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THE NIMBUS 6 DATA CATALOG
VOLUME 10

1 JANUARY 1977 THROUGH 28 FEBRUARY 1977
DATA ORBITS 7620 THROUGH 8409

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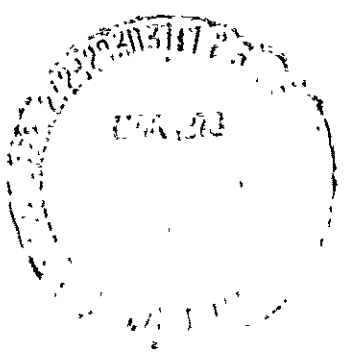

THE NIMBUS 6 DATA CATALOG

Volume 10

1 January 1977 through 28 February 1977
Data Orbits 7620 through 8409

Prepared by

Management and Technical Services Company
Beltsville, Maryland

For the

Landsat/Nimbus Project

December 1977

GODDARD SPACE FLIGHT CENTER
Greenbelt, Maryland

FOREWORD

This is the tenth volume of a series of catalogs to be published by the National Aeronautics and Space Administration to document data acquired from the Nimbus 6 meteorological satellite. This volume covers the period from 1 January 1977 through 28 February 1977. Subsequent catalogs will contain documentation for succeeding periods throughout the useful lifetime of Nimbus 6.

Background information concerning the Nimbus 6 meteorological satellite system and a description of the experiments and data formats has been published separately in The Nimbus 6 User's Guide. Post-launch User's Guide information changes and corrections are included in the data catalogs. The Nimbus 6 catalogs present the type of data available, anomalies in the data, if any, and geographic location and time of the data.

The assembly and editing of this catalog was accomplished by the Management and Technical Services Company (MATSCO), Beltsville, Maryland, under contract number NAS5-23740 with the Goddard Space Flight Center, NASA, Greenbelt, Maryland.

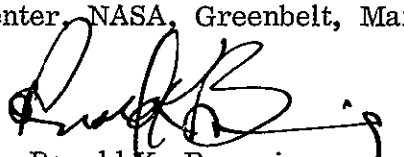

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TABLE OF CONTENTS

		Page
FOREWORD		iii
SECTION 1.	SUMMARY OF OPERATIONS	1-1
1.1	Introduction	1-1
1.2	The Temperature Humidity Infrared Radiometer (THIR) Subsystem	1-5
1.3	The High Resolution Infrared Radiation Sounder (HIRS) Experiment	1-6
1.4	The Scanning Microwave Spectrometer (SCAMS) Experiment	1-6
1.5	The Electrically Scanning Microwave Radiometer (ESMR) Experiment	1-6
1.6	The Earth Radiation Budget (ERB) Experiment	1-6
1.7	The Limb Radiance Inversion Radiometer (LRIR) Experiment	1-7
1.8	The Pressure Modulator Radiometer (PMR) Experiment	1-7
1.9	The Tropical Wind Energy Conversion and Reference Level Experiment (TWERLE)/Random Access Measurement System (RAMS)	1-7
1.10	The Tracking and Data Relay Experiment (T&DRE)	1-8
SECTION 2.	THE ORBITAL ELEMENTS AND DATA AVAILABILITY ON-OFF TIMES	2-1
SECTION 3.	ORBIT DISPLAYS OF ESMR	3-1
SECTION 4.	TEMPERATURE HUMIDITY INFRARED RADIOMETER MONTAGES	4-1
4.1	THIR Nighttime Montages	4-5
4.2	THIR Daytime Montages	4-101
SECTION 5.	CORRECTIONS TO THE NIMBUS 6 USER'S GUIDE	5-1
5.1	THIR Corrections to the User's Guide	5-1
5.2	HIRS Corrections to the User's Guide	5-1
5.3	SCAMS Corrections to the User's Guide	5-1
5.4	ESMR Corrections to the User's Guide	5-8
5.5	ERB Corrections to the User's Guide	5-15
5.6	LRIR Corrections to the User's Guide	5-22
5.7	PMR Corrections to the User's Guide	5-22
5.8	TWERLE Corrections to the User's Guide	5-23
5.9	T&DRE Corrections to the User's Guide	5-25

LIST OF FIGURES

Figure		Page
2-1	World Map	2-4

LIST OF TABLES

Table		Page
1-1	Nimbus 6 Catalog Documentation Summary	1-1
1-2	Pitch Positions for Nimbus 6 1 January through 1 March 1977	1-3
1-3	TWERLE Platform Activity as of 12 June 1976	1-8
2-1	Nimbus 6 Brouwer Mean Orbital Elements for January and February 1977	2-1
2-2	Data Availability On-Off Times	2-6
3-1	Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 828 Through 3932	3-4
3-2	Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 3933 through 6184	3-5
3-3	Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 6185 through the present Data Catalog period	3-6
4-1	Latitude Versus Minutes From Ascending or Descending Node	4-4
5-1	Temperature Range of Gray Scale, and Channel of HIRS Data for each Swath on each HIRS Image Display Between Orbit 426 and 4697	5-2
5-2	Parameter Limits of the Gray Scale for Parameters 1, 2, 3, 5, 11, 12, and 16 on the SCAMS Image Displays between Orbits 426 and 4751	5-4
5-3	Contour Program Options used for Parameters 13, 14, and 15 on the SCAMS Image Display	5-5

LIST OF TABLES (Continued)

Table		Page
5-4	Theoretical brightness temperatures for a saturated tropical troposphere with no clouds and a smooth ocean surface for the period 2 January 1976-31 May 1976	5-7
5-5	Thermistor Calibration Constants used to Calculate the SCAMS Target Temperatures	5-9
5-6	Thermistor Calibration Constants used to Calculate the SCAMS Target Temperatures	5-10
5-7	Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 426 through 827	5-12
5-8	Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 828 through 3932	5-13
5-9	Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 3933 through 6184	5-14
5-10	Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 6185 through present Data Catalog period	5-16
5-11	Stability of Calibration of the ERB Longwave Scanning Calibration	5-19
5-12	Percentage Change of the Maximum Deviation in the Gain Ratio between Post-launch and Pre-launch Gain Values for ERB channels 1 through 14	5-20
5-13	Optical Characteristics of LRIR Channels	5-22
5-14	Nimbus RAMS Experiments - Address Changes	5-23
5-15	New TWERLE User's, Added Since Launch	5-26

SECTION 1

SUMMARY OF OPERATIONS

1.1 Introduction

Nimbus 6 was successfully launched from the Western Test Range, Vandenberg Air Force Base, California at 08 hr. 12 min. 00 sec. GMT on 12 June 1975. The orbit was nearly circular at 1093 x 1105 km. Satellite operations from launch through 14 July (orbit 425) consisted of engineering evaluation of all spacecraft systems. As a result of that effort, data reception, accountability and processing were intermittent during that period. Therefore, Volume 1 in this catalog series mainly reflects documentation from orbit 426 (14 July) through orbit 1082 (31 August). During orbit 4905 (12 June 1976) Nimbus 6 successfully completed one year of operations. Table 1-1 is a summary of the documentation for each Nimbus 6 Data Catalog volume.

Because the spacecraft power is limited, all experiments are not on at the same time. During this catalog period the THIR*, ESMR, ERB, PMR and TWERLE/RAMS (Random Access Measurement System) were recorded for almost all orbits. The exception to this schedule occurred when the T&DRE and ESMR experiments split their operating time; the T&DRE was on approximately two days while the ESMR was off, followed by ESMR being on for two days while T&DRE was off. This schedule continued through orbit 8283 (19 February) when ESMR resumed full-time operations. ESMR data quality from both Horizontal and Vertical channels was good through orbit 6183

*THIR sensor fails during orbit 8029 (31 January) and restarts during orbit 8195 (12 February).

Table 1-1

Nimbus 6 Catalog Documentation Summary

Volume	Dates	Orbits
1	12 June 75-31 Aug. 75	1-1082
2	1 Sept. 75-31 Oct. 75	1083-1900
3	1 Nov. 75-31 Dec. 75	1901-2717
4	1 Jan. 76-29 Feb. 76	2718-3521
5	1 Mar. 76-30 Apr. 76	3522-4338
6	1 May 76-30 Jun. 76	4339-5155
7	1 July 76-31 Aug. 76	5156-5985
8	1 Sept. 76-31 Oct. 76	5986-6802
9	1 Nov. 76-31 Dec. 76	6803-7619
10	1 Jan. 77-28 Feb. 77	7620-8409

(15 September). After orbit 6184 (15 September), the Horizontal channel output went to zero and telemetry information indicates a failure of the Ferrite Dicke switch. The Vertical channel remains in good working order with data being collected and processed. These data are being used in the analysis of hurricanes and tropical storms. The SCAMS instrument functioned through orbit 4751 (31 May 1976); after the above mentioned date, the SCAMS instrument ceased to function due to a scan mechanism anomaly, see Section 5.3 this catalog. The HIRS instrument failed during orbit 4697 (27 May) when a filter chopper motor anomaly occurred. As a precautionary measure, the HIRS subsystem was turned off. Due to the depletion of methane in the cryogenic cooler, the last useable data from the LRIR experiment was received during orbit 2801 (7 January 1976). The on-off cycle for each experiment is shown in Table 2-2 in Section 2 of this catalog.

Because of an anomaly in the functioning of the High Data Range Storage subsystem (HDRSS) B, first noted during orbit 33 (14 June), HDRSS B has been limited to 65 minutes of record capability (out of a possible 120 minutes). With only HDRSS B available for full-time use, there are occasional periods when global experiment coverage is not obtained. (These occur when the Orroral, Australia STDN station is not available for playback of recorded experiment data.) The areas not covered are usually over the western part of the Pacific Ocean and/or the eastern part of the Atlantic Ocean. During orbit 4641 the HDRSS A recorder failed to record. Prior to the above date, HDRSS A was successfully used operationally 120 minutes every other orbit with HDRSS B providing 65 minutes of alternate coverage. Complete failure of HDRSS A occurred during orbit 4713 and despite many attempts to engage the system in a record mode, it has not recorded since orbit 4713 (28 May). The areas most affected by the lack of HDRSS A experiment coverage are the latitudes north of the Equator during the nighttime orbital passes. The daytime coverage remains virtually unchanged with the exception as noted in the above paragraph.

The pitch of the Nimbus 6 satellite has been made to alternate between +2.0 degrees, +0.6 degrees, and 0.0 degrees since launch. Table 1-2 lists the orbits when each pitch position was used.

A positive pitch angle of 0.6 degrees moves the nadir-looking position 11.5 kilometers ahead of the subsatellite point. A positive pitch angle of 2.0 degrees moves the nadir-looking position 38.3 kilometers ahead of the subsatellite point.

At these pitch angles, a scanner-type instrument no longer scans the earth along a great circle arc through the subpoint, but scans along the small circle formed by the intersection of the scan plane with the earth. Since the plane of the small circle is tilted with respect to the nominal scan plane, points on the arc are displaced farther from the great circle as the scan angle increases. As noted above, a pitch angle of 0.6 degrees causes a displacement of 11.5 kilometers at nadir, but when the scanner turns 45 degrees away from nadir the displacement increases slightly to 12.8 kilometers. Similarly, for a 2.0 degree pitch the displacement is 38.3 kilometers at

Table 1-2

Pitch Positions for Nimbus 6
01 January through 01 March 1977 (Orbits 7620-8412)

Pitch Change			Pitch Bias	
Date (1977)	Orbit and STDN	Time (GMT)	+0.6°	+0.0°
1 Jan.	7632A*	2247	X	
2 Jan.	7635R*	0432		X
13 Jan.	7793A	2320	X	
14 Jan.	7797R	0651		X
14 Jan.	7801A	1351	X	
15 Jan.	7807O*	0141		X
18 Jan.	7847O	0122	X	
18 Jan.	7854A	1250		X
18 Jan.	7860A	2324	X	
19 Jan.	7866A	1023		X
19 Jan.	7863A	2240	X	
20 Jan.	7880A	1127		X
20 Jan.	7887A	2344	X	
21 Jan.	7891R	0721		X
21 Jan.	7896A	1600	X	
21 Jan.	7898A	1930		X
22 Jan.	7904R	0639	X	
23 Jan.	7914A	0011		X
23 Jan.	7923A	1624	X	
24 Jan.	7933A	1028		X
24 Jan.	7939A	2100	X	
25 Jan.	7949A	1504		X
25 Jan.	7953A	2242	X	
26 Jan.	7960A	1049		X
26 Jan.	7966A	2123	X	
27 Jan.	7967A	1526		X
27 Jan.	7980A	2227	X	
28 Jan.	7986A	0926		X
28 Jan.	7990A	1620	X	
28 Jan.	7990A	1631		X
28 Jan.	7992A	1957	X	
29 Jan.	8000A	1034		X
29 Jan.	8005A	1914	X	
30 Jan.	8012A	0806		X

Table 1-2 (continued)

Pitch Change			Pitch Bias	
Date (1977)	Orbit and STDN	Time (GMT)	+0.6°	+0.0°
30 Jan.	8017A	1650	X	
30 Jan.	8020A	2211		X
30 Jan.	8020A	2212	X	
31 Jan.	8025A	0721		X
31 Jan.	8031A	1751	X	
1 Feb.	8042A	1345		X
1 Feb.	8046A	2042	X	
3 Feb.	8054A	1119		X
3 Feb.	8060A	2147	X	
4 Feb.	8066A	0849		X
4 Feb.	8073A	2105	X	
5 Feb.	8078R	0626		X
5 Feb.	8100A	2100	X	
6 Feb.	8104R	0504		X
7 Feb.	8117R	0417	X	
7 Feb.	8122A	1307		X
8 Feb.	8139A	1927	X	
9 Feb.	8144R	0443		X
9 Feb.	8154A	2218	X	
10 Feb.	8157R	0404		X
10 Feb.	8167A	2137	X	
11 Feb.	8171R	0506		X
12 Feb.	8194A	2159	X	
13 Feb.	8198R	0530		X
14 Feb.	8221A	2222	X	
15 Feb.	8225R	0554		X
16 Feb.	8247A	2057	X	
17 Feb.	8253A	0757		X
18 Feb.	8273A	1930	X	
19 Feb.	8279R	0641		X
20 Feb.	8289O	0015	X	
20 Feb.	8294A	0926		X
21 Feb.	8303O	0241	X	
21 Feb.	8303O	0242		X
21 Feb.	8312A	1734	X	
22 Feb.	8316O	0153		X
22 Feb.	8327A	2019	X	
23 Feb.	8332R	0540		X

Table 1-2 (continued)

Pitch Change			Pitch Bias	
Date (1977)	Orbit and STDN	Time (GMT)	+0.6°	+0.0°
23 Feb.	8341O	2127	X	
24 Feb.	8344W*	0257		X
24 Feb.	8355A	2230	X	
25 Feb.	8360A	0745		X
26 Feb.	8372R	0520	X	
26 Feb.	8376A	1221		X
26 Feb.	8382A	2252	X	
27 Feb.	8385R	0439		X
27 Feb.	8395A	2211	X	
28 Feb.	8399R	0544		X
28 Feb.	8407A	1940	X	
01 Mar.	8412R	0459		X

*A = Fairbanks, Alaska; O = Orroral, Australia; R = Rosman, North Carolina; W = Winkfield, England

nadir and increases to 42.6 kilometers at a 45 degree scan angle. Thus, although the instrument records in lines normal to the orbit plane (in the absence of yaw) the perpendicular displacement from the perfect-attitude scan line is not uniform across the scan line.

Subsections 1.2 through 1.10 of this catalog summarize the operational highlights of the individual experiments, present preliminary experiment results, and call attention to known data anomalies. Section 2 lists the on-off times for each experiment and provides a method for determining the geographical coverage of each experiment. Section 3 shows selected ESMR images, and Section 4 presents THIR montages. Section 5 presents corrections to The Nimbus 6 User's Guide.

The user is referred to The Nimbus 6 User's Guide for a complete description of each experiment and to Section 1.7 of that Guide for the requesting procedure and sources for all data. Sections 2, 3, and 4 of this Data Catalog should help users select data to meet their needs.

1.2 The Temperature Humidity Infrared Radiometer (THIR) Subsystem

The THIR Radiometer Mirror anomaly previously reported in Volume 8, was again noted from 31 January (orbit 8029) through 12 February (orbit 8195). After orbit 8195 the Radiometer Mirror anomaly was corrected and THIR operations are back to normal. Daily world montages of the THIR are presented in Section 4 of this catalog. All processed THIR film is archived and available through the National Space

Science Data Center, as is all available THIR digital data. The THIR digital products are processed to final format only on request. Users should refer to Section 4 of this catalog, and to Sections 1.7 and 2.4 of The Nimbus 6 User's Guide for a discussion of the formats and procedure to order these products.

1.3 The High Resolution Infrared Radiation Sounder (HIRS) Experiment

During this reporting period, the HIRS instrumentation system did not operate. The last operational data was obtained during orbit 4697 (27 May) when a subsystem anomaly (Filter Chopper motor failed) occurred; causing the subsystem to be turned off as a precautionary move. Subsequent operations after orbit 4697 are to be construed as evaluations of the subsystem anomaly. Valid operational data is not available after the above date (27 May 1976).

