

FLIGHT SUMMARY REPORT

Flight Number: 11-002-03

Calendar/Julian Date: 10 October 2010 (283)

Sensor Package: Cirrus Digital Camera System (DCS)
MODIS/ASTER Airborne Simulator (MASTER)

Area(s) Covered: Canyon, Coral, Santiago, Cajon, Grass Valley and Slide Fire Scars CA

Investigator(s): Hook (JPL) **Aircraft:** DoE B200 #796

SENSOR DATA

Accession #:	05983	_____
Sensor ID #:	167	124
Sensor Type:	DCS	MASTER
Focal Length:	50mm	_____
Film Type:	_____	_____
Filtration:	Wratten 12	_____
Spectral Band:	510-990nm	_____
f-Stop:	11	_____
Shutter Speed:	1/500	_____
# of Frames:	366	_____
% Overlap:	60%	_____
Quality:	Excellent	Good
Remarks:		

NASA Airborne Science Program

The National Aeronautics and Space Administration maintains a variety of aircraft and sensor systems dedicated to the support of remote sensing research. Two Lockheed ER-2s (S-model U-2); two WB-57 high altitude aircraft; a DC-8; a Lockheed Orion P-3B; Global Hawk and the Altair unmanned aerial vehicle (supported by General Atomics) provide multi-level platforms for both NASA and investigator-owned sensors. Data are collected for the atmospheric, land, and ocean processes in support of the NASA Earth Science program, as well as for universities and other government agencies.

Additionally contracted aircraft from Department of Energy, and Twin Otter International provide remote sensing platforms for the program.

The NASA aircraft, located at Dryden Flight Research Center and Johnson Space Center, are used as test-beds for advanced sensor design and satellite simulation, as well as to support scientific and operational data collection campaigns. Numerous sensor systems are in use and under development by NASA, including multispectral imaging devices, a SAR system, and a suite of medium-format digital cameras. All instruments are spectrally, spatially, and radiometrically calibrated on a routine basis. The aircraft themselves are equipped with navigation systems that continuously record GPS location and platform attitude data.

Airborne Sensor Facility

The Airborne Sensor Facility at NASA Ames Research Center web site:

<http://asapdata.arc.nasa.gov/>

Additional information regarding flight documentation to include archive searches may be obtained from the following:

Airborne Sensor Facility
MS 244-15
NASA Ames Research Center
Moffett Field, CA 94035
Telephone: (650)604-6252 (FAX 4987)

MASTER (MODIS/ASTER Airborne Simulator)

The MODIS/ASTER Airborne Simulator (MASTER) is similar to MAS, with the thermal bands modified to more closely match the NASA EOS ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer). It is intended primarily to study geologic and other Earth surface properties. It has a variable scan speed which allows data to be acquired on both high and low altitude aircraft. Its fifty spectral bands are configured below:

MASTER AIRBORNE SIMULATOR			ASTER		
Band	Bandwidth	Resolution	Band	Bandwidth	Resolution
1	0.438-0.482	5-50m			
2	0.479-0.522	5-50m			
3	0.521-0.564	5-50m	1	0.520-0.600	15m
4	0.562-0.603	5-50m			
5	0.633-0.692	5-50m	2	0.630-0.690	15m
6	0.692-0.734	5-50m			
7	0.731-0.773	5-50m	3	0.760-0.860	15m
8	0.781-0.823	5-50m			
9	0.848-0.889	5-50m			
10	0.886-0.927	5-50m			
11	0.927-0.966	5-50m			
12	1.582-1.636	5-50m	4	1.600-1.700	30m
13	1.638-1.691	5-50m			
14	1.694-1.745	5-50m			
15	1.749-1.801	5-50m			
16	1.803-1.853	5-50m			
17	1.852-1.898	5-50m			
18	1.896-1.953	5-50m			
19	1.956-2.006	5-50m			
20	2.057-2.105	5-50m			
21	2.134-2.185	5-50m	5	2.145-2.185	30m
22	2.185-2.236	5-50m	6	2.185-2.225	30m
23	2.233-2.284	5-50m	7	2.235-2.285	30m
24	2.294-2.363	5-50m	8	2.295-2.365	30m
25	2.362-2.426	5-50m	9	2.360-2.430	30m
26	3.075-3.231	5-50m			
27	3.231-3.377	5-50m			
28	3.385-3.535	5-50m			
29	3.538-3.694	5-50m			
30	3.692-3.826	5-50m			
31	3.846-3.999	5-50m			
32	3.999-4.154	5-50m			
33	4.157-4.310	5-50m			
34	4.307-4.460	5-50m			
35	4.456-4.603	5-50m			
36	4.597-4.760	5-50m			
37	4.753-4.911	5-50m			
38	4.906-5.054	5-50m			
39	5.044-5.205	5-50m			
40	5.203-5.342	5-50m			

