

## SAFARI 2000 MAS Flight 00157

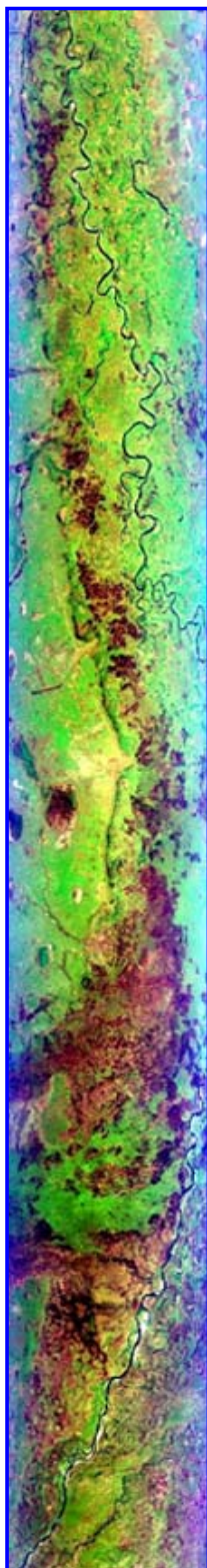
The SAFARI 2000 MAS contains 146 GB of data. Individual HDF files may exceed the size of a CD, and are best written to DVD. You may use this automated interface to order data from selected tracks (flight segments). If you require large portions of this data, we recommend that you contact us by email or phone and make special arrangements.

### Flight #00-157

#### RBG Images

[Click Image](#)

Track #06



#### Summary Information

Date: **September 06, 2000**

ER-2 Flight Number: **00-157**

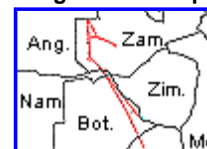
Location: **Northern South Africa and Mozambique**

Principal Investigator: **Dr. Michael King (NASA GSFC)**

Flight Scientist: **Chris Moeller (UW CIMSS)**

Additional Sensors: **AirMISR, CLS, LAS, MAS, MOPITT-A, S-HIS, SSFR** (see [Instrument Status](#) below)

#### Flight Track Map



[Click to enlarge](#)

#### Processing Information

Level-1B Data processed by: **Ames Research Center**

Level-1B Data Version: **#01**

Level-1B Configuration: ([sample file](#))

Calibration Type: **Final**

Calibration Version: **1.0**

#### Level-1B Browse Imagery

Straight Line Flight Tracks: **17 processed**

Scanlines Processed: **0**

[Solar Azimuth and Zenith Angles](#)

#### Browse Images

Click on the Flight Track number to see track images.  
Click on the Check Box to list HDF files prior to adding to shopping cart.  
Lat/Lon ranges are for the BEG-END scanline nadir pixels.

List	Flight Track	Time_Span (GMT)	Heading (Deg)	Lat_Range (Deg_S)	Lon_Range (Deg_E)	Length (Scanlines)	Altitude (msl)
<input type="checkbox"/>	<a href="#">01</a>	07:14-07:40	320	21.70-19.38	28.03-25.95	9999	19602
<input type="checkbox"/>	<a href="#">02</a>	07:40-08:07	321	19.38-17.01	25.95-23.91	9999	20014
<input type="checkbox"/>	<a href="#">03</a>	08:07-08:14	318	17.01-16.46	23.91-23.36	2516	19962
<input type="checkbox"/>	<a href="#">04</a>	08:15-08:41	358	16.39-13.40	23.33-23.09	9888	20029
<input type="checkbox"/>	<a href="#">05</a>	08:46-09:13	176	13.21-16.12	23.03-23.21	9999	19989
<input type="checkbox"/>	<a href="#">06</a>	09:19-09:46	357	16.45-13.41	23.23-23.04	9976	19907
<input type="checkbox"/>	<a href="#">07</a>	09:49-10:02	153	13.34-14.56	23.26-23.92	4771	20051
<input type="checkbox"/>	<a href="#">08</a>	10:02-10:15	114	14.61-15.15	23.98-25.32	4849	20039
<input type="checkbox"/>	<a href="#">09</a>	10:21-10:34	293	15.23-14.65	25.56-24.11	5043	19884
<input type="checkbox"/>	<a href="#">10</a>	10:34-10:42	274	14.63-14.58	24.06-23.25	2665	19921
<input type="checkbox"/>	<a href="#">11</a>	10:44-10:58	179	14.74-16.24	23.14-23.22	5173	19890
<input type="checkbox"/>	<a href="#">12</a>	10:58-11:04	135	16.31-16.71	23.25-23.68	2019	19989
<input type="checkbox"/>	<a href="#">13</a>	11:04-11:13	138	16.71-17.45	23.68-24.34	3377	20048
<input type="checkbox"/>	<a href="#">14</a>	11:13-11:40	146	17.46-19.93	24.35-25.90	9999	20090
<input type="checkbox"/>	<a href="#">15</a>	11:40-11:46	149	19.93-20.50	25.90-26.26	2274	20035



R:2.15 microns  
G:0.91 microns  
B:0.55 microns

<a href="#">16</a>	11:46-11:50	148	20.50-20.92	26.27-26.53	1705	19937
<a href="#">17</a>	11:51-12:17	154	20.95-23.55	26.55-27.91	9999	19830
<a href="#">18</a>	12:17-12:22	156	23.54-24.04	27.91-28.15	1860	19410
<a href="#">All images in sequence</a>						

### ER-2 Flight Log

Author: **Chris Moeller**  
Mission Scientist: **Dr. Michael King**  
ER-2 Pilot: **Jan Nystrom**  
Takeoff: **06Sep2000 0000 UTC**  
Landing: **06Sep2000 0000 UTC**  
Duration: **06:15:00**

### Objective:

Over fly the Mongu Tower (15°26'S, 23°15'E) on a line from about Senanga to Zambezi with the CV580 doing BRDF below followed by two overpasses of Mongu airfield (15°15'S, 23°10'E) on the same line shifted slightly to the west with CV580 doing profiles below and MPL lidar looking up. Make two overpasses of controlled burn (Ward) at Kaoma (about 1000 and 1020 UTC), then over fly MPL at Mongu airfield one more time on N-S transect.

### Key Flight Legs:

ER-2 overpass of Mongu tower (~0823 UTC) and Mongu airfield (~0905 and ~0930 UTC) in clear sky with much smoke/haze noted by pilot. AirMISR successfully operated on tower and 1st airfield overpass. The ER-2 then flew to burn scars and a small controlled fire launch near Kaoma for two overpasses centered on about 14°55'S, 24°45'E. Mission then returned to Mongu airfield line for a final overpass of MPL and on to Senanga site. ER-2 then proceeded on a flyby of Matimba power station near Ellisras (~1220 UTC).

Highlights: Coordinated ER-2/CV580 BRDF and profiling over ground based instruments in Mongu region. After the mission, learned that Mongu MPL not operative due to power outage.

AERONET sites were overflown during this mission:

- Mongu Airport
- Senanga
- Zambezi
- Kaoma
- Mongu Tower

### Pilot Report:

Skies clear throughout the Zambian sites with much smoke/haze noted.

### Meteorology:

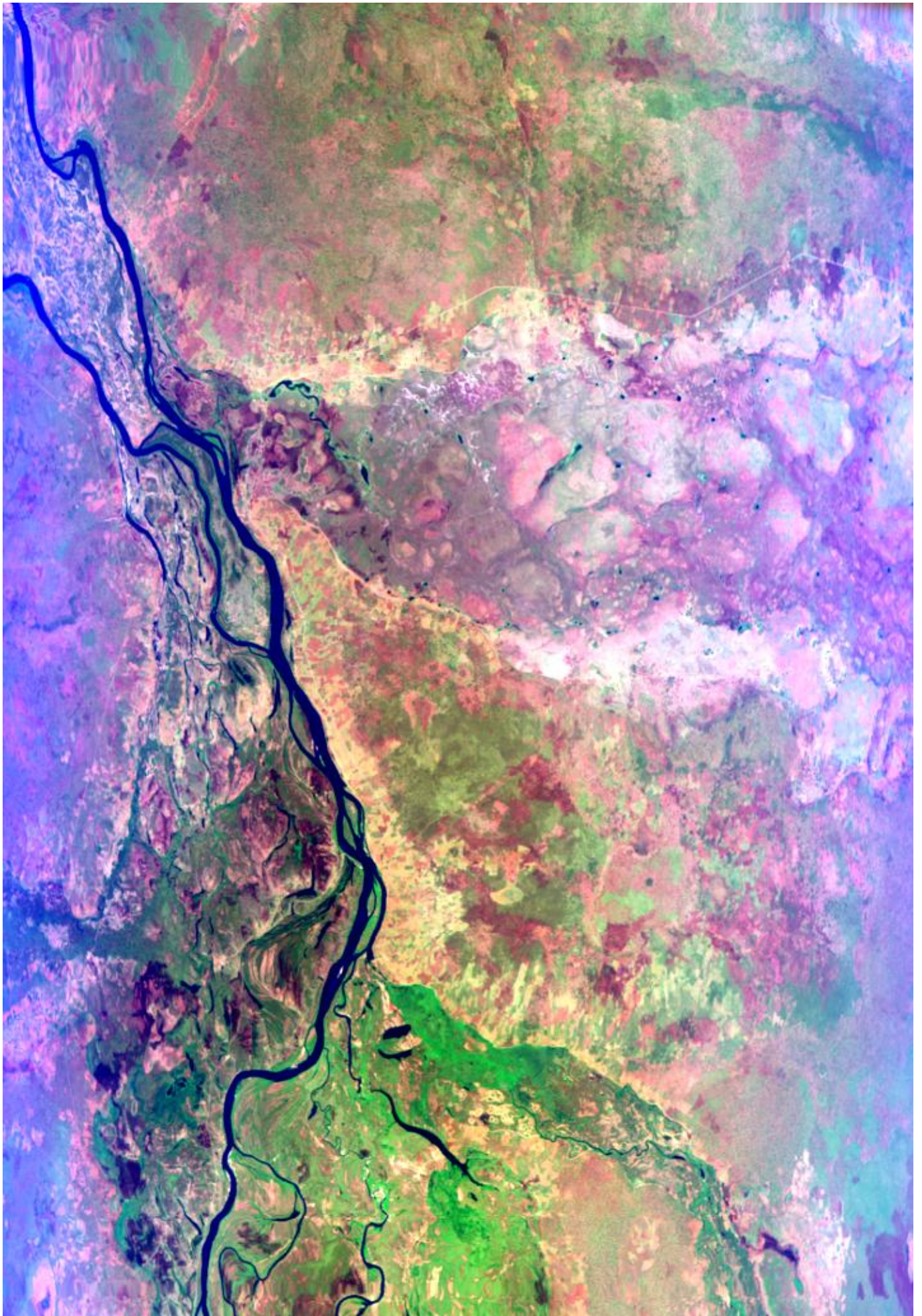
A cold front has crossed the Cape, causing cloudy rainy weather over the southwestern parts of South Africa. To the north of the front, the south atlantic high is ridging across the western interior. The indian ocean high has moved off to the east and the influx of cool moist air into the northeastern areas has collapsed. Aloft, the flow has become more zonal over southern Africa with a trough and upper jet to the east. Weather will be generally fine, except for the southwestern areas where it will be cloudy at times with occasional rain.

### Instrument Status:

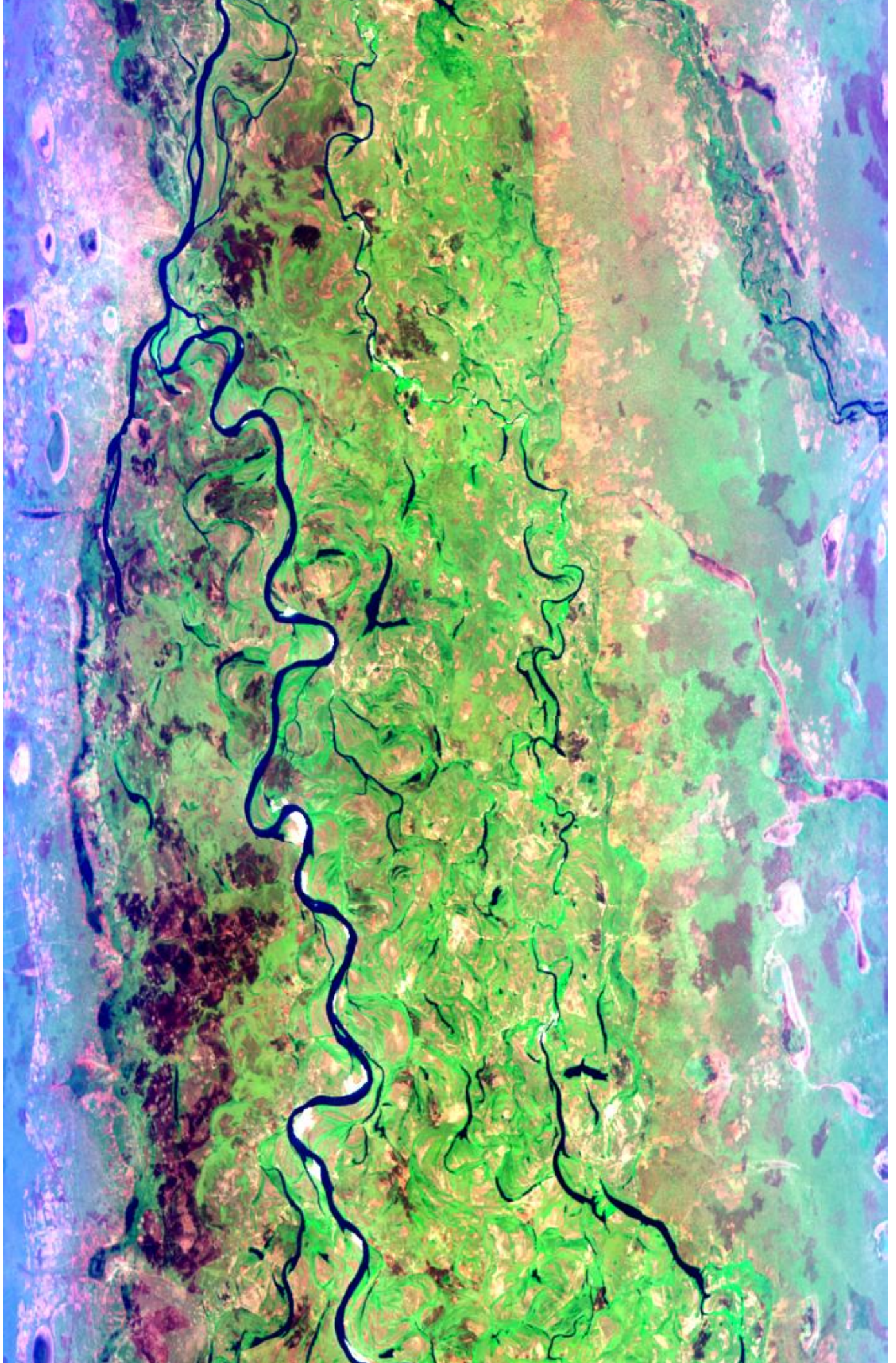
- AirMISR (Airborne Multi-angle Imaging Spectroradiometer): collected data over Mongu tower
- CLS (Cloud Lidar System): Lidar worked properly, but navigation data not recorded
- LAS (Leonardo Airborne Simulator): worked well
- MAS (MODIS Airborne Simulator): worked well
- MOPITT-A (MOPITT Airborne Simulator): Worked well
- S-HIS (High-resolution Interferometer Sounder): worked well; nadir mode
- SSFR (Solar Spectral Flux Radiometer): Worked well

- RC-10 (Tracking Camera): operated on all legs covering Mongu region as well as Kaoma burn region.

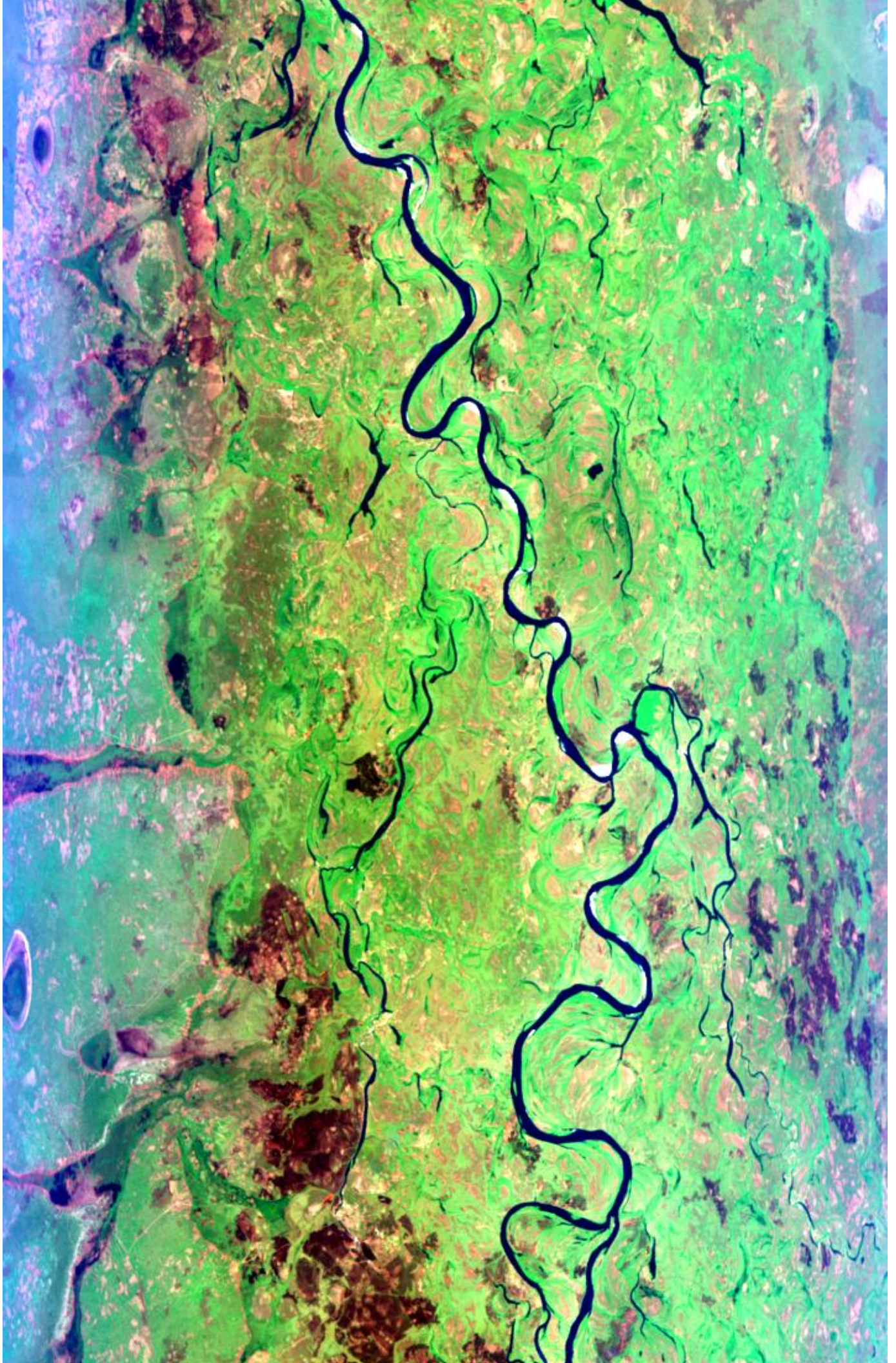




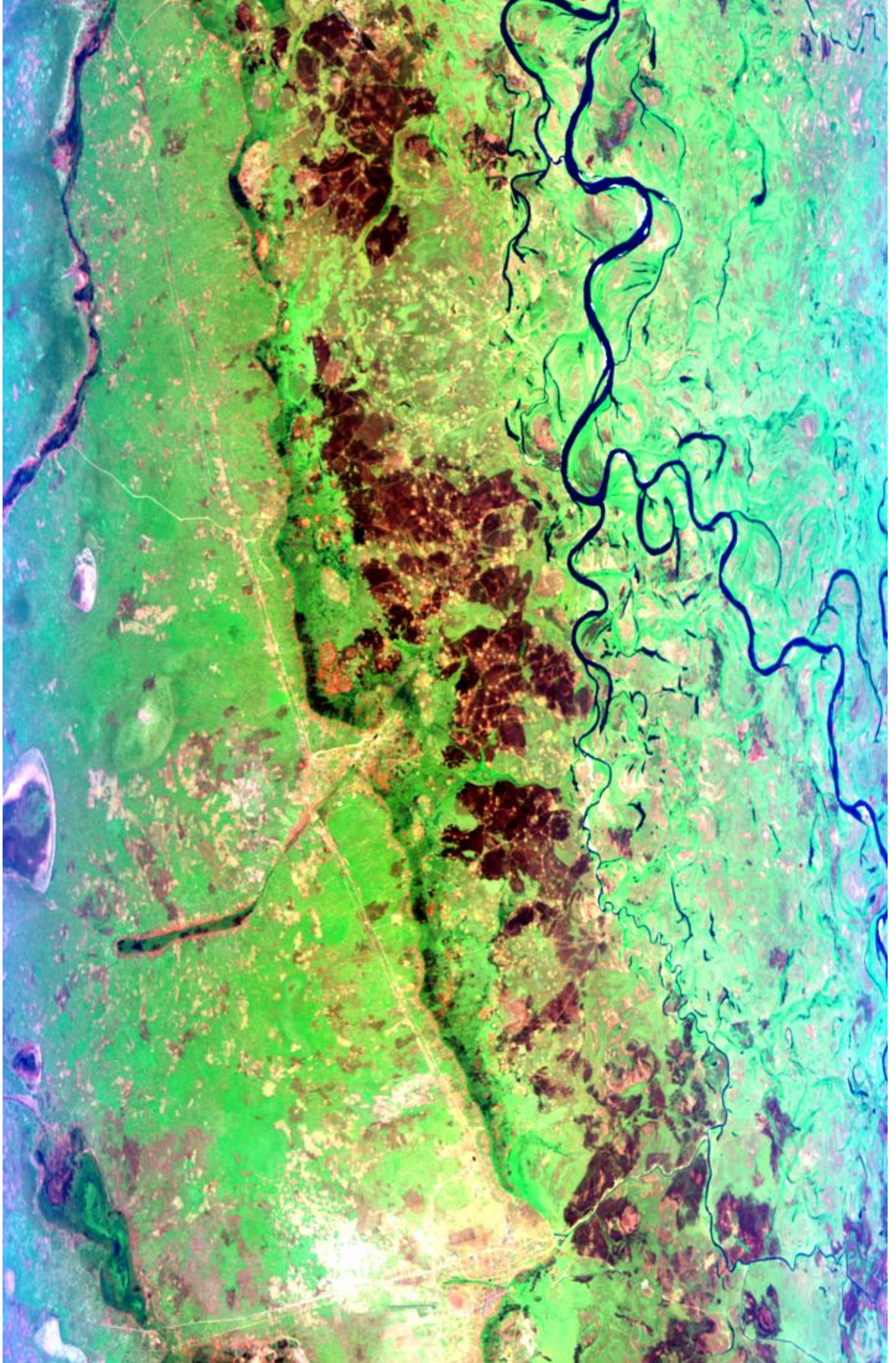




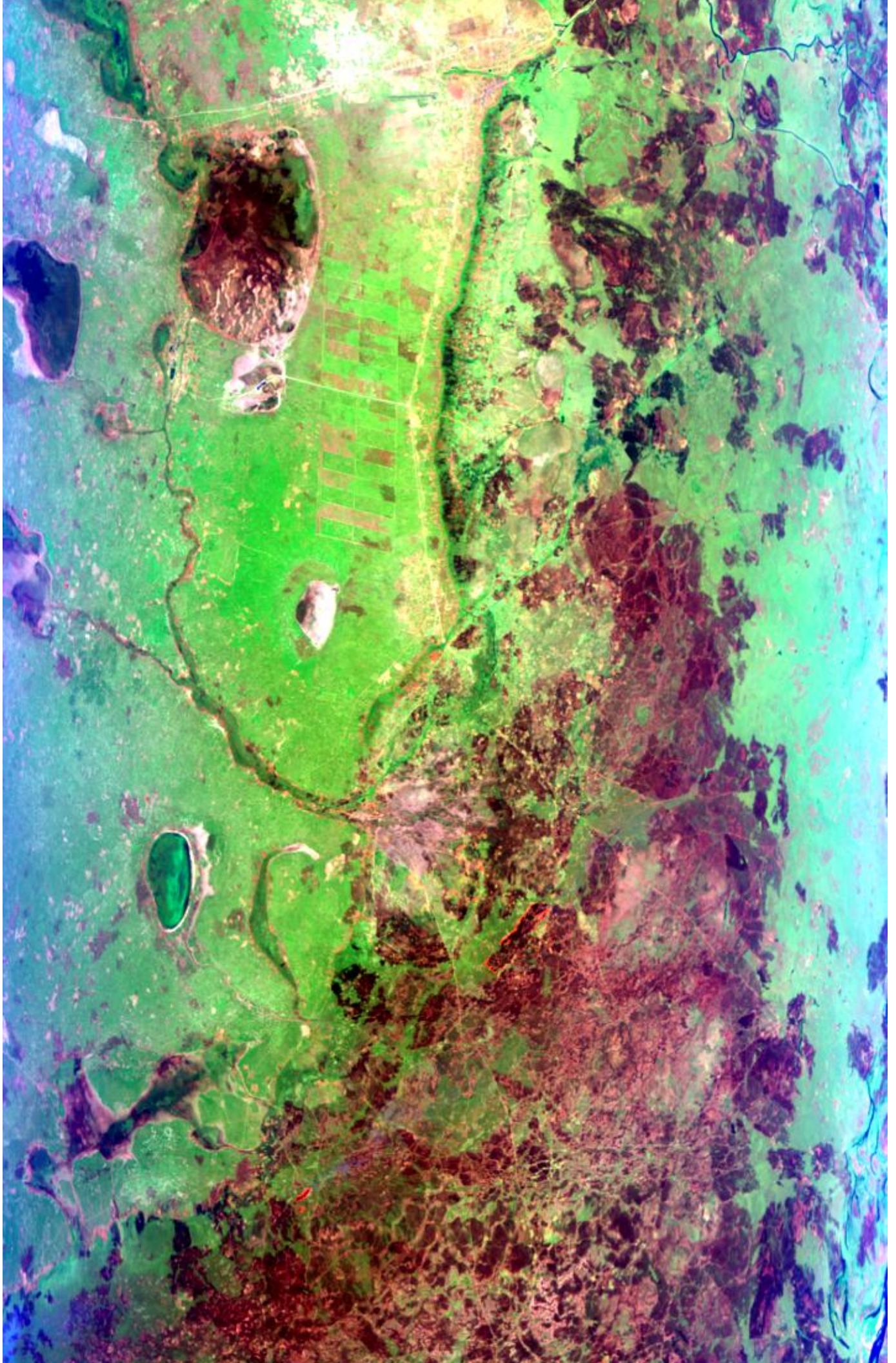




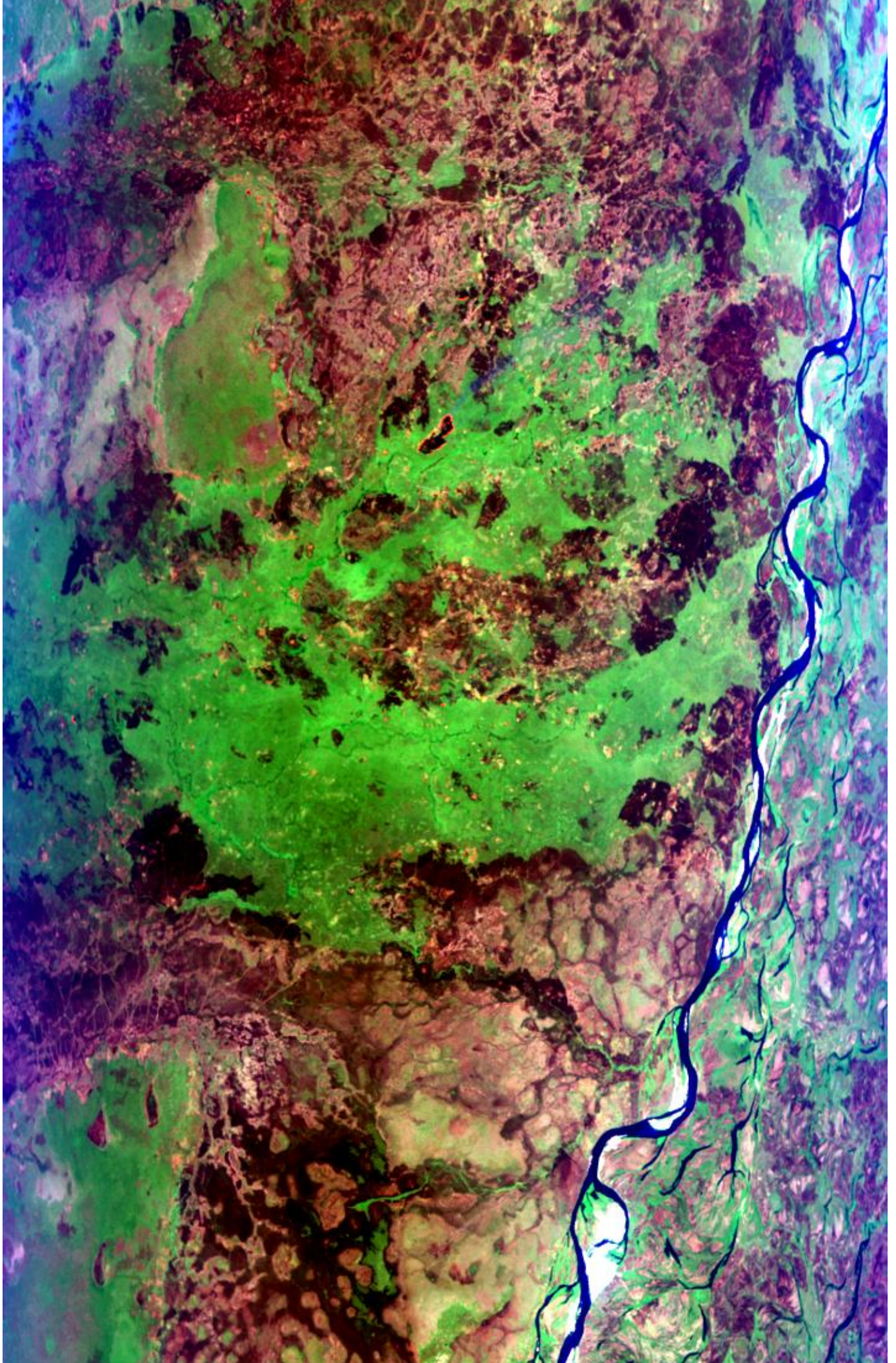




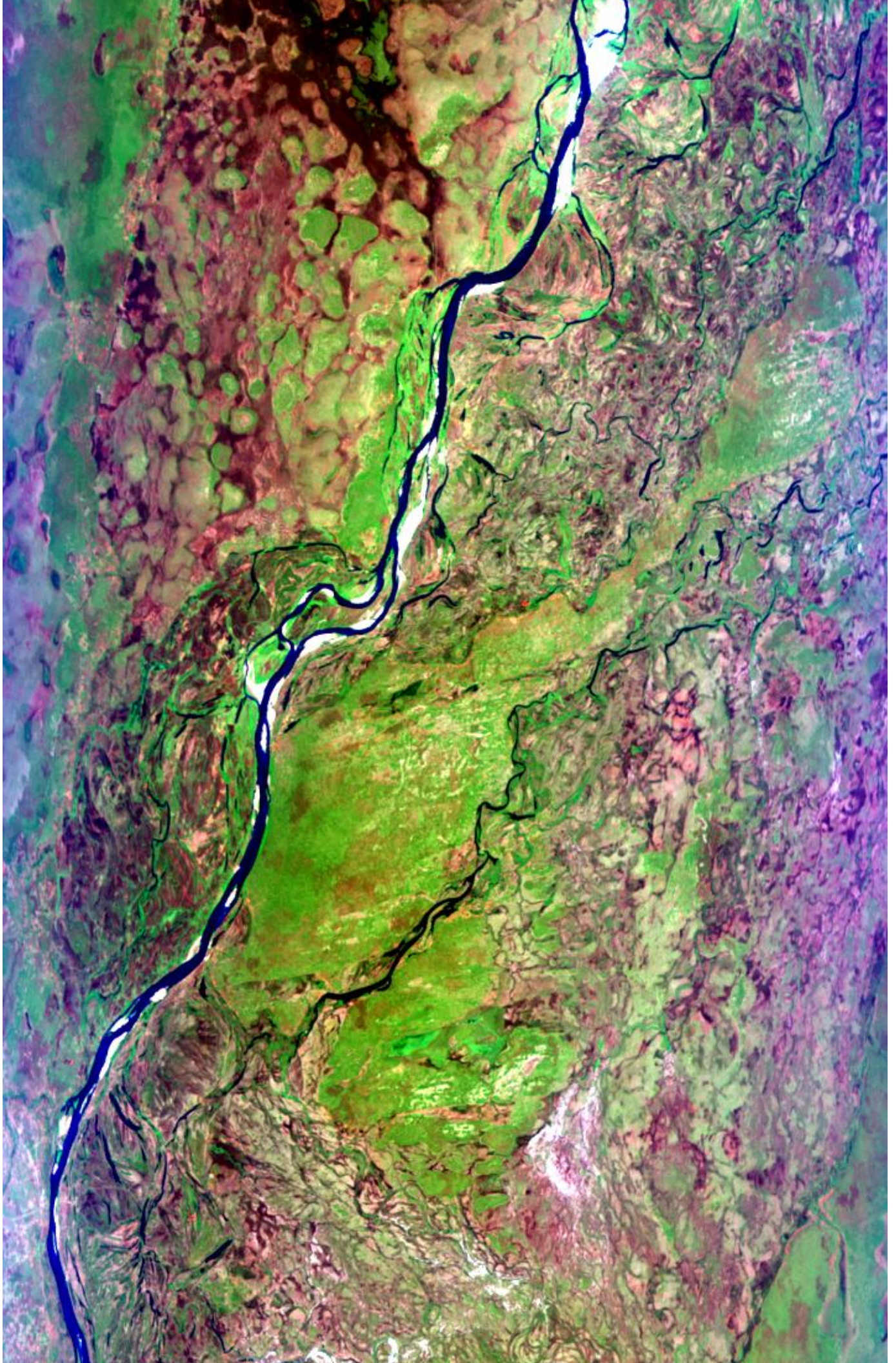




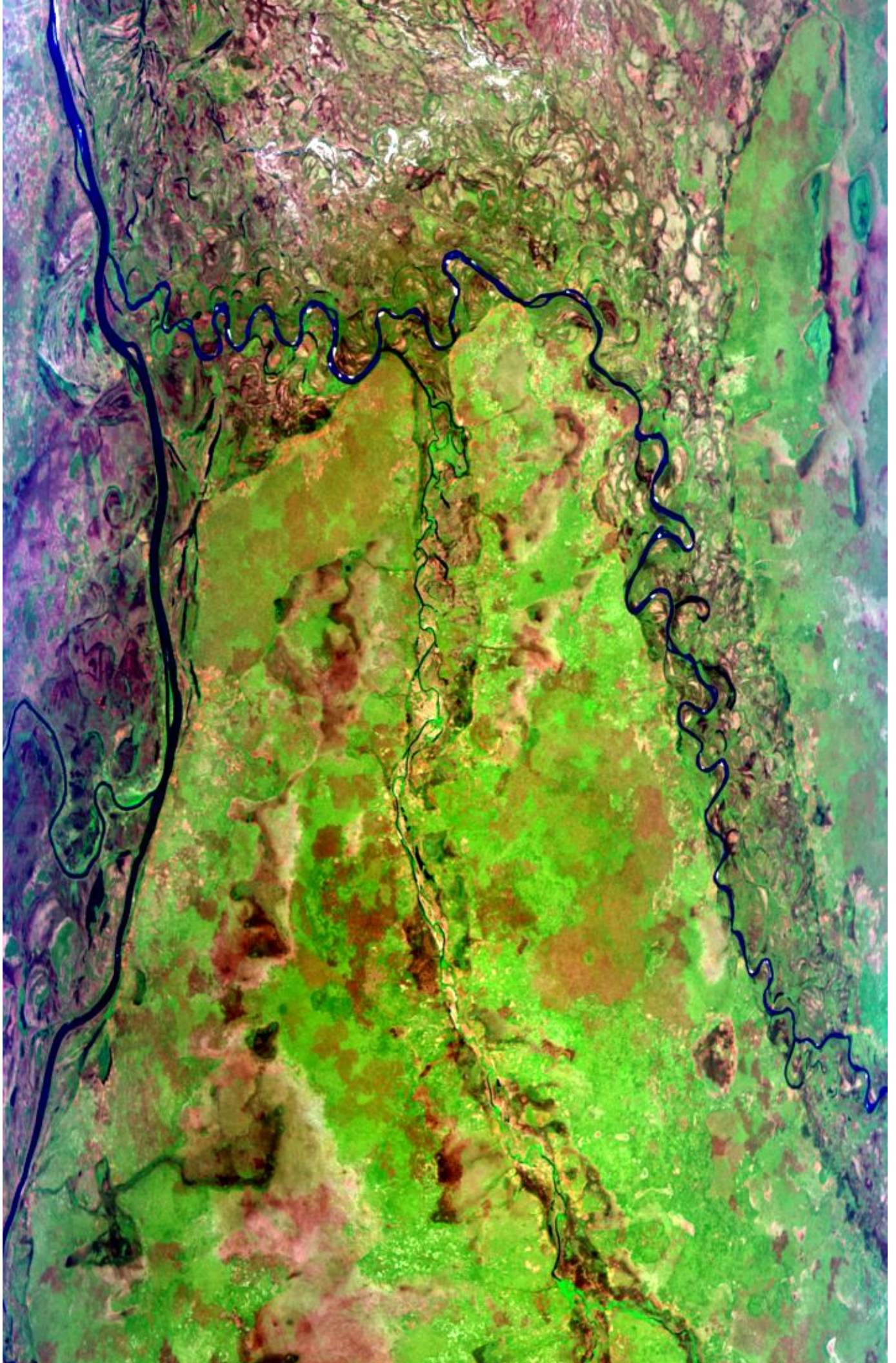




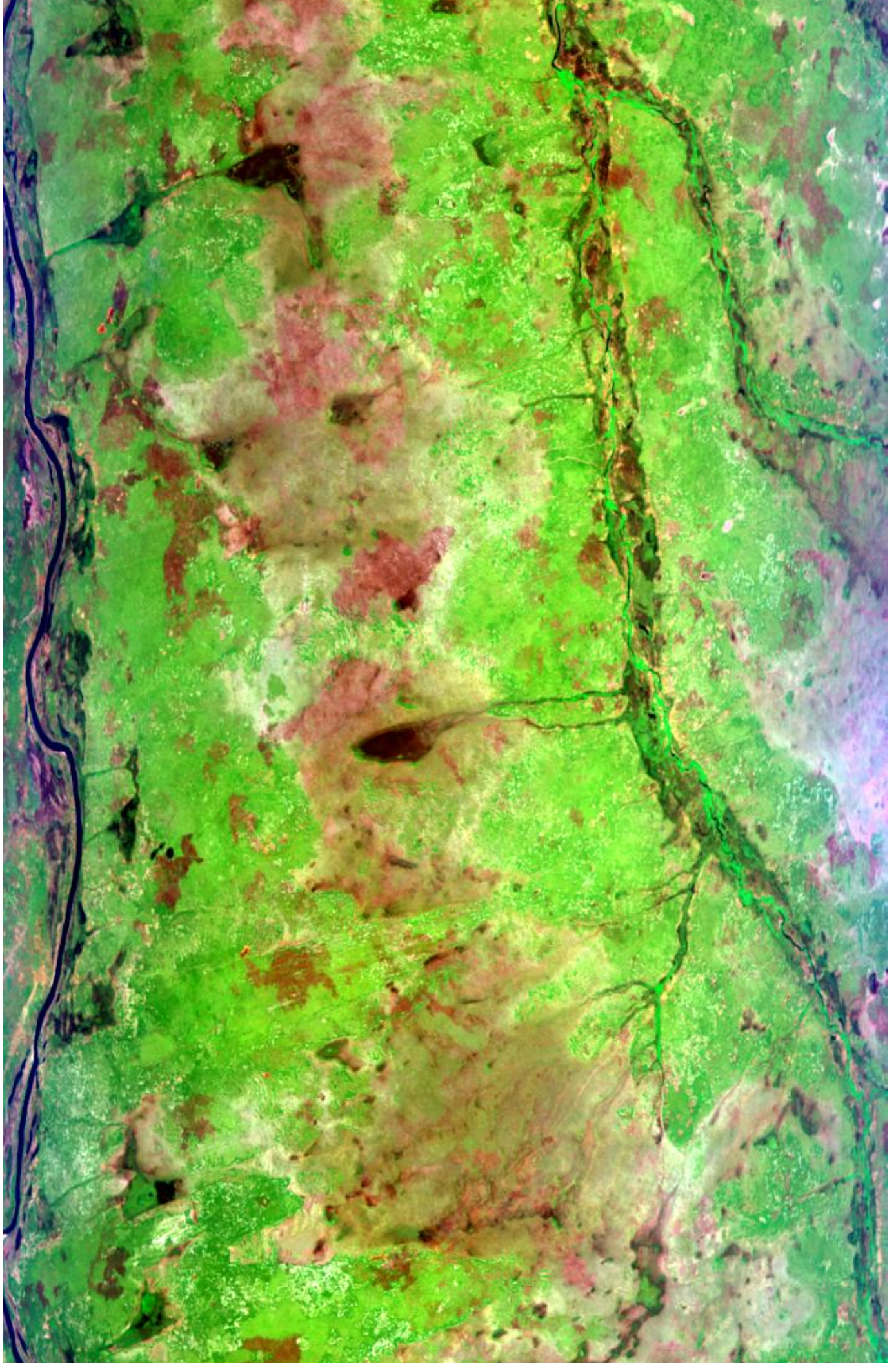












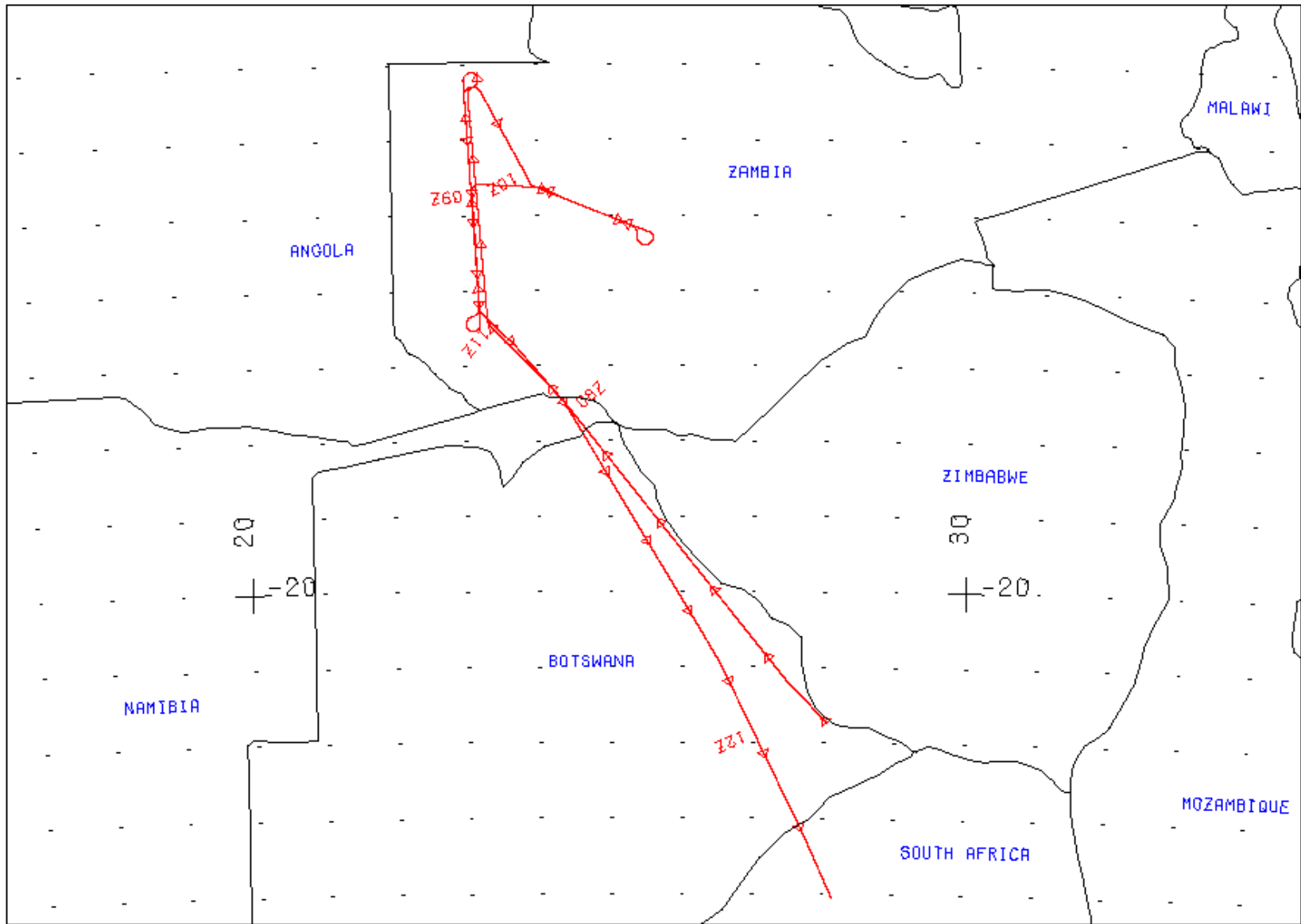












FLIGHT 00-157

6 SEPTEMBER 2000

A/C 809

SAFARI (NAV DATA FROM RS232 FEED TO MAS)



FLIGHT 00-157

6 SEPTEMBER 2000

A/C 809

SAFARI (NAV DATA FROM RS232 FEED TO MAS)



50 MAS Configuration for 00-157 06 Sep 2000 Botswana and Zambia

01	01	16	0	0.038163	0.0000	0.452	0.472	0.493	0.100	1981.92
02	02	16	0	0.040904	0.0000	0.534	0.554	0.577	0.100	1857.88
03	03	16	0	0.027690	0.0000	0.635	0.658	0.689	0.100	1549.55
04	04	16	0	0.032404	0.0000	0.687	0.708	0.731	0.100	1386.41
05	05	16	0	0.024650	0.0000	0.729	0.750	0.773	0.100	1260.07
06	06	16	0	0.025397	0.0000	0.810	0.830	0.855	0.100	1053.65
07	07	16	0	0.025286	0.0000	0.853	0.874	0.895	0.100	962.82
08	08	16	0	0.020314	0.0000	0.893	0.912	0.934	0.100	869.28
09	09	16	0	0.021950	0.0000	0.933	0.954	0.974	0.100	784.92
10	10	16	0	0.003497	0.0000	1.586	1.612	1.640	0.100	244.16
11	11	16	0	0.006487	0.0000	1.642	1.668	1.695	0.010	227.32
12	12	16	0	0.003034	0.0000	1.698	1.722	1.749	0.010	201.29
13	13	16	0	0.003000	0.0000	1.751	1.776	1.801	0.010	176.56
14	14	16	0	0.003087	0.0000	1.805	1.830	1.855	0.010	156.28
15	15	16	0	0.002950	0.0000	1.855	1.880	1.906	0.010	139.66
16	16	16	0	0.002800	0.0000	1.906	1.932	1.956	0.100	131.21
17	17	16	0	0.002539	0.0000	1.956	1.982	2.006	0.010	122.76
18	18	16	0	0.002481	0.0000	2.006	2.032	2.057	0.010	109.78
19	19	16	0	0.002395	0.0000	2.058	2.082	2.107	0.010	98.67
20	20	16	0	0.002433	0.0000	2.107	2.132	2.157	0.010	86.28
21	21	16	0	0.005116	0.0000	2.156	2.180	2.205	0.010	76.85
22	22	16	0	0.002779	0.0000	2.205	2.230	2.255	0.010	73.57
23	23	16	0	0.002851	0.0000	2.255	2.280	2.305	0.010	68.38
24	24	16	0	0.002672	0.0000	2.306	2.330	2.354	0.010	58.53
25	25	16	0	0.002608	0.0000	2.355	2.380	2.404	0.010	57.88
26	26	16	1	0.956000	0.0000	3.105	3.180	3.261	0.001	20.15
27	27	16	1	0.960000	0.0000	3.250	3.325	3.401	0.001	17.66
28	28	16	1	0.961000	0.0000	3.405	3.475	3.559	0.001	15.05
29	29	16	1	0.949000	0.0000	3.556	3.640	3.718	0.001	13.06
30	30	16	1	0.945000	0.0000	3.702	3.770	3.847	0.001	11.39
31	31	16	1	0.942000	0.0000	3.857	3.940	4.023	0.001	9.98
32	32	16	1	0.940000	0.0000	4.014	4.095	4.183	0.001	8.69
33	33	16	1	0.939000	0.0000	4.138	4.210	4.291	0.001	7.73
34	34	16	1	0.938000	0.0000	4.288	4.360	4.441	0.001	6.71
35	35	16	1	0.935000	0.0000	4.471	4.550	4.632	0.001	5.63
36	36	16	1	0.934000	0.0000	4.622	4.700	4.784	0.001	4.87
37	37	16	1	0.933000	0.0000	4.773	4.860	4.937	0.001	4.28



38	38	16	1	0.932000	0.0000	4.917	4.990	5.084	0.001	3.80
39	39	16	1	0.931000	0.0000	5.055	5.165	5.235	0.001	3.39
40	40	16	1	0.930000	0.0000	5.215	5.315	5.371	0.001	3.03
41	41	16	1	0.932000	0.0000	5.342	5.380	5.421	0.001	2.80
42	42	16	1	0.966000	0.0000	8.330	8.564	8.759	0.010	0.45
43	43	16	1	0.963000	0.0000	9.436	9.665	9.928	0.010	0.28
44	44	16	1	0.960000	0.0000	10.218	10.474	10.711	0.010	0.20
45	45	16	1	0.957000	0.0000	10.694	10.943	11.209	0.010	0.17
46	46	16	1	0.947000	0.0000	11.684	11.953	12.208	0.010	0.12
47	47	16	1	0.943000	0.0000	12.583	12.803	13.035	0.010	0.09
48	48	16	1	0.948000	0.0000	12.939	13.193	13.446	0.010	0.08
49	49	16	1	0.939000	0.0000	13.425	13.712	14.035	0.010	0.07
50	50	16	1	0.944000	0.0000	13.953	14.193	14.403	0.010	0.06

| | | | |     |     |     |     |     |     |  
| | | | |     |     |     |     |     |     |     =(!)  
| | | | |     |     |     |     |     |     |     =-Scale Factor  
| | | | |     |     |     |     |     |     |     =- Right 50% spectral response  
| | | | |     |     |     |     |     |     |     =-Peak 100% spectral response (microns)  
| | | | |     |     |     |     |     |     |     =-Left 50% spectral response (microns)  
| | | | |     |     |     |     |     |     |     =-Calibration intercept (only used for visible bands)  
| | | | |     |     |     |     |     |     |     =-----Calibration slope (only used for visible bands 1-25)  
| | | | |     |     |     |     |     |     |     Blackbody emmissivity (only used for IR bands 26-50)  
| | | | |     |     |     |     |     |     |     =-----0 => visible band, 1 => thermal infrared band"  
| | | | |     |     |     |     |     |     |     =-----Number of bits in this channel (8 or 10)  
| | | | |     |     |     |     |     |     |     =-----Spectral band assigned to this channel  
=----- Channel number  
(!) Sensor weighted solar spectral irradiance (Watts/meter<sup>2</sup>/micron)  
at mean Earth-Sun distance

NOTE: Factor in column 10 is used to scale radiances in calibrated data by the following method:  
value\_stored = int( radiance / factor ) for each channel

---

Title	MODIS Airborne Simulator (MAS) Level-1B Data
Sensor_ID_Code	M5 105 MAS50
ExperimentName	SAFARI 2000
AircraftPlatform	NASA ER-2 (809)
NavFormatCode	Format (A-1)



LocationCode	Inertial (INU)
AltitudeCode	Inertial (INU)
CalibrationVersion	Version 1.0 Calibration
CalibrationName	SAFARI_Jul19-Oct19
SRF_Dataset	/rarray/calibrat/mas/srf/Oct_00/
SRF_FTP	ftp://asapdata/mas/srf/Oct_00/
NavDataSource	ER2 navigation recorder
NavDataPath	/nav/2000/er2/00-157
TbackBand	45, 47, 31, 273.0
GranuleVersion	1.0.0
MetadataVersion	1.0.0

-----  
 -----  
 Conversion from counts to radiance in VIS and NIR channels is  
 $rad = (count - (cbb\_avg)) * slope$

"where,"

rad = radiance

cbb\_avg = cold black body counts (running average)

slope = from column 7 in above table

count = count value

\*\*\*\*\*

IR Emissivity Correction (for MAS-50)

From Chris Moeller (UWisc)

\*\*\*\*\*

This is done in 2 steps:

1. Get the (TBACK Band) scan head count and convert it to a brightness temperature
2. Use the scan head temperature and the cold and warm black body counts/temperatures for computing the corrected slope and intercept for all IR bands.