1.4 The Scanning Microwave Spectrometer (SCAMS) Experiment

The SCAMS instrument ceased functioning during orbit 4751 (31 May) due to jamming of the scan mechanism. Scan problems as discussed in Volume 5 first developed during orbit 3862 (26 March) when the drive belt for channel 2 (31.65 GHz) antenna started slipping. The loss of data from channel 2 prevented retrieval of atmospheric water vapor and liquid water during said catalog period; the inversion matrices for atmospheric temperature were redefined to exclude channel 2, and temperature retrievals were continued until 31 May. (Since this last date, various improvements have been made with respect to data retrieval, calibration of oxygen band channel and inversion of H_2O channels. For a current summary of events as relates to SCAMS, see Section 5.3).

1.5 The Electrically Scanning Microwave Radiometer (ESMR) Experiment

The ESMR performance continued to be satisfactory through orbit 6183 (15 September). After orbit 6184 (15 September), the Horizontal channel output went to zero and telemetry information indicates a failure of the Ferrite Dicke switch. There was no effect of data from the Vertical channel. Data are being collected and processed with the EIS display updated to process only the Vertical channel data. See Section 3 for a new table of values and selected ESMR images for this catalog period.

1.6 The Earth Radiation Budget (ERB) Experiment

The Solar and wide-angle Earth-Flux channels continued to operate in the non-scanning mode. The data quality is good and the ERB sensor is operating full-time as power permits. The scanning channels operate only in the nadir position because of mechanical scan problems.

1.7 The Limb Radiance Inversion Radiometer (LRIR) Experiment

The last useable data from the LRIR was received during orbit 2801 (7 January). By this orbit the methane used to cool the detector was depleted and the telemetry indicating the detector temperature was saturated at 73.6°K. The ammonia temperature was constant until orbit 2787 (6 January) when it began to increase and then became erratic-varying from 145.6°K to 150.0°K. At orbit 2802 (7 January) the temperature of 145.6°K began increasing and by orbit 2806 it was at 165.7°K, when the LRIR was turned off. Since the above date, the experiment has been turned on during several occasions to record the ammonia temperature. The last reading, orbit 5014 (20 June) indicated that the cryogen shield temperature reached telemetry saturation at 263°K. With all of the coolants (Methane-ammonia) depleted and useable experiment data nonexistent; the LRIR is expected to be in a permanent non-operational mode even though the instrument and telemetry are completely functional.

1.8 The Pressure Modulator Radiometer (PMR) Experiment

During this catalog period, special Northern Hemisphere coverage was provided the PMR experimenters for an "Upper Atmospheric Warning" study. Coverage schedule was on an every other day basis with the instrument being operational during the entire reporting period. Data quality from both channels was satisfactory. All acquired data was routinely transmitted from GSFC to the experimenter at Oxford, England.

1.9 The Tropical Wind Energy Conversion and Reference Level Experiment (TWERLE)/ Random Access Measurement System (RAMS)

With the successful conclusion of the TWERLE Experiment, data transmission to the National Center for Atmospheric Research was terminated on 10 August 1976. A summary report detailing various aspects of the experiment has been published and may be found in the following publication authored by: Julian, P., Massnon, M., Levanson, N.: The TWERL Experiment. Bulletin of the American Meteorological Society., vol. 58, no. 9, September 1977, pp. 936-948.

Since the TWERLE Experiment and Random Access Measurement System (RAMS) were an integral part of the total operations; the RAMS subsystem continues to be used to track and monitor various experimental platforms. During this catalog period, the RAMS subsystem was successfully used to track the "oil spill" in the Atlantic Ocean from the Argo Merchant Tanker that ran aground along the New England coast during a severe winter storm.

As of 12 June 1976, (Nimbus 6 one year anniversary) over 700 platforms had been activated. Table 1-3 shows distribution of these platforms. The full address of each experimenter is given in Table 9-2 in the Nimbus 6 User's Guide. (Corrected addresses for many of these experimenters, and addresses for several new experimenters, are given in Section 5.8 of this catalog.) Anyone interested in results from a particular experiment should write to the principal investigator for that experiment.

1.10 The Tracking and Data Relay Experiment (T&DRE)

The T&DRE performance was satisfactory during this catalog period. The orbits when the T&DRE was operated are listed in Table 2-2 in Section 2. Significant accomplishments of T&DRE are discussed in Data Catalog Volume 1, Section 1.10.

Table 1-3

TWERLE Platform Activity as of 12 June 1976

Principal Investigator	Platform			
	Type	Active	Inactive	Total
Dr. Paul R. Julian Boulder, Colorado	Balloons	81	275	356
Professor Norbert Untersteiner Seattle, Washington	Ice Buoys	26	6	32
Dr. Hanson Miami, Florida	Drifting Buoys	12	33	45
Mr. Vincent Lally Boulder, Colorado	Balloons	0	21	21
Dr. P. Richardson Woods Hole, Massachusetts	Drifting Buoys	0	1	1
Mr. Arnold Gordon Palisades, New York	Drifting Buoys	4	20	24
Mr. Tim P. Barnett La Jolla, California	Drifting Buoys	3	13	16
Mr. Robert Kee Washington, D. C.	Drifting Buoys	0	2	2
Mr. R. E. Vockeroth Ontario, Canada	Buoys	2	0	2
Mr. Jack Lentfer Anchorage, Alaska	Polar Bears	1	1	2
Mr. B. M. Buck Santa Barbara, California	Drifting Buoys	3	2	5
Mr. Fernando DeMendonca Sao Paulo, Brazil	Buoys	0	2	2

Table 1-3 (continued)

Principal Investigator	Platform			
	Type	Active	Inactive	Total
Mr. George Cresswell Cronulla, Australia	Drifting Buoys	9	5	14
Dr. A. Dyer Mordialloc, Australia	Drifting Buoys	0	3	3
Professor Lacombe Paris, France	Drifting Buoys	1	4	5
Mr. C. K. Jenson/J. Nordo Oslo, Norway	Buoys	2	0	2
Mr. T. Haegh/T. Vinje Oslo, Norway	Ice Buoys	5	5	10
Mr. Frank Anderson Congella, South Africa	Drifting Buoys	5	5	10
Professor H. Stommel Cambridge, Massachusetts	Drifting Buoys	0	6	6
Dr. A. D. Kirwan, Jr. College Station, Texas	Drifting Buoys	0	12	12
Mr. H. N. Brann Melbourne, Australia	Drifting Buoys	1	5	6
Professor Morel Paris, France	Balloons & Buoys	0	47	47
Dr. John Garrett Victoria, B. C. Canada	Drifting Buoys	2	33	35
Professor Tchernia Paris, France	Drifting Buoys	3	2	5
Mr. R. R. Dickson Lowestoft, Suffolk, U.K.	Drifting Buoys	1	5	6
Dr. Michael Hall Bay St. Louis, Mississippi	Buoys	9	10	19
Mr. David Thomas, Jr. Hampton, Virginia	Buoys	0	6	6
Dr. J. Williamson La Jolla, California	Balloons	0	1	1

Table 1-3 (continued)

Principal Investigator	Platform			
	Type	Active	Inactive	Total
Mr. J. C. O'Rourke Calgary, Canada	Buoys	2	0	2
Mr. Robert Oehlkers Madison, Wisconsin	Buoys	2	8	10
Capt. E. A. Delaney Washington, D. C.	Buoys	1	0	1
Dr. R. H. Goodman Alberta, Canada	Buoys	1	1	2
Dr. D. Halpern Seattle, Washington	Buoys	2	1	3
TOTALS		178	535	713

SECTION 2

THE ORBITAL ELEMENTS AND DATA AVAILABILITY ON-OFF TIMES

This section presents the Nimbus orbital elements for selected epochs, tabulates the time when each of the experiments was recording data, and gives procedures for determining the time and orbit when the satellite is over a given geographical area (and thus determining the location of coverage for each experiment).

The Nimbus 6 Brouwer Mean Orbital elements for selected epochs during January and February 1977 are listed in Table 2-1.

Table 2-1

Nimbus 6 Brouwer Mean Orbital Elements for
January and February 1977

Epoch	GMT	12 Jan. 77 00 00 00	24 Jan. 77 00 00 00	11 Feb. 77 00 00 00	21 Feb. 77 00 00 00
Semi-Major Axis	Km	7485.342	7485.345	7485.339	7485.340
Eccentricity		.000731	.000745	.000776	.000814
Inclination	Degrees	99.951	99.951	99.951	99.953
Argument of Perigee	Degrees	286.340	256.080	209.764	185.321
Right Ascension of Ascending Node	Degrees	285.986	297.756	315.415	325.223
Height of Perigee	Km	1101.71	1101.60	1101.37	1101.08
Height of Apogee	Km	1112.65	1112.76	1112.98	1113.27
Anomalistic Period	Minutes	107.41748	107.41755	107.41742	107.41743
Motion of Perigee	Deg. per Day	-2.4199	-2.4200	-2.4200	-2.4198

As previous elements indicated, the orbital period was slowly increasing (approximately 22 milliseconds per day) and the satellite was moving into a slightly higher orbit. This effect was attributed to the thrust given by the solid methane and ammonia sublimating from the LRIR solid cooler. Since 26 May 1976, the orbital period appears to have stabilized and has remained constant at 107.418 minutes. Thus with the depletion of the solid methane and ammonia now complete; the predicted (Vol. 4, Sec. 2) stabilization of the orbital period by mid-1976 has been confirmed. The elements listed in Table 2-1 do not account for this effect. When these elements are used more than seven days from epoch, location errors of greater than 60 km (about ten seconds of time), can be expected. If more accurate ephemeris are needed for a specific time period, write to the Nimbus Project, Code 430, Goddard Space Flight Center, Greenbelt, Maryland 20771.

The data availability on-off times, listed in Table 2-2, are the times when the data from each experiment was recorded on a HDRSS and processed through the Meteorological Data Handling System (MDHS) at Goddard Space Flight Center. The Table 2-2 header labels and their meaning are as follows:

- INT ORBIT AND STDN

  The satellite orbit number in progress when the satellite data is relayed to a ground station is called the interrogation orbit (INT ORBIT). The ground stations receiving the Nimbus 6 satellite data are part of the Spacecraft and Tracking Data Network (STDN). There are four STDN stations receiving Nimbus 6 experiment data: Fairbanks, Alaska (denoted by the letter "A"); Rosman, North Carolina (R); Orroral, Australia (O); and Winkfield, England (W).

- HDRS

  The HDRS (High Data Rate Storage System - HDRSS) is the acronym for the satellite tape recorder system. Recorder "A" or "B" (or both) is played back during each STDN station interrogation.

- HDRSS TIME ON-OFF

  The HDRSS ON and OFF times are given in GMT to the nearest minute. The ON time is the time the (A or B) HDRSS begins recording experiment measurements; the OFF time is when it stops recording. Usually, the ON and OFF times occurs when the satellite is within acquisition range on one of the four STDN stations. The time span between each ON and OFF usually covers part of two DATA ORBITS.

- LRIR, THIR, TDRE, SCAM, ESMR, ERB, PMR, TWRL, HIRS

  These are the acronyms for each of the experiments on Nimbus 6. (Acronyms longer than four letters have been shortened.) The column beneath each acronym contains a series of "X's" or "blanks." Each "X" in the column indicates that the data for that experiment was processed at GSFC. A "blank" usually indicates that the experiment was turned off for the HDRSS ON-OFF in that line. A single "blank" in the middle of a series of "X's" frequently means that the experiment was on during that time span but the data has not been processed, or is unavailable for any of several reasons.

- DATA ORBIT

  A DATA ORBIT begins when the satellite crosses the equator heading in a northbound direction, and ends after the satellite has circled the earth and is about to cross the equator heading in a northbound direction. The DATA ORBIT number increases by one with each successive northbound equator crossing. The ASCENDING NODE and DESCENDING NODE information is referenced to the DATA ORBIT number.

- ASCENDING NODE TIME (and) LONG

  The ASCENDING NODE is the point in the orbit when the satellite crosses the equator heading in a northbound direction. The TIME of ASCENDING NODE is given in hours (HR), minutes (MN), and seconds (SS) GMT. The longitude (LONG) of ASCENDING NODE is given to the nearest tenth of a degree of east (E) or west (W) longitude. For Nimbus 6, the ascending node crossings always occur during the daytime portion of the orbit at approximately 11:45 a.m. local time.

- DESCENDING NODE TIME (and) LONG

  The DESCENDING NODE is the point within a DATA ORBIT when the satellite crosses the equator heading in a southbound direction. The TIME of DESCENDING NODE is given in hours (HR), minutes (MN), and seconds (SS) GMT. The longitude (LONG) of DESCENDING NODE is given to the nearest tenth of a degree of east (E) or west (W) longitude. The descending node crossings always occur during the nighttime portion of each orbit at approximately 1 1:45 p.m. local time.

Table 2-2 together with the World Map (Figure 2-1) and the vellum-Subsatellite Tracks Overlay attached to the back of this catalog, can be used to determine approximate geographic coverages and times for experiment data that the user may wish to order. The Overlay contains 14 correctly spaced satellite subpoint tracks, which end

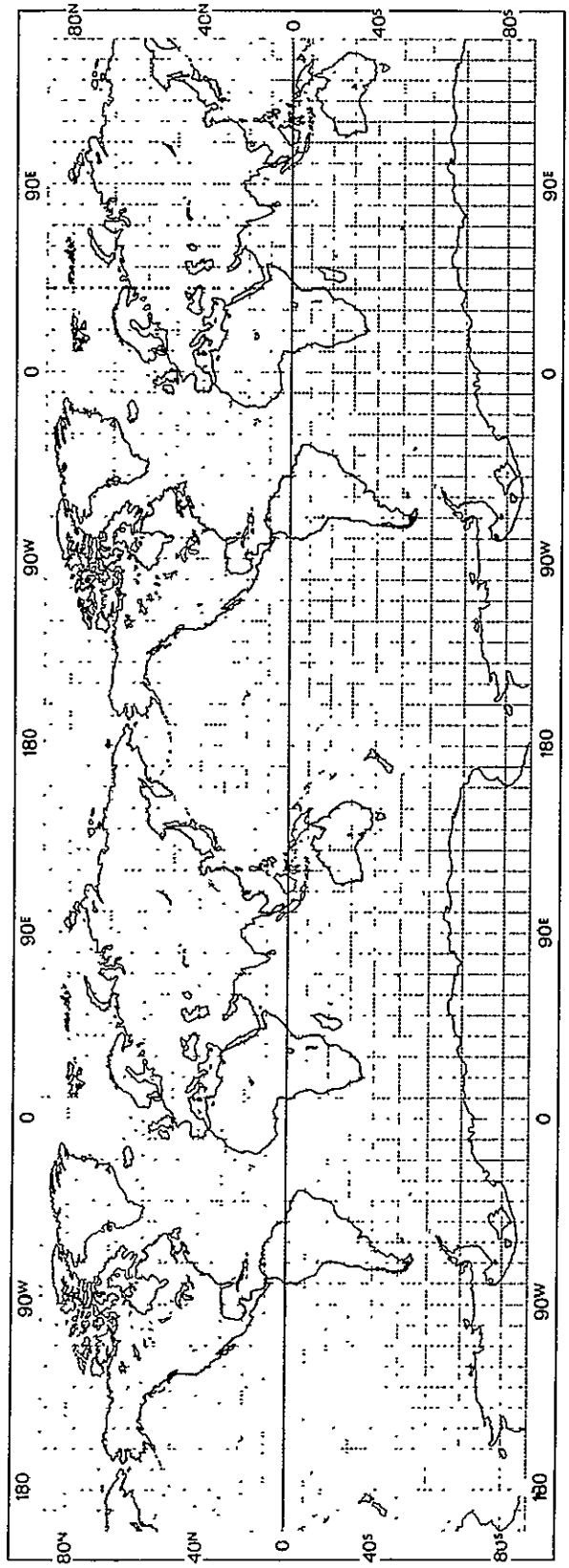


Figure 2-1. World Map

at the approximate earth day-to-night transitions. The tracks contain time ticks spaced 5 minutes apart, appropriately annotated at the edge of the overlay and referenced to the equator.

A Subsatellite Tracks Overlay is correctly oriented with the World Map when the ascending or descending node line (equator) on the overlay coincides with the 0-degree latitude line (equator) of the World Map.

Orbital coverage for all orbits on any day is then determined by placing one of the orbit tracks on the overlay at its appropriate ascending node (for daytime data) or descending node (for nighttime data) longitude. (The nodes for each day are listed in Table 2-2.) The orbit track (or tracks) which covers the area of interest is readily apparent.

The time (GMT) of satellite passage over an area of interest is calculated by adding or subtracting the minutes from equator crossing (as determined from the overlay) to the appropriate node time (derived from Table 2-2). For daytime orbits, time is added to the ascending node for areas north of the equator, and subtracted from the ascending node for areas south of the equator. For nighttime orbits, time is subtracted from the descending node for areas north of the equator, and added to the descending node for areas south of the equator.

