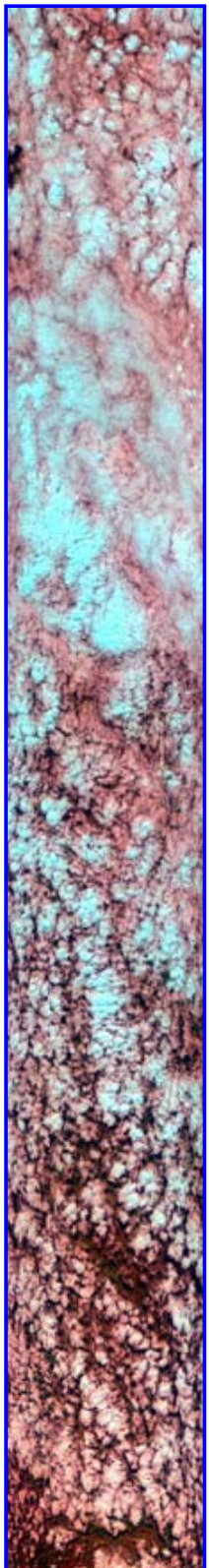
SAFARI 2000 MAS Flight 00179

To obtain tracks from this flight, click the checkbox for the desired track in the "Browse Images" table below. When you have selected your desired flights, click the "List" button to see a list of your tracks prior to placing into the shopping cart.

This is **Flight #00-179**

RBG Images
Click Image

Track #04



Summary Information
Date: September 23, 2000
ER-2 Flight Number: 00-179
Location: South Africa, Mozambique and Indian Ocean
Principal Investigator: Dr. Michael King (NASA GSFC)
Flight Scientist: Steve Platnick (NASA GSFC)
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: #2
Level-1B Configuration: (sample file)
Calibration Type: final
Calibration Version: 1.0

Level-1B Browse Imagery
Straight Line Flight Tracks: 13 processed
Scanlines Processed: 71789
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 m (msl)
☐	01	07:57-08:15	101	24.64-25.08	30.38-32.43	6596	19148
☐	02	08:19-08:35	284	25.23-24.82	32.53-30.60	5842	19509
☐	03	08:40-08:57	105	24.90-25.34	30.36-32.36	6421	19623
☐	04	08:59-09:17	207	25.50-27.29	32.45-31.33	6725	19829
☐	05	09:17-09:44	223	27.32-29.49	31.31-28.86	9999	19952
☐	06	09:48-09:55	7	29.57-28.79	28.47-28.50	2516	19967
☐	07	09:56-10:01	342	28.70-28.15	28.48-28.28	1869	20043
☐	08	10:02-10:05	278	28.05-28.00	28.16-27.73	1227	20063
☐	09	10:06-10:19	298	27.98-27.25	27.67-26.17	4849	20167
☐	10	10:21-10:40	79	27.07-26.56	26.19-28.42	7099	20207
☐	11	10:41-10:49	138	26.59-27.20	28.56-29.19	2899	20295
☐	12	10:52-11:11	350	27.02-24.82	29.34-28.77	7247	20298
☐	13	11:13-11:36	59	24.68-23.43	28.82-31.18	8509	19710

All images in sequence

ER-2 Flight Log
Author: Steve Platnick

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

Mission Scientist: Dr. Michael King
ER-2 Pilot: Dave Wright
Takeoff: 23Sep2000 0000 UTC
Landing: 23Sep2000 0000 UTC
Duration: 05:00:00

Objective:

(1) Overfly Skukuza tower site with PARABOLA instrument for MISR instrument team, (2) Overfly Katse Dam and Malibamatso River catchment to study land use patterns, degredation/erosion, (3) Overfly powerplants east of Johannesburg, including Witbank, Secunda and Tutuka (third attempt), (4) Overfly industrial sites south of Johannesburg along with the Vredefort dome (ancient impact crater site), (5) Overfly Merensky Nature Reserve.

SAWB Aerocommander JRA, the remaining in situ aircraft, was not operating in the ER-2 flight area.

ER-2 flight tracks over Skukuza Tower in Kruger Park were oriented perpendicular to the Terra track with a 15 km offset to allow forward, nadir, and aft views of the site from MAS, and coincident with the 0828 UTC overpass. The Terra ground track was approximately 140 km west of Skukuza (12 degree viewing angle), within the MODIS, MOPITT, and MISR swath.

The RC-10 was operated over the prime target areas mentioned above except during overcast conditions.

Key Flight Legs:

No comments (See flight objectives)

Highlights: N/A

Surface sites and features overflown during this mission:

- Skukuza Tower, Kruger Park, RSA (25°01' S, 31°30' E).
- Katse Dam (Lesotho Highlands Project) and Malibamatso River catchment, RSA (vicinity of 29° 30' S, 28°05' E).
- Bethlehem AERONET sun photometer site (28°14' S, 28°19' E).
- Merensky Nature Reserve, RSA (25°01' S, 31°30' E).

Pilot Report:

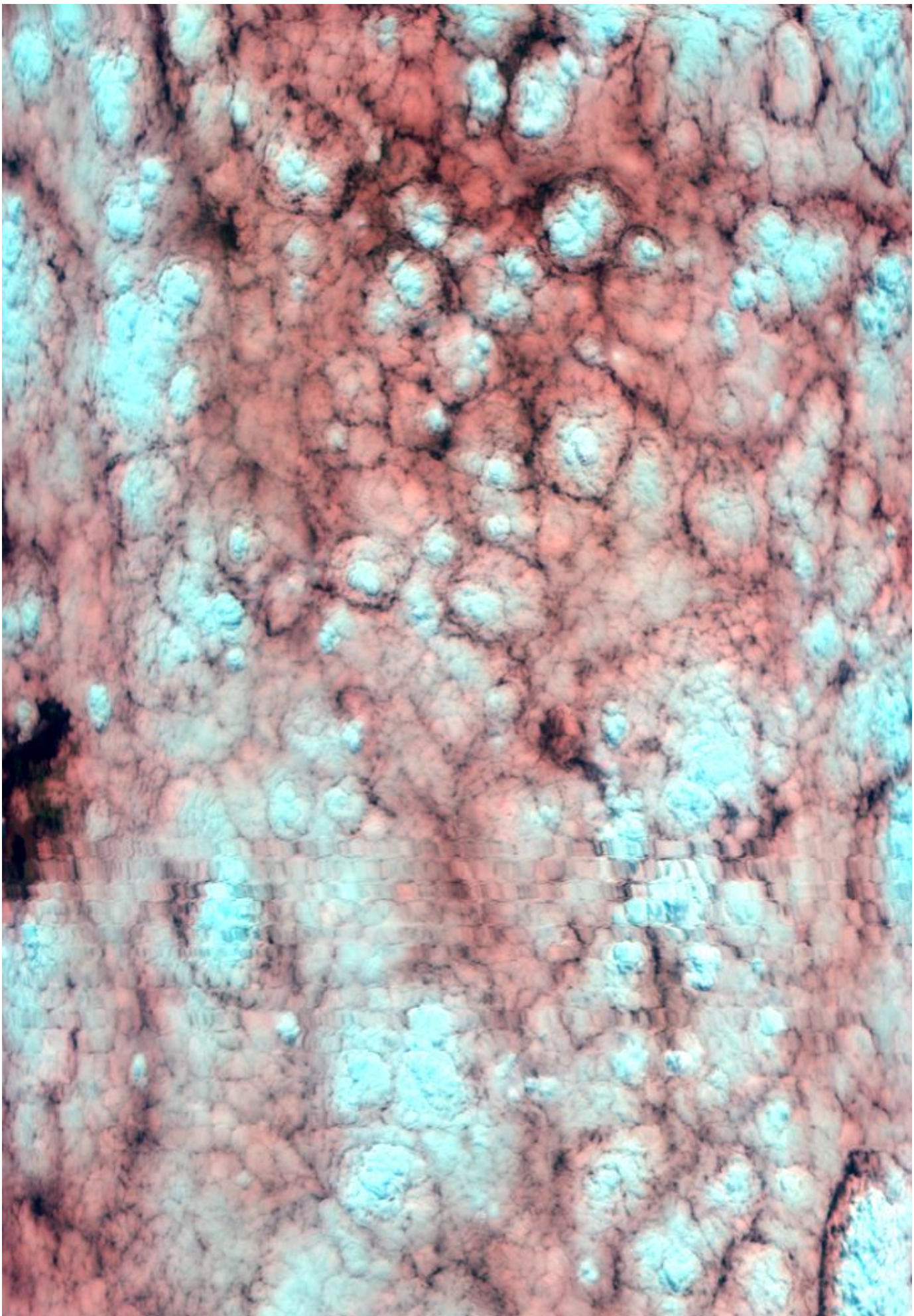
The flight legs over Skukuza were reported by the pilot to be over approximately 60% cloud cover. The water catchment and sunphotometer site were in clear sky, while views of the industrial and powerplant sites near Johannesburg were once again hindered by cloud (about 50% coverage). The flight leg over Merensky was estimated to have about 40% cloud cover.

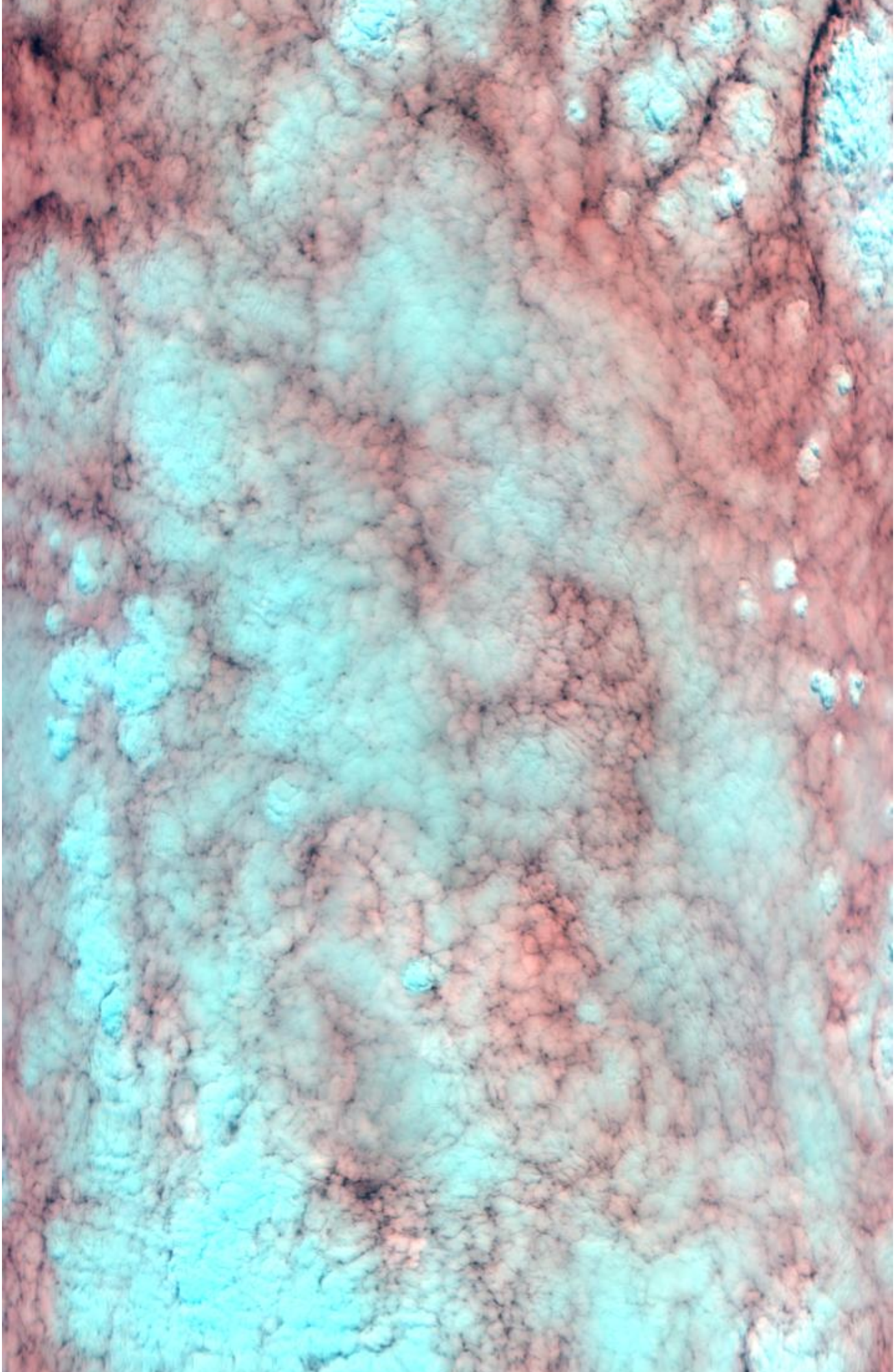
Meteorology:

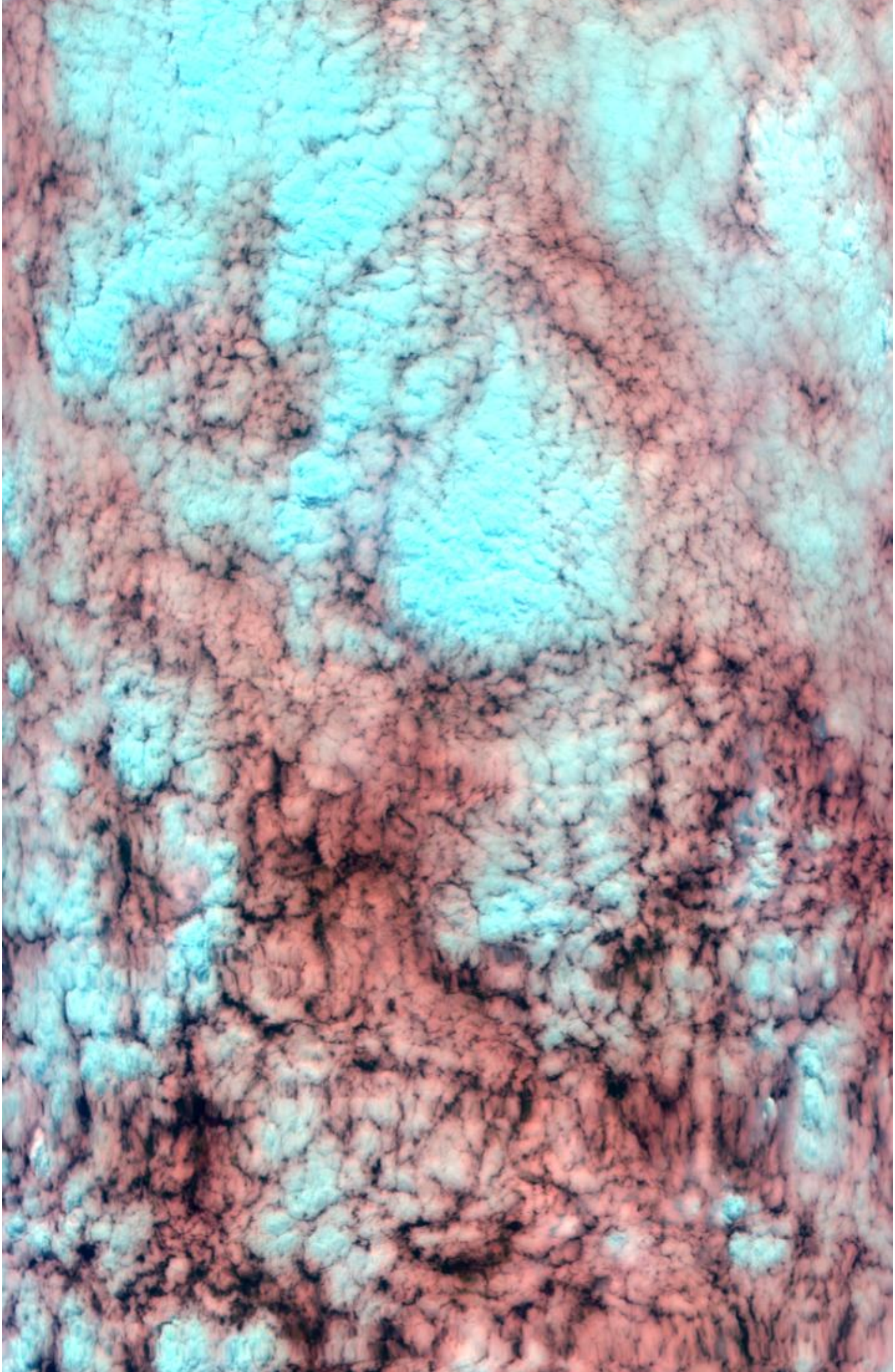
A cold front is approaching the Cape, bringing some light rain showers to the Cape peninsula overnight. A detached cell of high pressure over the northern South African interior causes generally fine weather elsewhere, but the eastern and northeastern areas (including Skukuza) will have patchy fog or low stratus at first. Clouds in the Skukuza area are expected to burn off in time for the Terra/ER-2 overpass.

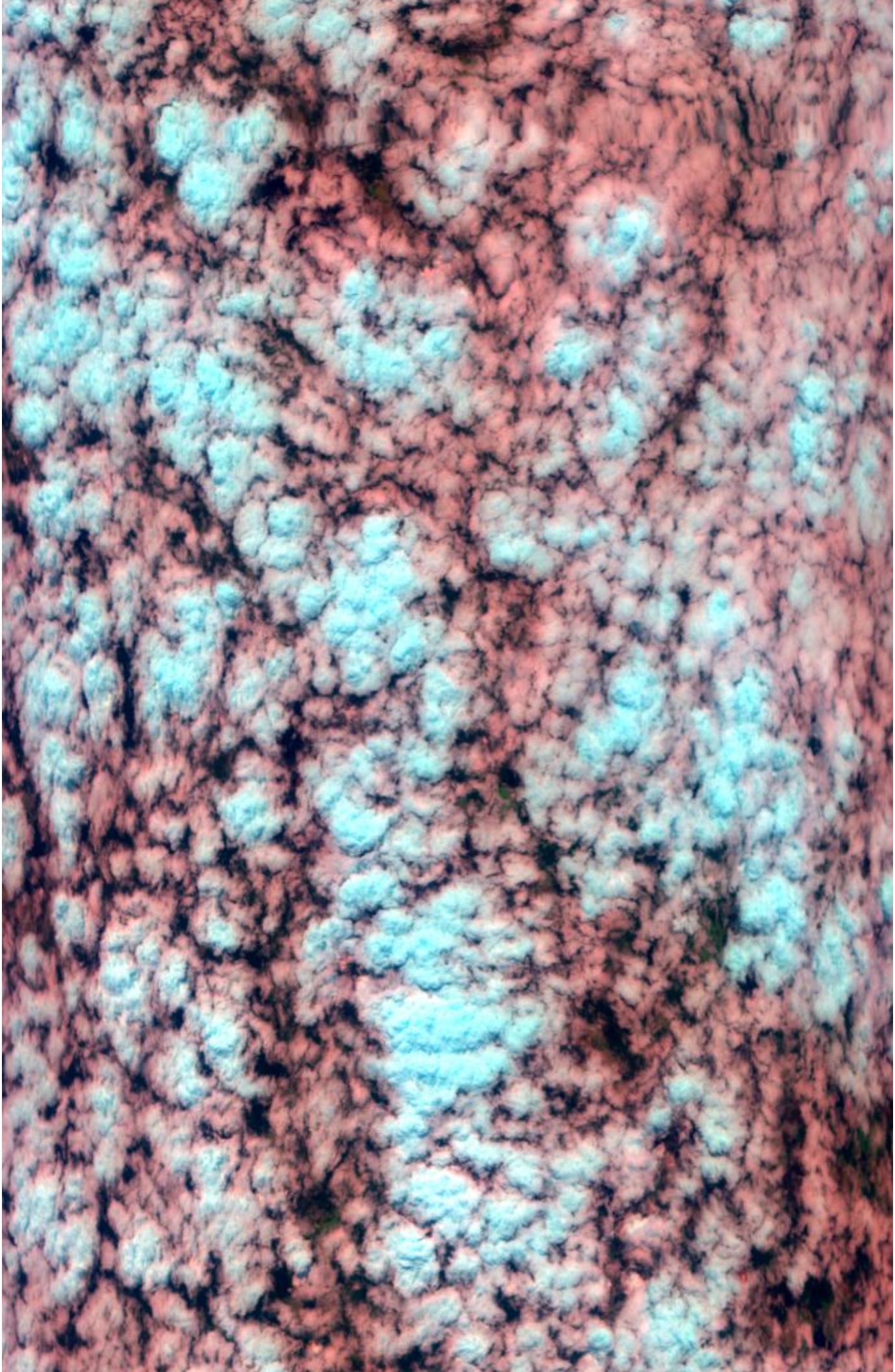
Instrument Status:

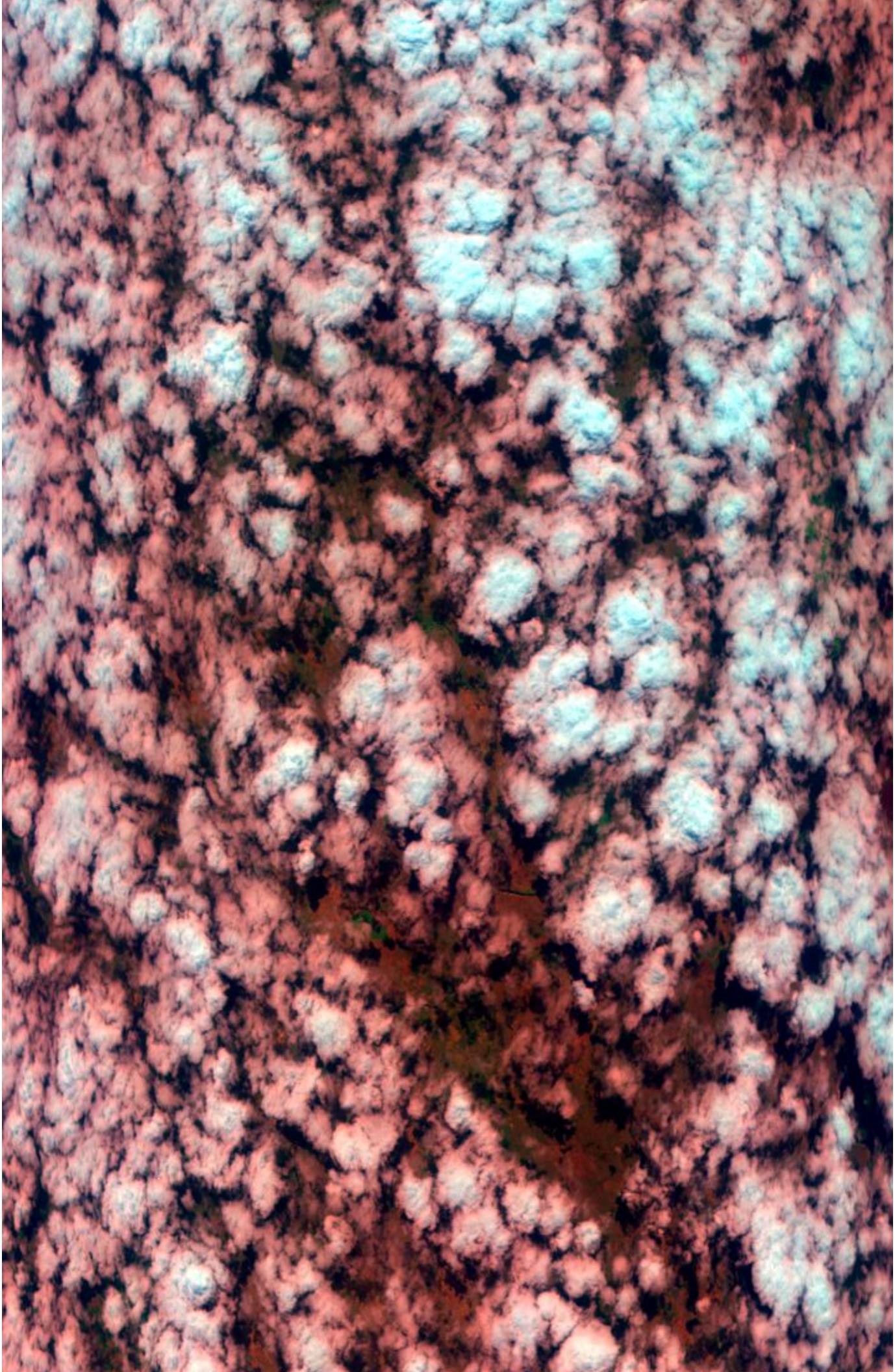
- AirMISR (Airborne Multi-angle Imaging Spectroradiometer): not on aircraft
- CLS (Cloud Lidar System): Lidar worked properly, but navigation data not recorded
- LAS (Leonardo Airborne Simulator): not on aircraft
- MAS (MODIS Airborne Simulator): worked well
- MOPITT-A (MOPITT Airborne Simulator): Worked well
- S-HIS (High-resolution Interferometer Sounder): operated in scanning mode
- SSFR (Solar Spectral Flux Radiometer): Worked well

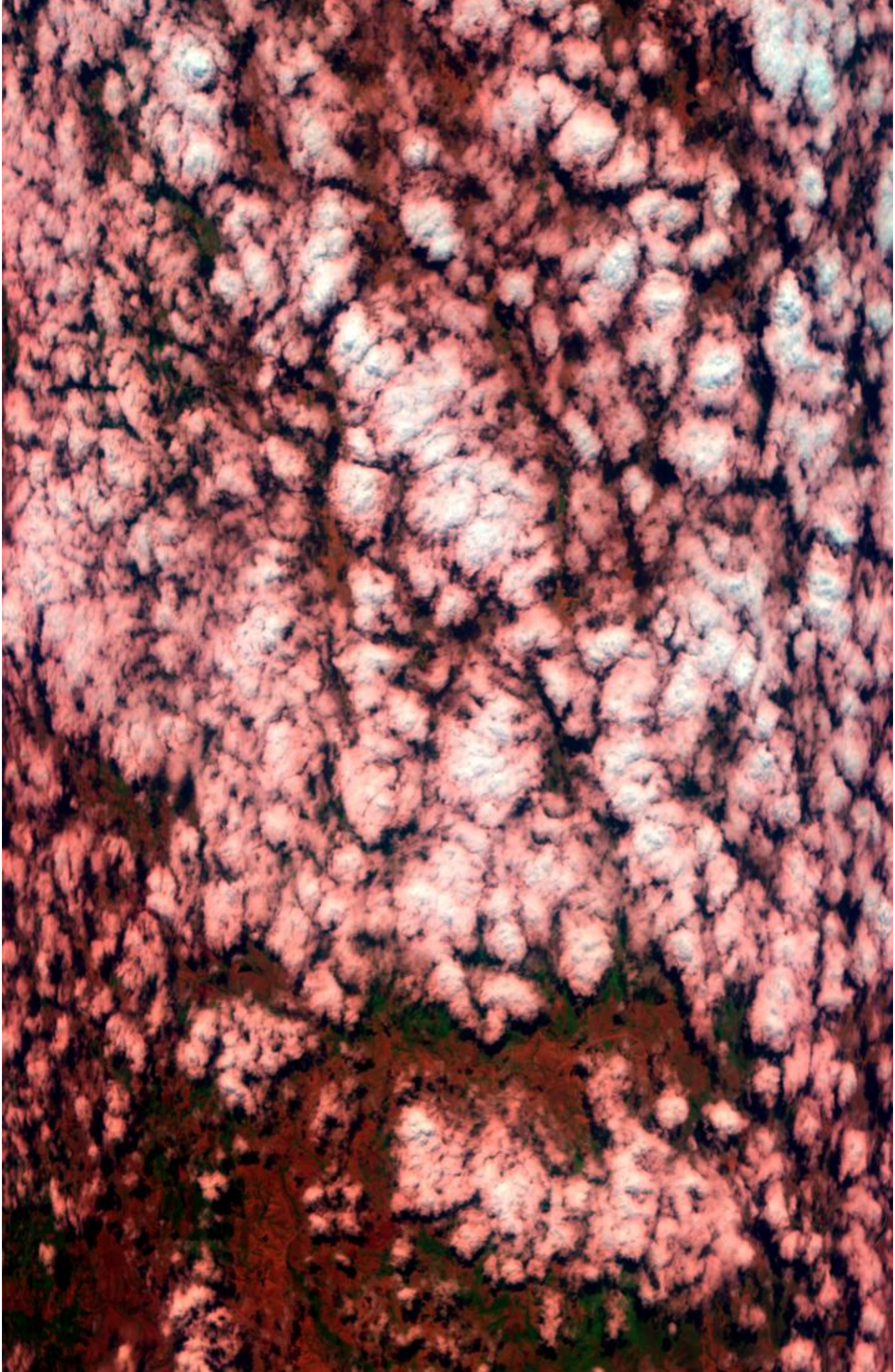


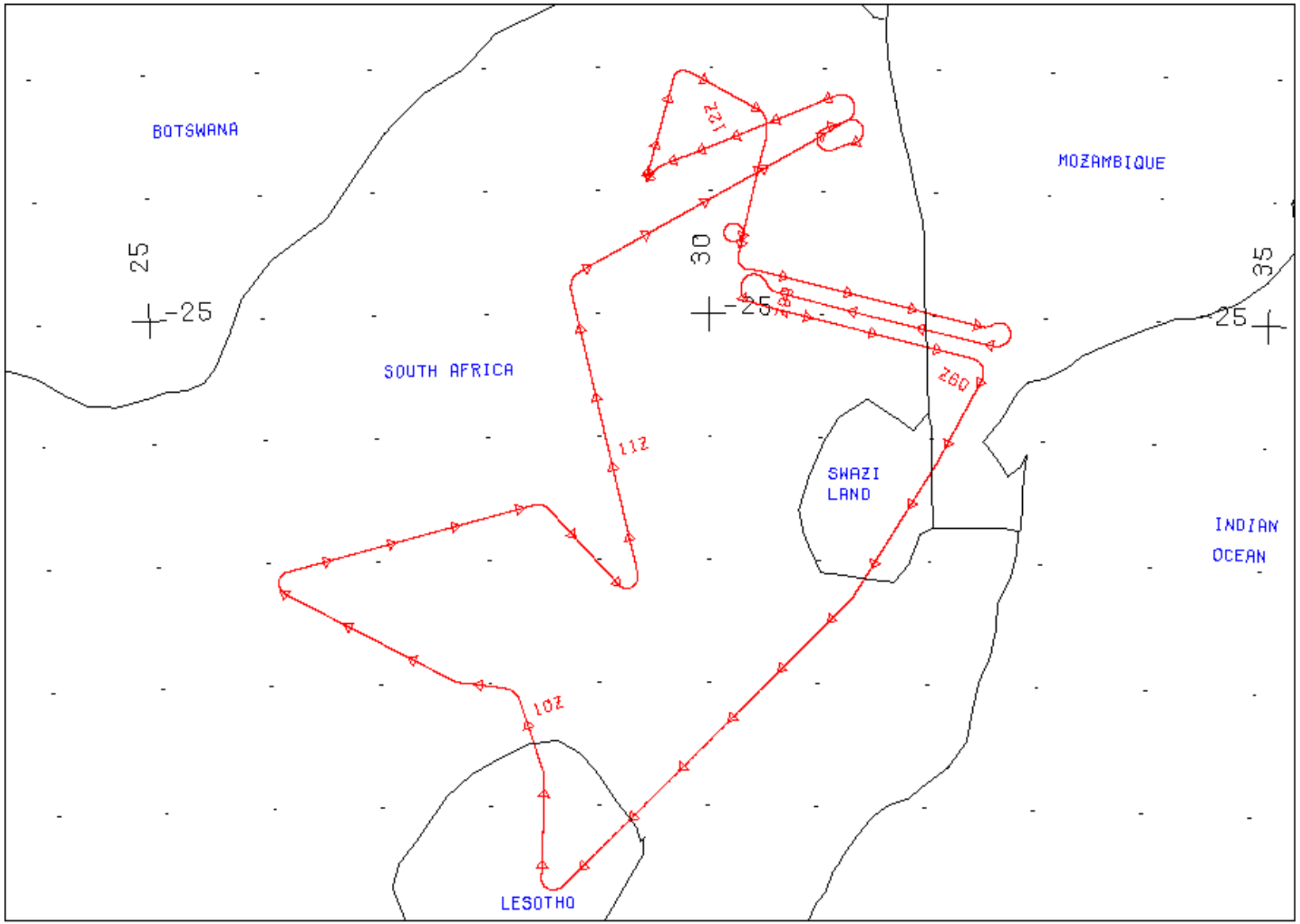












FLIGHT 00-179 23 SEPTEMBER 2000 A/C 809 SAFARI

FLIGHT 00-179 23 SEPTEMBER 2000 A/C 809 SAFARI

50 MAS Configuration for 00-179 23 Sep 2000 S. Africa, Mozambique, Lesotho
01 01 16 0 0.041162 0.0000 0.452 0.472 0.493 0.100 1981.92
02 02 16 0 0.043757 0.0000 0.534 0.554 0.577 0.100 1857.88
03 03 16 0 0.029294 0.0000 0.635 0.658 0.689 0.100 1549.55
04 04 16 0 0.034148 0.0000 0.687 0.708 0.731 0.100 1386.41
05 05 16 0 0.025921 0.0000 0.729 0.750 0.773 0.100 1260.07
06 06 16 0 0.026587 0.0000 0.810 0.830 0.855 0.100 1053.65
07 07 16 0 0.026461 0.0000 0.853 0.874 0.895 0.100 962.82
08 08 16 0 0.021300 0.0000 0.893 0.912 0.934 0.100 869.28
09 09 16 0 0.023116 0.0000 0.933 0.954 0.974 0.100 784.92
10 10 16 0 0.003647 0.0000 1.586 1.612 1.640 0.100 244.16
11 11 16 0 0.006794 0.0000 1.642 1.668 1.695 0.010 227.32
12 12 16 0 0.003224 0.0000 1.698 1.722 1.749 0.010 201.29
13 13 16 0 0.003189 0.0000 1.751 1.776 1.801 0.010 176.56
14 14 16 0 0.003277 0.0000 1.805 1.830 1.855 0.010 156.28
15 15 16 0 0.003130 0.0000 1.855 1.880 1.906 0.010 139.66
16 16 16 0 0.002967 0.0000 1.906 1.932 1.956 0.100 131.21
17 17 16 0 0.002691 0.0000 1.956 1.982 2.006 0.010 122.76
18 18 16 0 0.002626 0.0000 2.006 2.032 2.057 0.010 109.78
19 19 16 0 0.002531 0.0000 2.058 2.082 2.107 0.010   98.67
20 20 16 0 0.002567 0.0000 2.107 2.132 2.157 0.010   86.28
21 21 16 0 0.005388 0.0000 2.156 2.180 2.205 0.010   76.85
22 22 16 0 0.002921 0.0000 2.205 2.230 2.255 0.010   73.57
23 23 16 0 0.002987 0.0000 2.255 2.280 2.305 0.010   68.38
24 24 16 0 0.002785 0.0000 2.306 2.330 2.354 0.010   58.53
25 25 16 0 0.002708 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/meter2/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/er2/00-179
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,
****