(note: set to 1.0 for channels 1-25)

MAS BB Emissivity Coefficients

Hemispherical Reflectance (JPL) 11/00

convolved with MAS SRF (ARC) 10/00

Red spot Paint



Values in form Wavelength, Emissivity

\*\*\*\*\*

For Bands 26 thru 50:

0.95600, 0.96000, 0.96100, 0.94900, 0.94500,  
0.94200, 0.94000, 0.93900, 0.93800, 0.93500,  
0.93400, 0.93300, 0.93200, 0.93100, 0.93000,  
0.93200, 0.96600, 0.96300, 0.96000, 0.95700,  
0.94700, 0.94300, 0.94800, 0.93900, 0.94400,

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Config.asc creation date = 13-June-2001

Config.asc creation date = 13-June-2001



MODIS AIRBORNE SIMULATOR (MAS) FLIGHT LINE  
 INFORMATION FOR 06 Sep 2000  
 NASA FLIGHT NUMBER 00-157

LINE	START OF FLIGHT LINE FLIGHT DATA					END OF FLIGHT			
	FLTL SOLAR	TIME SCAN	LAT DEG	LON DEG	SOLAR ZEN	TIME HH:MM:SS	LAT DEG	LON DEG	
1	07:14:05	-21.704	28.035	50.6	61.4	07:40:51	-19.378	25.949	45.7
59.7	9999	320.3	19602						
2	07:40:51	-19.377	25.949	45.7	59.7	08:07:37	-17.007	23.908	40.6
57.9	9999	320.6	20014						
3	08:07:38	-17.007	23.908	40.6	57.9	08:14:22	-16.459	23.358	39.4
57.5	2516	318.0	19962						
4	08:15:00	-16.394	23.328	39.3	57.4	08:41:28	-13.400	23.090	32.5
54.4	9888	358.0	20029						
5	08:46:38	-13.214	23.031	31.4	53.3	09:13:23	-16.122	23.209	28.6
39.9	9999	175.9	19989						
6	09:19:47	-16.446	23.225	27.9	36.8	09:46:29	-13.410	23.042	21.9
27.1	9976	357.3	19907						
7	09:49:15	-13.344	23.258	21.5	25.0	10:02:01	-14.561	23.919	21.4
14.1	4771	153.1	20051						
8	10:02:44	-14.614	23.975	21.4	13.4	10:15:42	-15.150	25.324	21.4
0.8	4849	113.9	20039						
9	10:21:01	-15.228	25.559	21.5	356.5	10:34:31	-14.645	24.114	21.1
351.1	5043	293.0	19884						
10	10:34:58	-14.631	24.064	21.1	350.9	10:42:06	-14.582	23.247	21.2
348.3	2665	274.4	19921						
11	10:44:14	-14.745	23.138	21.5	347.2	10:58:05	-16.236	23.217	23.9
339.5	5173	178.8	19890						
12	10:58:47	-16.306	23.249	24.0	339.1	11:04:11	-16.708	23.680	25.0



335.4 2019 135.0 19989  
 13 11:04:15 -16.712 23.685 25.0 335.4 11:13:17 -17.447 24.345 27.0  
 330.1 3377 137.8 20048  
 14 11:13:25 -17.459 24.354 27.0 330.1 11:40:11 -19.934 25.904 33.6  
 319.0 9999 146.2 20090  
 15 11:40:11 -19.934 25.904 33.6 319.0 11:46:16 -20.496 26.263 35.2  
 316.9 2274 148.9 20035  
 16 11:46:20 -20.501 26.266 35.2 316.9 11:50:53 -20.923 26.534 36.4  
 315.5 1705 148.1 19937  
 17 11:51:12 -20.951 26.553 36.5 315.4 12:17:58 -23.546 27.912 43.7  
 308.7 9999 154.0 19830  
 18 12:17:58 -23.546 27.912 43.7 308.7 12:22:57 -24.042 28.157 45.1  
 307.6 1860 156.5 19410

NUMBER OF FILES FOR THIS FLIGHT = 18  
 TOTAL NUMBER OF SCAN LINES = 106111  
 DATE THESE FILES WERE PROCESSED = 27-Nov-2002  
 DATE THIS LIST WAS CREATED = Fri Sep 26 12:15:49

PDT 2003

GRANULE VERSION = 2

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GLOBAL ATTRIBUTES

Attribute Name	Description
-----	-----
CreationDate	27-Nov-2002 19:00:03
AircraftPlatform	NASA ER-2 (809)
NavFormatCode	Format (A-1)
LocationCode	Inertial (GPS)
AltitudeCode	Inertial (GPS)
NavDataSource	ER2 navigation recorder
NavDataPath	/nav/2000/er2/00-157
CalibrationName	SAFARI_Jul19-Oct19
Reference	NCSA HDF Reference Manual, Version 4.1r4, 2000



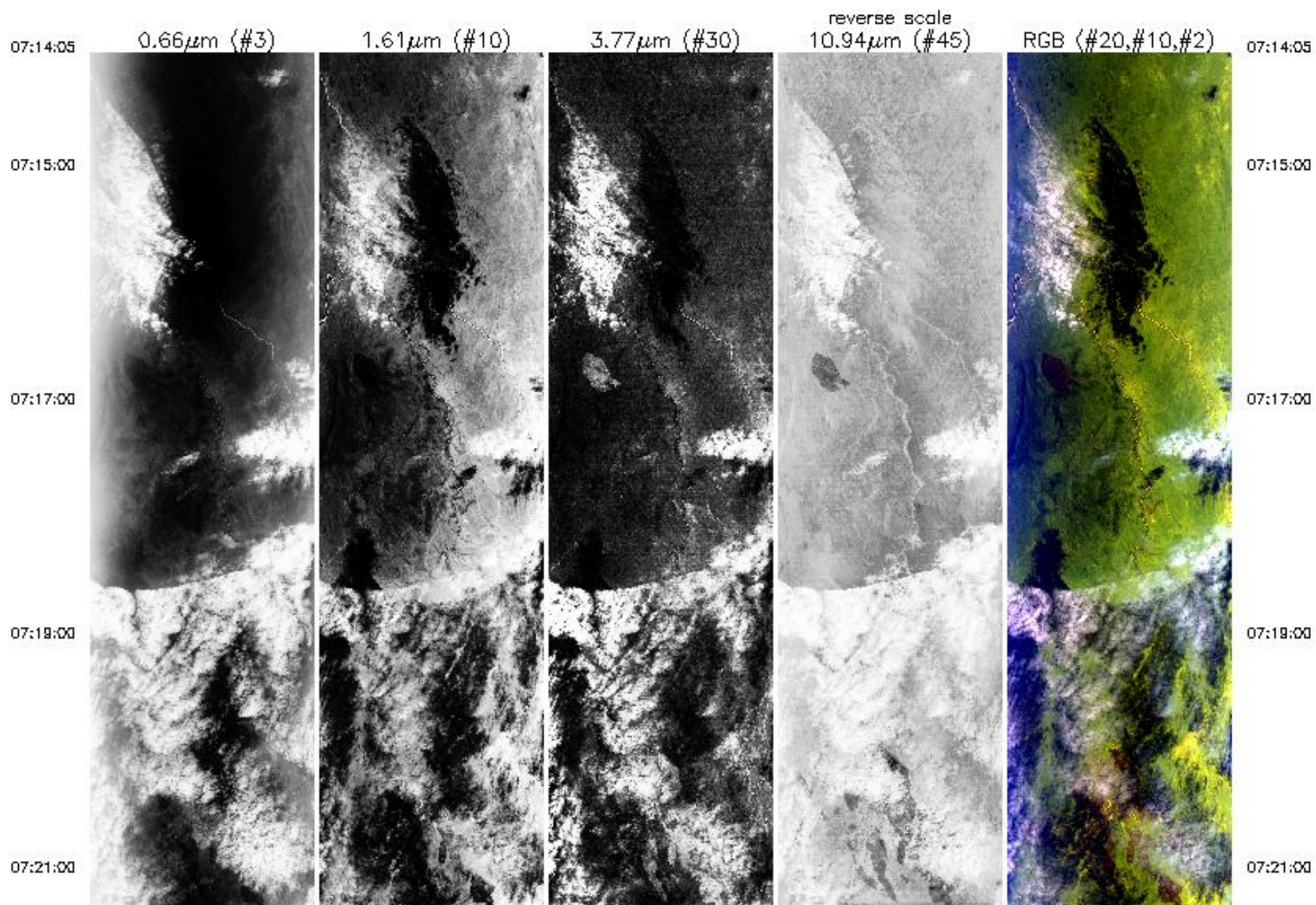
title	MODIS Airborne Simulator (MAS) Level-1B Data
ExperimentName	SAFARI 2000
FlightNumber	00-157
FlightDate	06 Sep 2000
SiteLineRun	void
GeographicArea	Botswana
SRF_FTP	ftp://asapdata/mas/srf/Oct_00/
SRF_dataset	/rarray/calibrat/mas/srf/Oct_00/
FlightLineNumber	1
TotalFlightLines	18
DataUsersGuideSource	<a href="http://ltpwww.gsfc.nasa.gov/MAS/">http://ltpwww.gsfc.nasa.gov/MAS/</a>
SoftwareVersion	Level-1b Version 10.1.3 UR
CalibrationVersion	Version 1.0 Calibration
data_set	MAS SAFARI 2000
day_night_flag	D
granule_version	2
metadata_version	2.0.0
data_quality	Good
Other_Aircraft_Sensors	AirMISR, CLS, MOPPIT-A, Leonardo
Principal_Investigator	King
lat_UL	-21.59653
lon_UL	28.15994
lat_UR	-21.81025
lon_UR	27.91086
lat_LL	-19.27688
lon_LL	26.08858
lat_LR	-19.47384
lon_LR	25.80755
begin_date	20000906 071405
end_date	20000906 074052
RunTime	723,750 ms, or 72 ms/scanline
CompletionDate	27-Nov-2002 19:19:54
producer_granule_id	

MASL1B\_00157\_01\_20000906\_0714\_0740\_V02.hdf

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MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Botswana  
Flight #00-157 Track #1

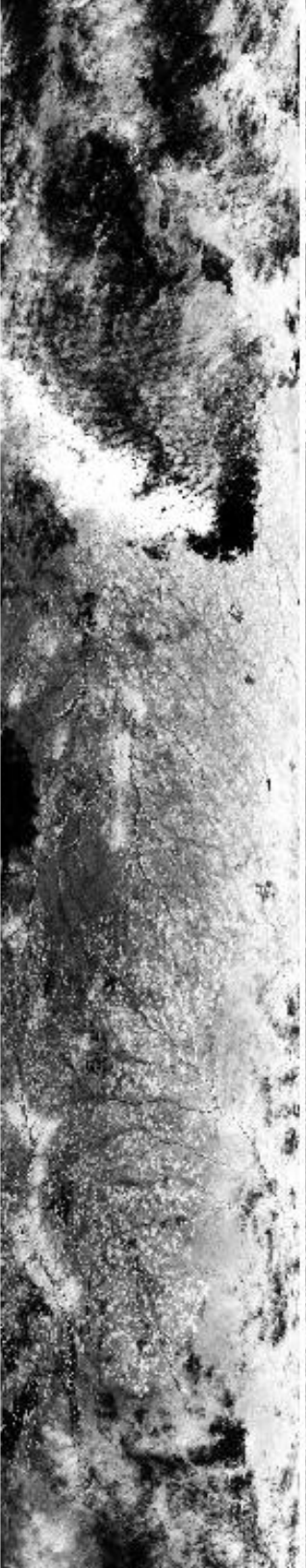




07:21:00



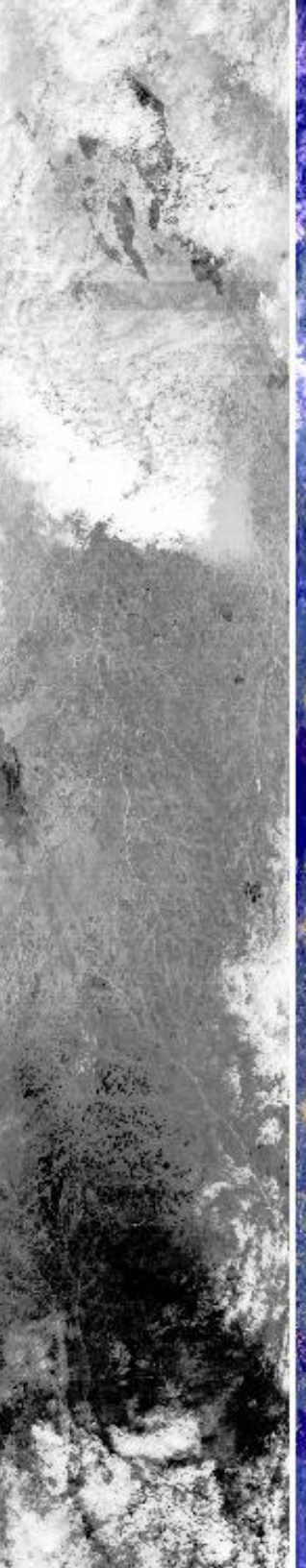
07:23:00



07:25:00



07:27:00



07:29:00



07:21:00

07:23:00

07:25:00

07:27:00

07:29:00



07:29:00



07:31:00



07:33:00



07:35:00



07:37:00



07:29:00

07:31:00

07:33:00

07:35:00

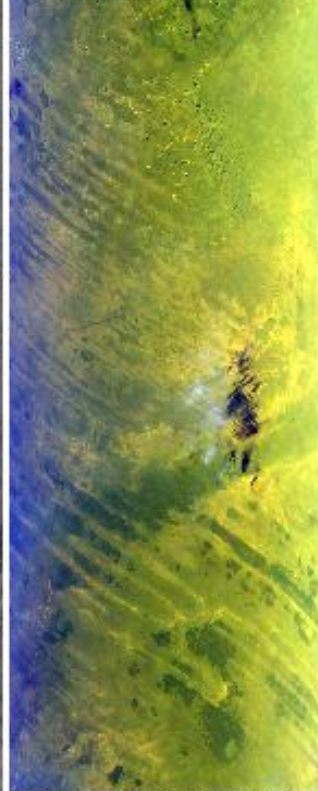
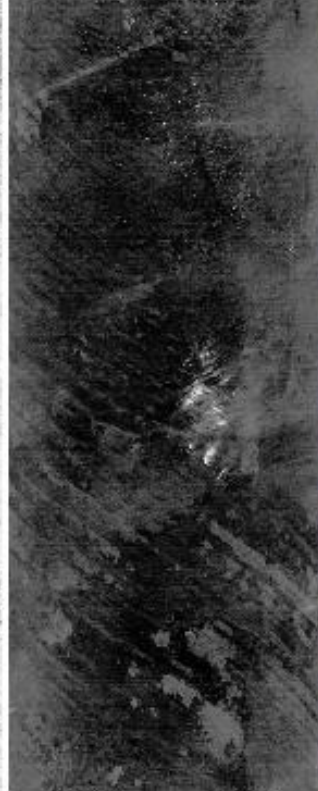
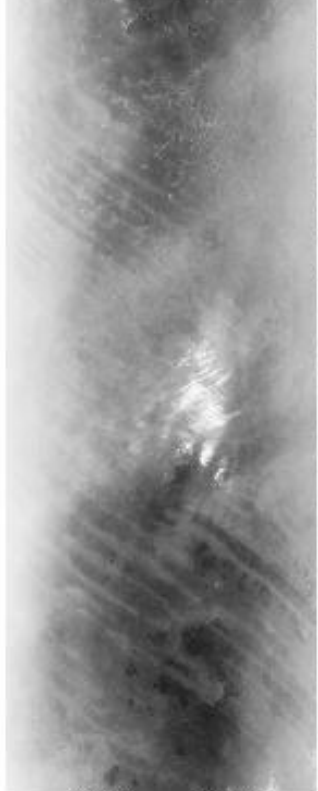
07:37:00



07:37:00

07:39:00

07:40:52



07:37:00

07:39:00

07:40:52

0.66 $\mu$ m (#3)

1.61 $\mu$ m (#10)

3.77 $\mu$ m (#30)

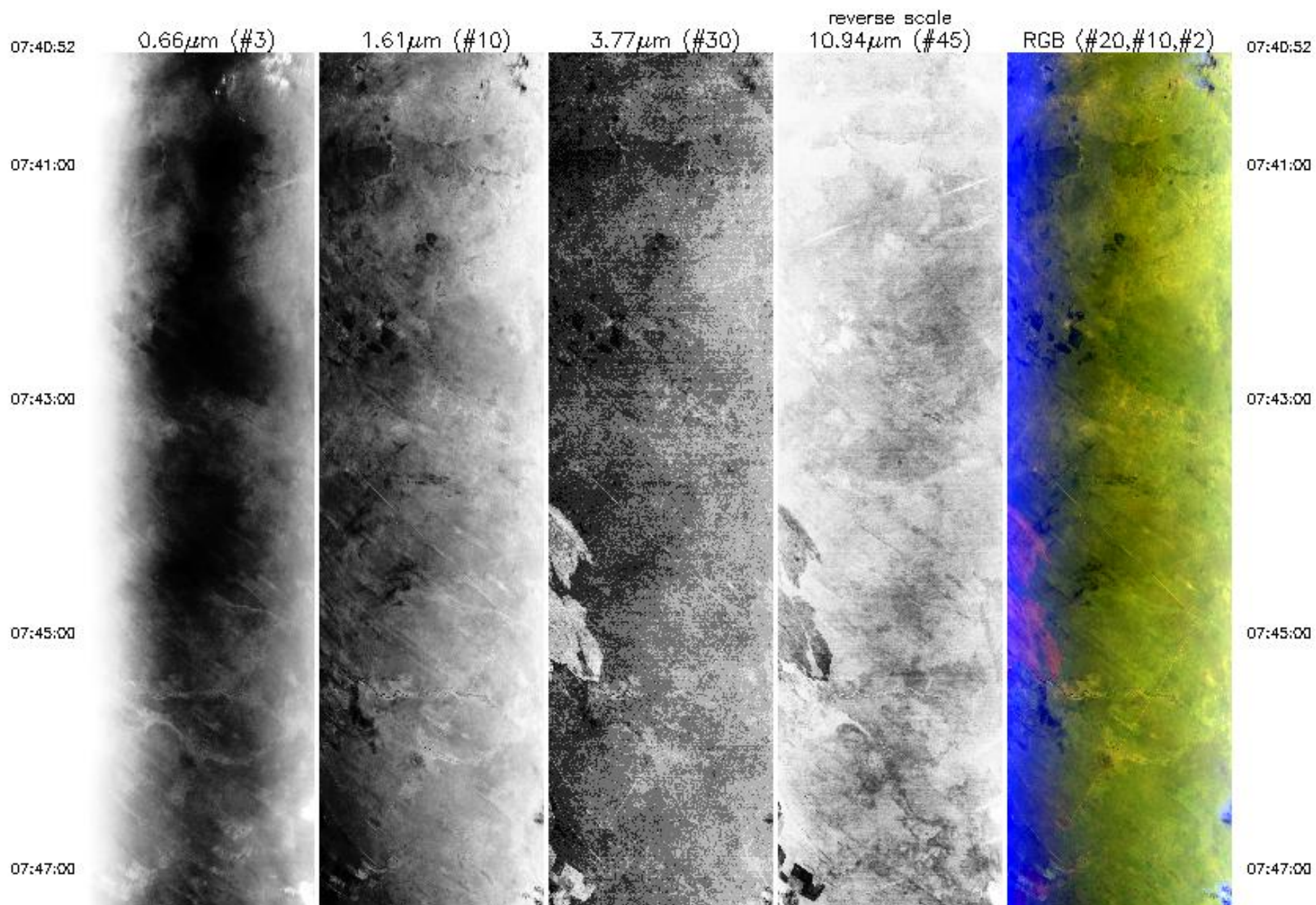
10.94 $\mu$ m (#45)  
reverse scale

RGB (#20,#10,#2)

Upper Left Lat, Lon =  $-21.6^\circ$ ,  $28.2^\circ$   
 Lower Right Lat, Lon =  $-19.5^\circ$ ,  $25.8^\circ$   
 Aircraft Heading =  $317.3^\circ$   
 Solar Zenith =  $50.4^\circ$   
 GPS Altitude = 19817. m (MSL)



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Botswana/Zambia  
Flight #00-157 Track #2





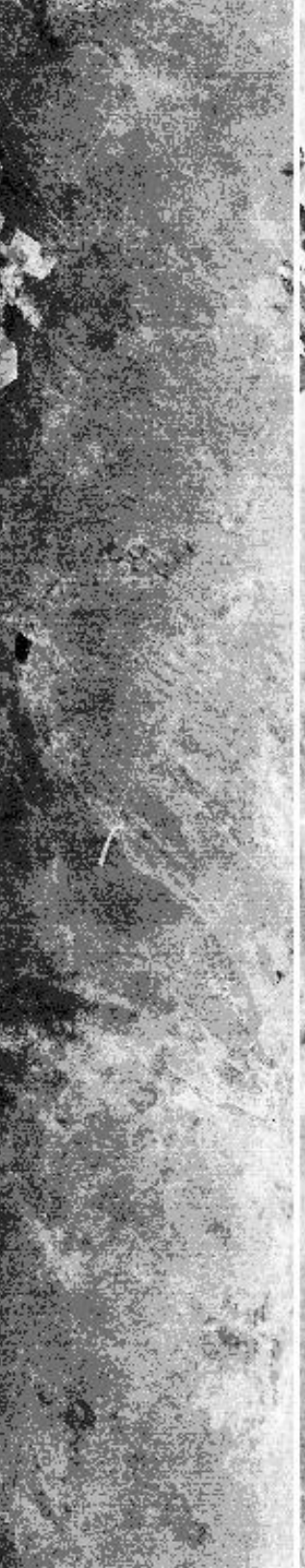
07:47:00



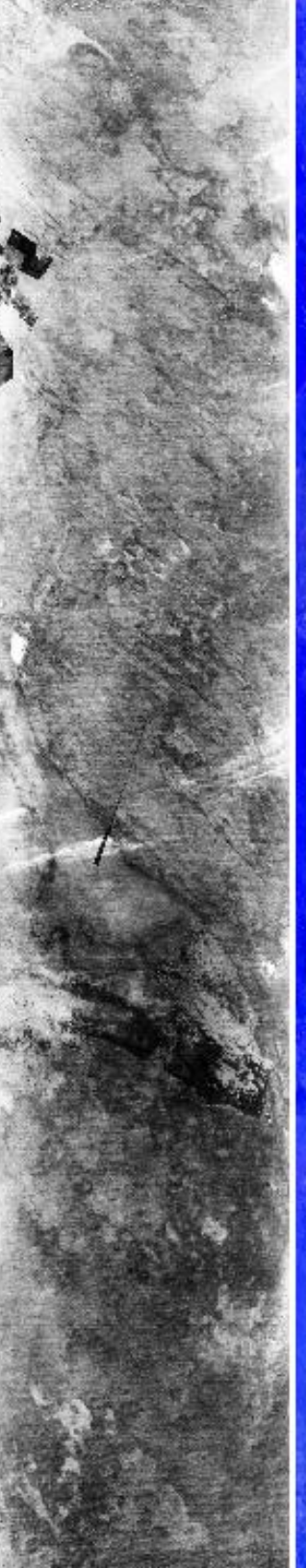
07:48:00



07:51:00



07:53:00



07:55:00



07:47:00

07:48:00

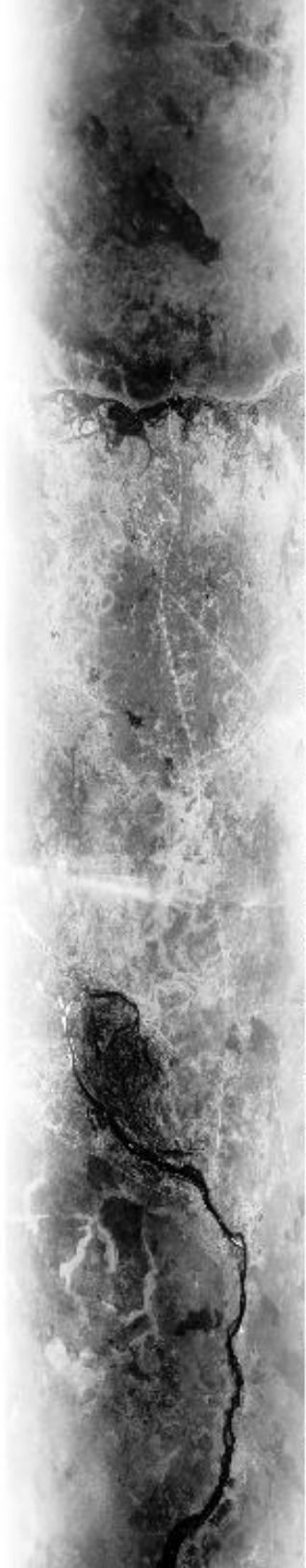
07:51:00

07:53:00

07:55:00



07:55:00



07:57:00



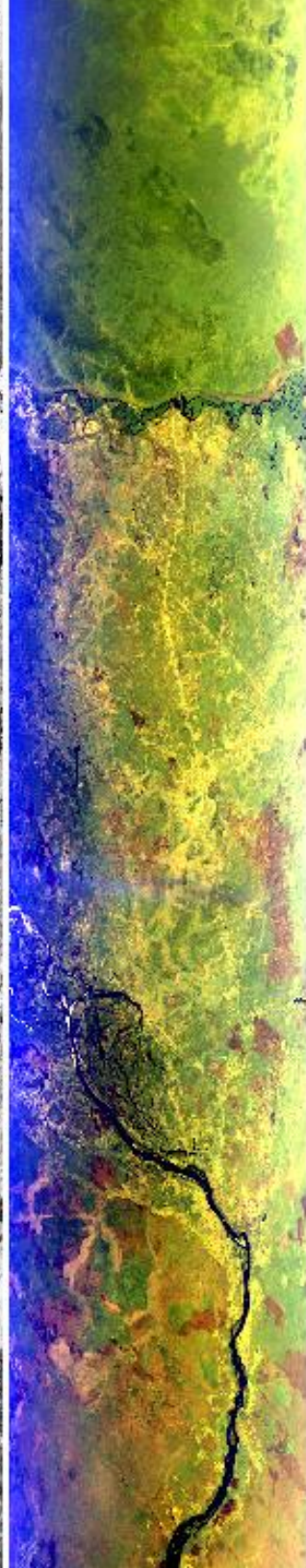
07:58:00



08:01:00



08:03:00



07:55:00

07:57:00

07:58:00

08:01:00

08:03:00



06:03:00

06:05:00

06:07:38



06:03:00

06:05:00

06:07:38

0.66µm (#3)

1.61µm (#10)

3.77µm (#30)

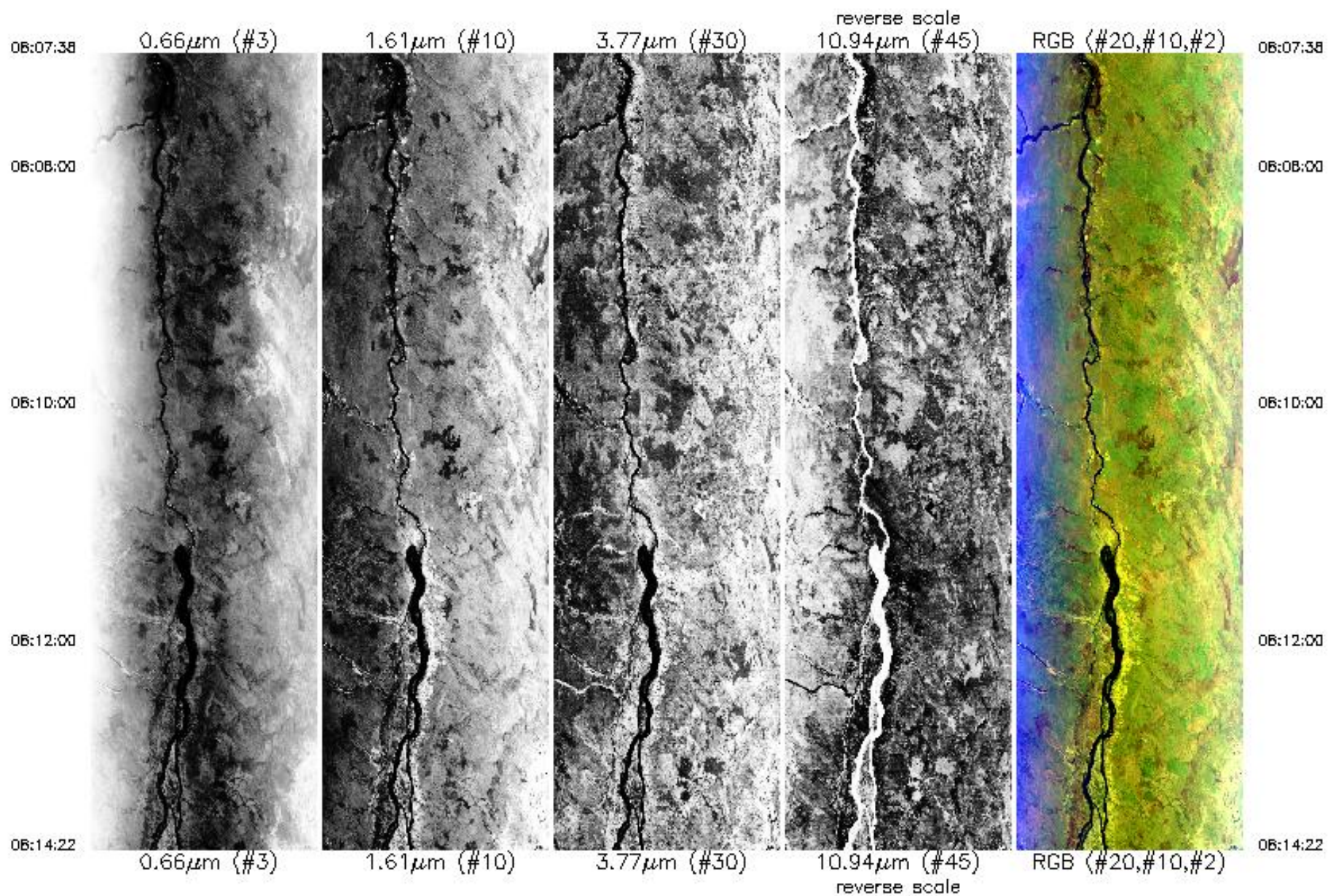
10.94µm (#45)  
reverse scale

RGB (#20,#10,#2)

Upper Left Lat, Lon =  $-19.3^{\circ}$ ,  $26.1^{\circ}$   
 Lower Right Lat, Lon =  $-17.1^{\circ}$ ,  $23.8^{\circ}$   
 Aircraft Heading =  $323.4^{\circ}$   
 Solar Zenith =  $45.5^{\circ}$   
 GPS Altitude = 20085. m (MSL)



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Zambia  
Flight #00-157 Track #3

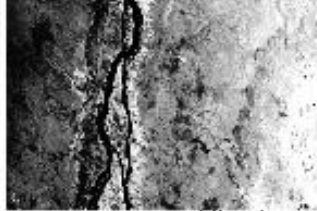




06:14:22



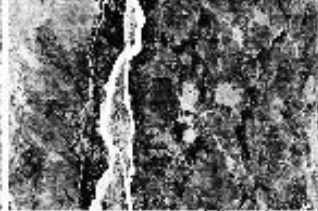
0.66 $\mu$ m (#3)



1.61 $\mu$ m (#10)



3.77 $\mu$ m (#30)



10.94 $\mu$ m (#45)

reverse scale



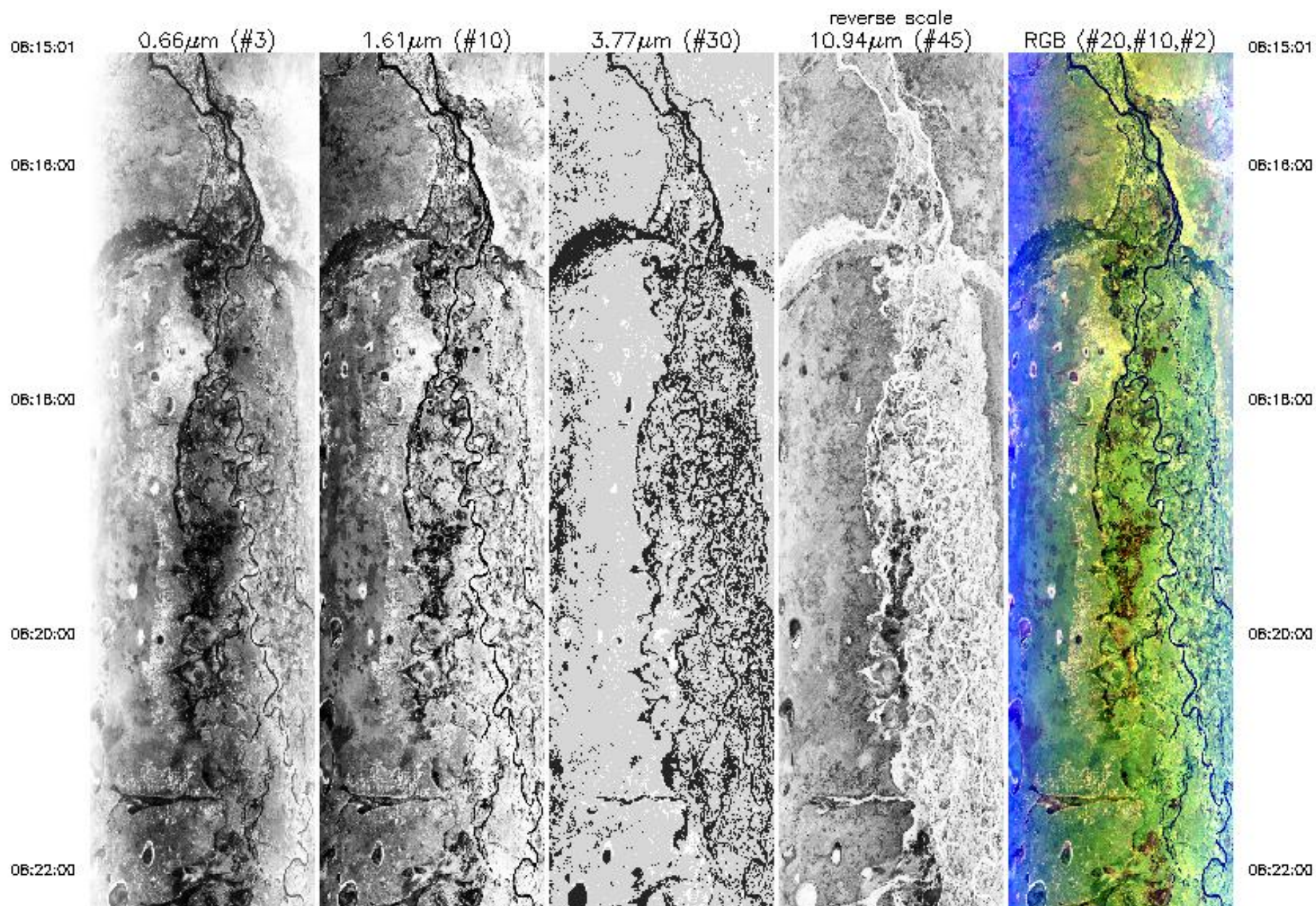
RGB (#20,#10,#2)

06:14:22

Upper Left Lat, Lon =  $-16.9^\circ$ ,  $24.0^\circ$   
Lower Right Lat, Lon =  $-16.6^\circ$ ,  $23.2^\circ$   
Aircraft Heading =  $317.7^\circ$   
Solar Zenith =  $40.5^\circ$   
GPS Altitude = 19971. m (MSL)



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Zambia  
Flight #00-157 Track #4





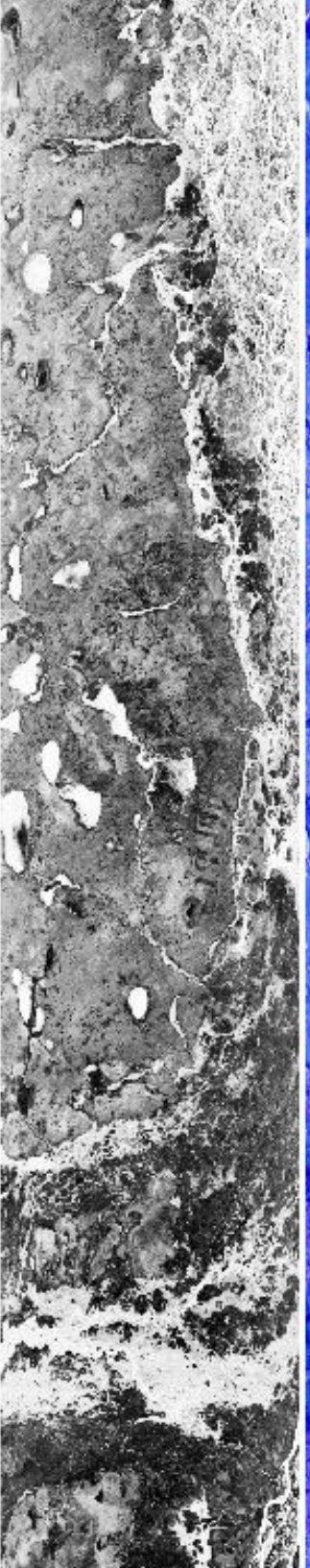
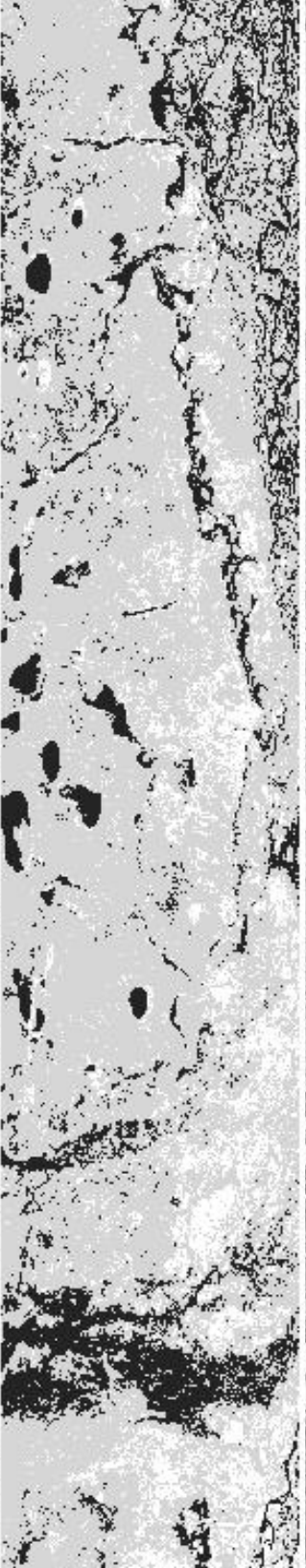
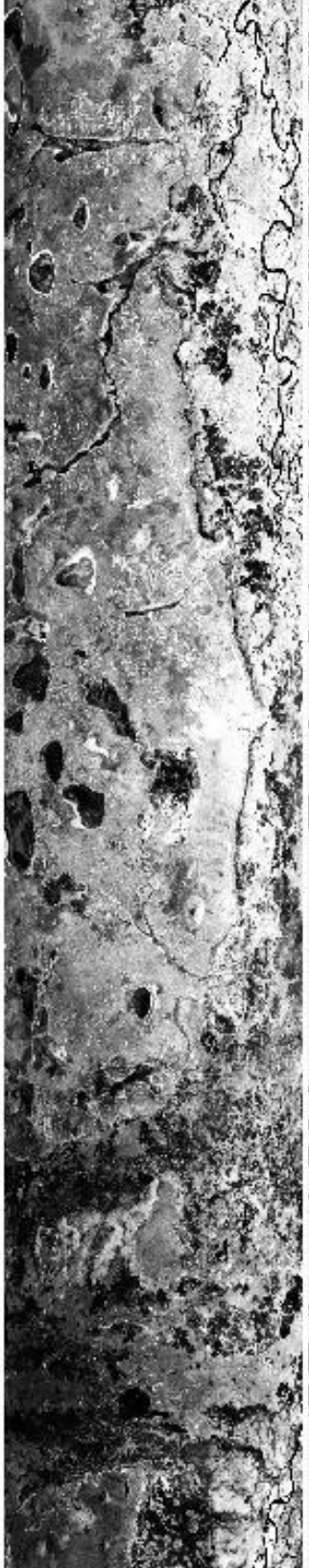
06:22:00

06:24:00

06:26:00

06:28:00

06:30:00



06:22:00

06:24:00

06:26:00

06:28:00

06:30:00



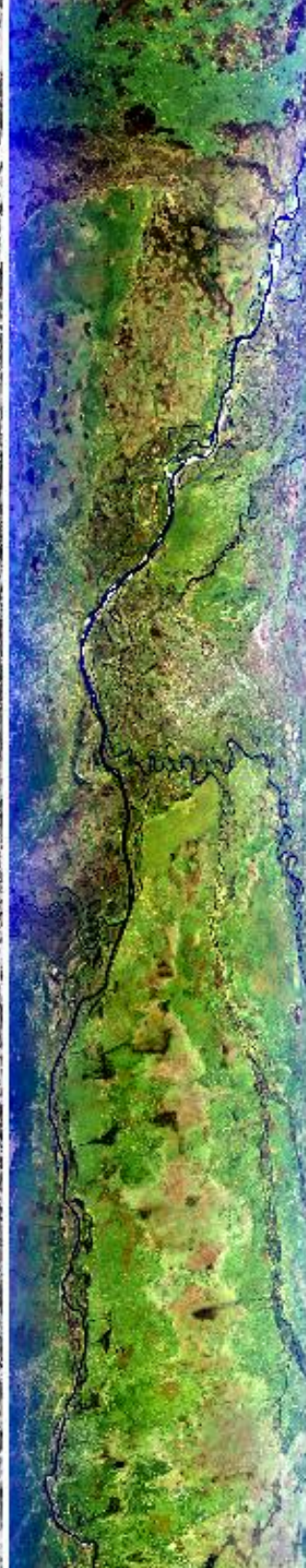
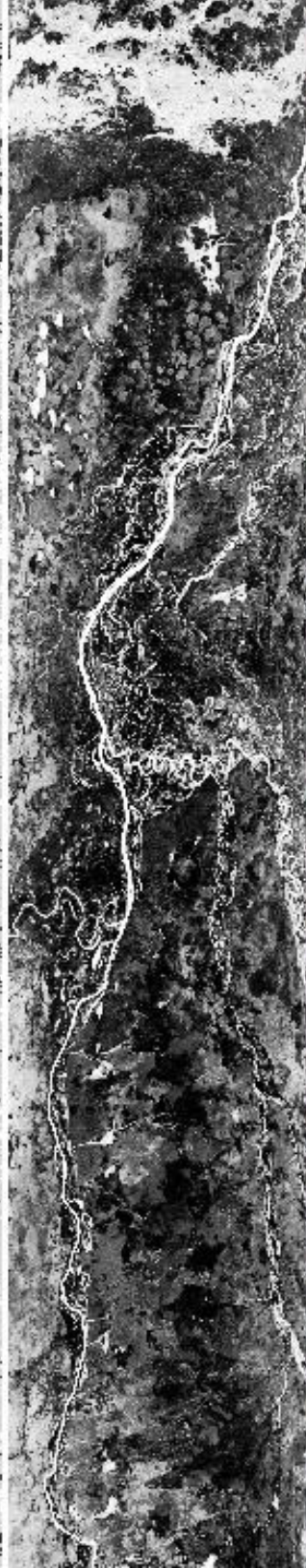
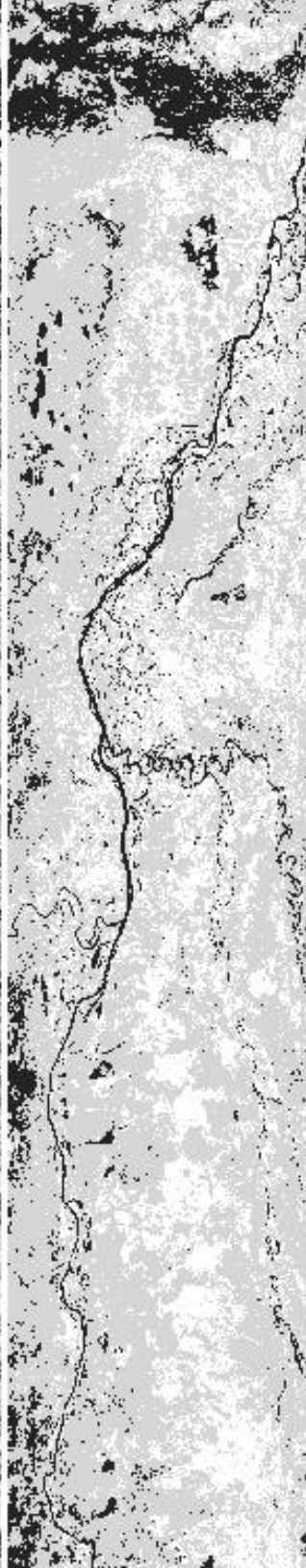
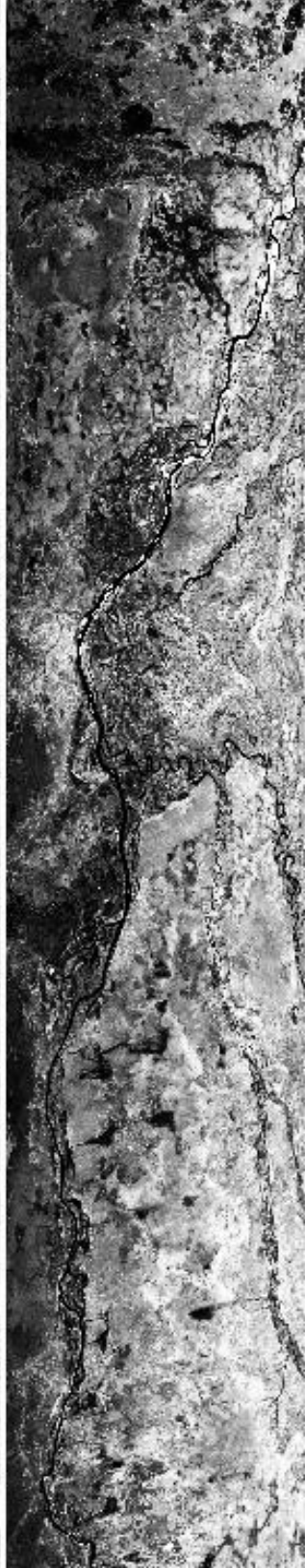
06:30:00