To determine if an experiment was ON during the calculated orbit and time of interest, the user must first "fit" the calculated time into the correct ON-OFF interval of an interrogation orbit listed in Table 2-2. Then the user must check the appropriate experiment column for that line. If an "X" is in the column, the experiment was on and the data has been processed. If the column is "blank", the experiment was off (or the data was not processed) and no data for that orbit is available.

An alternate method of determining geographic coverage and time of data is to use the method described in Section 4. The THIR montages and the vellum Location Guides (attached in the back of this catalog) are used to locate the geographical coverages of each orbit of THIR. The data coverage from other experiments will be within the limits of each THIR swath. The TIME of coverage over a particular area is obtained by using Table 4-1 and adding or subtracting this computed time to the appropriate ascending or descending node time given in Table 2-2.

Each request for data should contain, as a minimum, the name of the experiment for which data is requested, the calendar date of the data, the orbit, the time (GMT) interval of the data needed, and the geographic limits of the area of interest. The procedures described above will provide this information.

The nature and format of the data available from each experiment are explained in detail in the respective sections of The Nimbus 6 User's Guide. The appropriate sources for requesting the various data types are listed in Section 1.7 of the same manual.

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
01 JANUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E P R B	M P R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
76200	B	0047	0151					X	X	X	X		7620	005534	E160.8	014918	W032.7
7622R	B	0232	0337		X			X	X	X	X		7621	024305	E133.9	033649	W059.6
7623R	B	0547	0707		X			X	X	X	X		7622	043037	E107.0	052421	W086.4
7625A	B	0912	1034		X			X	X	X	X		7623	061809	E080.1	071153	W113.3
7626A	B	1059	1222		X			X	X	X	X		7624	080541	E053.3	085925	W140.2
7627A	B	1244	1405		X			X	X	X	X		7625	095312	E026.4	104656	W167.1
7628A	B	1428	1549		X			X	X	X	X		7626	114044	W000.5	123428	E166.1
7629A	B	1611	1734		X			X	X	X	X		7627	132816	W027.4	142200	E139.2
7630A	B	1757	1919		X			X	X	X	X		7628	151548	W054.3	160932	E112.3
7631A	B	1945	2105		X			X	X	X	X		7629	170319	W081.2	175703	E085.4
7632A	B	2131	2251		X			X	X	X	X		7630	185051	W108.1	194435	E058.5
													7631	203823	W135.0	213207	E031.6
													7632	222555	W161.8	231939	E004.7

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
02 JANUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E P R B	M P R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
76330	B	0035	0140					X	X	X	X		7633	001326	E171.3	010710	W022.1
76340	B	0152	0256					X	X	X	X		7634	020058	E144.4	025442	W049.0
7635R	B	0336	0440		X			X	X	X	X		7635	034830	E117.6	044214	W075.9
7636R	B	0505	0627		X			X	X	X	X		7636	053602	E090.7	062946	W102.8
7637A	B	0645	0803		X			X	X	X	X		7637	072333	E063.8	081717	W129.7
7638A	B	0831	0952		X			X	X	X	X		7638	091105	E036.9	100449	W156.6
7639A	B	1017	1140		X			X	X	X	X		7639	105837	E010.1	115221	E176.6
7640A	B	1203	1323		X			X	X	X	X		7640	124609	W016.9	133953	E149.7
7641A	B	1347	1508		X			X	X	X	X		7641	143340	W043.7	152724	E122.8
7642A	B	1531	1652		X			X	X	X	X		7642	162112	W070.7	171456	E096.0
													7643	180844	W097.5	190228	E069.0
													7644	195616	W124.4	205000	E042.2
													7645	214347	W151.3	223731	E015.3
													7646	233119	W178.2	002503	W011.6

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
03 JANUARY 1977

INT ORBIT AND STDN.	HDR S	HDRSS TIME ON HRMN	OFF HRMN	LIR R	THIR E	TDRA M	SCAR R	SEMR R	EFR R	PM R	TWR L	HIR S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	LONG DEGREE	DESCENDING NODE TIME HRMNSS	LONG DEGREE
76460	B	2354	0057				X	X	X	X			7647	011851	E155.0	021235	W038.5
76470	B	0109	0213				X	X	X	X			7648	030622	E128.1	040007	W065.4
7648R	B	0256	0356		X		X	X	X	X			7649	045354	E101.2	054738	W092.7
7649R	B	0423	0545		X		X	X	X	X			7650	064126	E074.3	073510	W119.1
7650A	B	0607	0649		X		X	X	X	X			7651	082858	E047.4	092242	W146.0
7651A	B	0749	0911		X		X	X	X	X			7652	101629	E020.6	111014	W172.9
7652A	B	0935	1058		X		X	X	X	X			7653	120401	W006.3	125745	E160.2
7653A	B	1121	1245		X		X	X	X	X			7654	135133	W033.2	144517	E133.4
7654A	B	1307	1428		X		X	X	X	X			7655	153905	W060.1	163249	E106.5
7655A	B	1451	1612		X		X	X	X	X			7656	172636	W088.0	182021	E079.6
7656A	B	1635	1757		X		X	X	X	X			7657	191408	W113.9	200752	E052.7
7657A	B	1821	1942		X		X	X	X	X			7658	210140	W140.8	215524	E025.8
7658A	B	2008	2128		X		X	X	X	X			7659	224912	W167.7	234256	W001.1
7659A	B	2155	2315		X		X	X	X	X							

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
04 JANUARY 1977

INT ORBIT AND STDN	HDR S	HDRSS TIME ON HRMN	OFF HRMN	LIR R	THIR E	TDRA M	SCAR R	SEMR R	EFR R	PM R	TWR L	HIR S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	LONG DEGREE	DESCENDING NODE TIME HRMNSS	LONG DEGREE
76590	B	2315	0017				X	X	X	X			7660	003643	E165.5	013028	W028.0
76600	B	0028	0132				X	X	X	X			7661	022415	E138.6	031759	W054.8
7662R	B	0213	0318		X		X	X	X	X			7662	041147	E111.7	050531	W081.7
7663R	B	0527	0649		X		X	X	X	X			7663	055919	E084.9	065303	W108.6
7664A	B	0708	0828		X		X	X	X	X			7664	074650	E058.0	084035	W135.5
7665A	B	0855	1015		X		X	X	X	X			7665	093422	E031.1	102806	W162.4
7666A	B	1040	1203		X		X	X	X	X			7666	112154	E004.2	121538	E170.7
7667A	B	1226	1348		X		X	X	X	X			7667	130926	W022.7	140310	E143.9
7668A	B	1411	1531		X		X	X	X	X			7668	145657	W049.6	155042	E117.0
7669A	B	1553	1715		X		X	X	X	X			7669	164429	W076.5	173813	E090.1
7670A	B	1738	1901		X		X	X	X	X			7670	183201	W103.4	192545	E063.2
7673A	B	2304	0019		X		X	X	X	X			7671	201933	W130.2	211317	E036.3
													7672	220704	W157.1	230049	E009.5
													7673	235436	E176.0	004820	W017.4

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
05 JANUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LR IR	TH IR	TD RE	SC AM	SE MR	EF RR	PM RR	TW RL	HI RS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
76730	B	0016	0103					X	X	X	X		7674	014208	E149.1	023552	W044.3
76740	B	0137	0241					X	X	X	X		7675	032939	E122.2	042324	W071.2
7675R	B	0316	0420		X			X	X	X	X		7676	051711	E095.4	061054	W098.1
7676R	B	0445	0608		X			X	X	X	X		7677	070443	E068.5	075827	W125.0
7677A	B	0627	0749		X			X	X	X	X		7678	085215	E041.6	094559	W151.8
7678A	B	0812	0934		X			X	X	X	X		7679	103946	E014.7	113331	W178.7
7679A	B	0959	1121		X			X	X	X	X		7680	122718	W012.2	132103	E154.4
7680A	B	1144	1259		X			X	X	X	X		7681	141450	W039.1	150834	E127.5
7681A	B	1329	1450		X			X	X	X	X		7682	160222	W065.9	165606	E100.6
7682A	B	1513	1634		X			X	X	X	X		7683	174953	W092.8	184338	E073.7
7683A	B	1657	1819		X			X	X	X	X		7684	193725	W119.7	203110	E046.9
7684A	B	1843	2006		X			X	X	X	X		7685	212457	W146.6	221841	E020.0
7685A	B	2031	2151		X			X	X	X	X		7686	231229	W173.5	000613	W006.9
7686A	B	2219	2338		X			X	X	X	X						

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
06 JANUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LR IR	TH IR	TD RE	SC AM	SE MR	EF RR	PM RR	TW RL	HI RS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
76860	B	0015	0039					X	X	X	X		7687	010000	E159.6	015345	W033.8
76870	B	0053	0157					X	X	X	X		7688	024732	E132.8	034116	W060.7
7689R	B	0404	0525		X			X	X	X	X		7689	043504	E105.9	052848	W087.5
7690R	B	0551	0707		X			X	X	X	X		7690	062236	E079.0	071620	W114.4
7691A	B	0731	0852		X			X	X	X	X		7691	081007	E052.1	090352	W141.3
7692A	B	0917	1040		X			X	X	X	X		7692	095739	E025.2	105123	W168.2
7693A	B	1103	1226		X			X	X	X	X		7693	114511	W001.6	123855	E164.9
7694A	B	1248	1411		X			X	X	X	X		7694	133243	W028.5	142627	E138.0
7695A	B	1433	1553		X			X	X	X	X		7695	152014	W055.4	161359	E111.2
7696A	B	1616	1739		X			X	X	X	X		7696	170746	W082.3	180130	E084.3
7697A	B	1801	1924		X			X	X	X	X		7697	185518	W109.2	194902	E057.4
													7698	204249	W136.1	213634	E030.5
													7699	223021	W162.9	232406	E003.6

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
07 JANUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E P R B	P M R R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
7705A	B	0835	0957		X			X	X	X	X		7700	001753	E170.2	011137	W023.2
7706A	B	1021	1145		X			X	X	X	X		7701	020525	E143.3	025909	W050.1
7707A	B	1207	1329		X			X	X	X	X		7702	035256	E116.4	044641	W077.0
7708A	B	1352	1513		X			X	X	X	X		7703	054028	E089.5	063413	W103.9
7709A	B	1535	1657		X			X	X	X	X		7704	072800	E062.7	082144	W130.8
7710A	B	1720	1843		X			X	X	X	X		7705	091532	E035.8	100916	W157.7
7711A	B	1907	2028		X			X	X	X	X		7706	110303	E009.9	115648	E175.5
7712A	B	2053	2215		X			X	X	X	X		7707	125035	W018.0	134420	E148.6
7713A	B	2244	0000		X			X	X	X	X		7708	143807	W044.9	153151	E121.7
													7709	162539	W071.8	171923	E094.8
													7710	181310	W098.7	190655	E067.9
													7711	200042	W125.6	205427	E041.0
													7712	214814	W152.4	224158	E014.2
													7713	233546	W179.3	002930	W012.8

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
08 JANUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E P R B	P M R R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
77130	B	2358	0102					X	X	X	X		7714	012317	E153.8	021702	W039.6
77140	B	0116	0220					X	X	X	X		7715	031049	E126.9	040434	W066.5
7715R	B	0258	0402		X			X	X	X	X		7716	045821	E100.1	055205	W093.4
7716R	B	0427	0550		X			X	X	X	X		7717	064553	E073.2	073937	W120.3
7717A	B	0608	0724		X			X	X	X	X		7718	083324	E046.3	092709	W147.2
7718A	B	0753	0915		X			X	X	X	X		7719	102056	E019.4	111441	W174.0
7719A	B	0940	1101		X			X	X	X	X		7720	120828	W007.5	130212	E159.1
7720A	B	1127	1240		X			X	X	X	X		7721	135600	W034.3	144044	E132.2
7721A	B	1311	1432		X			X	X	X	X		7722	154331	W061.2	163716	E105.3
7723A	B	1650	1801		X			X	X	X	X		7723	173103	W088.1	182448	E078.4
7726A	B	2317	0020		X			X	X	X	X		7724	191835	W115.0	201219	E051.5
													7725	210607	W141.9	215951	E024.7
													7726	225338	W168.8	234723	W002.2

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
09 JANUARY 1977

INT ORBIT AND STDN	HDRS DR S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRI RR	THJ RE	TDRE EM	SAR R	EFR R	PMR R	TWR LR	HIR SR	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
77270	B	0034	0137				X	X	X	X		7727	004108	E164.4	013453	W029.1
7729R	B	0347	0507		X		X	X	X	X		7728	022840	E137.5	032225	W056.0
7730R	B	0532	0653		X		X	X	X	X		7729	041612	E110.6	050956	W082.9
7731A	B	0712	0832		X		X	X	X	X		7730	060344	E083.7	065728	W109.7
7732A	B	0859	1021		X		X	X	X	X		7731	075115	E056.8	084500	W136.6
7733A	B	1044	1207		X		X	X	X	X		7732	093847	E029.9	103232	W163.5
7734A	B	1231	1352		X		X	X	X	X		7733	112619	E003.0	122003	E169.6
7735A	B	1415	1536		X		X	X	X	X		7734	131351	W023.8	140735	E142.7
7736A	B	1559	1720		X		X	X	X	X		7735	150122	W050.7	155507	E115.9
7740A	B	2309	0013		X		X	X	X	X		7736	164854	W077.6	174239	E089.0
												7737	183626	W104.5	193010	E062.1
												7738	202357	W131.4	211742	E035.2
												7739	221129	W158.2	230514	E008.7
												7740	235901	E174.9	005245	W018.6

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
10 JANUARY 1977

INT ORBIT AND STDN	HDRS DR S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRI RR	THJ RE	TDRE EM	SAR R	EFR R	PMR R	TWR LR	HIR SR	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
77400	B	0137	0241				X	X	X	X		7741	014633	E148.0	024017	W045.4
7742R	B	0321	0426		X		X	X	X	X		7742	033404	E121.1	042749	W072.3
7743A	B	0451	0605		X		X	X	X	X		7743	052136	E094.2	061521	W099.2
7744A	B	0631	0749		X		X	X	X	X		7744	070908	E067.3	080252	W126.1
7745A	B	0816	0938		X		X	X	X	X		7745	085640	E040.5	095024	W153.0
7746A	B	1037	1141		X		X	X	X	X		7746	104411	E013.6	113756	W179.9
7747A	B	1151	1312		X		X	X	X	X		7747	123143	W013.3	132528	E153.3
7748A	B	1333	1455		X		X	X	X	X		7748	141915	W040.2	151259	E126.4
7749A	B	1449	1630		X		X	X	X	X		7749	160647	W067.1	170031	E099.5
7750A	B	1634	1811		X		X	X	X	X		7750	175418	W093.9	184803	E072.6
7752A	B	1804	1909		X		X	X	X	X		7751	194150	W120.8	203535	E045.7
7753A	B	2224	2342		X		X	X	X	X		7752	212922	W147.7	222306	E018.9
												7753	231653	W174.6	001038	W008.0

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
11 JANUARY 1977

INT ORBIT AND STDN	HDRS	HDRSS TIME ON	HDRSS TIME OFF	LIR	THR	TDRE	SAM	EMR	SER	PMR	TWR	HIR	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
77530	B	2339	0041					X	X	X	X		7754	010425	E158.5	015810	W034.9
77540	B	0058	0201					X	X	X	X		7755	025157	E131.6	034542	W061.8
7756R	B	0408	0521		X			X	X	X	X		7756	043929	E104.8	053313	W088.7
7757R	B	0555	0709		X			X	X	X	X		7757	062700	E077.9	072045	W115.6
7758A	B	0735	0856		X			X	X	X	X		7758	081432	E051.0	090817	W142.5
7759A	B	0921	1043		X			X	X	X	X		7759	100204	E024.1	105548	W169.3
7760A	B	1140	1245		X			X	X	X	X		7760	114936	W002.8	124320	E163.8
7761A	B	1326	1431		X			X	X	X	X		7761	133707	W029.6	143052	E136.9
7762A	B	1440	1556		X			X	X	X	X		7762	152439	W056.5	161824	E110.0
7763A	B	1556	1730		X			X	X	X	X		7763	171211	W083.4	180555	E083.2
7765A	B	1715	1831		X			X	X	X	X		7764	185942	W110.3	195327	E056.3
77670	B	2231	2334					X	X	X	X		7765	204714	W137.2	214059	E029.4
													7766	223446	W164.1	232831	E002.5