Config.asc creation date = 13-June-2001
Config.asc creation date = 13-June-2001

MODIS AIRBORNE SIMULATOR (MAS) FLIGHT LINE INFORMATION FOR 23 Sep 2000

NASA FLIGHT NUMBER 00-179

	START OF FLIGHT LINE					END OF FLIGHT LINE					FLIGHT DATA	
LINE	TIME	LAT	LON	SOLAR ZEN	SOLAR AZIM	TIME	LAT	LON	SOLAR ZEN	SOLAR AZIM	SCAN HEAD LINES	ALT DEG
	HH:MM:SS	DEG	DEG			HH:MM:SS	DEG	DEG				M (GPS)
1	07:57:27	-24.639	30.378	36.6	52.5	08:15:06	-25.075	32.431	32.5	43.6	6596	100.6 19148
2	08:19:45	-25.229	32.525	31.9	41.6	08:35:23	-24.821	30.598	30.4	38.9	5842	283.8 19509
3	08:40:18	-24.901	30.363	29.9	37.2	08:57:29	-25.338	32.364	27.3	25.1	6421	104.9 19623
4	08:59:22	-25.499	32.454	27.2	23.9	09:17:22	-27.290	31.327	27.9	15.7	6725	206.5 19829
5	09:17:40	-27.317	31.305	27.9	15.6	09:44:27	-29.488	28.864	29.3	6.1	9999	222.9 19952
6	09:48:44	-29.572	28.468	29.4	4.7	09:55:28	-28.792	28.502	28.5	1.2	2516	7.0 19967
7	09:56:17	-28.700	28.483	28.4	0.9	10:01:17	-28.146	28.280	27.8	358.6	1869	342.4 20043
8	10:02:34	-28.048	28.160	27.8	358.2	10:05:51	-27.995	27.728	27.7	357.4	1227	278.3 20063
9	10:06:16	-27.980	27.674	27.7	357.2	10:19:15	-27.255	26.166	27.1	353.4	4849	297.5 20167
10	10:21:28	-27.069	26.188	27.0	352.1	10:40:28	-26.557	28.421	28.2	337.1	7099	79.3 20207
11	10:41:44	-26.593	28.561	28.3	336.2	10:49:30	-27.203	29.186	29.9	331.8	2899	137.8 20295
12	10:52:33	-27.025	29.340	30.1	330.0	11:11:57	-24.824	28.771	30.5			

320.6 7247 349.7 20298
13 11:13:19 -24.682 28.815 30.6 319.8 11:36:06 -23.431 31.181 35.1
307.3 8509 58.5 19710

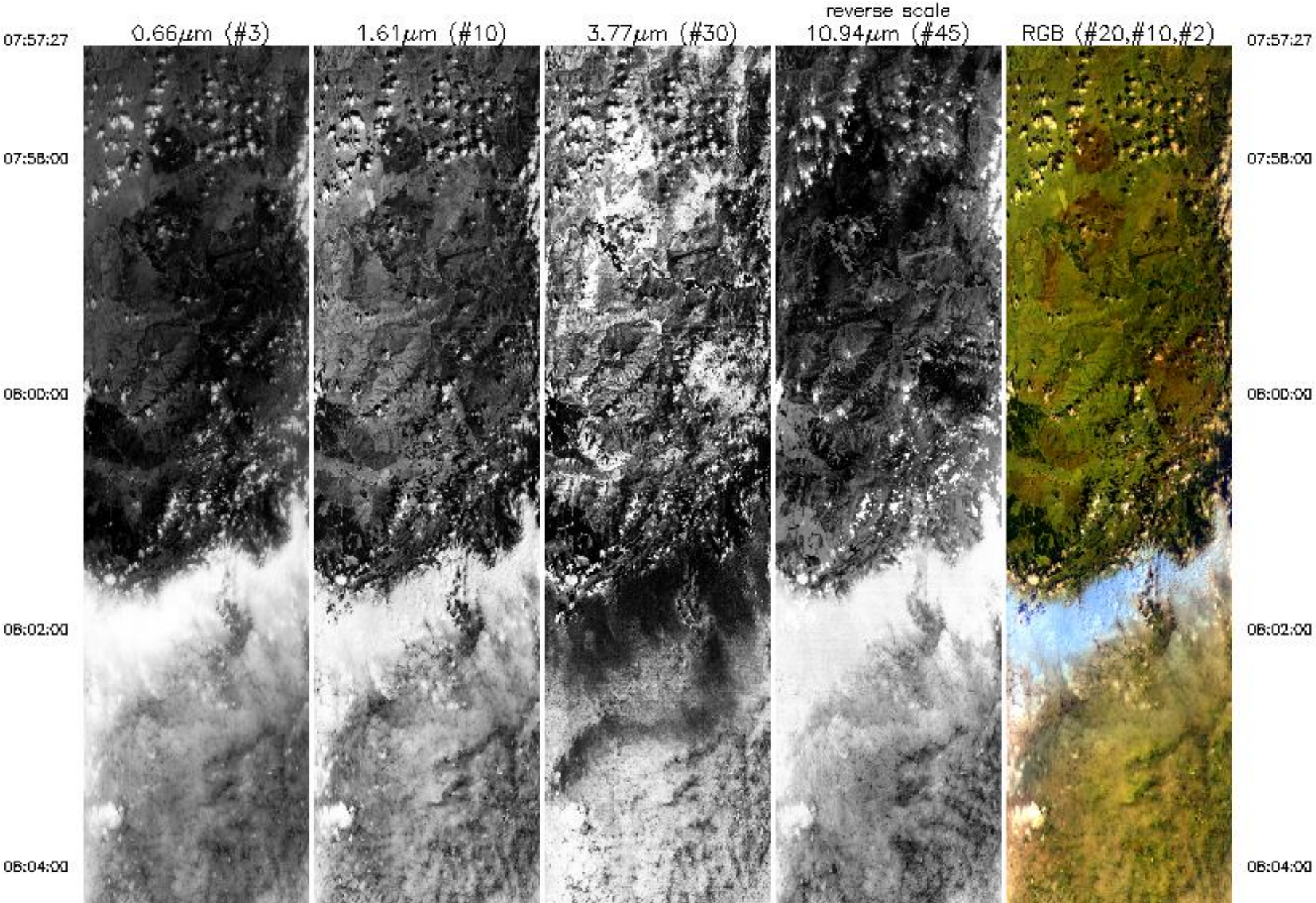
NUMBER OF FILES FOR THIS FLIGHT = 13
TOTAL NUMBER OF SCAN LINES = 71798
DATE THESE FILES WERE PROCESSED = 06-Sep-2002
DATE THIS LIST WAS CREATED = Mon Sep 9
09:56:48 PDT 2002
GRANULE VERSION = 2

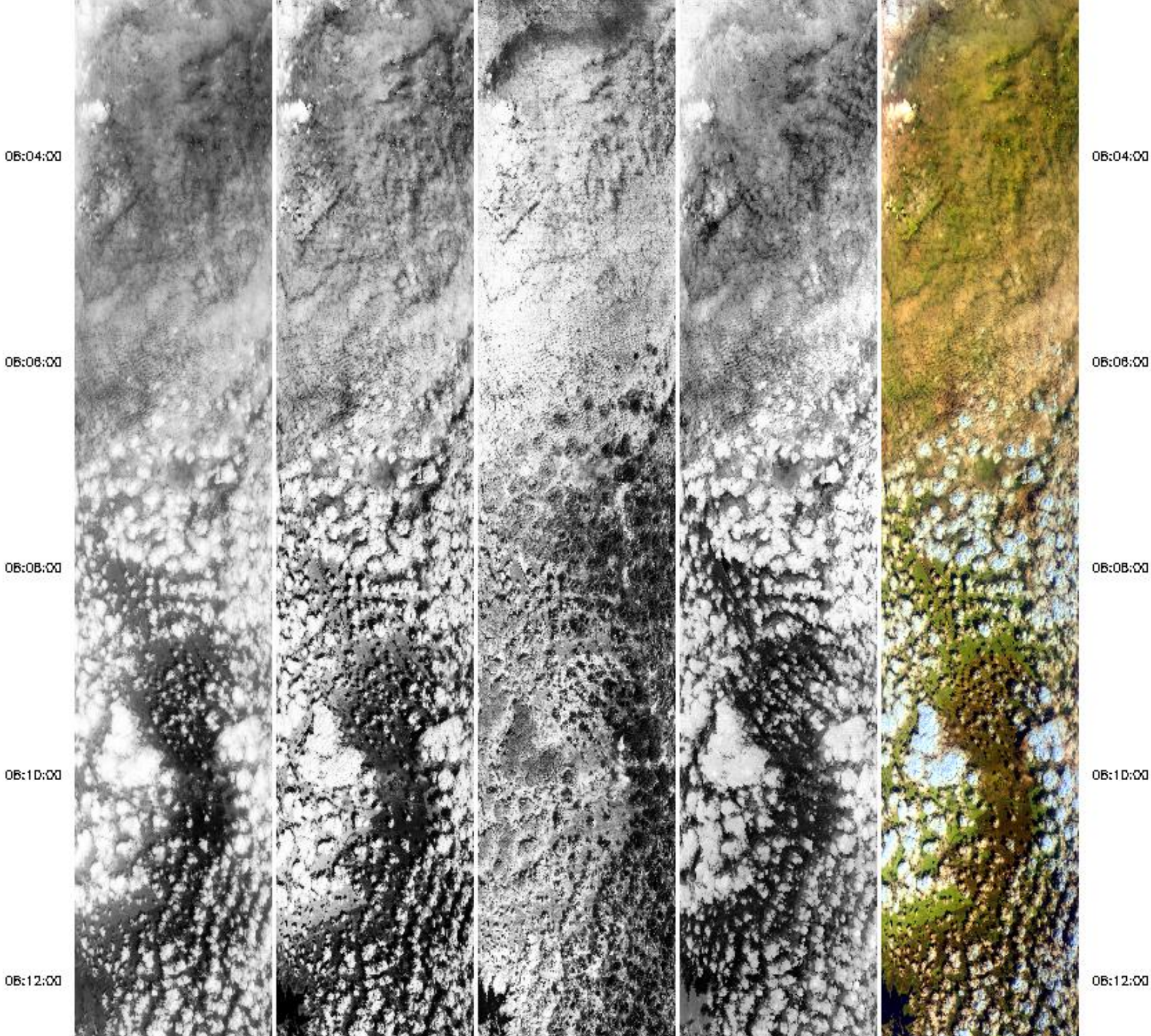
GLOBAL ATTRIBUTES

Attribute Name	Description
CreationDate	06-Sep-2002 23:00:04
AircraftPlatform	NASA ER-2 (809)
NavFormatCode	Format (A-1)
LocationCode	Inertial (INU)
AltitudeCode	Inertial (INU)
NavDataSource	ER2 navigation recorder
NavDataPath	/nav/2000/er2/00-179
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	00-179
FlightDate	23 Sep 2000
SiteLineRun	void
GeographicArea	South Africa
SRF_FTP	ftp://asapdata/mas/srf/Oct_00/
SRF_dataset	/rarray/calibrat/mas/srf/Oct_00/
FlightLineNumber	1
TotalFlightLines	13

DataUsersGuideSource http://ltpww.gsfc.nasa.gov/MAS/
SoftwareVersion Level-1b Version 10.1.1 UR
CalibrationVersion Version 1.0 Calibration
data_set MAS SAFARI 2000
day_night_flag D
granule_version 1
metadata_version 1.0.0
data_quality Good
Other_Aircraft_Sensors AirMISR, CLS, MOPPIT-A, Leonardo
Principal_Investigator King
lat_UL -24.79370
lon_UL 30.35838
lat_UR -24.48645
lon_UR 30.39760
lat_LL -25.23148
lon_LL 32.38837
lat_LR -24.92076
lon_LR 32.47738
begin_date 20000922 075727
end_date 20000922 081507
RunTime 459,249 ms, or 69 ms/scanline
CompletionDate 06-Sep-2002 23:12:12
producer_granule_id
MASL1B_00179_01_20000922_0757_0815_V01.hdf

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #1

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06:10:00
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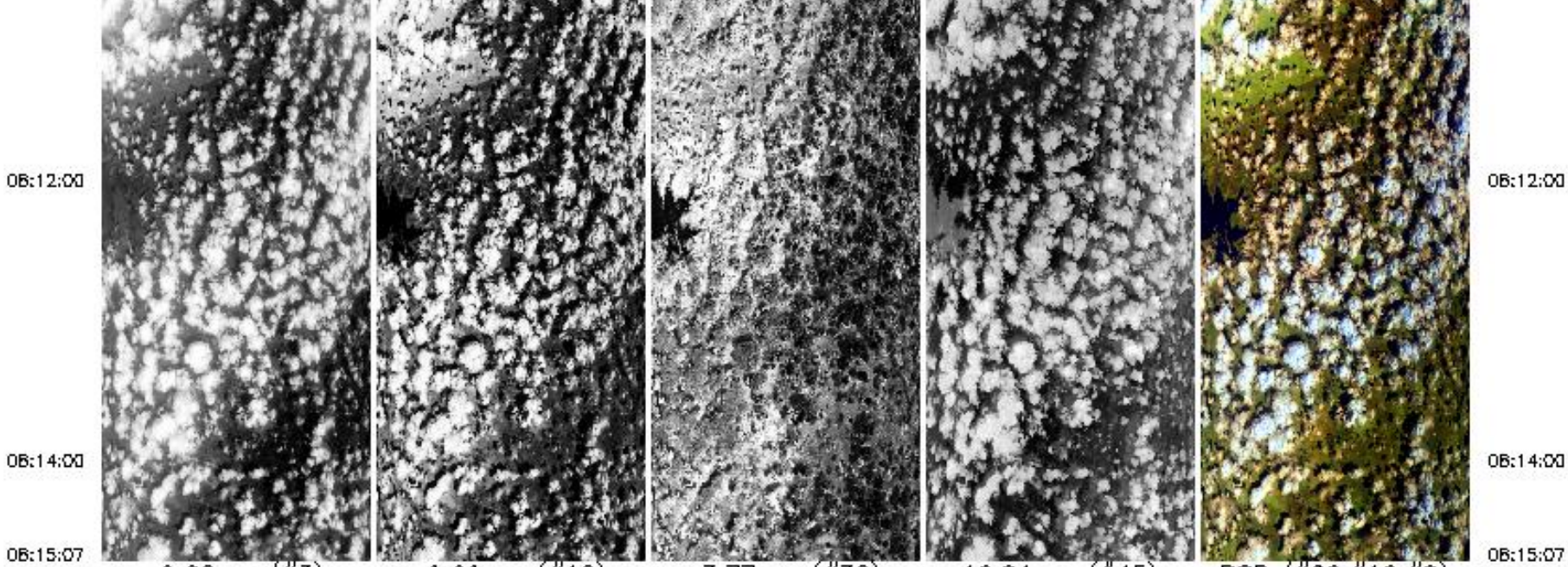
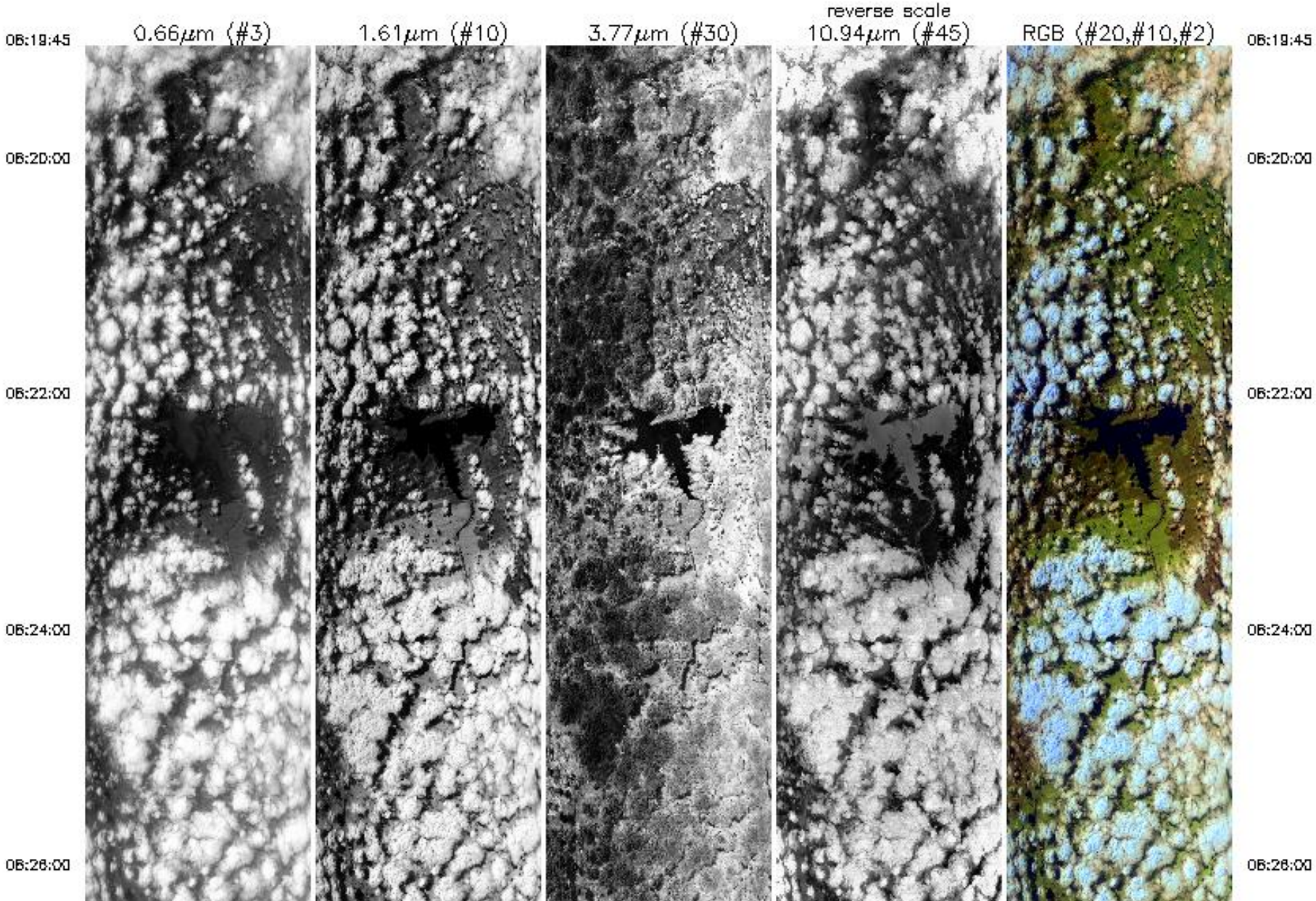
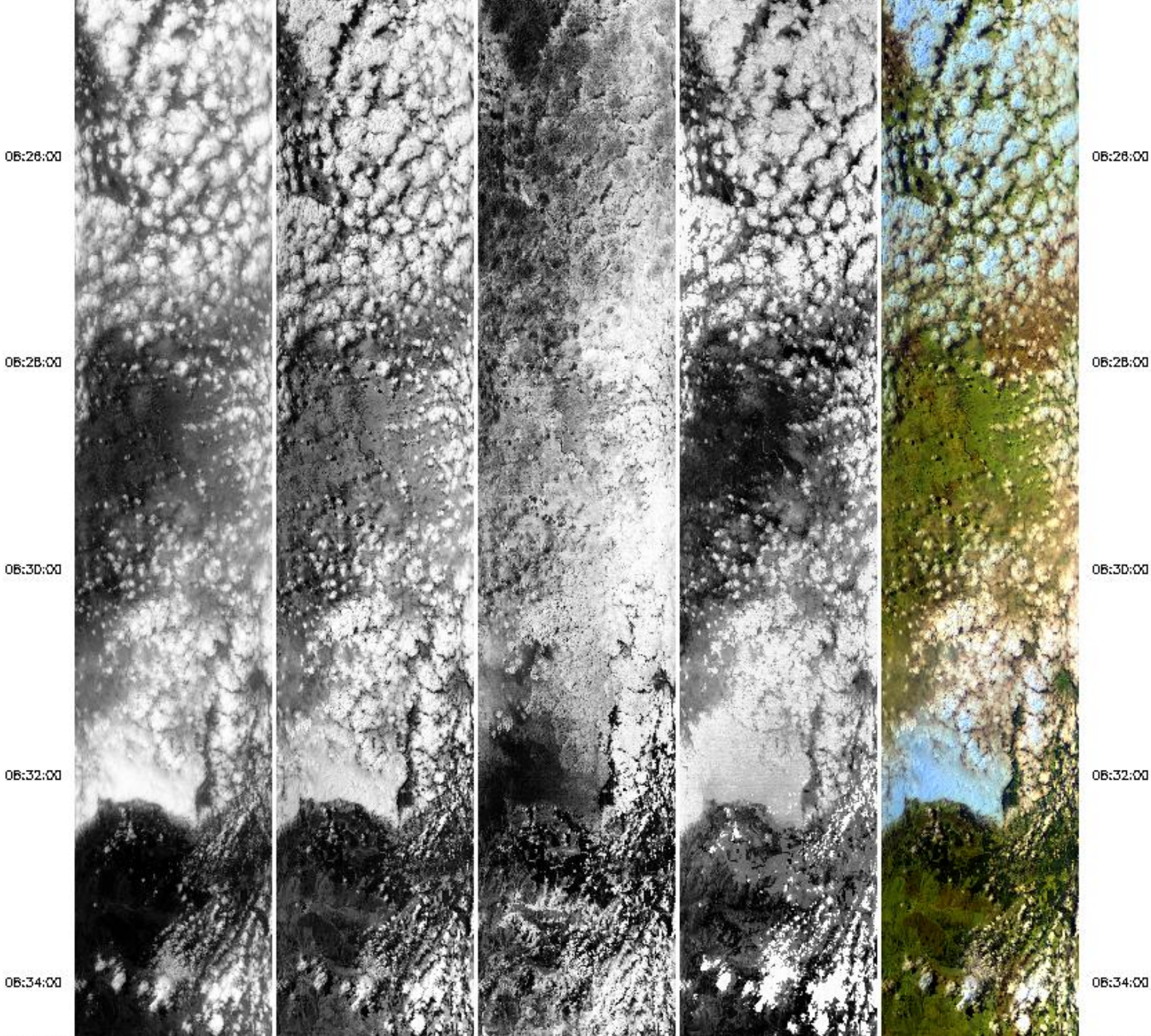


Upper Left Lat, Lon = −24.8°, 30.4°
Lower Right Lat, Lon = −24.9°, 32.5°
Aircraft Heading = 96.6°
Solar Zenith = 36.7°
GPS Altitude = 19249. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #2

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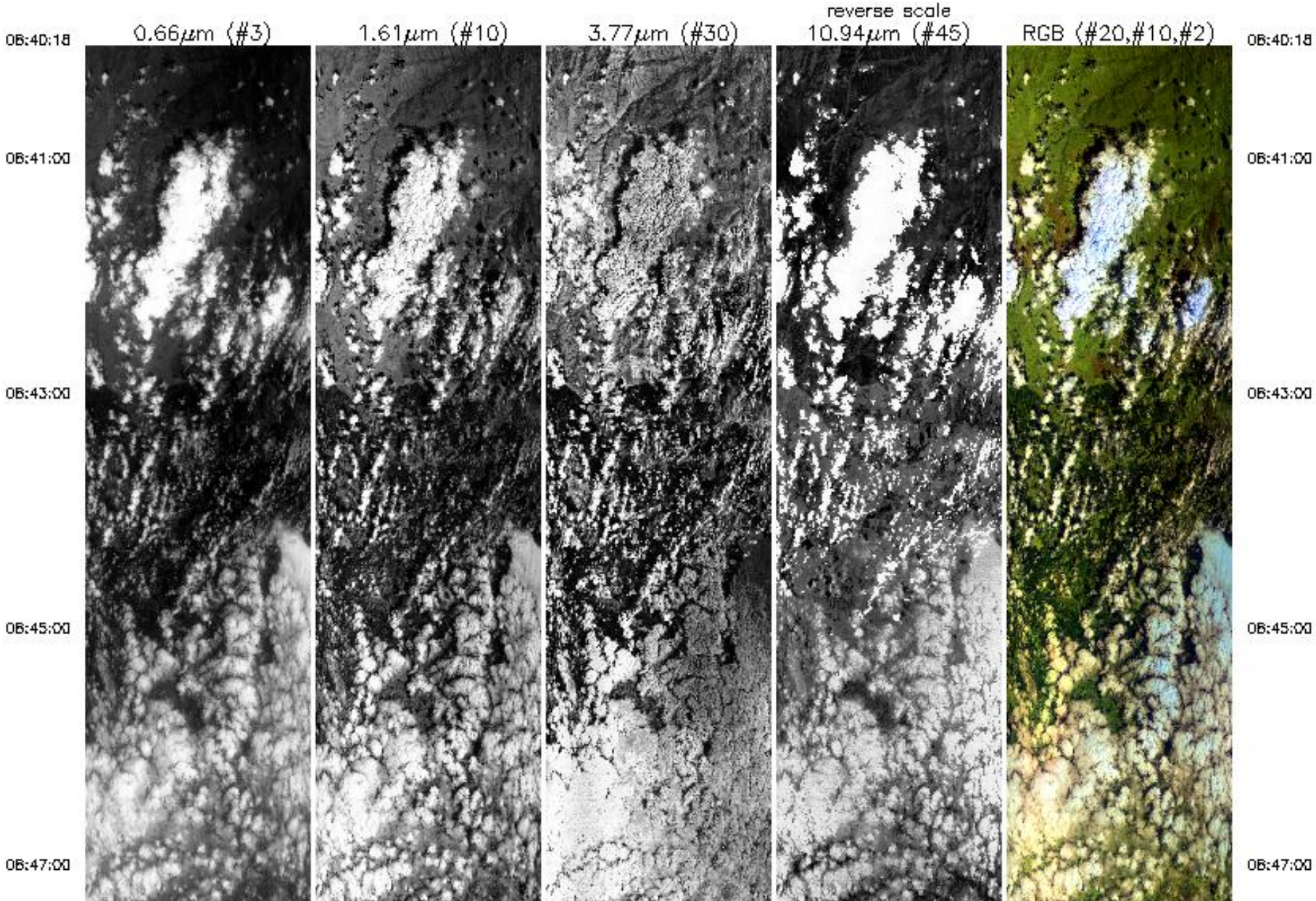
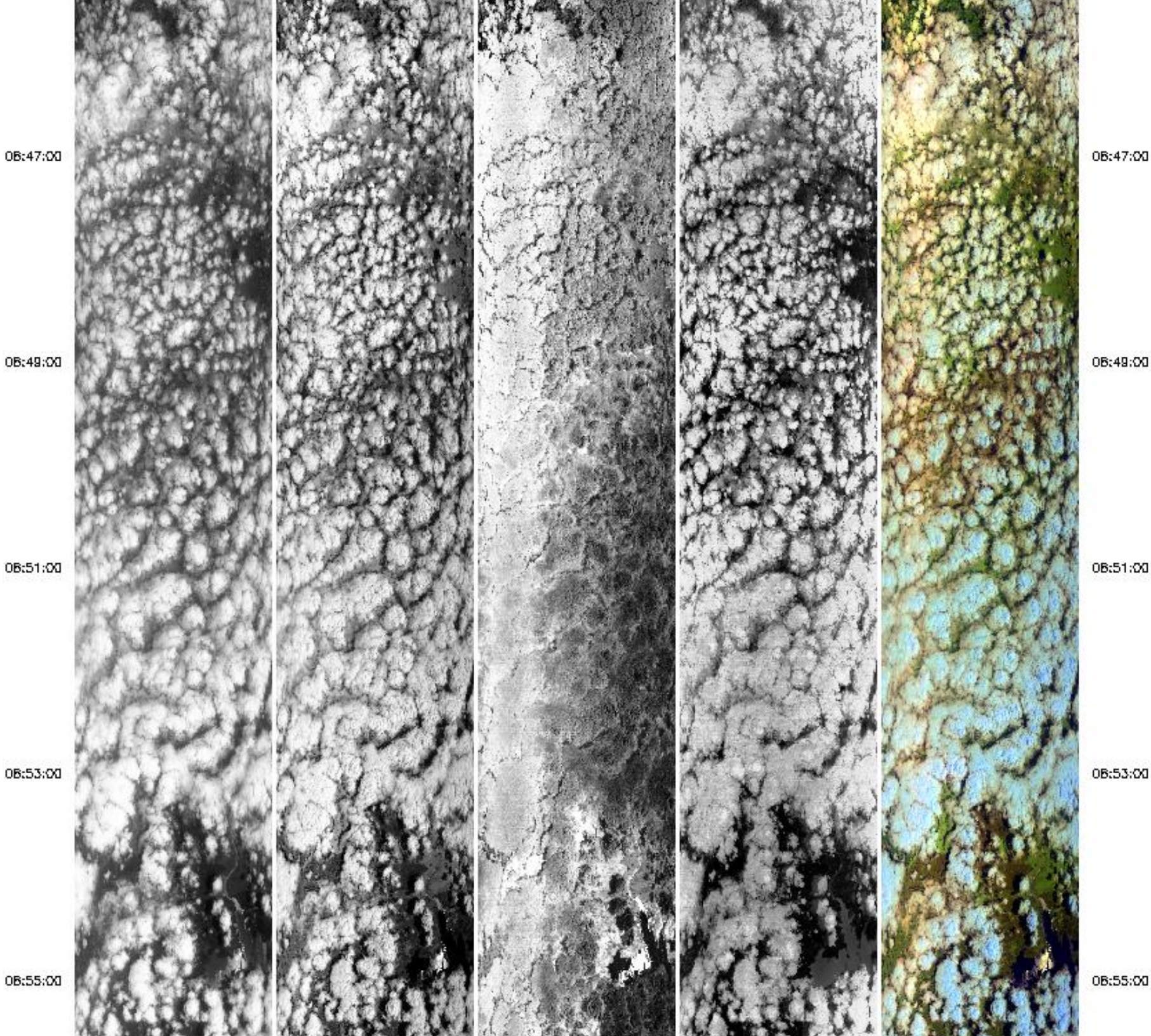
06:32:00
06:34:00
06:26:00
06:28:00
06:30:00
06:32:00
06:34:00

Upper Left Lat, Lon = −25.1°, 32.6°
Lower Right Lat, Lon = −25.0°, 30.6°
Aircraft Heading = 283.4°
Solar Zenith = 31.7°
GPS Altitude = 19540. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #3