Continued Next Page

MASTER AIRBORNE SIMULATOR			ASTER		
Band	Bandwidth	Resolution	Band	Bandwidth	Resolution
41	7.587-7.943	5-50m			
42	7.950-8.398	5-50m	10	8.125-8.475	90m
43	8.447-8.806	5-50m	11	8.475-8.825	90m
44	8.882-9.307	5-50m	12	8.925-9.275	90m
45	9.503-9.902	5-50m			
46	9.912-10.327	5-50m			
47	10.338-10.922	5-50m	13	10.25-10.95	90m
48	10.977-11.652	5-50m	14	10.95-11.65	90m
49	11.864-12.364	5-50m			
50	12.638-13.119	5-50m			

MASTER/Aircraft Parameters:

Spectral Bands: 50 (16-bit resolution)
 IFOV: 2.5mrad
 Swath width: 19.9nm (36km) at 65,000ft
 Ground Resolution 5-50m (variable w/ altitude)
 Total FOV: 85.92 degrees
 Pixels/Scanline: 716
 Scan Rate: 6.25 – 25 Hz
 URL Reference: <http://masterweb.jpl.nasa.gov>

Cirrus Digital Camera System (DCS)

Cirrus Digital Systems provides the digital camera. It consists of a Hasselblad camera body with a Kodak camera back and CCD array. It can be configured to acquire either false color infrared or natural color imagery.

Lens	Array Size	Array Width	Field of View (FOV)	Altitude	Ground Coverage	Nominal Resolution
50mm	4072 x 4072 (pixels)	36.72mm	40.3°	65000'	7.9nm	3.5m
50mm	4072 x 4072 (pixels)	36.72mm	40.3°	45000'	5.4nm	2.5m
50mm	4072 x 4072 (pixels)	36.72mm	40.3°	28000'	3.4nm	1.5m
50mm	4072 x 4072 (pixels)	36.72mm	40.3°	13000'	1.6nm	0.7m
50mm	4072 x 4072 (pixels)	36.72mm	40.3°	6500'	0.8nm	0.4m

Note: Nominal resolution references the smallest target that can be imaged.

CAMERA FLIGHT LINE DATA

FLIGHT NO. 11-002-03

Accession # 05983

Page 1 of 2

Sensor # 167

Site	Line #	Run #	Frame #	Time (GMT-hr, min, sec)		Altitude, GPS feet/meters	Cloud Cover/Remarks
				START	END		
CAN	2	1	2805-2815	17:51:45	17:52:48	7700/2350	Clear (no data collected during Canyon/Coral line 3)
CAN	1	1	2816-2840	18:02:41	18:05:28	7700/2350	Clear
SAN	1	1	2841-2853	18:21:10	18:22:34	8800/2690	Clear
SAN	2	1	2854-2889	18:29:14	18:33:18	8800/2690	Clear
SAN	3	1	2890-2925	18:37:12	18:41:15	8800/2690	Clear
SAN	4	1	2926-2957	18:44:52	18:48:28	8800/2690	Clear
SAN	5	1	2958-2969	18:52:14	18:55:49	8800/2690	Clear (camera turned off midway through line)
SAN	6	1	2970-2990	18:58:42	19:01:01	8800/2690	Clear
SAN	7	1	2991-3002	19:04:51	19:06:08	8800/2690	Clear
GVS	6	1	3003-3014	19:25:23	19:26:40	13000/3970	Clear