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
12 JANUARY 1977

INT ORBIT AND STDN	HDRS	HDRSS TIME ON	HDRSS TIME OFF	LIR	THR	TDRE	SAM	EMR	SER	PMR	TWR	HIR	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
77680	B	0205	0308					X	X	X	X		7767	002218	E169.1	011602	W024.4
7770A	B	0513	0635		X			X	X	X	X		7768	020949	E142.2	030334	W051.3
7771R	B	0654	0813		X			X	X	X	X		7769	035721	E115.3	045106	W078.2
7772A	B	0839	1001		X			X	X	X	X		7770	054453	E088.4	063838	W105.1
7773A	B	1027	1149		X			X	X	X	X		7771	073225	E061.5	082609	W131.9
7774A	B	1211	1334		X			X	X	X	X		7772	091956	E034.6	101341	W158.9
7775A	B	1356	1517		X			X	X	X	X		7773	110728	E007.8	120113	E174.3
7776A	B	1539	1701		X			X	X	X	X		7774	125500	W019.1	134845	E147.5
7777R	B	1715	1819		X			X	X	X	X		7775	144232	W046.0	153616	E120.6
7778A	B	2059	2219		X			X	X	X	X		7776	163003	W072.9	172348	E093.7
7780A	B	2249	0004		X			X	X	X	X		7777	181735	W099.8	191120	E066.8
													7778	200507	W126.7	205851	E039.9
													7779	215238	W153.6	224623	E013.0
													7780	234010	E179.6	003355	W013.9

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
13 JANUARY 1977

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	OFF HRMN	LRI	THR	TDR	SCA M	SER	EPR	TWR	HIR	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
77800	B	0003	0106				X	X	X	X		7781	012742	E152.7	022127	W040.8
77810	B	0120	0224				X	X	X	X		7782	031514	E125.8	040858	W067.6
7783R	B	0311	0555		X		X	X	X	X		7783	050245	E098.9	055630	W094.5
7784A	B	0613	0736		X		X	X	X	X		7784	065017	E072.1	074402	W121.4
7785A	B	0759	0920		X		X	X	X	X		7785	083749	E045.2	093134	W148.3
7786A	B	0944	1048		X		X	X	X	X		7786	102521	E018.3	111905	W175.2
77870	B	1203	1307				X	X	X	X		7787	121252	W008.6	130637	E158.0
7788A	B	1333	1436		X		X	X	X	X		7788	140024	W035.5	145409	E131.1
7790R	B	1459	1621		X		X	X	X	X		7789	154756	W062.4	164141	E104.2
7792A	B	1750	1853		X		X	X	X	X		7790	173528	W089.3	182912	E077.2
7793A	B	2135	2230		X		X	X	X	X		7791	192259	W116.1	201644	E050.4
												7792	211031	W143.0	220416	E023.5
												7793	225803	W169.9	235147	W003.3

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
14 JANUARY 1977

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	OFF HRMN	LRI	THR	TDR	SCA M	SER	EPR	TWR	HIR	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
7797R	B	0536	0657		X		X	X	X	X		7794	004534	E163.2	013919	W030.2
7798A	B	0716	0832		X		X	X	X	X		7795	023306	E136.4	032651	W057.1
7799A	B	0903	1019		X		X	X	X	X		7796	042038	E109.4	051423	W084.0
7800A	B	1048	1203		X		X	X	X	X		7797	060810	E082.6	070154	W110.9
7801A	B	1234	1356		X		X	X	X	X		7798	075541	E055.7	084926	W137.7
7802A	B	1419	1540		X		X	X	X	X		7799	094313	E028.8	103658	W164.6
7803A	B	1603	1707		X		X	X	X	X		7800	113045	E001.9	122430	E168.5
7804A	B	1747	1909		X		X	X	X	X		7801	131817	W025.0	141201	E141.6
7805A	B	1935	2056		X		X	X	X	X		7802	150548	W051.8	155933	E114.7
7806A	B	2121	2242		X		X	X	X	X		7803	165320	W078.7	174705	E087.8
												7804	184052	W105.6	193437	E061.0
												7805	202824	W132.5	212208	E034.1
												7806	221555	W159.4	230940	E007.2

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
15 JANUARY 1977

INT ORBIT AND STDN	HDR SS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LTHIR	TTDRM	SCAMR	SEMRR	PMRR	TWLR	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
78070	B	2359	0103			X	X	X	X		7807	000327	E173.7	005712	W019.7
78080	B	0145	0249			X	X	X	X		7808	015059	E146.9	024444	W046.6
7810R	B	0454	0617	X		X	X	X	X		7809	033830	E120.0	043215	W073.5
7811A	B	0635	0753	X		X	X	X	X		7810	052602	E093.1	061947	W100.3
7812A	B	0821	0943	X		X	X	X	X		7811	071334	E066.2	080719	W127.2
78130	B	1041	1145			X	X	X	X		7812	090106	W039.3	095450	W154.1
7814A	B	1153	1315	X		X	X	X	X		7813	104837	E012.5	114222	E179.0
7815A	B	1339	1459	X		X	X	X	X		7814	123609	W014.4	132954	E152.1
7816R	B	1506	1630	X		X	X	X	X		7815	142341	W041.3	151726	E125.3
7817R	B	1628	1733	X		X	X	X	X		7816	161113	W068.2	170457	E098.4
7819A	B	2039	2200	X		X	X	X	X		7817	175844	W095.1	185229	E071.5
7820A	B	2229	2346	X		X	X	X	X		7818	194616	W122.0	204001	E044.6
											7819	213348	W148.8	222733	E017.7
											7820	232120	W174.7	001504	E009.2

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
16 JANUARY 1977

INT ORBIT AND STDN	HDR SS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LTHIR	TTDRM	SCAMR	SEMRR	PMRR	TWLR	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
78200	B	2343	0047			X	X	X	X		7821	010852	E157.4	020237	W036.0
78210	B	0104	0208			X	X	X	X		7822	025624	E130.5	035009	W062.9
7823R	B	0412	0516	X		X	X	X	X		7823	044356	E103.7	053740	W089.8
7824R	B	0544	0719	X		X	X	X	X		7824	063127	E076.7	072512	W116.7
7825A	B	0739	0859	X		X	X	X	X		7825	081859	E049.9	091244	W143.6
7826A	B	0925	1048	X		X	X	X	X		7826	100631	E023.0	110016	W170.5
7827A	B	1111	1235	X		X	X	X	X		7827	115402	W003.9	124747	E162.7
7828A	B	1257	1418	X		X	X	X	X		7828	134134	W030.8	143519	E135.8
7829A	B	1624	1747	X			X	X	X		7829	152906	W057.7	162251	E108.9
7830A	B	1811	1932	X			X	X	X		7830	171638	W084.6	181022	E082.0
7831A	B	1959	2119	X			X	X	X		7831	190410	W111.4	195754	E055.1
7832A	B	2145	2305	X			X	X	X		7832	205141	W138.3	214526	E028.3
											7833	223913	W165.2	233258	E001.4

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
17 JANUARY 1977

INT ORBIT AND STDN	HDR S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LR I R	TT HI R	TT DE	SC AM	SE MR	SF RR	PM R	TW RL	TH IR S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
78340	B	2341	0045						X	X	X		7834	002645	E167.9	012029	W025.5
7838A	B	0659	0817		X				X	X	X		7835	021416	E141.0	030801	W052.4
7839A	B	0844	1006		X				X	X	X		7836	040148	E114.2	045533	W079.3
7840A	B	1031	1153		X				X	X	X		7837	054920	E087.3	064305	W106.2
7841A	B	1216	1338		X				X	X	X		7838	073652	E060.4	083036	W133.0
7842A	B	1400	1521		X				X	X	X		7839	082423	E033.5	101808	W160.0
7844A	B	1728	1852		X				X	X	X		7840	111155	E006.6	120540	E173.2
7845A	B	1916	2035		X				X	X	X		7841	125927	W020.3	135312	E146.3
7846A	B	2103	2224		X			X	X	X	X		7842	144658	W047.1	154043	E119.4
7847A	B	2253	0009		X			X	X	X	X		7843	163430	W074.0	172815	E092.5
													7844	182202	W100.9	191547	E065.7
													7845	200934	W127.8	210319	E038.8
													7846	215705	W154.7	225050	E011.9
													7847	234437	E178.5	003822	W015.0

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
18 JANUARY 1977

INT ORBIT AND STDN	HDR S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LR I R	TT HI R	TT DE	SC AM	SE MR	SE RR	PM R	TW RL	TH IR S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
78470	B	0007	0110					X	X	X	X		7848	013209	E151.6	022554	W041.9
7849R	B	0252	0411		X			X	X	X	X		7849	031941	E124.7	041325	W068.8
7850R	B	0435	0559		X			X	X	X	X		7850	050712	E097.8	060057	W095.7
7851A	B	0617	0733		X			X	X	X	X		7851	065444	E070.9	074829	W122.5
7852A	B	0802	0920		X			X	X	X	X		7852	084216	E044.0	093601	W149.4
7853A	B	0948	1107		X			X	X	X	X		7853	102948	E017.2	112332	W176.3
7854A	B	1135	1252		X			X	X	X	X		7854	121719	W009.8	131104	E156.8
7855A	B	1319	1438		X			X	X	X	X		7855	140451	W036.6	145836	E130.0
7856A	B	1503	1616		X			X	X	X	X		7856	155223	W063.5	164608	E103.1
7857A	B	1647	1809		X			X	X	X	X		7857	173955	W090.4	183339	E076.2
7858A	B	1833	1953		X				X	X	X		7858	192726	W117.3	202111	E049.3
7859A	B	2021	2142		X				X	X	X		7859	211458	W144.2	220843	E022.4
78600	B	2209	2328						X	X	X		7860	230230	W171.0	235615	W004.5

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
19 JANUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E F R R	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
78610	B	0049	0147						X	X	X		7861	005001	E162.1	014346	W031.4
7863R	B	0355	0508		X				X	X	X		7862	023733	E135.2	033119	W058.2
7864R	B	0541	0701		X				X	X	X		7863	042505	E108.3	051850	W085.1
7865A	B	0721	0841		X				X	X	X		7864	061234	E081.5	070622	W112.0
7866A	B	0907	1028		X				X	X	X		7865	080008	E054.5	085353	W138.9
7867A	B	1053	1216		X				X	X	X		7866	094740	E027.7	104125	W165.9
7868A	B	1239	1401		X				X	X	X		7867	113512	E000.8	122857	W167.3
7869A	B	1359	1544		X				X	X	X		7869	132244	W026.1	141623	E140.5
7871A	B	1751	1914		X				X	X	X		7869	151015	W053.0	160400	E113.6
7872A	B	1939	2100		X				X	X	X		7870	165747	W079.9	175132	E086.7
7873A	B	2125	2246		X				X	X	X		7871	184519	W106.8	193904	E059.8
													7872	203251	W133.6	212635	E032.9
													7873	222022	W160.5	231407	E006.1

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
20 JANUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E F R R	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
78740	B	2351	0055						X	X	X		7874	000754	E172.6	010139	W020.8
78750	B	0151	0255						X	X	X		7875	015526	E145.8	024911	W047.7
7876R	B	0331	0435		X				X	X	X		7876	034257	E118.9	043642	W074.6
7877R	B	0459	0621		X				X	X	X		7877	053029	E092.0	062414	W101.5
7878A	B	0643	0748		X				X	X	X		7878	071801	E065.1	081146	W128.4
7879A	B	0825	0938		X				X	X	X		7879	090533	E038.2	095918	W155.2
7880A	B	1011	1134		X				X	X	X		7880	105304	E011.3	114649	E177.9
7881A	B	1157	1319		X				X	X	X		7881	124036	W015.6	132421	E151.0
7882A	B	1342	1457		X				X	X	X		7882	142808	W042.5	152153	E124.1
7883A	B	1525	1647		X				X	X	X		7883	161540	W069.3	170924	E097.2
7884A	B	1711	1833		X				X	X	X		7884	180311	W096.2	185656	E070.4
7885A	B	1856	2013		X				X	X	X		7885	195043	W123.1	204429	E043.5
7886A	B	2044	2204		X				X	X	X		7886	213815	W150.0	223200	E016.6
7887A	B	2233	2351		X				X	X	X		7887	232547	W176.9	001931	W010.3

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
21 JANUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
7890R	3	0241	0351		X				X	X	X		7888	011318	E156.3	020703	W037.2
7891R	3	0604	0723		X				X	X	X		7889	030050	E129.4	035435	W064.1
7892A	3	0744	0904		X				X	X	X		7890	044822	E102.5	054207	W090.9
7893A	3	0931	1052		X				X	X	X		7891	063553	E075.6	072938	W117.8
7894A	3	1133	1239		X				X	X	X		7892	082325	E048.7	091710	W144.7
7895A	3	1301	1423		X				X	X	X		7893	101057	E021.8	110442	W171.6
7896A	3	1445	1606		X				X	X	X		7894	115829	W005.0	125214	E161.5
7897A	3	1629	1751		X				X	X	X		7895	134600	W031.9	143945	E134.6
7898A	3	1815	1937		X				X	X	X		7896	153332	W058.8	162717	E107.8
7899A	3	2002	2124		X				X	X	X		7897	172104	W085.7	181449	E080.9
7900A	3	2149	2309		X				X	X	X		7898	190836	W112.6	200229	E054.0
													7899	205607	W139.4	214952	E027.1
													7900	224339	W166.3	233724	E000.2

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
22 JANUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
79000	B	2305	0009						X	X	X		7901	003111	E166.8	012456	W026.6
79010	B	0023	0126						X	X	X		7902	021843	E139.9	031227	W053.5
7903R	B	0337	0457		X			X	X	X	X		7903	040614	E113.0	045959	W080.4
7904R	B	0521	0644		X			X	X	X	X		7904	055346	E086.1	064731	W107.3
7905A	B	0703	0822		X			X	X	X	X		7905	074118	E059.3	083503	W134.2
7906A	B	0848	1010		X			X	X	X	X		7906	092850	E032.4	102234	W161.1
7907A	B	1035	1157		X			X	X	X	X		7907	111621	E005.5	121006	E172.1
7908A	B	1342	1220		X			X	X	X	X		7908	130353	W021.4	135738	E145.2
7909A	B	1405	1525		X			X	X	X	X		7909	145125	W048.3	154510	E118.3
7910A	B	1548	1710		X			X	X	X	X		7910	163856	W075.2	173241	E091.4
7911A	B	1734	1852		X			X	X	X	X		7911	182628	W102.0	192013	E064.5
7912A	B	1920	2042		X			X	X	X	X		7912	201400	W128.9	210745	E037.7
7913A	B	2108	2227		X			X	X	X	X		7913	220132	W155.8	225516	E010.8
7914A	B	2259	0013		X			X	X	X	X		7914	234903	E177.3	004248	W016.1

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
23 JANUARY 1977

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	SERB	PMRR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
7914O	B	0011	0114					X	X	X	X		7915	013632	E150.4	023016	W043.0
7915O	B	0131	0234					X	X	X	X		7916	032403	E123.6	041748	W069.9
7918A	B	0621	0738		X			X	X	X	X		7917	051135	E096.7	060520	W096.8
7919A	B	0807	0928		X			X	X	X	X		7918	065907	E069.8	075252	W123.6
7920A	B	0953	1116		X			X	X	X	X		7919	084638	E042.9	094023	W150.5
7921A	B	1139	1302		X			X	X	X	X		7920	103410	E016.1	112755	W177.4
7922A	B	1324	1444		X			X	X	X	X		7921	122142	W010.9	131527	E155.7
7923A	B	1507	1629		X			X	X	X	X		7922	140914	W037.7	150259	E128.8
7924A	B	1652	1814		X			X	X	X	X		7923	155645	W064.6	165030	E101.9
7925A	B	1837	2000		X			X	X	X	X		7924	174417	W091.5	183802	E075.1
7926A	B	2025	2146		X			X	X	X	X		7925	193149	W118.4	202534	E048.2
7927A	B	2213	2332		X			X	X	X	X		7926	211920	W145.3	221305	E021.3
													7927	230652	W172.1	000037	W005.4

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
24 JANUARY 1977

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	SERB	PMRR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
79270	B	2328	0031					X	X	X	X		7928	005424	E161.0	014809	W032.5
79280	B	0048	0152					X	X	X	X		7929	024156	E134.1	033540	W059.3
7931R	B	0545	0705		X			X	X	X	X		7930	042927	E107.2	052312	W086.2
7932A	B	0725	0847		X			X	X	X	X		7931	061659	E080.3	071044	W113.1
7933A	B	0911	1034		X			X	X	X	X		7932	080431	E053.4	085815	W140.0
7934A	B	1057	1221		X			X	X	X	X		7933	095202	E026.6	104547	W166.9
7935A	B	1244	1403		X			X	X	X	X		7934	113934	W000.3	123319	E166.2
7936A	B	1427	1540		X			X	X	X	X		7935	132706	W027.2	142051	E139.4
7937A	B	1611	1729		X			X	X	X	X		7936	151438	W054.1	160822	E112.5
7938A	B	1756	1919		X			X	X	X	X		7937	170209	W081.0	175554	E085.6
7939A	B	1944	2105		X			X	X	X	X		7938	184941	W107.8	194326	E058.7
7940A	B	2130	2251		X			X	X	X	X		7939	203713	W134.7	213057	E031.8
													7940	222444	W161.6	231829	E005.0