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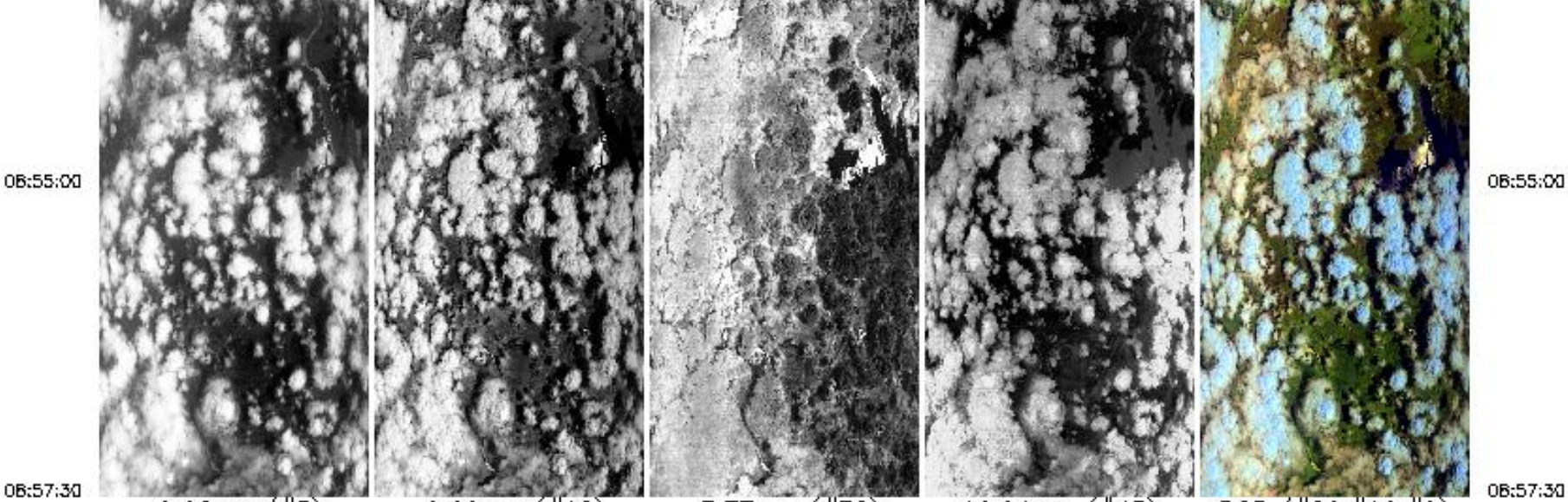
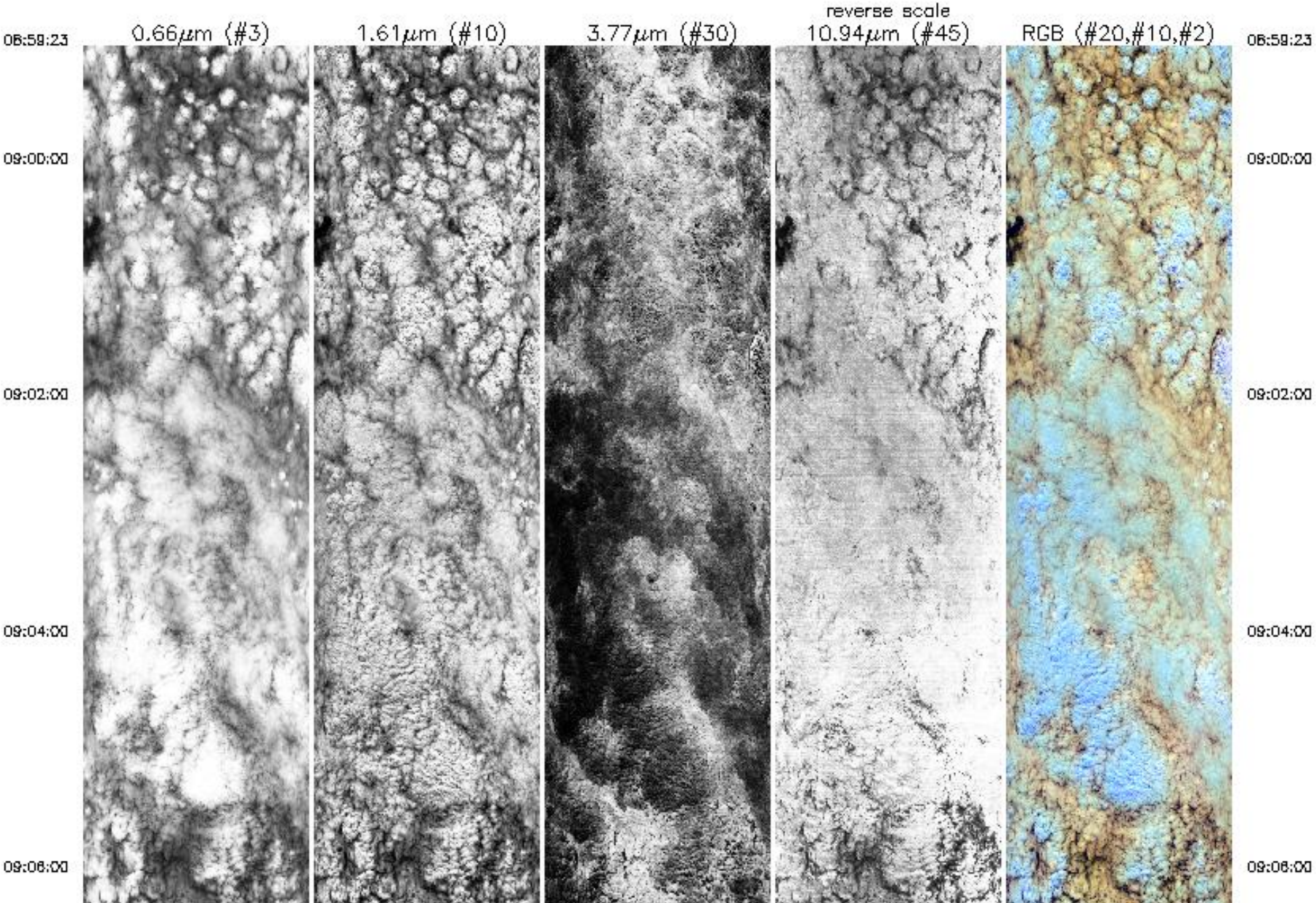
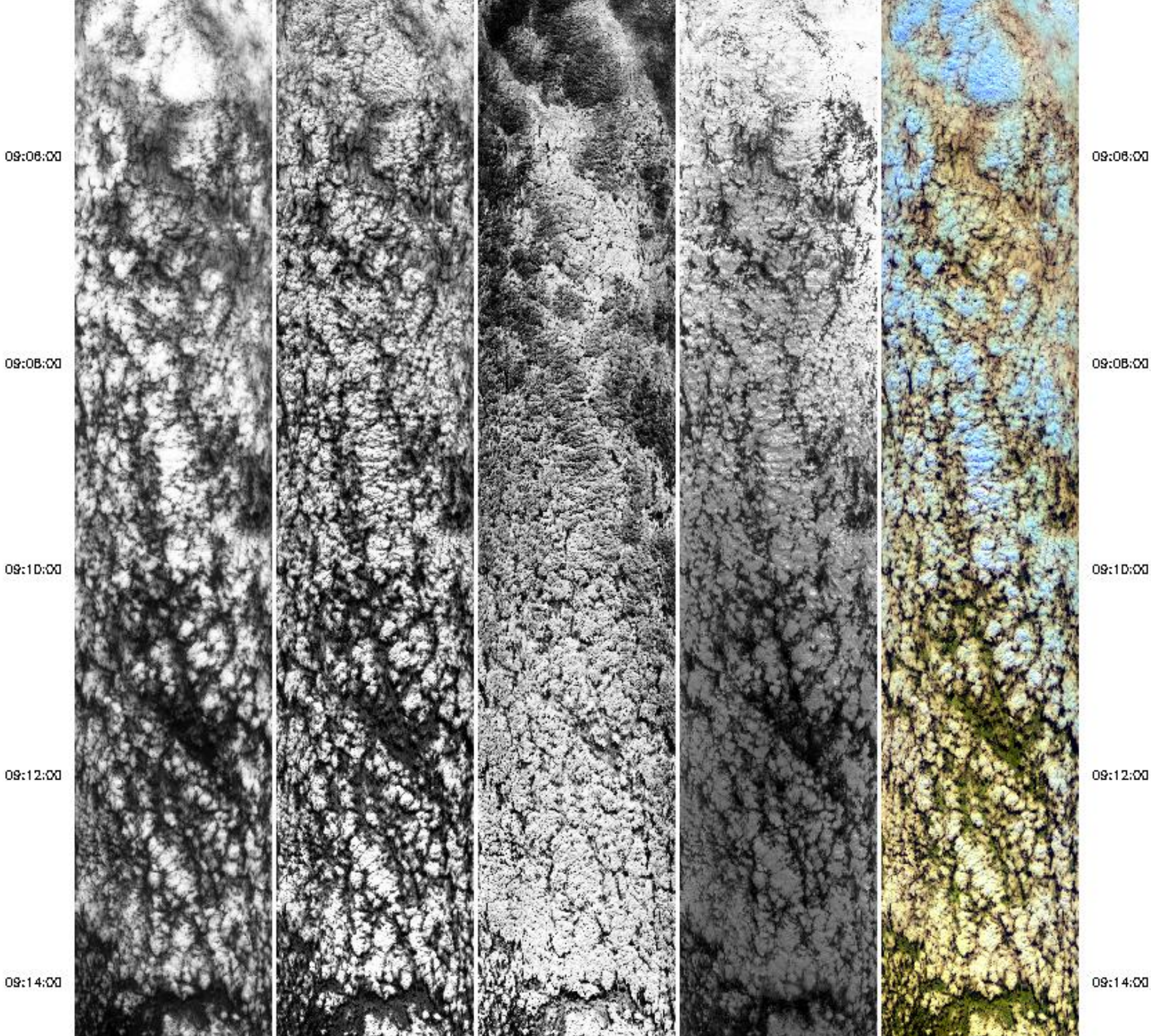
06:55:00



Upper Left Lat, Lon = −25.1°, 30.3°
Lower Right Lat, Lon = −25.2°, 32.4°
Aircraft Heading = 106.4°
Solar Zenith = 30.0°
GPS Altitude = 19636. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
Mozamb., Swazi.
Flight #00–179 Track #4

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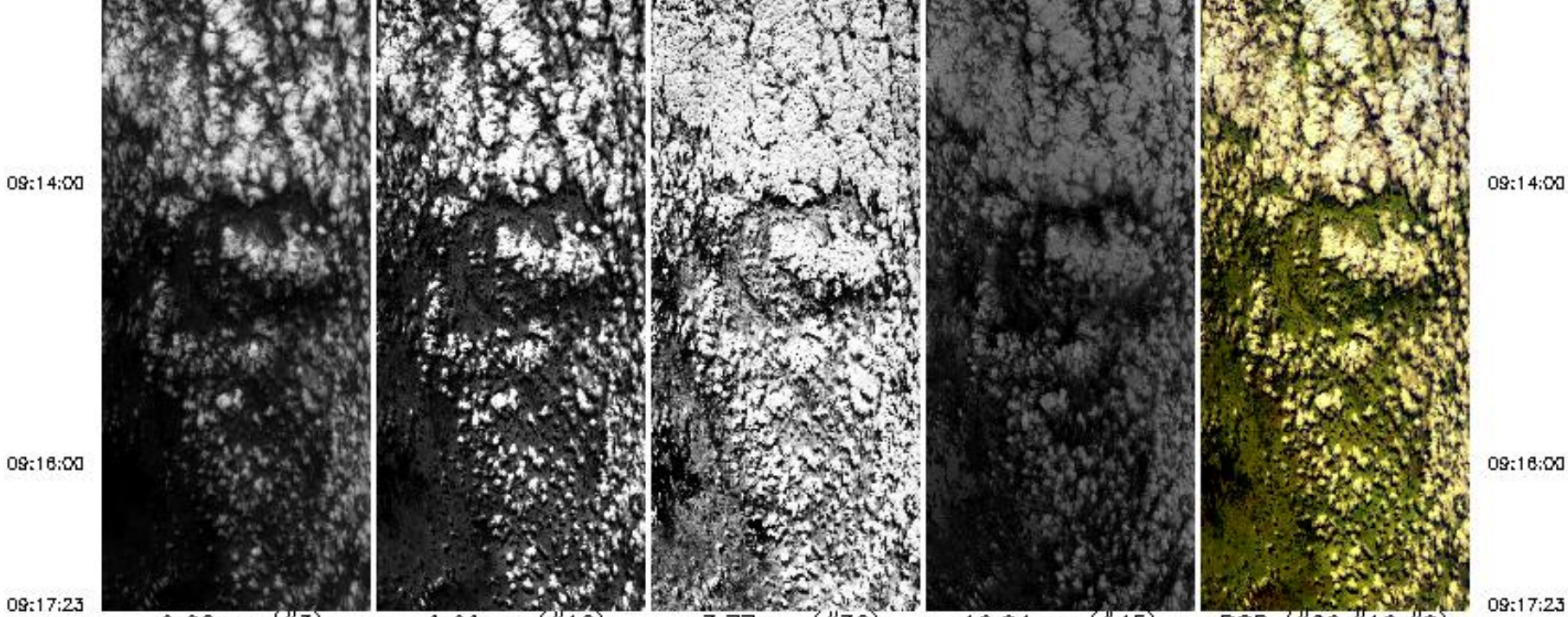
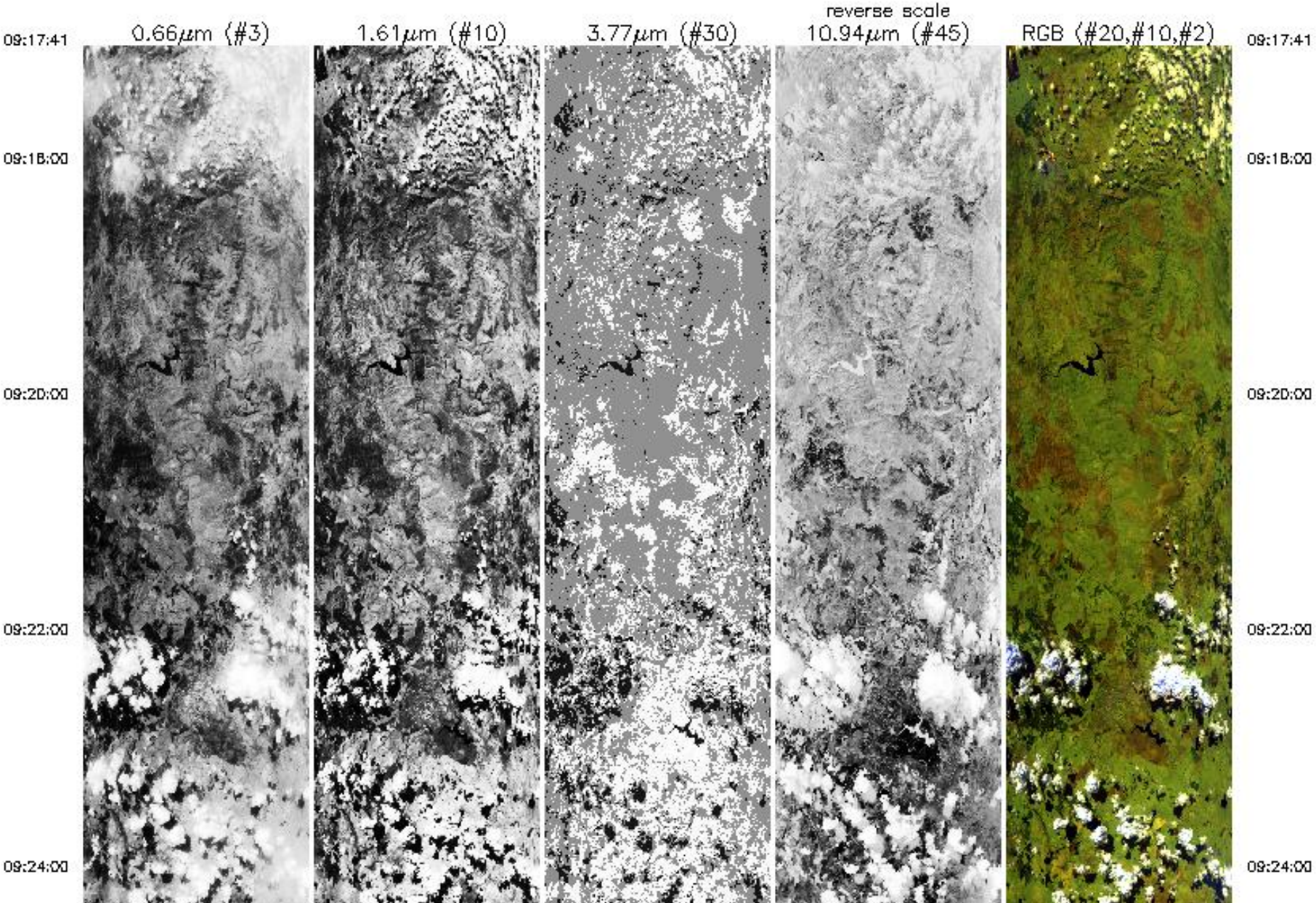
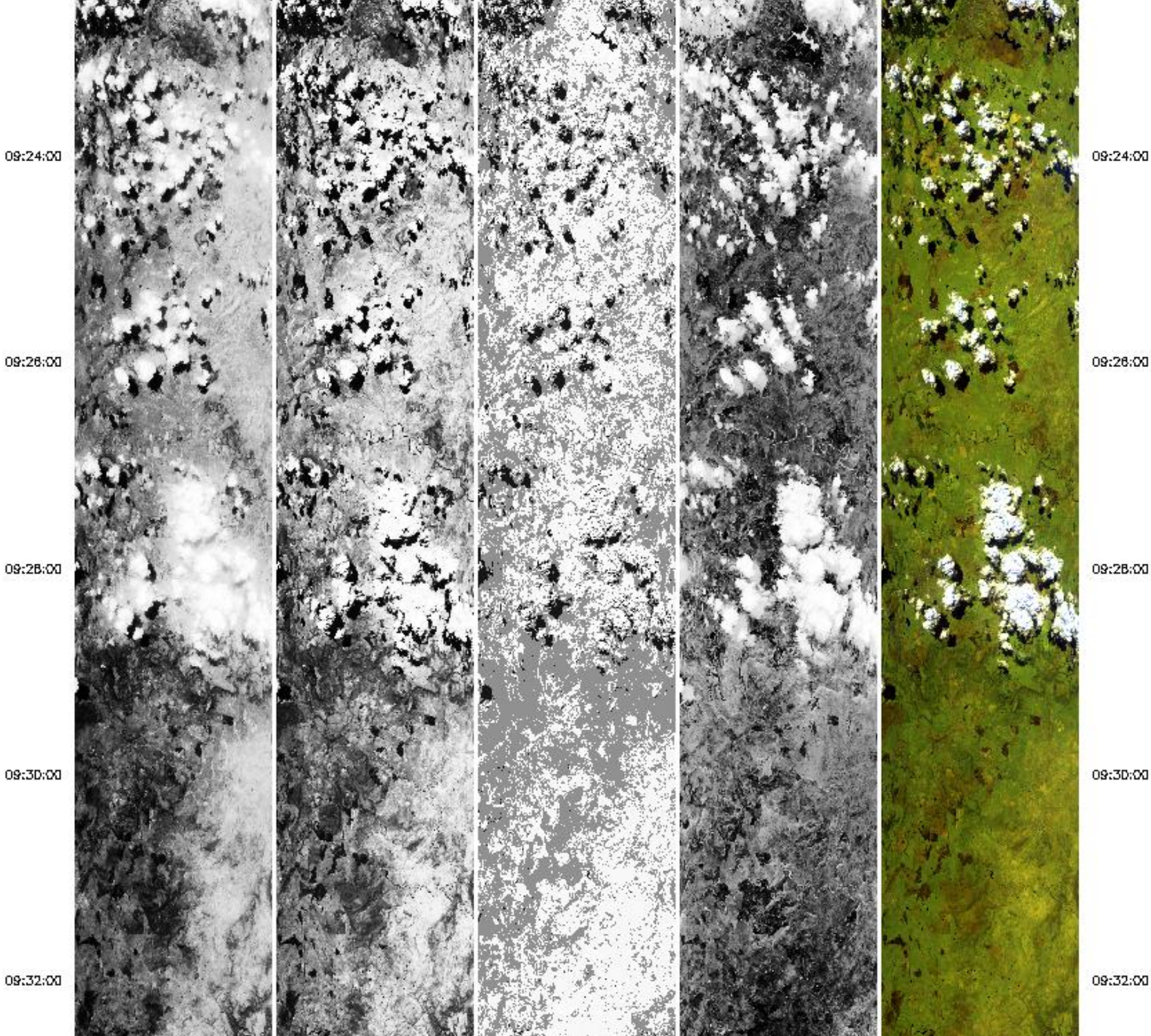


Upper Left Lat, Lon = −25.4°, 32.3°
Lower Right Lat, Lon = −27.4°, 31.5°
Aircraft Heading = 203.0°
Solar Zenith = 27.2°
GPS Altitude = 19814. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #5

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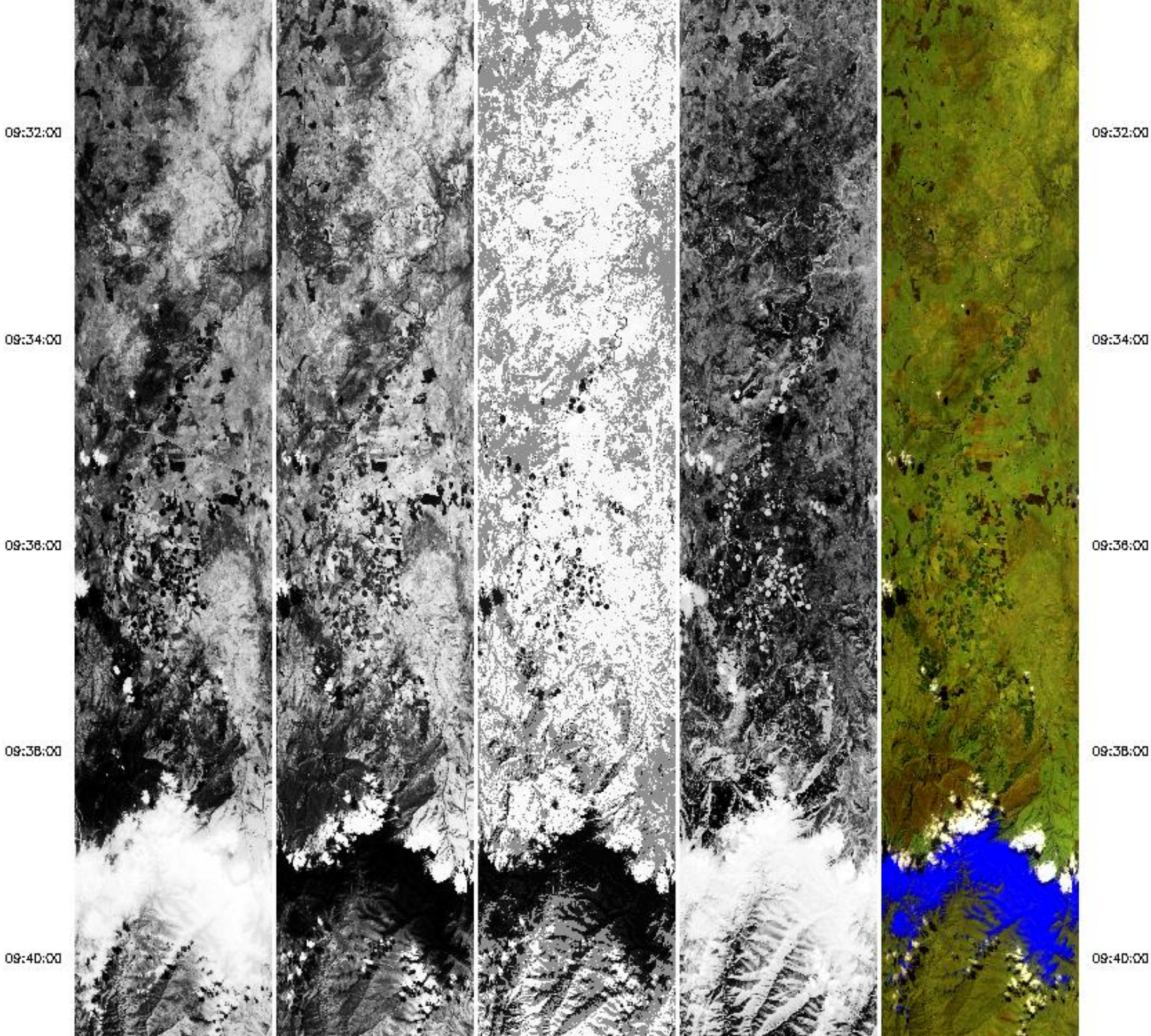
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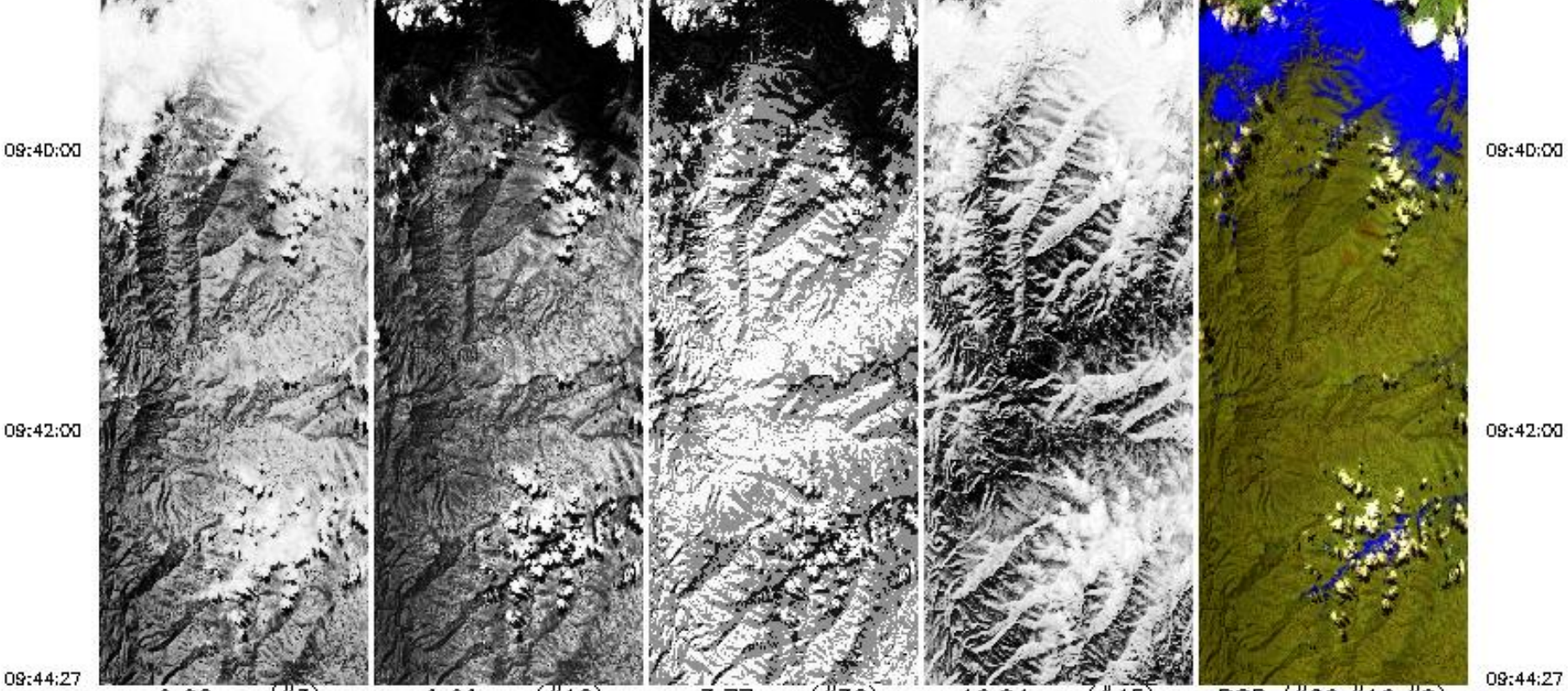
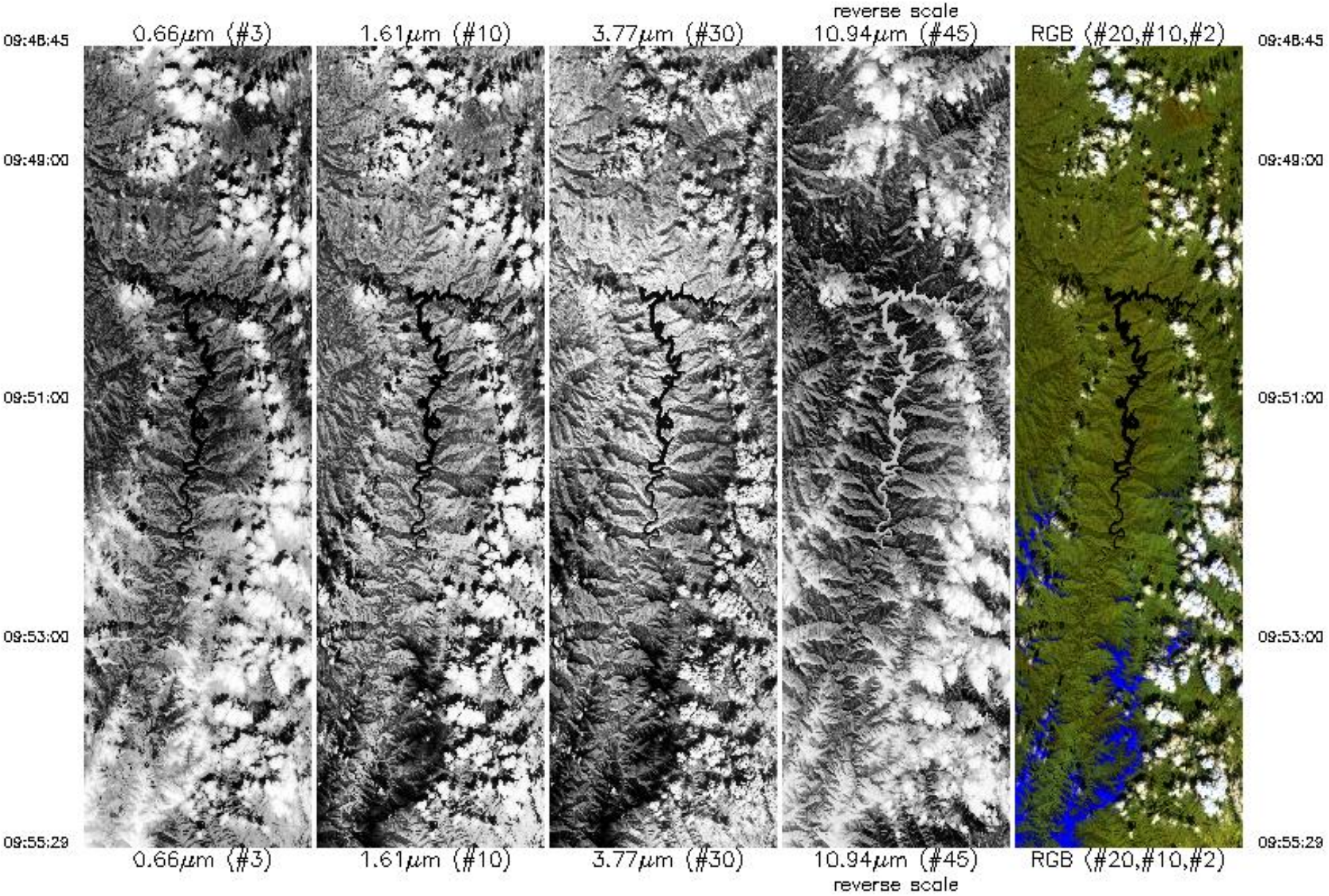
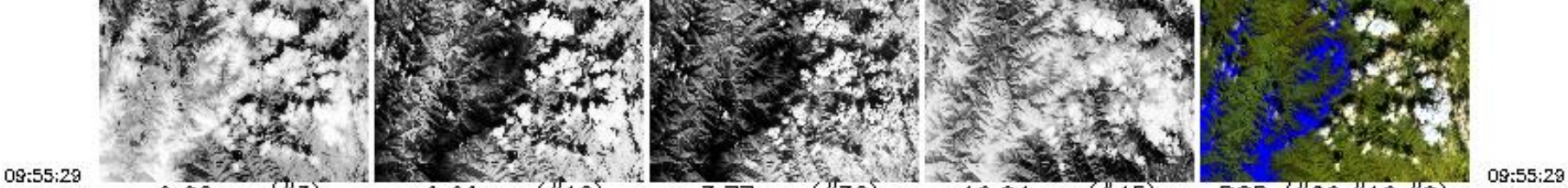


Upper Left Lat, Lon = −27.2°, 31.2°
Lower Right Lat, Lon = −29.6°, 29.0°
Aircraft Heading = 221.4°
Solar Zenith = 27.8°
GPS Altitude = 19969. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
Lesotho
Flight #00–179 Track #6





0.66μm (#3) 1.61μm (#10) 3.77μm (#30) 10.94μm (#45) RGB (#20,#10,#2)

reverse scale

Upper Left Lat, Lon = −29.6°, 28.7°

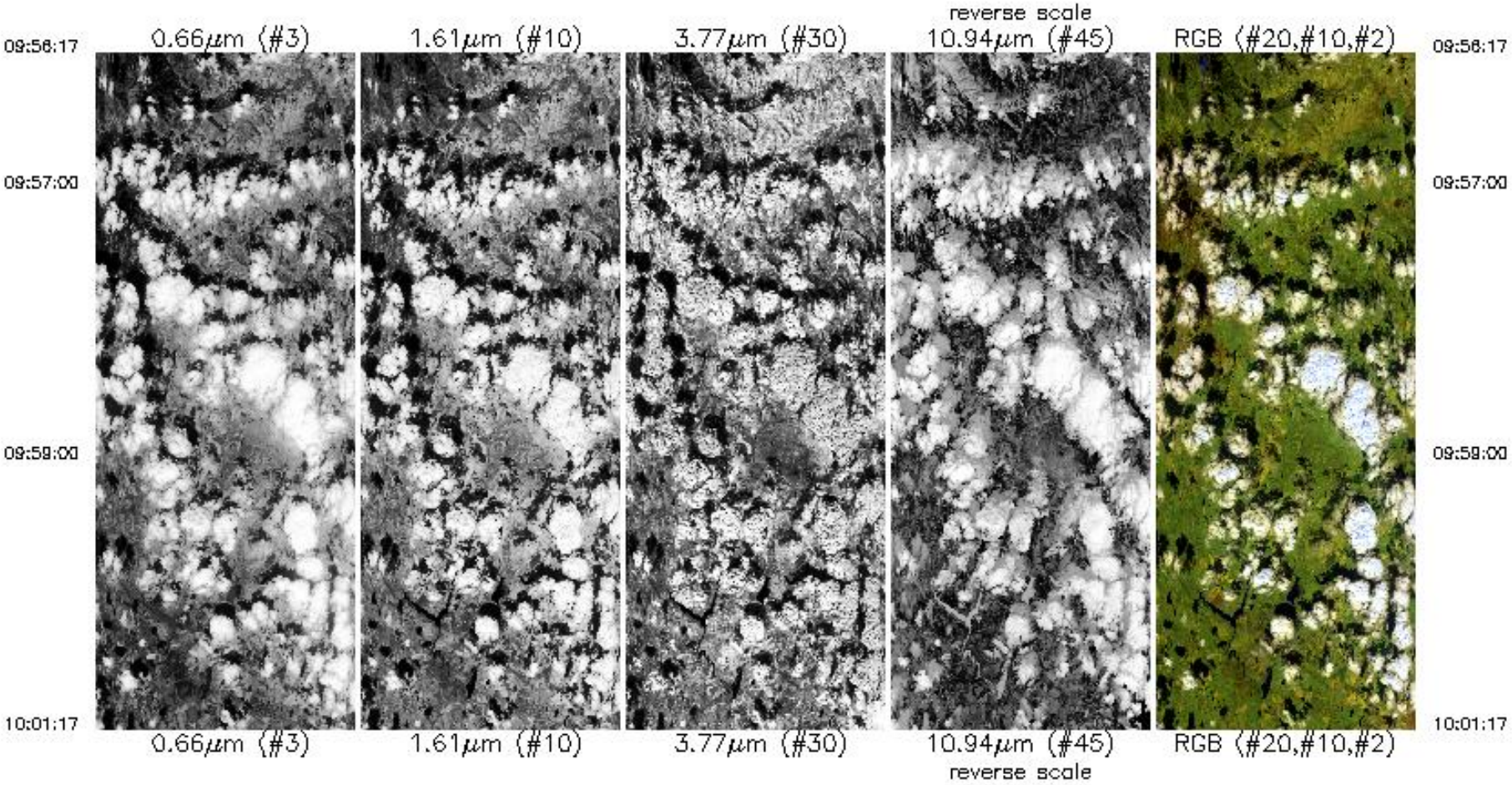
Lower Right Lat, Lon = −28.8°, 28.3°

Aircraft Heading = 8.8°

Solar Zenith = 29.4°

GPS Altitude = 19926. m (MSL)