CAMERA FLIGHT LINE DATA

FLIGHT NO. 11-002-03

Accession # 05983

Page 2 of 2

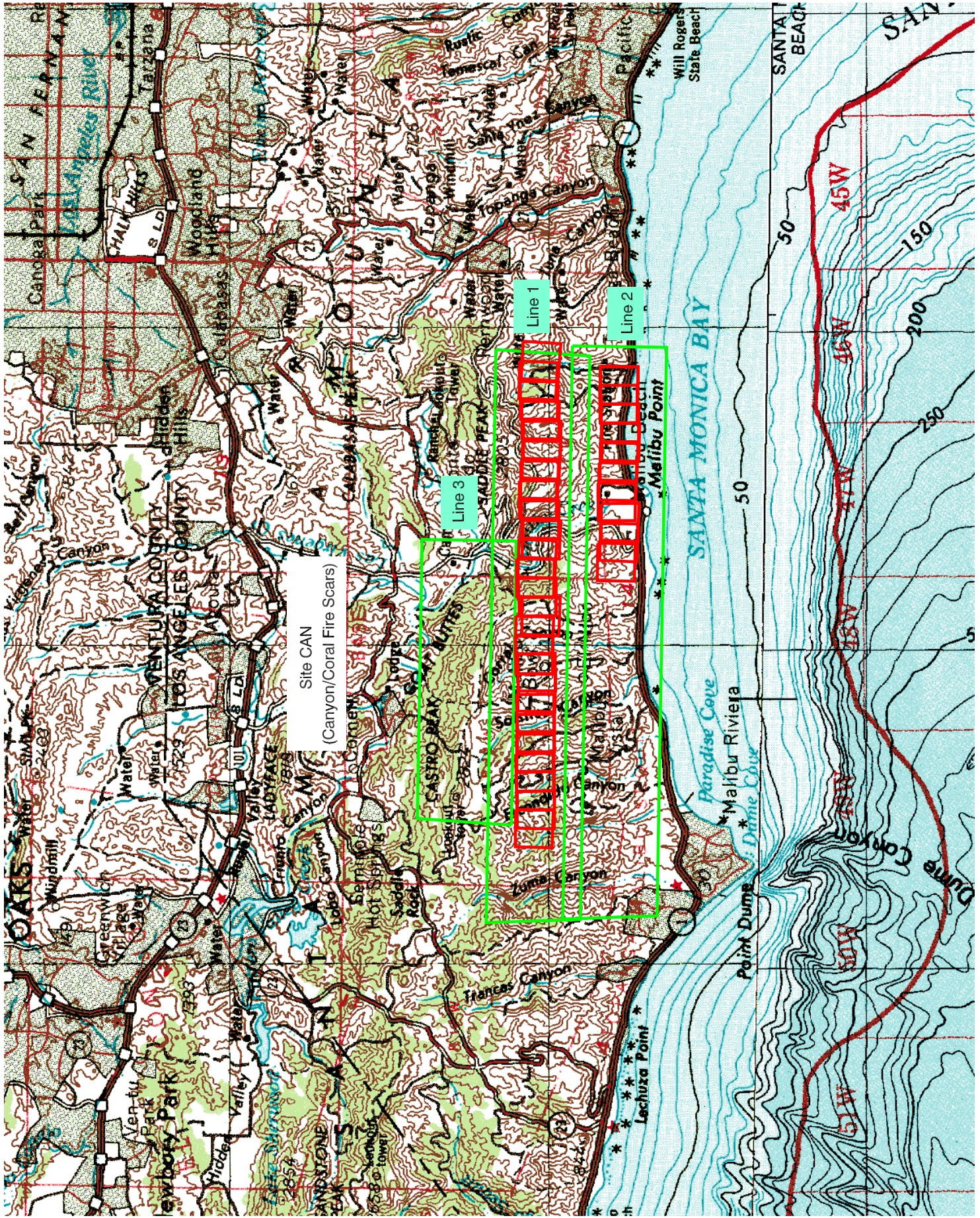
Sensor # 167

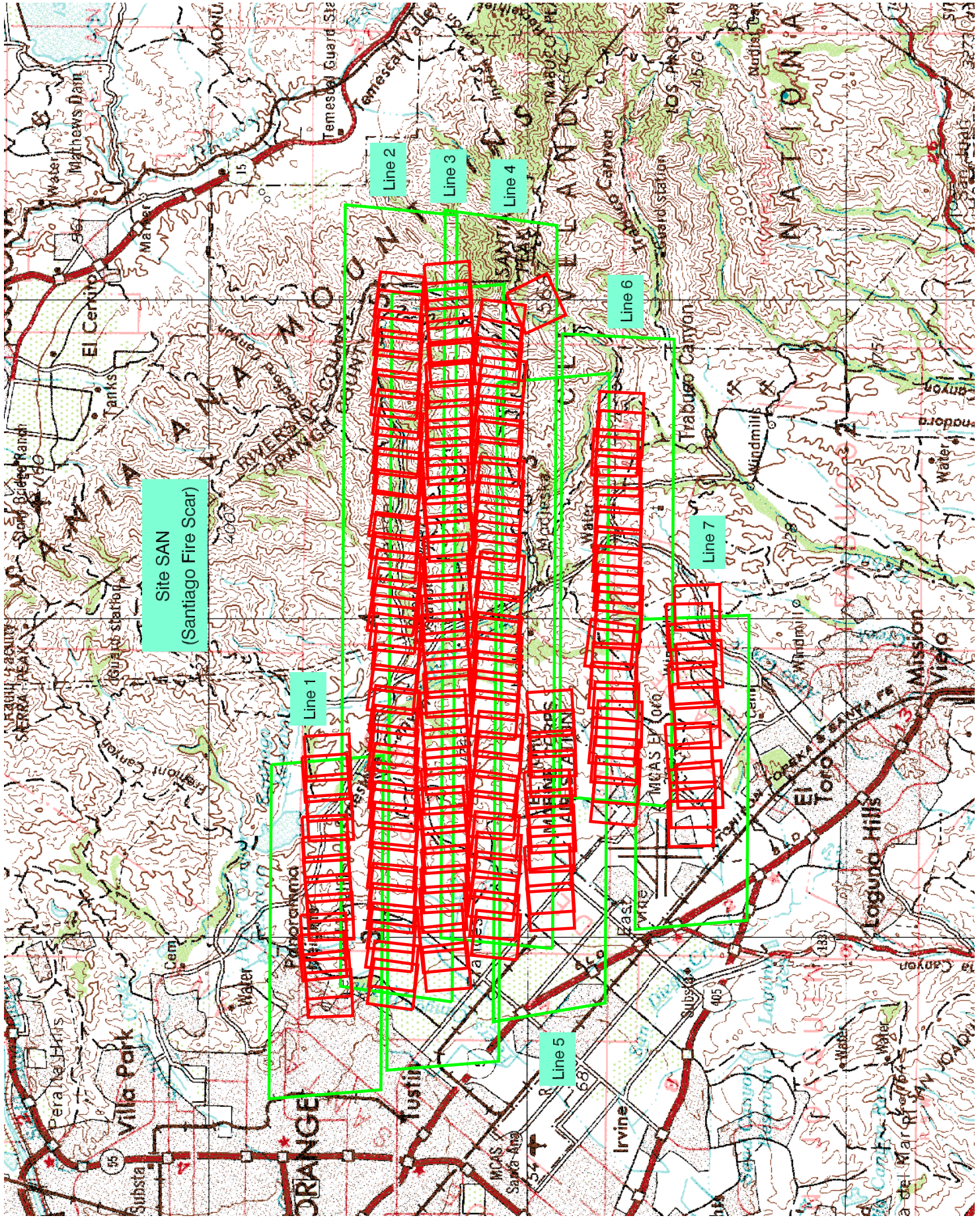
Site	Line #	Run #	Frame #	Time (GMT-hr, min, sec)		Altitude, GPS feet/meters	Cloud Cover/Remarks
				START	END		
GVS	5	1	3015-3025	19:30:30	19:31:39	13000/3970	Clear
GVS	4	1	3026-3044	19:36:42	19:38:48	13000/3970	Clear
GVS	3	1	3045-3064	19:42:51	19:45:04	13000/3970	Clear
GVS	2	1	3065-3101	19:49:16	19:53:27	13000/3970	Clear
GVS	1	1	3102-3111	19:56:45	19:57:48	13000/3970	Clear
CAJ	1	1	3112-3123	20:03:26	20:04:42	9900/3020	Clear
CAJ	2	1	3124-3139	20:07:43	20:09:28	9900/3020	Clear
CAJ	3	1	3140-3154	20:13:17	20:14:54	9900/3020	Clear
CAJ	2	2	3155-3170	20:18:41	20:20:25	9800/2990	Clear