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
25 JANUARY 1977

INT ORBIT AND STDN	HDRS R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LTHIR	TTDRE	SCAM	SEMR	EBR	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
79410	B	0007	0111				X	X	X	X		7941	001216	E171.5	010601	W022.0
79420	B	0152	0255				X	X	X	X		7942	015048	E144.6	025333	W048.8
7944R	B	0503	0617	X			X	X	X	X		7943	034720	E117.7	044104	W075.7
7945A	B	0644	0803	X			X	X	X	X		7944	053451	E090.9	062836	W102.6
7946A	B	0831	0952	X			X	X	X	X		7945	072223	E064.0	081608	W129.5
7947A	B	1016	1130	X			X	X	X	X		7946	090955	E037.1	100339	W156.3
7948A	B	1239	1342	X			X	X	X	X		7947	105726	E010.2	115111	E176.8
7949A	B	1351	1508	X			X	X	X	X		7948	124458	W016.7	133843	E149.9
7950A	B	1530	1651	X			X	X	X	X		7949	143230	W043.5	152615	E123.0
7951A	B	1715	1836	X			X	X	X	X		7950	162002	W070.4	171346	E096.1
7952A	B	1901	2023	X			X	X	X	X		7951	180733	W097.3	190118	E069.2
7953A	B	2048	2209	X			X	X	X	X		7952	195505	W124.2	204850	E042.3
												7953	214237	W151.1	223621	E015.5
												7954	233008	W178.0	002353	W011.4

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
26 JANUARY 1977

INT ORBIT AND STDN	HDRS R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LTHIR	TTDRE	SCAM	SEMR	EBR	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
79540	B	2325	0020				X	X	X	X		7955	011740	E155.2	021125	W038.7
79550	B	0112	0216				X	X	X	X		7956	030512	E128.3	035857	W065.2
7957R	B	0407	0544	X			X	X	X	X		7957	045244	E101.4	054628	W092.1
7958R	B	0600	0728	X			X	X	X	X		7958	064015	E074.5	073400	W118.9
7959A	B	0748	0910	X			X	X	X	X		7959	082747	E047.6	092132	W145.8
7960A	B	0935	1056	X			X	X	X	X		7960	101519	E020.8	110903	W172.7
7961A	B	1120	1244	X			X	X	X	X		7961	120250	W006.2	125635	E160.4
7963A	B	1449	1610	X			X	X	X	X		7962	135022	W033.0	144407	E133.6
7964A	B	1637	1755	X			X	X	X	X		7963	153754	W059.9	163139	E106.7
7965A	B	1820	1942	X			X	X	X	X		7964	172526	W086.8	181910	E079.8
7966A	B	2007	2128	X			X	X	X	X		7965	191257	W113.7	200642	E052.9
7967A	B	2155	2314	X			X	X	X	X		7966	210029	W140.6	215414	E026.0
												7967	224801	W167.5	234145	W000.9

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
27 JANUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E M R R	P R R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
79670	B	2311	0013					X	X	X	X		7968	003532	E165.7	012917	W027.8
79680	B	0028	0132					X	X	X	X		7969	022304	E138.8	031649	W054.7
7971R	B	0527	0648		X			X	X	X	X		7970	041036	E111.9	050420	W081.5
7972A	B	0707	0827		X			X	X	X	X		7971	055808	E085.0	065152	W108.4
7973A	B	0852	1014		X			X	X	X	X		7972	074539	E058.1	083924	W135.3
7976A	B	1410	1520		X			X	X	X	X		7973	093311	E031.3	102656	W162.2
7977A	B	1552	1715		X			X	X	X	X		7974	112043	E004.4	121427	E170.9
7978A	B	1736	1900		X			X	X	X	X		7975	130814	W022.5	140159	E144.1
7979A	B	1925	2046		X			X	X	X	X		7976	145546	W049.4	154931	E117.2
7980A	B	2111	2232		X			X	X	X	X		7977	164318	W076.3	173702	E090.3
7981A	B	2304	0017		X			X	X	X	X		7978	183049	W103.2	192434	E063.4
													7979	201821	W130.0	211206	E036.5
													7980	220553	W156.9	225938	E009.6
													7981	235325	E176.2	004709	W017.2

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
28 JANUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E M R R	P R R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
7984R	B	0444	0608		X			X	X	X	X		7982	014056	E149.3	023441	W044.1
7986A	B	0811	0933		X			X	X	X	X		7983	032828	E122.4	042213	W071.0
7987A	B	0957	1120		X			X	X	X	X		7984	051600	E095.6	060944	W097.9
7988A	B	1143	1306		X			X	X	X	X		7985	070331	E068.7	075716	W124.8
7989A	B	1328	1433		X			X	X	X	X		7986	085103	E041.8	094449	W151.6
7990A	B	1511	1633		X			X	X	X	X		7987	103835	E014.9	113220	W178.5
7991A	B	1656	1818		X			X	X	X	X		7988	122607	W012.0	131951	E154.6
7992A	B	1843	2004		X			X	X	X	X		7989	141338	W038.9	150723	E127.7
7993A	B	2037	2148		X			X	X	X	X		7990	160110	W065.7	165455	E100.8
7994A	B	2301	2336		X			X	X	X	X		7991	174842	W092.6	184226	E073.9
													7992	193613	W119.5	202958	E047.1
													7993	212345	W146.4	221730	E020.2
													7994	231117	W173.3	000501	W006.7

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
29 JANUARY 1977

INT ORBIT AND STDN	HDRS DR S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LR IR	TH IR	TDRE	SCAM	SEMR	EFRR	PMR	TWRL	HIRS	ASCENDING NODE DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
79940	B	2335	0037					X	X	X	X		7995	005849	E159.9	015233	W033.6
79950	B	0053	0156					X	X	X	X		7996	024620	E133.0	034005	W060.5
7998R	B	0549	0710		X			X	X	X	X		7997	043352	E106.1	052737	W087.4
7999A	B	0729	0851		X			X	X	X	X		7998	062124	E079.2	071508	W114.3
8000A	B	0916	1038		X			X	X	X	X		7999	080855	E052.3	090240	W141.1
8001A	B	1103	1225		X			X	X	X	X		8000	095627	E025.4	105012	W168.0
8002A	B	1248	1408		X			X	X	X	X		8001	114359	W001.5	123743	E165.1
8003A	B	1432	1552		X			X	X	X	X		8002	133131	W028.4	142515	E138.2
8004A	B	1615	1737		X			X	X	X	X		8003	151902	W055.2	161247	E111.4
8005A	B	1800	1923		X			X	X	X	X		8004	170634	W082.1	180019	E084.5
8006A	B	1948	2108		X			X	X	X	X		8005	185406	W109.0	194750	E057.6
8007A	B	2134	2255		X			X	X	X	X		8006	204137	W135.9	213522	E030.7
													8007	222909	W162.8	232254	E003.8

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
30 JANUARY 1977

INT ORBIT AND STDN	HDRS DR S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LR IR	TH IR	TDRE	SCAM	SEMR	EFRR	PMR	TWRL	HIRS	ASCENDING NODE DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
80080	B	0013	0118					X	X	X	X		8008	001647	E170.4	011032	W023.1
80090	B	0159	0251					X	X	X	X		8009	020419	E143.5	025803	W050.0
8010R	B	0343	0444		X			X	X	X	X		8010	035151	E116.6	044535	W076.9
8011R	B	0528	0630		X			X	X	X	X		8011	053922	E089.7	063307	W103.7
8012A	B	0648	0807		X			X	X	X	X		8012	072654	E062.8	082039	W130.6
8013A	B	0835	0956		X			X	X	X	X		8013	091426	E036.0	100810	W157.5
8014A	B	1020	1143		X			X	X	X	X		8014	110158	E009.0	115542	E175.6
8015A	B	1207	1328		X			X	X	X	X		8015	124929	W017.8	134314	E148.7
8016A	B	1352	1512		X			X	X	X	X		8016	143701	W044.7	153046	E121.8
8017A	B	1535	1655		X			X	X	X	X		8017	162433	W071.6	171817	E095.0
8018A	B	1719	1841		X			X	X	X	X		8018	181205	W098.5	190549	E068.1
8019A	B	1905	2027		X			X	X	X	X		8019	195936	W125.4	205321	E041.2
8020A	B	2052	2213		X			X	X	X	X		8020	214708	W152.3	224053	E014.3
													8021	233440	W179.1	002824	W012.6

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
31 JANUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E M R R	P R R	T W L	H I R S	ASCENDING NODE DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
80210	B	2331	0029					X	X	X	X		8022	012212	E154.0	021556	W039.4
80220	B	0116	0220					X	X	X	X		8023	030943	E127.1	040328	W066.3
8023R	B	0256	0400		X			X	X	X	X		8024	045715	E100.2	055059	W093.2
8024R	B	0425	0540		X			X	X	X	X		8025	064447	E073.4	073831	W120.1
8025A	B	0607	0723		X			X	X	X	X		8026	083219	E046.5	092603	W147.0
8026A	B	0751	0914					X	X	X	X		8027	101950	E019.6	111335	W173.9
8028A	B	1125	1248					X	X	X	X		8028	120722	W007.3	130106	E159.3
8029A	B	1309	1431					X	X	X	X		8029	135454	W034.2	144838	E132.4
8030A	B	1453	1615					X	X	X	X		8030	154225	W061.1	163610	E105.5
8031A	B	1637	1756					X	X	X	X		8031	172957	W088.0	182342	E078.6
8032A	B	1823	1944					X	X	X	X		8032	191729	W114.8	201113	E051.7
8033A	B	2011	2129					X	X	X	X		8033	210501	W141.7	215845	E024.8
8034A	B	2159	2319					X	X	X	X		8034	225232	W168.6	234617	E002.0

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
01 FEBRUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E M R R	P R R	T W L	H I R S	ASCENDING NODE DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
80340	B	2315	0019					X	X	X	X		8035	004004	E164.5	013349	W028.9
80350	B	0030	0136					X	X	X	X		8036	022736	E137.6	032120	W055.8
8037R	B	0345	0507					X	X	X	X		8037	041508	E110.7	050852	W082.7
8038R	B	0531	0652					X	X	X	X		8038	060239	E083.9	065624	W109.6
8039A	B	0711	0827					X	X	X	X		8039	075011	E057.0	084355	W136.4
8040A	B	0858	1019					X	X	X	X		8040	093743	E030.1	103127	W163.3
8041A	B	1043	1201					X	X	X	X		8041	112515	E003.2	121859	E169.8
8042A	B	1229	1348					X	X	X	X		8042	131246	W023.7	140631	E142.9
8043A	B	1413	1528					X	X	X	X		8043	150018	W050.5	155402	E116.0
8045A	B	1741	1857					X	X	X	X		8044	164750	W077.4	174134	E089.1
8046A	B	1929	2044					X	X	X	X		8045	183521	W104.3	192906	E062.3
8047A	B	2116	2232					X	X	X	X		8046	202253	W131.2	211638	E035.4
													8047	221025	W158.1	230409	E008.5
													8048	235757	E175.0	005141	W018.4

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
02 FEBRUARY 1977

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRE	SCAM	ESMR	FRB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
8048O	B	2353	0057					X	X	X	X		8049	014528	E148.2	023913	W045.3
8049O	B	0139	0243					X	Y	X	X		8050	033300	E121.3	042644	W072.1
8050R	B	0320	0417					X	X	X	X		8051	052032	E094.4	061416	W099.0
8051R	B	0449	0604					X	X	X	X		8052	070804	E067.5	080148	W125.9
8052A	B	0631	0745					X	X	X	X		8053	085535	E040.6	094920	W152.8
8053A	B	0815	0934					X	Y	X	X		8054	104307	E013.8	113651	W179.7
8054A	B	1003	1124						X	X	X		8055	123039	W013.1	132423	E153.4
8055A	B	1148	1301						X	X	X		8056	141811	W040.0	151155	E126.6
8056A	B	1332	1453						X	Y	X		8057	160542	W066.9	165927	E099.7
8057A	B	1516	1631						X	X	X		8058	175314	W093.8	184659	E072.8
8058A	B	1700	1815						X	X	X		8059	194046	W120.7	203430	E045.9
8059A	B	1847	2003						X	X	X		8060	212818	W147.5	222202	E019.0
8060A	B	2035	2149						X	X	X		8061	231549	W174.4	000934	W007.9
8061A	B	2224	2341						X	Y	X						

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
03 FEBRUARY 1977

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRIR	THIR	TDRF	SCAM	ESMR	ERB	PMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
8061O	B	2339	0042						X	X	X		8062	010321	E158.7	015705	W034.8
8062O	B	0057	0201						X	X	X		8063	025053	E131.8	034437	W061.6
8064R	B	0408	0530						X	X	X		8064	043824	E104.9	053209	W081.5
8066R	B	0734	0838						X	X	X		8065	062556	E078.1	071940	W115.4
8067A	B	0920	1043						X	X	X		8066	081328	E051.2	090712	W142.3
8068A	B	1107	1229						X	X	X		8067	100100	E024.3	105444	W169.2
8069A	B	1256	1413						X	X	X		8068	114831	W002.6	124216	E163.9
8070A	B	1436	1556						X	X	X		8069	133603	W029.5	142947	E137.1
8071A	B	1619	1714						X	X	X		8070	152335	W056.4	161719	E110.2
8072A	B	1804	1915						X	X	X		8071	171107	W083.3	180451	E083.3
8073A	B	1952	2107						X	X	X		8072	185838	W110.2	195223	E056.4
8074A	B	2140	2258						X	X	X		8073	204610	W137.0	213954	E029.5
													8074	223342	W163.9	232726	E002.7

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
04 FEBRUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E R R	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
8077R	B	0327	0448						X	X	X		8075	002114	E169.2	011458	W024.2
8078R	B	0512	0634						X	X	X		8076	020845	E142.3	030229	W051.1
8079A	B	0653	0811						X	X	X		8077	035617	E115.5	045001	W078.0
8080A	B	0838	1000						X	X	X		8078	054349	E088.6	063733	W104.9
8081A	B	1025	1148						X	X	X		8079	073121	E061.7	082505	W131.8
8082A	B	1211	1333						X	X	X		8080	091852	E034.8	101236	W158.6
8083A	B	1356	1516						X	X	X		8081	110624	E007.9	120008	E174.5
8084A	B	1538	1701						X	X	X		8082	125356	W019.0	134740	E147.6
8085A	B	1723	1846						X	X	X		8083	144127	W045.9	153512	E120.7
8086A	B	1911	2032						X	X	X		8084	162859	W072.7	172243	E093.8
8087A	B	2057	2219						X	X	X		8085	181631	W099.6	191015	E066.9
8088A	B	2248	0004						X	X	X		8086	200403	W126.5	205747	E040.1
													8087	215134	W153.4	224519	E013.2
													8088	233906	W179.8	003250	W013.7

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
05 FEBRUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E R R	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
80880	B	0002	0104						X	X	X		8089	012638	E152.8	022022	W040.6
80890	B	0117	0221						X	X	X		8090	031410	E126.0	040752	W067.5
8090R	B	0303	0352						X	X	X		8091	050141	E099.1	055525	W094.3
8091R	B	0431	0553						X	X	X		8092	064913	E072.2	074257	W121.2
8092A	B	0612	0727						X	X	X		8093	083645	E045.4	093029	W148.1
8093A	B	0757	0918						X	X	X		8094	102417	E018.5	111801	W175.0
8094A	B	0943	1106						X	X	X		8095	121148	W008.4	130533	E158.1
8095A	B	1129	1252						X	X	X		8096	135920	W035.3	145304	E131.2
8096A	B	1315	1435					X	X	X	X		8097	154652	W062.2	164036	E104.4
8097A	B	1459	1618					X	X	X	X		8098	173423	W089.1	182809	E077.5
8098A	B	1642	1804					X	X	X	X		8099	192155	W116.0	201539	E050.6
8099A	B	1827	1950					X	X	X	X		8100	210927	W142.9	220311	E023.7
8100A	B	2016	2137					X	X	X	X		8101	225659	W169.7	235043	W003.2
8101A	B	2207	2322					X	X	X	X						

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
06 FEBRUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	LONG DEGREE	DESCENDING NODE TIME HRMNSS	LONG DEGREE
81010	B	2319	0022					X	X	X	X		8102	004430	E163.4	013814	W030.0
81020	B	0036	0140					X	X	X	X		8103	023202	E136.5	032546	W056.9
8104R	B	0349	0511					X	X	X	X		8104	041934	E109.6	051318	W083.8
8105R	B	0535	0656					X	X	X	X		8105	060706	E082.7	070050	W110.7
8106A	B	0715	0836					X	X	X	X		8106	075437	E055.9	084822	W137.6
8107A	B	0901	1024					X	X	X	X		8107	094209	E029.0	103553	W164.5
8108A	B	1048	1211					X	X	X	X		8108	112941	E002.1	122325	E168.7
8109A	B	1233	1355					X	X	X	X		8109	131713	W024.8	141057	E141.9
8110A	B	1419	1538					X	X	X	X		8110	150444	W051.7	155828	E114.9
8111A	B	1601	1723					X	X	X	X		8111	165216	W078.6	174600	E088.0
8112A	B	1747	1909					X	X	X	X		8112	183948	W105.4	193332	E061.1
8113A	B	1934	2055					X	X	X	X		8113	202720	W132.3	212103	E034.3
8114A	B	2120	2241					X	X	X	X		8114	221451	W159.2	230835	E007.4