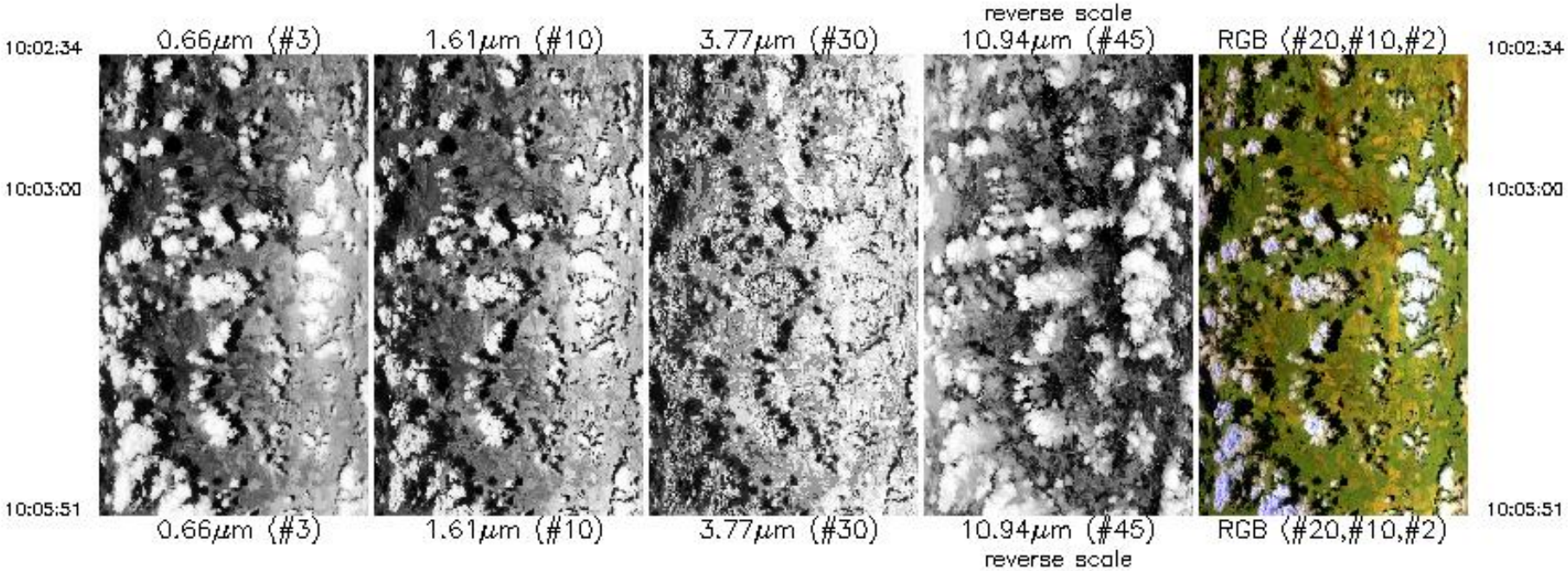
MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #7



Upper Left Lat, Lon = −28.6°, 28.7°
Lower Right Lat, Lon = −28.2°, 28.1°
Aircraft Heading = 339.6°
Solar Zenith = 28.3°
GPS Altitude = 20048. m (MSL)

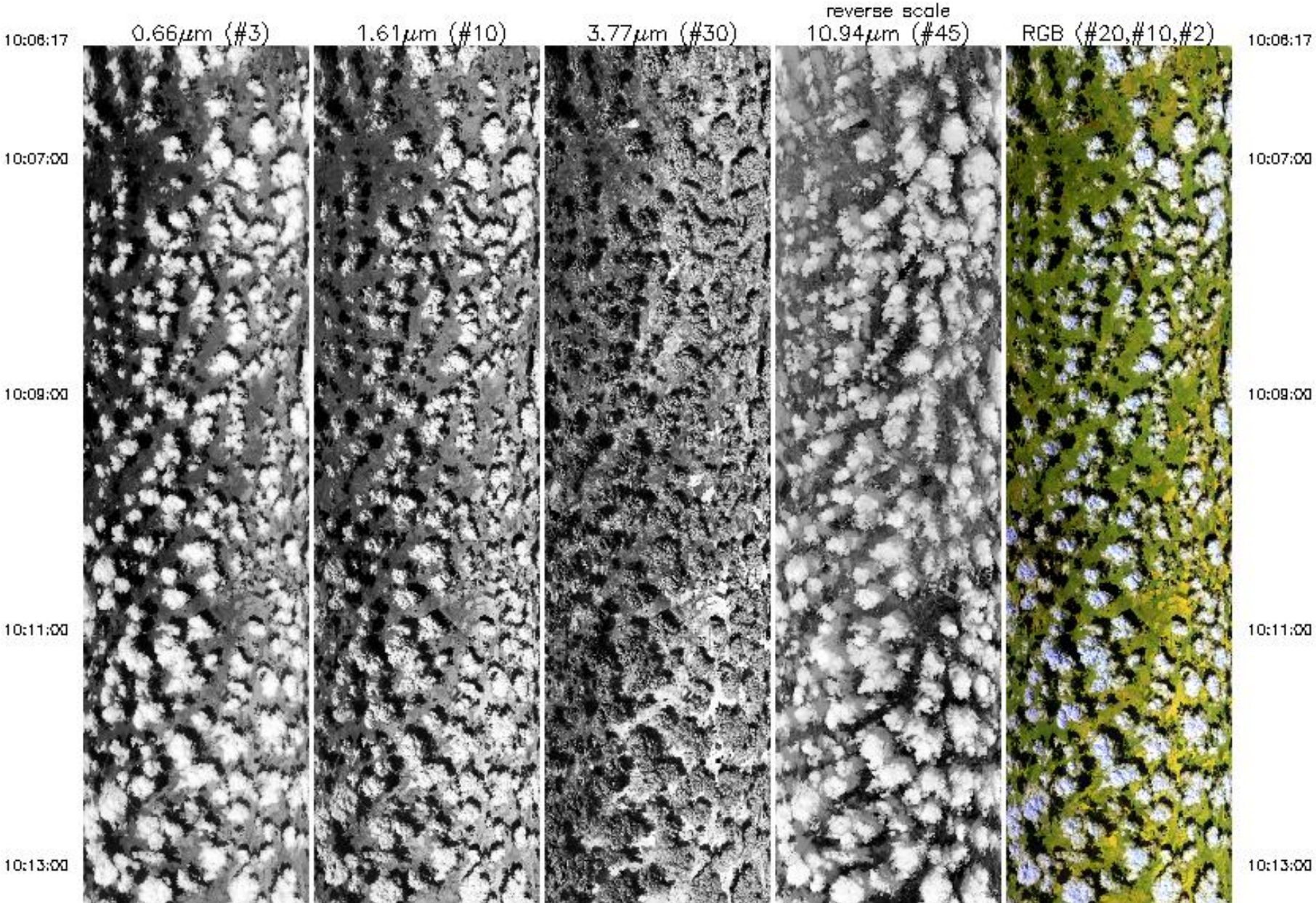
Upper Left Lat, Lon = −28.6°, 28.7°
Lower Right Lat, Lon = −28.2°, 28.1°
Aircraft Heading = 339.6°
Solar Zenith = 28.3°
GPS Altitude = 20048. m (MSL)

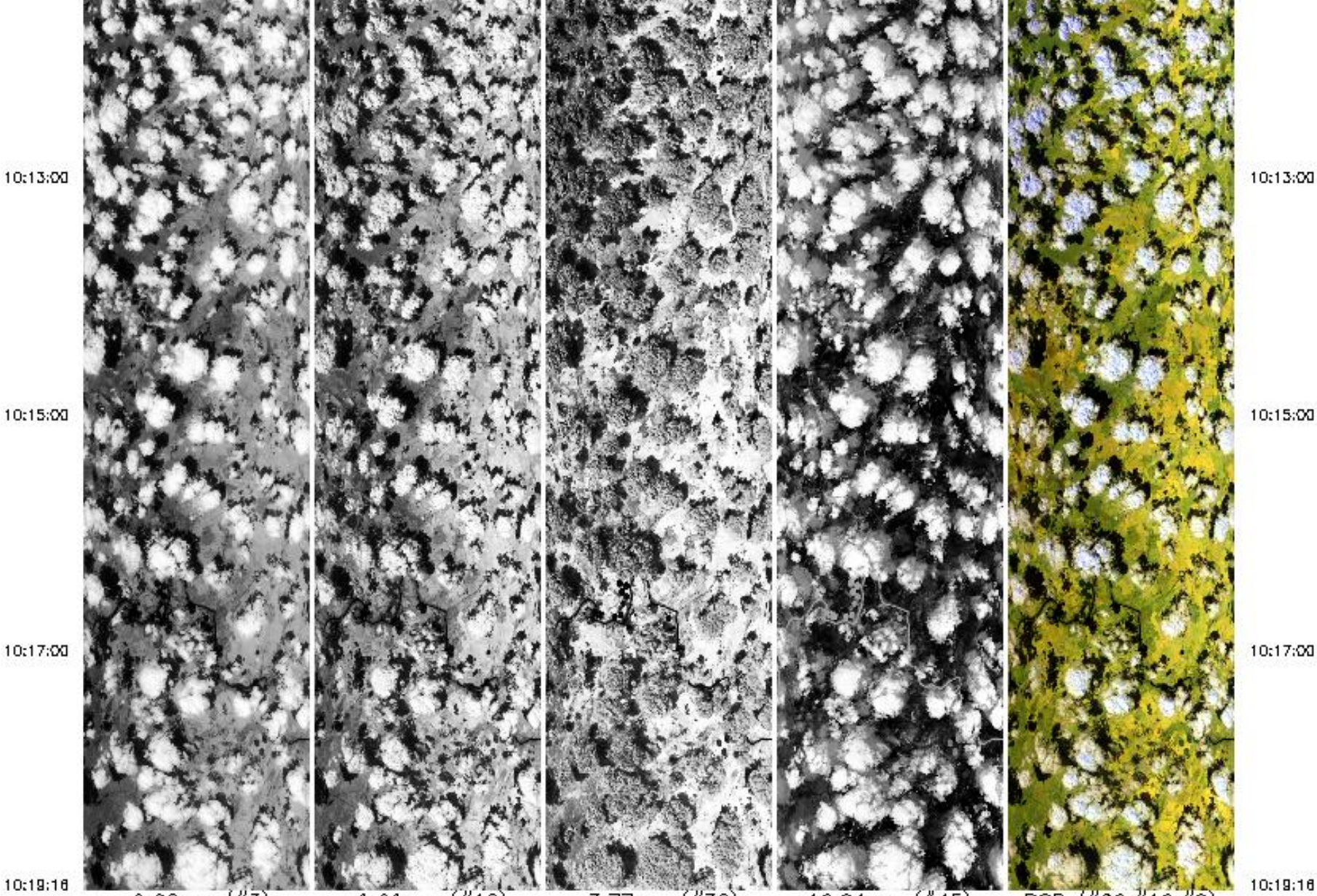
MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #8



Upper Left Lat, Lon = −27.9°, 28.2°
Lower Right Lat, Lon = −28.2°, 27.7°
Aircraft Heading = 279.0°
Solar Zenith = 27.6°
GPS Altitude = 20054. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #9





Upper Left Lat, Lon = −27.8°, 27.8°
Lower Right Lat, Lon = −27.4°, 26.1°
Aircraft Heading = 295.9°
Solar Zenith = 27.6°
GPS Altitude = 20138. m (MSL)

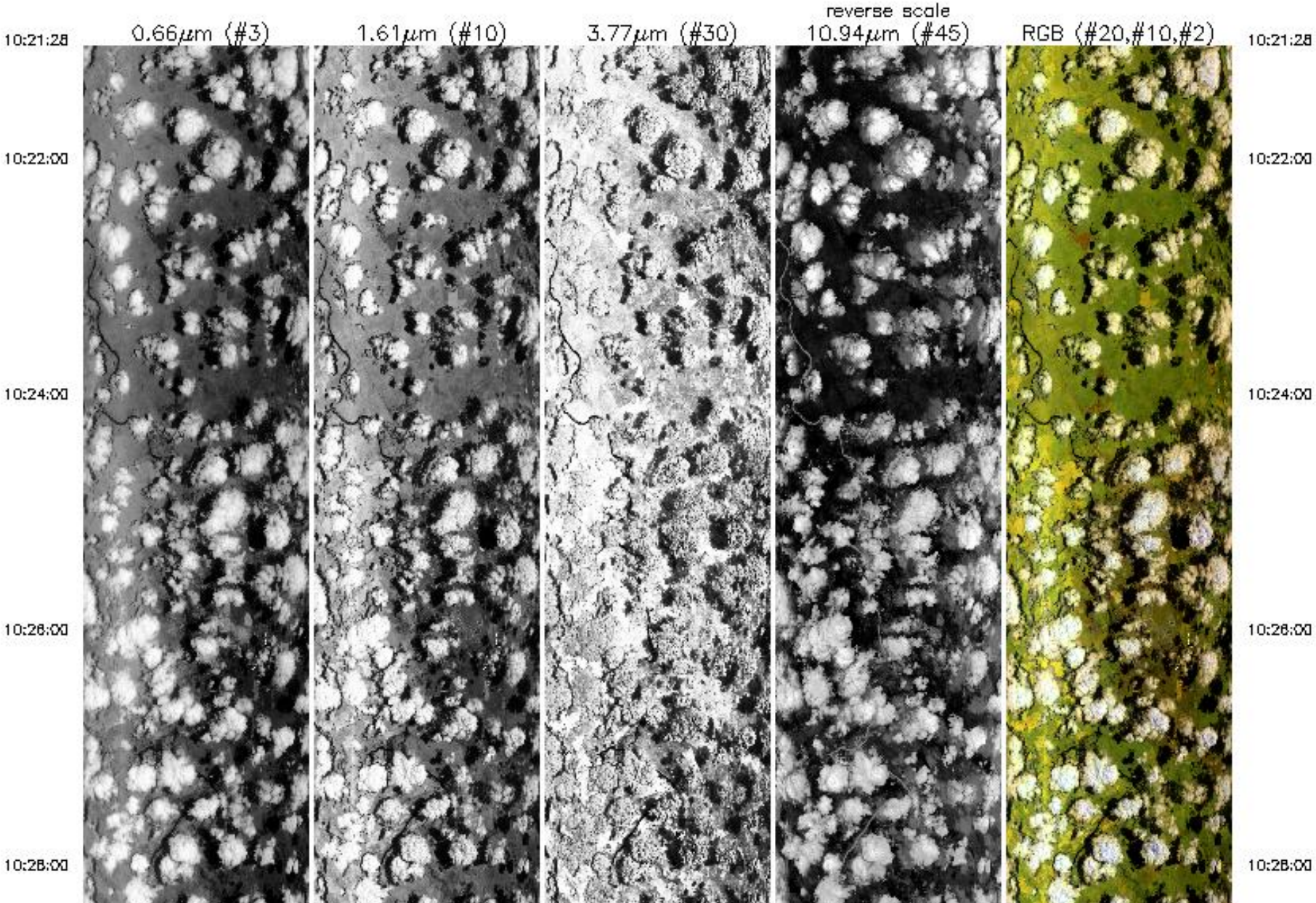
Lower Right Lat, Lon = −27.4°, 26.1°

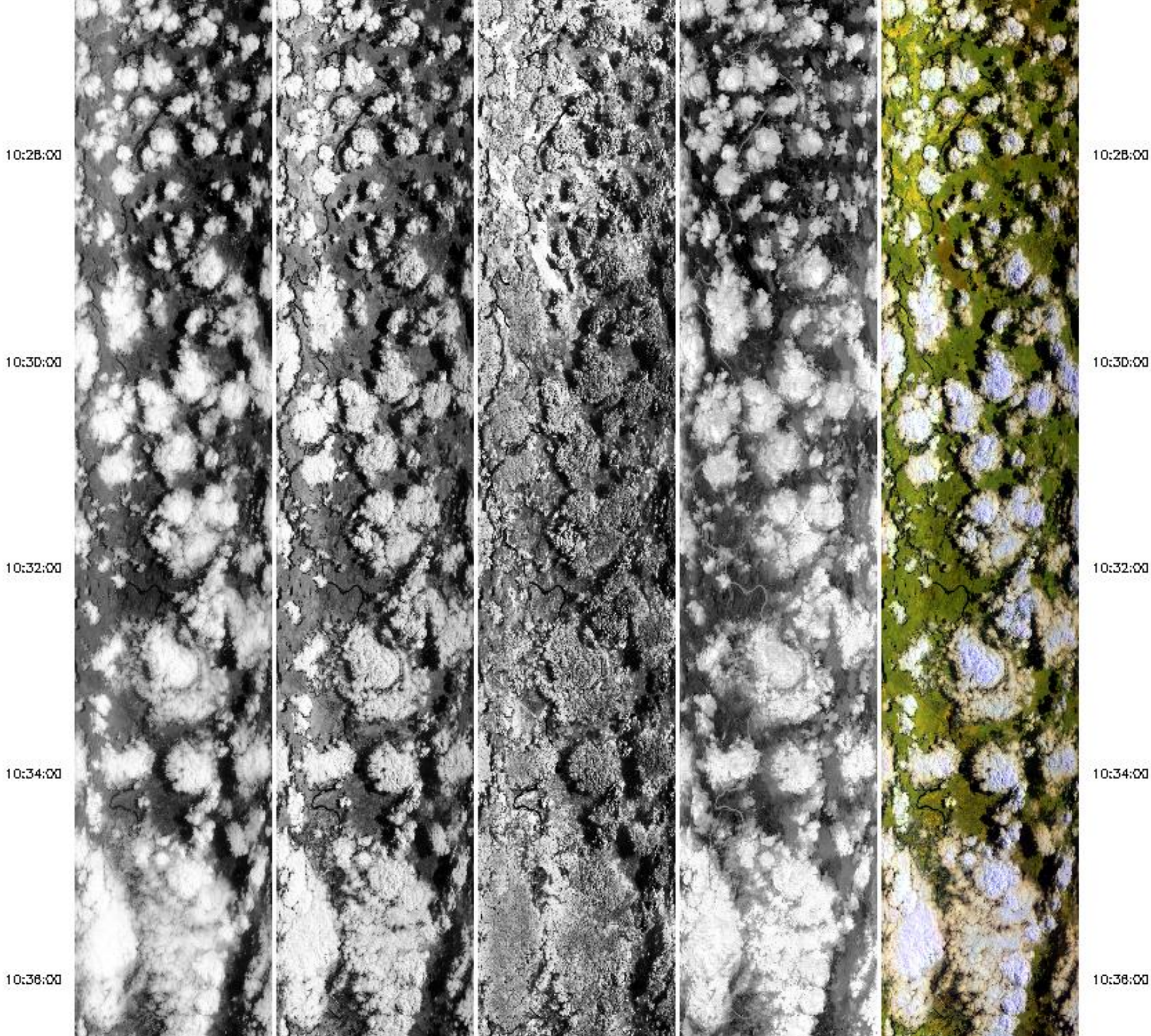
Aircraft Heading = 295.9°

Solar Zenith = 27.6°

GPS Altitude = 20138. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #10

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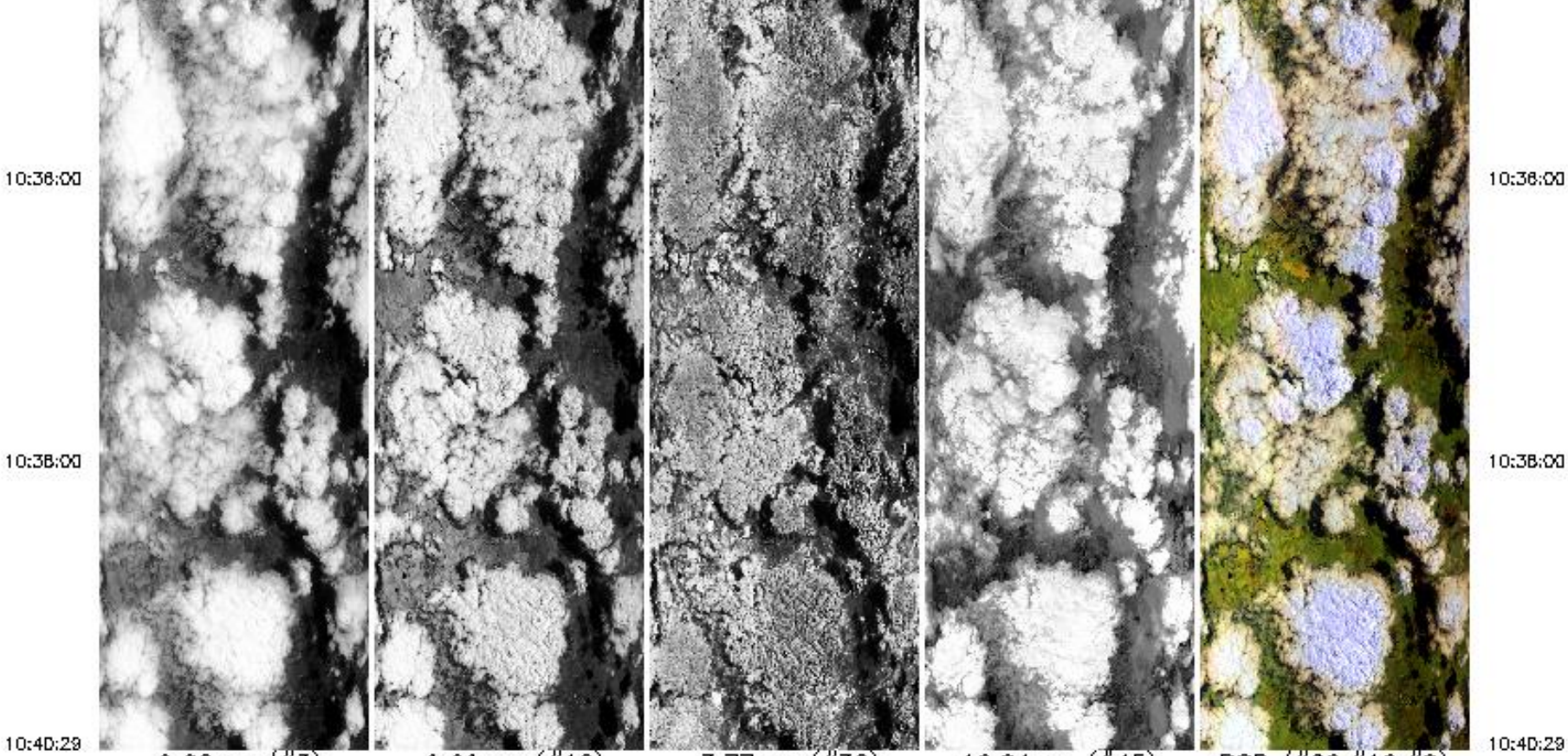
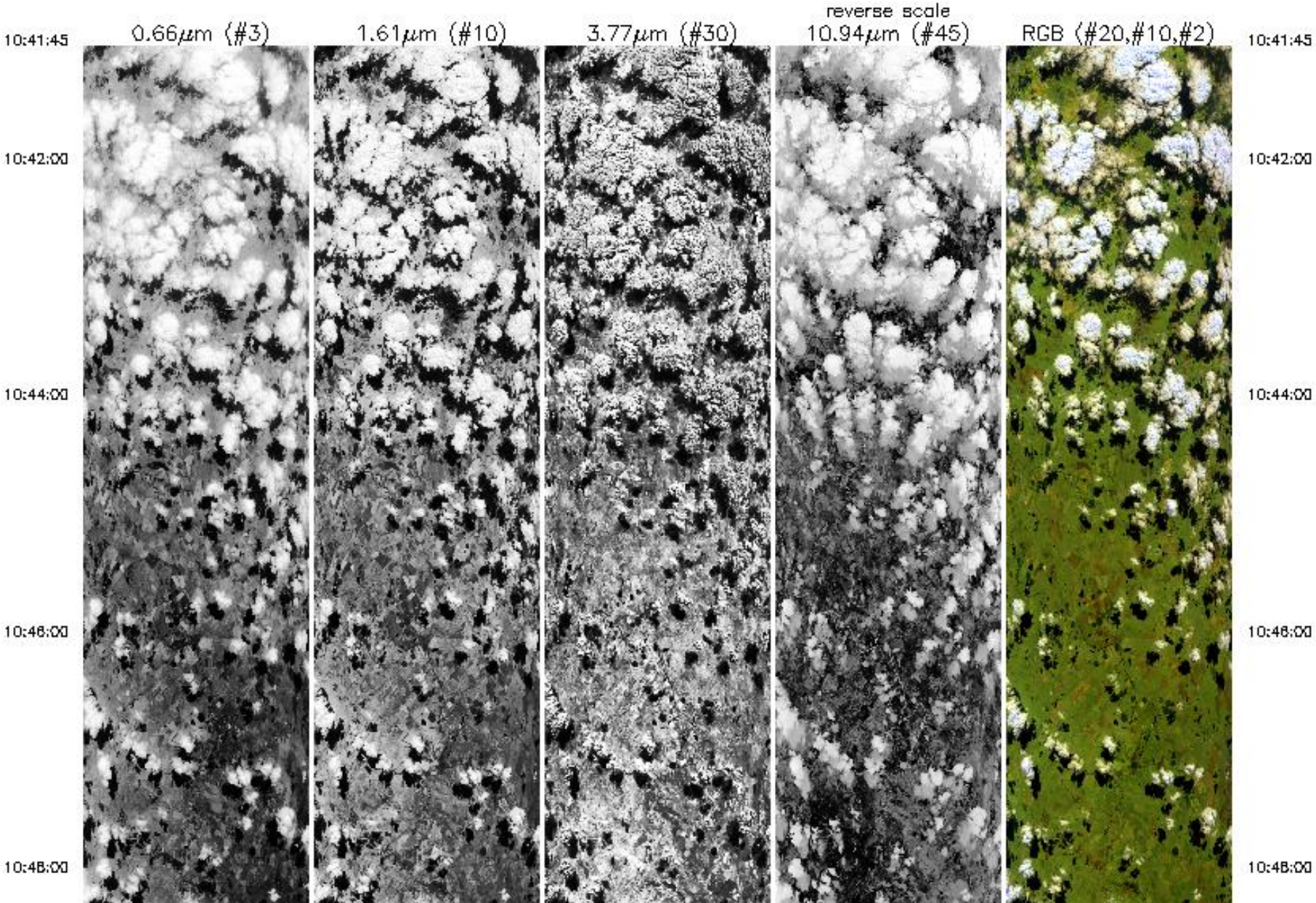
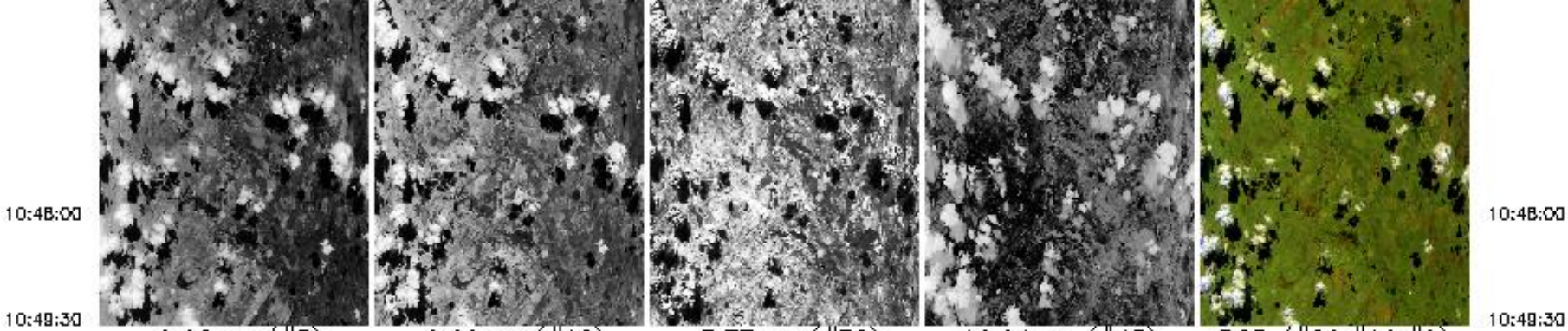


Upper Left Lat, Lon = −27.2°, 26.2°
Lower Right Lat, Lon = −26.4°, 28.4°
Aircraft Heading = 80.1°
Solar Zenith = 27.1°
GPS Altitude = 20236. m (MSL)

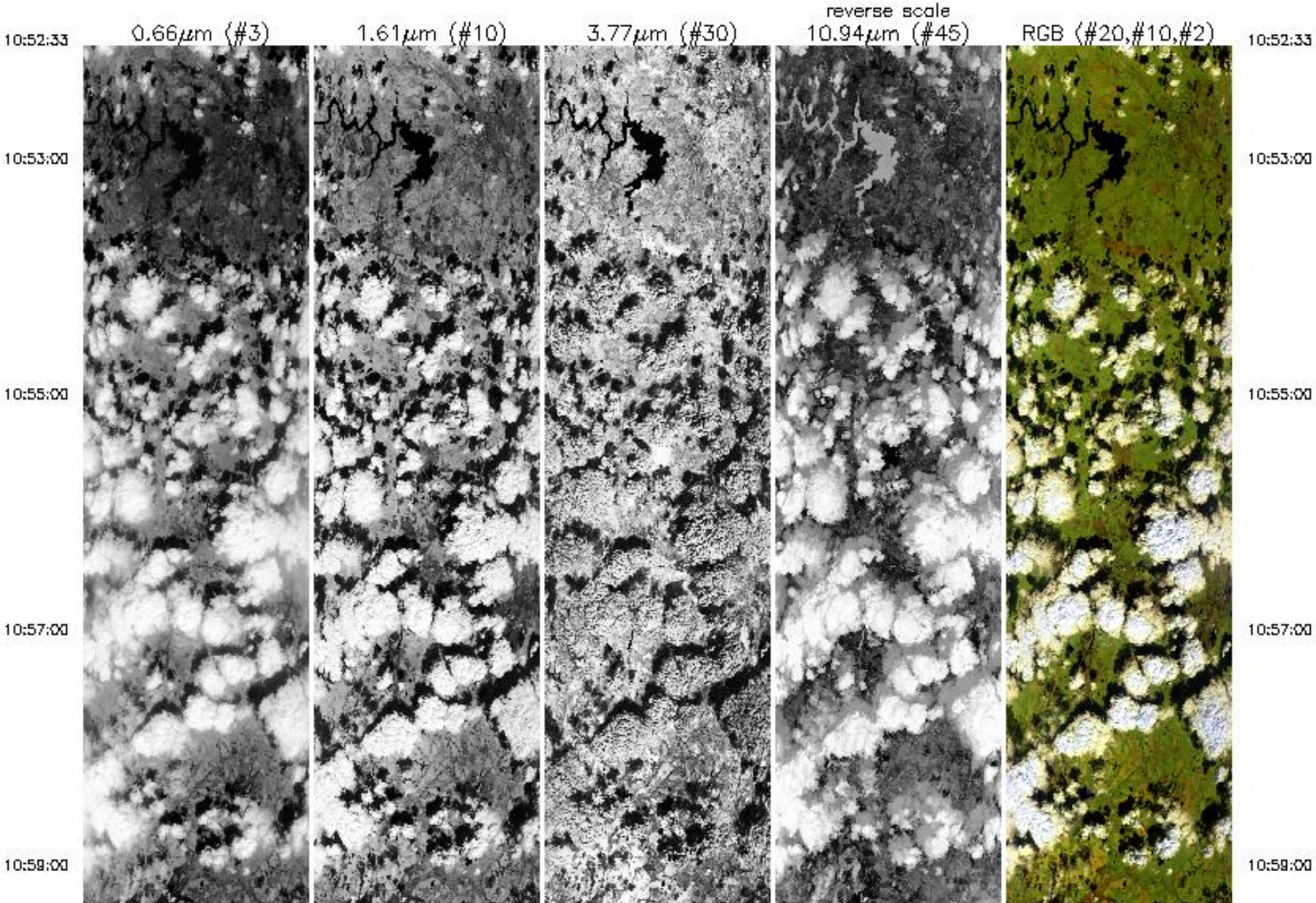
MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #11

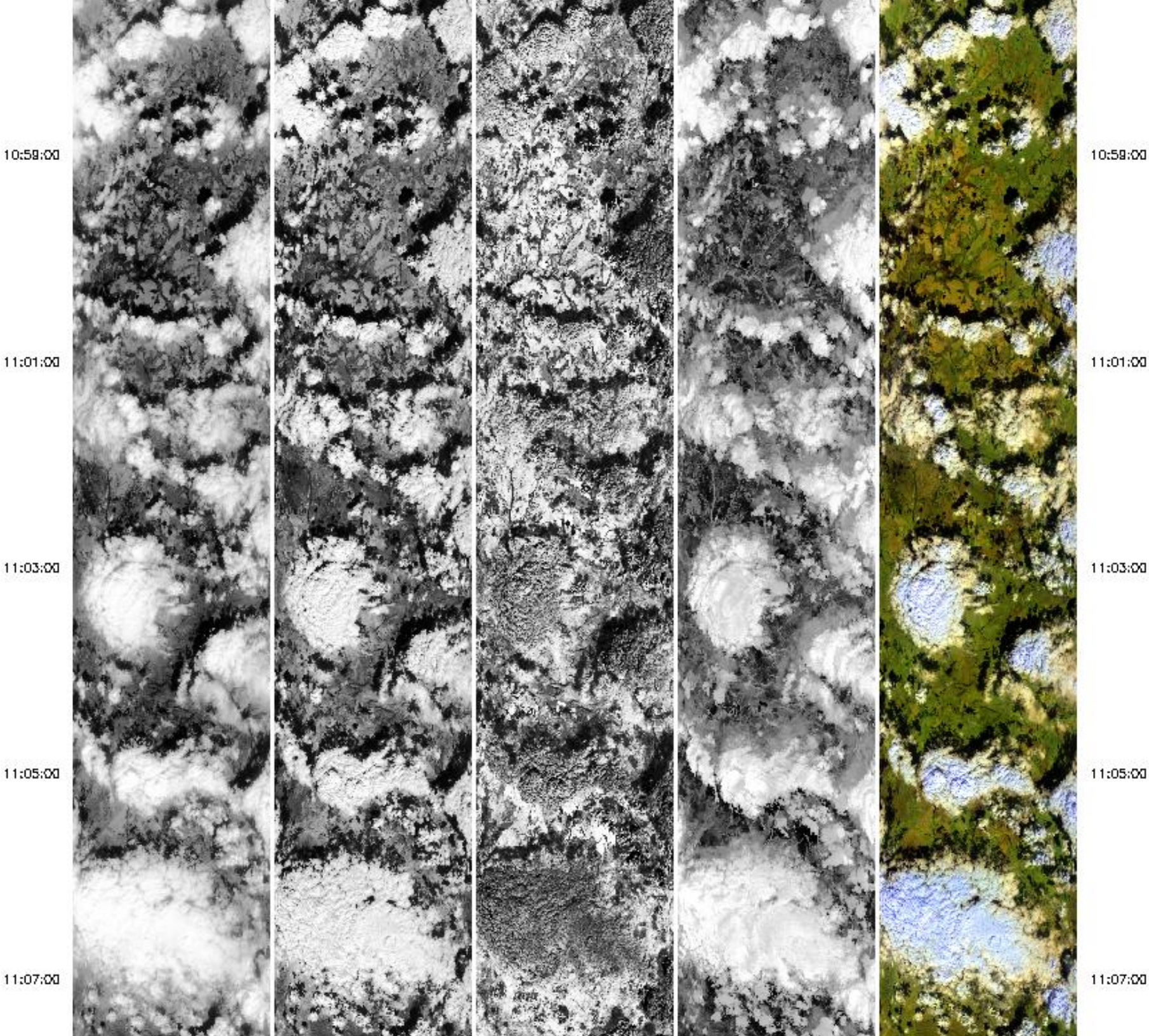




Upper Left Lat, Lon = −26.7°, 28.4°
Lower Right Lat, Lon = −27.1°, 29.3°
Aircraft Heading = 138.6°
Solar Zenith = 28.4°
GPS Altitude = 20313. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #12