06:32:00

06:34:00

06:36:00

06:38:00



06:30:00

06:32:00

06:34:00

06:36:00

06:38:00



06:38:00

06:40:00

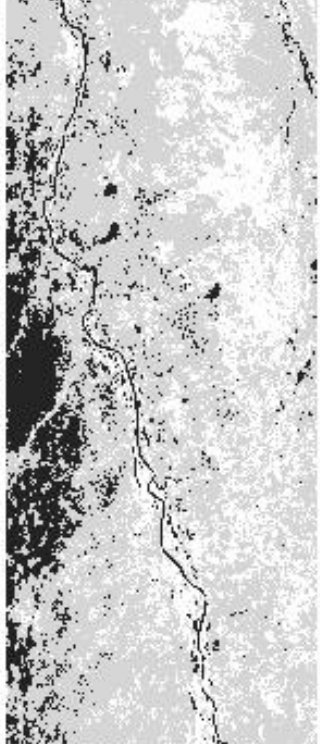
06:41:29



0.66 $\mu\text{m}$  (#3)



1.61 $\mu\text{m}$  (#10)



3.77 $\mu\text{m}$  (#30)



10.94 $\mu\text{m}$  (#45)  
reverse scale



RGB (#20,#10,#2)

06:38:00

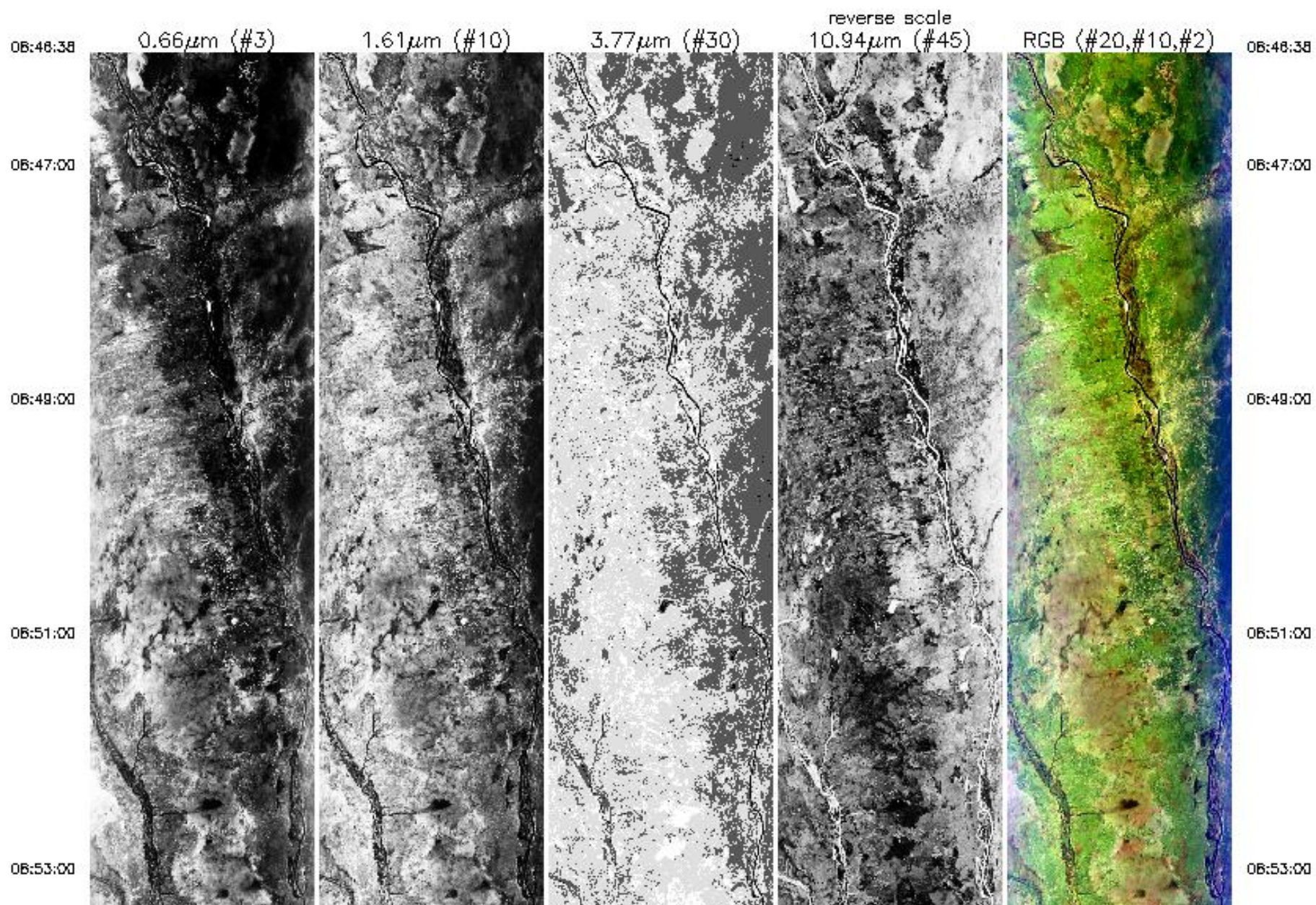
06:40:00

06:41:29

Upper Left Lat, Lon =  $-16.4^\circ$ ,  $23.5^\circ$   
Lower Right Lat, Lon =  $-13.4^\circ$ ,  $22.9^\circ$   
Aircraft Heading =  $358.7^\circ$   
Solar Zenith =  $39.2^\circ$   
GPS Altitude = 19995. m (MSL)



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Zambia  
Flight #00-157 Track #5





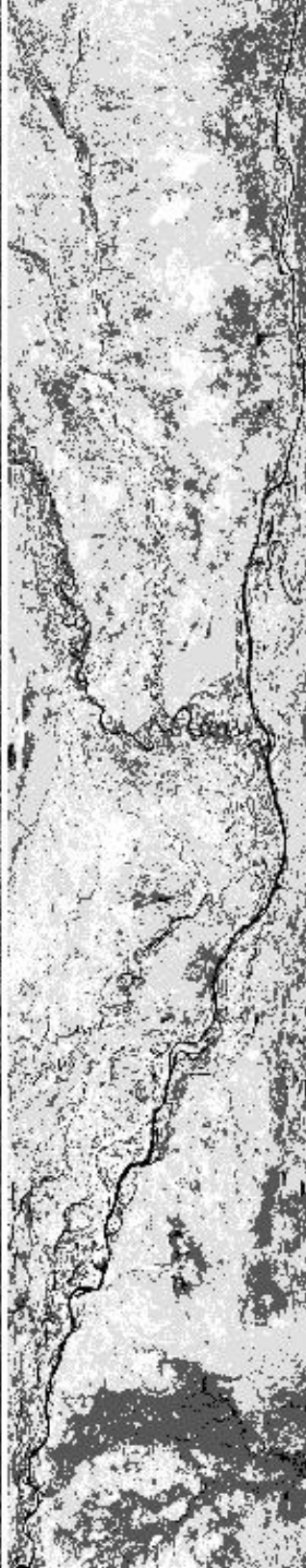
06:53:00



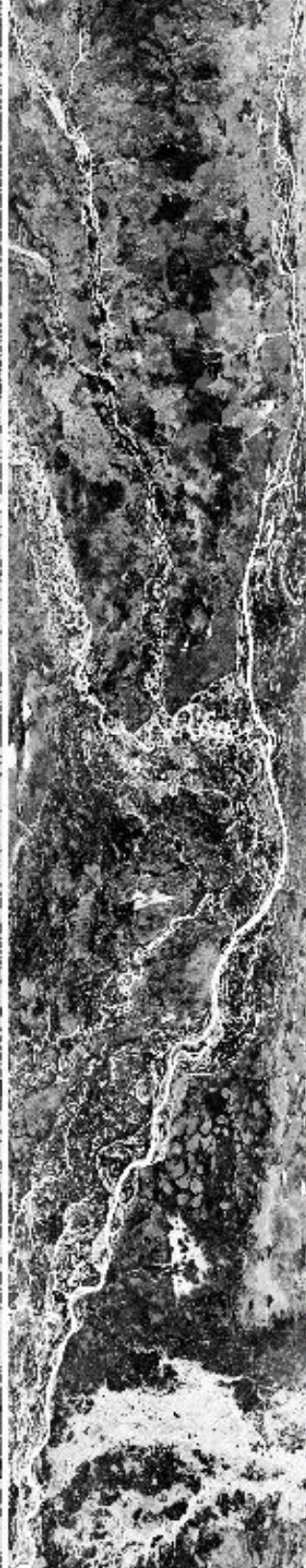
06:55:00



06:57:00



06:58:00



09:01:00



06:53:00

06:55:00

06:57:00

06:58:00

09:01:00



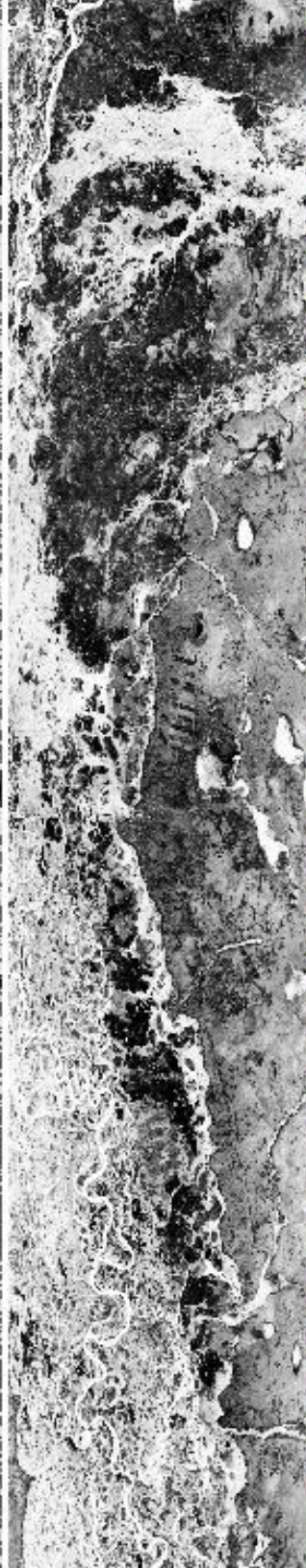
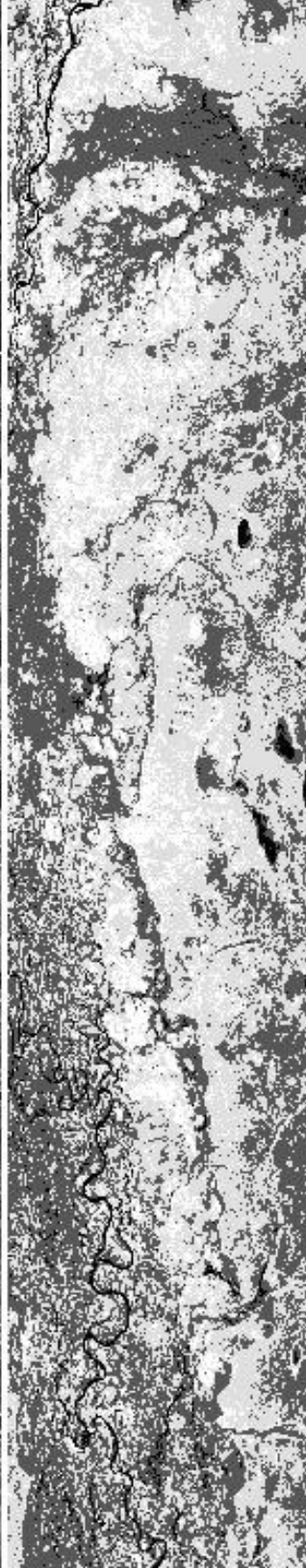
09:01:00

09:03:00

09:05:00

09:07:00

09:08:00



09:01:00

09:03:00

09:05:00

09:07:00

09:08:00



09:09:00

09:11:00

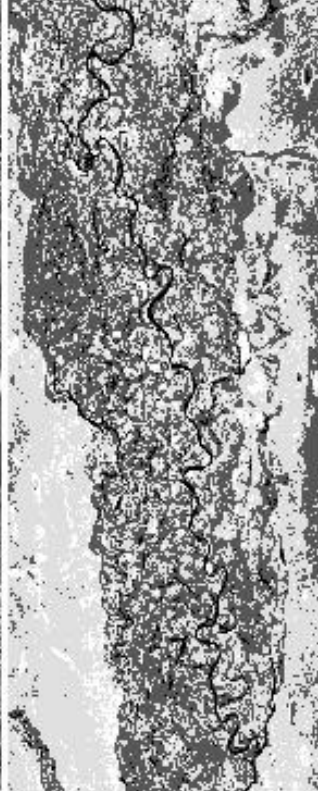
09:13:24



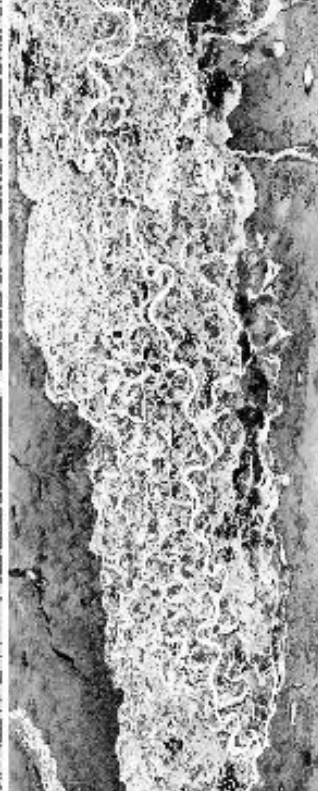
0.66µm (#3)



1.61µm (#10)



3.77µm (#30)



10.94µm (#45)  
reverse scale



RGB (#20,#10,#2)

09:09:00

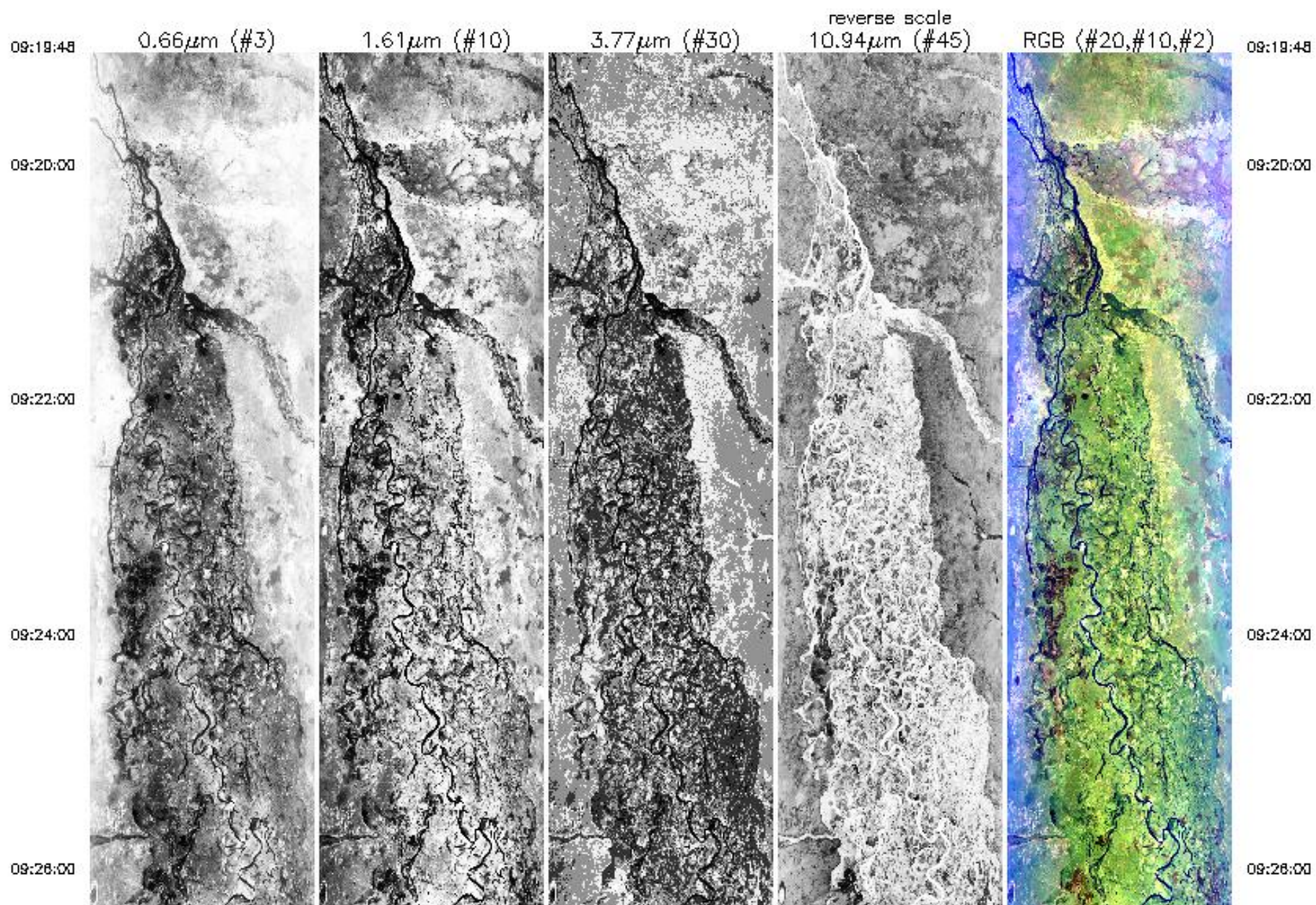
09:11:00

09:13:24

Upper Left Lat, Lon =  $-13.2^\circ$ ,  $22.9^\circ$   
 Lower Right Lat, Lon =  $-16.1^\circ$ ,  $23.4^\circ$   
 Aircraft Heading =  $175.5^\circ$   
 Solar Zenith =  $31.6^\circ$   
 GPS Altitude = 20080. m (MSL)



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Zambia  
Flight #00-157 Track #6





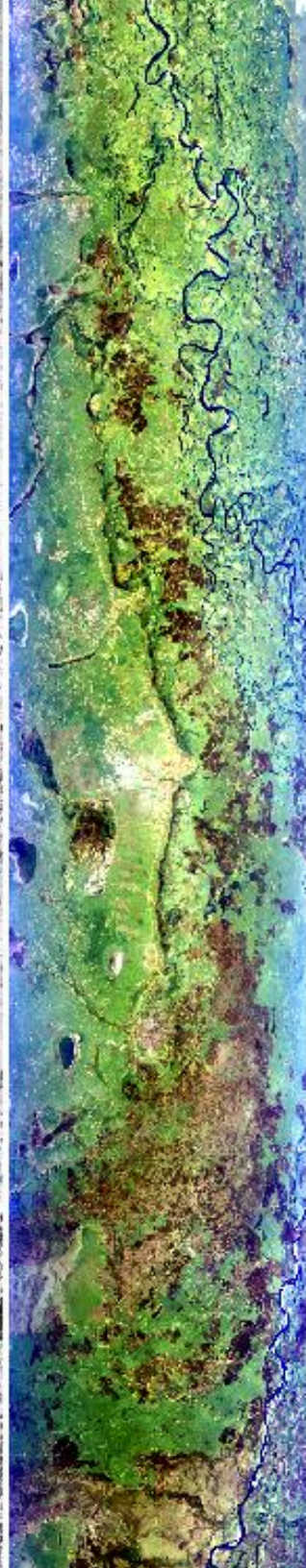
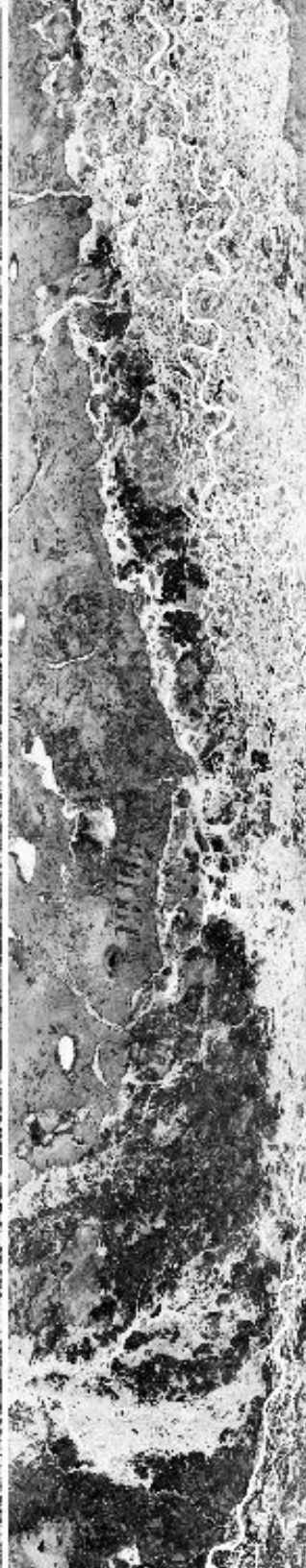
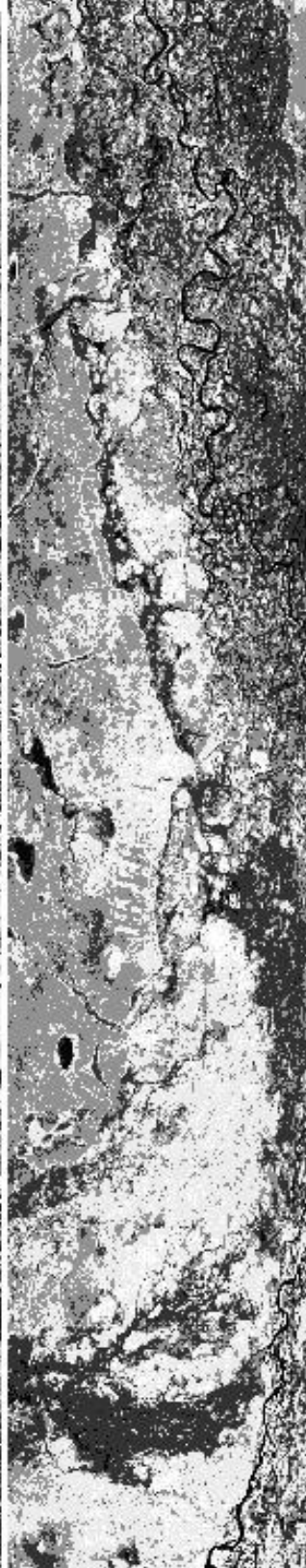
09:26:00

09:26:00

09:30:00

09:32:00

09:34:00



09:26:00

09:26:00

09:30:00

09:32:00

09:34:00



09:34:00

09:36:00

09:38:00

09:40:00

09:42:00



09:34:00

09:36:00

09:38:00

09:40:00

09:42:00



09:42:00

09:44:00

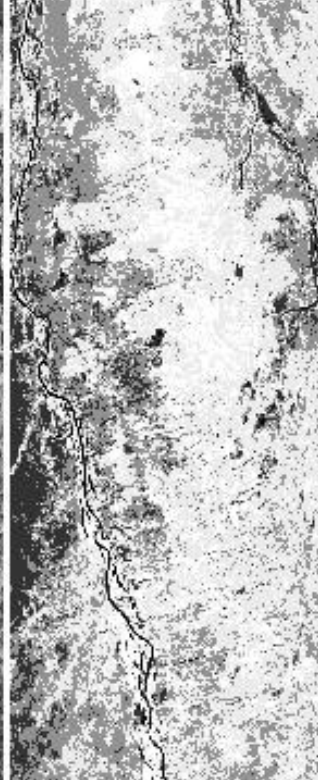
09:46:30



0.66 $\mu$ m (#3)



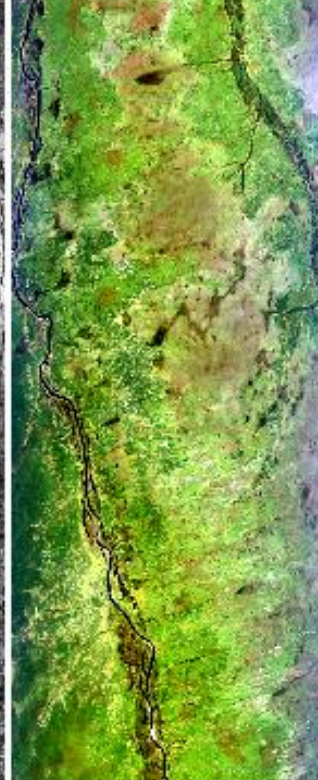
1.61 $\mu$ m (#10)



3.77 $\mu$ m (#30)



10.94 $\mu$ m (#45)  
reverse scale



RGB (#20,#10,#2)

09:42:00

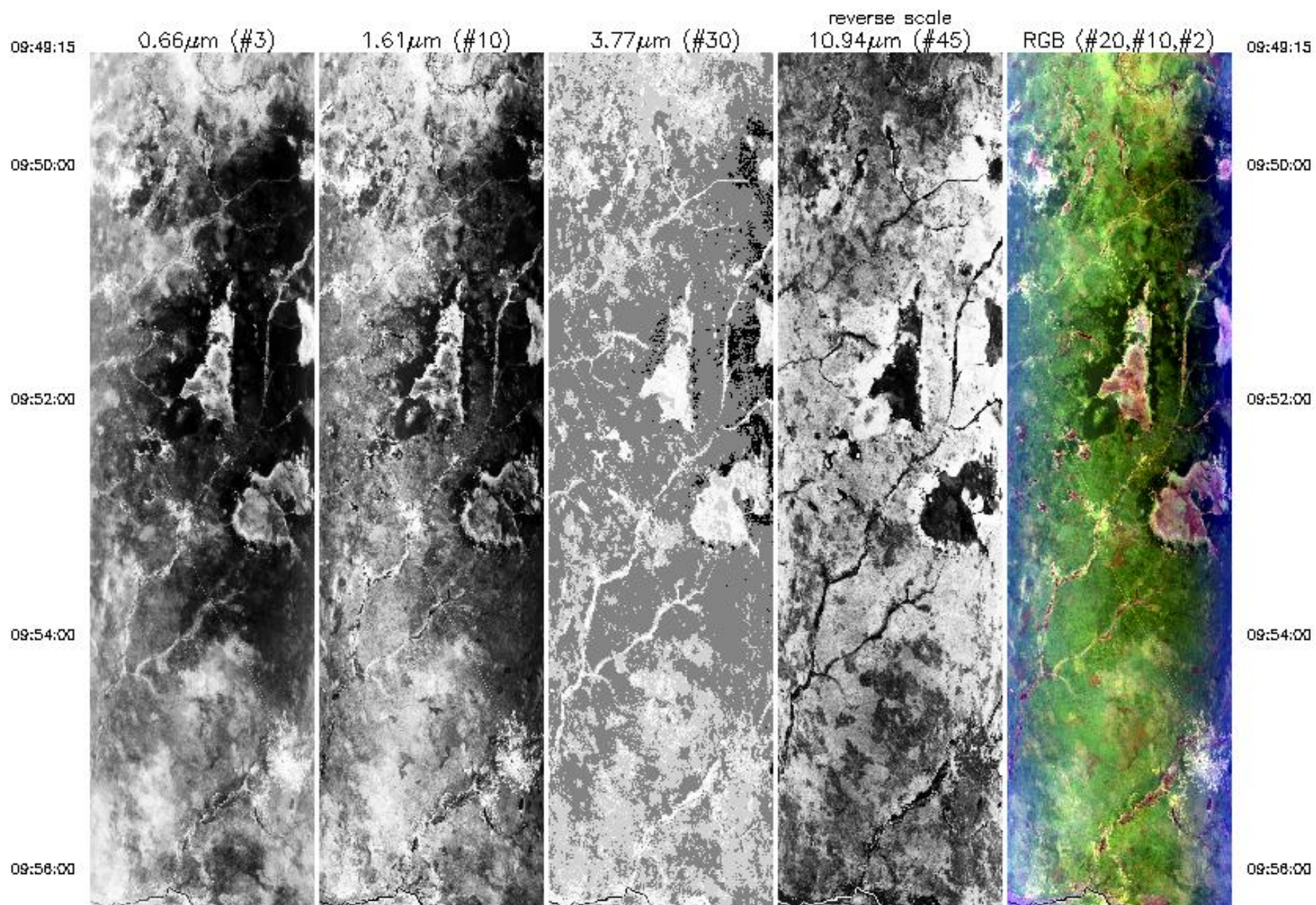
09:44:00

09:46:30

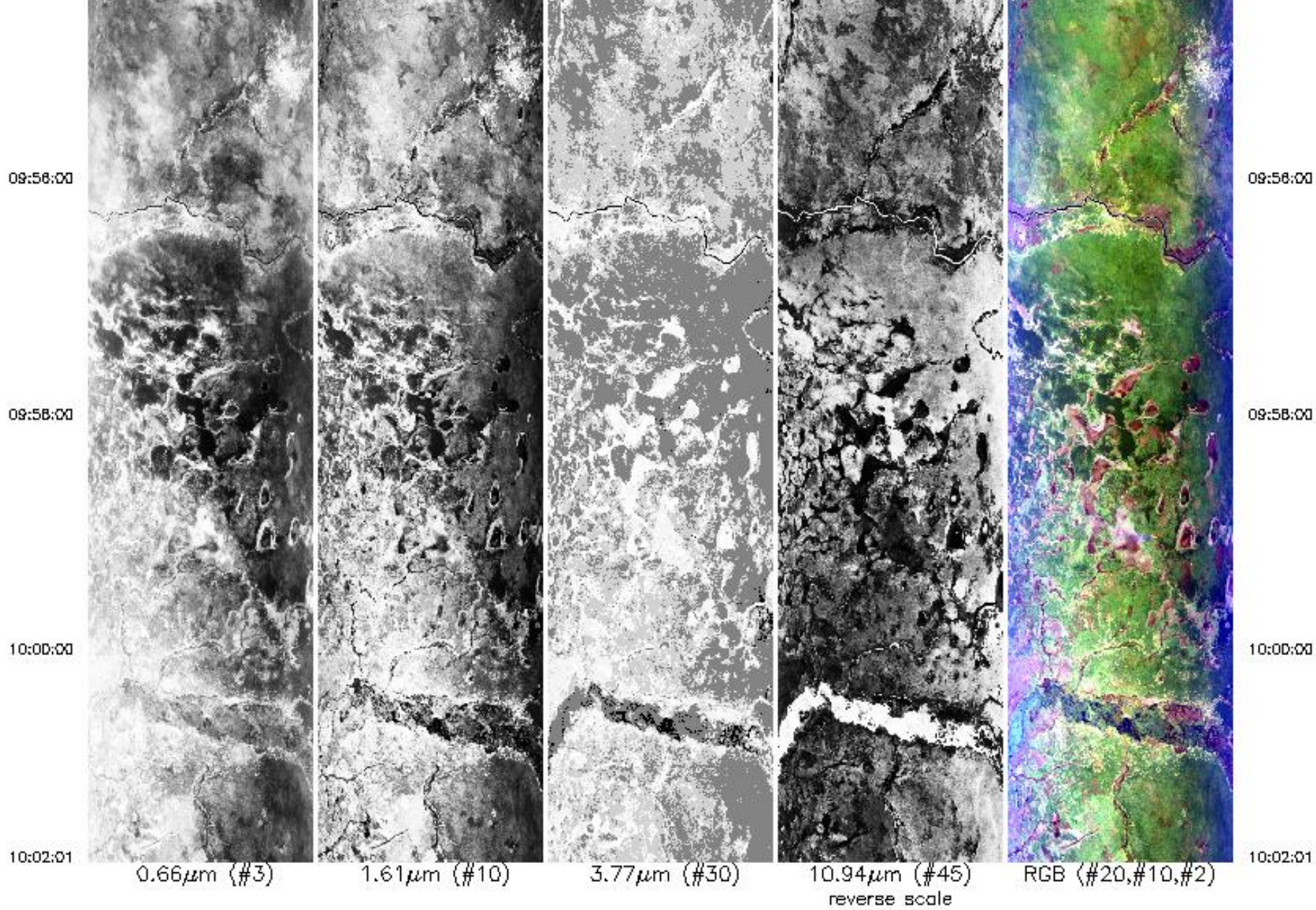
Upper Left Lat, Lon =  $-16.4^{\circ}$ ,  $23.4^{\circ}$   
Lower Right Lat, Lon =  $-13.4^{\circ}$ ,  $22.9^{\circ}$   
Aircraft Heading =  $356.5^{\circ}$   
Solar Zenith =  $27.8^{\circ}$   
GPS Altitude = 19935. m (MSL)



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Zambia  
Flight #00-157 Track #7







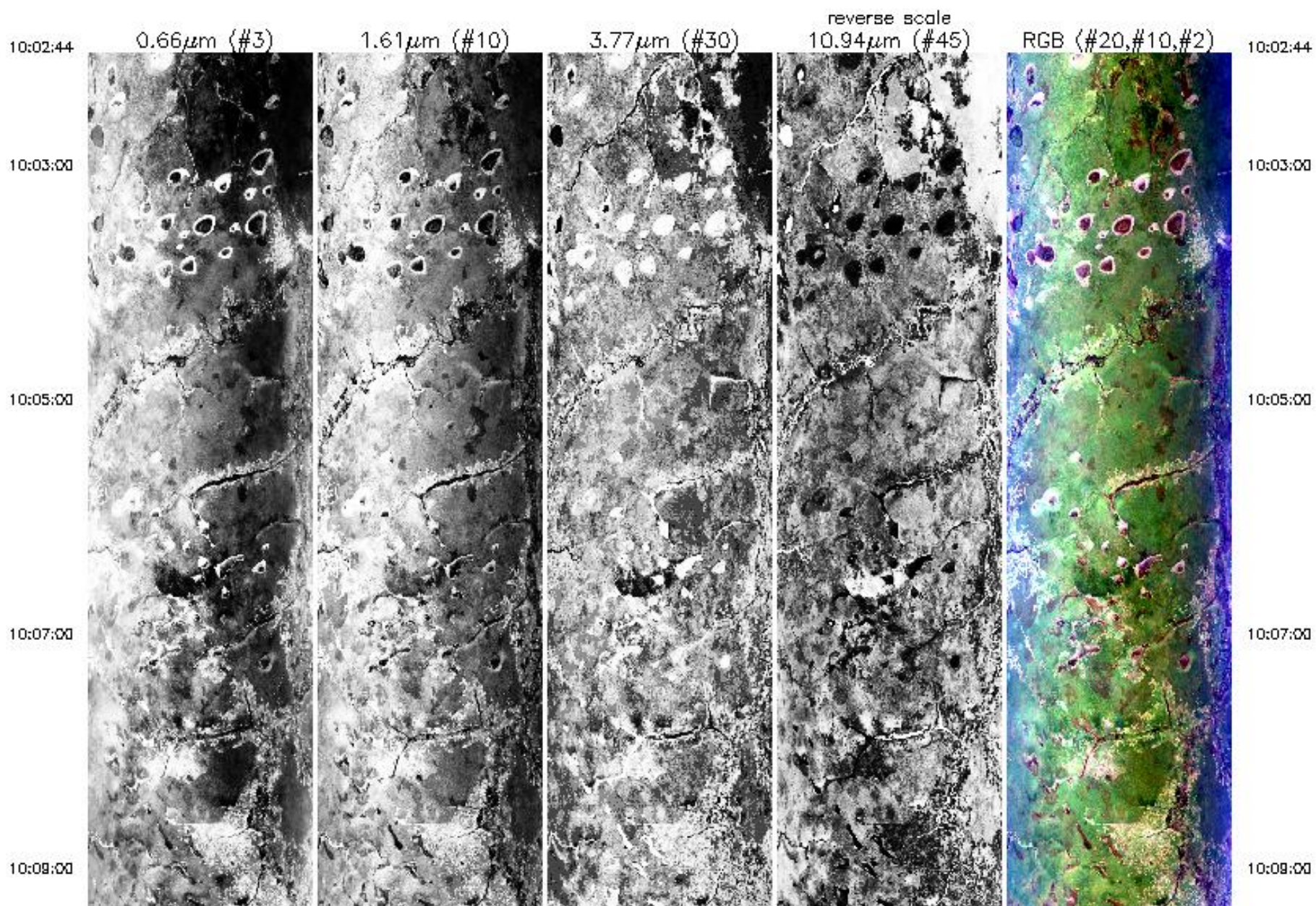
Upper Left Lat, Lon =  $-13.4^{\circ}$ ,  $23.1^{\circ}$   
 Lower Right Lat, Lon =  $-14.5^{\circ}$ ,  $24.1^{\circ}$   
 Aircraft Heading =  $151.6^{\circ}$   
 Solar Zenith =  $21.6^{\circ}$   
 GPS Altitude = 20047. m (MSL)



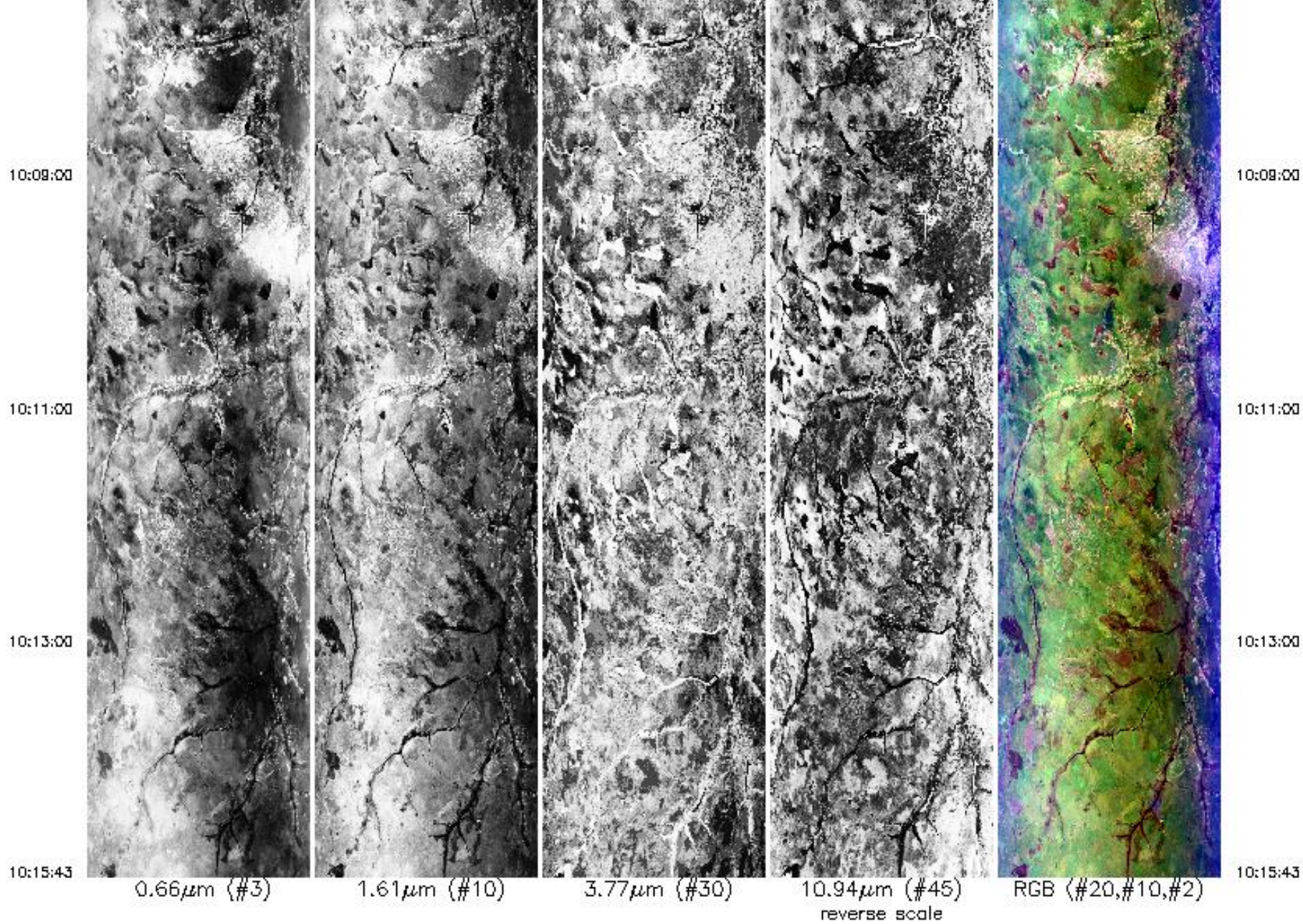
Lower Right Lat, Lon = 14.3, -24.1  
Aircraft Heading = 151.6°  
Solar Zenith = 21.6°  
GPS Altitude = 20047. m (MSL)



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Zambia  
Flight #00-157 Track #8







Upper Left Lat, Lon =  $-14.8^\circ$ ,  $23.9^\circ$   
 Lower Right Lat, Lon =  $-15.0^\circ$ ,  $25.4^\circ$   
 Aircraft Heading =  $113.0^\circ$   
 Solar Zenith =  $21.5^\circ$   
 GPS Altitude = 20068. m (MSL)



Lower Right Lat, Lon =  $-15.0^\circ$ ,  $25.4^\circ$

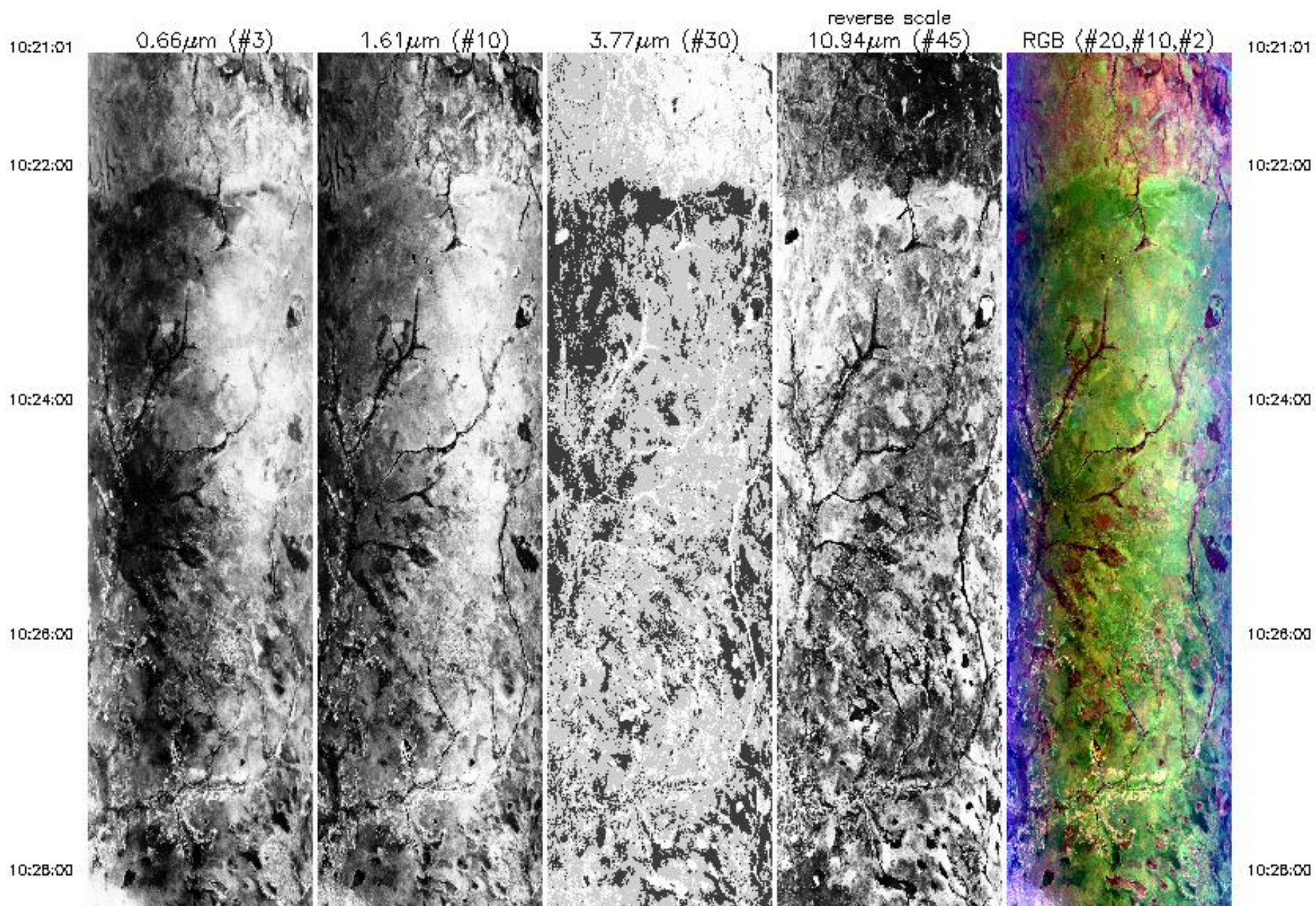
Aircraft Heading =  $113.0^\circ$

Solar Zenith =  $21.5^\circ$

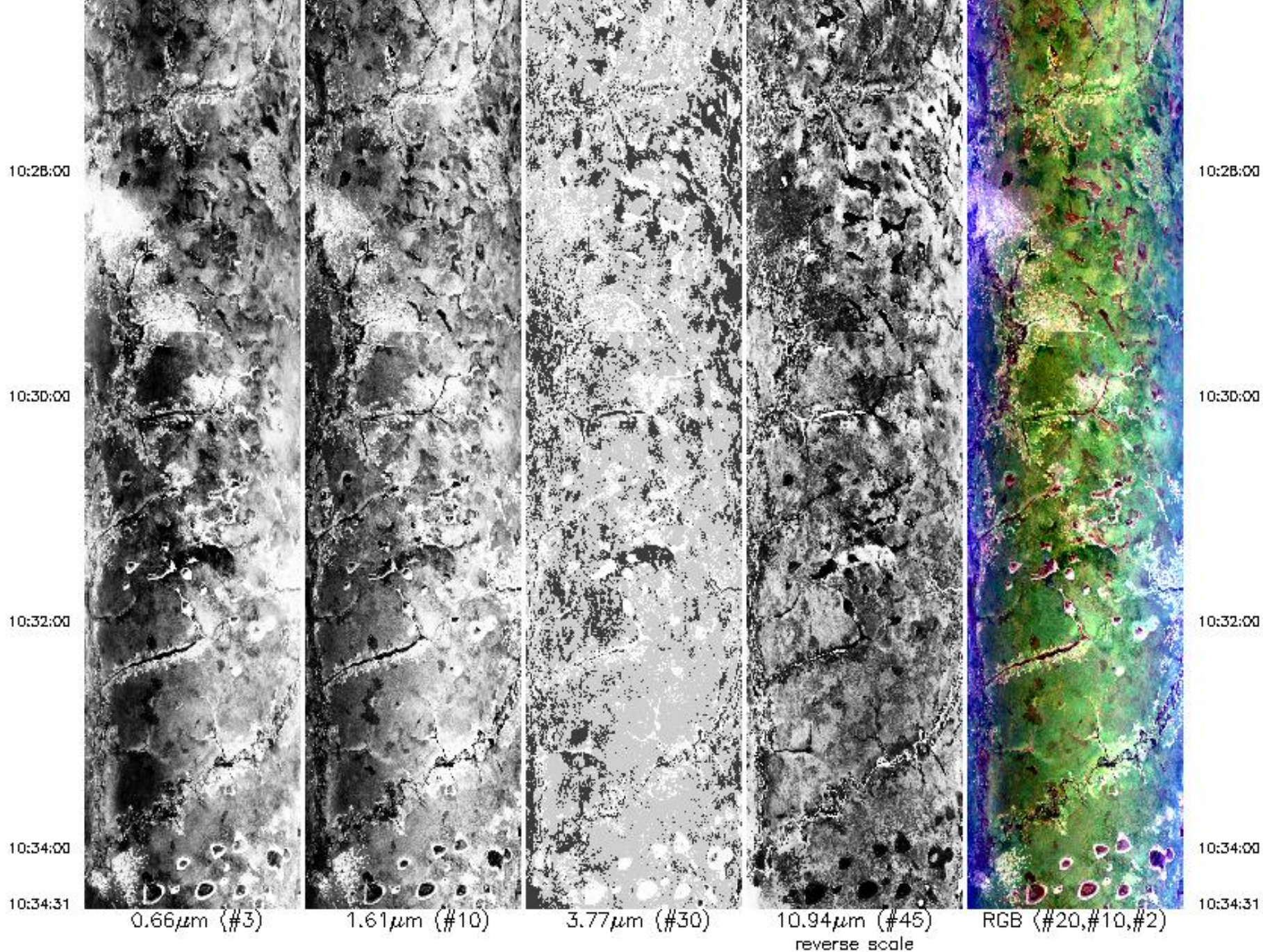
GPS Altitude = 20068. m (MSL)