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
07 FEBRUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	LONG DEGREE	DESCENDING NODE TIME HRMNSS	LONG DEGREE
81150	B	2357	0101					X	X	X	X		8115	000223	E173.9	005607	W019.5
81160	B	0142	0245					X	X	X	X		8116	014955	E147.0	024339	W046.4
8117R	B	0324	0429					X	X	X	X		8117	033726	E120.1	043110	W073.3
8118R	B	0453	0558					X	X	X	X		8118	052458	E093.3	061842	W100.2
8119A	B	0635	0752					X	X	X	X		8119	071230	E066.4	080614	W127.0
8120A	B	0820	0941					X	X	X	X		8120	090002	E039.5	095346	W154.0
8121A	B	1007	1129					X	X	X	X		8121	104733	E012.6	114117	E179.2
8122A	B	1152	1314					X	X	X	X		8122	123505	W014.3	132849	E152.3
8123A	B	1337	1459					X	X	X	X		8123	142237	W041.2	151621	E125.4
8124A	B	1520	1642					X	X	X	X		8124	161009	W068.1	170353	E098.6
8125A	B	1705	1827					X	X	X	X		8125	175740	W094.9	185124	E071.6
8126A	B	1852	2003					X	X	X	X		8126	194512	W121.8	203856	E044.8
8128A	B	2227	2345					X	X	X	X		8127	213244	W148.7	222628	E017.9
													8128	232016	W175.6	001359	W009.0

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
08 FEBRUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H R	T D R E	S C A M	E S M R	E R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
81280	B	2342	0045					X	X	X	X		8129	010747	E157.6	020131	W035.9
81290	B	0101	0205					X	X	X	X		8130	025519	E130.7	034003	W062.8
8131R	B	0412	0535					X	X	X	X		8131	044250	E103.8	053634	W089.6
8132R	B	0559	0718					X	X	X	X		8132	063022	E076.9	072405	W116.5
8133A	B	0739	0859					X	X	X	X		8133	081754	E050.0	091137	W143.4
8134A	B	0924	1048					X	X	X	X		8134	100525	E023.2	105909	W170.3
8135A	B	1111	1231					X	X	X	X		8135	115257	W003.8	124641	E162.9
8136A	B	1256	1418					X	X	X	X		8136	134029	W030.6	143412	E136.0
8137A	B	1440	1601					X	X	X	X		8137	152800	W057.5	162144	E109.1
8138A	B	1623	1745					X	X	X	X		8138	171532	W084.4	180916	E082.2
8139A	B	1809	1932					X	X	X	X		8139	190304	W111.3	195648	E055.3
8140A	B	1957	2118					X	X	X	X		8140	205036	W138.2	214419	E028.4
8141A	B	2144	2304					X	X	X	X		8141	223807	W165.0	233151	E001.6

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
09 FEBRUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H R	T D R E	S C A M	E S M R	E R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
81420	B	0021	0124					X	X	X	X		8142	002539	E168.1	011923	W025.4
81430	B	0208	0311					X	X	X	X		8143	021311	E141.2	030654	W052.2
8144R	B	0347	0452					X	X	X	X		8144	040043	E114.3	045426	W079.1
8145R	B	0517	0639					X	X	X	X		8145	054814	E087.5	064158	W106.0
8146A	B	0657	0817					X	X	X	X		8146	073546	E060.6	082930	W132.9
8147A	B	0844	1004					X	X	X	X		8147	092318	E033.7	101701	W159.8
8148A	B	1029	1152					X	X	X	X		8148	111050	E006.8	120433	E173.4
8149A	B	1215	1337					X	X	X	X		8149	125821	W020.1	135205	E146.5
8150A	B	1400	1520						X	X	X		8150	144553	W047.0	153936	E119.6
8151A	B	1544	1704						X	X	X		8151	163325	W073.8	172708	E092.7
8152A	B	1727	1849						X	X	X		8152	182056	W100.7	191440	E065.8
8153A	B	1915	2036						X	X	X		8153	200828	W127.6	210212	E038.9
8154A	B	2101	2222						X	X	X		8154	215600	W154.5	224943	E012.1
8155A	B	2252	0006						X	X	X		8155	234332	E178.6	003715	W014.8

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
10 FEBRUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	F R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
81550	B	0005	0109						X	X	X		8156	013103	E151.8	022447	W041.7
81560	B	0125	0229						X	X	X		8157	031835	E124.8	041219	W068.6
8157R	B	0306	0410						X	X	X		8158	050607	E098.0	055959	W095.5
8158R	B	0435	0558						X	X	X		8159	065339	E071.1	074722	W122.3
8159A	B	0616	0733						X	X	X		8160	084110	E044.2	093454	W149.2
8160A	B	0801	0923						X	X	X		8161	102842	E017.3	112225	W176.1
8161A	B	0948	1111						X	X	X		8162	121614	W009.6	130957	E157.0
8162A	B	1133	1256						X	X	X		8163	140345	W036.5	145729	E130.1
8163A	B	1319	1440						X	X	X		8164	155117	W063.3	164501	E103.2
8164A	B	1502	1624						X	X	X		8165	173849	W090.2	183232	E076.4
8165A	B	1647	1809						X	X	X		8166	192621	W117.1	202004	E049.5
8166A	B	1831	1955						X	X	X		8167	211352	W144.0	220736	E022.6
8167A	B	2020	2141						X	X	X		8168	230124	W170.9	235509	W004.3
8168A	B	2208	2326						X	X	X						

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
11 FEBRUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	F R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
8171R	B	0357	0503						X	X	X		8169	004856	E162.3	014239	W031.2
8172R	B	0539	0701						X	X	X		8170	023628	E135.4	033011	W058.0
8173A	B	0720	0841						X	X	X		8171	042359	E108.5	051743	W084.9
8174A	B	0907	1028						X	X	X		8172	061131	E081.6	070514	W111.8
8175A	B	1052	1215						X	X	X		8173	075903	E054.7	085246	W138.7
8176A	B	1239	1400						X	X	X		8174	094635	E027.8	104018	W165.6
8177A	B	1423	1543						X	X	X		8175	113406	E001.0	122750	E167.5
8178A	B	1605	1728						X	X	X		8176	132138	W025.9	141521	E140.7
8179A	B	1751	1912						X	X	X		8177	150910	W052.8	160253	E113.8
													8178	165641	W079.7	175025	E086.9
													8179	184413	W106.6	193756	E060.0
													8180	203145	W133.4	212528	E033.1
													8181	221917	W160.3	231300	E006.3

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
12 FEBRUARY 1977

INT ORBIT AND STDN	HDRS	HDRSS TIME ON	HDRSS TIME OFF	LR	TTR	TDRE	SCAMR	SEMRR	TERMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
81820	B	0003	0107					X	X	X		8182	000648	E172.8	010032	W020.6
81830	B	0148	0252					X	X	X		8183	015420	E145.9	024803	W047.5
8184R	B	0327	0433					X	X	X		8184	034152	E119.0	043535	W074.4
8185R	B	0459	0620					X	X	X		8185	052924	E092.1	062307	W101.7
8187A	B	0824	0946					X	X	X		8186	071655	E065.3	081039	W128.2
8188A	B	1011	1134					X	X	X		8187	090427	E038.4	095810	W155.1
8189A	B	1156	1319				X	X	X	X		8188	105159	E011.5	114542	E178.1
8190A	B	1341	1503				X	X	X	X		8189	123930	W015.4	133314	E151.2
8191A	B	1524	1647				X	X	X	X		8190	142702	W042.3	152045	E124.7
8192A	B	1709	1832				X	X	X	X		8191	161434	W069.2	170817	E097.4
8193A	B	1856	2017				X	X	X	X		8192	180206	W096.0	185549	E070.5
8194A	B	2043	2204				X	X	X	X		8193	194937	W122.9	204321	E043.7
8195A	B	2232	2350		X		X	X	X	X		8194	213709	W149.8	223052	E016.8
												8195	232441	W176.7	001824	W010.1

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
13 FEBRUARY 1977

INT ORBIT AND STDN	HDRS	HDRSS TIME ON	HDRSS TIME OFF	LR	TTR	TDRE	SCAMR	SEMRR	TERMR	TWRL	HIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
81950	B	2347	0051					X	X	X	X	8196	011215	E156.4	020559	W037.0
81960	B	0105	0210					X	X	X	X	8197	025947	E129.5	035330	W063.9
8198R	B	0416	0539		X			X	X	X	X	8198	044719	E102.6	054102	W090.8
8199R	B	0604	0722		X			X	X	X	X	8199	063451	E075.7	072834	W117.7
8200A	B	0743	0858		X			X	X	X	X	8200	082222	E048.9	091605	W144.6
8201A	B	0929	1052		X			X	X	X	X	8201	100954	E022.0	110337	W171.5
8202A	B	1116	1232		X			X	X	X	X	8202	115726	W004.9	125109	E161.6
8203A	B	1300	1421		X			X	X	X	X	8203	134458	W031.8	143841	E134.8
8204A	B	1444	1605		X			X	X	X	X	8204	153229	W058.7	162612	E107.9
8205A	B	1628	1750		X			X	X	X	X	8205	172001	W085.6	181344	E081.0
8207A	B	1813	2123		X			X	X	X	X	8206	190733	W112.4	200116	E054.1
8208A	B	2148	2308		X			X	X	X	X	8207	205505	W139.3	214849	E027.3
												8208	224236	W166.2	233619	E000.4

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
14 FEBRUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	F R B	P M R	T W R L	H I R S	ASCENDING NODE DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
82080	B	2305	0009					X	X	X	X		8209	003008	E166.9	012351	W026.5
82090	B	0021	0126					X	X	X	X		8210	021740	E140.0	031123	W053.4
8211R	B	0336	0457		X			X	X	X	X		8211	040512	E113.1	045855	W080.3
8212R	B	0521	0643		X			X	X	X	X		8212	055243	E086.3	064626	W107.2
8213A	B	0701	0821		X			X	X	X	X		8213	074015	E059.4	083358	W134.1
8214A	B	0847	1009		X			X	X	X	X		8214	092747	E032.5	102139	W160.9
8215A	B	1033	1157		X			X	X	X	X		8215	111519	E005.6	120901	E172.2
8216A	B	1219	1341		X			X	X	X	X		8216	130250	W021.3	135633	E145.3
8217A	B	1404	1524		X			X	X	X	X		8217	145022	W048.2	154404	E118.4
8218A	B	1548	1709		X			X	X	X	X		8218	163754	W075.0	173137	E091.5
8219A	B	1732	1854		X			X	X	X	X		8219	182526	W101.9	191908	E064.7
8220A	B	1919	2040		X			X	X	X	X		8220	201257	W128.8	210640	E037.8
8221A	B	2105	2227		X			X	X	X	X		8221	220029	W155.7	225412	E010.9
													8222	234801	E177.4	004144	W016.0

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
15 FEBRUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	F R B	P M R	T W R L	H I R S	ASCENDING NODE DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
82220	B	2344	0048					X	X	X	X		8223	013532	E150.6	022915	W042.9
82230	B	0131	0235					X	X	X	X		8224	032304	E123.7	041647	W069.8
8224R	B	0317	0414		X			X	X	X	X		8225	051036	E096.8	060419	W096.6
8225R	B	0439	0602		X			X	X	X	X		8226	065808	E069.9	075150	W123.5
8226A	B	0620	0736		X			X	X	X	X		8227	084539	E043.0	093922	W150.4
8227A	B	0807	0927		X			X	X	X	X		8228	103311	E016.1	112654	W177.3
8228A	B	0952	1114		X			X	X	X	X		8229	122043	W010.7	131426	E155.8
8229A	B	1139	1301		X			X	X	X	X		8230	140815	W037.6	150159	E129.0
8230A	B	1323	1444		X			X	X	X	X		8231	155546	W064.5	164929	E102.1
8231A	B	1507	1628		X			X	X	X	X		8232	174318	W091.4	183701	E075.2
8233A	B	1836	1958		X			X	X	X	X		8233	193050	W118.3	202433	E048.3
8234A	B	2024	2146		X			X	X	X	X		8234	211822	W145.2	221204	E021.4
8235A	B	2212	2332		X			X	X	X	X		8235	230553	W172.0	235936	W005.5

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
16 FEBRUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E F R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	LONG DEGREE	DESCENDING NODE TIME HRMNSS	LONG DEGREE
82350	B	2328	0032					X	X	X	X		8236	005325	E161.1	014708	W032.4
82360	B	0047	0151					X	X	X	X		8237	024057	E134.2	033440	W059.2
8238R	B	0357	0520		X			X	X	X	X		8238	042829	E107.3	052211	W086.1
8239R	G	0544	0705		X			X	X	X	X		8239	061600	E080.4	070943	W113.0
8240A	B	0724	0845		X			X	X	X	X		8240	080332	E053.6	085715	W139.9
8241A	B	0911	1032		X			X	X	X	X		8241	095104	E026.7	104447	W166.8
8242A	B	1056	1220		X			X	X	X	X		8242	113836	W002.2	123219	E166.4
8243A	B	1243	1404		X				X	X	X		8243	132607	W027.1	141950	E139.5
8244A	B	1427	1547		X				X	X	X		8244	151339	W054.0	160722	E112.6
8245A	B	1609	1732		X				X	X	X		8245	170111	W080.9	175454	E085.7
8246A	B	1756	1918		X				X	X	X		8246	184843	W107.8	194225	E058.8
8247A	B	1942	2104		X				Y	X	X		8247	203614	W134.6	212957	E031.9
													8248	222346	W161.5	231729	E005.1

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
17 FEBRUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	E P R B	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	LONG DEGREE	DESCENDING NODE TIME HRMNSS	LONG DEGREE
82490	B	0005	0109						X	X	X		8249	001118	E171.6	010500	W021.8
82500	B	0148	0251						Y	X	X		8250	015850	E144.7	025232	W048.7
8251R	B	0333	0435		X				X	X	X		8251	034621	E117.8	044004	W075.6
8252R	B	0504	0624		X				Y	X	X		8252	053353	E091.0	062736	W102.5
8253A	B	0644	0801		X				X	X	X		8253	072125	E064.1	081507	W129.4
8254A	B	0829	0948		X				X	X	X		8254	090856	E037.2	100239	W156.3
8255A	B	1015	1135		X				Y	X	X		8255	105628	E010.3	115011	E176.9
8256A	B	1201	1319		X				Y	X	X		8256	124400	W016.6	133743	E150.0
8257A	B	1345	1507		X				Y	X	X		8257	143132	W043.5	152514	E123.1
8258A	B	1529	1642		X				X	X	X		8258	161903	W070.3	171246	E096.2
8260A	B	1900	2018		X				X	X	X		8259	180635	W097.2	190018	E069.4
8261A	B	2048	2205		X				Y	X	X		8260	195407	W124.1	204750	E042.5
													8261	214139	W151.0	223521	E015.6
													8262	232911	W177.9	002253	W011.3

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
18 FEBRUARY 1977

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LIR	THR	TDRE	SCAMR	SEMRB	EPMR	TWRL	THIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
8264R	B	0230	0355		X			X	X	X		8263	011642	E155.3	021025	W038.2
8265R	B	0420	0543		X			X	X	X		8264	030414	E128.4	035756	W065.1
8266A	B	0603	0718		X			X	X	X		8265	045146	E101.5	054528	W091.9
8267A	B	0747	0908		X			X	X	X		8266	063917	E074.6	073300	W118.8
8268A	B	0933	1057		X			X	X	X		8267	082649	E047.7	092032	W145.7
8269A	B	1120	1242		X			X	X	X		8268	101421	E020.8	110803	W172.6
8270A	B	1304	1420		X			X	X	X		8269	120153	W006.1	125535	E160.5
8271A	B	1448	1609		X			X	X	X		8270	134924	W032.9	144307	E133.6
8272A	B	1632	1754		X			X	X	X		8271	153656	W059.8	163039	E106.8
8273A	B	1819	1940		X			X	X	X		8272	172428	W086.7	181810	E079.9
8274A	B	2007	2127		X			X	X	X		8273	191200	W113.6	200542	E053.0
8275A	B	2153	2313		X			X	X	X		8274	205931	W140.5	215314	E026.1
												8275	224703	W167.3	234046	W000.8

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
19 FEBRUARY 1977

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LIR	THR	TDRE	SCAMR	SEMRB	EPMR	TWRL	THIRS	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
82750	B	2313	0012					X	X	X		8276	003435	E165.8	012817	W027.7
82760	B	0026	0130					X	X	X		8277	022207	E138.9	031540	W054.5
8278R	B	0210	0500		X			X	X	X		8278	040938	E112.0	050321	W081.4
8279R	B	0525	0647		X			X	X	X		8279	055710	E085.1	065052	W108.3
8280A	B	0707	0821		X			X	X	X		8280	074442	E058.2	083824	W135.2
8281A	B	0852	1008		X			X	X	X		8281	093214	E031.4	102556	W162.1
8282A	B	1039	1155		X			X	X	X		8282	111945	E004.5	121328	E171.1
8283A	B	1224	1330		X		X	X	X	X		8283	130717	W022.4	140059	E144.2
8284A	B	1408	1528		X		X	X	X	X		8284	145449	W049.3	154831	E117.3
8285A	B	1528	1706		X		X	X	X	X		8285	164221	W076.2	173603	E090.4
8286A	B	1712	1849		X		X	X	X	X		8286	182952	W103.1	192335	E063.5
8287A	B	1857	2039		X		X	X	X	X		8287	201724	W129.9	211106	E036.6
8288A	B	2044	2225		X		X	X	X	X		8288	220456	W156.8	225838	E009.8
												8289	235228	E176.3	004610	W017.1