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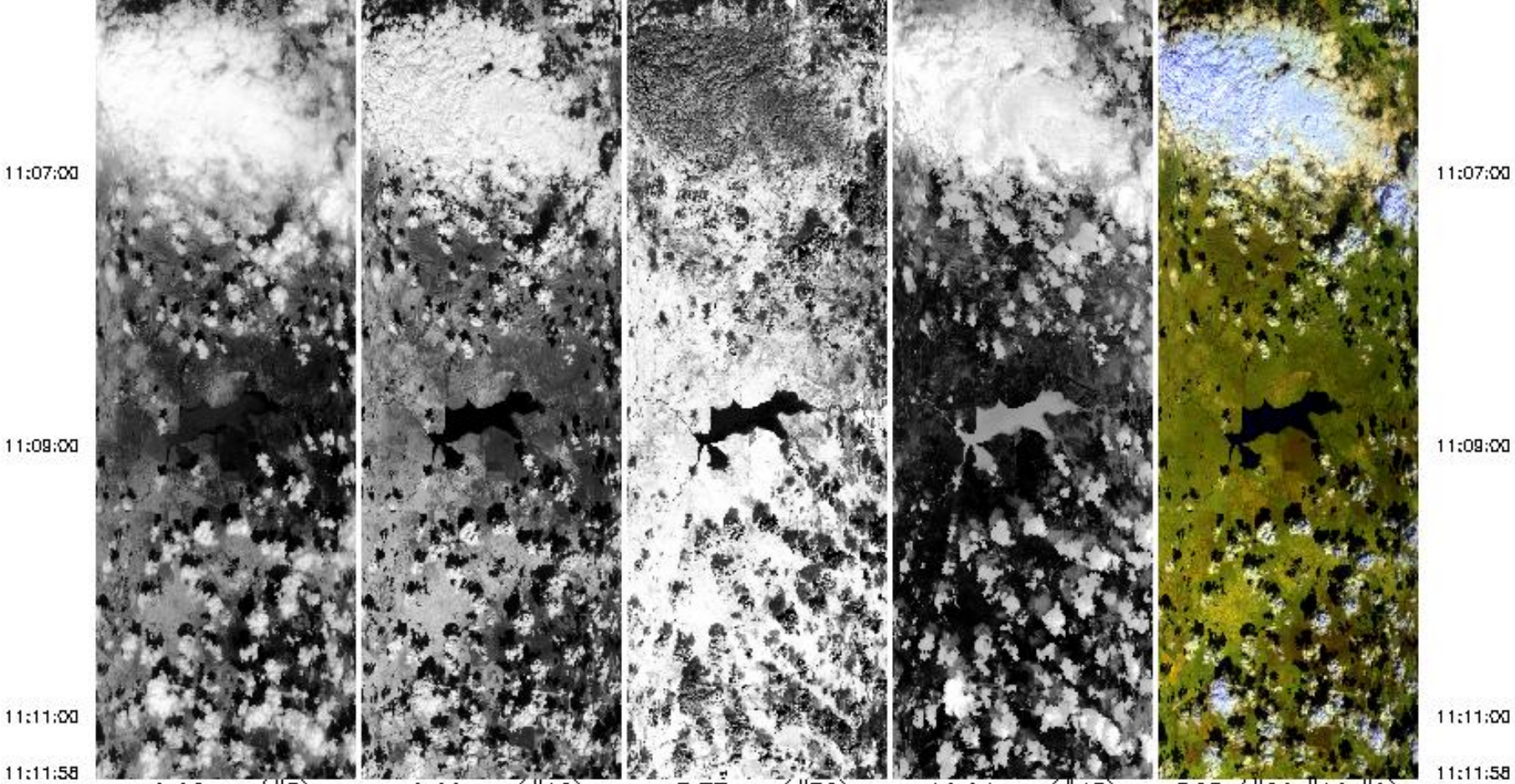


Upper Left Lat, Lon = −27.0°, 29.5°

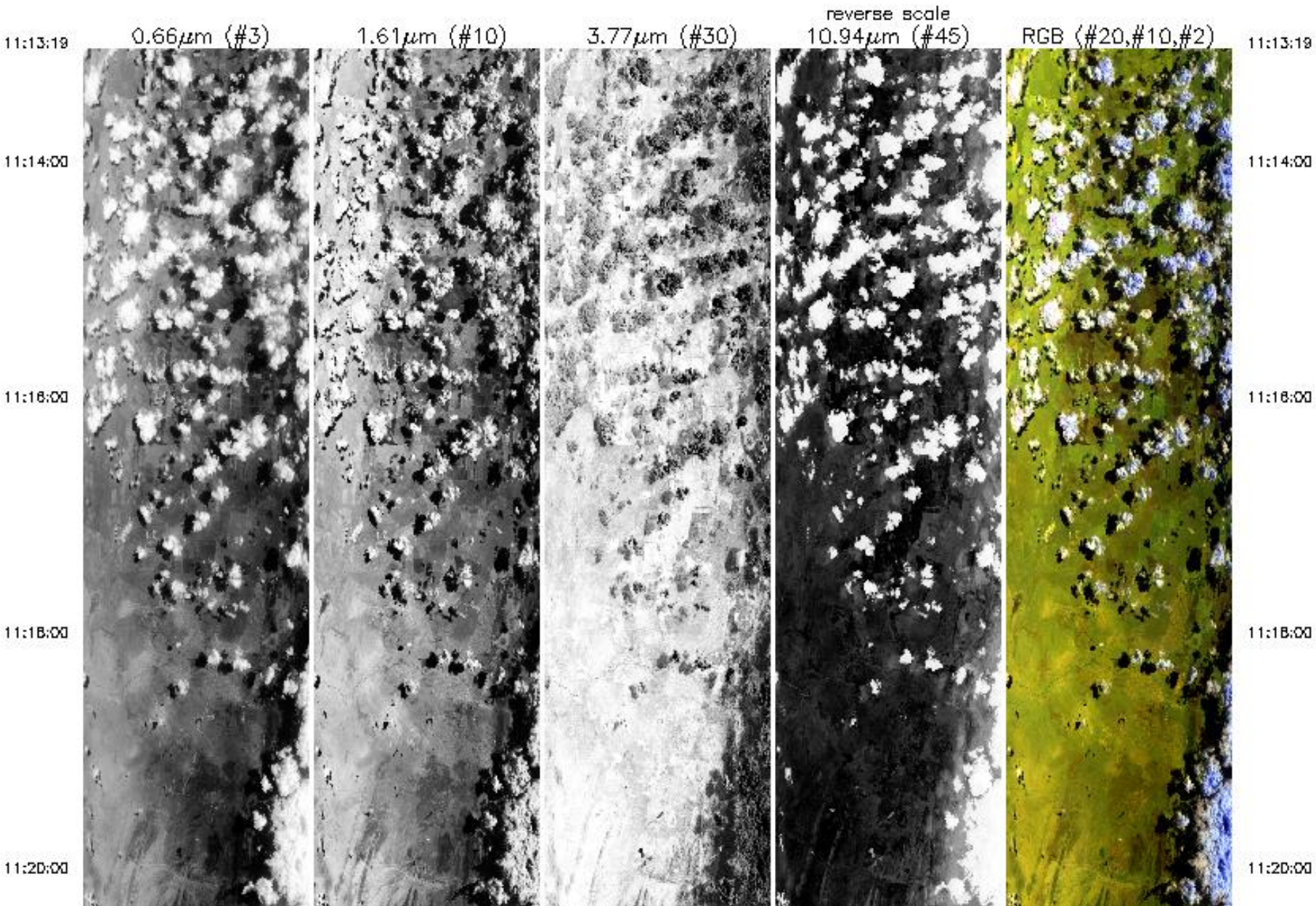
Lower Right Lat, Lon = −24.9°, 28.6°

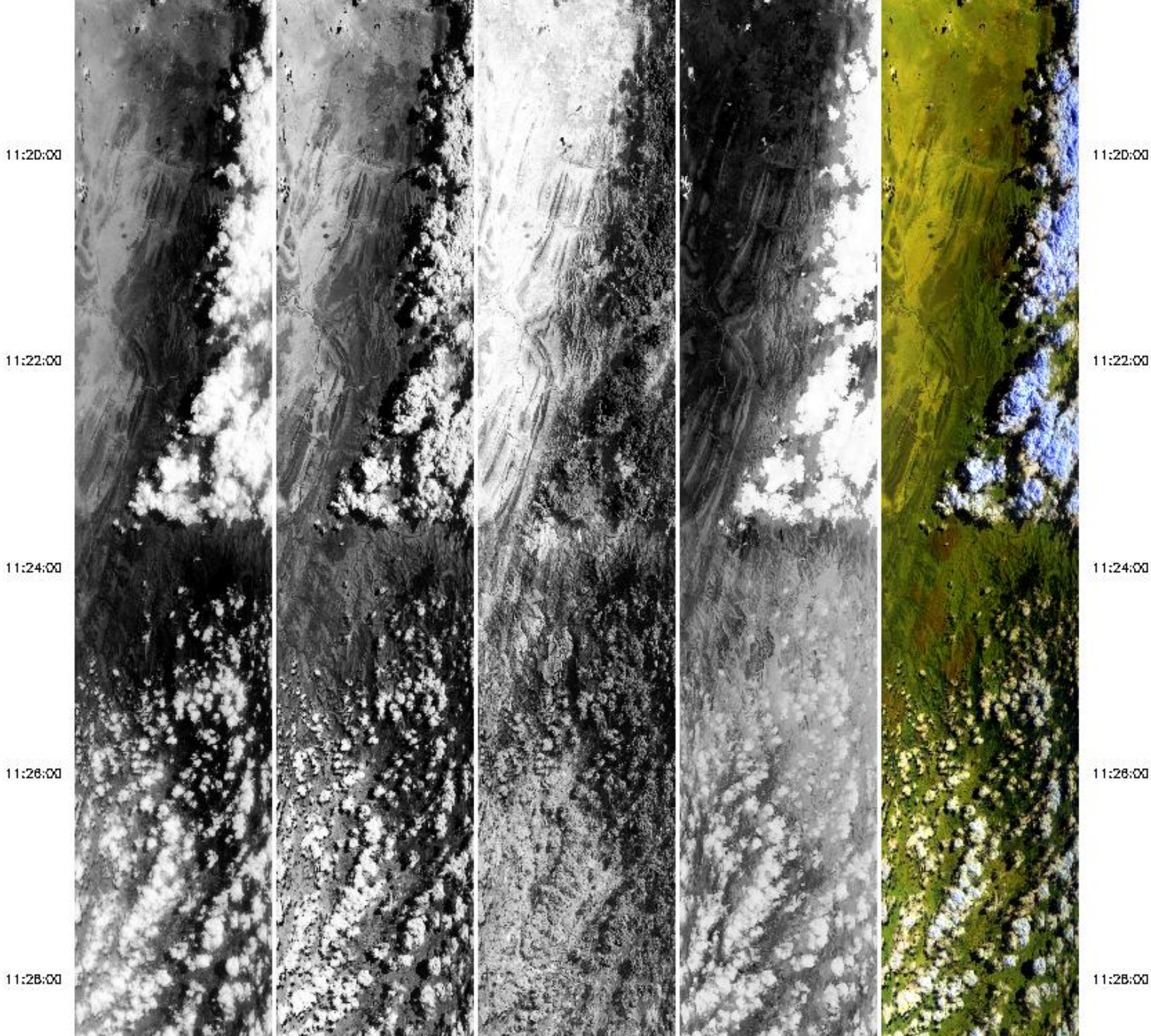
Aircraft Heading = 349.9°

Solar Zenith = 30.2°

GPS Altitude = 20370. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #13

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11:20:00
11:22:00
11:24:00
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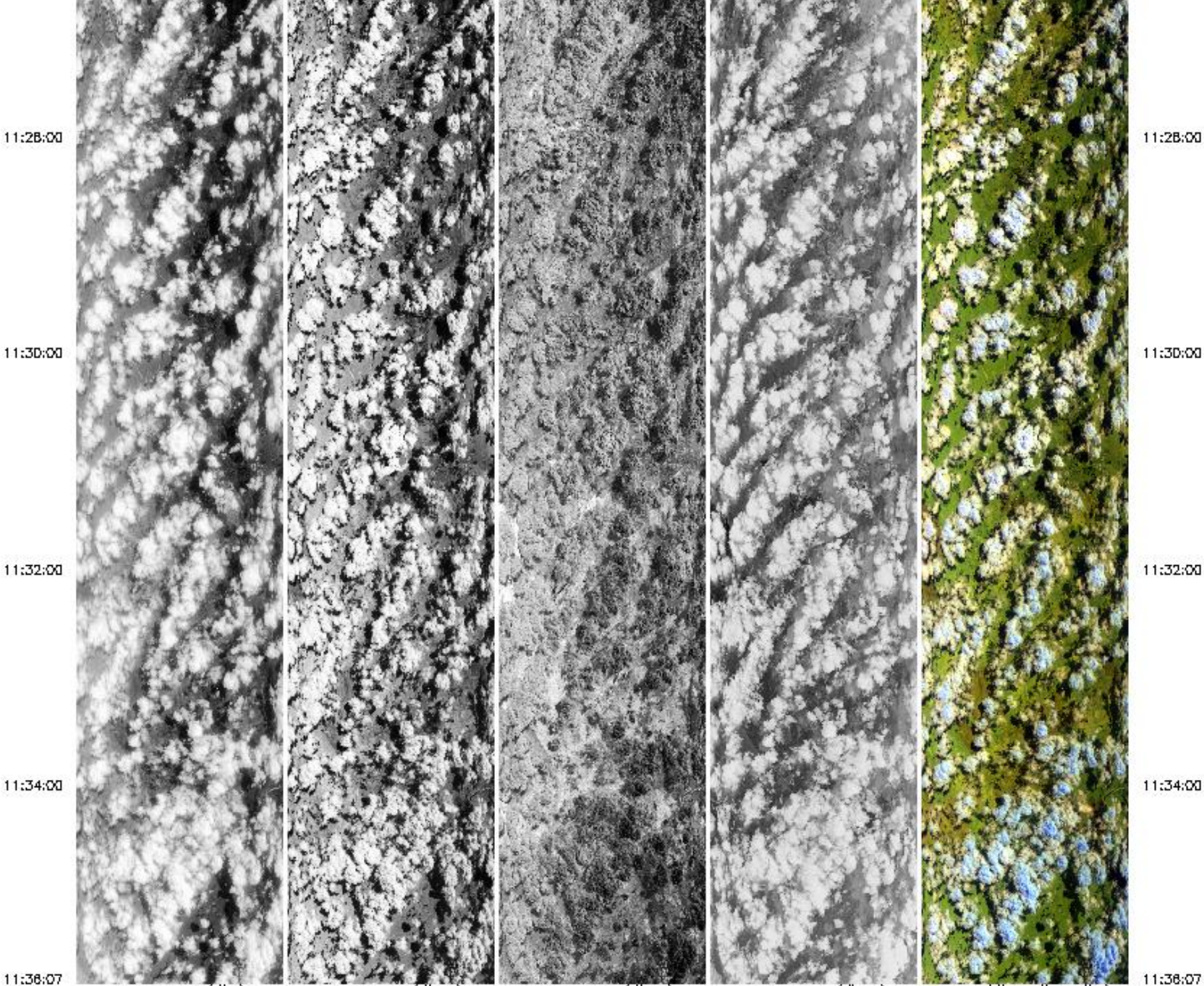
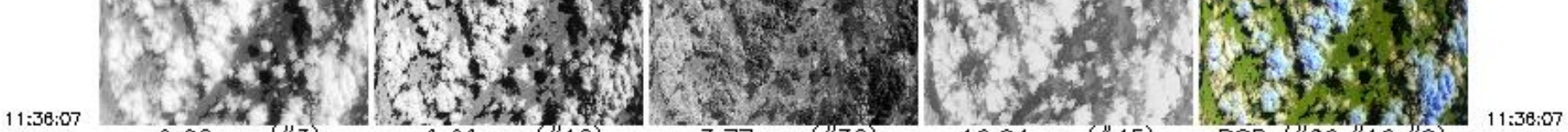
11:28:00



Upper Left Lat, Lon = −24.8°, 28.9°
Lower Right Lat, Lon = −23.3°, 31.1°



0.66μm (#3) 1.61μm (#10) 3.77μm (#30) 10.94μm (#45) RGB (#20,#10,#2)

reverse scale

Upper Left Lat, Lon = −24.8°, 28.9°

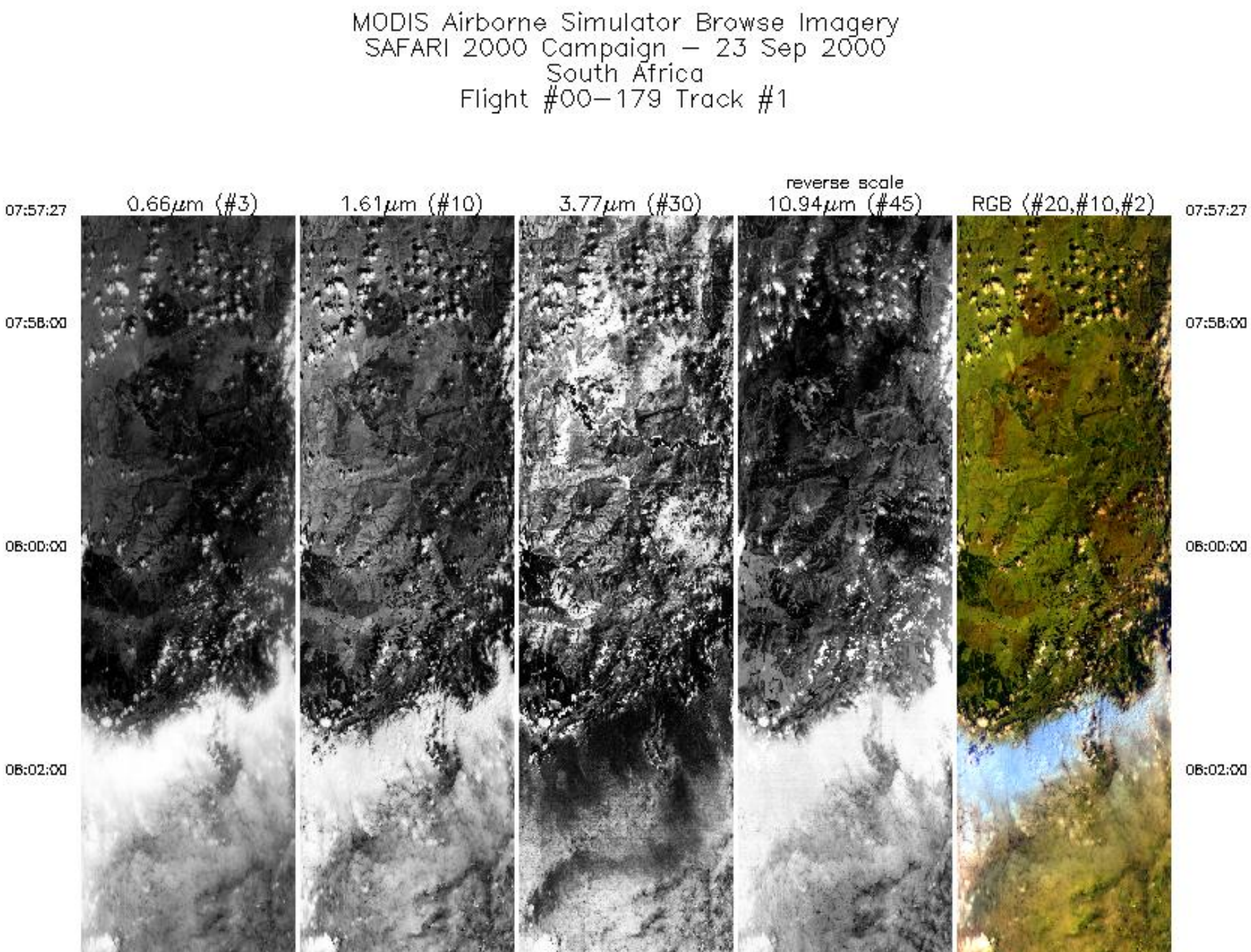
Lower Right Lat, Lon = −23.3°, 31.1°

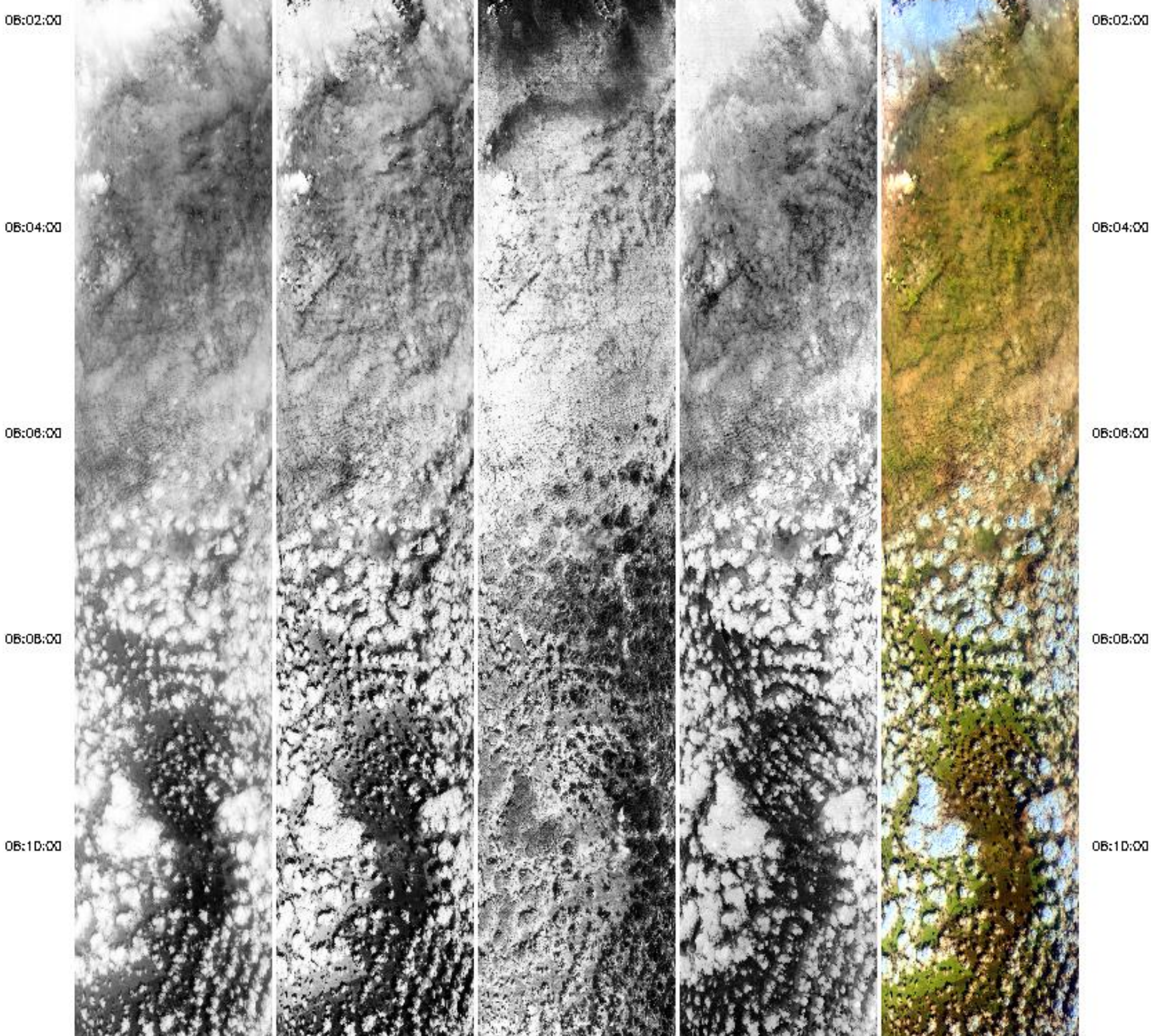
Aircraft Heading = 56.2°

Solar Zenith = 30.8°

GPS Altitude = 19876. m (MSL)

Flight #00-179 Browse Imagery

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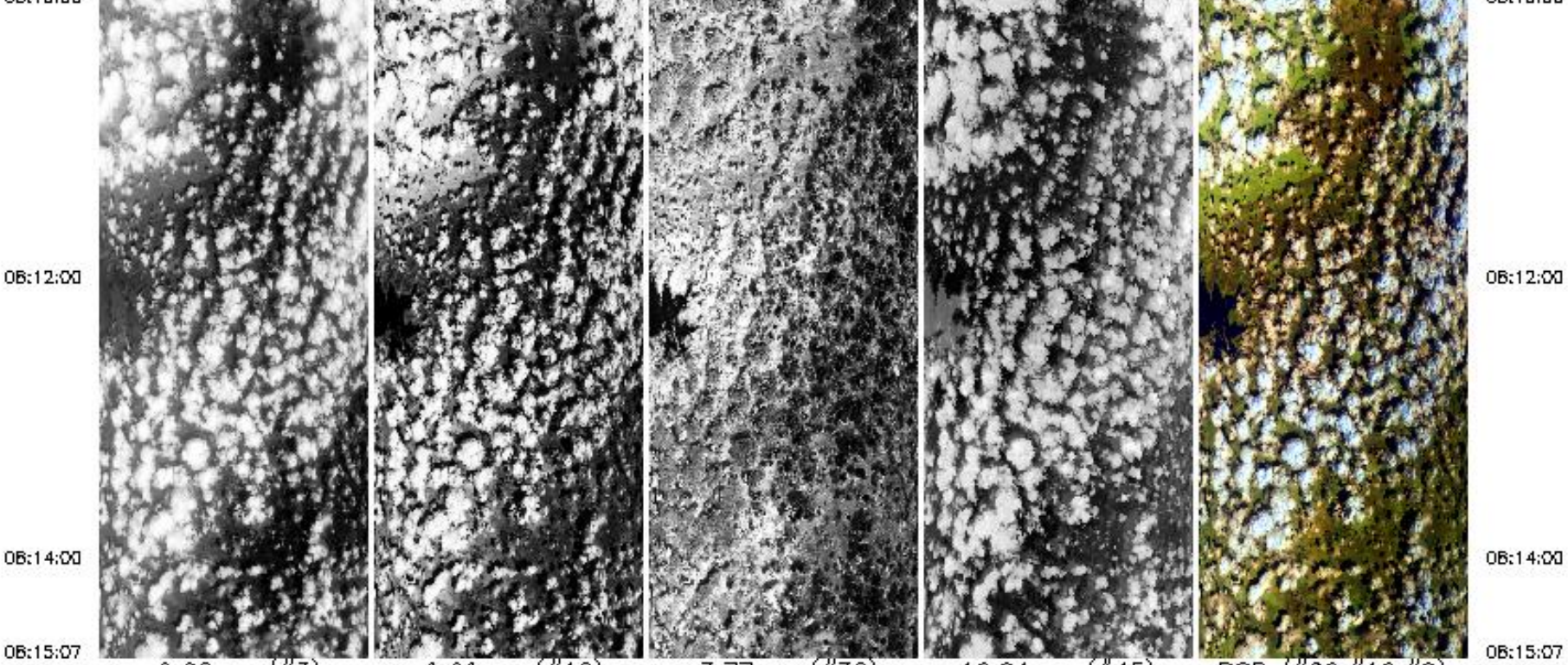
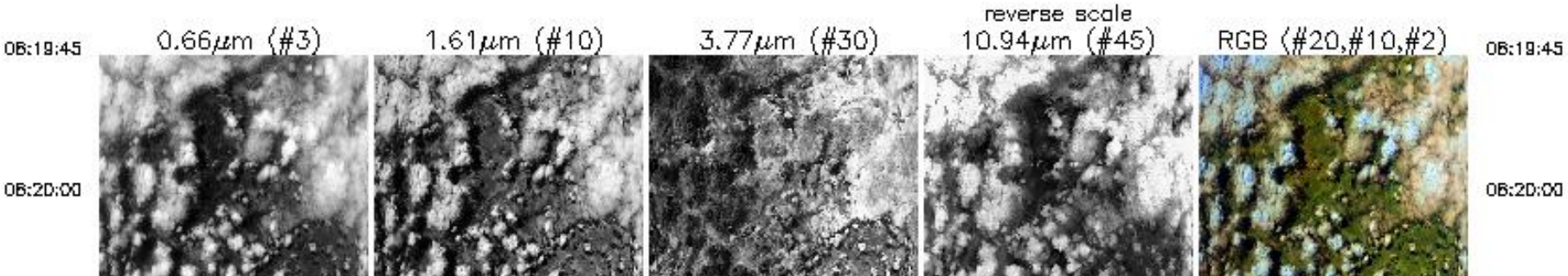
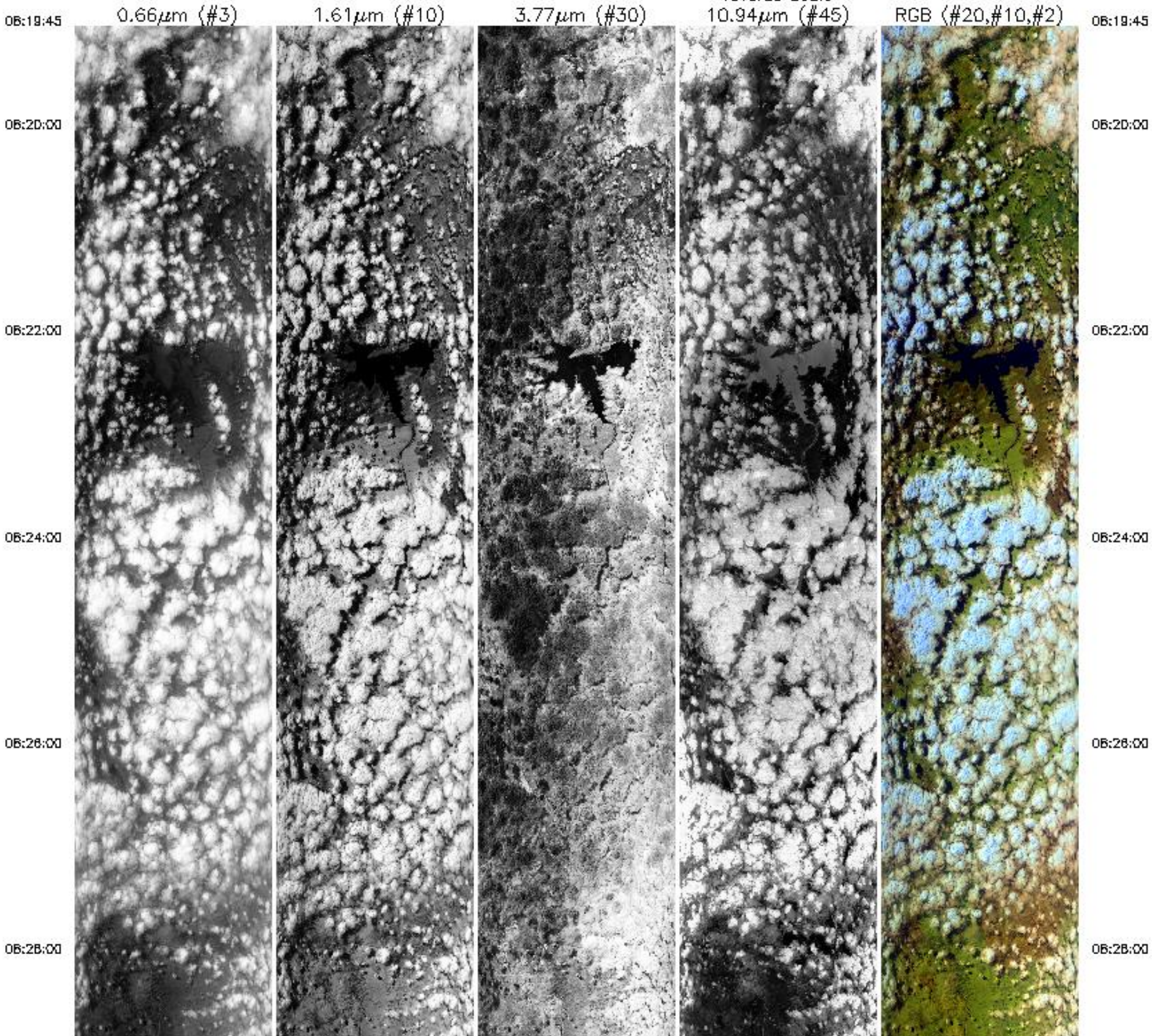


Upper Left Lat, Lon = −24.8°, 30.4°
Lower Right Lat, Lon = −24.9°, 32.5°
Aircraft Heading = 96.6°
Solar Zenith = 36.7°
GPS Altitude = 19249. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #2




