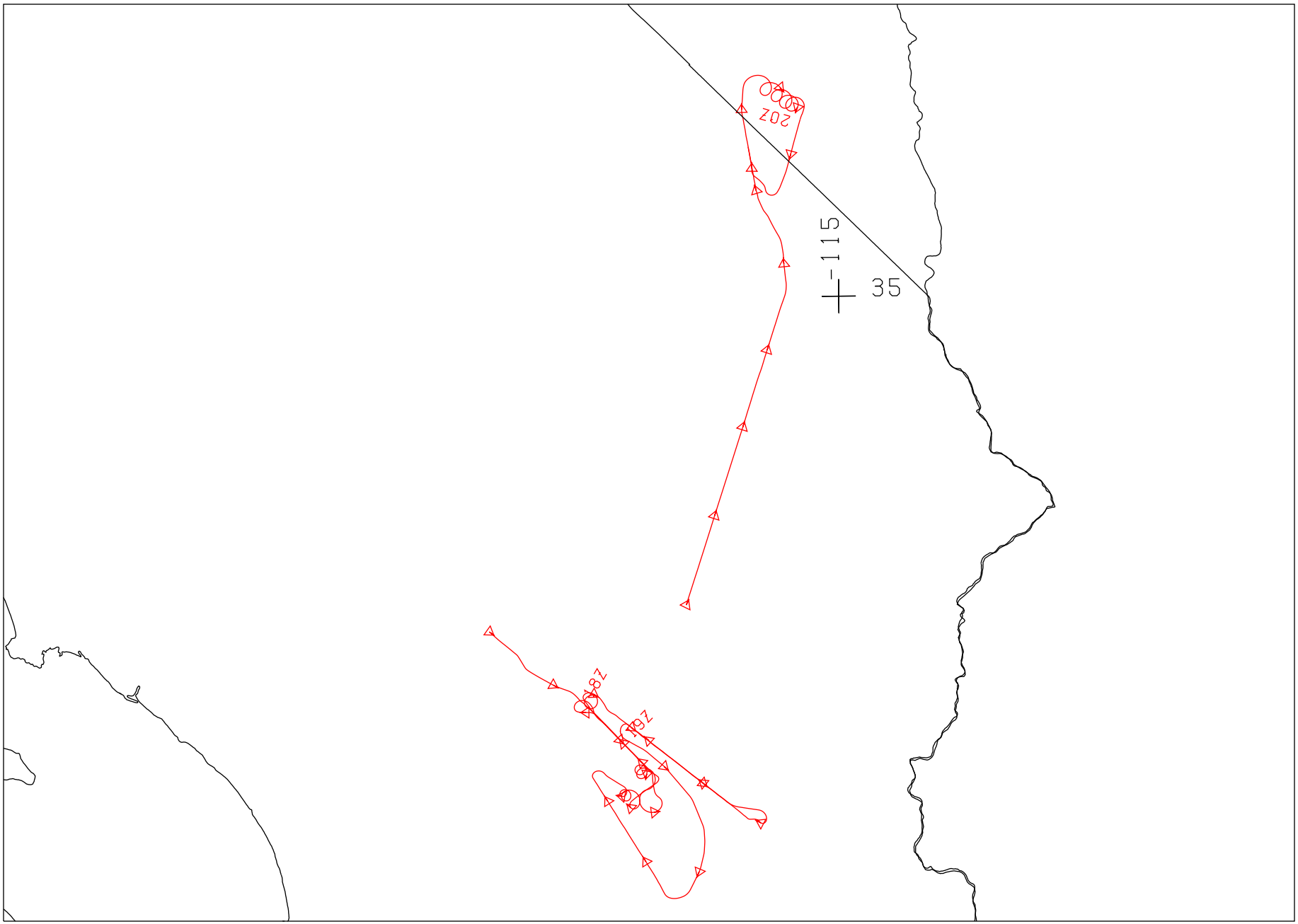
MODIS/ASTER AIRBORNE SIMULATOR (MASTER) FLIGHT LINE INFORMATION FOR 17-JAN-1999
NASA FLIGHT NUMBER 99-002-02

				START OF FLIGHT LINE			END OF FLIGHT LINE			FLIGHT DATA				
FILE	SITE	LINE	RUN	TIME HH:MM:SS	LAT DEG	LON DEG	TIME HH:MM:SS	LAT DEG	LON DEG	SCAN LINES	SOLAR ZEN	SOLAR AZIM	HEAD DEG	ALT M (GPS)
1	934	1	1	17:39:30	33.607	-116.054	17:40:46	33.554	-115.988	1891	63.0	144.7	145.85	1990
2	934	1	2	17:55:35	33.398	-115.810	17:57:22	33.475	-115.898	2663	60.9	148.6	327.82	4022
3	934	2	1	18:06:23	33.559	-115.911	18:12:03	33.339	-115.574	4237	59.5	151.7	139.77	6140
4	934	2	2	18:18:40	33.230	-115.408	18:27:11	33.482	-115.792	3172	58.1	155.4	320.24	6139
5	934	3	1	18:39:42	32.963	-115.726	18:47:06	33.274	-115.957	2763	56.4	160.4	338.17	6143
6	934	1	3	19:08:37	33.622	-116.046	19:09:38	33.561	-116.000	380	55.4	167.2	150.95	8211
7	956	1	8	19:45:33	35.350	-115.338	19:48:30	35.513	-115.374	2201	56.2	179.0	352.36	9068
8	956	1	9	20:10:38	35.435	-115.358	20:11:50	35.507	-115.372	896	56.4	185.7	353.86	4950

NUMBER OF FILES FOR THIS FLIGHT = 8
TOTAL NUMBER OF SCAN LINES = 18203
DATE THESE FILES WERE PROCESSED = 25-May-99
DATE THIS LIST WAS CREATED = 11-Oct-99
GRANULE VERSION = 9

GLOBAL ATTRIBUTES

Attribute Name	Description
title	MODIS/ASTER Airborne Simulator (MASTER) Level-1B Data
ExperimentName	DOE_Jan_99
FlightDate	17 January 1999
FlightNumber	99-002-02
GeographicArea	Salton Sea, Ivanpah
ClockUsedToProcess	GPS Clock
DataSliceNumber	1
Credits	Gumley & Hubanks/design, Fitzgerald & Cleven/modify, maintain
DataVersion	Version 2.0
Sof934twareVersion	9
CalibrationVersion	RSL-11/23/98-1/29/99, Ver_1.0
data_set	MASTER DOE_Jan_99
data_product	straight-line flight tracks
geog_flag	c
day_night_flag	d
granule_version	2
metadata_version	02a
producer_granule_id	Version 2.0 RSL-11/23/98-1/29/99, Ver_1.0
data_quality	good
granule_size	172194464.00000
Principle_Investigator	Palluconi (NASA/JPL)
Other_Aircraft_Sensors	



FLIGHT 99-002-02 17 JANUARY 1999 A/C 798 (DOE B200) MASTER