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
20 FEBRUARY 1977

INT ORBIT AND STDN	HDR S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LR I R	TH I R	TD I E	CA M	SE M R	EF R	PM R	TW R L	HI R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
8289A	B	2303	0017		X			X	X	X	X		8290	013957	E140.4	023340	W044.0
82890	B	0015	0118					X	X	X	X		8291	032729	E122.5	042111	W070.9
82900	B	0136	0239					X	X	X	X		8292	051501	E095.7	060843	W097.8
8291R	B	0315	0419		X			X	X	X	X		8293	070233	E068.8	075615	W124.7
8292R	B	0444	0606		X			X	X	X	X		8294	085004	E041.9	094347	W151.5
8294A	B	0811	0932		X			X	X	X	X		8295	103736	E015.0	113118	W178.4
8295A	B	0956	1110		X			X	X	X	X		8296	122508	W011.9	131850	E154.7
8296A	B	1143	1305		X			X	X	X	X		8297	141240	W038.8	150622	E127.8
8297A	B	1441	1448		X			X	X	X	X		8298	160011	W065.6	165354	E100.2
8298A	B	1448	1632		X			X	X	X	X		8299	174743	W092.5	184125	E074.1
8299A	B	1632	1817		X			X	X	X	X		8300	193515	W119.4	202857	E047.2
8300A	B	1816	2002		X			X	X	X	X		8301	212247	W146.3	221628	E020.3
8301A	B	2001	2149		X			X	X	X	X		8302	231018	W173.2	000400	W006.6
8302A	B	2148	2335		X			X	X	X	X						

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
21 FEBRUARY 1977

INT ORBIT AND STDN	HDR S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LR I R	TH I R	TD I E	CA M	SE M R	EF R	PM R	TW R L	HI R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
83020	B	2332	0036					X	X	X	X		8303	005750	E160.0	015132	W033.5
83030	B	0052	0155					X	X	X	X		8304	024522	E133.1	033904	W060.4
8305R	B	0241	0523		X			X	X	X	X		8305	043254	E106.2	052636	W087.2
8306R	B	0549	0708		X			X	X	X	X		8306	062025	E079.3	071407	W114.1
8307A	B	0737	0849		X			X	X	X	X		8307	080757	E052.4	090139	W141.0
8309A	B	1108	1224		X			X	X	X	X		8308	095529	E025.5	104911	W167.9
8310A	B	1247	1351		X			X	X	X	X		8309	114300	W001.3	123643	E165.2
8311A	B	1411	1511		X			X	X	X	X		8310	133032	W028.2	142414	E138.4
8312A	B	1551	1737		X			X	X	X	X		8311	151804	W055.1	161146	E111.5
8313A	B	1736	1922		X			X	X	X	X		8312	170536	W082.0	175918	E084.6
8314A	B	1921	2108		X			X	X	X	X		8313	185307	W108.9	194649	E057.7
8315A	B	2107	2245		X			X	X	X	X		8314	204039	W135.8	213421	E030.8
													8315	222811	W162.6	232153	E003.9

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
22 FEBRUARY 1977

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LTHR IRR	THDR IRE	DCAM RMR	SEMR RBR	EPM RMR	TWR RLR	HIR RSR	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
83160	B	0037	0141				X X X X				8316	001543	E170.5	010925	W023.0
83170	B	0153	0257				X X X X				8317	020314	E143.6	025656	W049.8
8318R	B	0337	0441		X		X X X X				8318	035046	E116.7	044428	W076.7
8319R	B	0508	0620		X		X X X X				8319	053818	E089.8	063200	W103.6
8320A	B	0647	0806		X		X X X X				8320	072550	E063.0	081931	W130.5
8321A	B	0833	0954		X		X X X X				8321	091321	E036.1	100703	W157.4
8322A	B	1020	1142		X		X X X X				8322	110053	E009.2	115435	E175.8
8323A	B	1205	1310		X		X X X X				8323	124825	W017.7	134207	E148.0
8324A	B	1351	1511		X		X X X X				8324	143556	W044.6	152938	E122.0
8325A	B	1509	1654		X		X X X X				8325	162328	W071.5	171710	E095.1
8326A	B	1655	1841		X		X X X X				8326	181100	W098.4	190442	E068.2
8327A	B	1840	2027		X		X X X X				8327	195832	W125.2	205214	E041.4
8328A	B	2024	2212		X		X X X X				8328	214603	W152.1	223945	E014.5
8329A	B	2243	2358		X		X X X X				8329	233335	W179.0	002717	W012.4

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
23 FEBRUARY 1977

INT ORBIT AND STDN	HDRS	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LTHR IRR	THDR IRE	DCAM RMR	SEMR RBR	EPM RMR	TWR RLR	HIR RSR	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
83290	B	2356	0059				X X X X				8330	012107	E154.1	021449	W039.3
83300	B	0112	0216				X X X X				8331	030839	E127.2	040220	W066.2
8331R	B	0257	0358		X		X X X X				8332	045610	E100.4	054952	W093.1
8332R	B	0424	0548		X		X X X X				8333	064342	E073.5	073724	W120.0
8333R	B	0613	0730		X		X X X X				8334	083114	E046.6	092456	W146.8
8334A	B	0759	0913		X		X X X X				8335	101846	E019.7	111227	W173.7
8335A	B	0939	1100		X		X X X X				8336	120617	W007.2	125959	E159.4
8336A	B	1124	1247		X		X X X X				8337	135349	W034.1	144731	E132.5
8337A	B	1308	1420		X		X X X X				8338	154121	W060.9	163503	E105.6
8338A	B	1428	1614		X		X X X X				8339	172852	W087.8	182234	E078.8
8339A	B	1613	1750		X		X X X X				8340	191624	W114.7	201006	E051.9
8340A	B	1758	1945		X		X X X X				8341	210356	W141.6	215738	E025.0
8341A	B	1944	2131		X		X X X X				8342	225128	W168.5	234509	W001.9
8342A	B	2129	2317		X		X X X X								

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
24 FEBRUARY 1977

INT ORBIT AND STDN	HDRS R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRI R	THI R	TDRE E	TSAM R	ESR R	EPR R	PMR R	TWR L	HIR S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
83420	B	2316	0019				X	X	X	X			8343	003859	E164.7	013241	W028.8
83430	B	0031	0134				X	X	X	X			8344	022631	E137.8	032013	W056.7
8345R	B	0229	0506		X		X	X	X	X			8345	041403	E110.9	050745	W082.5
8346R	B	0530	0651		X		X	X	X	X			8346	060135	E084.0	065516	W109.4
8347A	B	0710	0830		X		X	X	X	X			8347	074906	E057.1	084248	W136.3
8348A	B	0856	1018		X		X	X	X	X			8348	093638	E030.2	103020	W163.2
8349A	B	1042	1205		X		X	X	X	X			8349	112410	E003.4	121752	E169.9
8350A	B	1228	1350		X		X	X	X	X			8350	131142	W023.5	140523	E143.1
8351A	B	1412	1533		X		X	X	X	X			8351	145913	W050.4	155255	E116.2
8352R	B	1532	1705		X		X	X	X	X			8352	164645	W077.3	174027	E089.3
8354A	B	1928	2049		X		X	X	X	X			8353	183417	W104.2	192758	E062.4
8355A	B	2048	2234		X		X	X	X	X			8354	202149	W131.1	211530	E035.5
8356A	B	2234	0022		X		X	X	X	X			8355	220920	W156.0	230302	E008.6
													8356	235652	E175.2	005034	W018.3

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
25 FEBRUARY 1977

INT ORBIT AND STDN	HDRS R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LRI R	THI R	TDRE E	TSAM R	ESR R	EPR R	PMR R	TWR L	HIR S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
8358R	B	0304	0423				X	X	X	X			8357	014424	E148.3	023805	W045.1
8359R	B	0448	0610				X	X	X	X			8358	033155	E121.4	042537	W072.0
8360A	B	0629	0747		X		X	X	X	X			8359	051927	E094.5	061309	W098.9
8361A	B	0814	0936		X		X	X	X	X			8360	070659	E067.6	080041	W125.8
8362A	B	1000	1124		X		X	X	X	X			8361	085431	E040.8	094812	W152.7
8363A	B	1146	1310		X		X	X	X	X			8362	104202	E013.9	113544	W179.5
8364A	B	1332	1436		X		X	X	X	X			8363	122934	W013.0	132316	E153.6
8365A	B	1440	1556		X		X	X	X	X			8364	141706	W039.9	151047	E126.7
8366A	B	1622	1739		X		X	X	X	X			8365	160438	W066.8	165819	E099.8
8367A	B	1807	1924		X		X	X	X	X			8366	175209	W093.7	184551	E072.9
8368A	B	1951	2110		X		X	X	X	X			8367	193941	W120.5	203323	E046.0
8369A	B	2139	2256		X		X	X	X	X			8368	212713	W147.4	222054	E019.2
													8369	231445	W174.3	000826	W007.7

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
26 FEBRUARY 1977

INT ORBIT AND STDN	HDR S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LR I R	TH I R	TD R E	CA M	ES M R	FR B	PM P	TW R L	HI R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
83690	B	2338	0041					X	X	X	X		8370	010216	E158.8	015558	W034.6
83700	B	0056	0200					X	X	X	X		8371	024048	E131.9	034329	W061.5
8372R	B	0406	0529		X			X	X	X	X		8372	043720	E105.1	053101	W088.4
8373R	B	0553	0713		X			X	X	X	X		8373	062451	E078.2	071833	W115.3
8375A	B	0919	1042		X			X	X	X	X		8374	081223	E051.3	090605	W142.1
8376A	B	1105	1228		X			X	X	X	X		8375	095955	E024.4	105336	W169.0
8377A	B	1252	1412		X			X	X	X	X		8376	114727	W002.5	124108	E164.1
8378A	B	1434	1529		X			X	X	X	X		8377	133459	W029.4	142840	E137.2
8379A	B	1541	1741		X			X	X	X	X		8378	152230	W056.3	161612	E110.3
8380A	B	1725	1844		X			X	X	X	X		8379	171002	W083.1	180343	E083.5
8381A	B	1912	2028		X			X	X	X	X		8380	185734	W110.0	195115	E056.6
8382A	B	2057	2214		X			X	X	X	X		8381	204505	W136.9	213847	E029.7
													8382	223237	W163.8	232618	E002.8

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
27 FEBRUARY 1977

INT ORBIT AND STDN	HDR S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	LR I R	TH I R	TD R E	CA M	ES M R	FR B	PM R	TW R L	HI R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
83830	B	0016	0120					X	X	X	X		8383	002009	E169.4	011350	W024.1
83840	B	0200	0304					X	X	X	X		8384	020741	E142.5	030122	W051.0
8385R	B	0343	0447		X			X	X	X	X		8385	035513	E115.6	044854	W077.8
8386R	B	0512	0633		X			X	X	X	X		8386	054244	E088.7	063626	W104.7
8388A	B	0837	1000		X			X	X	X	X		8387	073016	E061.8	082357	W131.6
8389A	B	1024	1142		X			X	X	X	X		8388	091748	E034.9	101129	W158.5
8390A	B	1209	1332		X			X	X	X	X		8389	110519	E008.1	115901	E174.6
8391A	B	1354	1458		X			X	X	X	X		8390	125251	W018.8	134632	E147.8
8392A	B	1501	1618		X			X	X	X	X		8391	144023	W045.7	153404	E120.9
8393A	B	1644	1802		X			X	X	X	X		8392	162755	W072.6	172136	E094.0
8394A	B	1829	1946		X			X	X	X	X		8393	181526	W099.5	190908	E067.1
8395A	B	2023	2134		X			X	X	X	X		8394	200258	W126.4	205639	E040.2
													8395	215030	W153.3	224411	E013.3
													8396	233802	E170.9	003143	W013.6

TABLE 2–2
DATA AVAILABILITY ON-OFF TIMES
28 FEBRUARY 1977

INT ORBIT AND STDN	H D R S	HDRSS TIME ON HRMN	HDRSS TIME OFF HRMN	L R I R	T H I R	T D R E	S C A M	E S M R	F R R	P M R	T W R L	H I R S	DATA ORBIT	ASCENDING NODE TIME HRMNSS	ASCENDING NODE LONG DEGREE	DESCENDING NODE TIME HRMNSS	DESCENDING NODE LONG DEGREE
83960	B	2338	0038					X	X	X	X		8397	012533	E153.0	021915	W040.4
83970	B	0120	0219					X	X	X	X		8398	031305	E126.1	040646	W067.3
8398R	B	0301	0403		X			X	X	X	X		8399	050037	E099.2	055418	W094.2
8399R	B	0429	0552		X			X	X	X	X		8400	064809	E072.3	074150	W121.1
8400A	B	0611	0726		X			X	X	X	X		8401	083540	E045.5	092921	W148.0
8401A	B	0756	0917		X			X	X	X	X		8402	102312	E018.6	111653	W174.8
8402A	B	0942	1103		X			X	X	X	X		8403	121044	W008.3	130425	E158.3
8403A	B	1129	1232		X			X	X	X	X		8404	135816	W035.2	145157	E131.4
8405A	B	1420	1538		X			X	X	X	X		8405	154547	W062.1	163929	E104.5
8406A	B	1604	1718		X			X	X	X	X		8406	173319	W089.0	182700	E077.6
8407A	B	1749	1906		X			X	X	X	X		8407	192051	W115.8	201432	E050.7
8408A	B	1933	2052		X			X	X	X	X		8408	210822	W142.7	220204	E023.9
8409A	B	2120	2231										8409	225554	W169.6	234935	W003.8

SECTION 3

ORBIT DISPLAYS OF ESMR

This section briefly describes the ESMR experiment, the format of the image displays derived from the data of this experiment and presents image examples of selected data. A complete description of the ESMR experiment is found in Section 5 of The Nimbus 6 User's Guide.

The ESMR is a two-channel scanning radiometer receiving microwave radiation in a 250 MHz band centered at 37 GHz. One channel is used to measure the vertical polarization of the radiation, and the other measures the horizontal polarization. The antenna beam scans ahead of the spacecraft along a conical surface with a constant angle of 45 degrees with respect to the antenna axis. Spatial resolution of each element is about 20 km in the cross-track direction by 45 km in the direction parallel to the subpoint track.

For a brief description of the HIRS and SCAMS experiments formerly described in this Section, see The Nimbus 6 Data Catalog, Volume 5, Section 3. A complete description of the HIRS and SCAMS experiments may be found in The Nimbus 6 User's Guide, Sections 3 and 4 respectively.

All useable HIRS and SCAMS data have been converted to 4" x 5" black and white images. ESMR data will continue to be converted to 4" x 5" black and white image as long as the experiment continues to function in an operational mode. Selected images from the ESMR experiment for January and February 1977 are presented in this section. Complete coverage times are listed in the Data Availability ON-OFF Times in Table 2-2.

Section 5 of The Nimbus 6 User's Guide describes in detail the image format of the ESMR. The following is a summary of the format, detailing changes to the User's Guide where needed. The processed display contains the following items:

- NIMBUS 6 (ESMR)

  This identifies the satellite and the experiment.

- (DATE)

  This identifies the Greenwich month, day, and year the data were recorded on board the satellite.

- SCALE F (P2)

  Since orbit 3933, ESMR has operated in the P (partial mode). For each experiment the data from each interrogation orbit is displayed on a single image. Through orbit 3932 (31 March 1976), each ESMR scan line is displayed once and twice after orbit 3932. Similarly, each of the 71 scan-spot elements is displayed once through orbit 3932 and twice after orbit 3933.

- INT ORBIT

  The interrogation orbit number identifies the orbit in progress when the recorded data is transmitted to a STDN station. Usually parts of two data orbits are on the same display. The interrogation orbit number will only identify the last orbit of each display.

- TIME (and) SUBPOINT

  Satellite time and latitude-longitude information are presented along the vertical line down the center of each display. The line represents the satellite subpoint track, which is located down the center of each of the swaths on each display. Time is GMT with ticks along the left side of the line at each five minute mark (on the five minutes). Time is annotated (hour and minute) every 15 minutes (on the quarter hour).

  Subpoint information presents latitude and longitude positions of the satellite subpoint. Each tick mark on the right side of the vertical line is annotated with the subpoint latitude and longitude (to the nearest degree). Latitude is labeled N (north) or S (south). Longitude is labeled E (east) or W (west).

  After orbit 3933 and again at orbit 6185, the ESMR data display was changed. The following condensed changes apply for TIME and SUBPOINT information: Satellite time information is presented along the vertical lines to the left and to the right of the data display. Time is GMT with 5 minute tick marks. Time annotations consist of hour-minute displays with 15 minute intervals or quarter-hour notations.