0.66μm (#3)
1.61μm (#10)
3.77μm (#30)
10.94μm (#45)
RGB (#20,#10,#2)
06:19:45
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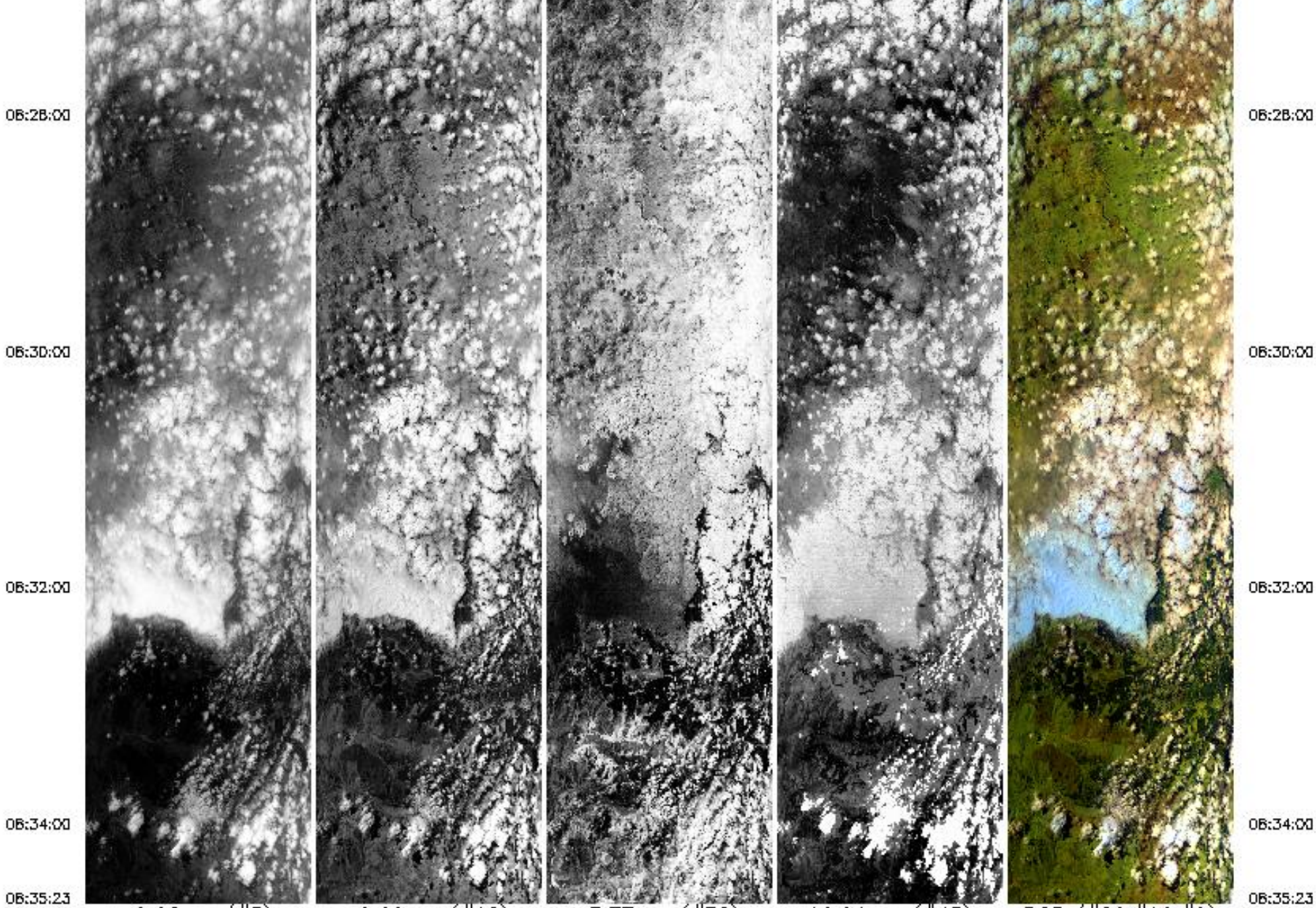
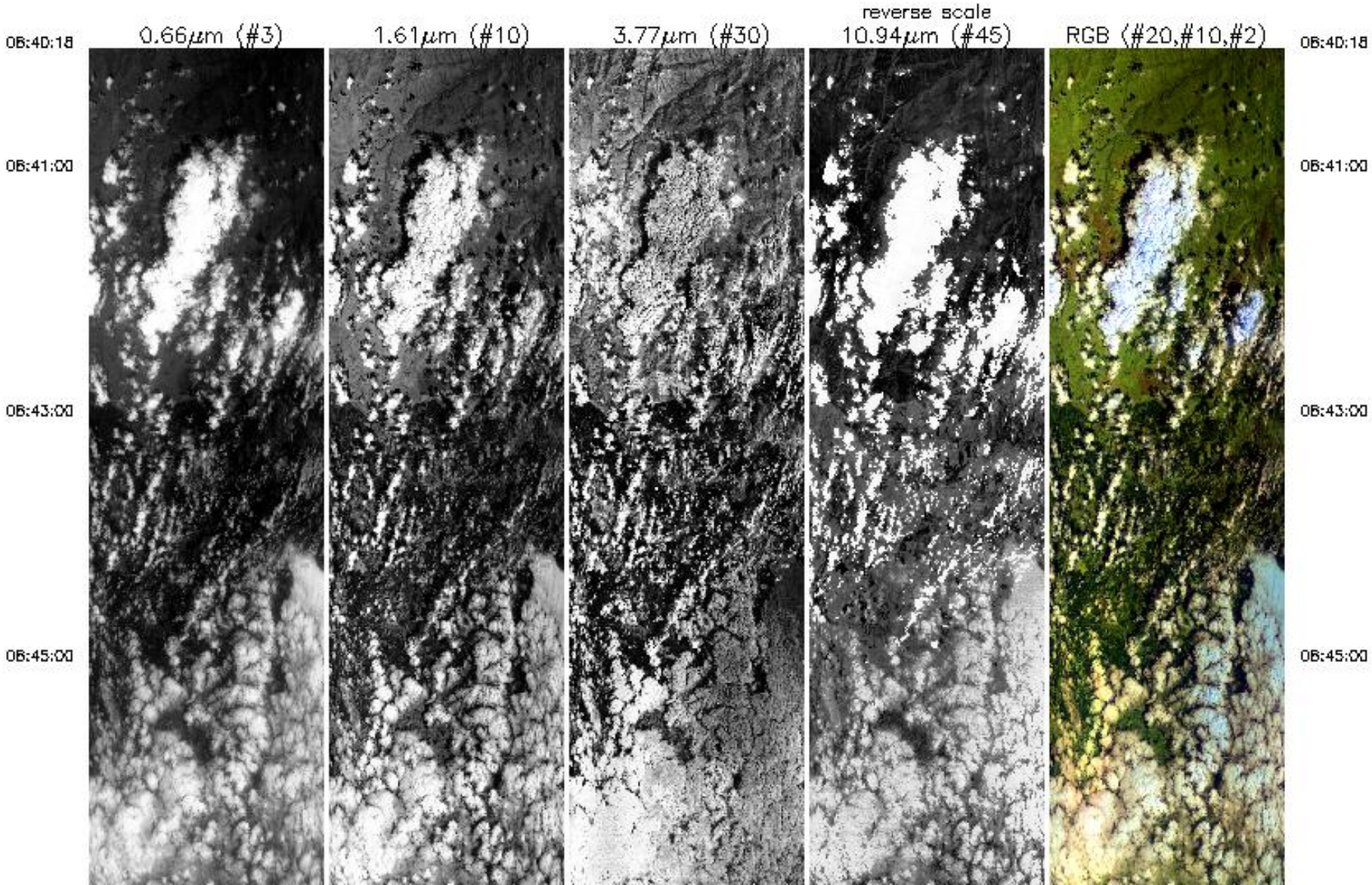
06:26:00
06:28:00

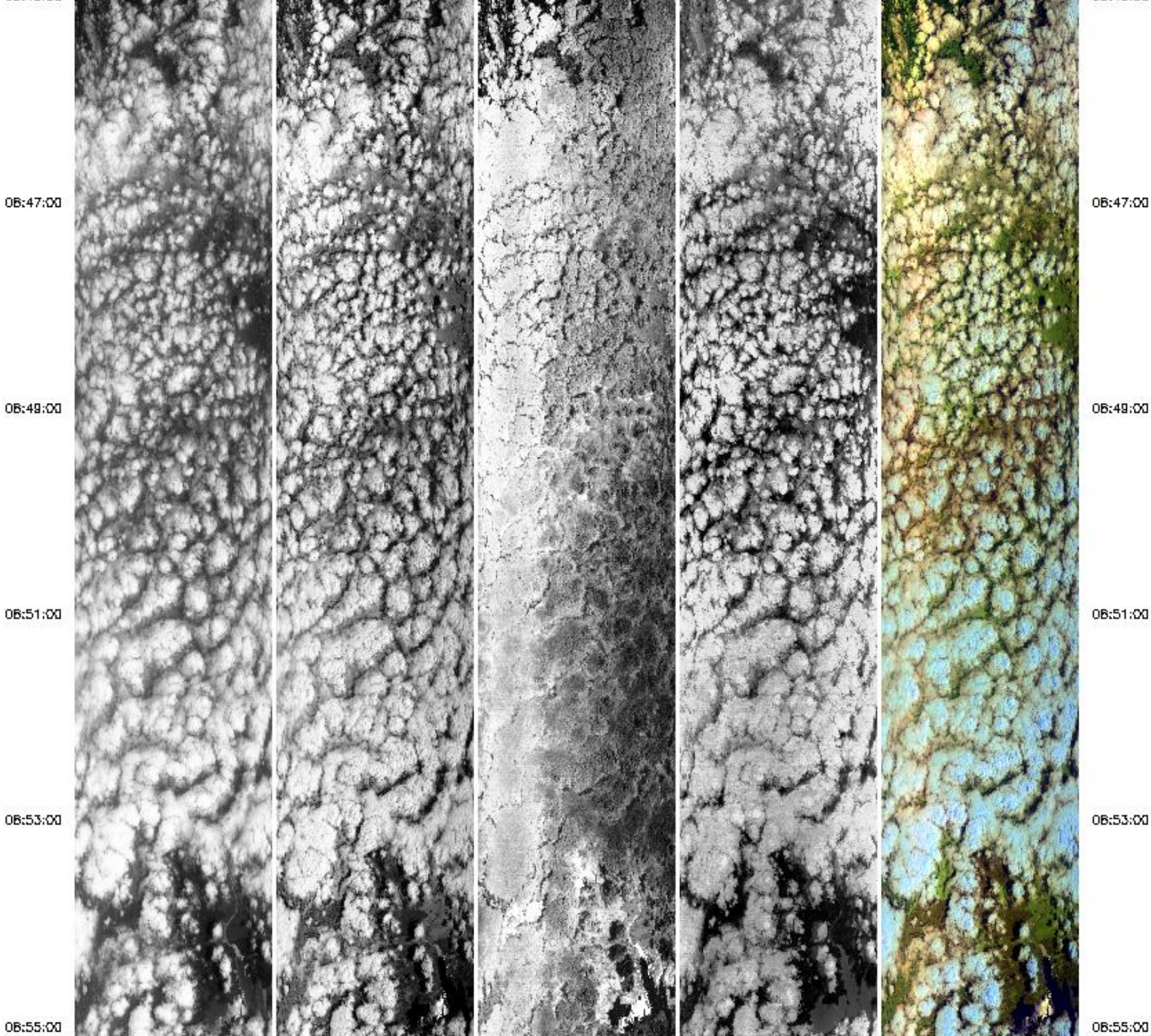


Upper Left Lat, Lon = −25.1°, 32.6°
Lower Right Lat, Lon = −25.0°, 30.6°
Aircraft Heading = 283.4°
Solar Zenith = 31.7°
GPS Altitude = 19540. m (MSL)

Upper Left Lat, Lon = −25.1°, 32.6°
Lower Right Lat, Lon = −25.0°, 30.6°
Aircraft Heading = 283.4°
Solar Zenith = 31.7°
GPS Altitude = 19540. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #3

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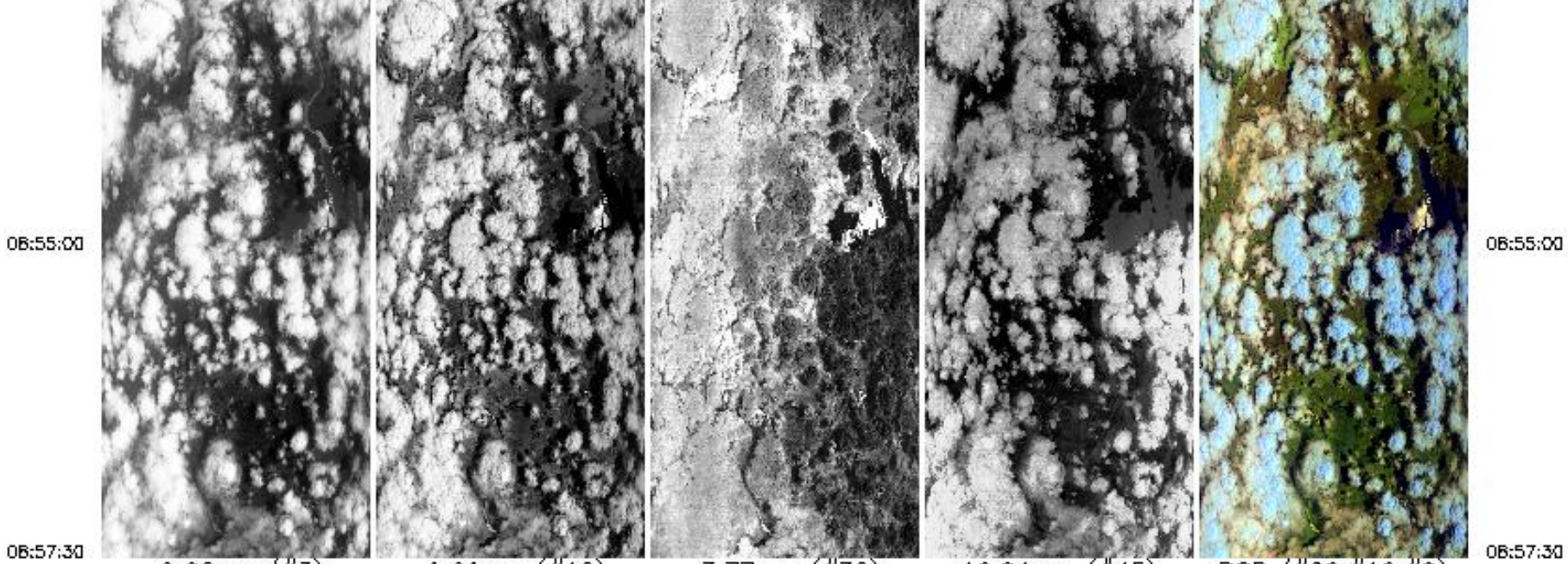
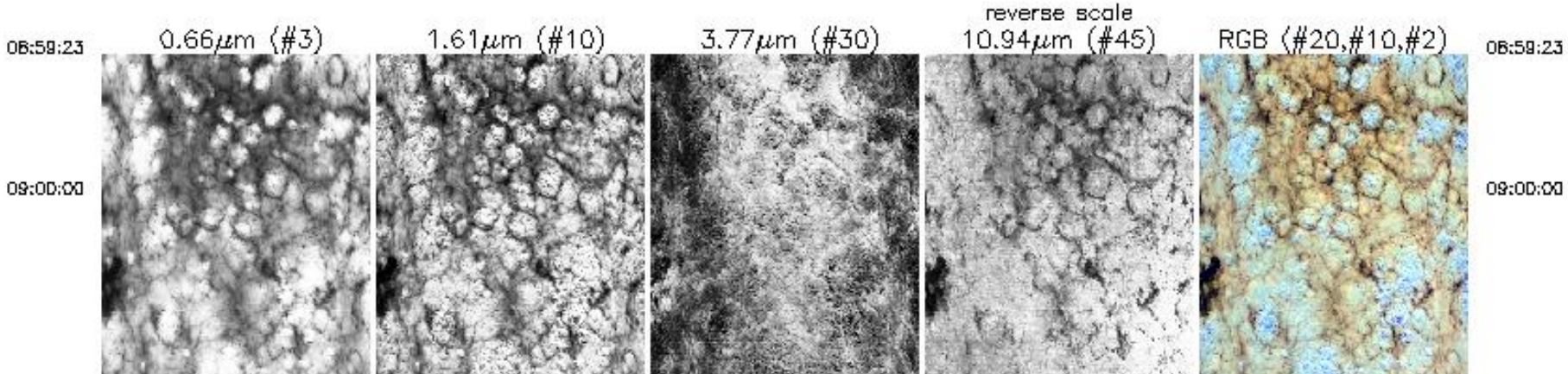
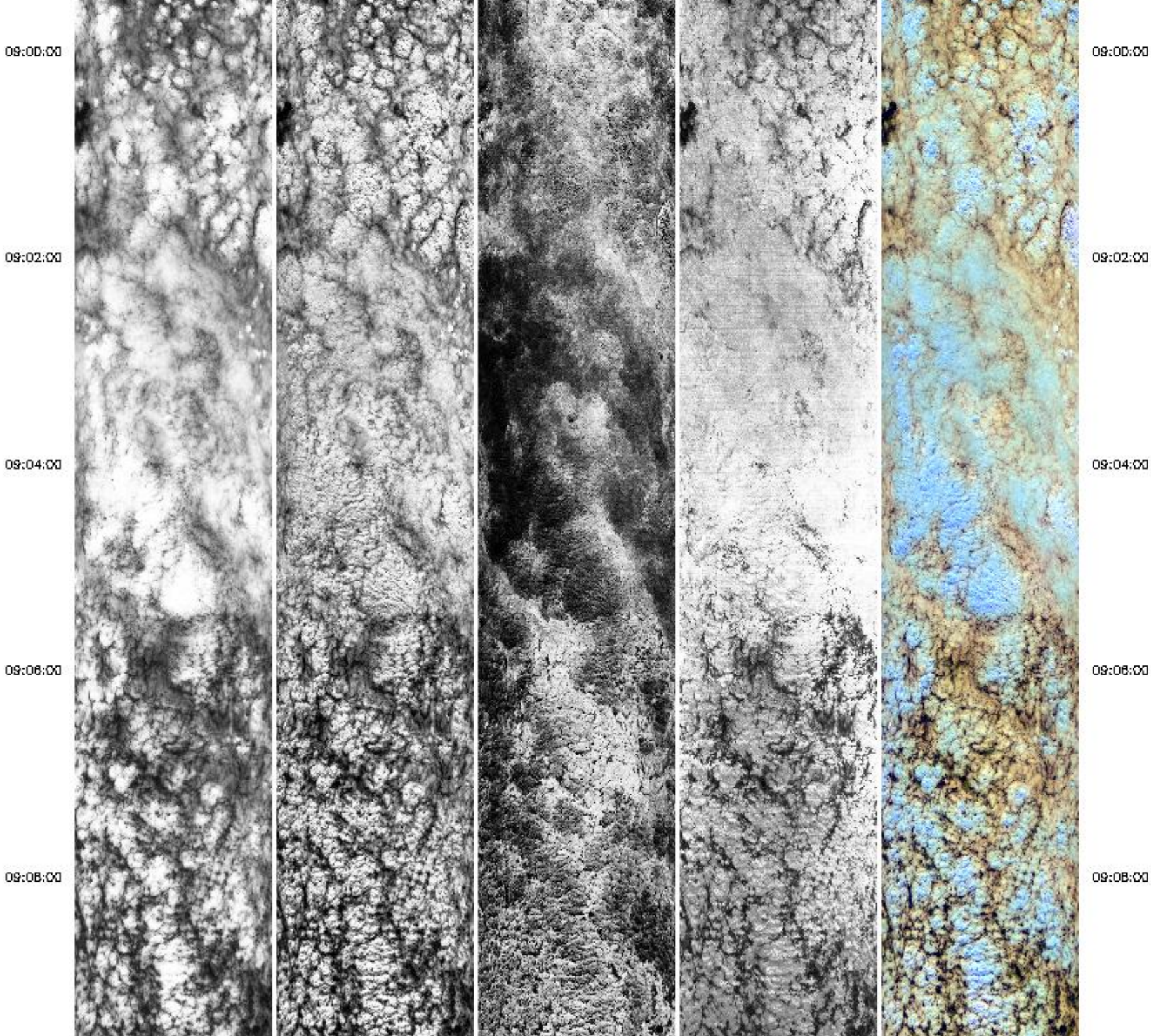


Upper Left Lat, Lon = −25.1°, 30.3°
Lower Right Lat, Lon = −25.2°, 32.4°
Aircraft Heading = 106.4°
Solar Zenith = 30.0°
GPS Altitude = 19636. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
Mozamb., Swazi.
Flight #00–179 Track #4

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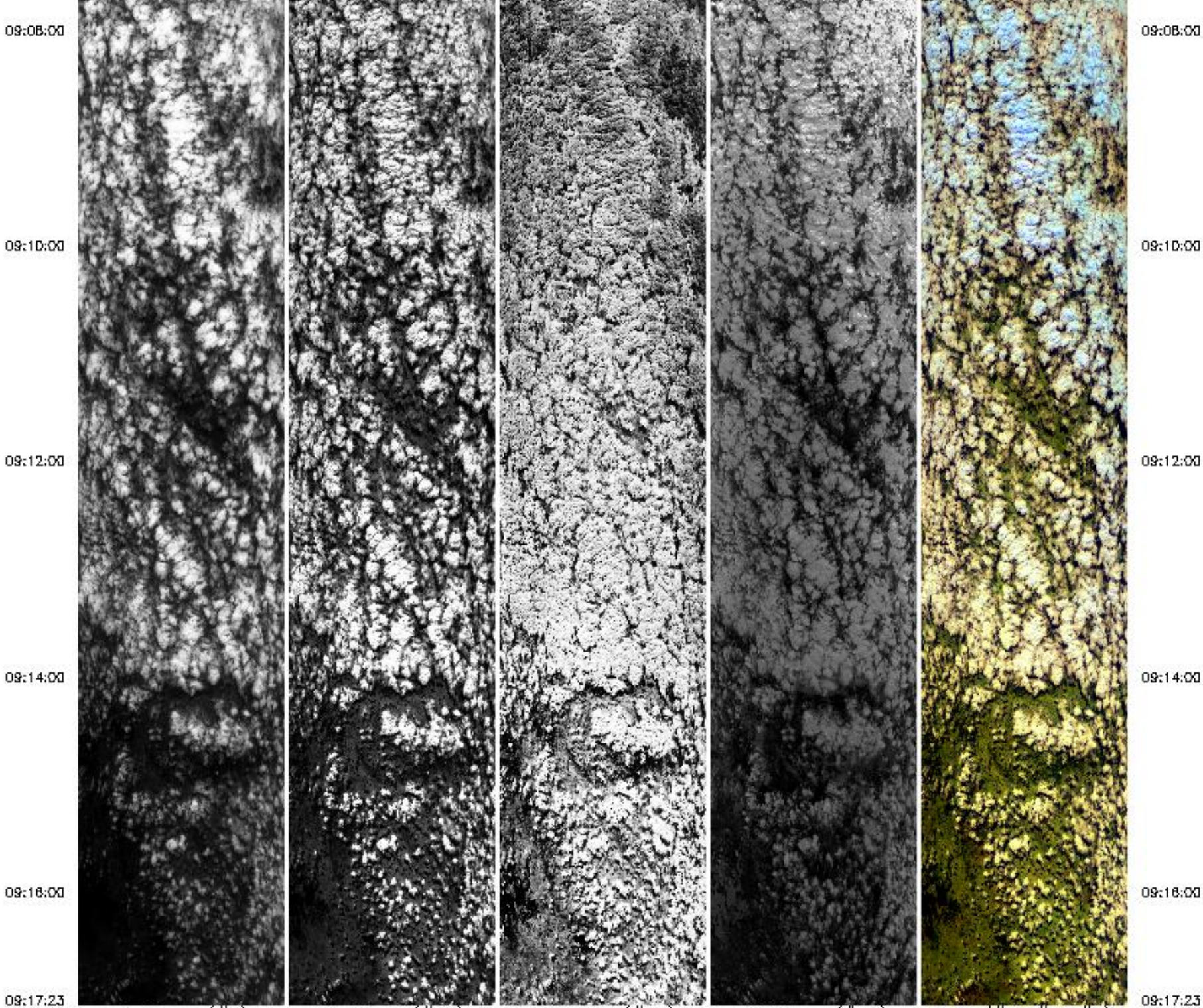
09:08:00
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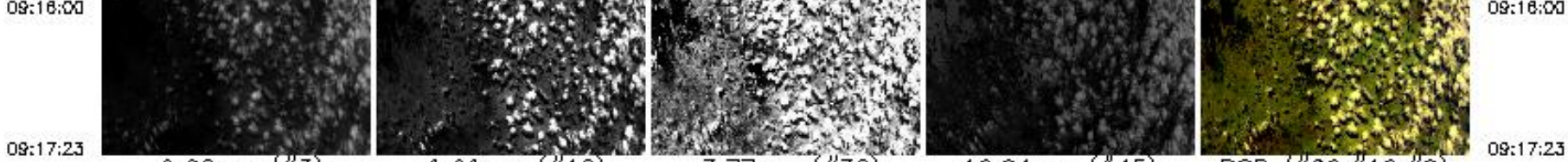
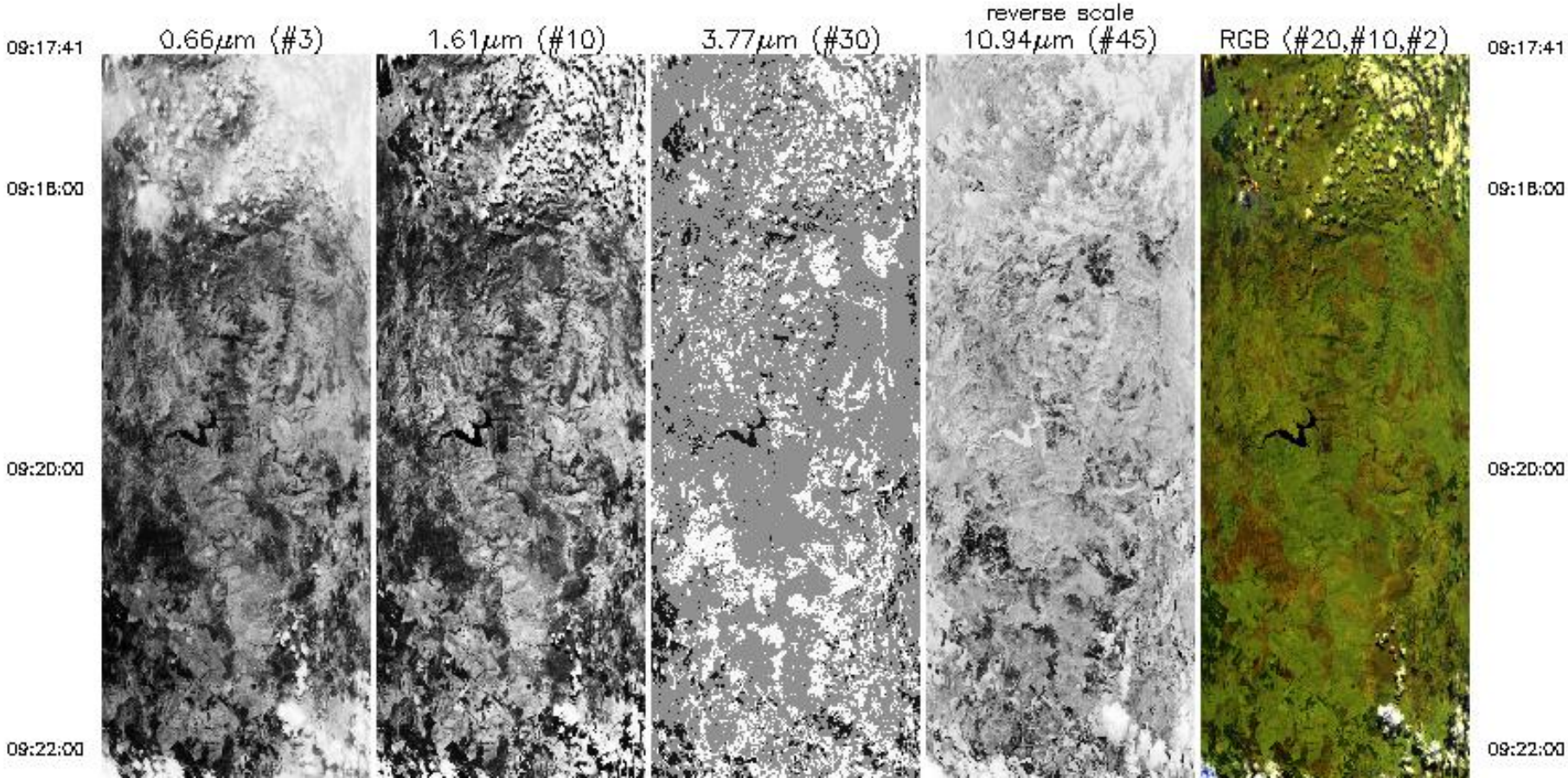
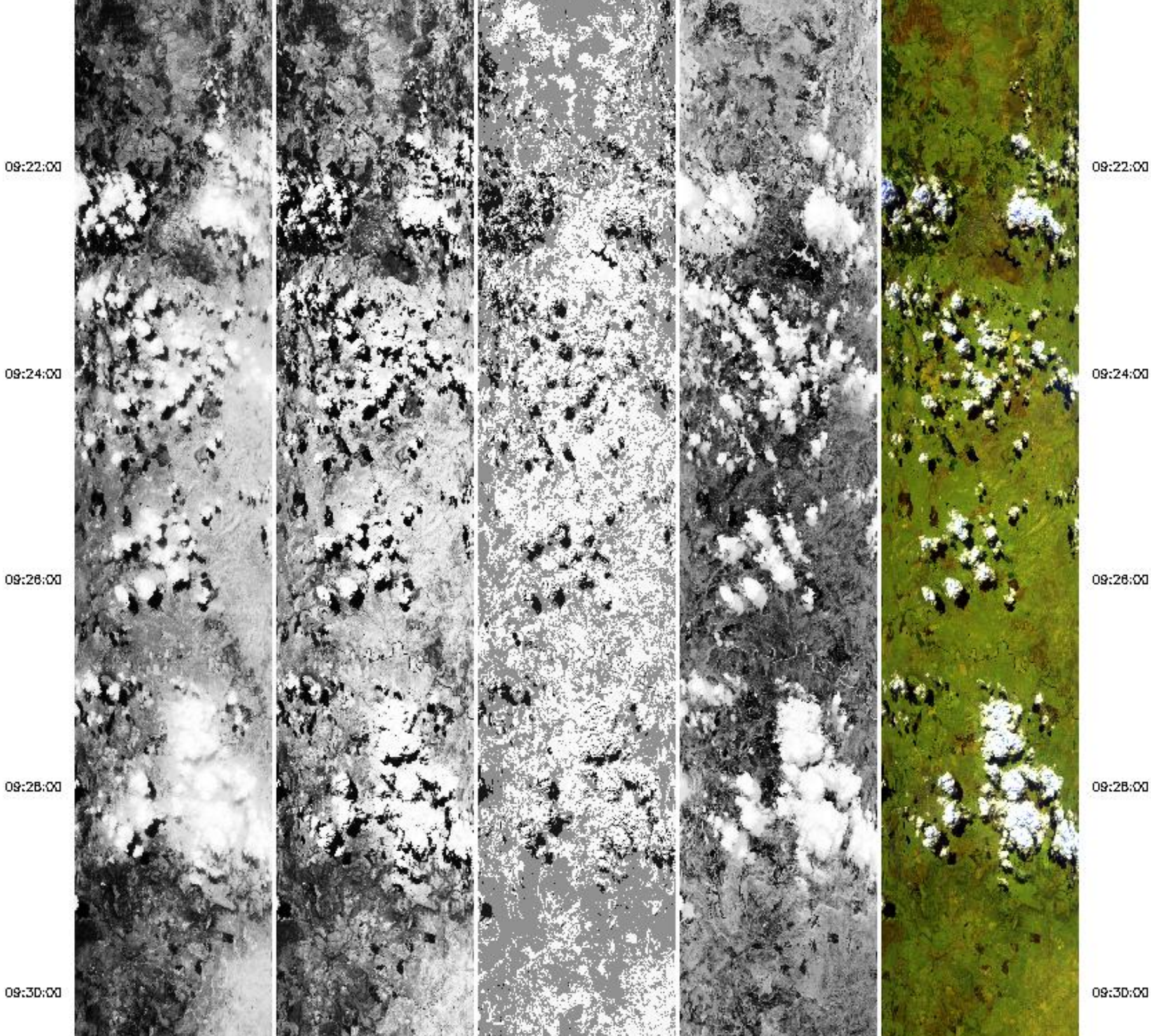
09:16:00
09:17:23
0.66μm (#3)
1.61μm (#10)
3.77μm (#30)
10.94μm (#45)
reverse scale
RGB (#20,#10,#2)
Upper Left Lat, Lon = −25.4°, 32.3°



Upper Left Lat, Lon = −25.4°, 32.3°
Lower Right Lat, Lon = −27.4°, 31.5°
Aircraft Heading = 203.0°
Solar Zenith = 27.2°
GPS Altitude = 19814. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #5