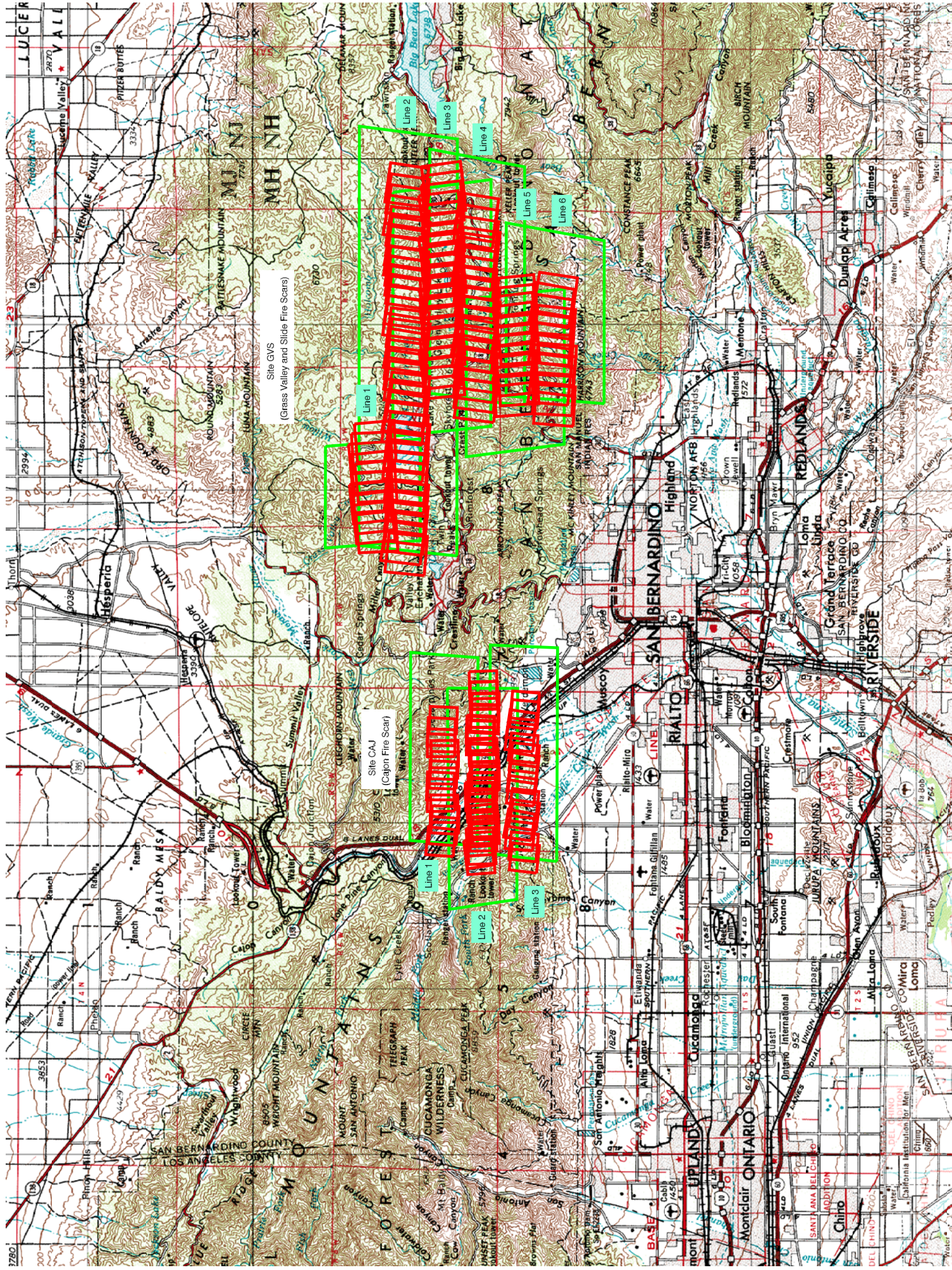
MODIS/ASTER AIRBORNE SIMULATOR (MASTER) FLIGHT LINE INFORMATION FOR 10 Oct 2010
 NASA FLIGHT NUMBER 11-002-03