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Zambia  
Flight #00-157 Track #9







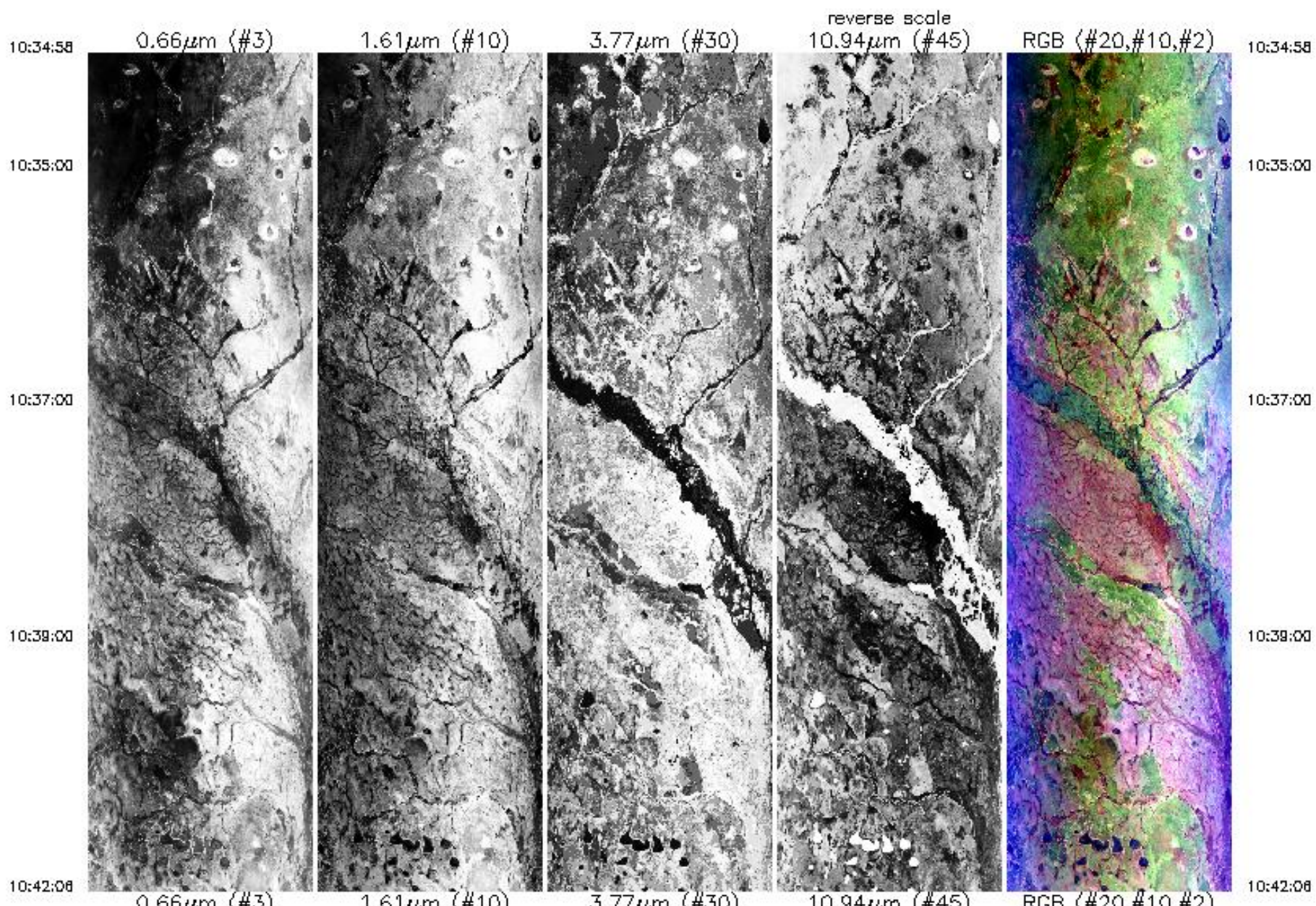
Upper Left Lat, Lon =  $-15.1^\circ$ ,  $25.6^\circ$   
 Lower Right Lat, Lon =  $-14.8^\circ$ ,  $24.0^\circ$   
 Aircraft Heading =  $290.7^\circ$   
 Solar Zenith =  $21.3^\circ$   
 GPS Altitude = 19899. m (MSL)



Upper Left Lat, Lon =  $-15.1^\circ$ ,  $25.6^\circ$   
Lower Right Lat, Lon =  $-14.8^\circ$ ,  $24.0^\circ$   
Aircraft Heading =  $290.7^\circ$   
Solar Zenith =  $21.3^\circ$   
GPS Altitude = 19899. m (MSL)



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Zambia  
Flight #00-157 Track #10





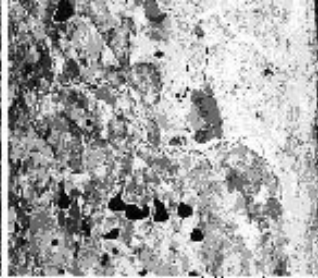
10:42:08



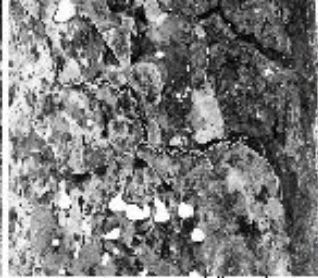
0.66 $\mu\text{m}$  (#3)



1.61 $\mu\text{m}$  (#10)



3.77 $\mu\text{m}$  (#30)



10.94 $\mu\text{m}$  (#45)

reverse scale



RGB (#20, #10, #2)

10:42:08

Upper Left Lat, Lon =  $-14.5^\circ$ ,  $24.1^\circ$

Lower Right Lat, Lon =  $-14.7^\circ$ ,  $23.2^\circ$

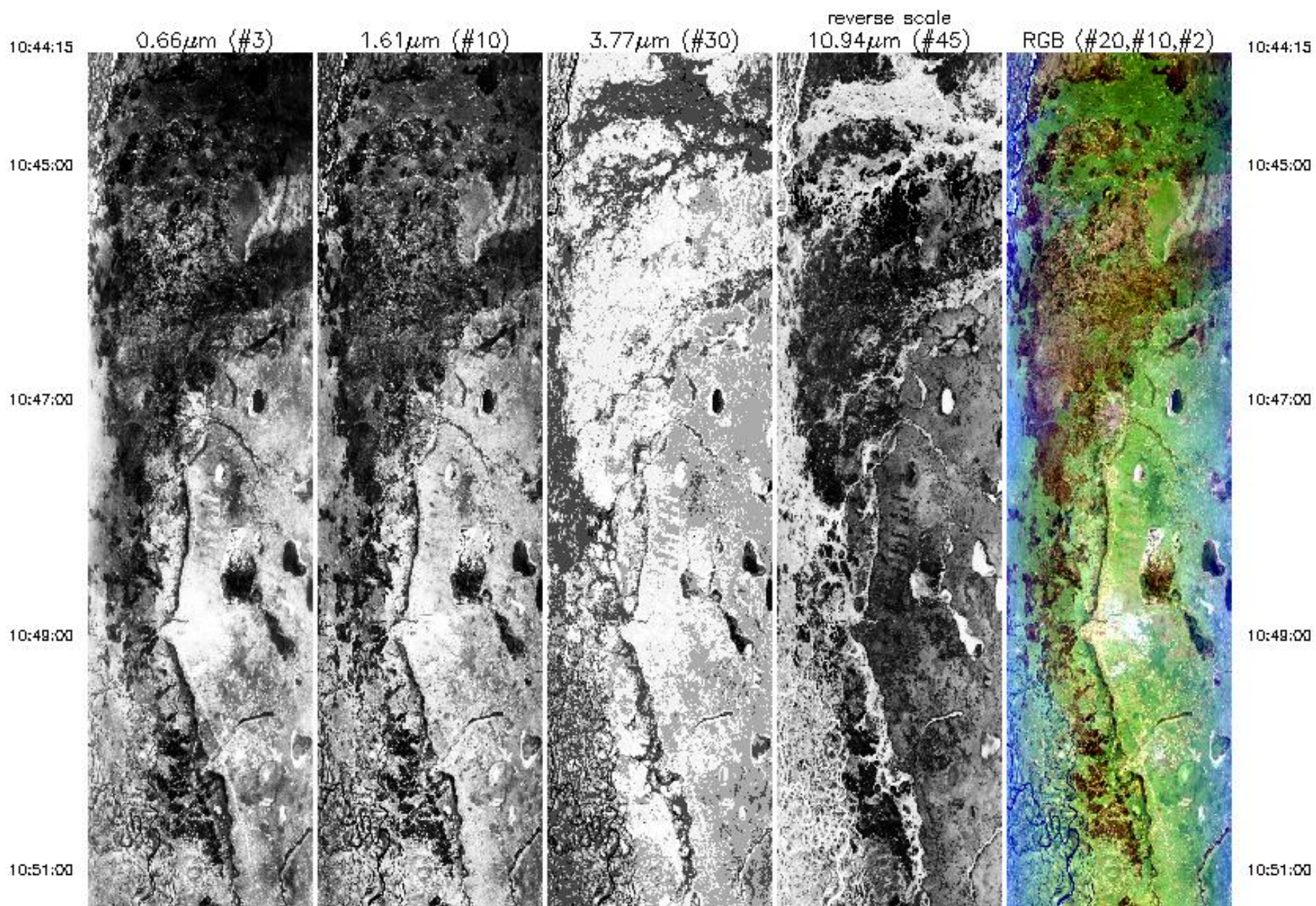
Aircraft Heading =  $275.9^\circ$

Solar Zenith =  $20.9^\circ$

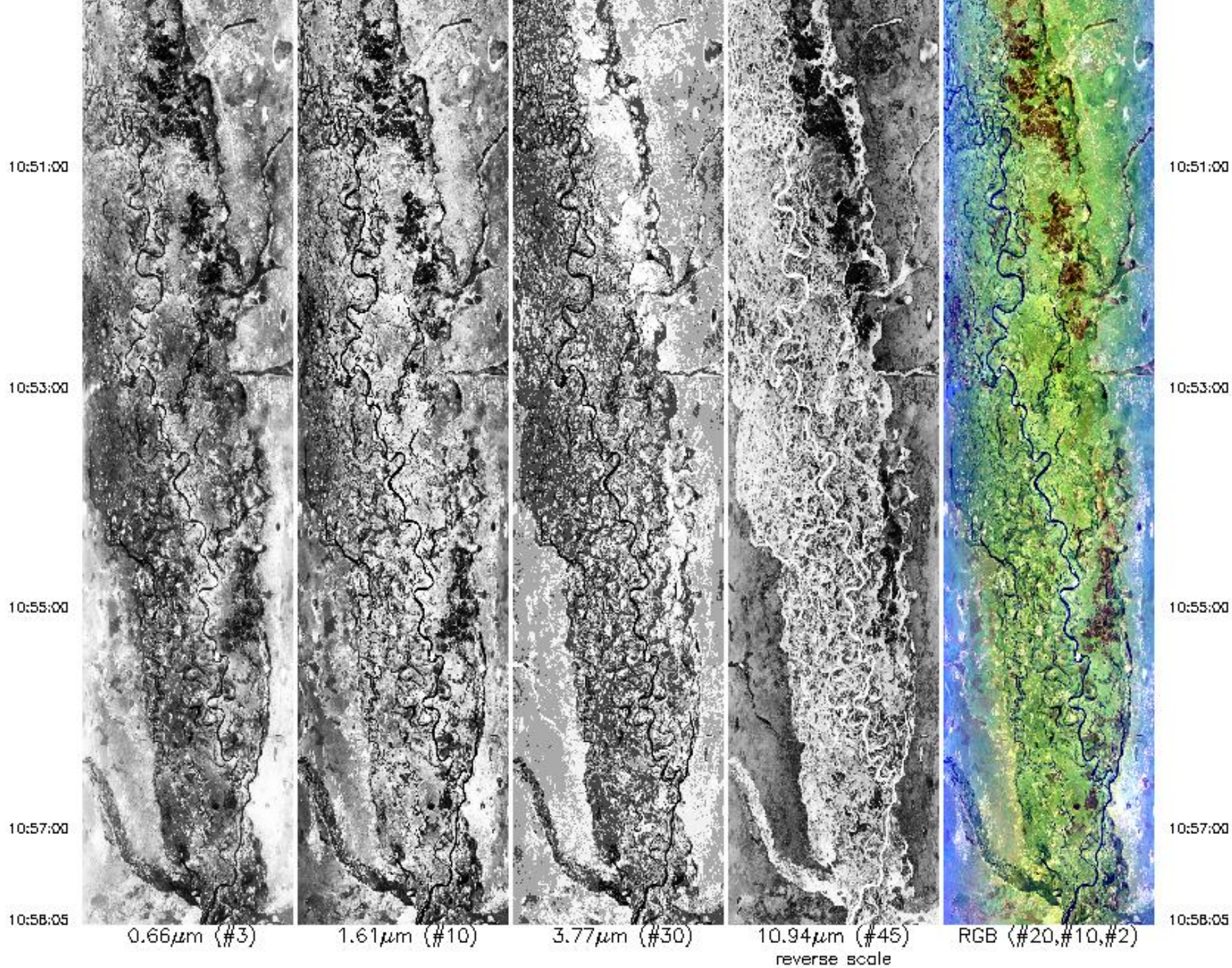
GPS Altitude = 19924. m (MSL)



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Zambia  
Flight #00-157 Track #11







Upper Left Lat, Lon =  $-14.7^\circ$ ,  $23.0^\circ$   
 Lower Right Lat, Lon =  $-16.2^\circ$ ,  $23.4^\circ$   
 Aircraft Heading =  $180.3^\circ$   
 Solar Zenith =  $21.4^\circ$

OPG AIRCRAFT 10010 (MGL)



10:58:05

0.66 $\mu$ m (#3)

1.61 $\mu$ m (#10)

3.77 $\mu$ m (#30)

10.94 $\mu$ m (#45)  
reverse scale

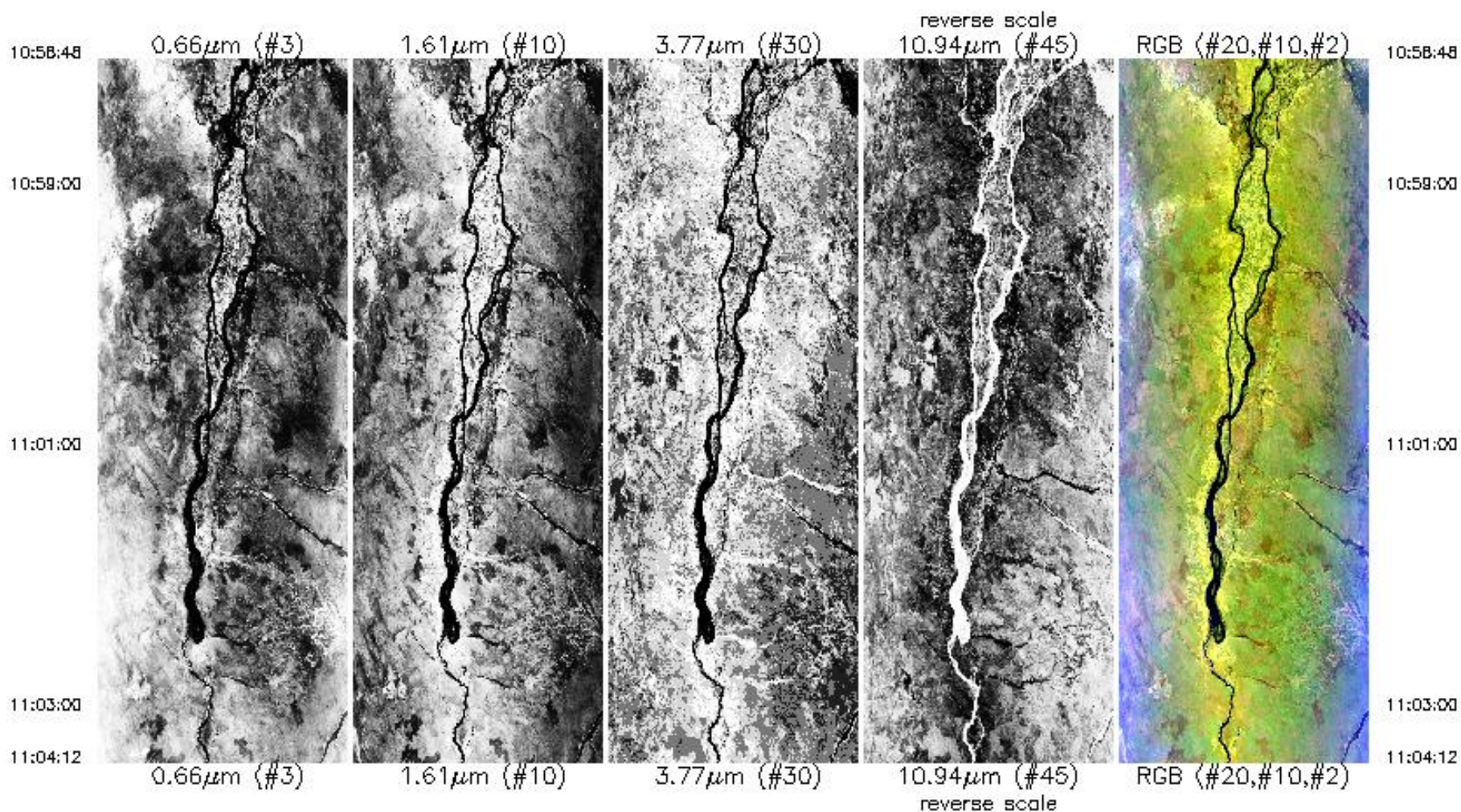
RGB (#20,#10,#2)

10:58:05

Upper Left Lat, Lon =  $-14.7^\circ$ ,  $23.0^\circ$   
Lower Right Lat, Lon =  $-16.2^\circ$ ,  $23.4^\circ$   
Aircraft Heading =  $180.3^\circ$   
Solar Zenith =  $21.4^\circ$   
GPS Altitude = 19916. m (MSL)



MODIS Airborne Simulator Browse Imagery  
 SAFARI 2000 Campaign – 06 Sep 2000  
 Zambia/Botswana  
 Flight #00-157 Track #12



Upper Left Lat, Lon =  $-16.4^\circ$ ,  $23.1^\circ$   
 Lower Right Lat, Lon =  $-16.6^\circ$ ,  $23.8^\circ$   
 Aircraft Heading =  $135.0^\circ$   
 Solar Zenith =  $24.1^\circ$   
 GPS Altitude = 20017. m (MSL)



0.66 $\mu$ m (#3)

1.61 $\mu$ m (#10)

3.77 $\mu$ m (#30)

10.94 $\mu$ m (#45)

RGB (#20,#10,#2)

reverse scale

Upper Left Lat, Lon = -16.4°, 23.1°

Lower Right Lat, Lon = -16.6°, 23.8°

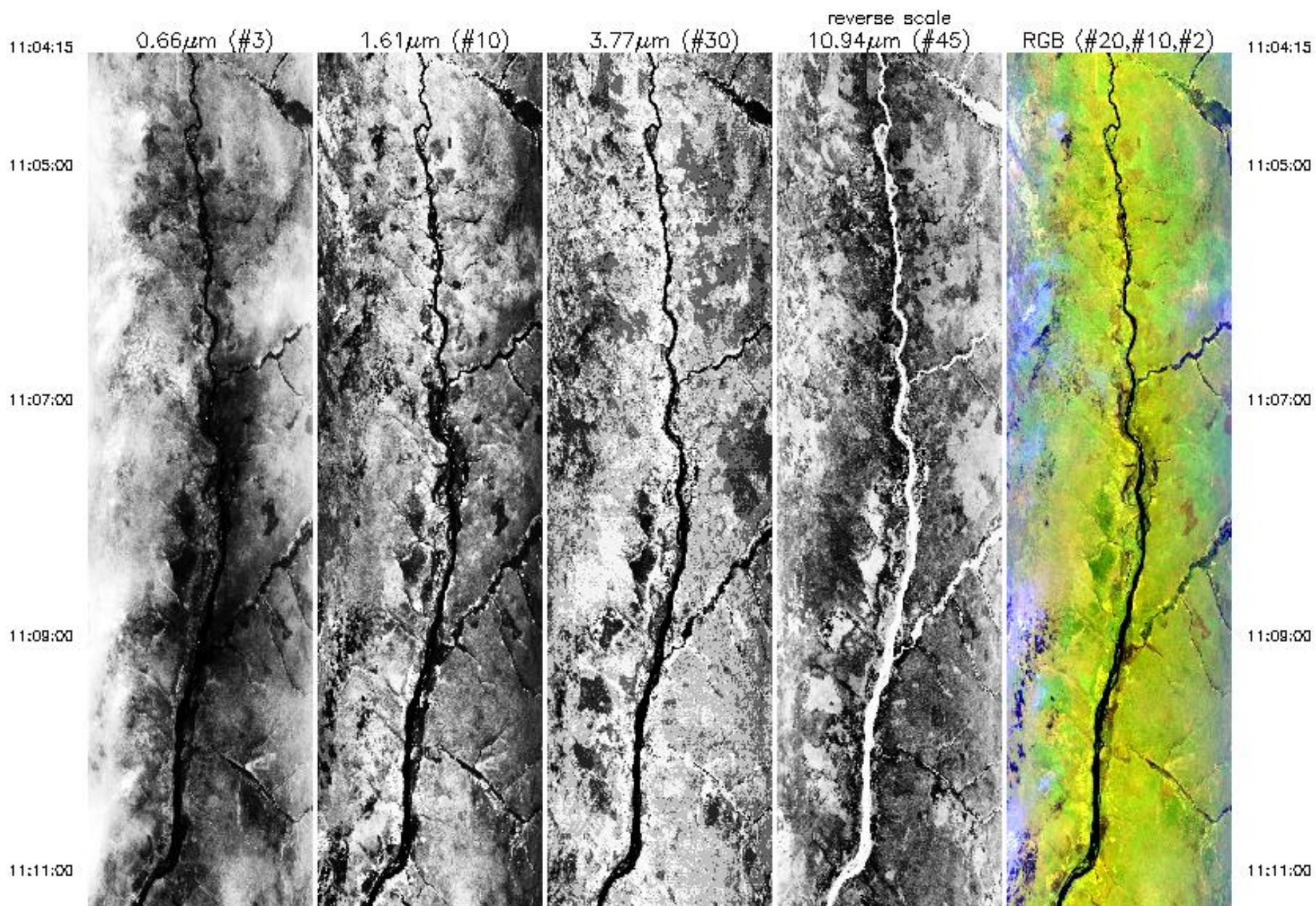
Aircraft Heading = 135.0°

Solar Zenith = 24.1°

GPS Altitude = 20017. m (MSL)



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Botswana  
Flight #00-157 Track #13





11:11:00

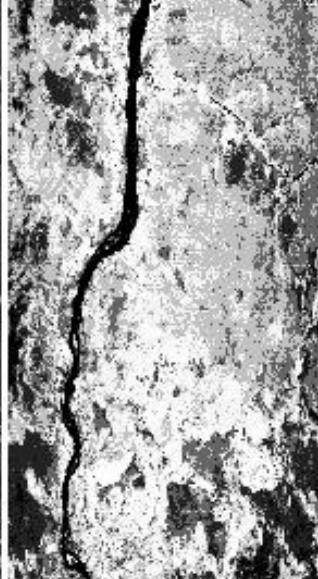
11:13:17



0.66 $\mu$ m (#3)



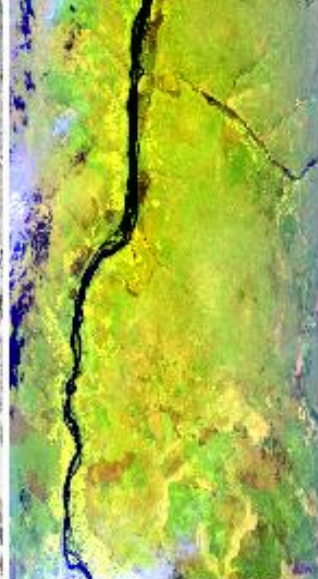
1.61 $\mu$ m (#10)



3.77 $\mu$ m (#30)



10.94 $\mu$ m (#45)  
reverse scale



RGB (#20,#10,#2)

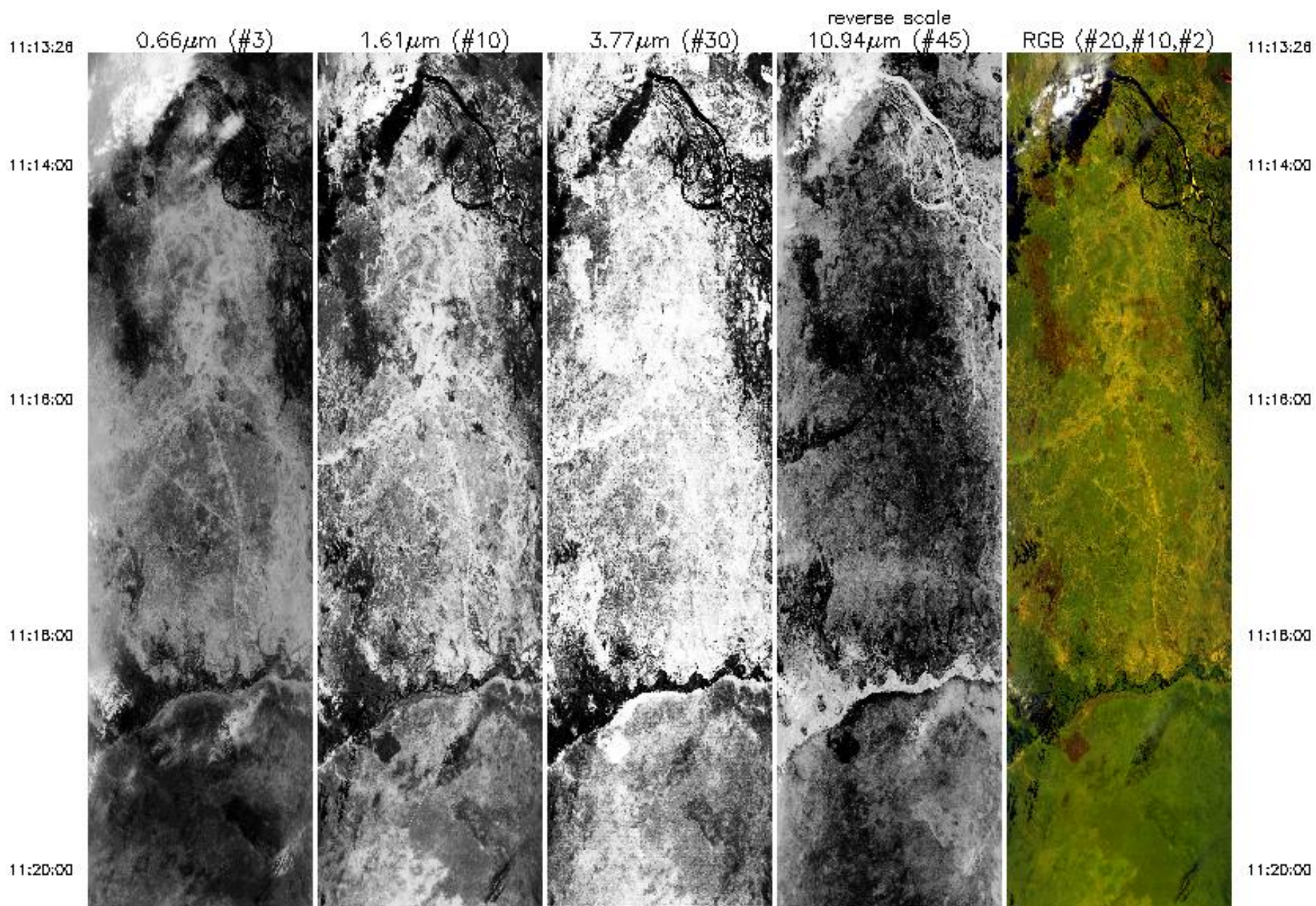
11:11:00

11:13:17

Upper Left Lat, Lon =  $-16.8^{\circ}$ ,  $23.6^{\circ}$   
Lower Right Lat, Lon =  $-17.3^{\circ}$ ,  $24.5^{\circ}$   
Aircraft Heading =  $135.8^{\circ}$   
Solar Zenith =  $25.1^{\circ}$   
GPS Altitude = 20059. m (MSL)



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Botswana  
Flight #00-157 Track #14





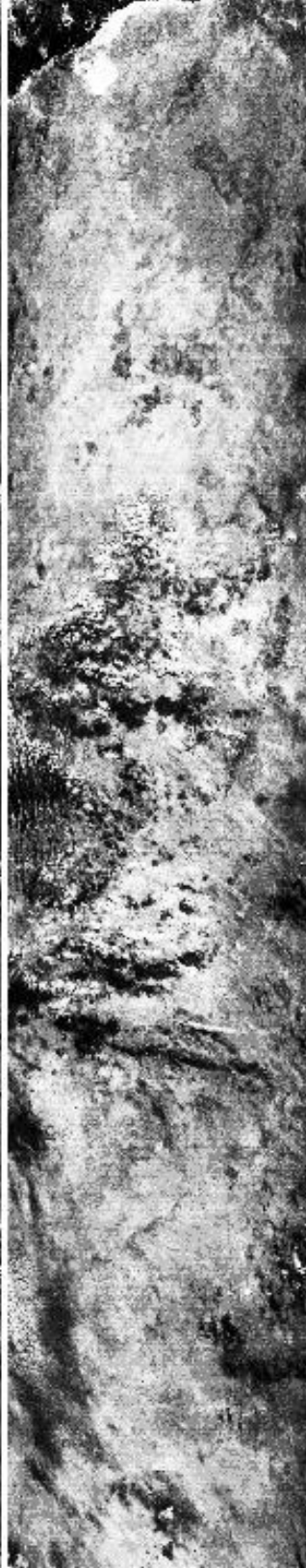
11:20:00



11:22:00



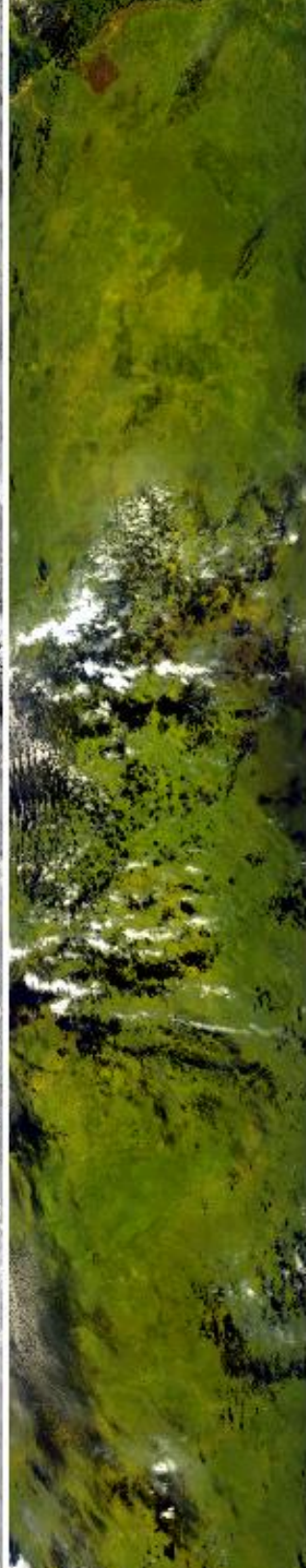
11:24:00



11:26:00



11:28:00



11:20:00

11:22:00

11:24:00

11:26:00

11:28:00



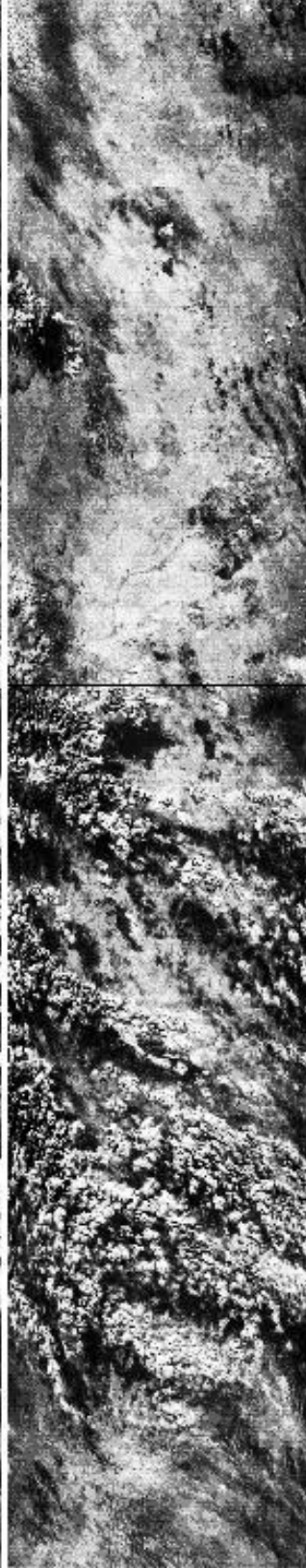
11:28:00



11:30:00



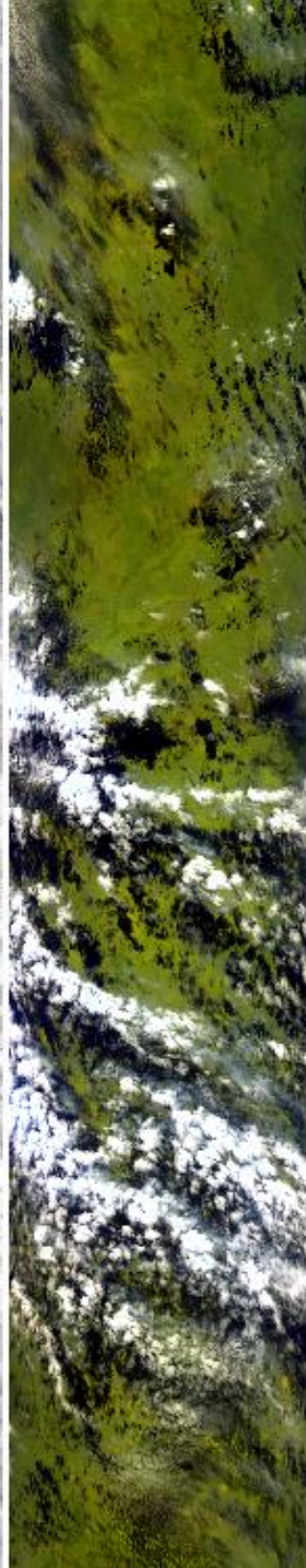
11:32:00



11:34:00



11:36:00



11:28:00

11:30:00

11:32:00

11:34:00

11:36:00



11:38:00

11:38:00

11:40:11



0.66 $\mu\text{m}$  (#3)



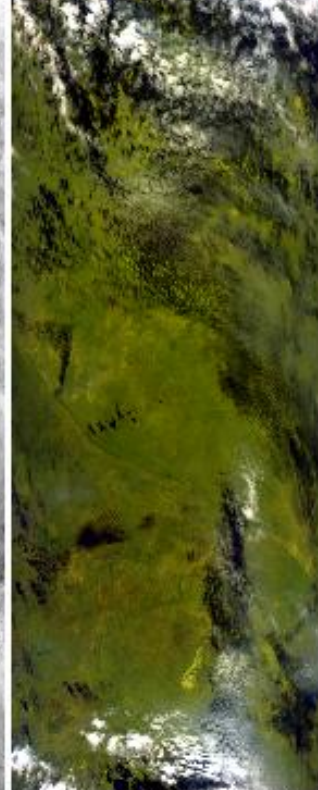
1.61 $\mu\text{m}$  (#10)



3.77 $\mu\text{m}$  (#30)



10.94 $\mu\text{m}$  (#45)  
reverse scale



RGB (#20, #10, #2)

11:38:00

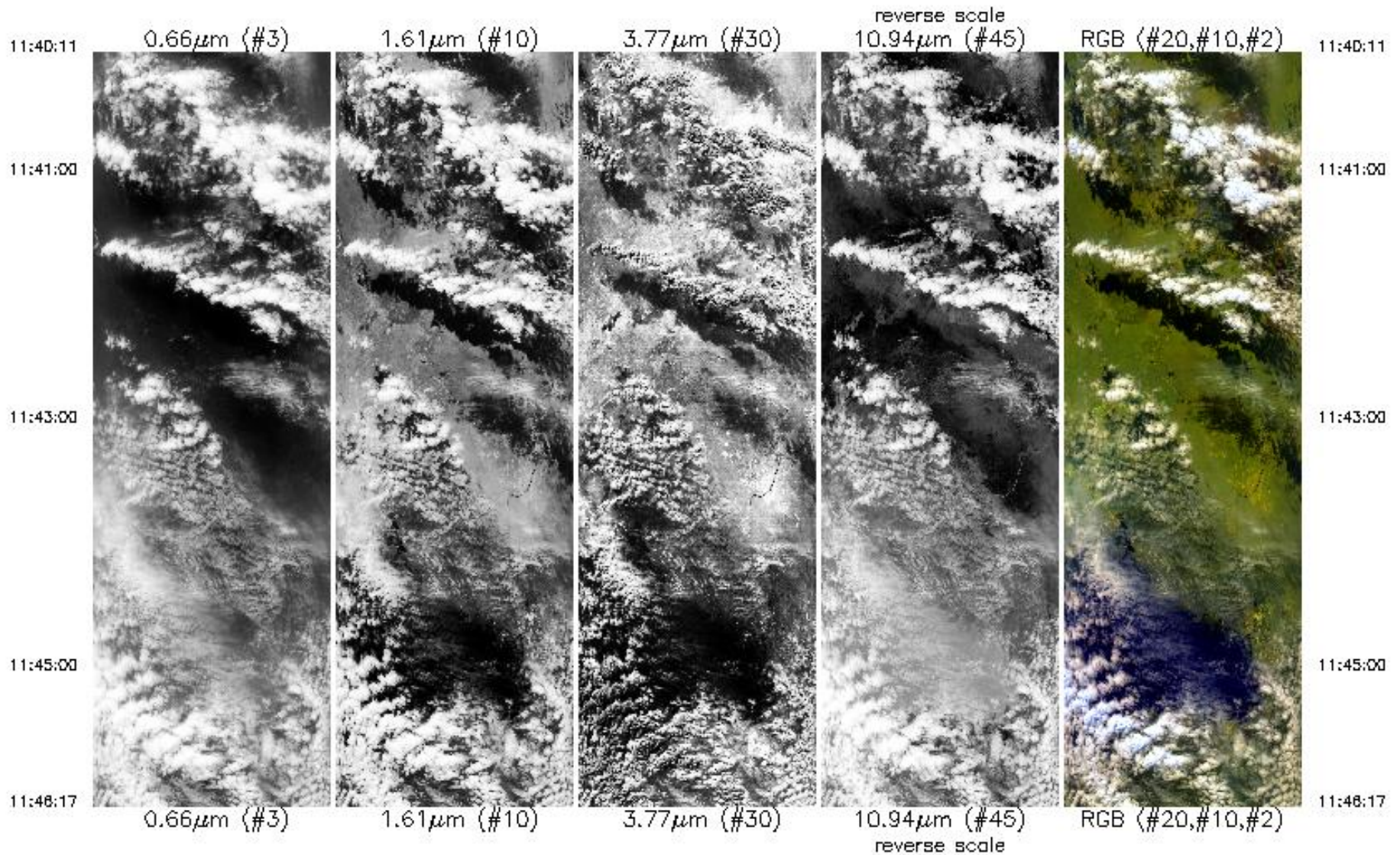
11:38:00

11:40:11

Upper Left Lat, Lon =  $-17.6^\circ$ ,  $24.2^\circ$   
Lower Right Lat, Lon =  $-19.8^\circ$ ,  $26.1^\circ$   
Aircraft Heading =  $143.8^\circ$   
Solar Zenith =  $27.0^\circ$   
GPS Altitude = 20161. m (MSL)



MODIS Airborne Simulator Browse Imagery  
 SAFARI 2000 Campaign – 06 Sep 2000  
 Botswana  
 Flight #00-157 Track #15



Upper Left Lat, Lon = -20.0°, 25.8°

Lower Right Lat, Lon = -20.4°, 26.4°

Aircraft Heading = 148.6°



11:48:17



0.66 $\mu$ m (#3)



1.61 $\mu$ m (#10)



3.77 $\mu$ m (#30)



10.94 $\mu$ m (#45)  
reverse scale



RGB (#20,#10,#2)

11:48:17

Upper Left Lat, Lon = -20.0°, 25.8°

Lower Right Lat, Lon = -20.4°, 26.4°

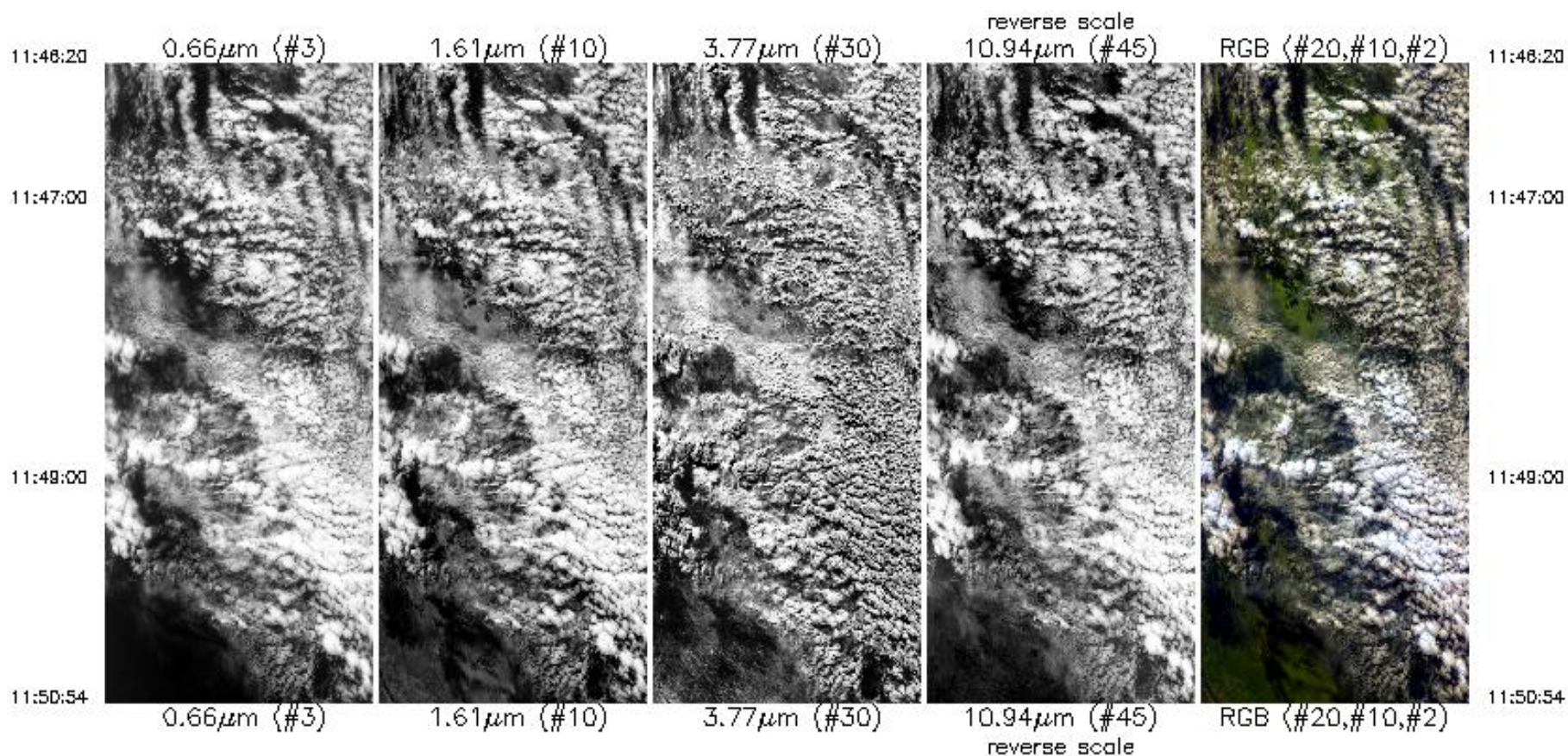
Aircraft Heading = 148.6°

Solar Zenith = 33.5°

GPS Altitude = 20014. m (MSL)



MODIS Airborne Simulator Browse Imagery  
 SAFARI 2000 Campaign – 06 Sep 2000  
 Botswana  
 Flight #00-157 Track #16