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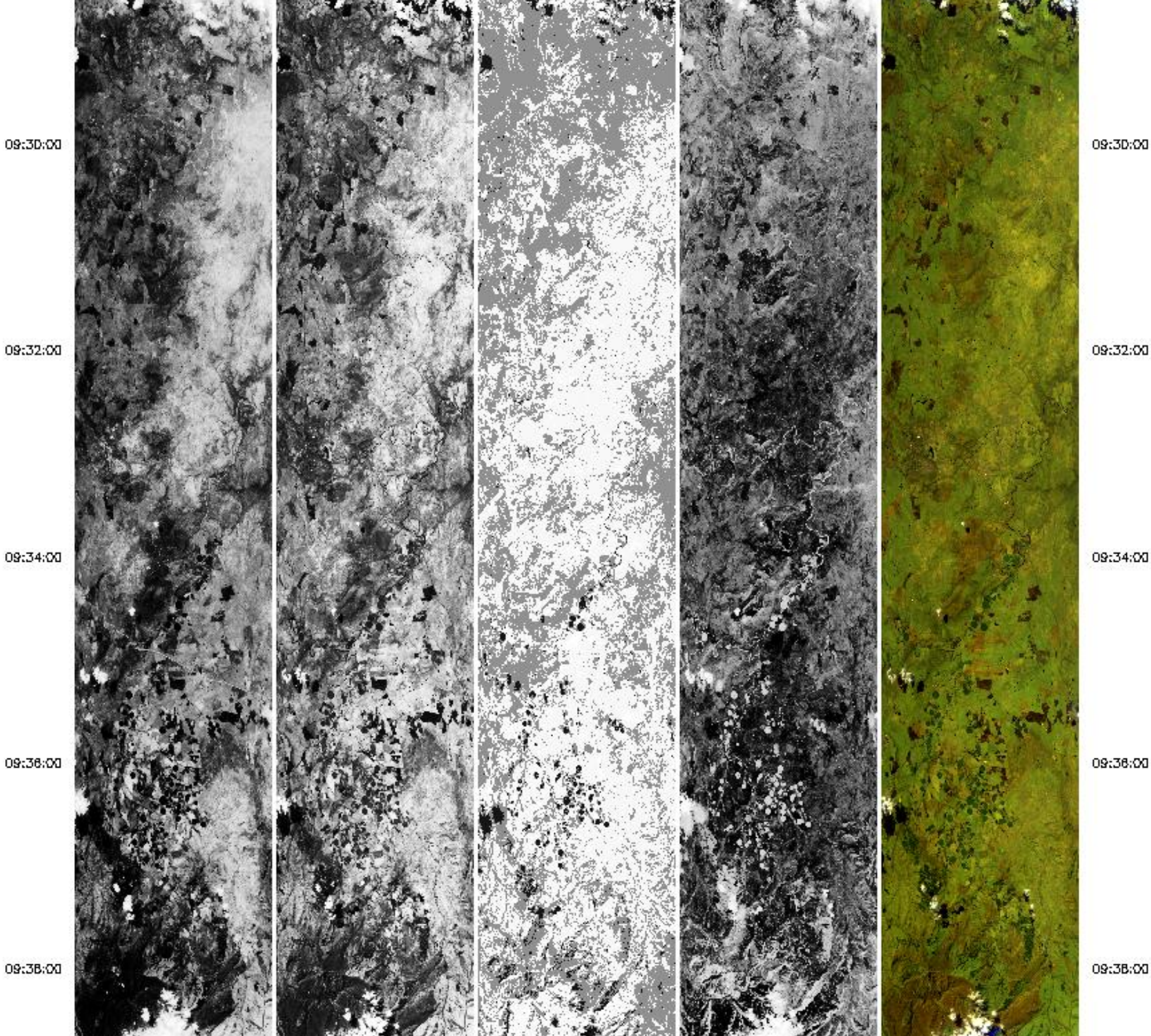
09:30:00


09:30:00
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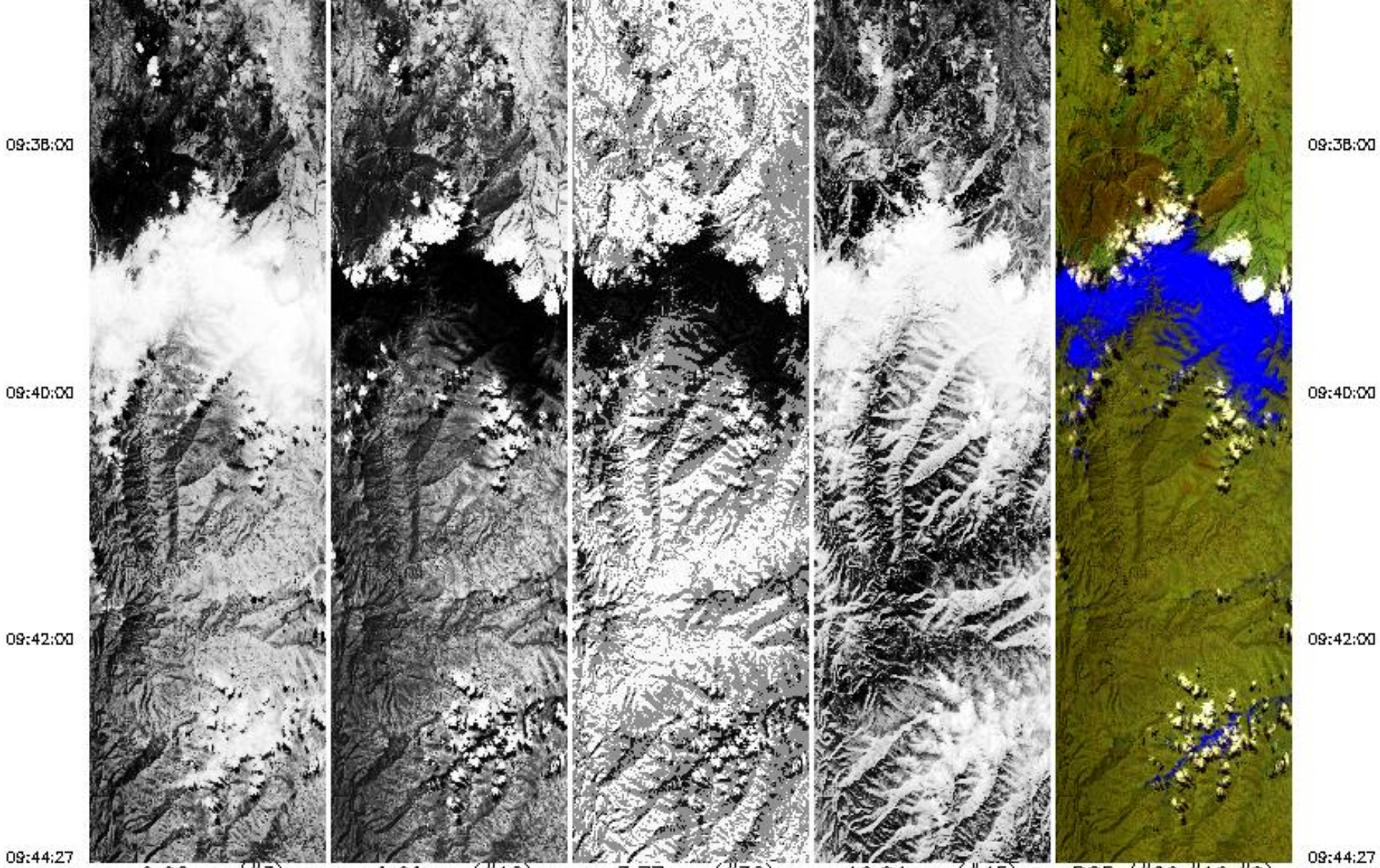
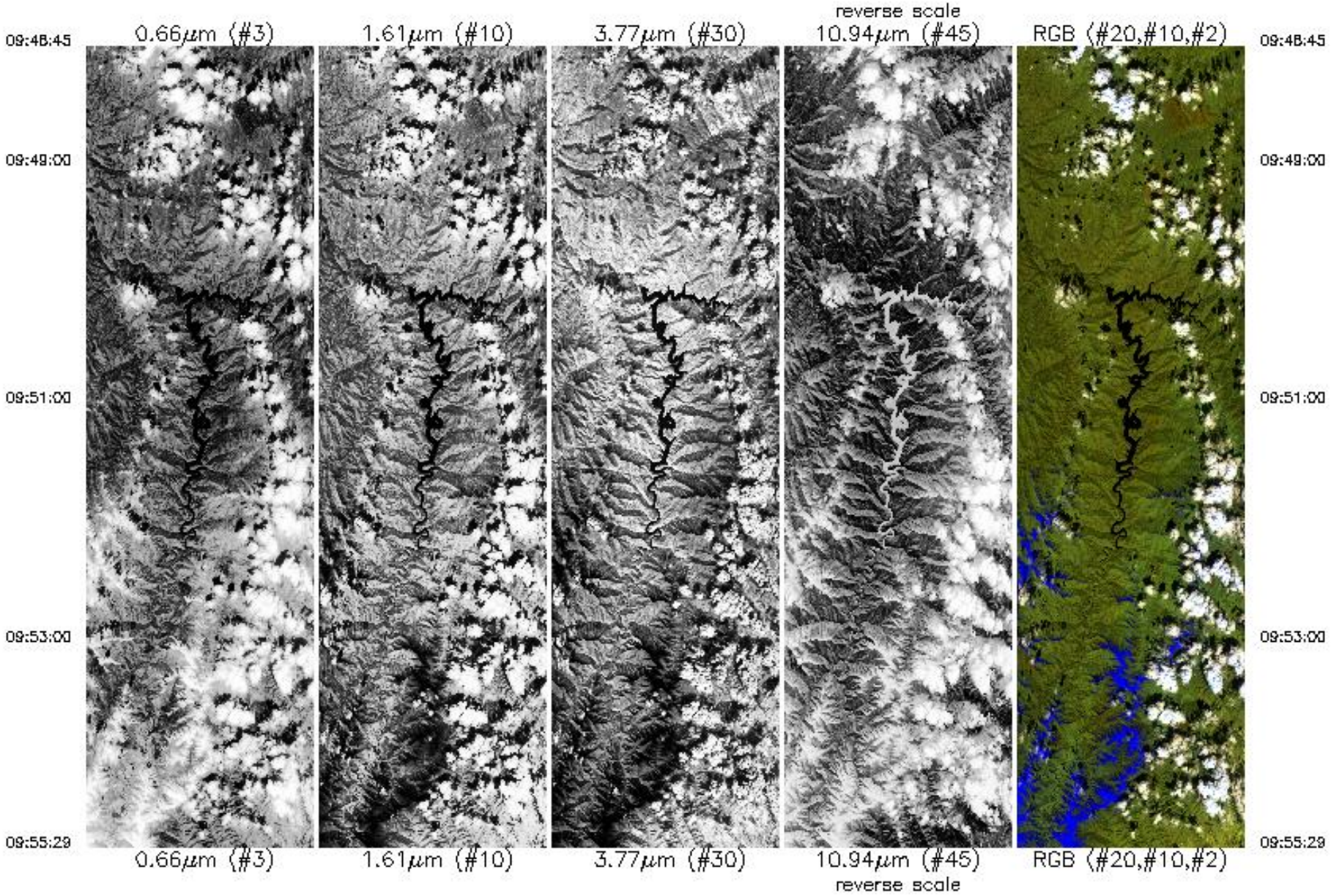
09:38:00



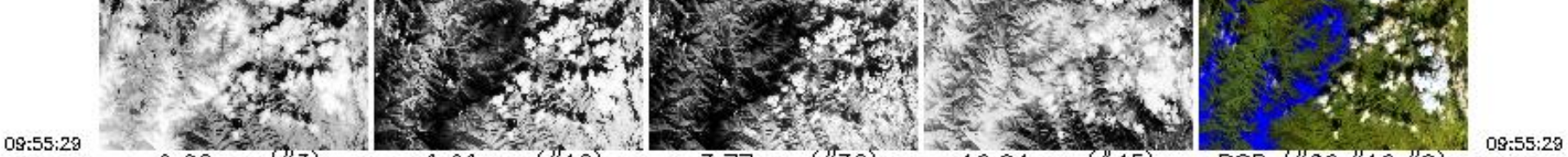
Upper Left Lat, Lon = −27.2°, 31.2°
Lower Right Lat, Lon = −29.6°, 29.0°
Aircraft Heading = 221.4°
Solar Zenith = 27.8°
GPS Altitude = 19969. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign — 23 Sep 2000
Lesotho
Flight #00−179 Track #6

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
Lesotho
Flight #00–179 Track #6



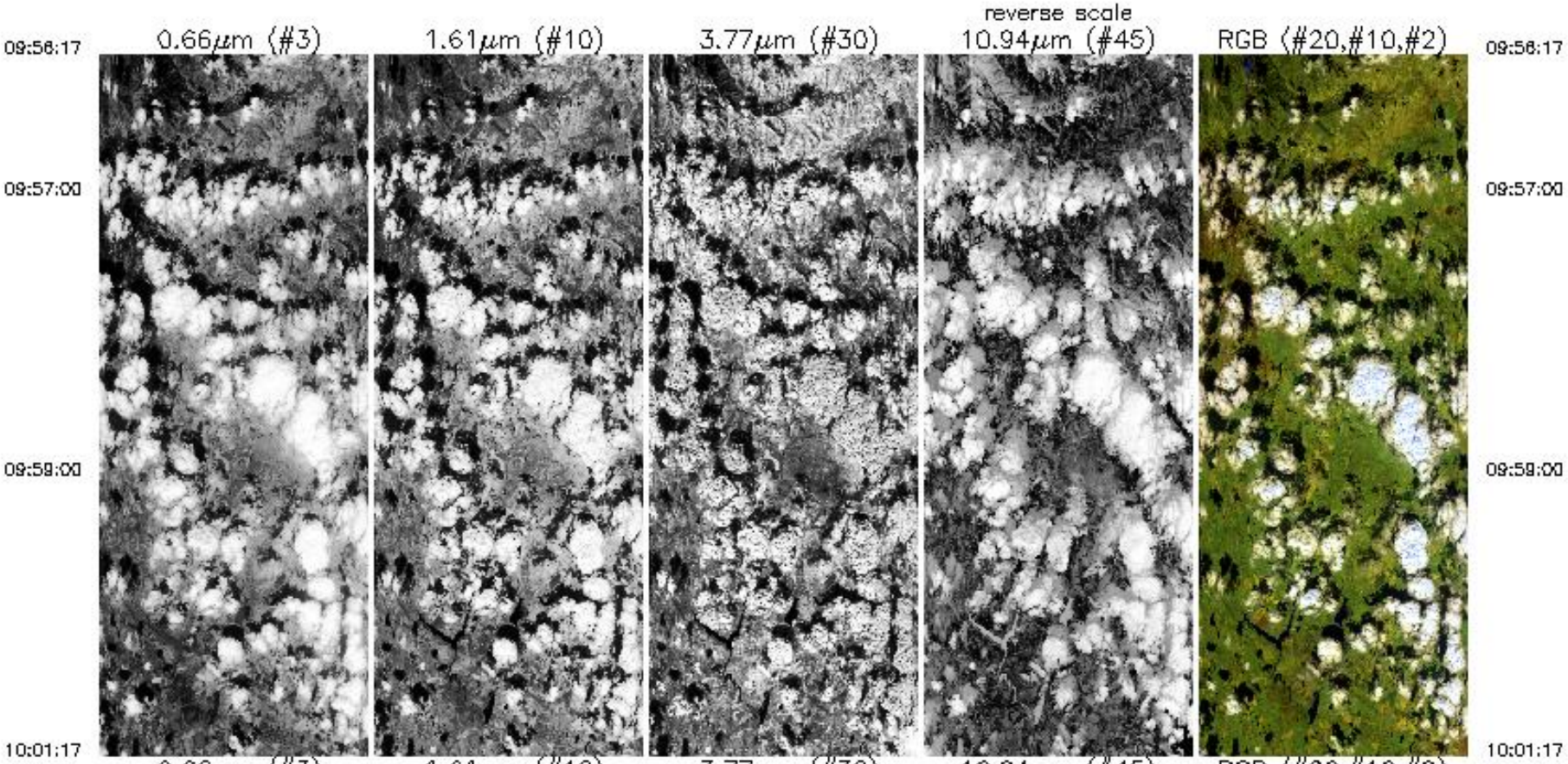
Upper Left Lat, Lon = −29.6°, 28.7°

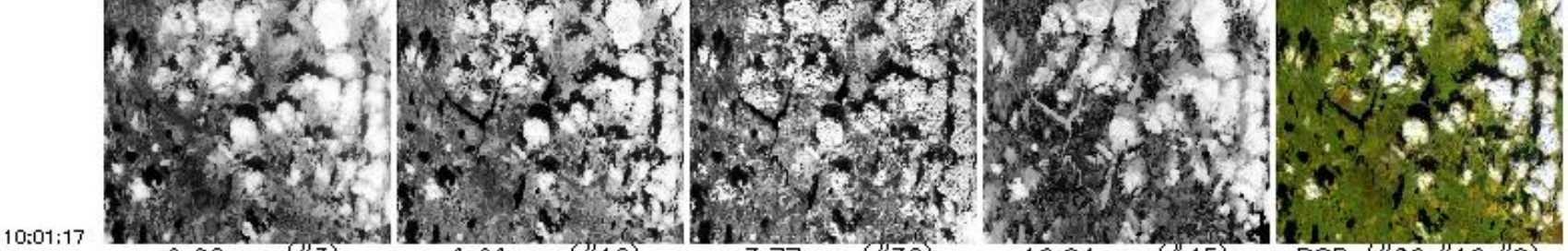


reverse scale

Upper Left Lat, Lon = −29.6°, 28.7°
Lower Right Lat, Lon = −28.8°, 28.3°
Aircraft Heading = 8.8°
Solar Zenith = 29.4°
GPS Altitude = 19926. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #7





10:01:17 | 0.66μm (#3) | 1.61μm (#10) | 3.77μm (#30) | 10.94μm (#45) reverse scale | RGB (#20,#10,#2) | 10:01:17

Upper Left Lat, Lon = −28.6°, 28.7°

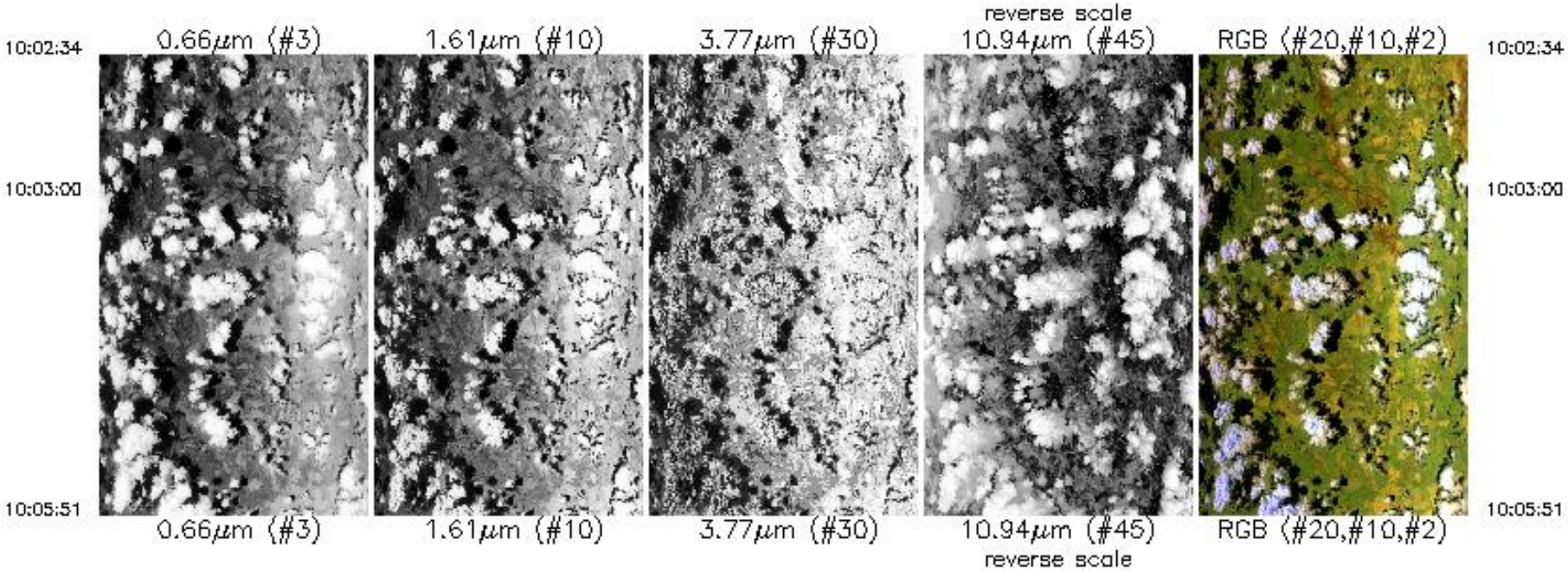
Lower Right Lat, Lon = −28.2°, 28.1°

Aircraft Heading = 339.6°

Solar Zenith = 28.3°

GPS Altitude = 20048. m (MSL)

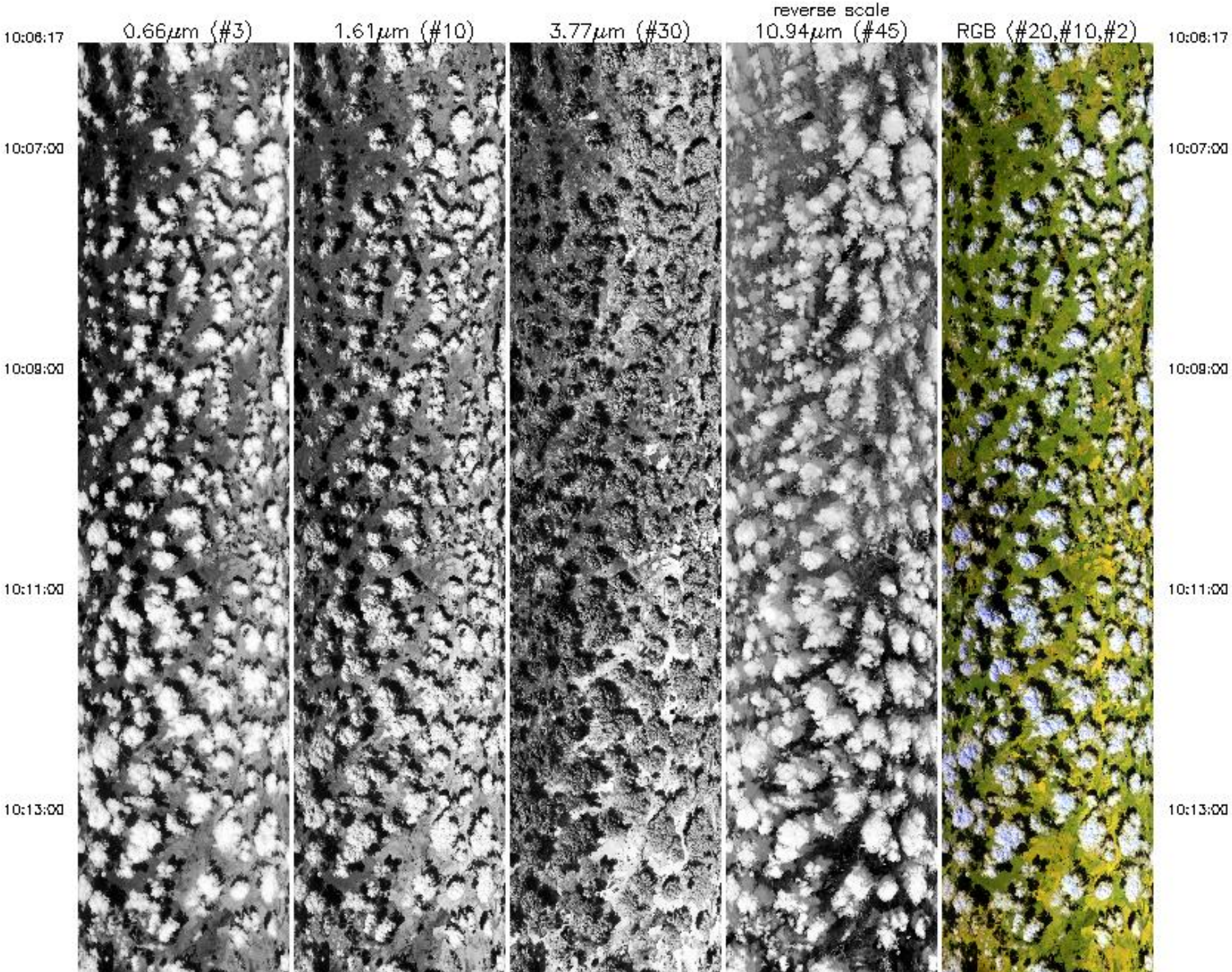
MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #8

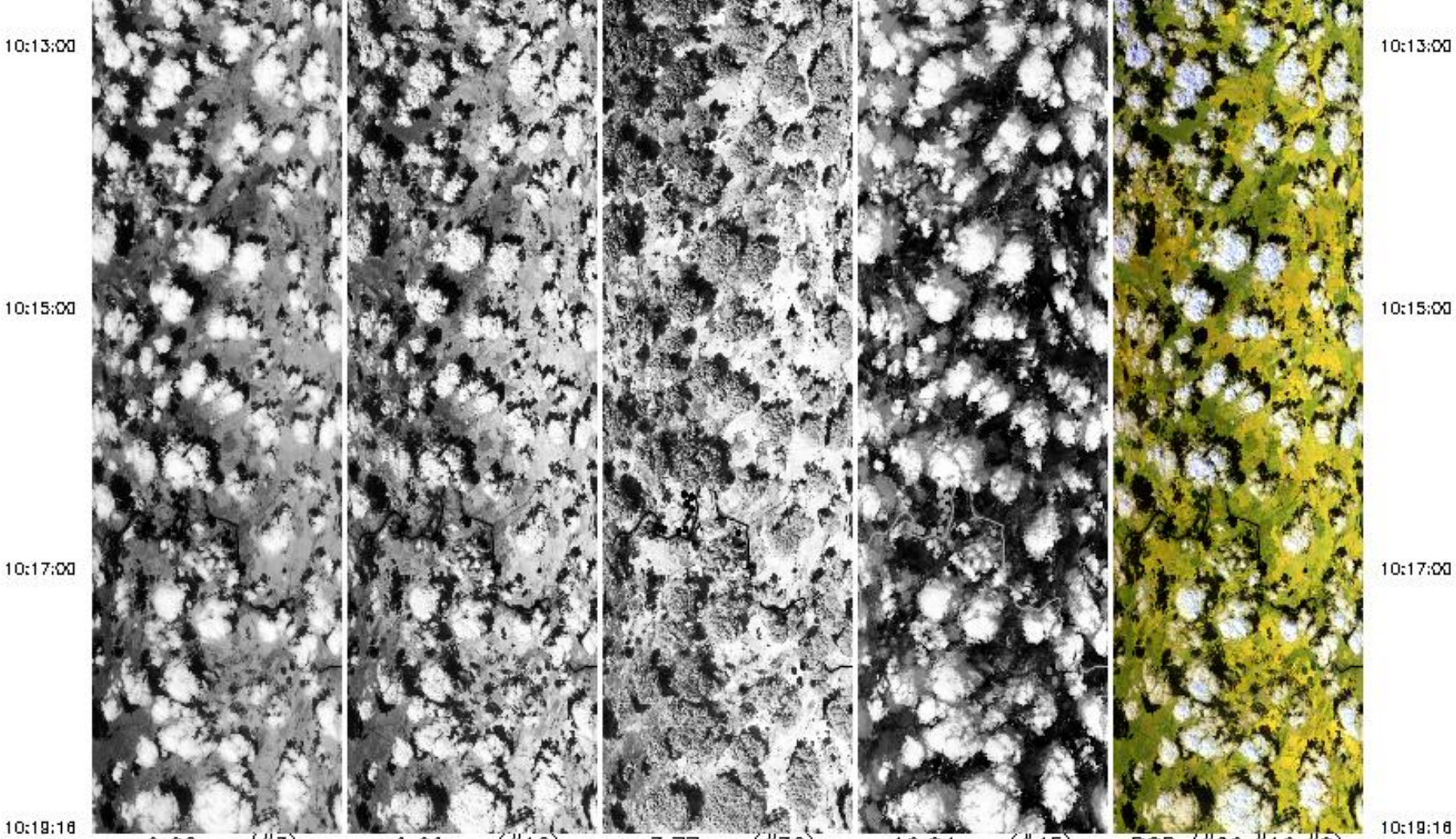


Upper Left Lat, Lon = −27.9°, 28.2°
Lower Right Lat, Lon = −28.2°, 27.7°
Aircraft Heading = 279.0°
Solar Zenith = 27.6°
GPS Altitude = 20054. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #9

SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #9



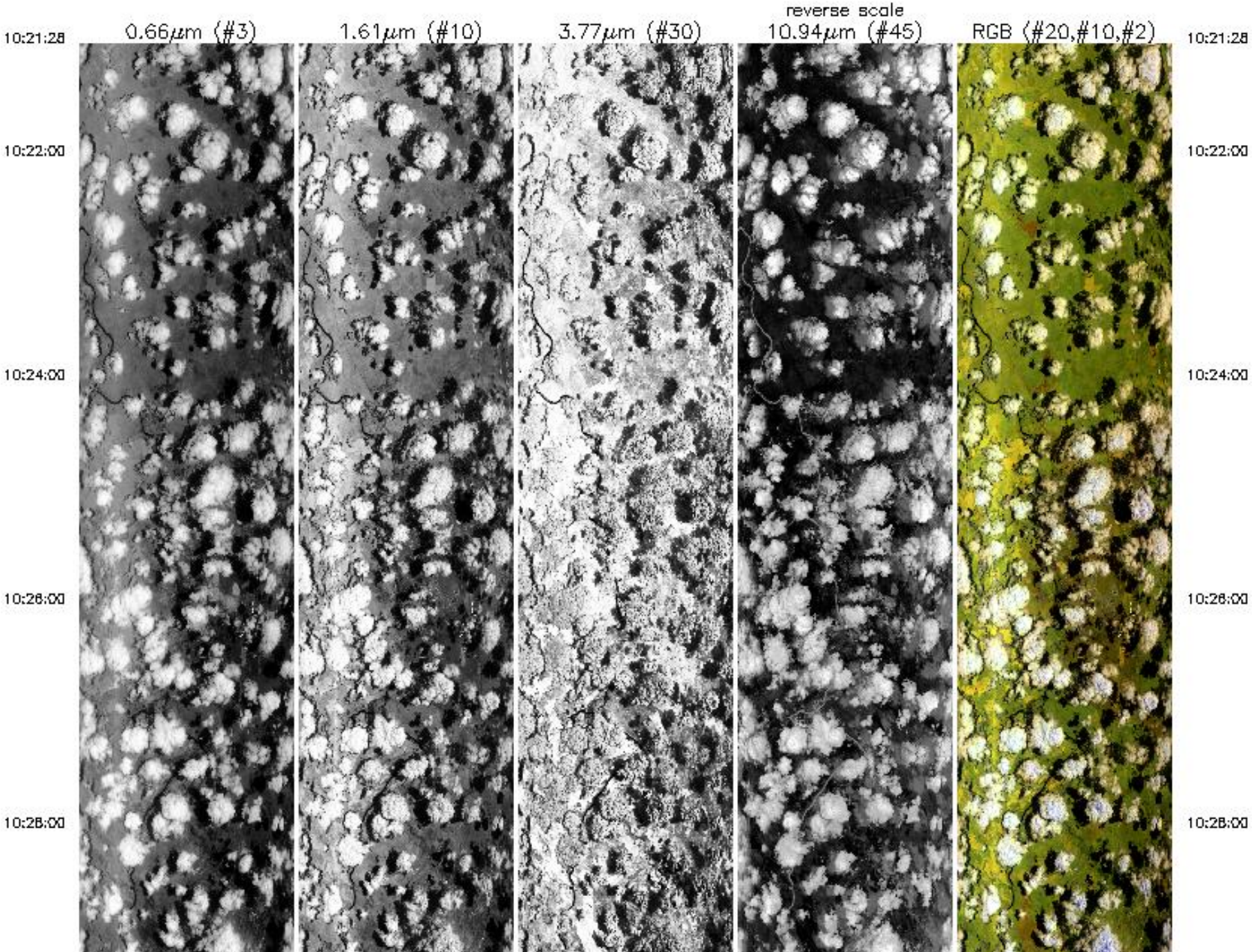


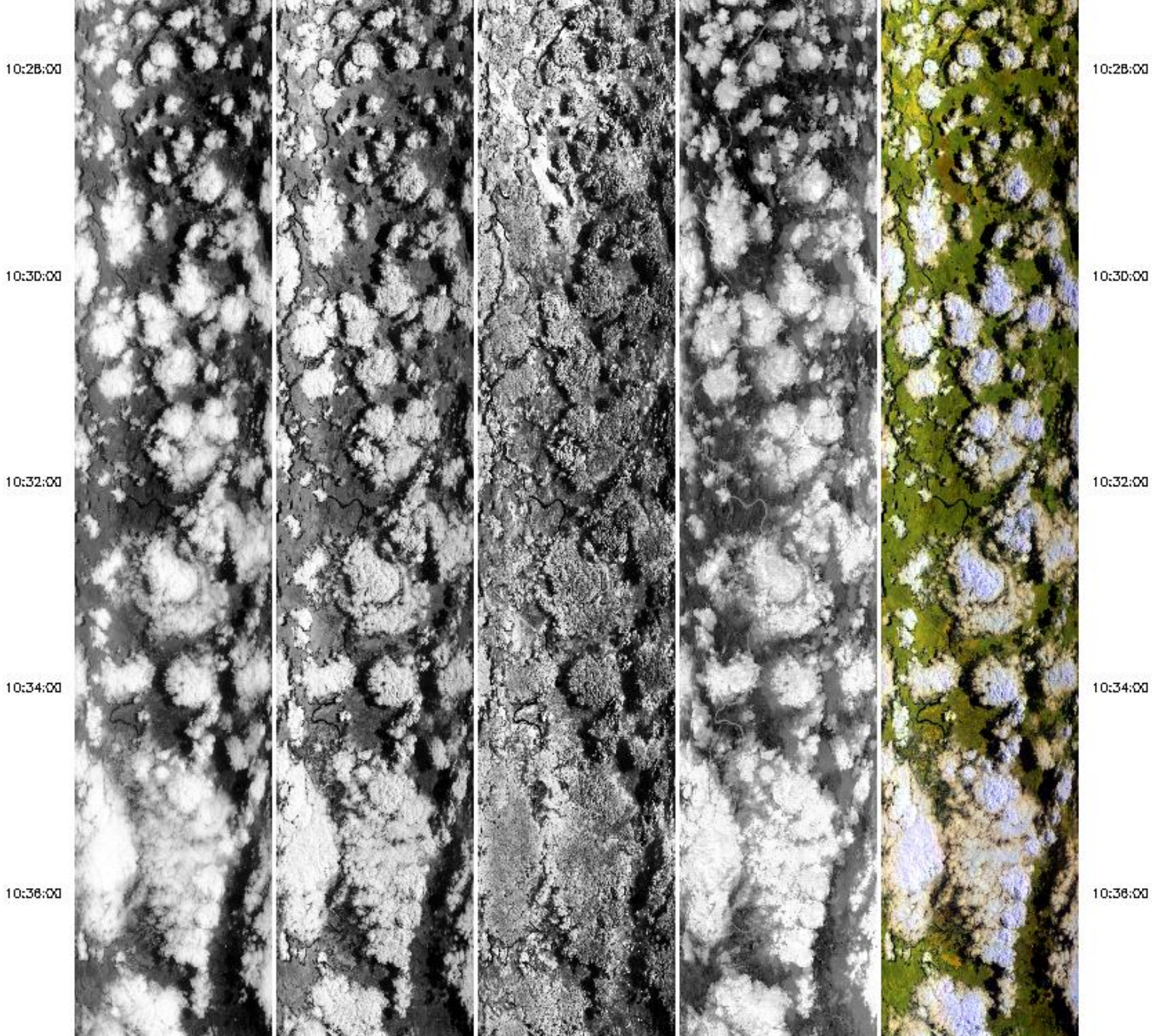
Upper Left Lat, Lon = −27.8°, 27.8°
Lower Right Lat, Lon = −27.4°, 26.1°
Aircraft Heading = 295.9°
Solar Zenith = 27.6°
GPS Altitude = 20138. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #10