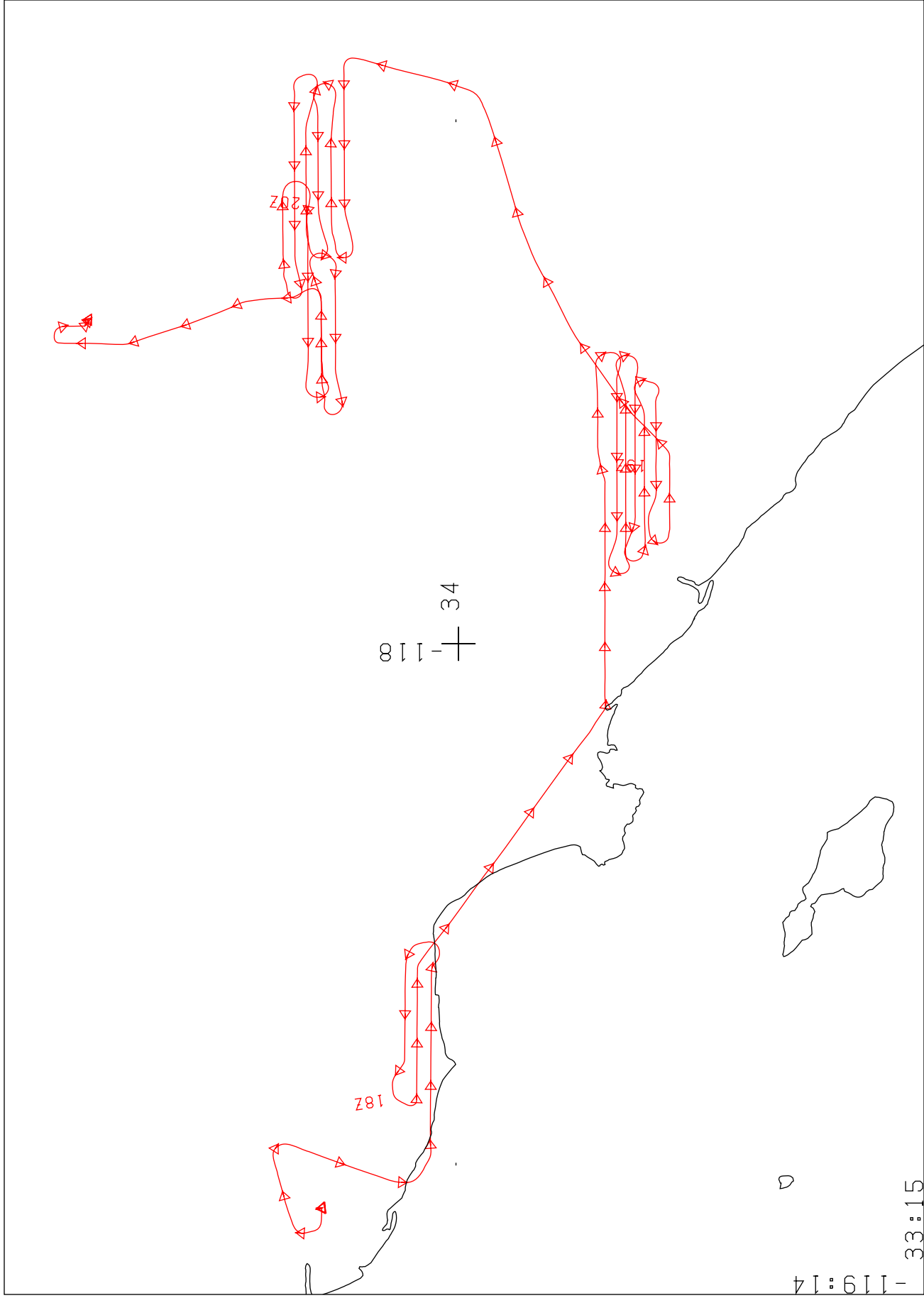
FLTL	SITE	LINE	RUN	START OF FLIGHT LINE			END OF FLIGHT LINE			FLIGHT DATA				
				TIME HH:MM:SS	LAT DEG	LON DEG	TIME HH:MM:SS	LAT DEG	LON DEG	SCAN LINES	SOLAR ZEN	AZIM	HEAD DEG	ALT M (MSL)
1	CAN	02	1	17:49:38	34.042	-118.825	17:53:02	34.042	-118.631	5094	48.3	142.0	89.78	2356
2	CAN	03	1	17:57:00	34.083	-118.699	17:58:42	34.083	-118.797	2544	47.5	143.9	274.19	2366
3	CAN	01	1	18:02:07	34.064	-118.827	18:05:32	34.064	-118.633	5120	46.8	145.7	90.97	2357
4	SAN	01	1	18:20:34	33.766	-117.809	18:22:35	33.766	-117.695	3012	44.2	152.4	86.96	2678
5	SAN	02	1	18:28:44	33.746	-117.510	18:33:24	33.747	-117.777	6954	43.3	155.7	276.10	2685
6	SAN	03	1	18:36:37	33.733	-117.800	18:41:14	33.732	-117.536	6900	42.7	158.3	86.71	2673
7	SAN	04	1	18:44:16	33.717	-117.512	18:48:32	33.718	-117.759	6400	42.1	161.0	277.48	2682
8	SAN	05	1	18:51:34	33.702	-117.783	18:55:24	33.703	-117.563	5730	41.7	163.5	84.18	2680
9	SAN	06	1	18:58:14	33.684	-117.552	19:01:03	33.684	-117.712	4200	41.3	165.8	274.43	2683
10	SAN	07	1	19:04:15	33.663	-117.751	19:06:06	33.662	-117.646	2766	41.0	167.8	87.42	2678
11	GVS	06	1	19:24:42	34.179	-117.047	19:26:39	34.179	-117.159	2900	40.9	176.5	276.74	3971