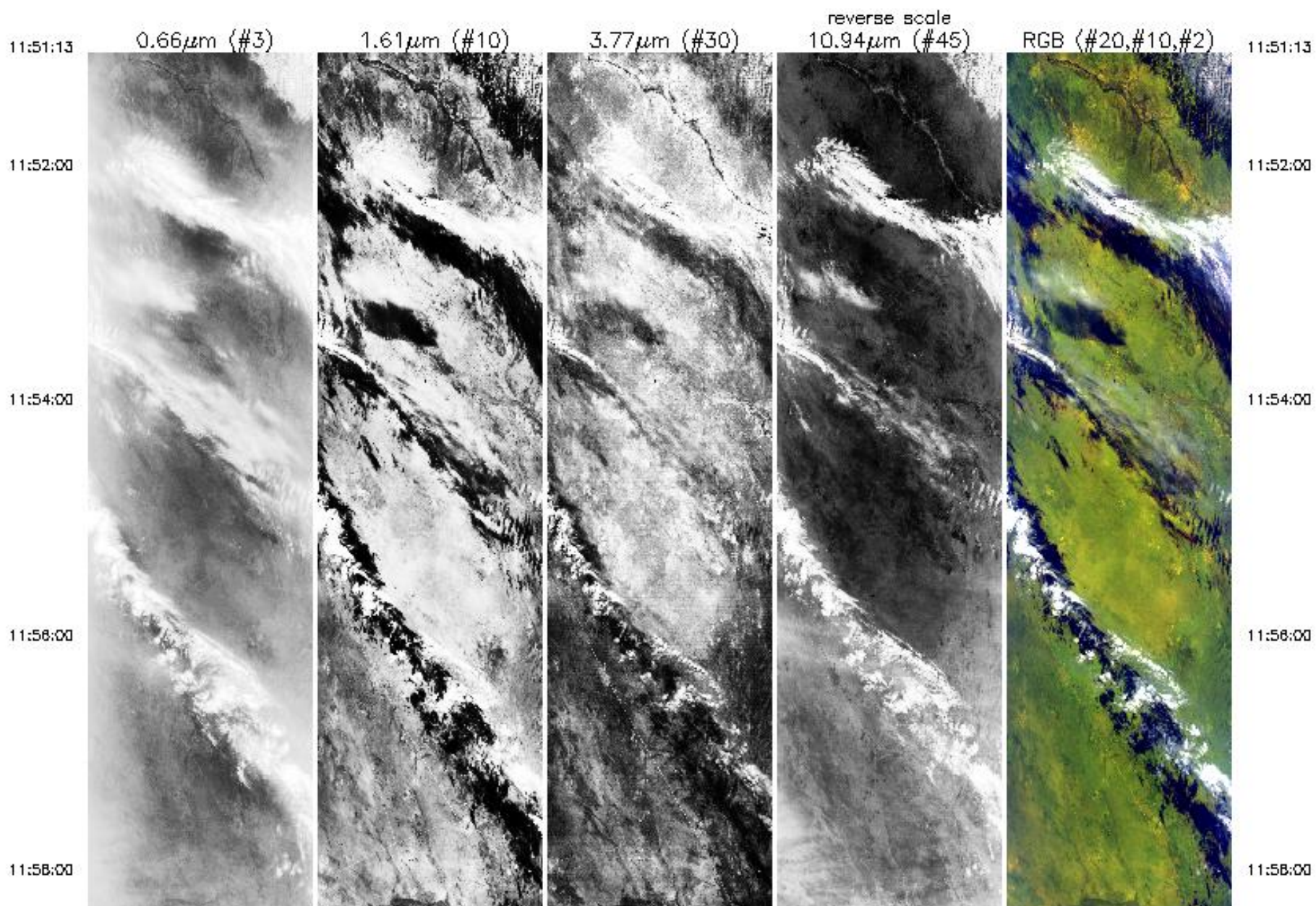
Upper Left Lat, Lon =  $-20.6^{\circ}$ ,  $26.1^{\circ}$   
 Lower Right Lat, Lon =  $-20.8^{\circ}$ ,  $26.7^{\circ}$   
 Aircraft Heading =  $147.2^{\circ}$   
 Solar Zenith =  $35.1^{\circ}$   
 GPS Altitude = 19923. m (MSL)



Lower Right Lat, Lon = -20.8 , 26.7  
Aircraft Heading = 147.2°  
Solar Zenith = 35.1°  
GPS Altitude = 19923. m (MSL)



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Botswana  
Flight #00-157 Track #17









12:06:00



12:06:00



12:10:00



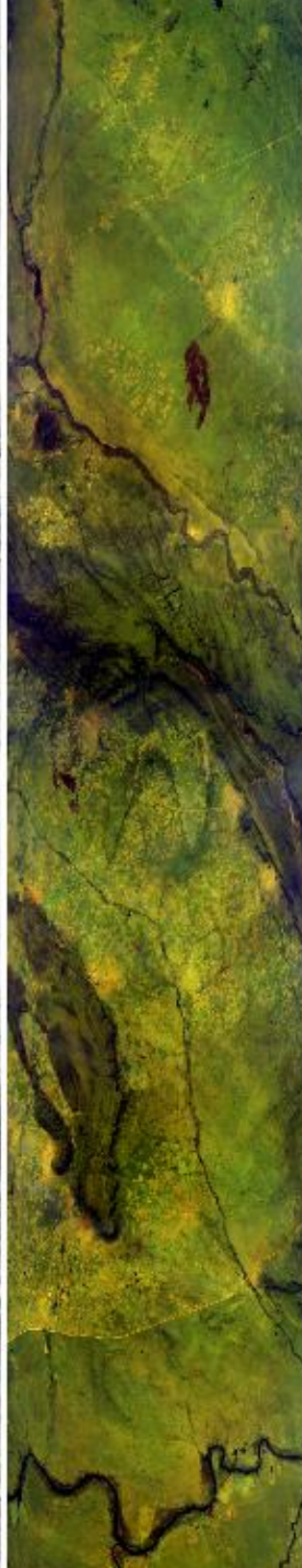
12:12:00



12:14:00



12:06:00



12:06:00



12:10:00

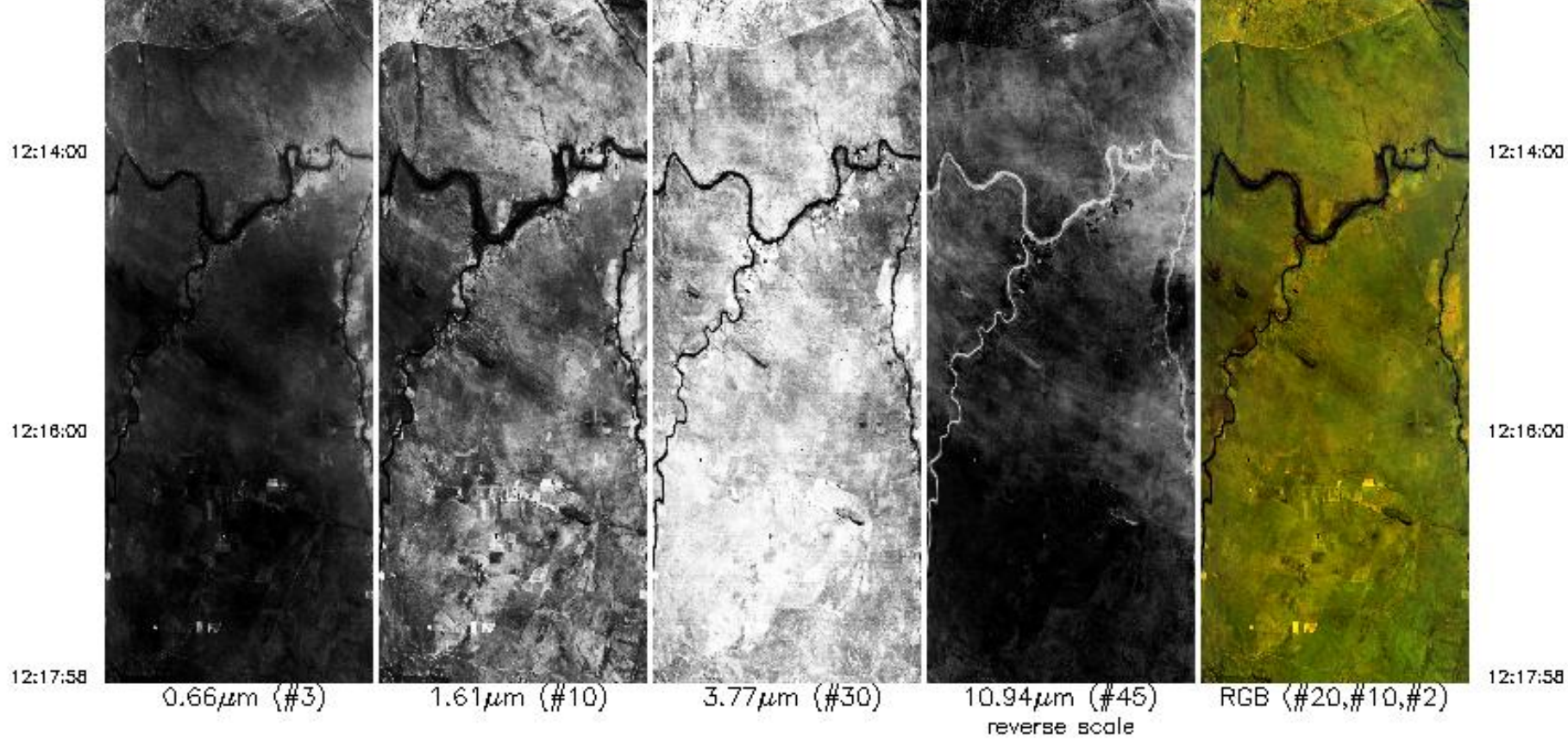
12:12:00



12:14:00



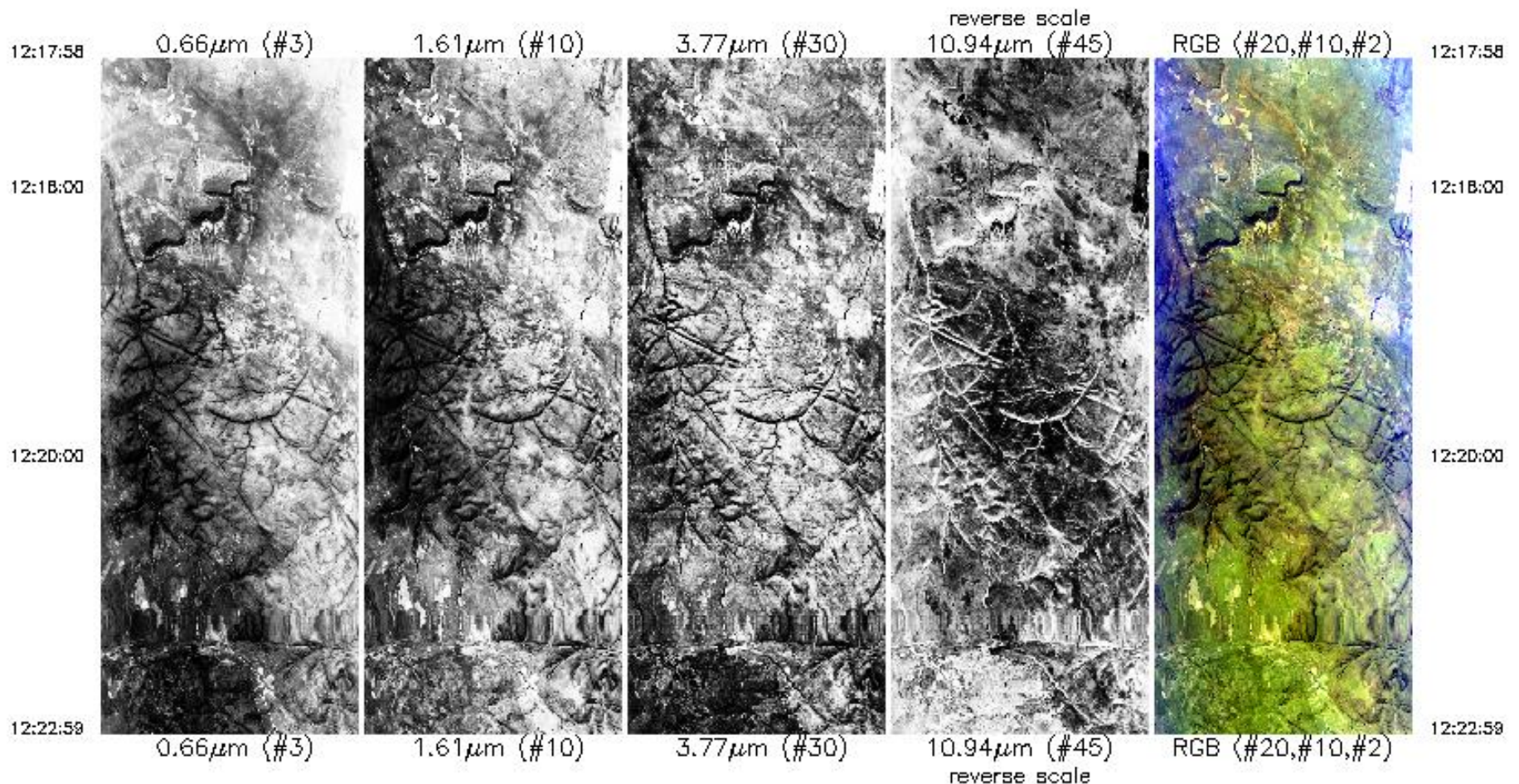




Upper Left Lat, Lon =  $-21.0^\circ$ ,  $26.4^\circ$   
 Lower Right Lat, Lon =  $-23.5^\circ$ ,  $28.1^\circ$   
 Aircraft Heading =  $151.7^\circ$   
 Solar Zenith =  $36.4^\circ$   
 GPS Altitude = 19806. m (MSL)



MODIS Airborne Simulator Browse Imagery  
 SAFARI 2000 Campaign – 06 Sep 2000  
 Botswana/S. Africa  
 Flight #00-157 Track #18



Upper Left Lat, Lon =  $-23.6^\circ$ ,  $27.7^\circ$   
 Lower Right Lat, Lon =  $-999.0^\circ$ ,  $-639.0^\circ$   
 Aircraft Heading =  $156.2^\circ$   
 Solar Zenith =  $43.7^\circ$   
 GPS Altitude = 19540. m (MSL)

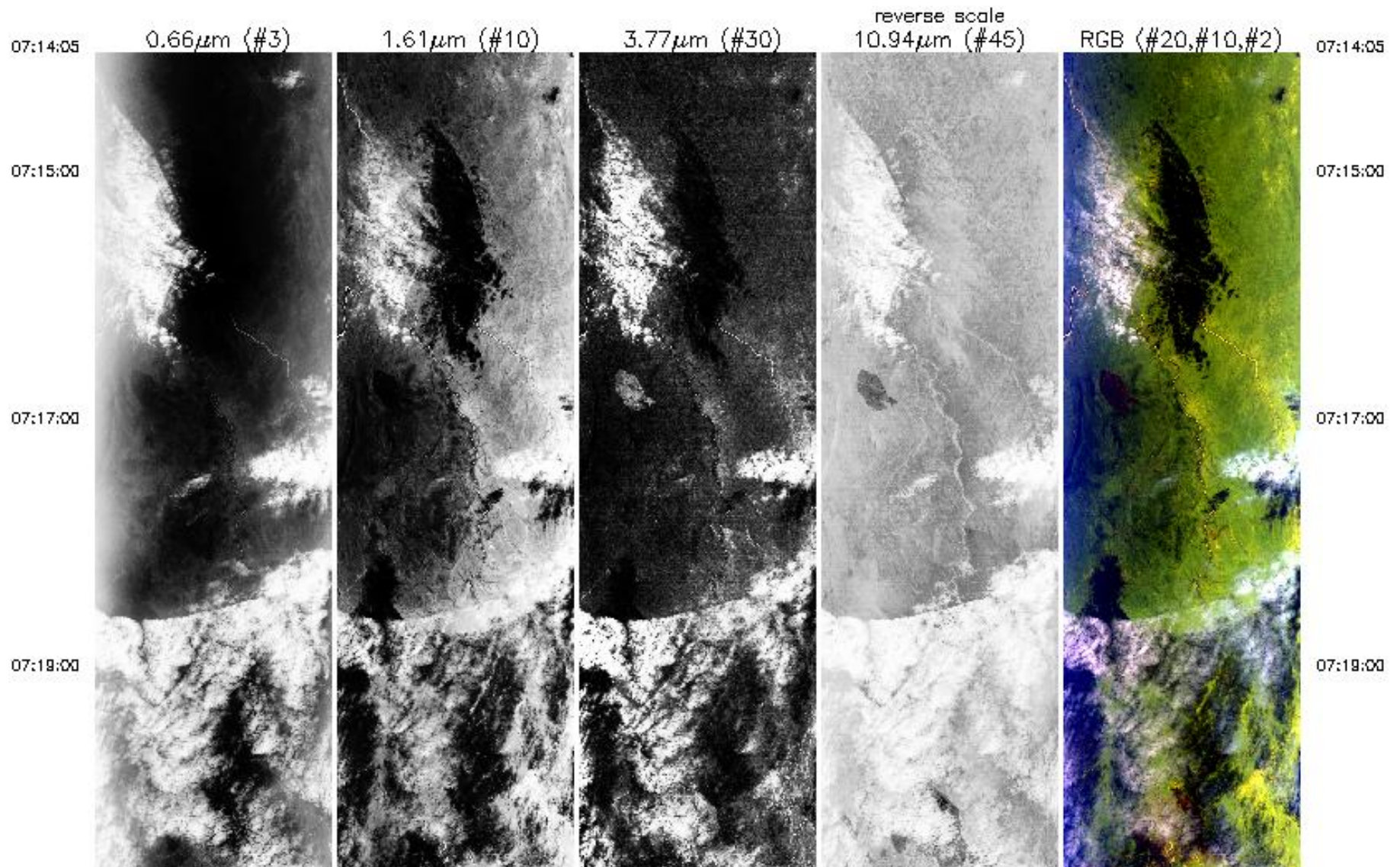


Upper Left Lat, Lon =  $-23.6^\circ$ ,  $27.7^\circ$   
Lower Right Lat, Lon =  $-999.0^\circ$ ,  $-639.0^\circ$   
Aircraft Heading =  $156.2^\circ$   
Solar Zenith =  $43.7^\circ$   
GPS Altitude = 19540. m (MSL)



# Flight #00-157 Browse Imagery

MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Botswana  
Flight #00-157 Track #1

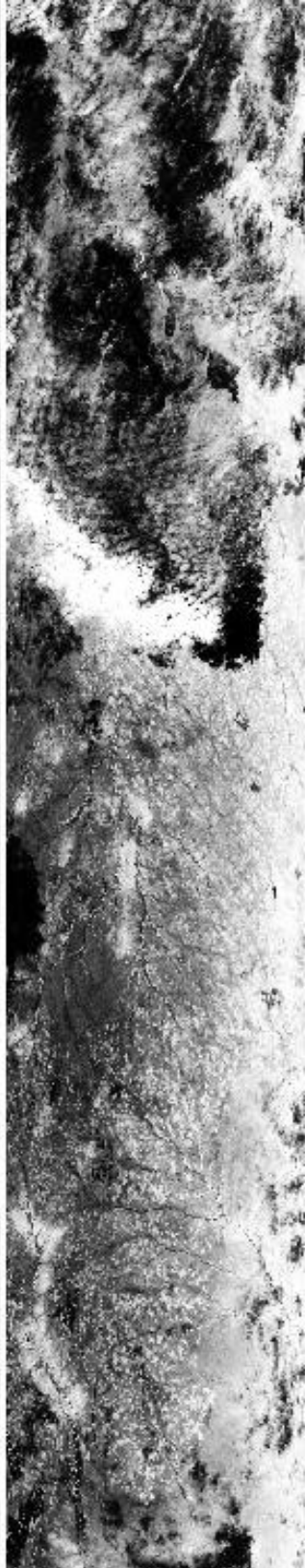




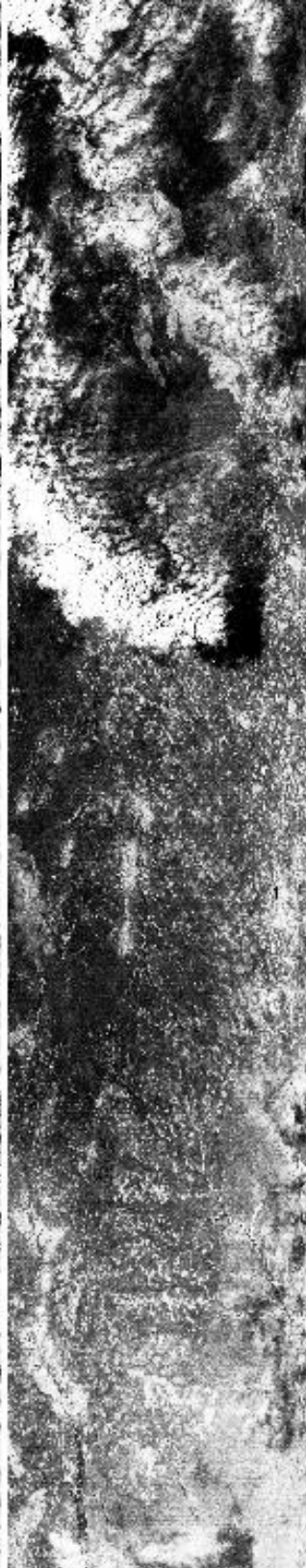
07:18:00



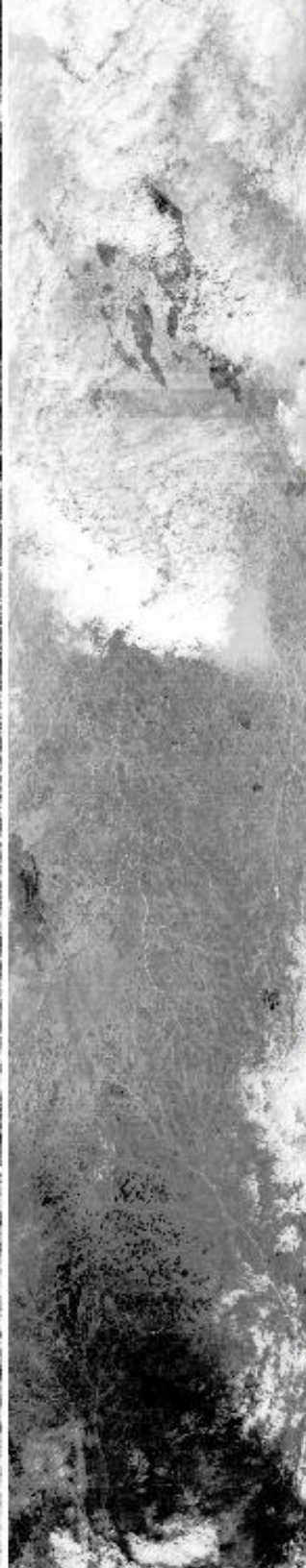
07:21:00



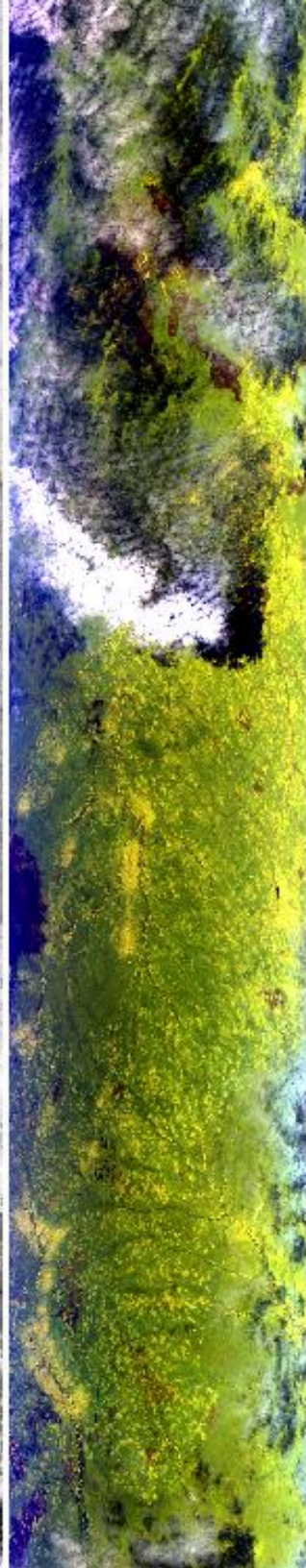
07:23:00



07:25:00



07:27:00



07:18:00

07:21:00

07:23:00

07:25:00

07:27:00



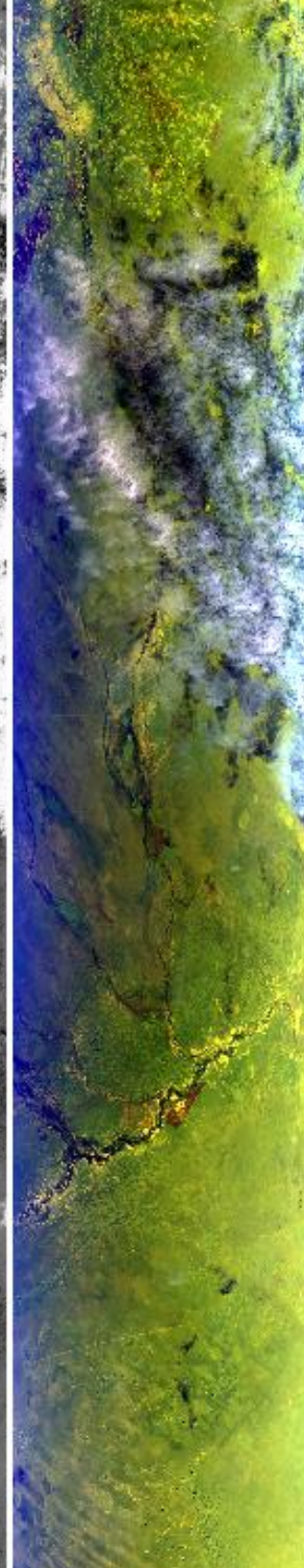
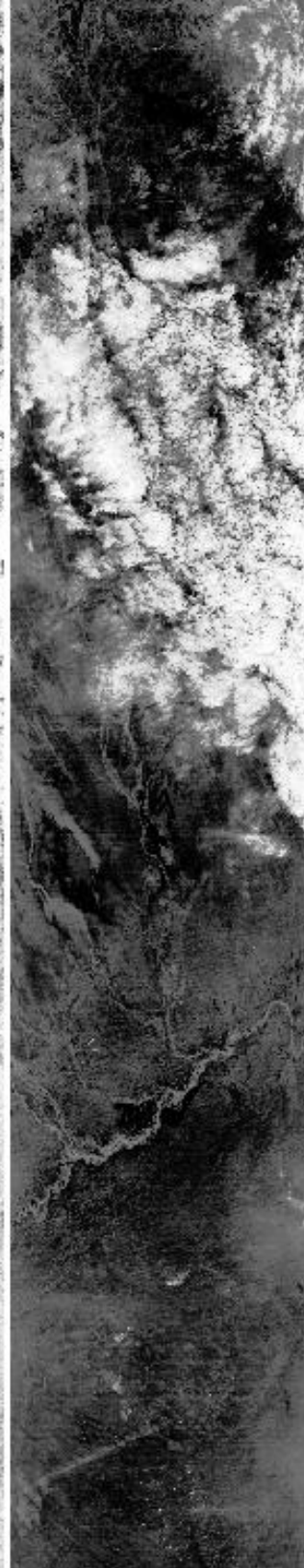
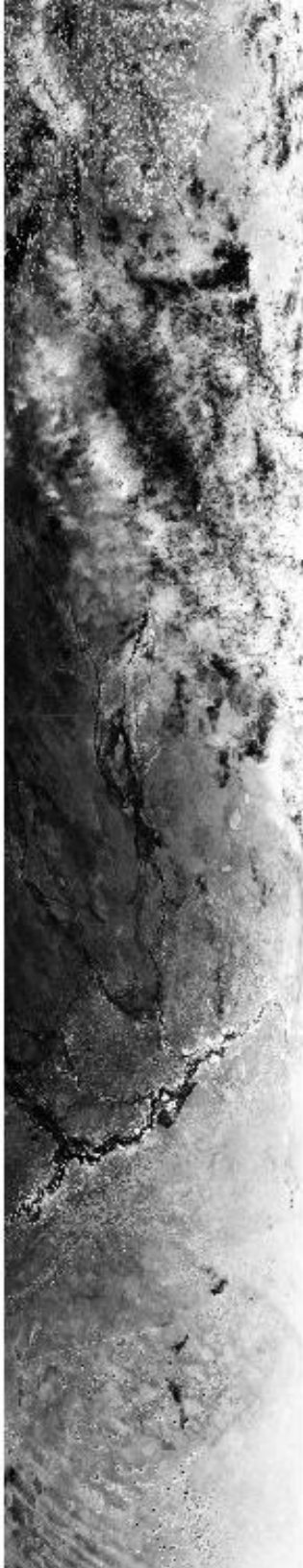
07:29:00

07:31:00

07:33:00

07:35:00

07:37:00



07:29:00

07:31:00

07:33:00

07:35:00

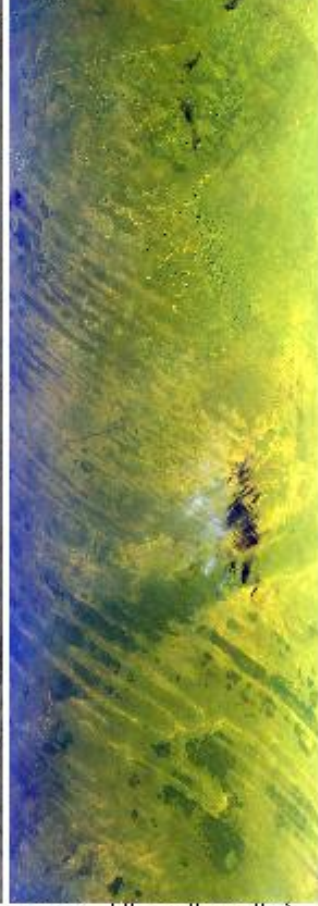
07:37:00



07:37:00

07:39:00

07:40:52



07:37:00

07:39:00

07:40:52

0.66µm (#3)

1.61µm (#10)

3.77µm (#30)

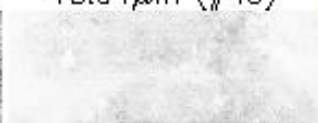
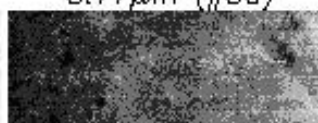
10.94µm (#45)  
reverse scale

RGB (#20,#10,#2)

Upper Left Lat, Lon = -21.6°, 28.2°  
Lower Right Lat, Lon = -19.5°, 25.8°  
Aircraft Heading = 317.3°  
Solar Zenith = 50.4°  
GPS Altitude = 19817. m (MSL)

MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign - 06 Sep 2000  
Botswana/Zambia  
Flight #00-157 Track #2

07:40:52



07:40:52

0.66µm (#3)

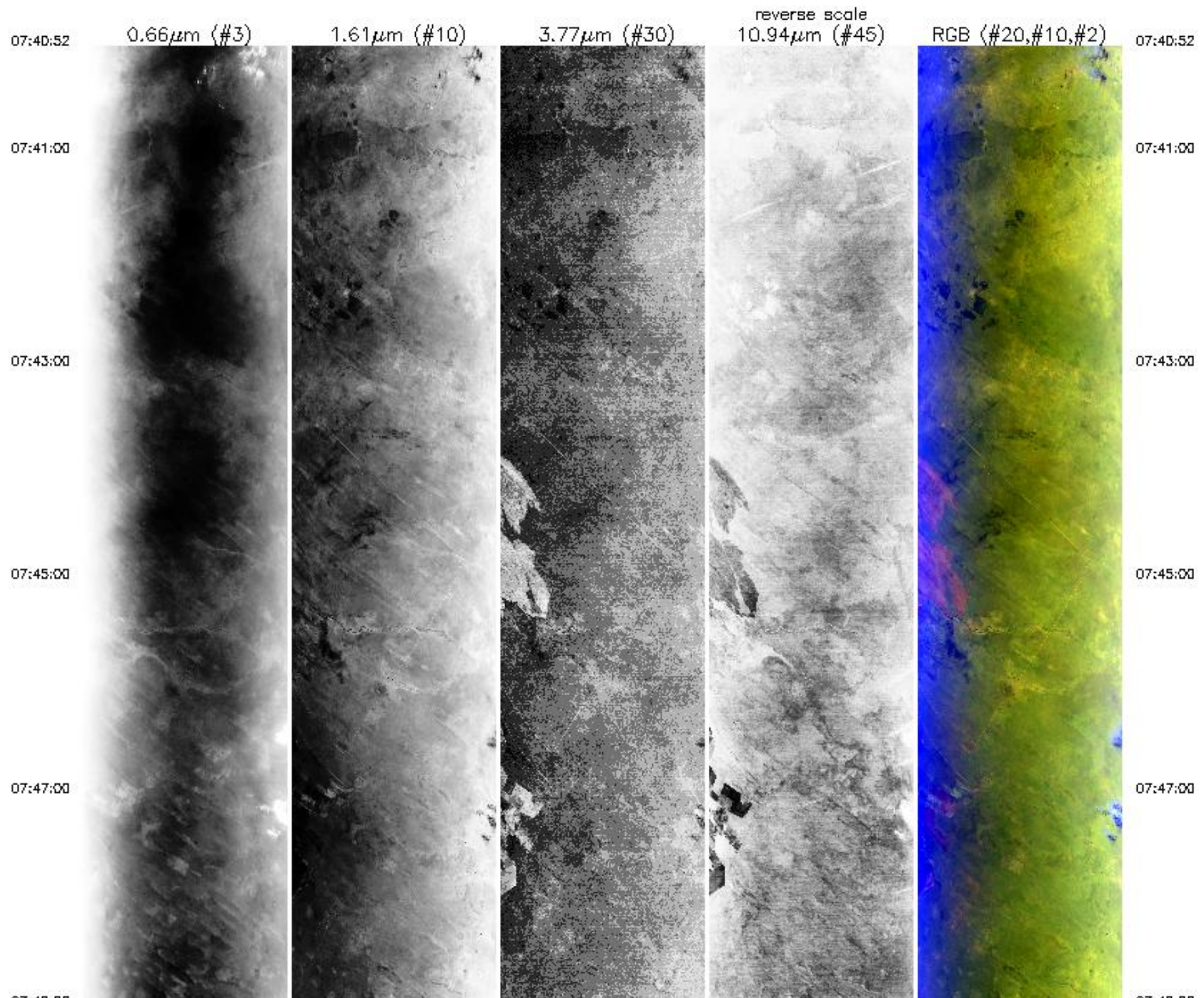
1.61µm (#10)

3.77µm (#30)

reverse scale  
10.94µm (#45)

RGB (#20,#10,#2)







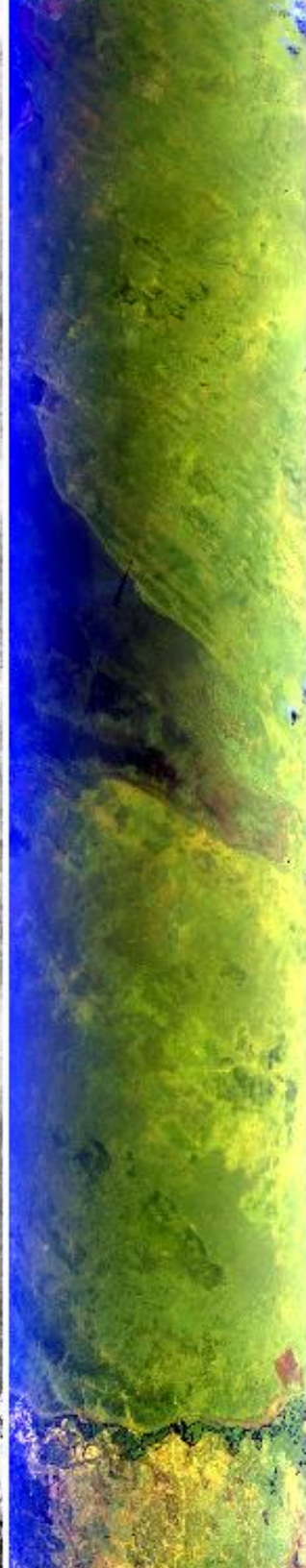
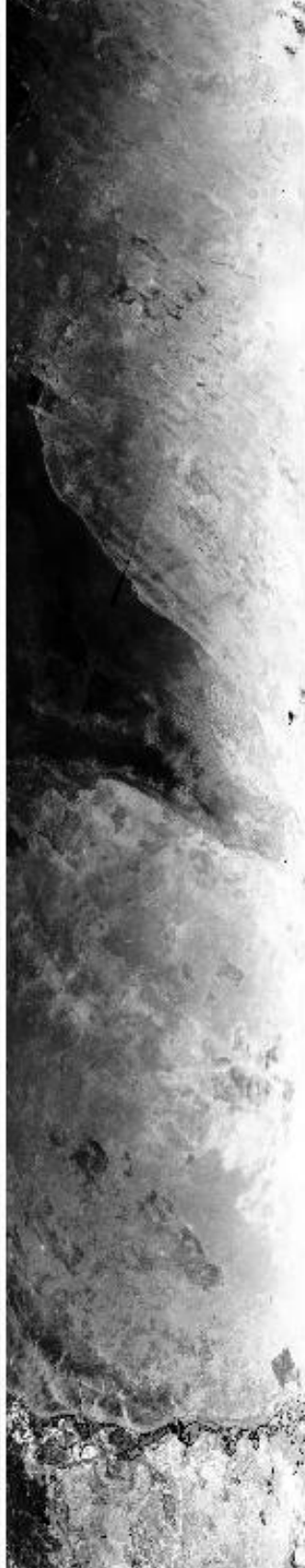
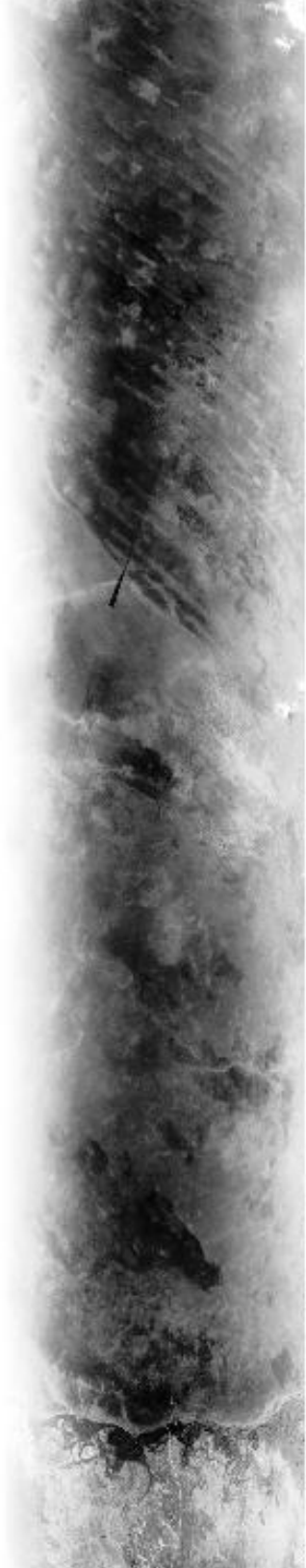
07:48:00

07:51:00

07:53:00

07:55:00

07:57:00



07:48:00

07:51:00

07:53:00

07:55:00

07:57:00



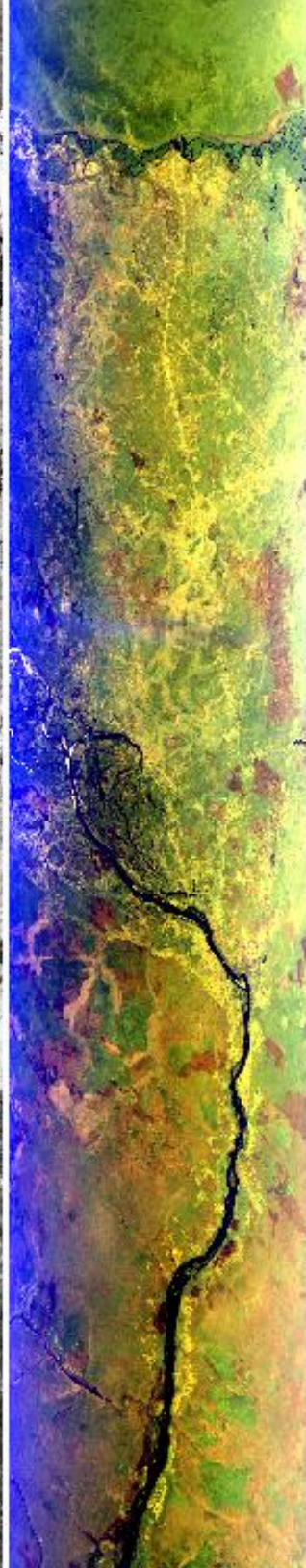
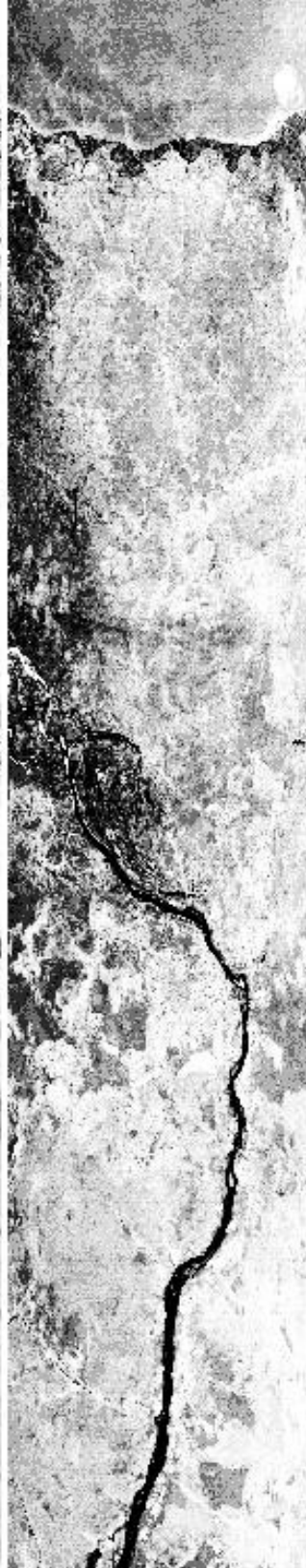
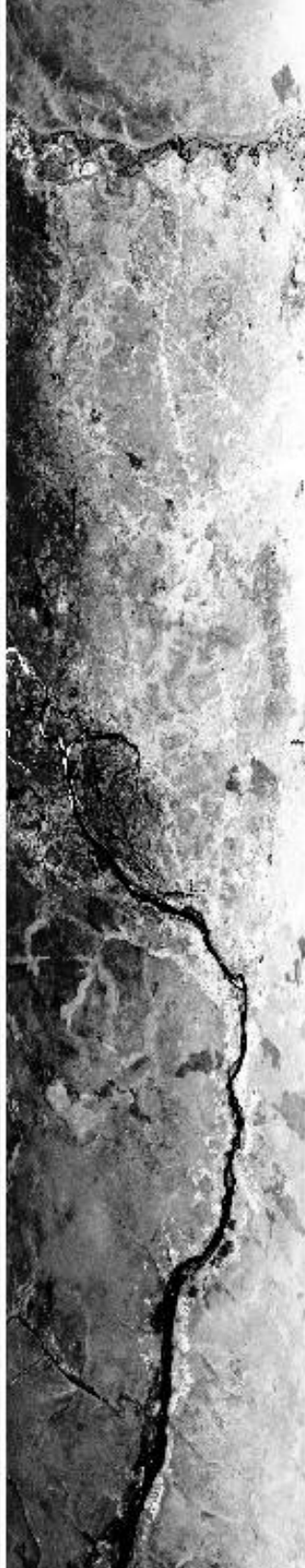
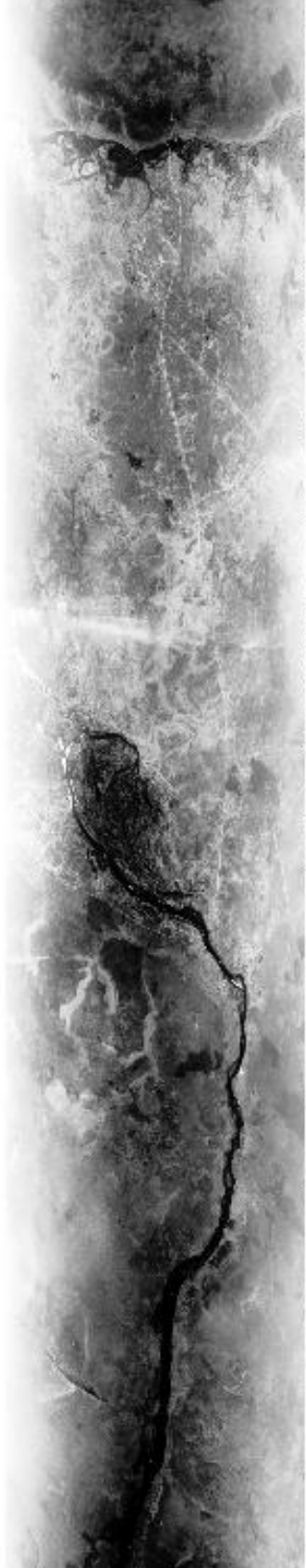
07:57:00

07:58:00

06:01:00

06:03:00

06:05:00



07:57:00

07:58:00

06:01:00

06:03:00

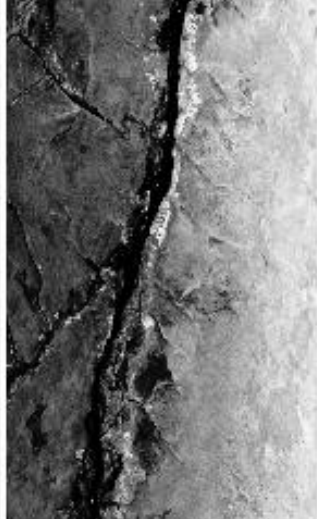
06:05:00



06:05:00



0.66µm (#3)



1.61µm (#10)



3.77µm (#30)



10.94µm (#45)  
reverse scale



RGB (#20,#10,#2)

06:05:00

06:07:38

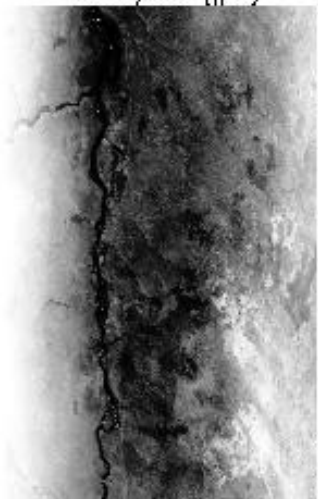
06:07:38

Upper Left Lat, Lon = -19.3°, 26.1°  
Lower Right Lat, Lon = -17.1°, 23.8°  
Aircraft Heading = 323.4°  
Solar Zenith = 45.5°  
GPS Altitude = 20085. m (MSL)

MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign - 06 Sep 2000  
Zambia  
Flight #00-157 Track #3

06:07:38

0.66µm (#3)



1.61µm (#10)



3.77µm (#30)



reverse scale  
10.94µm (#45)



RGB (#20,#10,#2)