reverse scale

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #10




10:28:00
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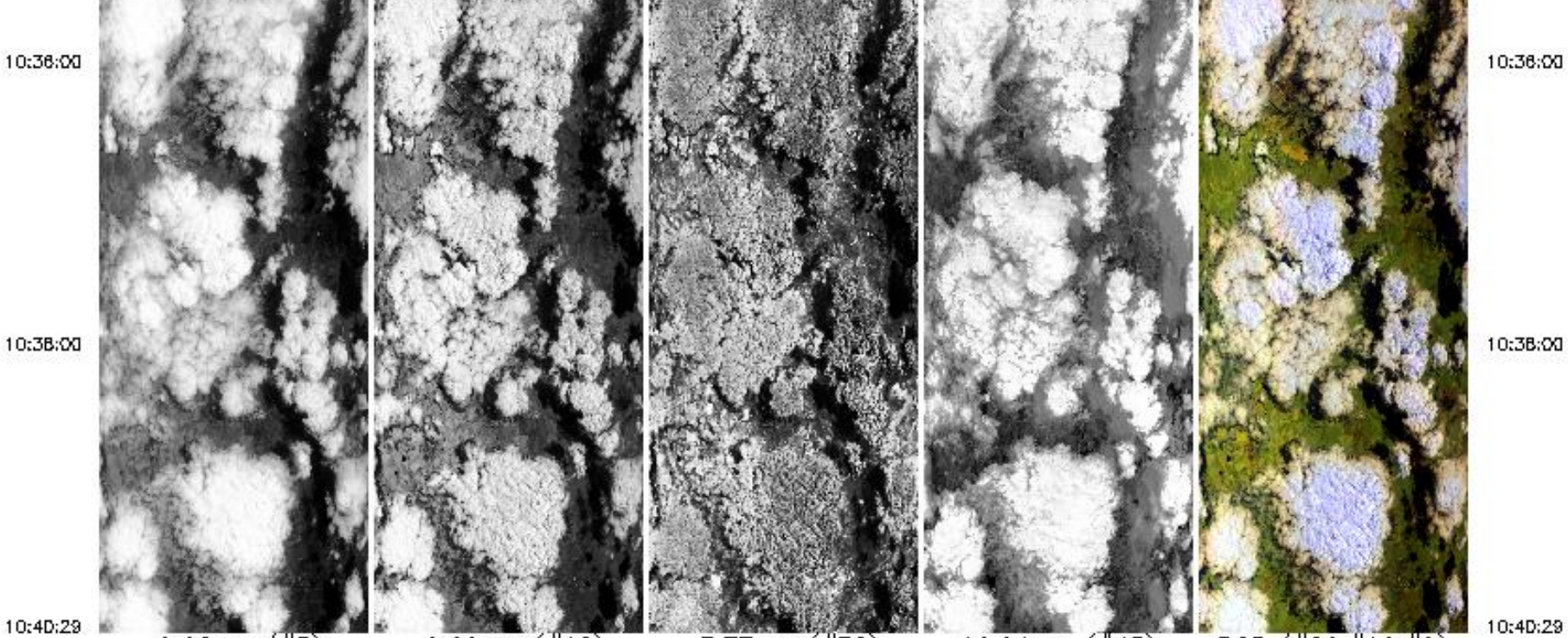
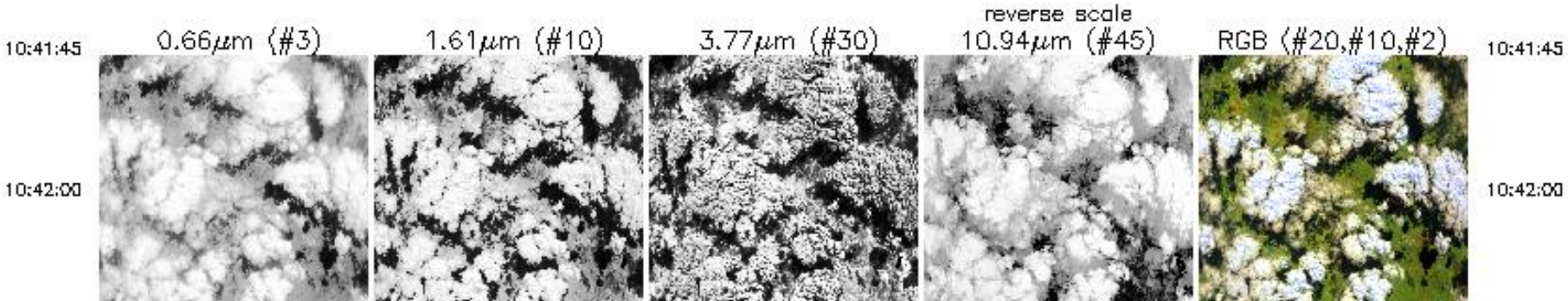
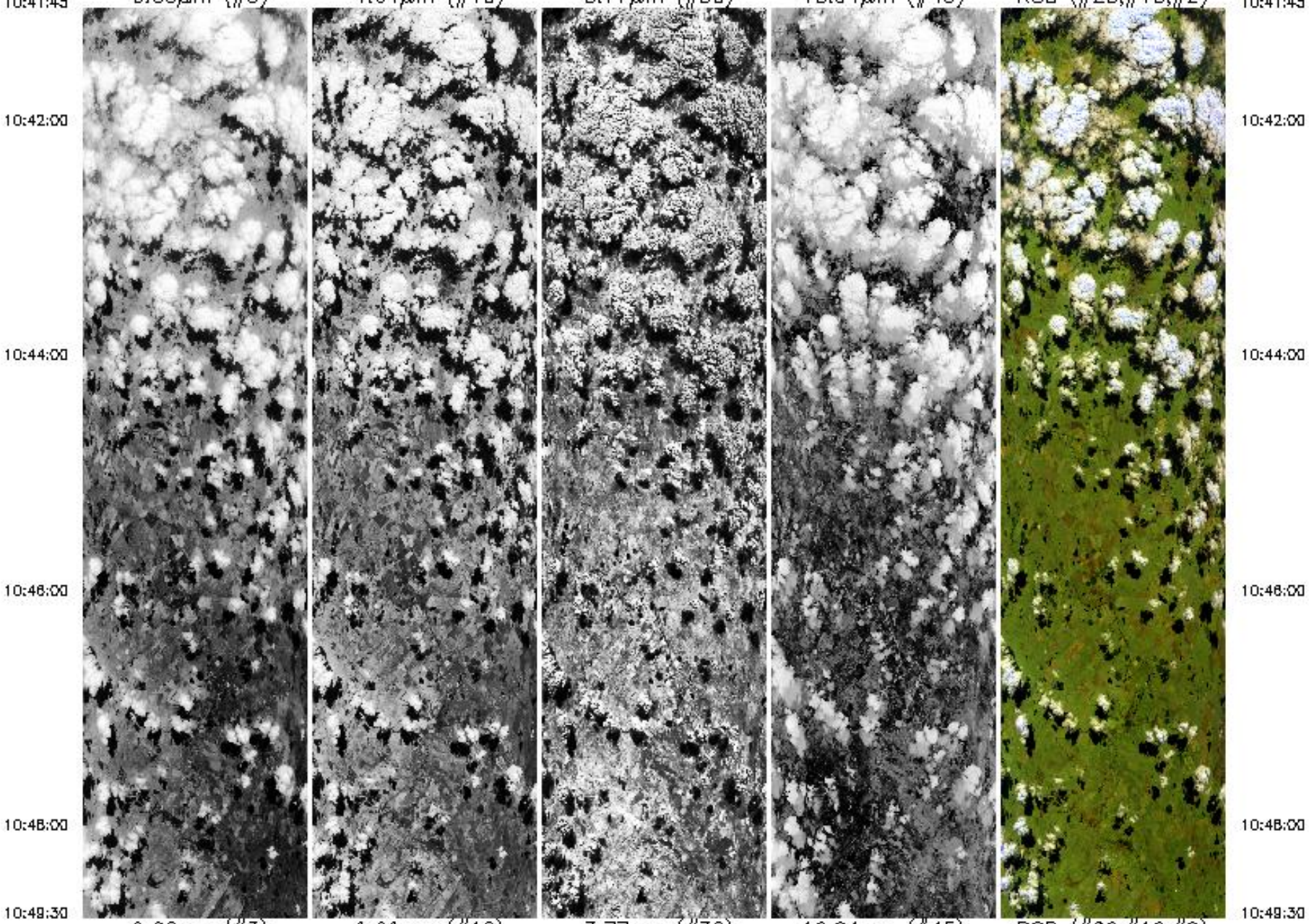
10:32:00
10:34:00
10:36:00



Upper Left Lat, Lon = −27.2°, 26.2°
Lower Right Lat, Lon = −26.4°, 28.4°
Aircraft Heading = 80.1°
Solar Zenith = 27.1°
GPS Altitude = 20236. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #11





Upper Left Lat, Lon = −26.7°, 28.4°

Lower Right Lat, Lon = −27.1°, 29.3°

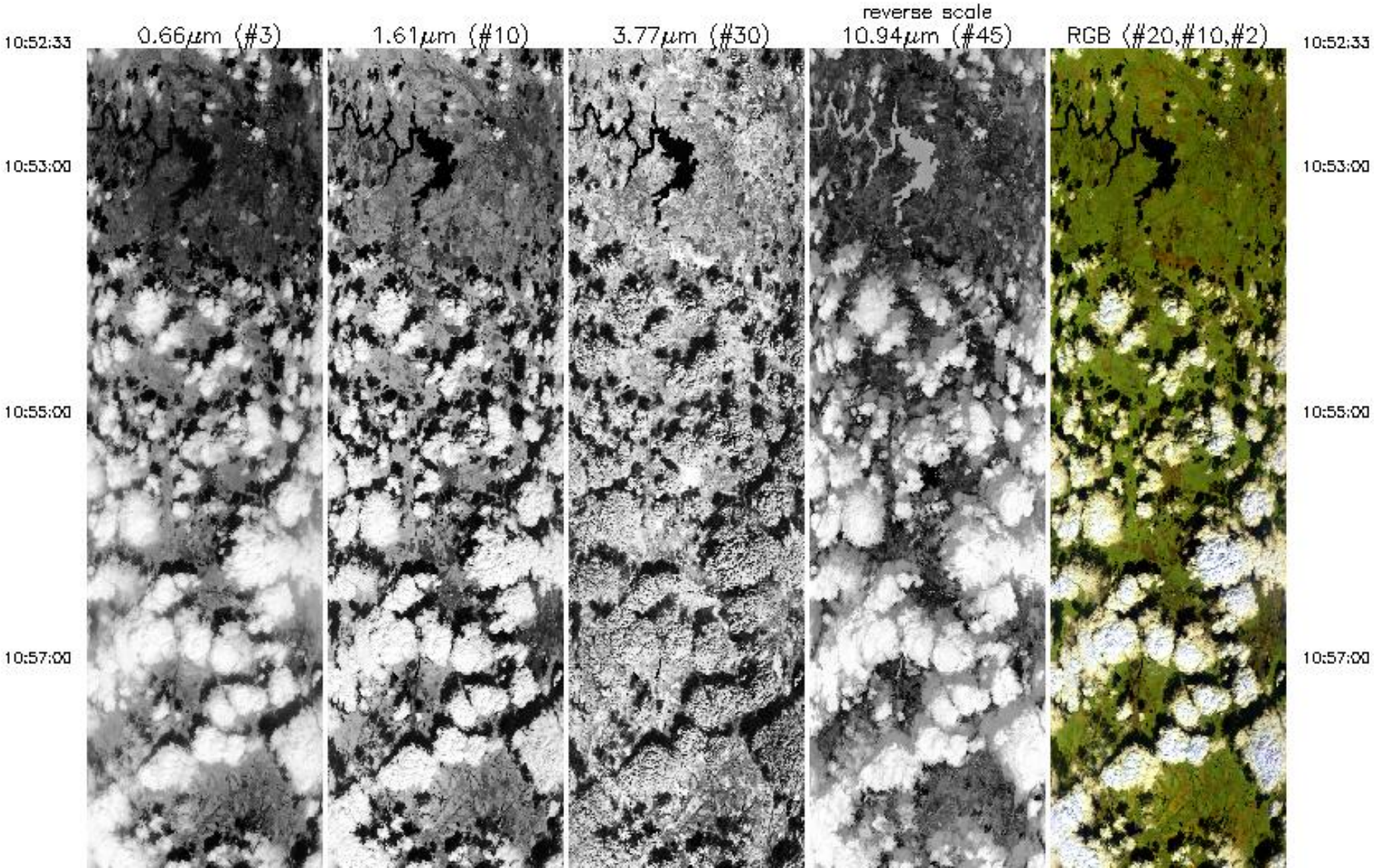
Aircraft Heading = 138.6°

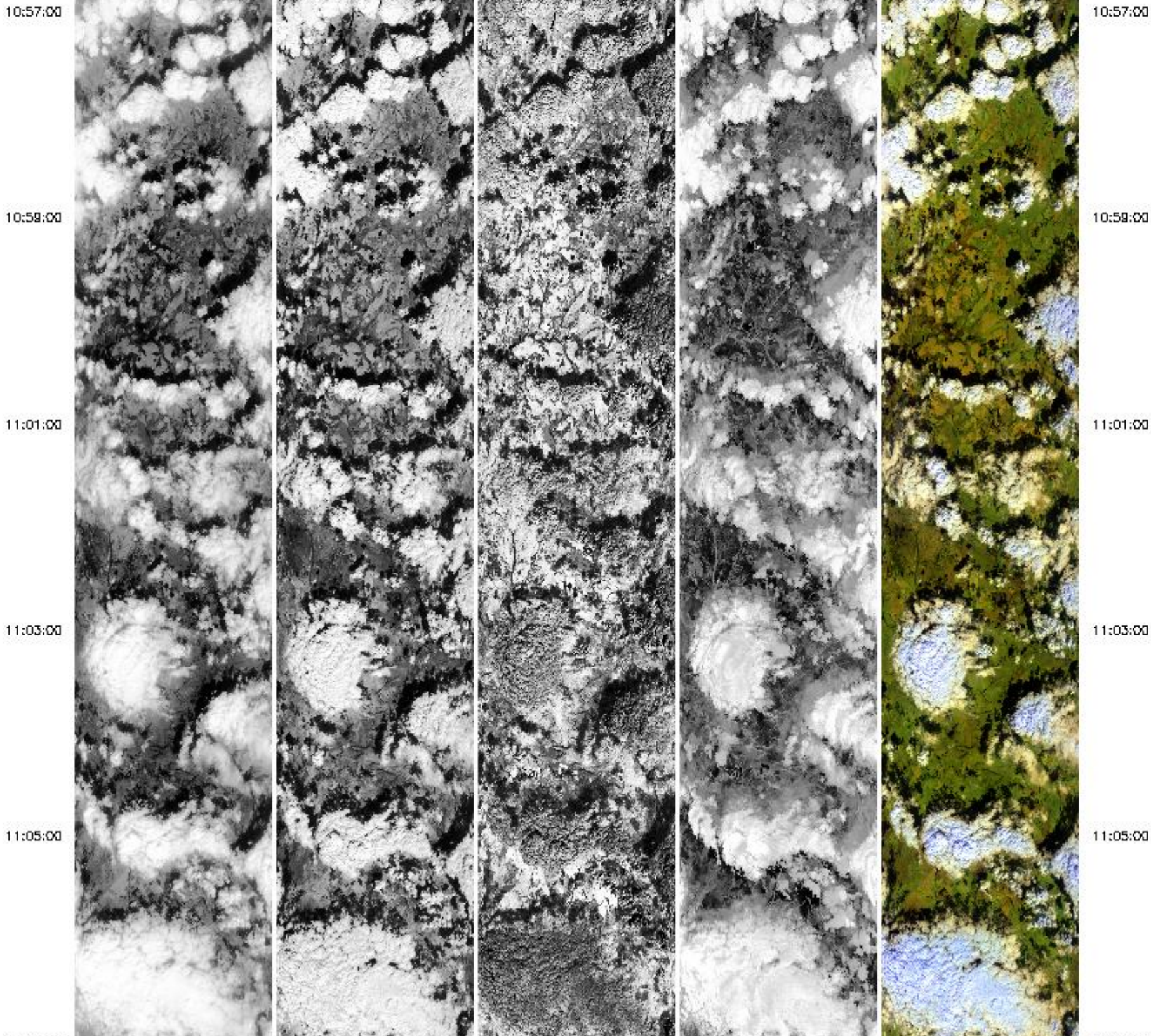
Solar Zenith = 28.4°

GPS Altitude = 20313. m (MSL)

Upper Left Lat, Lon = −26.7°, 28.4°
Lower Right Lat, Lon = −27.1°, 29.3°
Aircraft Heading = 138.6°
Solar Zenith = 28.4°
GPS Altitude = 20313. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #12




10:57:00
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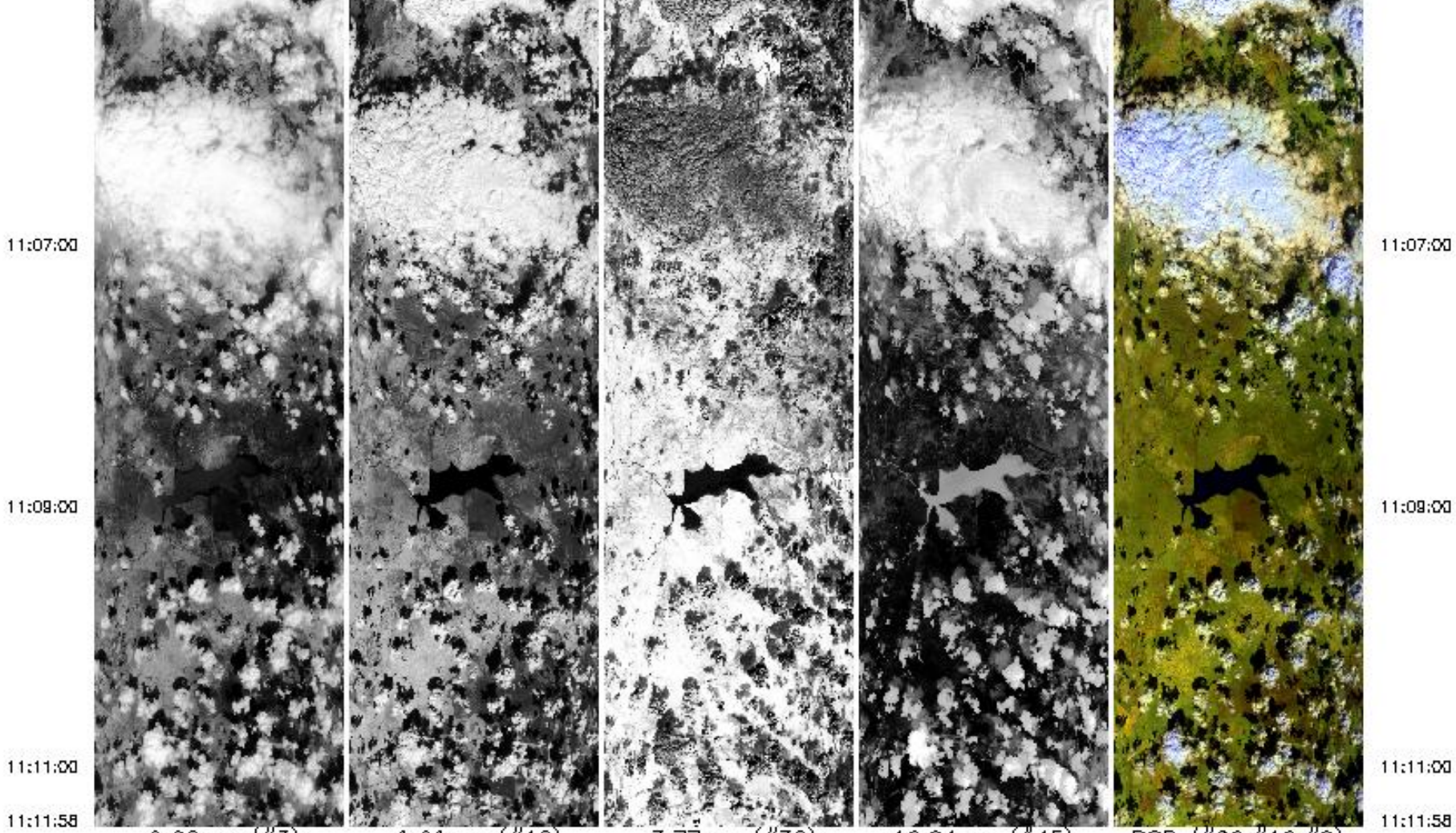
11:01:00
11:03:00
11:05:00

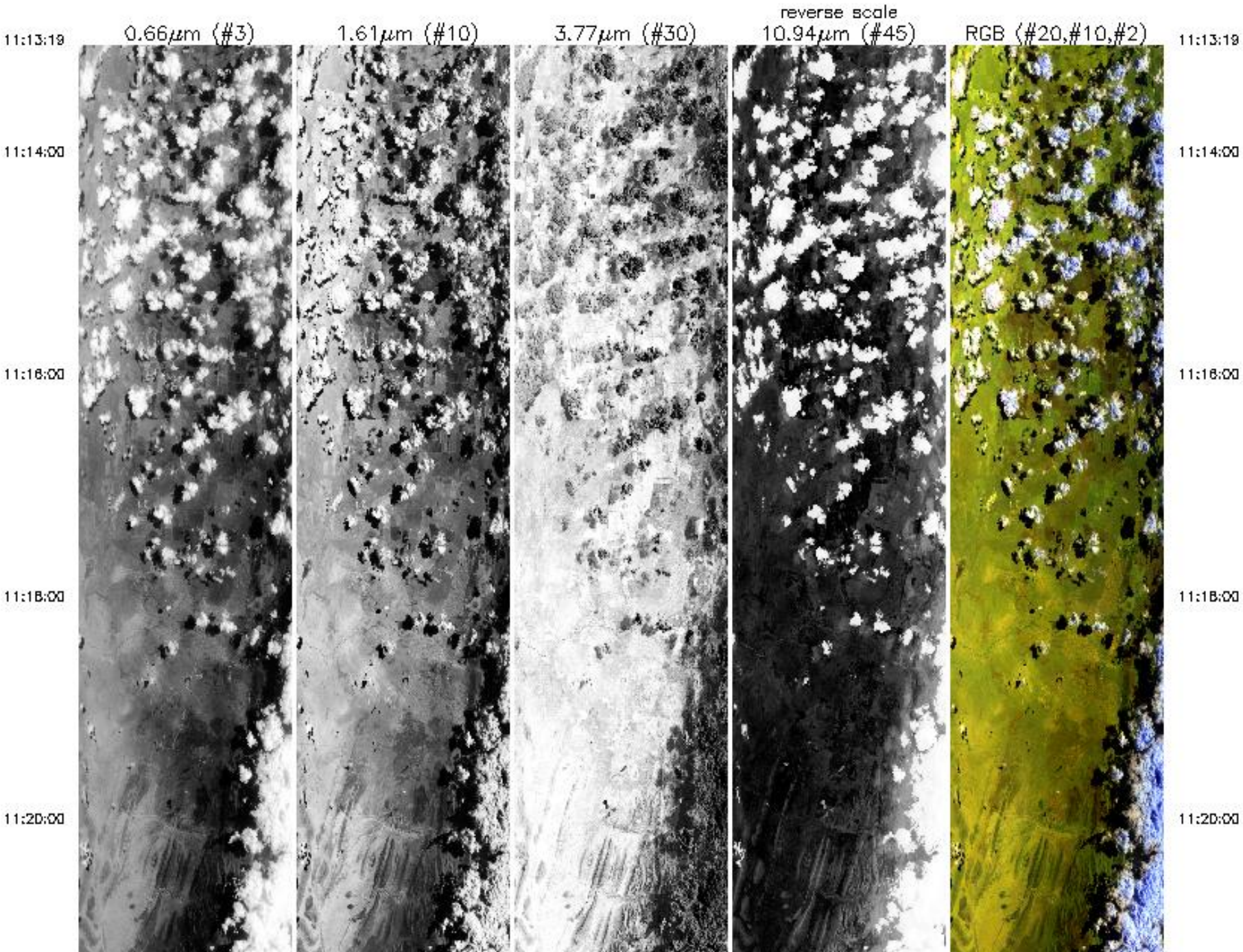


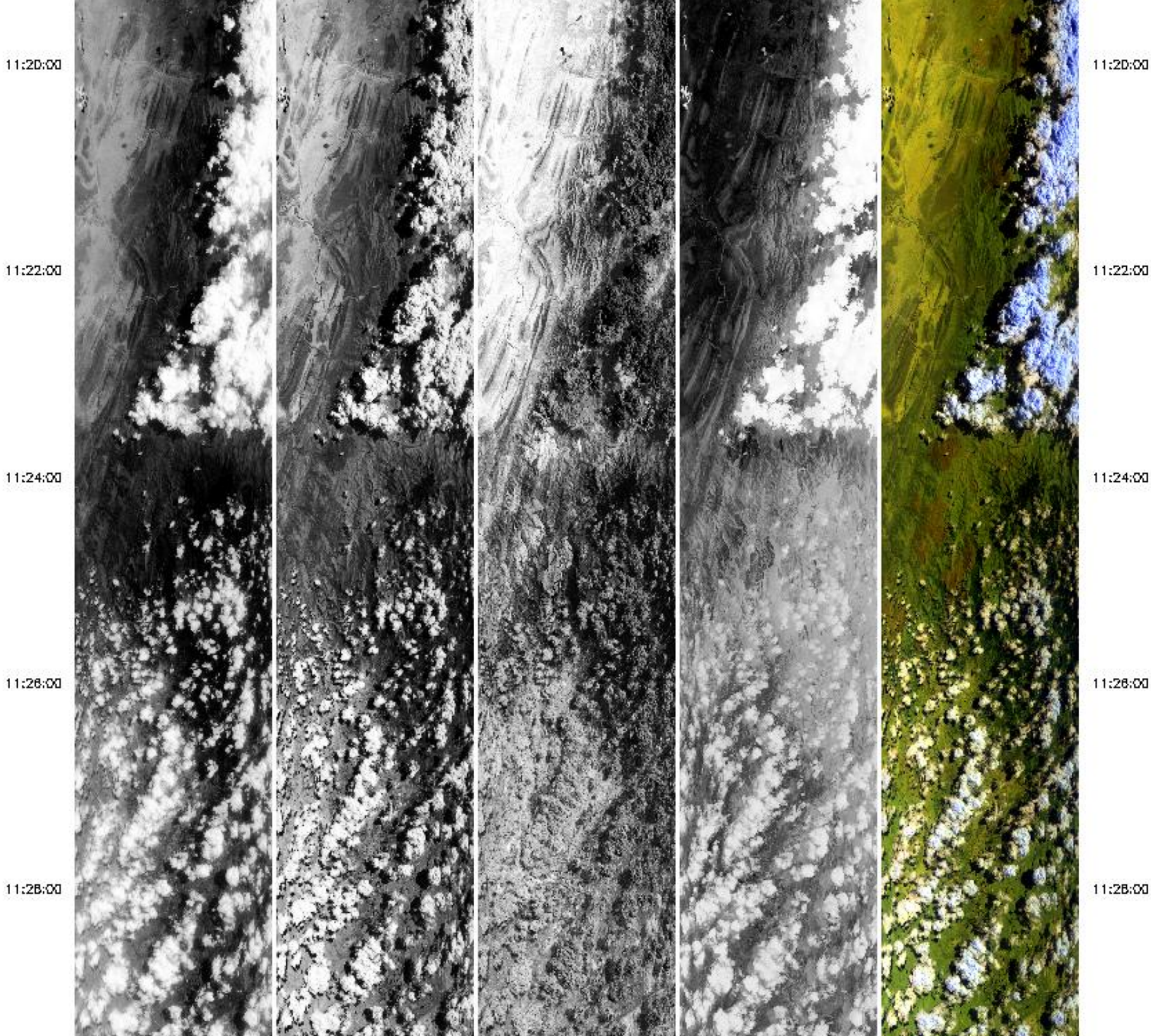
Upper Left Lat, Lon = −27.0°, 29.5°
Lower Right Lat, Lon = −24.9°, 28.6°
Aircraft Heading = 349.9°
Solar Zenith = 30.2°
GPS Altitude = 20370. m (MSL)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #13

0.66μm (#3)
1.61μm (#10)
3.77μm (#30)
10.94μm (#45)
reverse scale
RGB (#20,#10,#2)

MODIS Airborne Simulator Browse Imagery
SAFARI 2000 Campaign – 23 Sep 2000
South Africa
Flight #00–179 Track #13




11:20:00
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11:20:00
11:22:00
11:24:00
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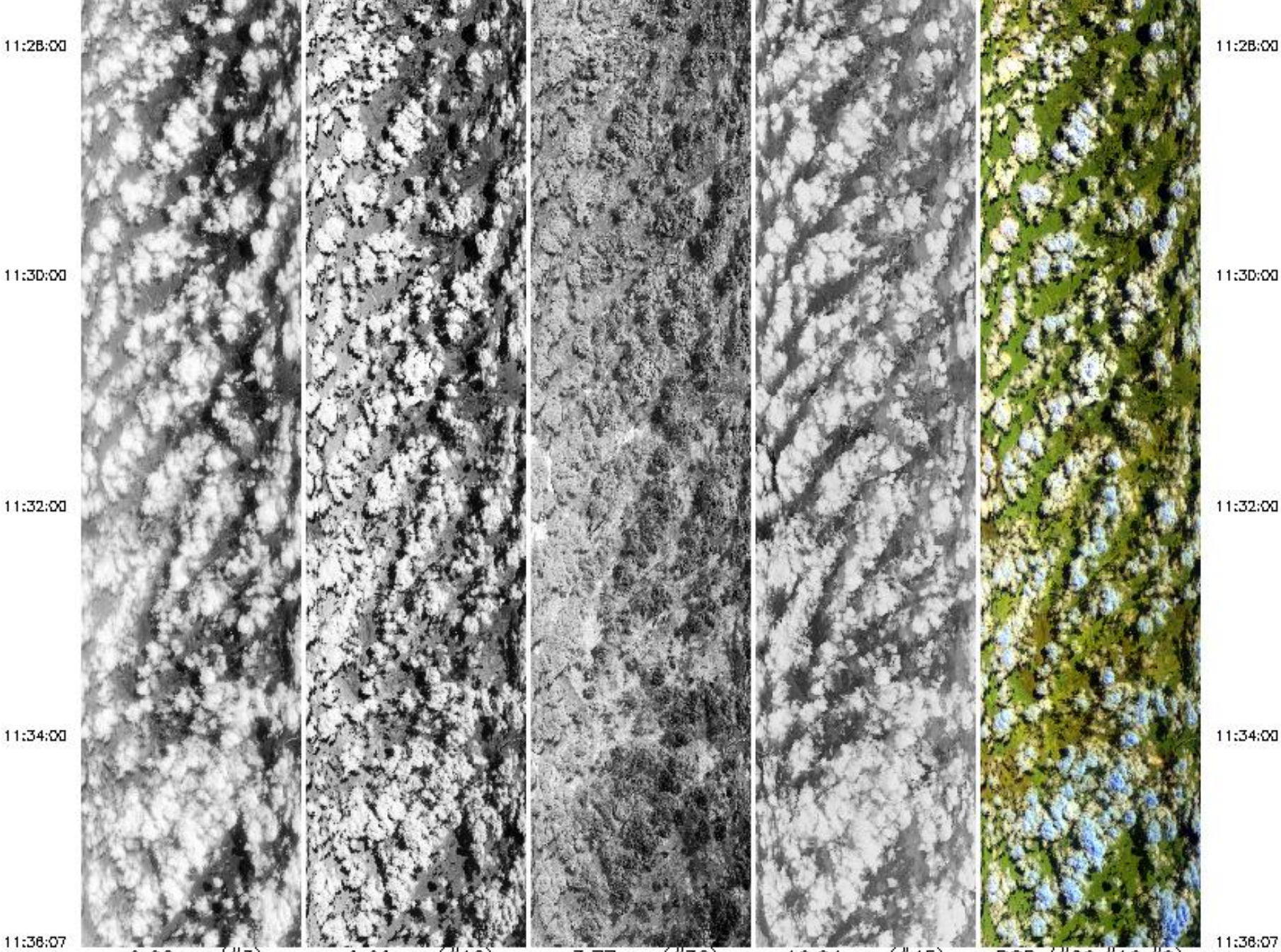
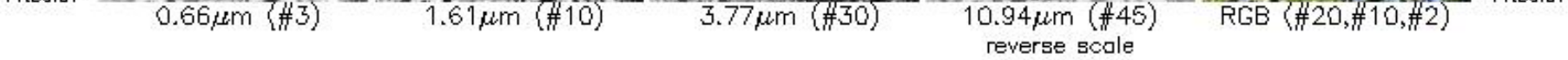
11:28:00



Upper Left Lat, Lon = −24.8°, 28.9°
Lower Right Lat, Lon = −23.3°, 31.1°
Aircraft Heading = 56.2°
Solar Zenith = 30.8°
GPS Altitude = 19876. m (MSL)



0.66μm (#3) | 1.61μm (#10) | 3.77μm (#30) | 10.94μm (#45) reverse scale | RGB (#20,#10,#2)

Upper Left Lat, Lon = −24.8°, 28.9°
Lower Right Lat, Lon = −23.3°, 31.1°
Aircraft Heading = 56.2°
Solar Zenith = 30.8°
GPS Altitude = 19876. m (MSL)