12	GVS	05	1	19:29:54	34.200	-117.190	19:31:42	34.200	-117.085	2699	40.9	178.4	82.98	3967
13	GVS	04	1	19:36:05	34.221	-117.000	19:38:50	34.221	-117.159	4123	40.9	181.0	278.72	3970
14	GVS	03	1	19:42:14	34.240	-117.178	19:45:06	34.240	-117.014	4278	40.9	183.3	83.86	3968
15	GVS	02	1	19:48:41	34.258	-116.983	19:53:28	34.259	-117.259	7152	41.1	186.1	276.56	3971
16	GVS	01	1	19:56:39	34.278	-117.251	19:57:50	34.278	-117.185	1772	41.3	188.2	85.94	3963
17	CAJ	01	1	20:02:46	34.239	-117.326	20:04:44	34.239	-117.449	2927	41.4	190.4	274.64	3004
18	CAJ	03	1	20:12:42	34.195	-117.320	20:14:56	34.195	-117.460	3344	41.8	194.1	273.91	3008
19	CAJ	02	2	20:18:13	34.217	-117.487	20:20:31	34.218	-117.344	3432	42.1	196.1	86.07	3001

NUMBER OF FILES FOR THIS FLIGHT = 19
 TOTAL NUMBER OF SCAN LINES = 81347
 DATE THESE FILES WERE PROCESSED = 18-Nov-2010
 DATE THIS LIST WAS CREATED = Thu Nov 18 13:47:44 PST 2010
 GRANULE VERSION = 1









FLIGHT 11-002-03 10 OCTOBER 2010 A/C 796 (DOE B200 ROMEO) MASTER / DCS
LAMBERT CONFORMAL PROJECTION: SP1 = 33.5 SP2 = 34.5 CM = -118.0 ROTATED BY 0.0
17:31:13 TO 20:40:00 UT SCALE 1:9.50E+05 TIME TICK EVERY 2.00 MINUTES