06:07:38

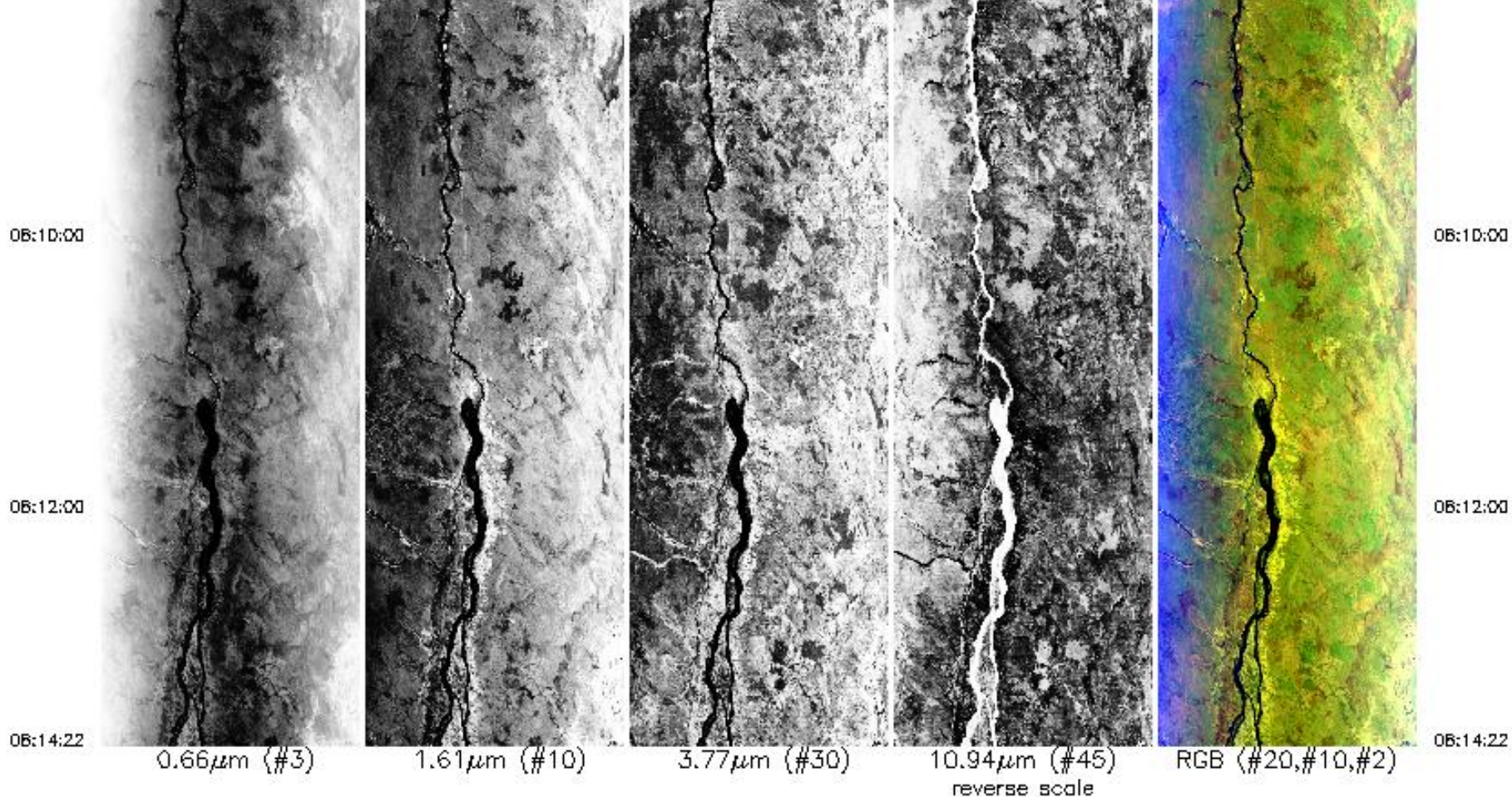
06:08:00

06:08:00

06:10:00

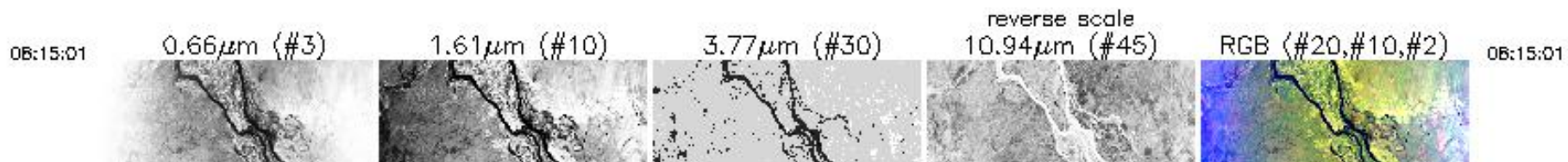
06:10:00



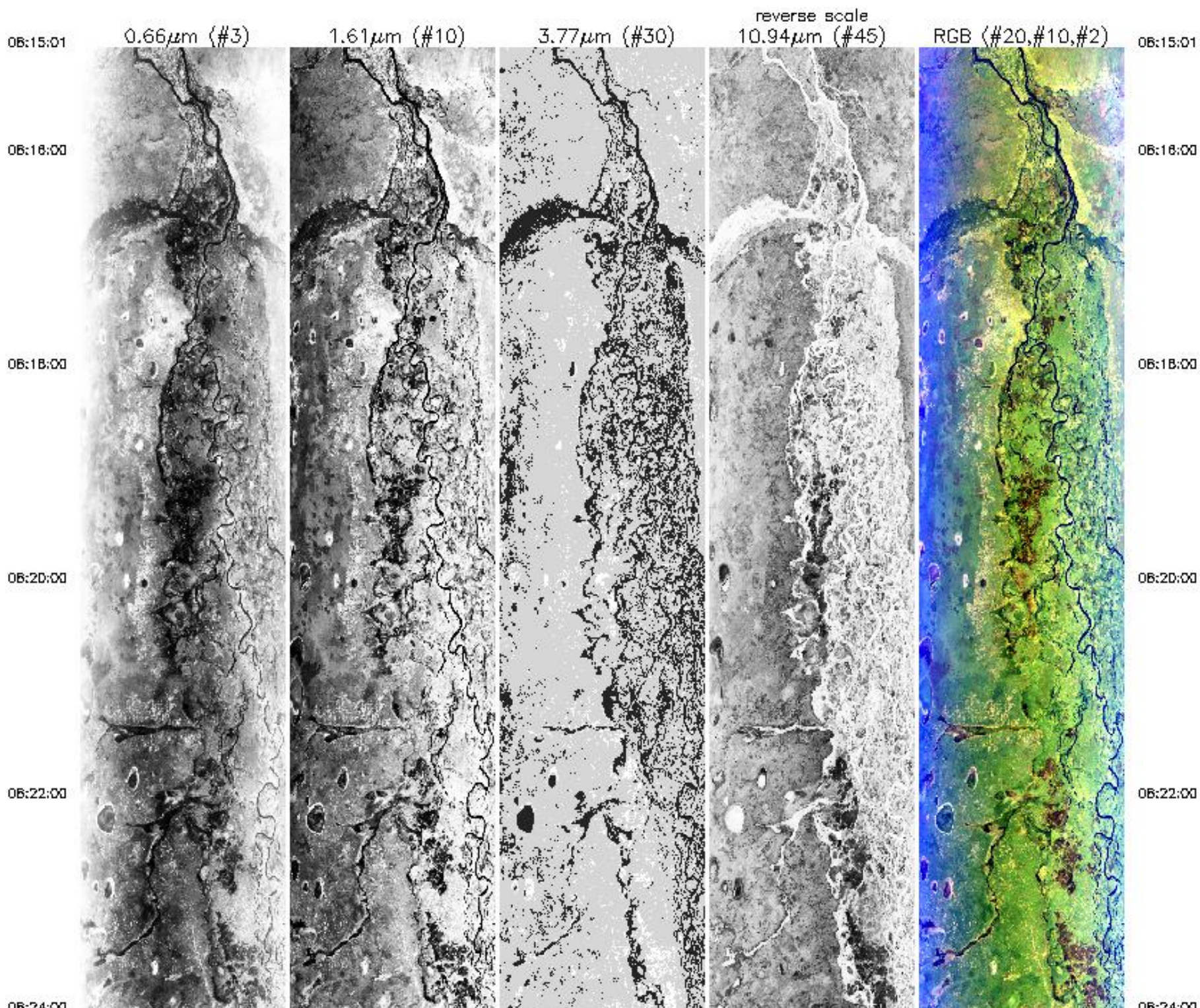


Upper Left Lat, Lon =  $-16.9^\circ$ ,  $24.0^\circ$   
 Lower Right Lat, Lon =  $-16.6^\circ$ ,  $23.2^\circ$   
 Aircraft Heading =  $317.7^\circ$   
 Solar Zenith =  $40.5^\circ$   
 GPS Altitude = 19971. m (MSL)

MODIS Airborne Simulator Browse Imagery  
 SAFARI 2000 Campaign – 06 Sep 2000  
 Zambia  
 Flight #00-157 Track #4









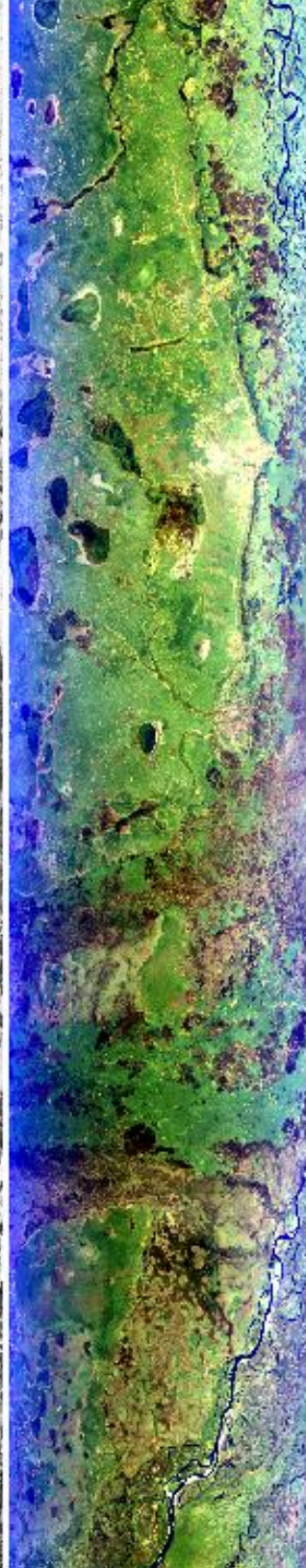
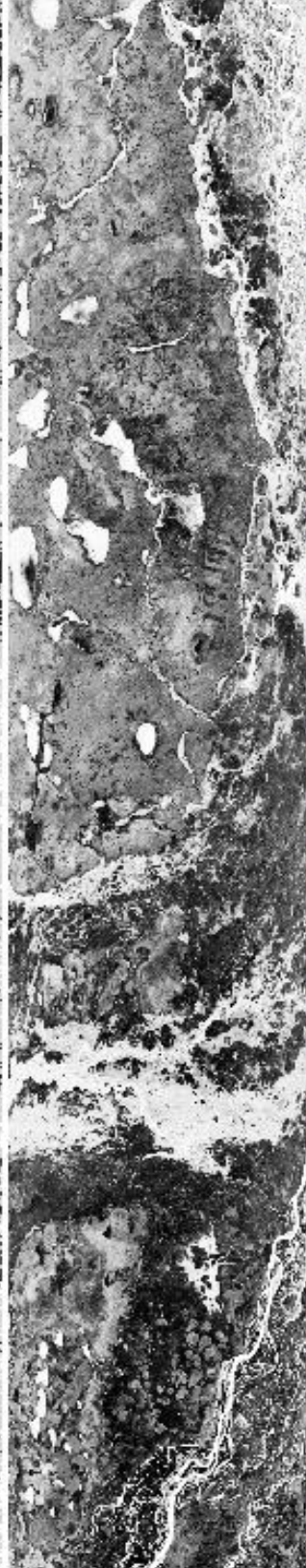
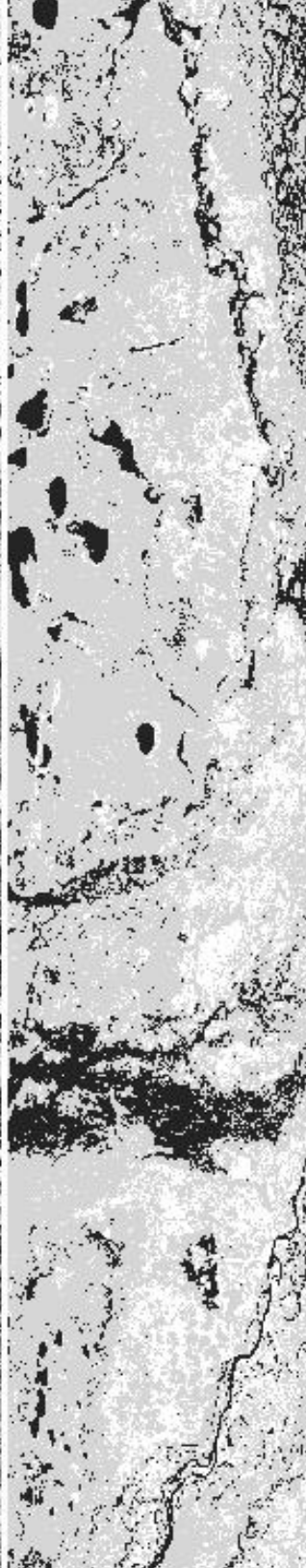
06:24:00

06:26:00

06:28:00

06:30:00

06:32:00



06:24:00

06:26:00

06:28:00

06:30:00

06:32:00



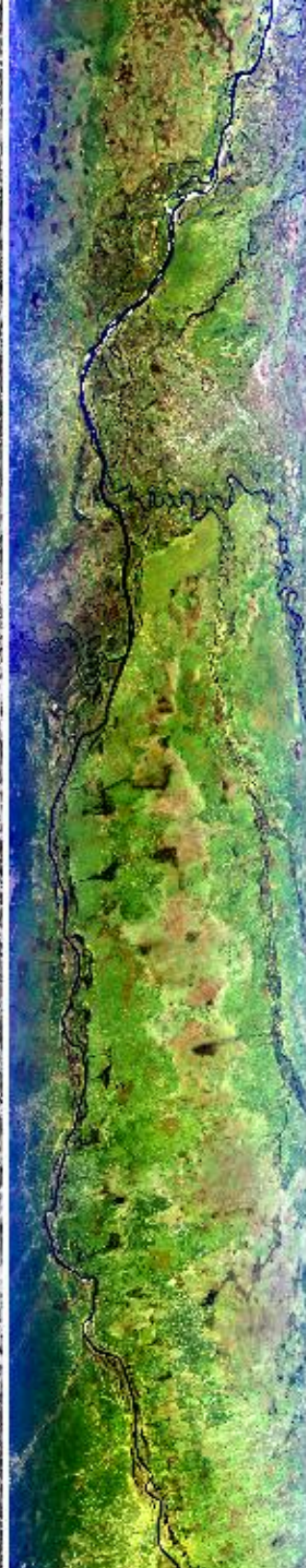
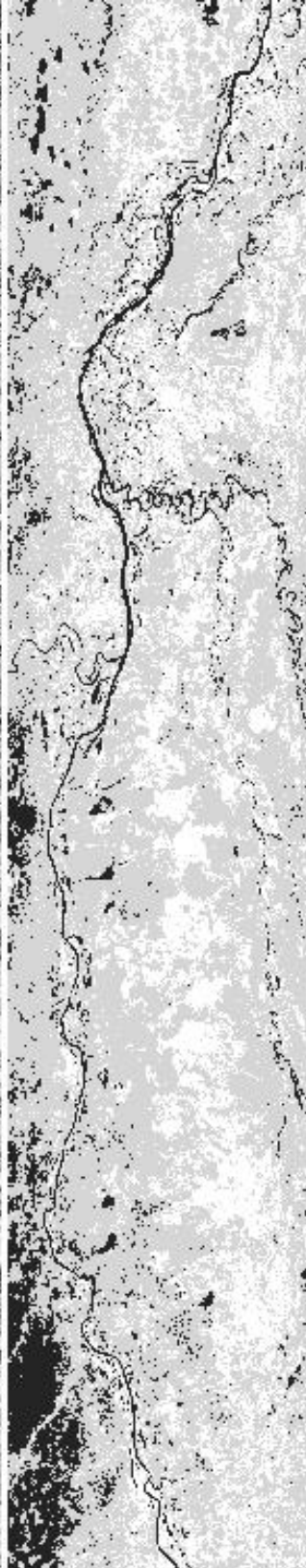
06:32:00

06:34:00

06:36:00

06:38:00

06:40:00



06:32:00

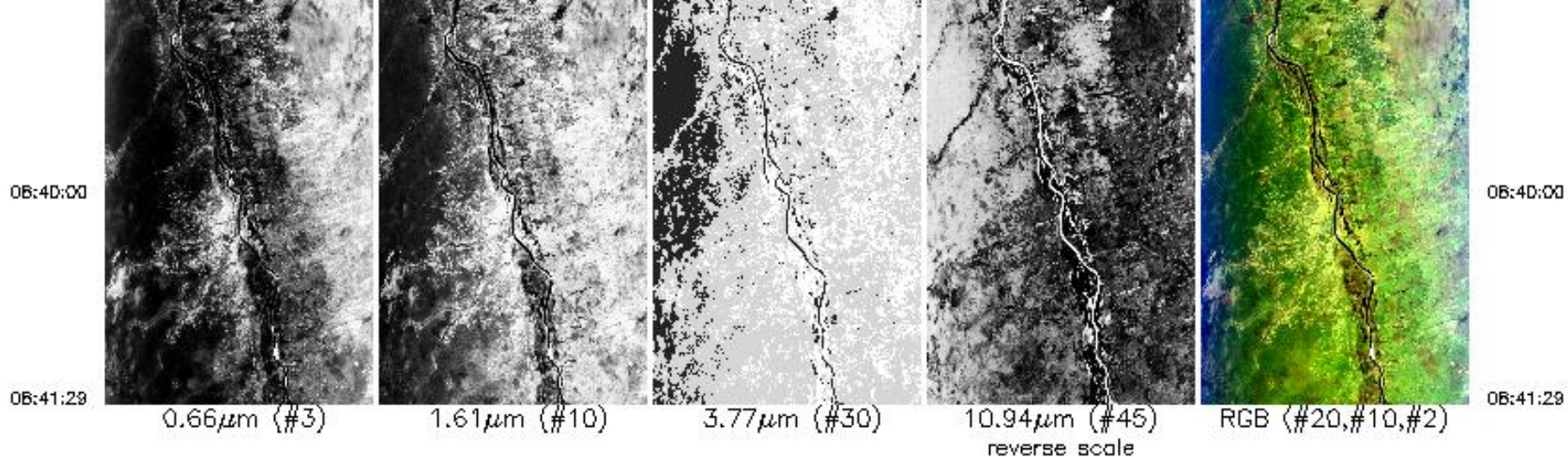
06:34:00

06:36:00

06:38:00

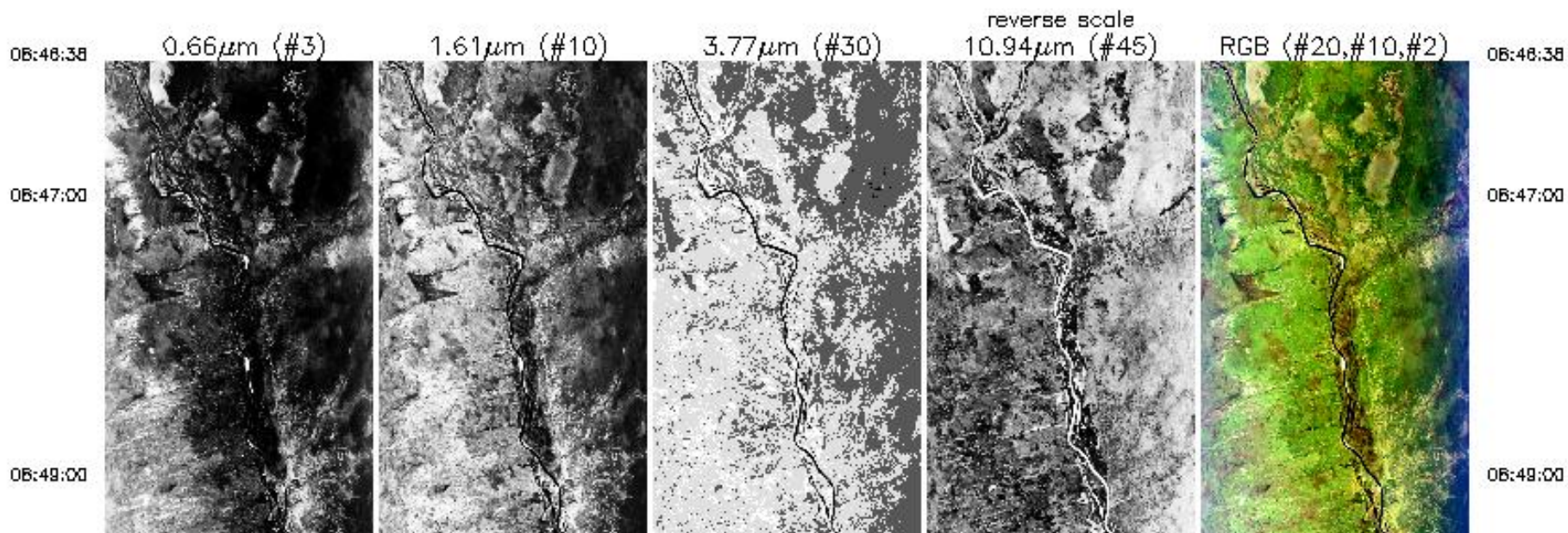
06:40:00





Upper Left Lat, Lon =  $-16.4^\circ$ ,  $23.5^\circ$   
 Lower Right Lat, Lon =  $-13.4^\circ$ ,  $22.9^\circ$   
 Aircraft Heading =  $358.7^\circ$   
 Solar Zenith =  $39.2^\circ$   
 GPS Altitude = 19995. m (MSL)

MODIS Airborne Simulator Browse Imagery  
 SAFARI 2000 Campaign – 06 Sep 2000  
 Zambia  
 Flight #00-157 Track #5





06:48:00



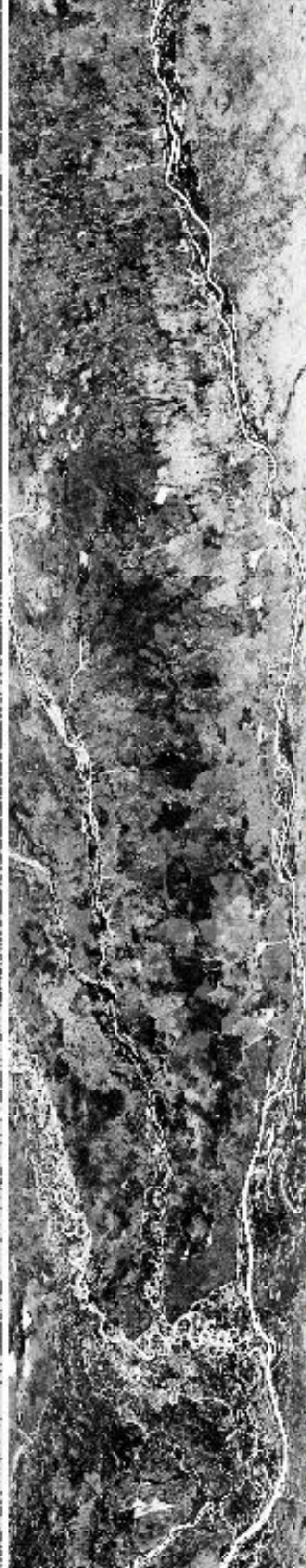
06:51:00



06:53:00



06:55:00



06:57:00



06:48:00

06:51:00

06:53:00

06:55:00

06:57:00



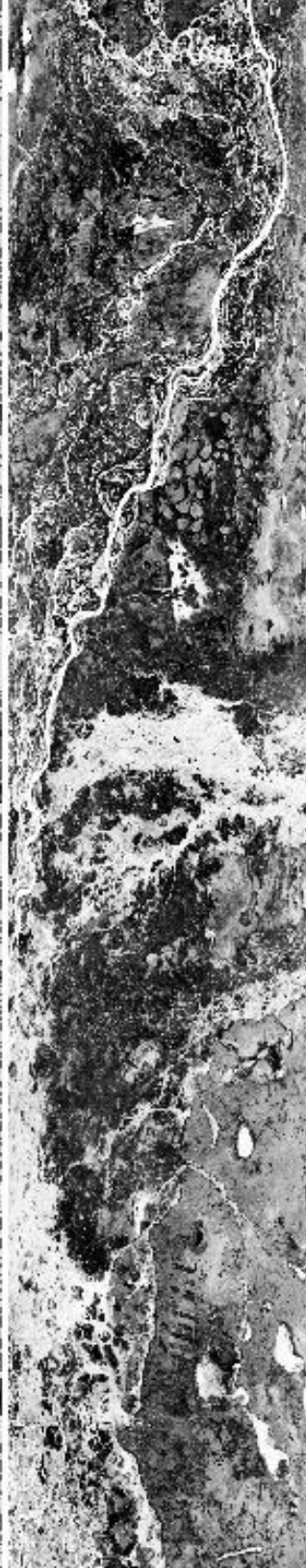
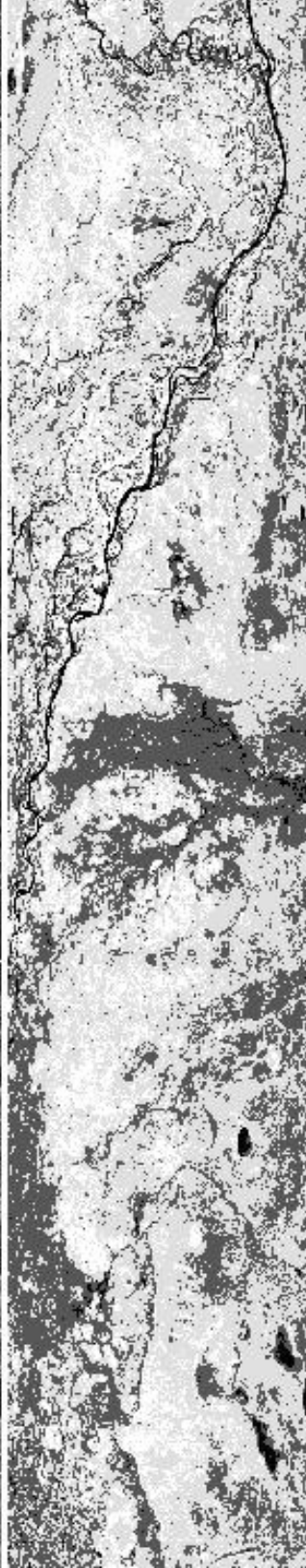
06:57:00

06:58:00

09:01:00

09:03:00

09:05:00



06:57:00

06:58:00

09:01:00

09:03:00

09:05:00



09:05:00

09:07:00

09:09:00

09:11:00

09:13:24

09:05:00

09:07:00

09:09:00

09:11:00

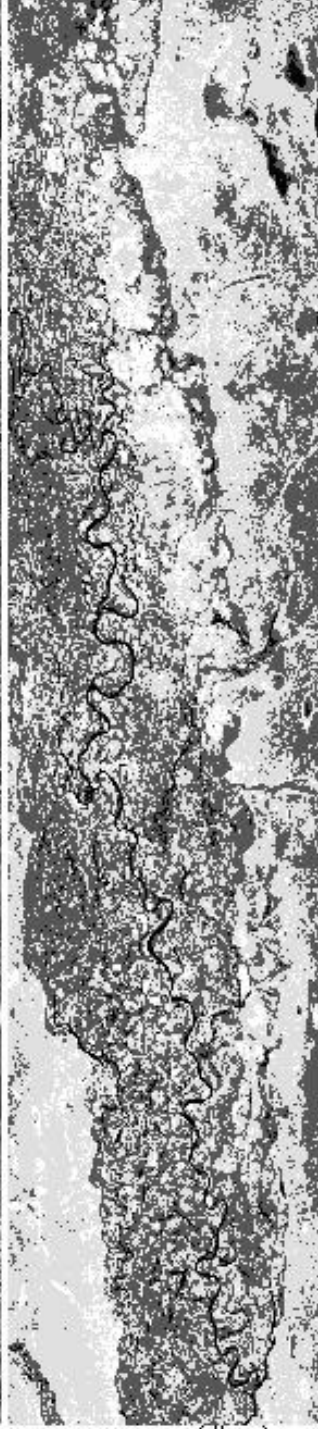
09:13:24



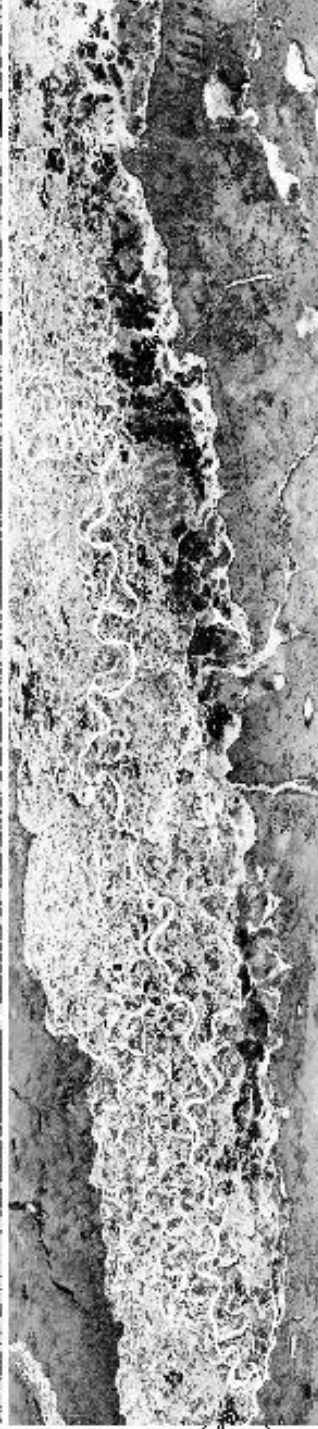
0.66µm (#3)



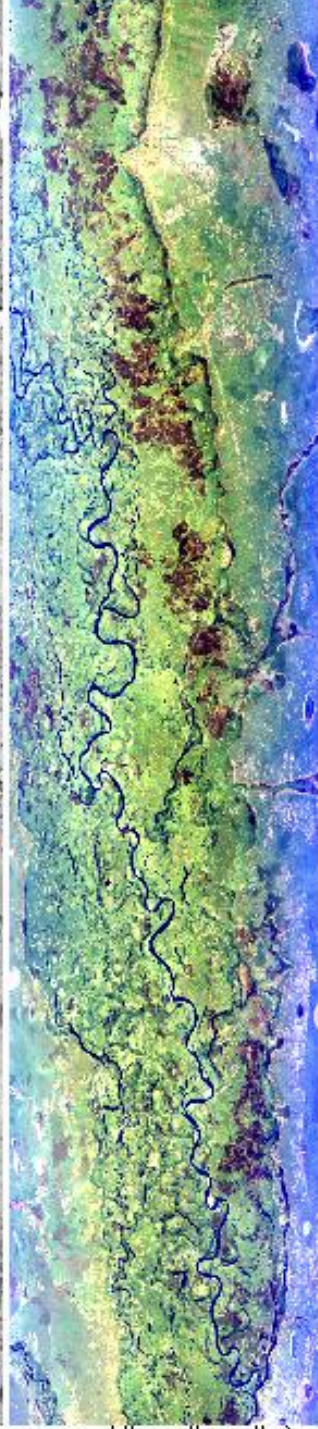
1.61µm (#10)



3.77µm (#30)



10.94µm (#45)  
reverse scale



RGB (#20,#10,#2)

Upper Left Lat, Lon = -13.2°, 22.9°  
 Lower Right Lat, Lon = -16.1°, 23.4°  
 Aircraft Heading = 175.5°



09:13:24



0.66µm (#3)



1.61µm (#10)



3.77µm (#30)



10.94µm (#45)  
reverse scale



RGB (#20,#10,#2)

09:13:24

Upper Left Lat, Lon = -13.2°, 22.9°

Lower Right Lat, Lon = -16.1°, 23.4°

Aircraft Heading = 175.5°

Solar Zenith = 31.6°

GPS Altitude = 20080. m (MSL)

MODIS Airborne Simulator Browse Imagery

SAFARI 2000 Campaign - 06 Sep 2000

Zambia

Flight #00-157 Track #6

09:19:48

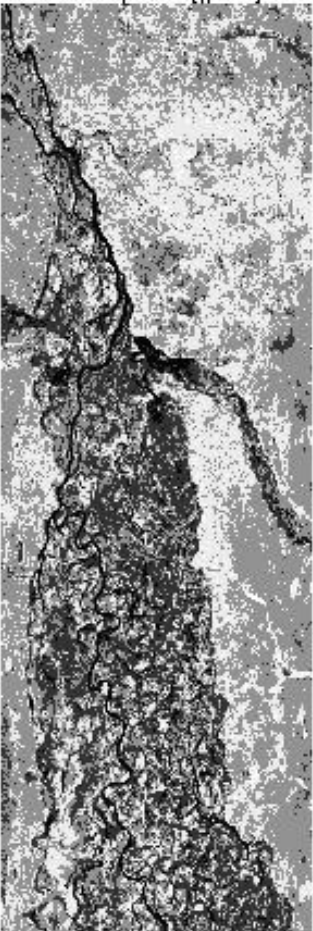
0.66µm (#3)



1.61µm (#10)



3.77µm (#30)



reverse scale  
10.94µm (#45)



RGB (#20,#10,#2)



09:19:48

09:20:00

09:20:00

09:22:00

09:22:00

09:24:00

09:24:00



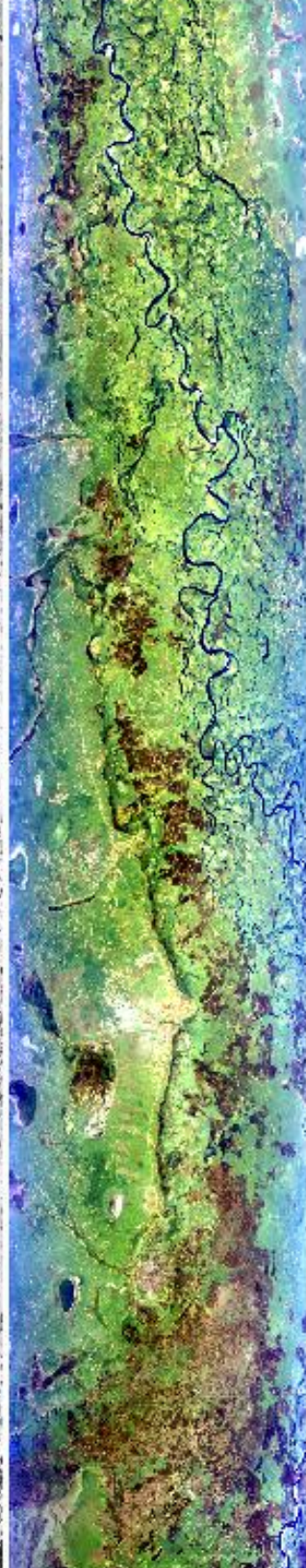
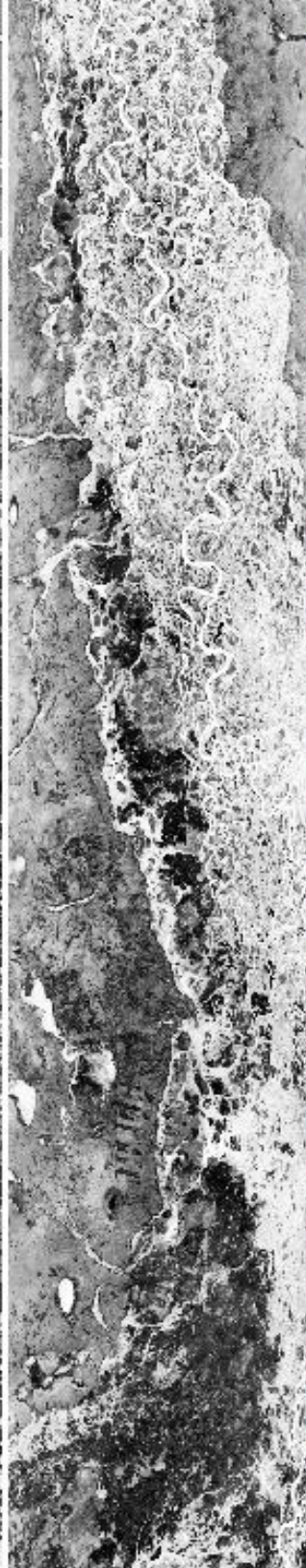
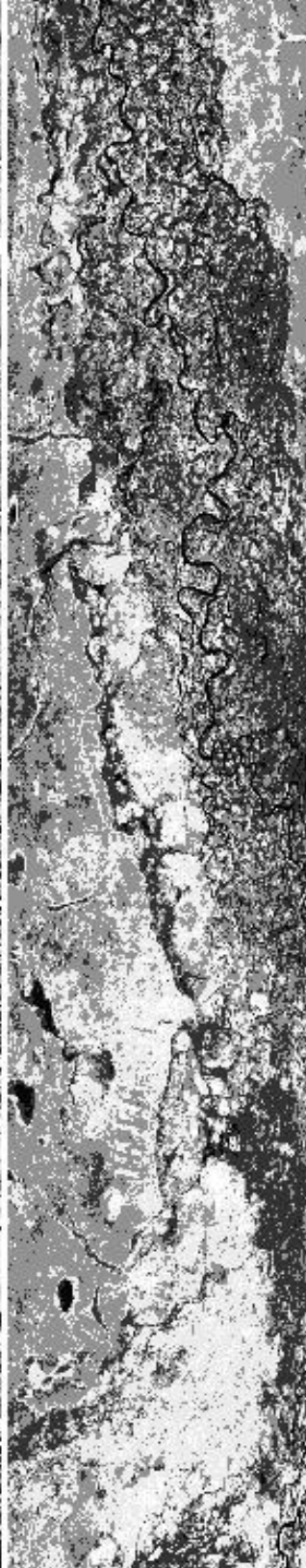
09:24:00

09:26:00

09:28:00

09:30:00

09:32:00



09:24:00

09:26:00

09:28:00

09:30:00

09:32:00



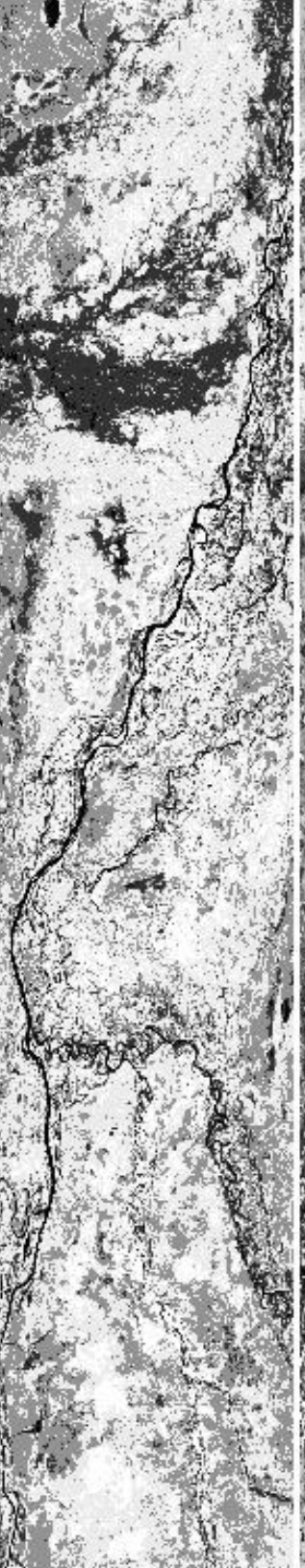
09:32:00



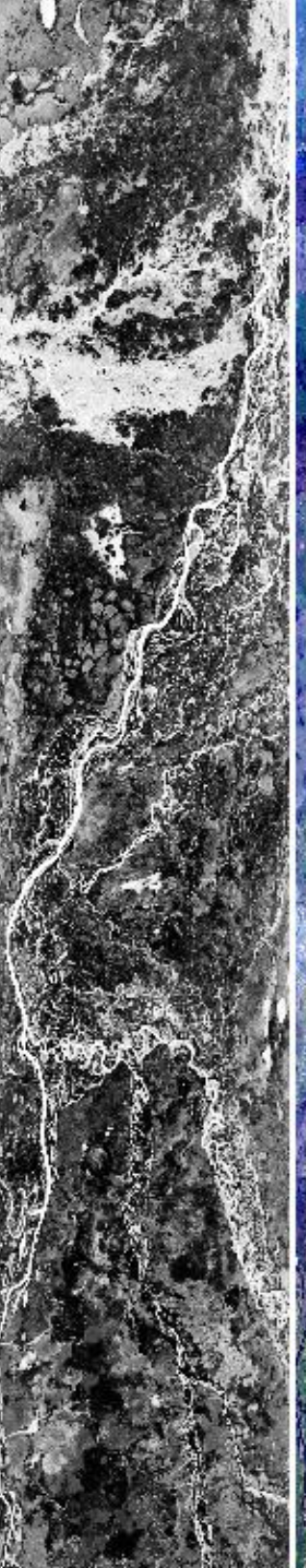
09:34:00



09:36:00



09:38:00



09:40:00



09:32:00

09:34:00

09:36:00

09:38:00

09:40:00



09:40:00  
09:42:00  
09:44:00  
09:46:30



0.66µm (#3)



1.61µm (#10)



3.77µm (#30)



10.94µm (#45)  
reverse scale



RGB (#20,#10,#2)

09:40:00  
09:42:00  
09:44:00  
09:46:30

Upper Left Lat, Lon =  $-16.4^{\circ}$ ,  $23.4^{\circ}$   
Lower Right Lat, Lon =  $-13.4^{\circ}$ ,  $22.9^{\circ}$   
Aircraft Heading =  $356.5^{\circ}$   
Solar Zenith =  $27.8^{\circ}$   
GPS Altitude = 19935. m (MSL)

MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign - 06 Sep 2000  
Zambia  
Flight #00-157 Track #7

0.66µm (#3)

1.61µm (#10)

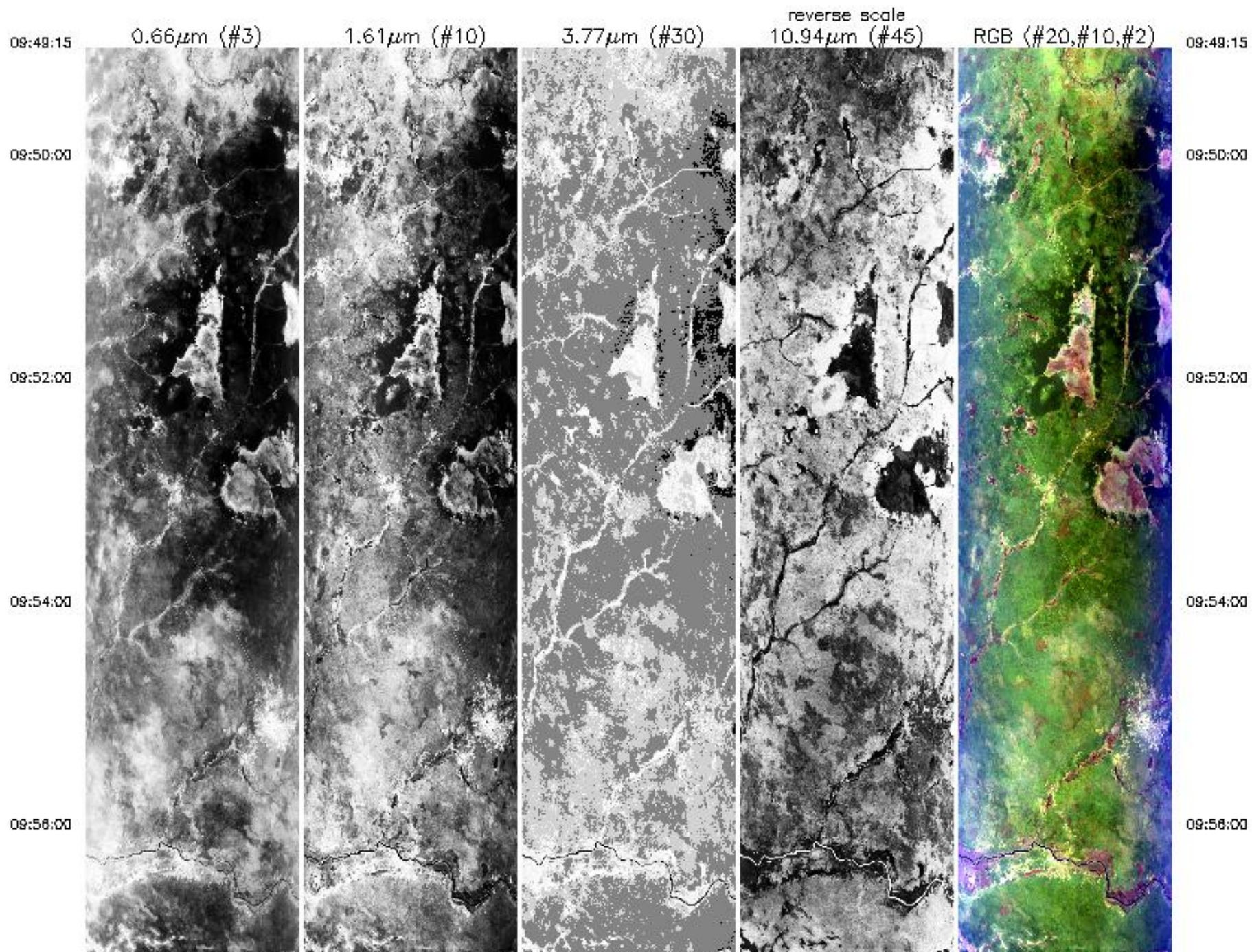
3.77µm (#30)

reverse scale  
10.94µm (#45)

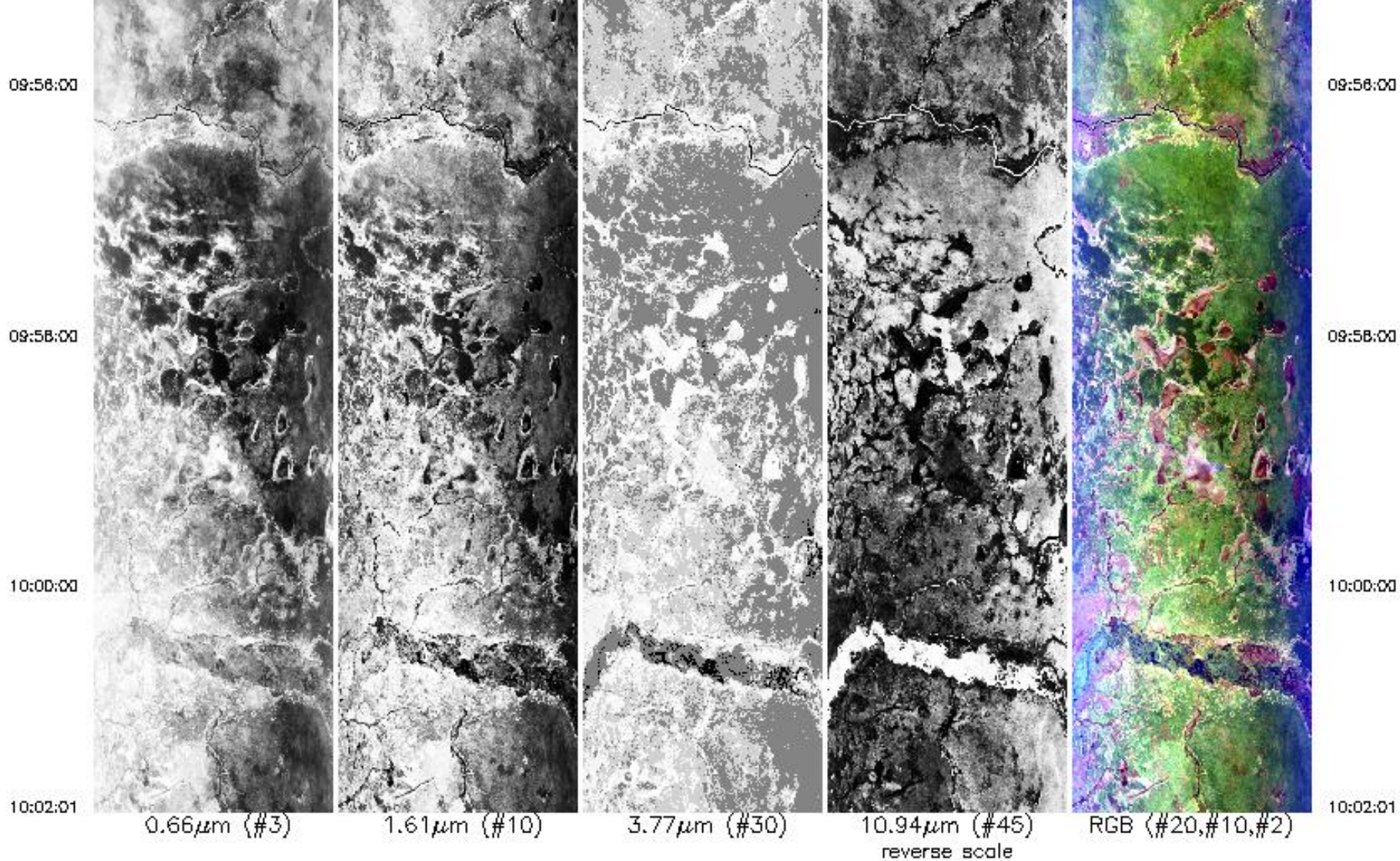
RGB (#20,#10,#2)



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Zambia  
Flight #00-157 Track #7





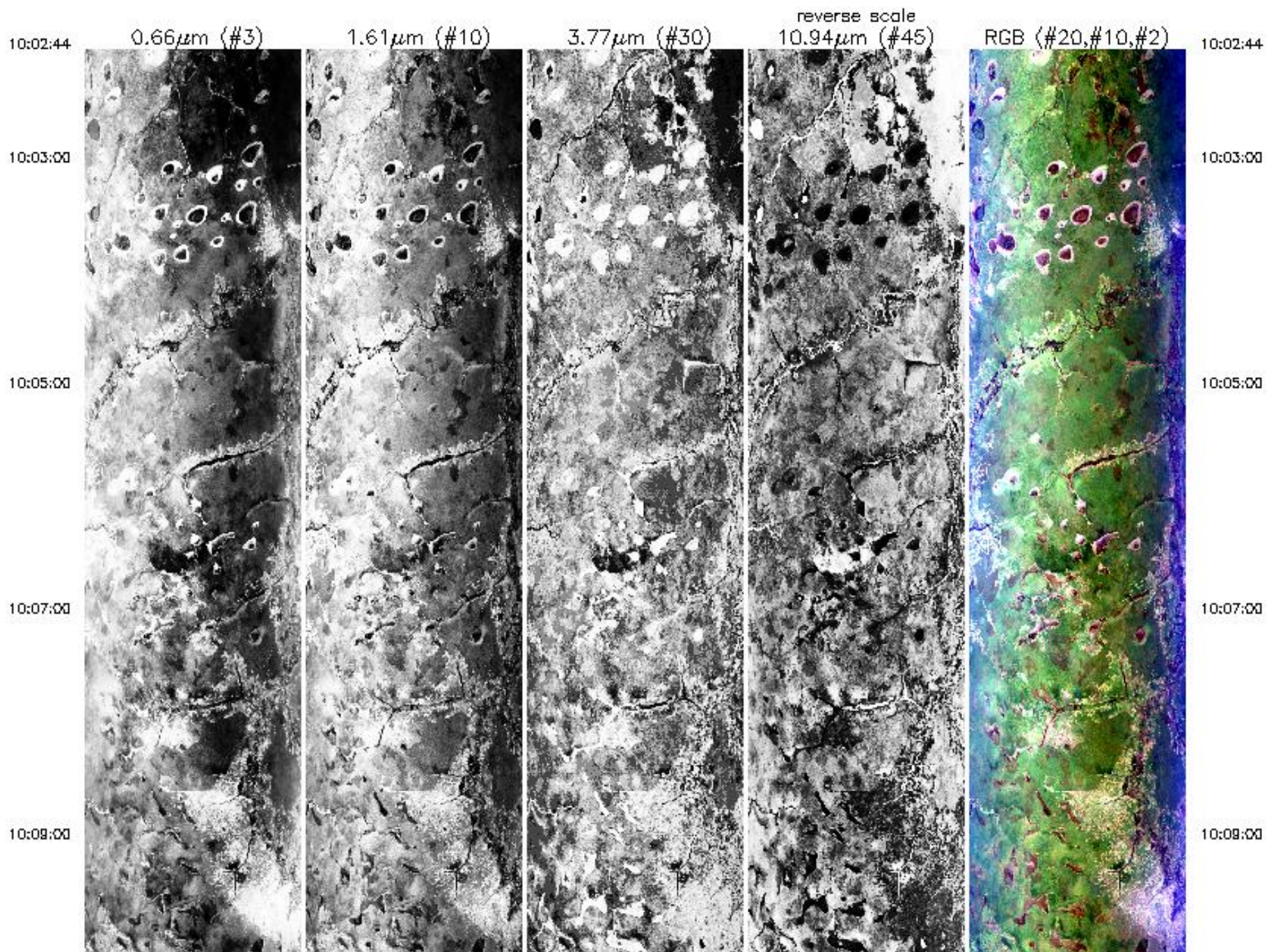


Upper Left Lat, Lon =  $-13.4^{\circ}$ ,  $23.1^{\circ}$   
 Lower Right Lat, Lon =  $-14.5^{\circ}$ ,  $24.1^{\circ}$   
 Aircraft Heading =  $151.6^{\circ}$   
 Solar Zenith =  $21.6^{\circ}$   
 GPS Altitude = 20047. m (MSL)

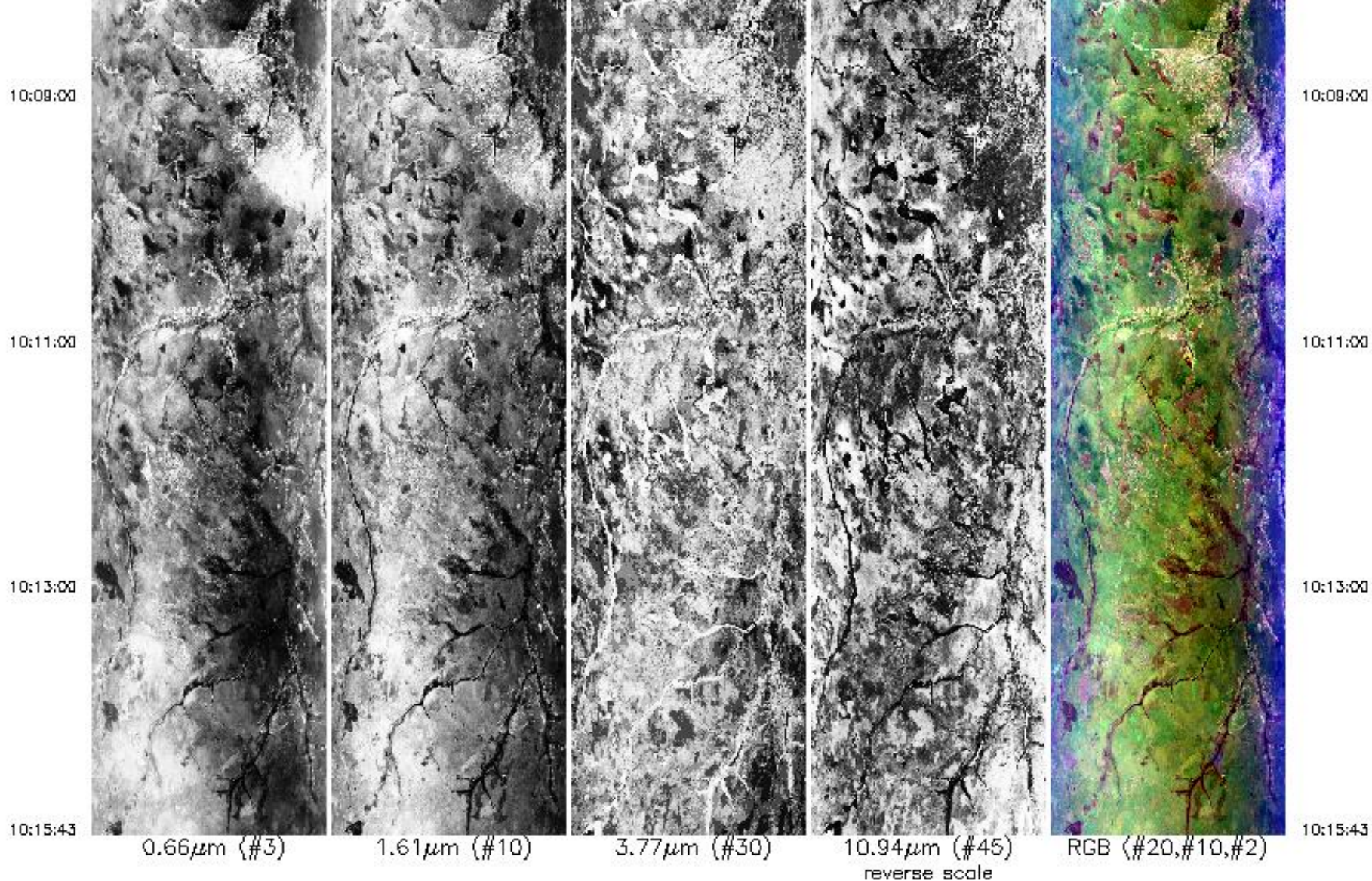
MODIS Airborne Simulator Browse Imagery  
 SAFARI 2000 Campaign – 06 Sep 2000  
 Zambia  
 Flight #00-157 Track #8



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Zambia  
Flight #00–157 Track #8







Upper Left Lat, Lon =  $-14.8^\circ$ ,  $23.9^\circ$

Lower Right Lat, Lon =  $-15.0^\circ$ ,  $25.4^\circ$

Aircraft Heading =  $113.0^\circ$

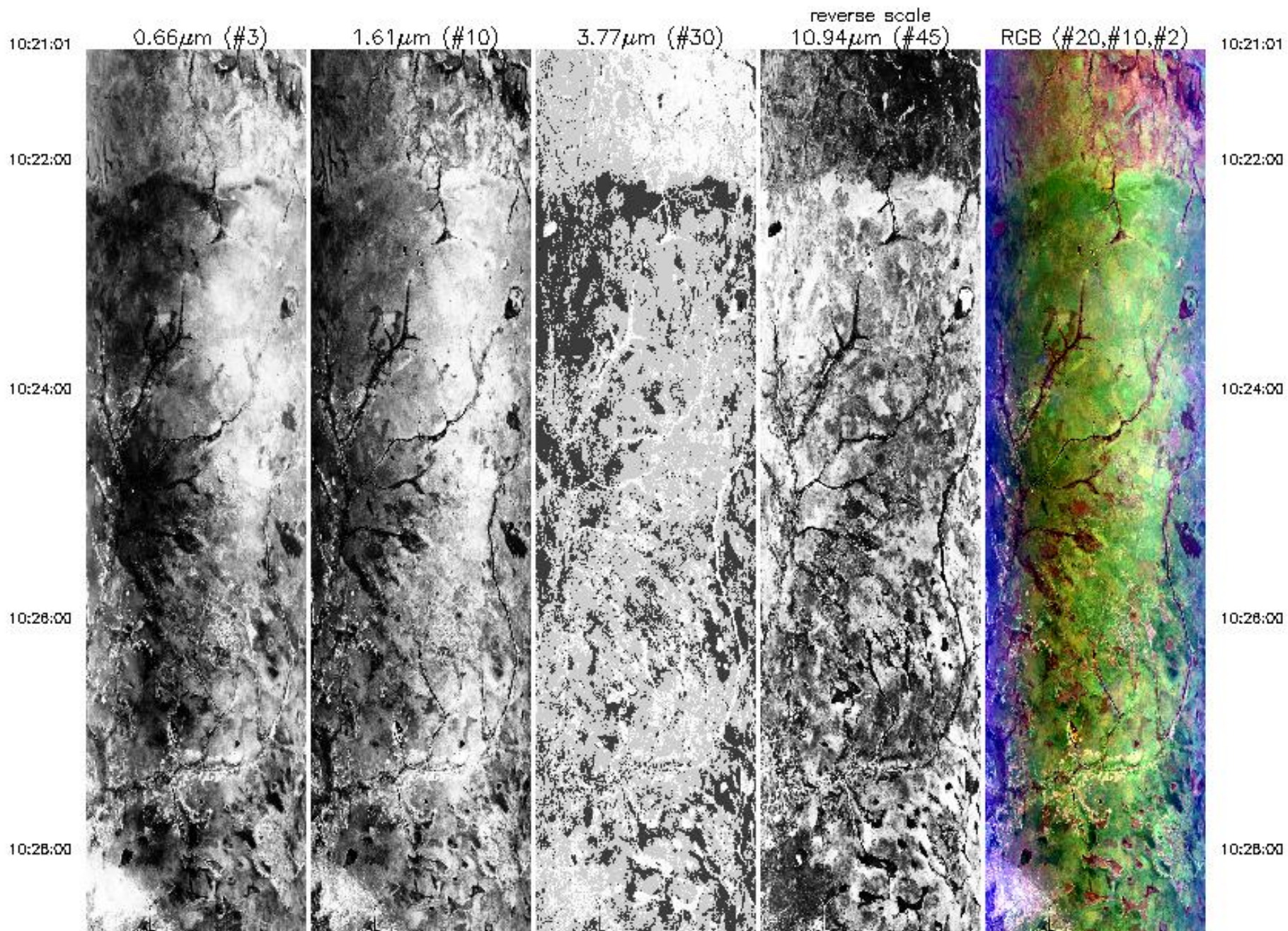
Solar Zenith =  $21.5^\circ$

GPS Altitude = 20068. m (MSL)

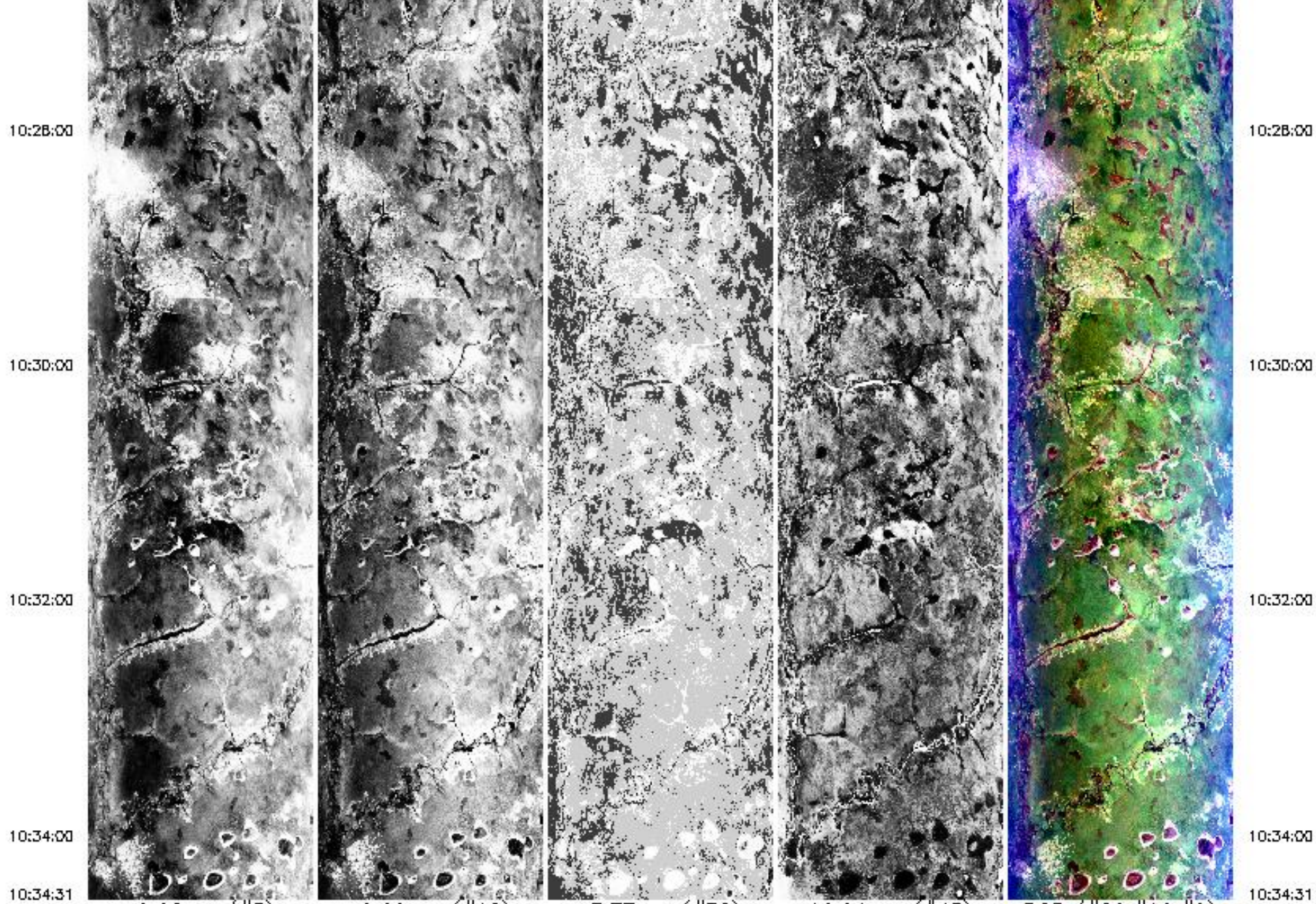
MODIS Airborne Simulator Browse Imagery  
 SAFARI 2000 Campaign – 06 Sep 2000  
 Zambia  
 Flight #00-157 Track #9



MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Zambia  
Flight #00-157 Track #9







0.66 $\mu\text{m}$  (#3)

1.61 $\mu\text{m}$  (#10)

3.77 $\mu\text{m}$  (#30)

10.94 $\mu\text{m}$  (#45)  
reverse scale

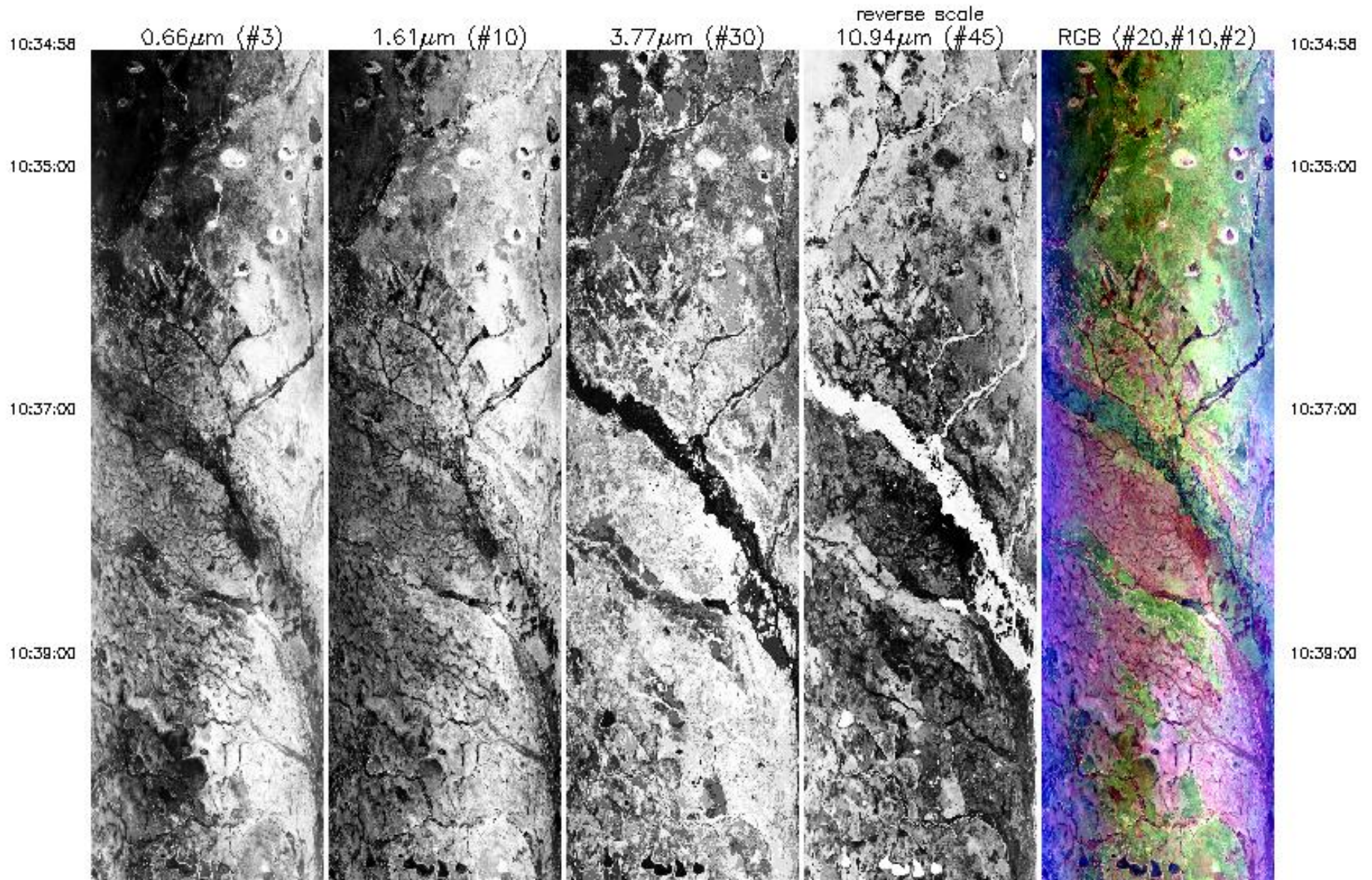
RGB (#20,#10,#2)

Upper Left Lat, Lon =  $-15.1^\circ$ ,  $25.6^\circ$   
 Lower Right Lat, Lon =  $-14.8^\circ$ ,  $24.0^\circ$   
 Aircraft Heading =  $290.7^\circ$   
 Solar Zenith =  $21.3^\circ$   
 GPS Altitude = 19899. m (MSL)

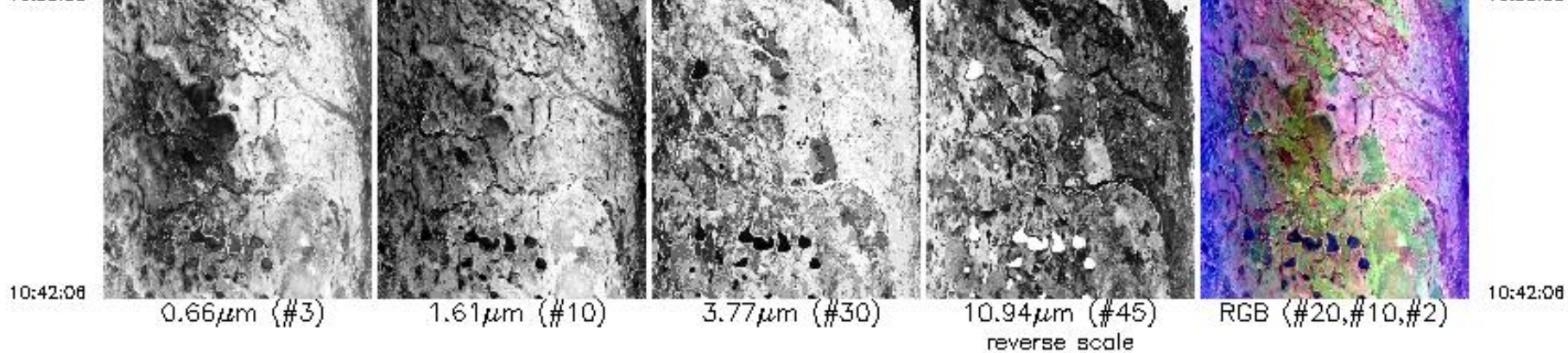


Upper Left Lat, Lon = -15.1°, 29.6°  
Lower Right Lat, Lon = -14.8°, 24.0°  
Aircraft Heading = 290.7°  
Solar Zenith = 21.3°  
GPS Altitude = 19899. m (MSL)

MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign - 06 Sep 2000  
Zambia  
Flight #00-157 Track #10

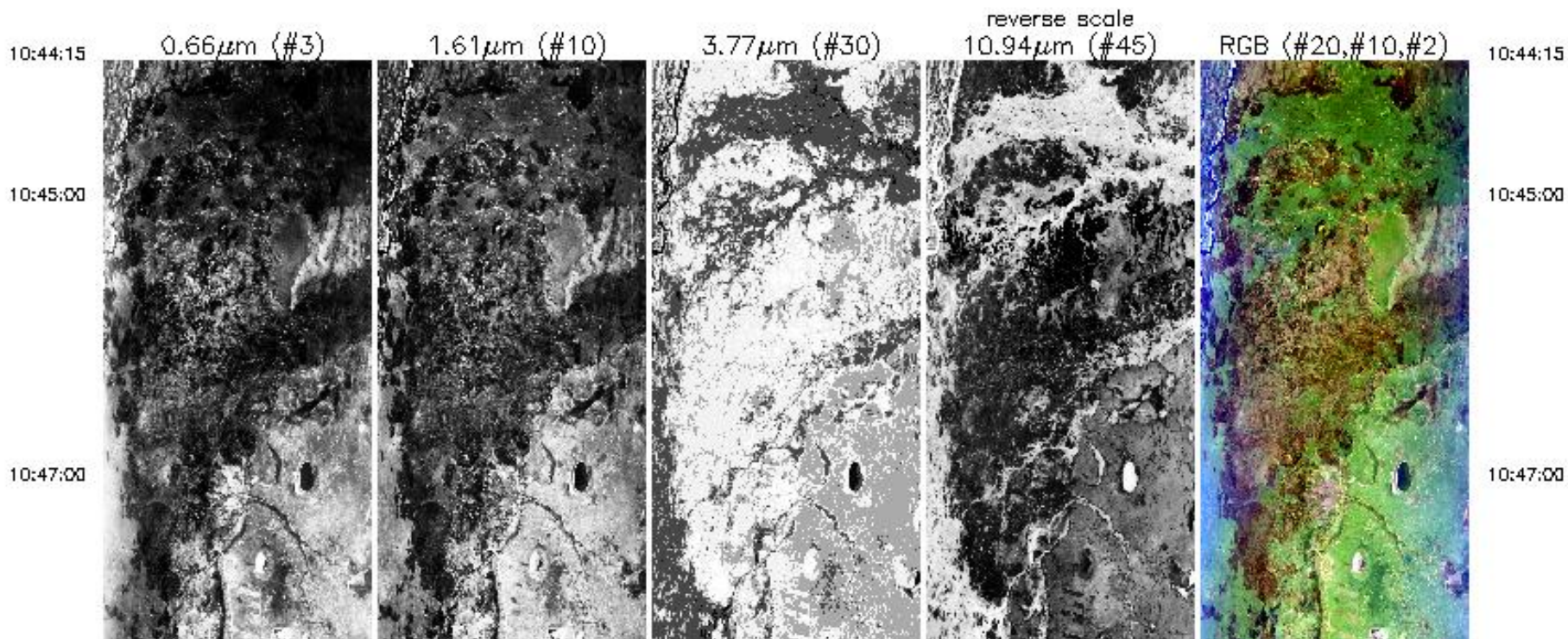






Upper Left Lat, Lon = -14.5°, 24.1°  
 Lower Right Lat, Lon = -14.7°, 23.2°  
 Aircraft Heading = 275.9°  
 Solar Zenith = 20.9°  
 GPS Altitude = 19924. m (MSL)

MODIS Airborne Simulator Browse Imagery  
 SAFARI 2000 Campaign - 06 Sep 2000  
 Zambia  
 Flight #00-157 Track #11





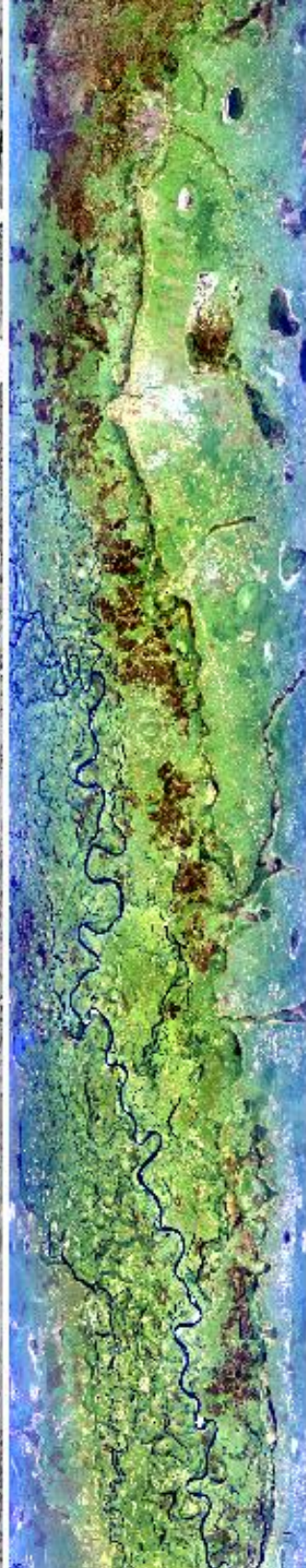
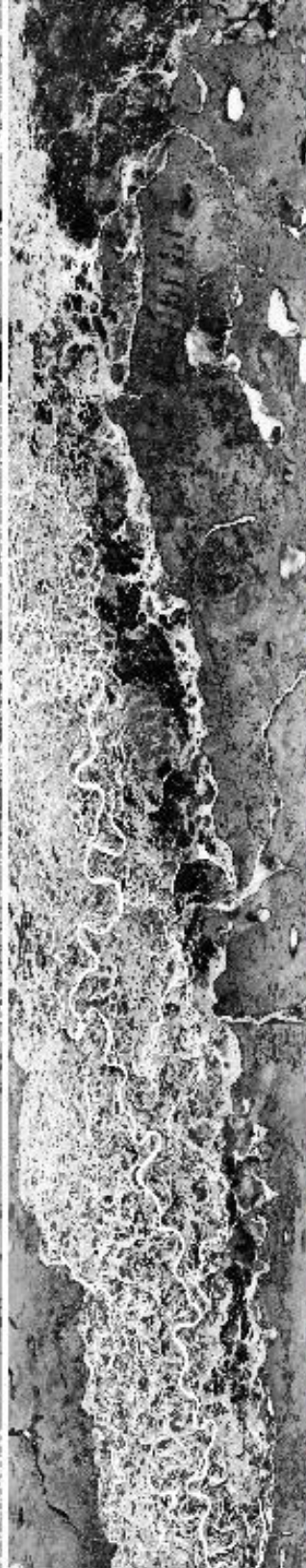
10:47:00

10:49:00

10:51:00

10:53:00

10:55:00



10:47:00

10:49:00

10:51:00

10:53:00

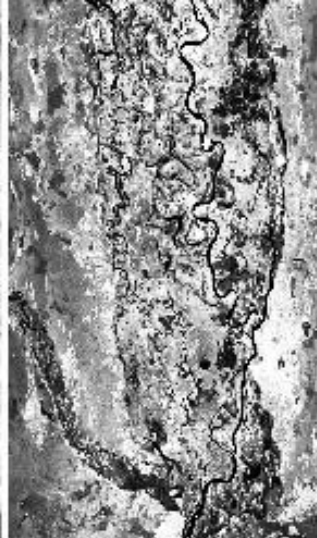
10:55:00



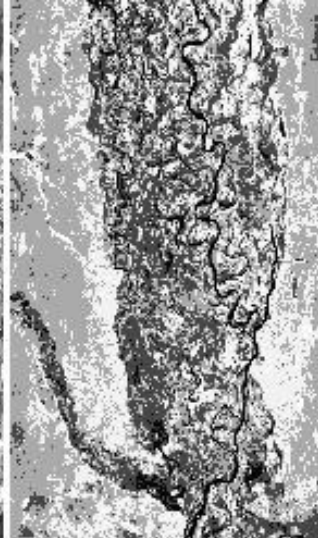
10:55:00



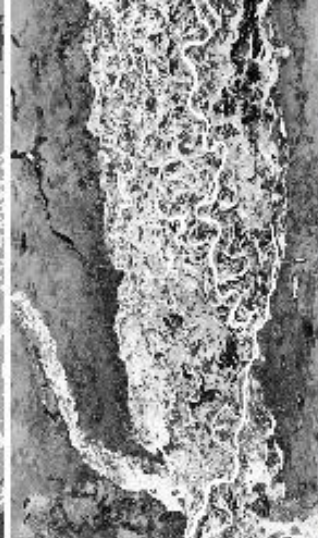
0.66µm (#3)



1.61µm (#10)



3.77µm (#30)



10.94µm (#45)  
reverse scale



RGB (#20,#10,#2)

10:57:00

10:58:05

10:55:00

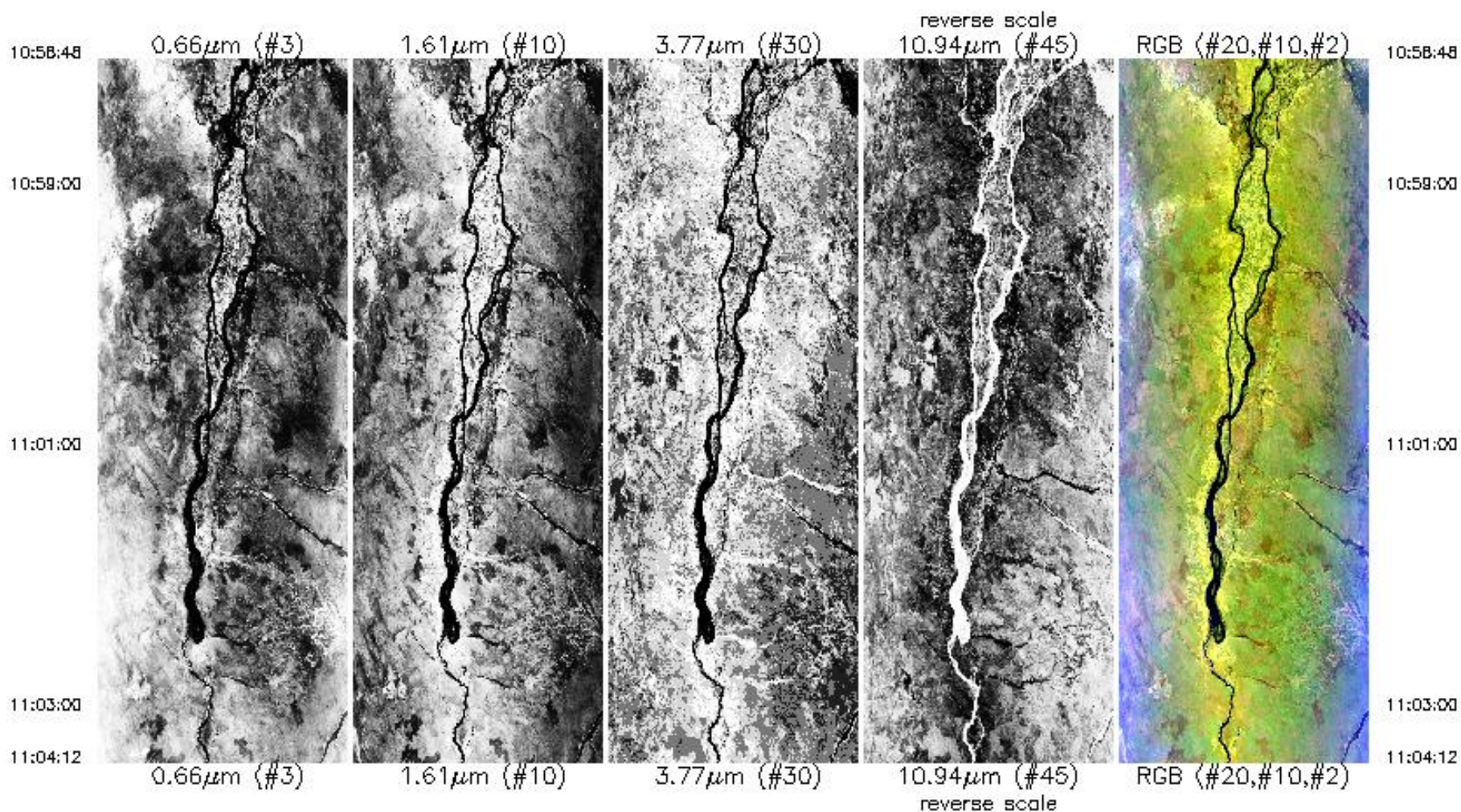
10:57:00

10:58:05

Upper Left Lat, Lon =  $-14.7^{\circ}$ ,  $23.0^{\circ}$   
 Lower Right Lat, Lon =  $-16.2^{\circ}$ ,  $23.4^{\circ}$   
 Aircraft Heading =  $180.3^{\circ}$   
 Solar Zenith =  $21.4^{\circ}$   
 GPS Altitude = 19916. m (MSL)



MODIS Airborne Simulator Browse Imagery  
 SAFARI 2000 Campaign – 06 Sep 2000  
 Zambia/Botswana  
 Flight #00-157 Track #12



Upper Left Lat, Lon = -16.4°, 23.1°  
 Lower Right Lat, Lon = -16.6°, 23.8°  
 Aircraft Heading = 135.0°  
 Solar Zenith = 24.1°  
 GPS Altitude = 20017. m (MSL)



0.66 $\mu\text{m}$  (#3)

1.61 $\mu\text{m}$  (#10)

3.77 $\mu\text{m}$  (#30)

10.94 $\mu\text{m}$  (#45)

RGB (#20,#10,#2)

reverse scale

Upper Left Lat, Lon =  $-16.4^\circ$ ,  $23.1^\circ$

Lower Right Lat, Lon =  $-16.6^\circ$ ,  $23.8^\circ$

Aircraft Heading =  $135.0^\circ$

Solar Zenith =  $24.1^\circ$

GPS Altitude = 20017. m (MSL)

MODIS Airborne Simulator Browse Imagery

SAFARI 2000 Campaign – 06 Sep 2000

Botswana

Flight #00-157 Track #13

11:04:15

0.66 $\mu\text{m}$  (#3)

1.61 $\mu\text{m}$  (#10)

3.77 $\mu\text{m}$  (#30)

reverse scale  
10.94 $\mu\text{m}$  (#45)

RGB (#20,#10,#2)

11:04:15

11:05:00

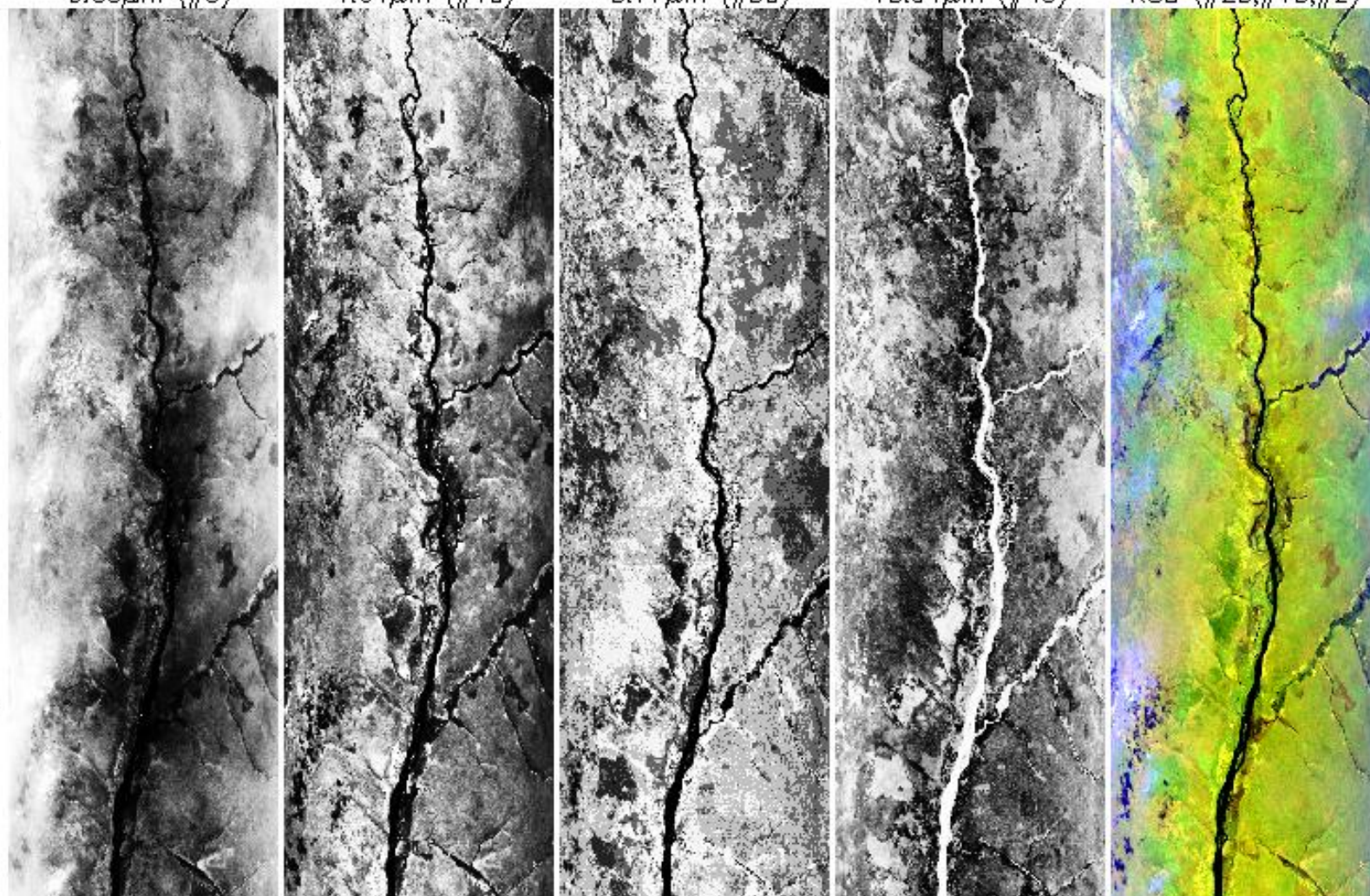
11:05:00

11:07:00

11:07:00

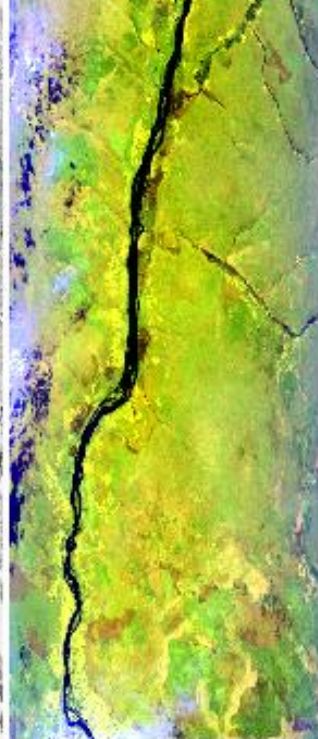
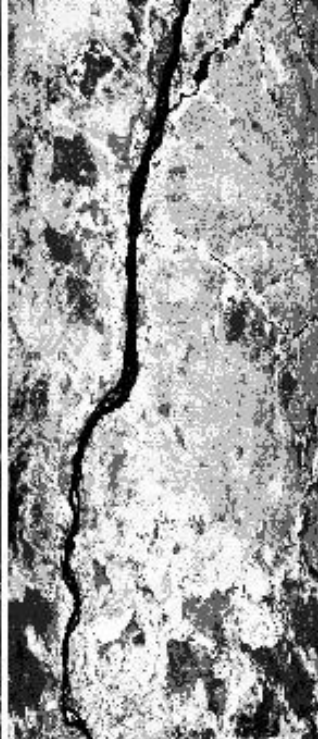
11:08:00

11:08:00





11:08:00



11:08:00

11:11:00

11:13:17

0.66 $\mu\text{m}$  (#3)

1.61 $\mu\text{m}$  (#10)

3.77 $\mu\text{m}$  (#30)

10.94 $\mu\text{m}$  (#45)  
reverse scale

RGB (#20,#10,#2)

11:11:00

11:13:17

Upper Left Lat, Lon =  $-16.8^\circ$ ,  $23.6^\circ$   
Lower Right Lat, Lon =  $-17.3^\circ$ ,  $24.5^\circ$   
Aircraft Heading =  $135.8^\circ$   
Solar Zenith =  $25.1^\circ$   
GPS Altitude = 20059. m (MSL)

MODIS Airborne Simulator Browse Imagery  
SAFARI 2000 Campaign – 06 Sep 2000  
Botswana  
Flight #00–157 Track #14

11:13:26

0.66 $\mu\text{m}$  (#3)

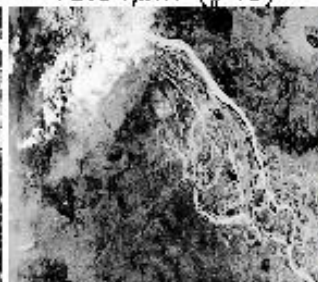
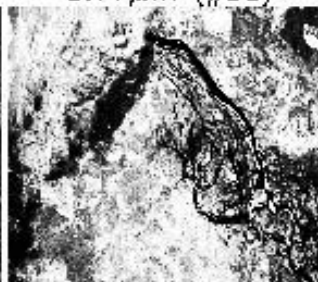
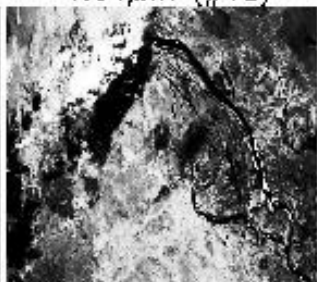
1.61 $\mu\text{m}$  (#10)

3.77 $\mu\text{m}$  (#30)

reverse scale  
10.94 $\mu\text{m}$  (#45)

RGB (#20,#10,#2)

11:13:26



11:14:00

11:14:00



11:13:28

0.65 $\mu\text{m}$  (#3)

1.61 $\mu\text{m}$  (#10)

3.77 $\mu\text{m}$  (#30)

10.94 $\mu\text{m}$  (#45)

RGB (#20,#10,#2)

11:13:28

11:14:00

11:14:00

11:16:00

11:16:00

11:18:00

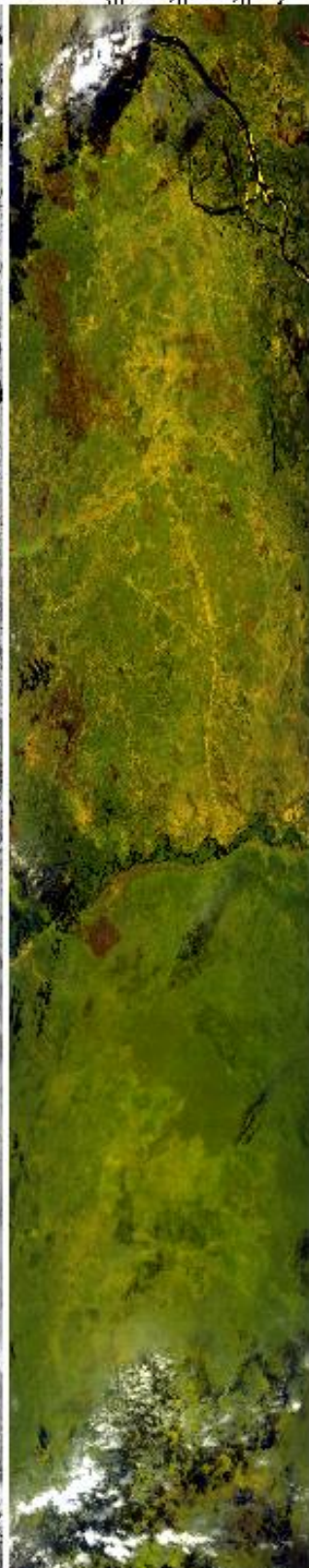
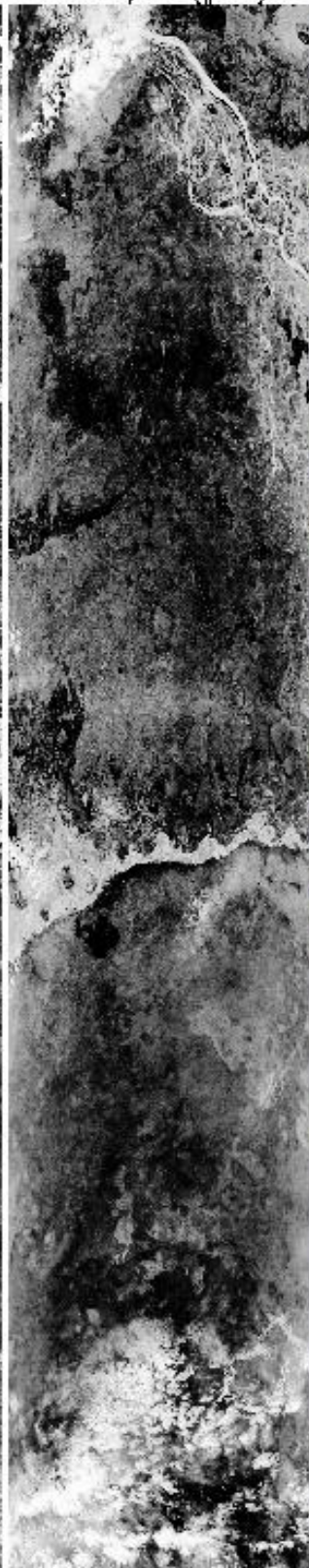
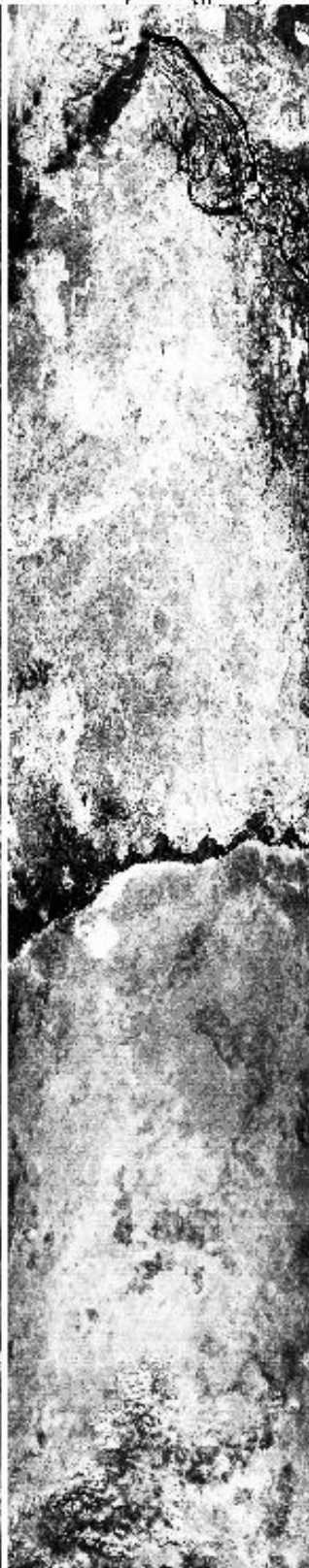
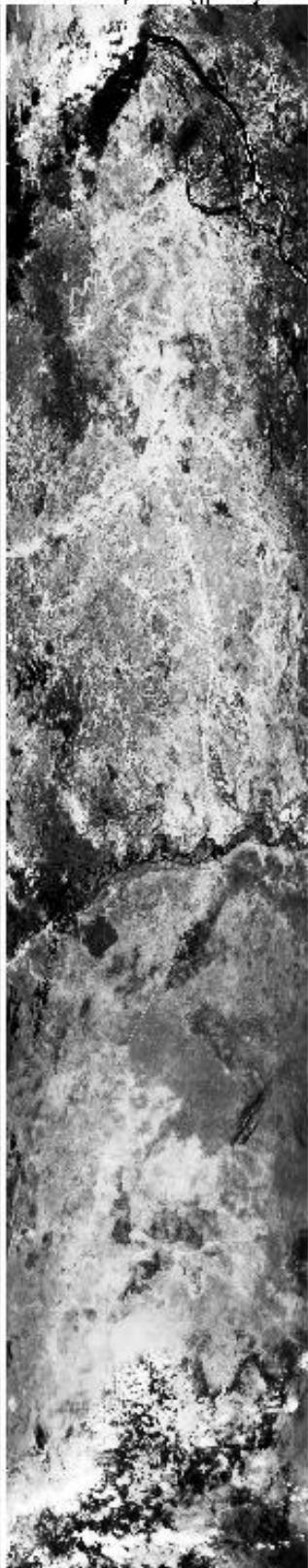
11:18:00

11:20:00

11:20:00

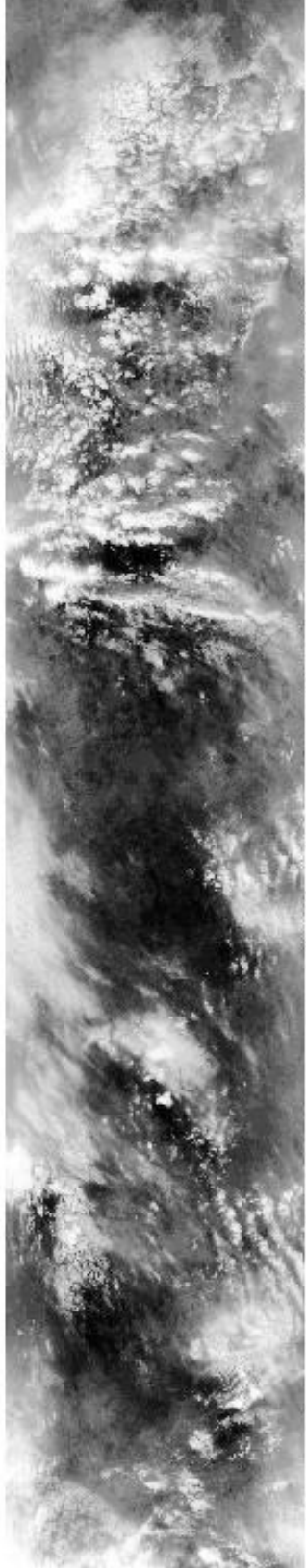
11:22:00

11:22:00

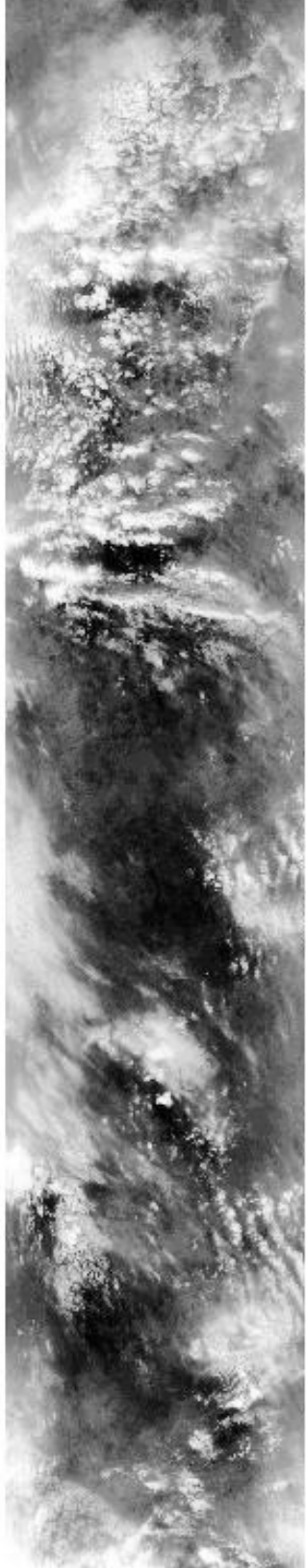




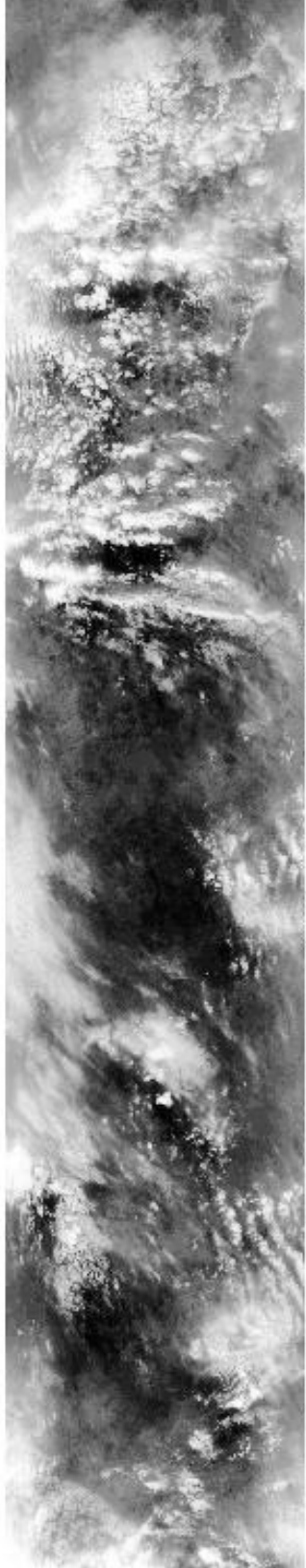
11:22:00



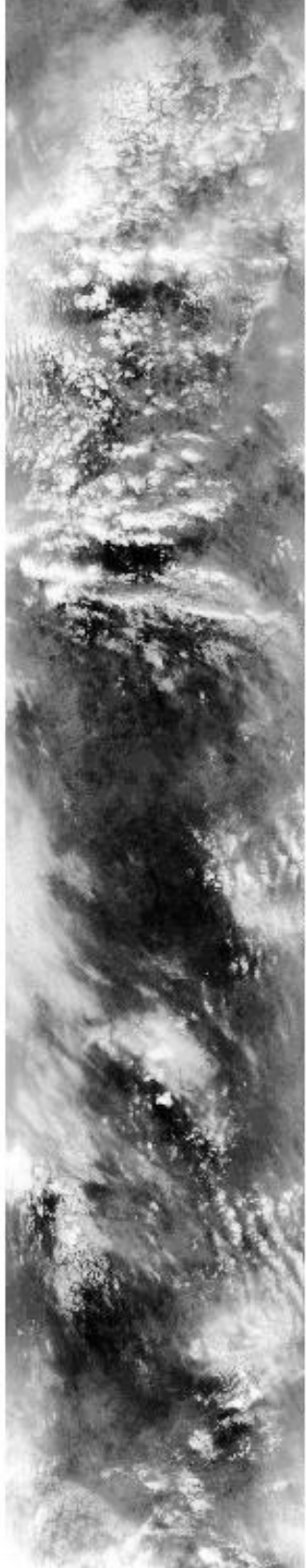
11:24:00



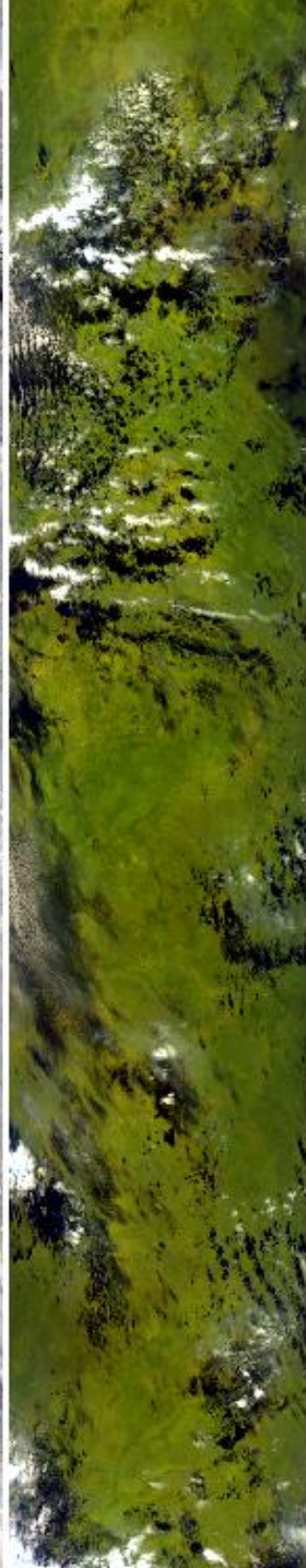
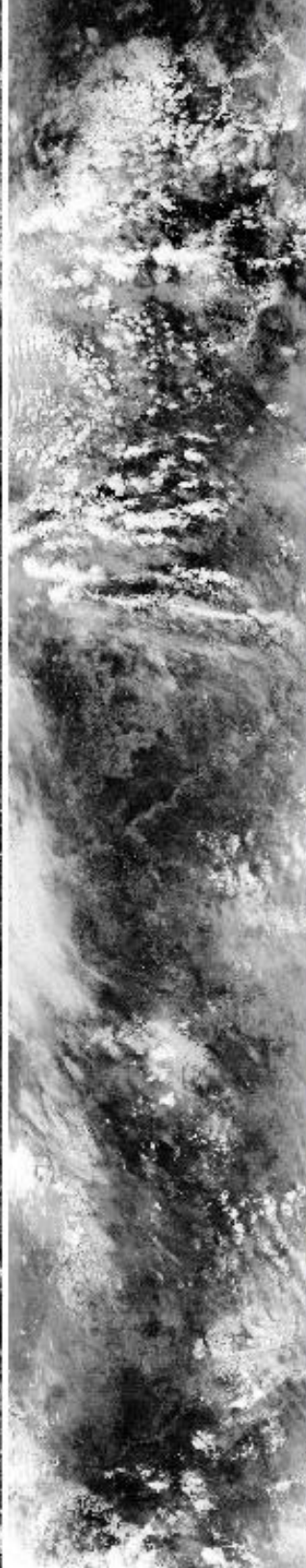
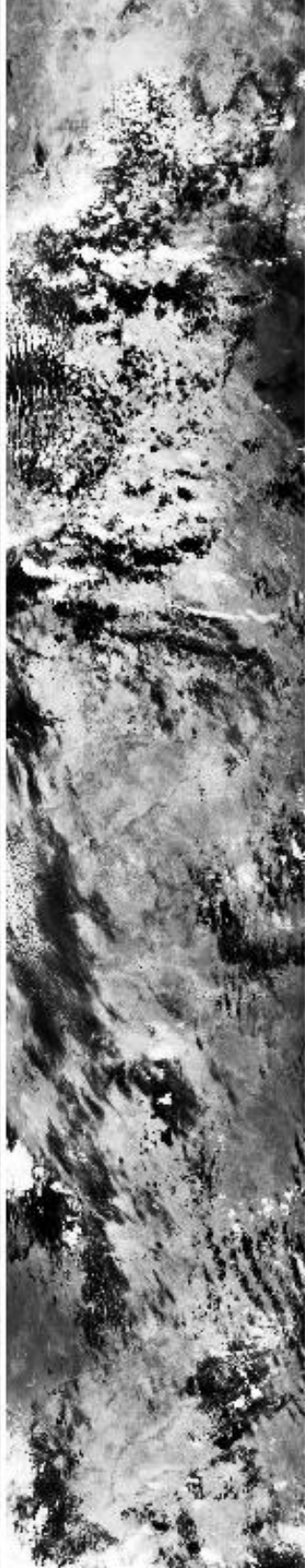
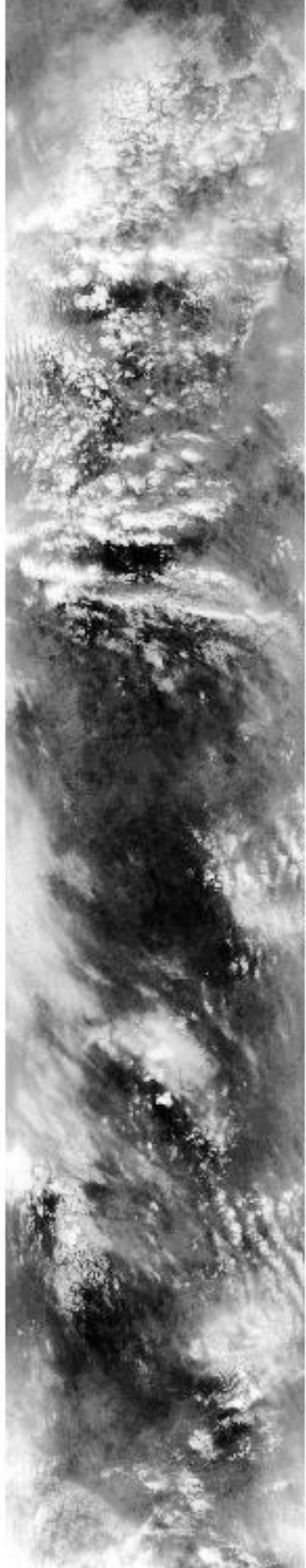
11:26:00



11:28:00



11:30:00



11:22:00

11:24:00

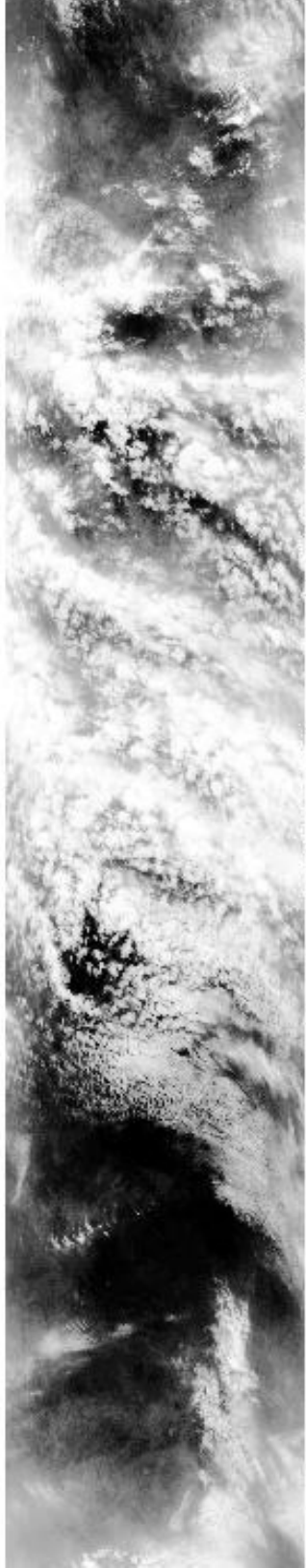
11:26:00

11:28:00

11:30:00



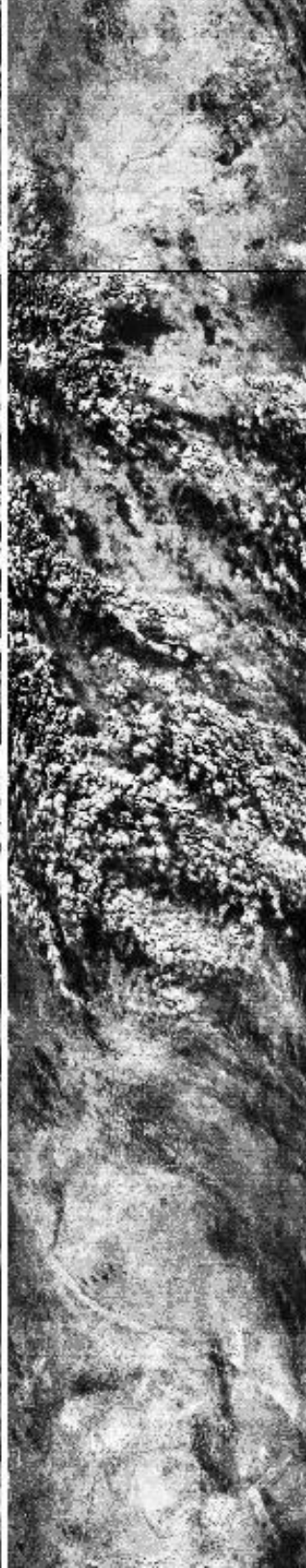
11:30:00



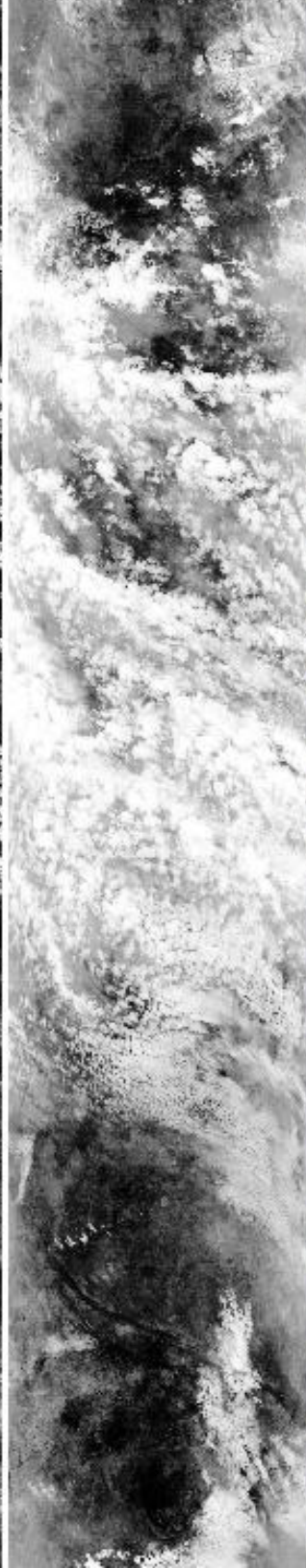
11:32:00



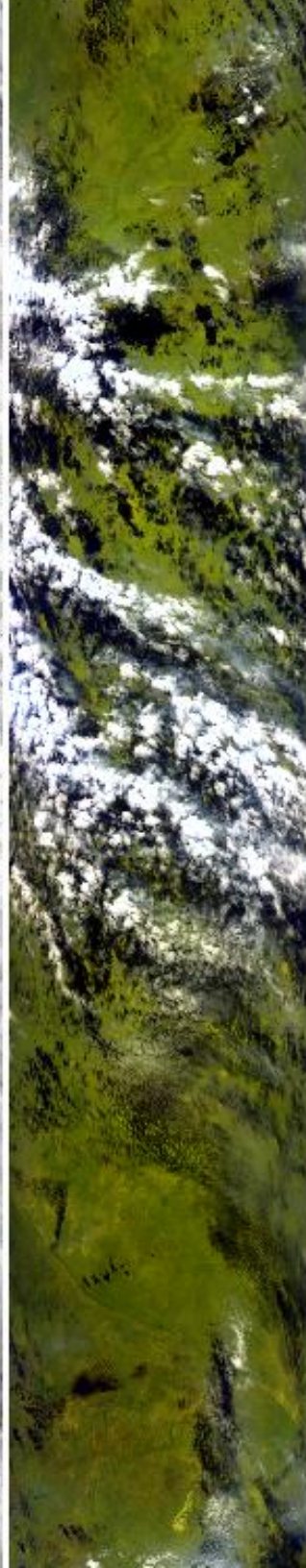
11:34:00



11:36:00



11:38:00



11:30:00

11:32:00

11:34:00

11:36:00

11:38:00



11:38:00



0.66 $\mu$ m (#3)



1.61 $\mu$ m (#10)



3.77 $\mu$ m (#30)



10.94 $\mu$ m (#45)  
reverse scale



RGB (#20,#10,#2)

11:38:00

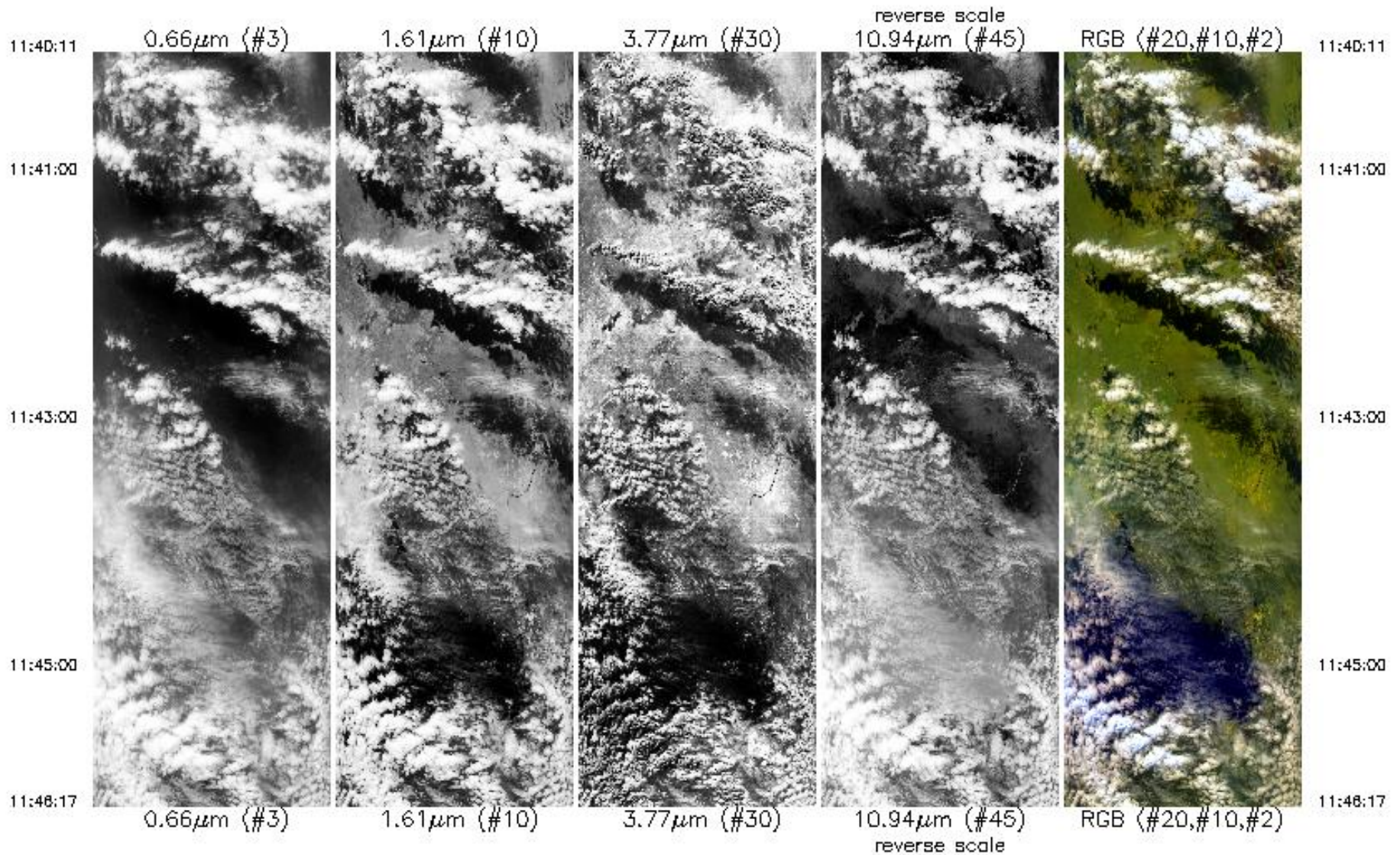
11:40:11

11:40:11

Upper Left Lat, Lon =  $-17.6^{\circ}$ ,  $24.2^{\circ}$   
Lower Right Lat, Lon =  $-19.8^{\circ}$ ,  $26.1^{\circ}$   
Aircraft Heading =  $143.8^{\circ}$   
Solar Zenith =  $27.0^{\circ}$   
GPS Altitude = 20161. m (MSL)



MODIS Airborne Simulator Browse Imagery  
 SAFARI 2000 Campaign – 06 Sep 2000  
 Botswana  
 Flight #00-157 Track #15



Upper Left Lat, Lon = -20.0°, 25.8°

Lower Right Lat, Lon = -20.4°, 26.4°

Aircraft Heading = 148.6°



11:48:17



0.66µm (#3)

1.61µm (#10)

3.77µm (#30)

10.94µm (#45)  
reverse scale

RGB (#20,#10,#2)

11:48:17

Upper Left Lat, Lon = -20.0°, 25.8°

Lower Right Lat, Lon = -20.4°, 26.4°

Aircraft Heading = 148.6°

Solar Zenith = 33.5°

GPS Altitude = 20014. m (MSL)

MODIS Airborne Simulator Browse Imagery

SAFARI 2000 Campaign - 06 Sep 2000

Botswana

Flight #00-157 Track #16

11:48:20

0.66µm (#3)

1.61µm (#10)

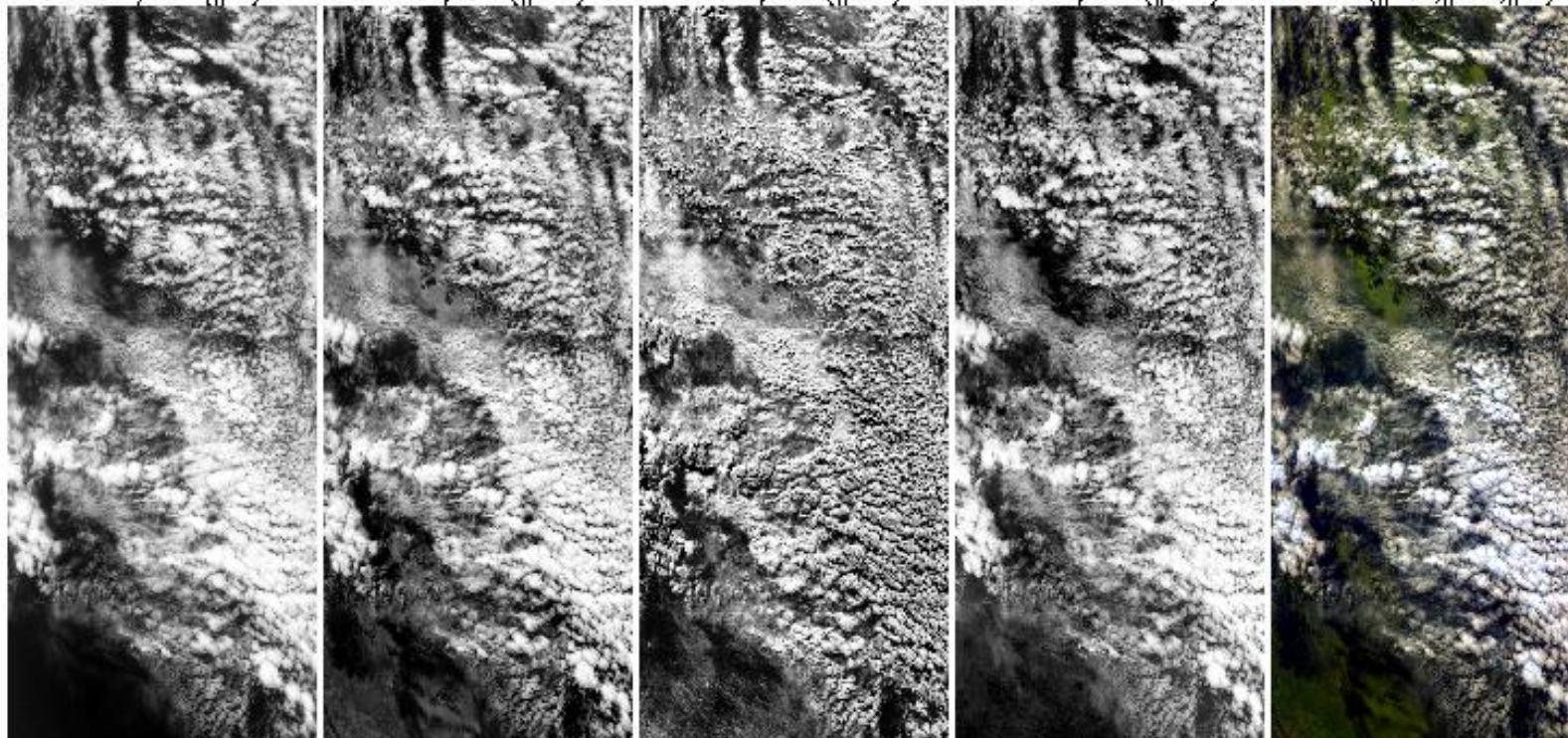
3.77µm (#30)

reverse scale  
10.94µm (#45)

RGB (#20,#10,#2)

11:48:20

11:47:00



11:47:00

11:49:00

11:49:00

11:50:54

0.66µm (#3)

1.61µm (#10)

3.77µm (#30)

10.94µm (#45)  
reverse scale

RGB (#20,#10,#2)

11:50:54

Upper Left Lat, Lon = -20.6°, 26.1°

Lower Right Lat, Lon = -20.8°, 26.7°



11:50:54



0.66 $\mu$ m (#3)

1.61 $\mu$ m (#10)

3.77 $\mu$ m (#30)

10.94 $\mu$ m (#45)  
reverse scale

RGB (#20,#10,#2)

11:50:54

Upper Left Lat, Lon = -20.6°, 26.1°

Lower Right Lat, Lon = -20.8°, 26.7°

Aircraft Heading = 147.2°

Solar Zenith = 35.1°

GPS Altitude = 19923. m (MSL)

MODIS Airborne Simulator Browse Imagery

SAFARI 2000 Campaign - 06 Sep 2000

Botswana

Flight #00-157 Track #17

11:51:13

0.66 $\mu$ m (#3)

1.61 $\mu$ m (#10)

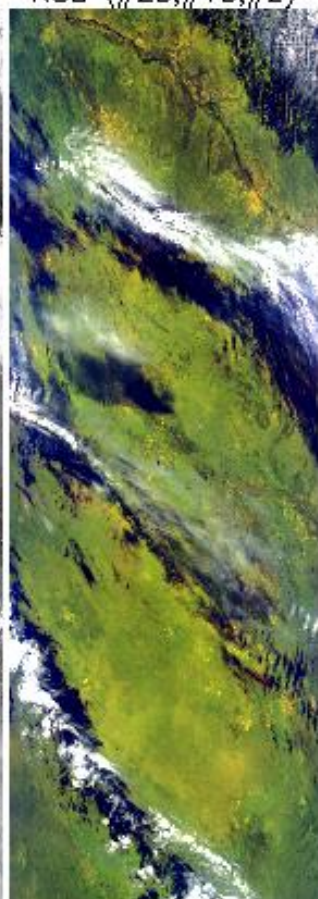
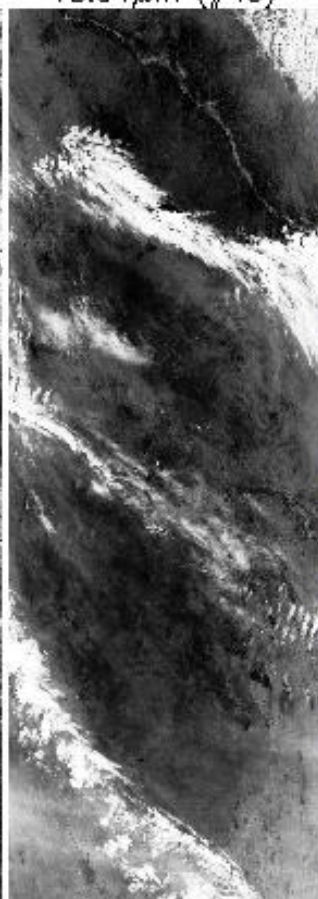
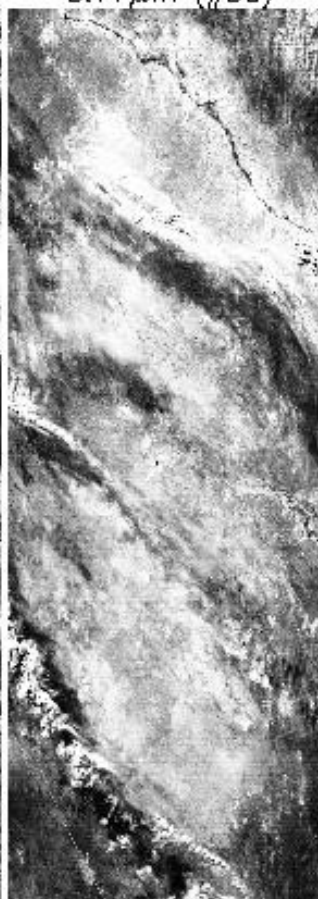
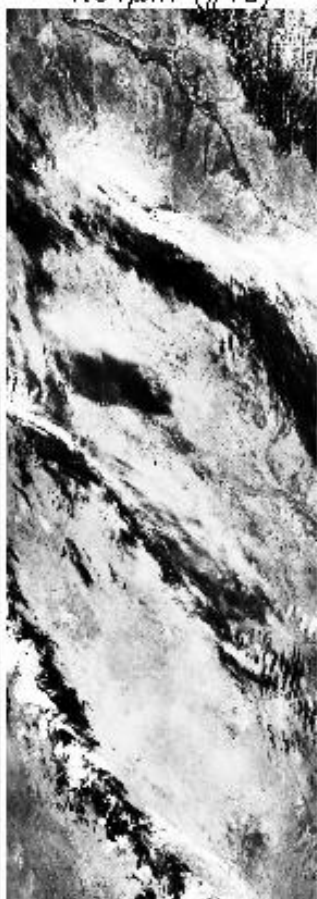
3.77 $\mu$ m (#30)

reverse scale  
10.94 $\mu$ m (#45)

RGB (#20,#10,#2)

11:51:13

11:52:00



11:52:00

11:54:00

11:54:00

11:56:00

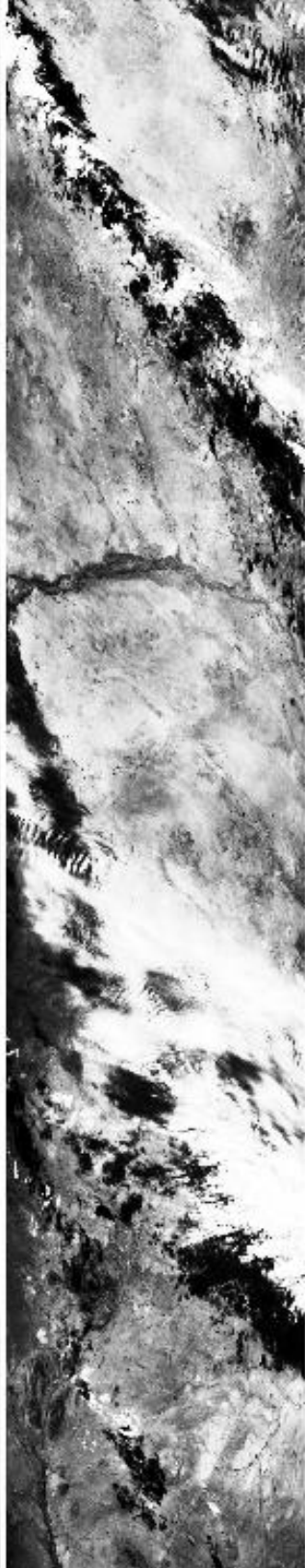
11:56:00



11:56:00



11:56:00



12:00:00



12:02:00



12:04:00



11:56:00



11:56:00



12:00:00



12:02:00

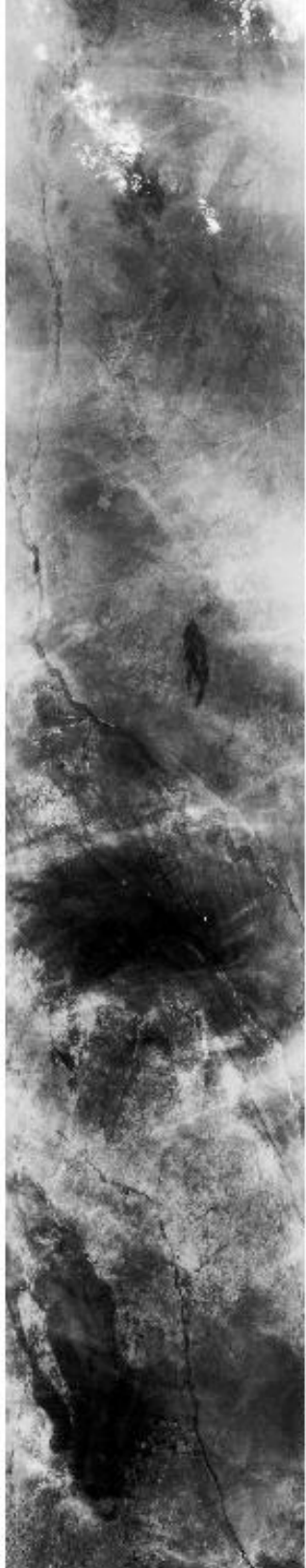


12:04:00

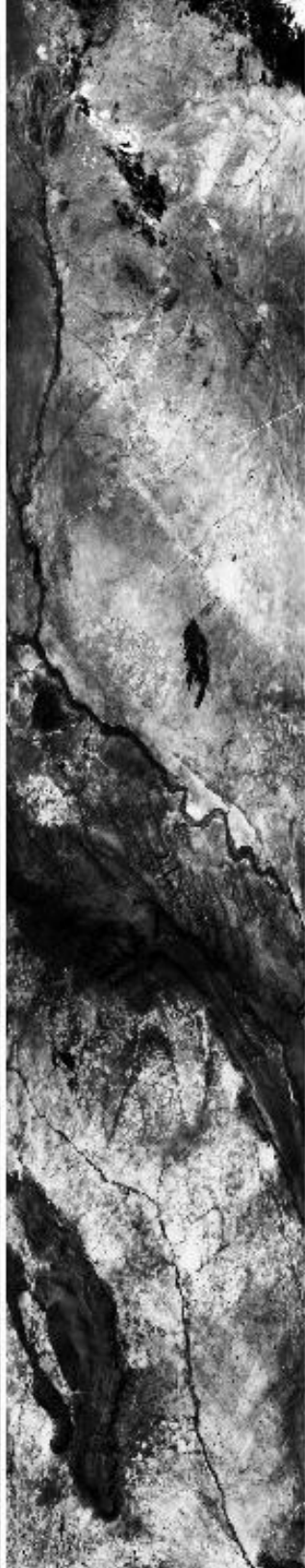




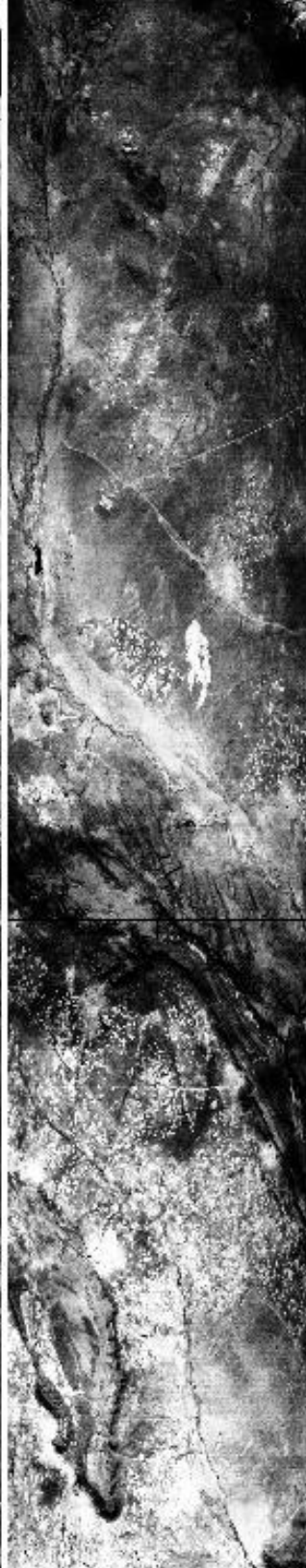
12:04:00



12:06:00



12:08:00



12:10:00



12:12:00



12:04:00

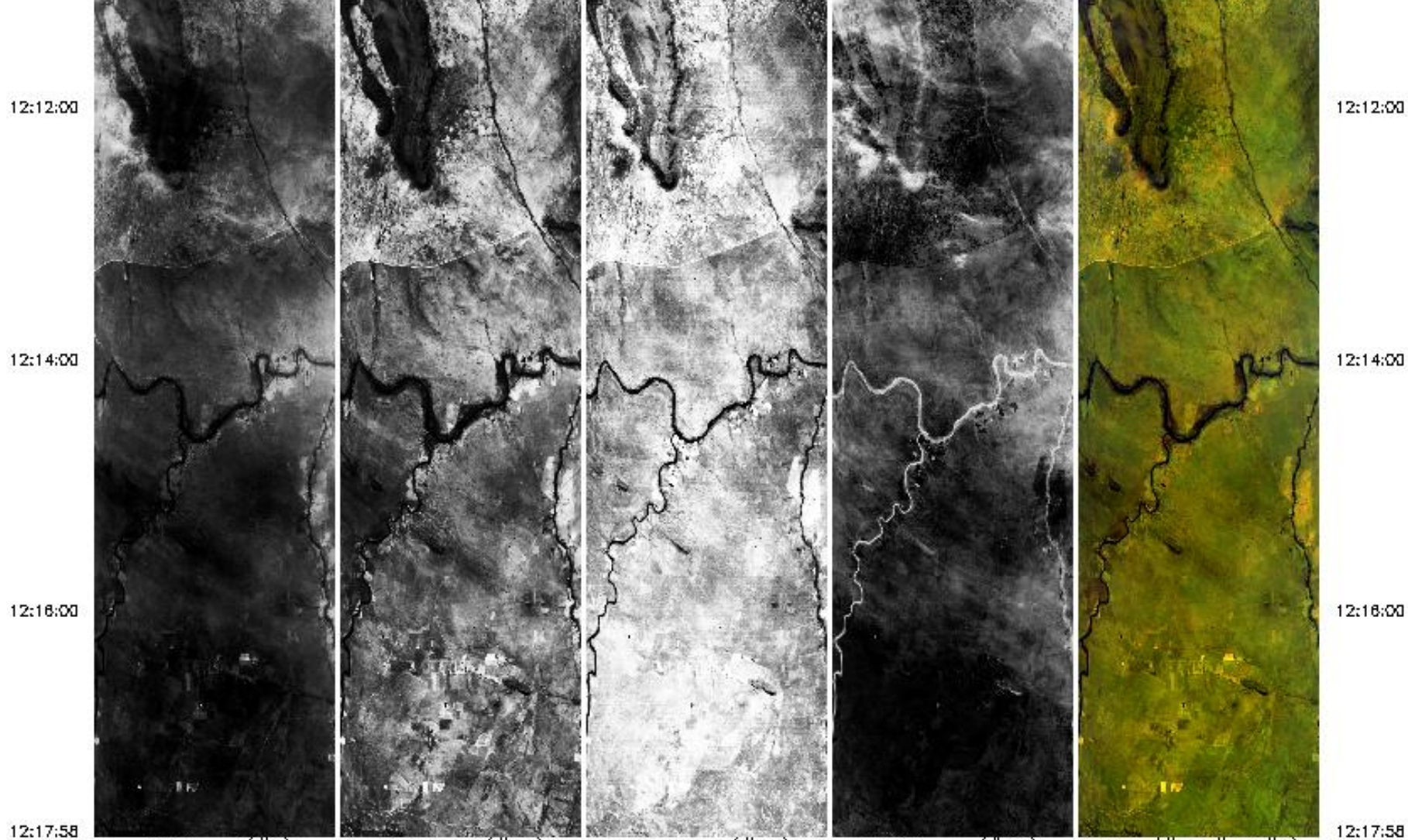
12:06:00

12:08:00

12:10:00

12:12:00





0.66 $\mu\text{m}$  (#3)

1.61 $\mu\text{m}$  (#10)

3.77 $\mu\text{m}$  (#30)

10.94 $\mu\text{m}$  (#45)

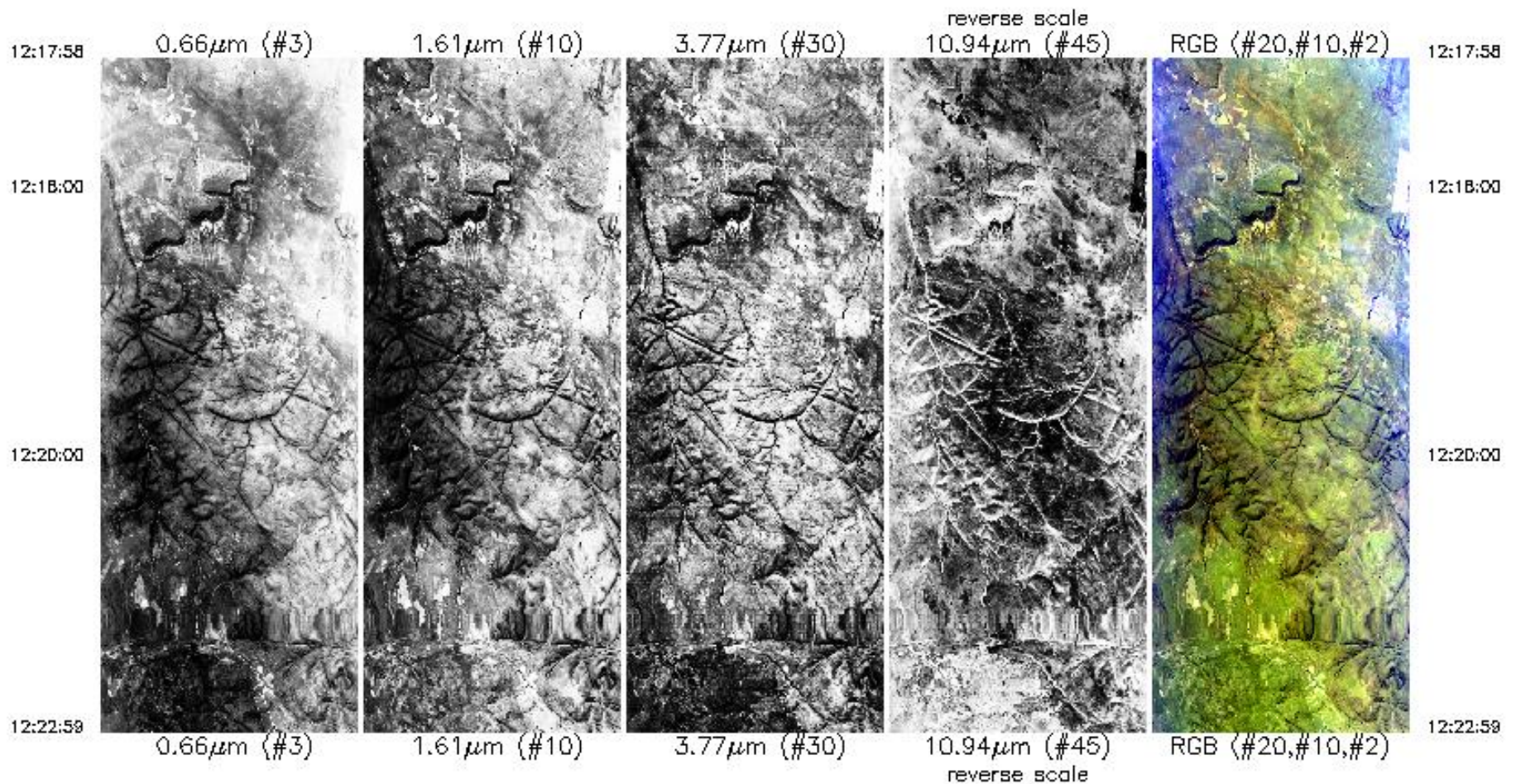
reverse scale

RGB (#20, #10, #2)

Upper Left Lat, Lon =  $-21.0^\circ$ ,  $26.4^\circ$   
 Lower Right Lat, Lon =  $-23.5^\circ$ ,  $28.1^\circ$   
 Aircraft Heading =  $151.7^\circ$   
 Solar Zenith =  $36.4^\circ$   
 GPS Altitude = 19806. m (MSL)



MODIS Airborne Simulator Browse Imagery  
 SAFARI 2000 Campaign – 06 Sep 2000  
 Botswana/S. Africa  
 Flight #00-157 Track #18



Upper Left Lat, Lon =  $-23.6^\circ$ ,  $27.7^\circ$   
 Lower Right Lat, Lon =  $-999.0^\circ$ ,  $-639.0^\circ$   
 Aircraft Heading =  $156.2^\circ$   
 Solar Zenith =  $43.7^\circ$   
 GPS Altitude = 19540. m (MSL)



Upper Left Lat, Lon =  $-23.6^\circ$ ,  $27.7^\circ$   
Lower Right Lat, Lon =  $-999.0^\circ$ ,  $-639.0^\circ$   
Aircraft Heading =  $156.2^\circ$   
Solar Zenith =  $43.7^\circ$   
GPS Altitude = 19540. m (MSL)