  Latitude and longitude coordinates are in grid form centrally placed between two sets of data; each data set are a compliment of the appropriate grid overlay immediately adjacent to its border. For a complete description of new format see ESMR CHANNEL-RANGE DISPLAYS, this section of the catalog.

- GRAY SCALE

  Each image has an 18-step gray scale along the bottom of the display. The gray scales are used to define parameter value intervals for each image swath of each display by assigning different parameter values to the gray scale for each swath. Tables 3-1 through 3-3 define the parameter values versus gray scale for each ESMR image swath.

- 3200

  This identifies the computer used to process the data. All data was processed by the Control Data Corporation (CDC) 3200.

ESMR CHANNEL-RANGE DISPLAYS

Through orbit 3932 (31 March), the ESMR displays contained 20 swaths of data, as shown in the ESMR image displays in Section 3.3, The Nimbus 6 Data Catalog, Volume 1-5. The swaths are numbered (numbers not shown) from 1 on the left to 20 on the right. Each of the ten swaths on the left has the same geographic coverage. However, each swath displays either horizontally or vertically polarized data at a temperature range as listed in Table 3-1. If the right swaths were cut and placed above the group on the left, the new display would show the continuous coverage recorded for that orbit. Swaths 1 and 11 have the same polarization and temperature range. Similarly, swaths 2 and 12, 3 and 13, etc., are the same. Table 3-1 is set up to show this duplication of parameter information.

The ESMR image display format has been modified on two occasions since launch date. The first modification occurred after orbit 3933 (31 March 1976) and the second change occurred after orbit 6184 (15 September 1976).

From orbit 3933 through orbit 6184 the ESMR image display had the following format:

The displays contain ten swaths of data plus a geographic grid overlay for each swath, as shown in the ESMR image display after orbit 3933 in Section 3.3, The Nimbus 6 Data Catalog, Volume 5 through 7. The swaths are numbered (numbers not displayed) from 1 on the left to 10 on the right. Each of the five swaths on the left has the same geographic coverage. However, each swath displays either horizontally or vertically polarized data at a temperature range as listed in Table 3-2.

The right set of five swaths has a similar format, and displays the latest recorded data. If the right swaths were cut and placed below the group on the left, the new display would show the continuous coverage of that display.

Table 3-1

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 828 through 3932 (13 August 1975 through 31 March 1976) (Brightness Temperatures are in °K)

Gray Scale Number		Swath Number and ESMR Display Parameter									
		1 and 11 (T_H)	2 and 12 (T_V)	3 and 13 $\left(\frac{T_H+T_V}{2}\right)$	4 and 14 (T_H)	5 and 15 (T_V)	6 and 16 $\left(\frac{T_H+T_V}{2}\right)$	7 and 17 (T_H)	8 and 18 (T_V)	9 and 19 $\left(\frac{T_H+T_V}{2}\right)$	10 and 20 (T_V-0.6T_H)
(black)	1	> 200	> 230	> 210	> 250	> 270	> 250	> 290	> 300	> 280	>140
	2	196-200	226-230	206-210	246-250	267-270	247-250	287-290	298-300	278-280	136-140
	3	191-196	223-226	203-206	243-246	264-267	244-247	284-287	295-298	275-278	133-136
	4	187-191	219-223	199-203	239-243	261-264	241-244	281-284	293-295	273-275	129-133
	5	183-187	215-219	195-199	235-239	258-261	238-241	278-281	290-293	270-273	125-129
	6	178-183	211-215	191-195	231-235	254-258	234-238	274-278	288-290	268-270	121-125
	7	174-178	208-211	188-191	228-231	251-254	231-234	271-274	285-288	265-268	118-121
	8	169-174	204-208	184-188	224-228	248-251	228-231	268-271	283-285	263-265	114-118
	9	165-169	200-204	180-184	220-224	245-248	225-228	265-268	280-283	260-263	110-114
	10	161-165	196-200	176-180	216-220	242-245	222-225	262-265	278-280	258-260	106-110
	11	156-161	193-196	173-176	213-216	239-242	219-222	259-262	275-278	255-258	103-106
	12	152-156	189-193	169-173	209-213	236-239	216-219	256-259	273-275	253-255	99-103
	13	148-152	185-189	165-169	205-209	233-236	213-216	253-256	270-273	250-253	95-99
	14	143-148	181-185	161-165	201-205	229-233	209-213	249-253	268-270	248-250	91-95
	15	139-143	178-181	158-161	198-201	226-229	206-209	246-249	265-268	245-248	88-91
	16	134-139	174-178	154-158	194-198	223-226	203-206	243-246	263-265	243-245	84-88
	17	130-134	170-174	150-154	190-194	220-223	200-203	240-243	260-263	240-243	80-84
(white)	18	< 130	< 170	< 150	< 190	< 220	<200	< 240	< 260	< 240	< 80

T_H = Brightness temperature derived from the ESMR horizontal polarization data

T_V = Brightness temperature derived from the ESMR vertical polarization data

Table 3-2

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 3933 through 5155 (31 March through 30 June 1976)

(Brightness Temperatures are in °K)

Gray Scale Number	Swath Number and ESMR Display Parameter				
	1 and 6 (T_H)	2 and 7 (T_H)	3 and 8 (T_H)	4 and 9 (T_V)	5 and 10 $\left(\frac{T_H + T_V}{2}\right)$
(black) 1	> 200	> 230	> 210	> 250	> 270
2	196-200	226-230	206-210	246-250	267-270
3	191-196	223-226	203-206	243-246	264-267
4	187-191	219-223	199-203	239-243	261-264
5	183-187	215-219	195-199	235-239	258-261
6	178-183	211-215	191-195	231-235	254-258
7	174-178	208-211	188-191	228-231	252-254
8	169-174	204-208	184-188	224-228	248-252
9	165-169	200-204	180-184	220-224	245-248
10	161-165	196-200	176-180	216-220	242-245
11	156-161	193-196	173-176	213-216	239-242
12	152-156	189-193	169-173	209-213	236-239
13	148-152	185-189	165-169	205-209	233-236
14	143-148	181-185	161-165	201-205	229-233
15	139-143	178-181	158-161	198-201	226-229
16	134-139	174-178	154-158	194-198	223-226
17	130-134	170-174	150-154	190-194	220-223
(white) 18	< 130	<170	<150	<190	< 220

T_H = Brightness temperature derived from the ESMR horizontal polarization data

T_V = Brightness temperature derived from the ESMR vertical polarization data

Table 3-3

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 6185 (15 September 1976) through the present Catalog Period

(Brightness Temperatures are in °K)

Swath Number and ESMR Display Parameter					
Gray Scale Number	1 and 6 (T_V)	2 and 7 (T_V)	3 and 8 (T_V)	4 and 9 (T_V)	5 and 10 (T_V)
(black) 1	>240	>254	>270	>280	>300
2	236-240	251-254	266-270	277-280	296-300
3	233-236	248-251	263-266	274-277	293-296
4	230-233	245-248	260-263	271-274	290-293
5	227-230	242-245	257-260	268-271	287-290
6	224-227	239-242	254-257	265-268	284-287
7	221-224	236-239	251-254	262-265	281-284
8	218-221	233-236	248-251	259-262	278-281
9	215-218	230-233	245-248	256-259	275-278
10	212-215	227-230	242-245	253-256	272-275
11	209-212	224-227	239-242	250-253	269-272
12	206-209	221-224	236-239	247-250	266-269
13	203-206	218-221	233-236	244-247	263-266
14	200-203	215-218	230-233	241-244	260-263
15	197-200	212-215	227-230	239-241	257-260
16	193-197	208-212	223-227	237-239	253-257
17	190-193	205-208	220-223	235-237	250-253
(white) 18	<190	<205	<220	<235	<250

T_V = Brightness temperature derived from the ESMR vertical polarization data

Swaths 1 and 6 display the same parameter. That is, the temperature range and polarization for swaths 1 and 6 are the same. Similarly, swaths 2 and 7, 3 and 8, 4 and 9, and 5 and 10 display the same parameters. Table 3-2 is set up to show this duplication of parameter information.

Data time (GMT) references for the left set of five swaths are shown adjacent to the vertical line at the left. Time tick marks are every five minutes with hour and minute annotation every fifteen minutes. Data time references for the right set of five swaths are shown in a similar manner adjacent to the vertical line at the right.

The center portion of the display contains two swaths of grid overlay information: the left grid for overlay on each of the five swaths on the left, and the right grid for overlay on each of the five swaths on the right. The grid longitudes are generated at ten degree intervals between 55 degrees south and 55 degrees north, and at 20 degree intervals from 55 degrees to the Poles. Latitude grids are generated every five degrees. All grid lines consist of a series of dots at one degree intervals. Latitudes are labeled at 60°S, 30°S, EQ, 30°N, and 60°N. Longitude labels are normally placed next to each latitude label.

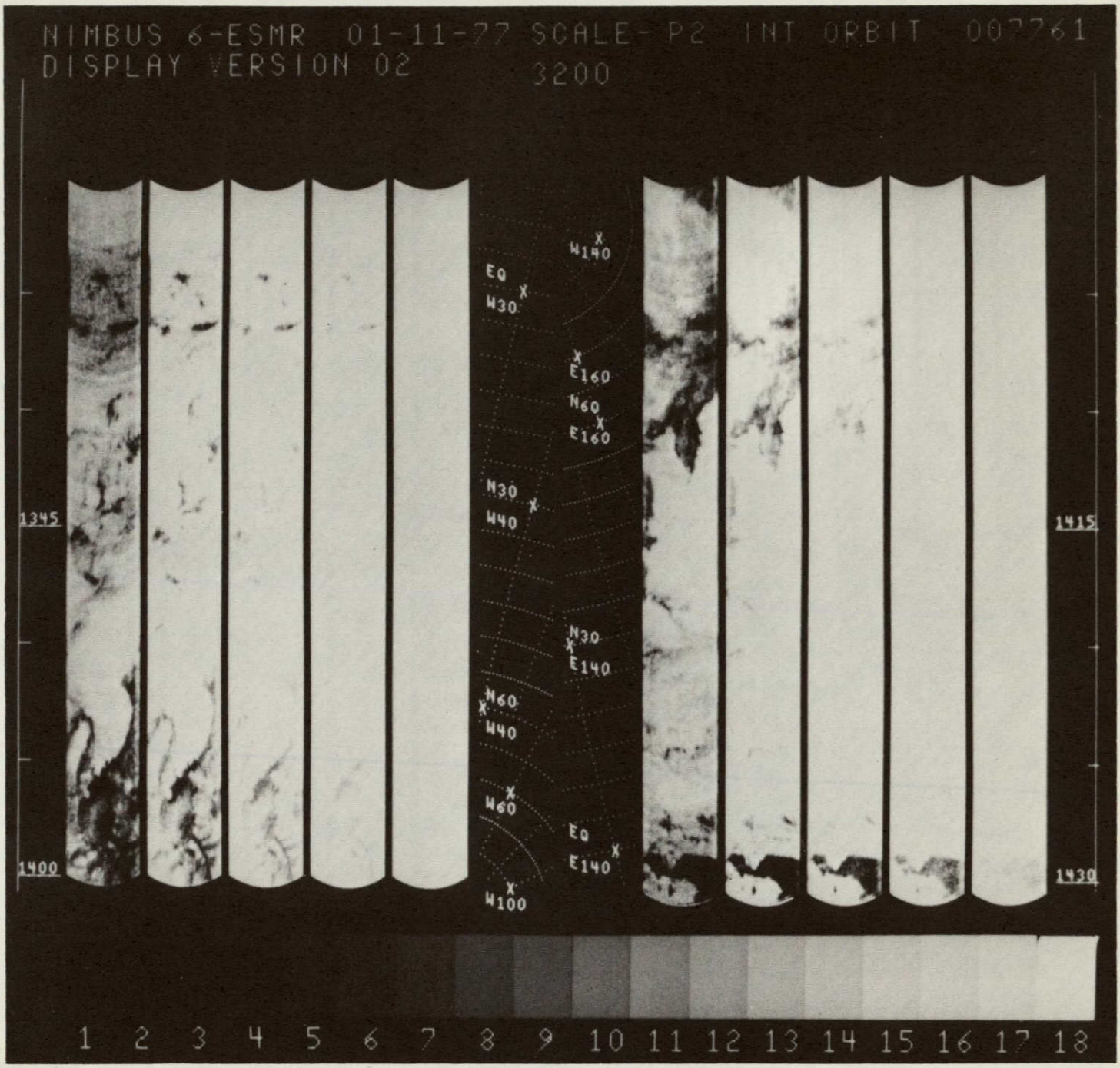
From orbit 6185 (15 September 1976) through the current data catalog period, the new ESMR image display has the following format:

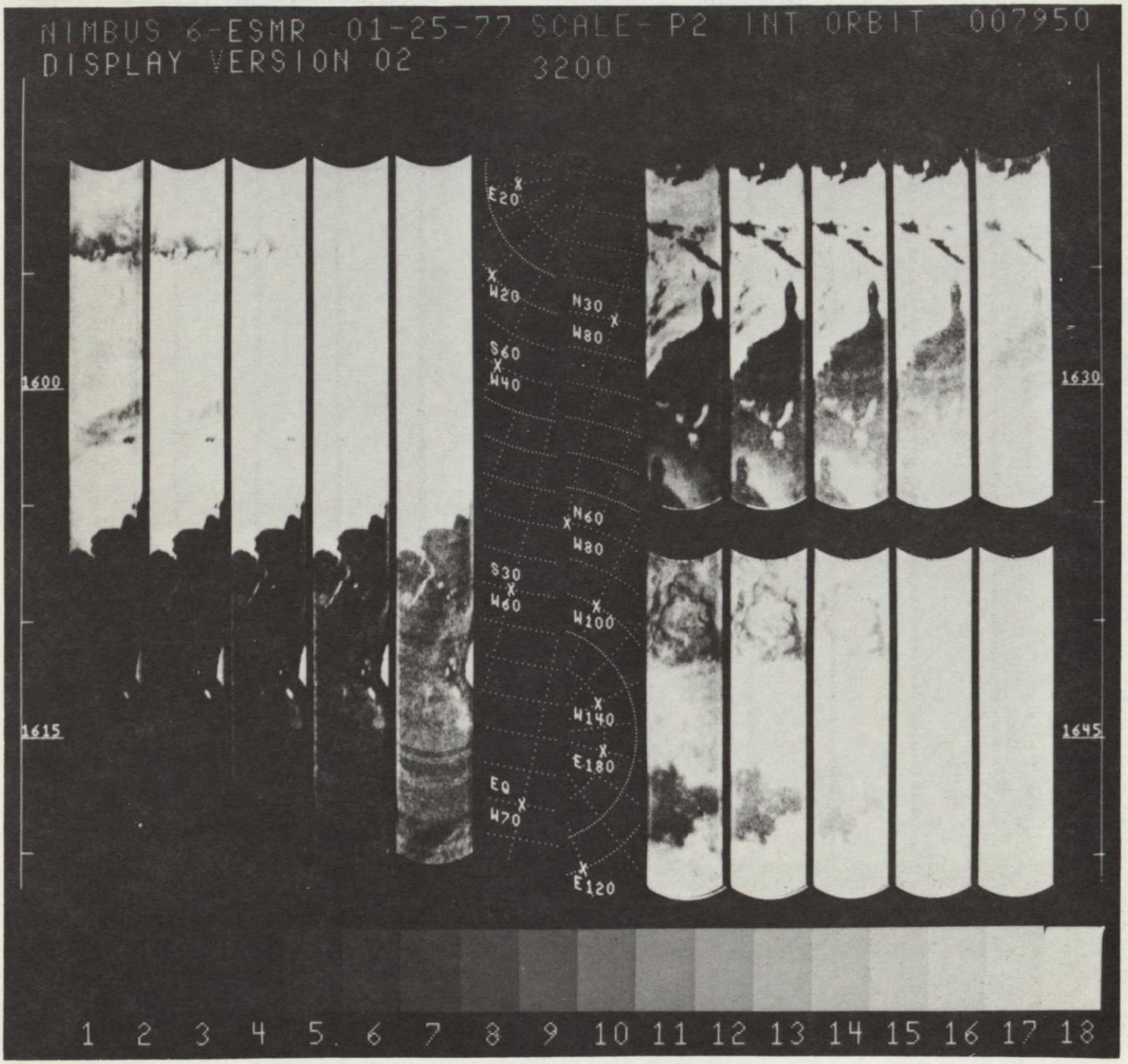
Since an anomaly renders the Horizontal channel unuseable, the new ESMR format was devised to display the Vertical channel with five different temperature ranges and polarization for each individual swath. That is, the temperature range and polarization for swaths 1 and 6 are the same. Swaths 2 and 7, 3 and 8, 4 and 9, and 5 and 10 display the same parameters. Thus, four additional swaths of data are dedicated to the Vertical channel display for a total of 5 swaths as described above.

Data time (GMT) references and grid overlay information remain unchanged. Please refer to Table 3-3 for new parameter information.

SECTION 3.1

SELECTED ESMR IMAGE DISPLAYS

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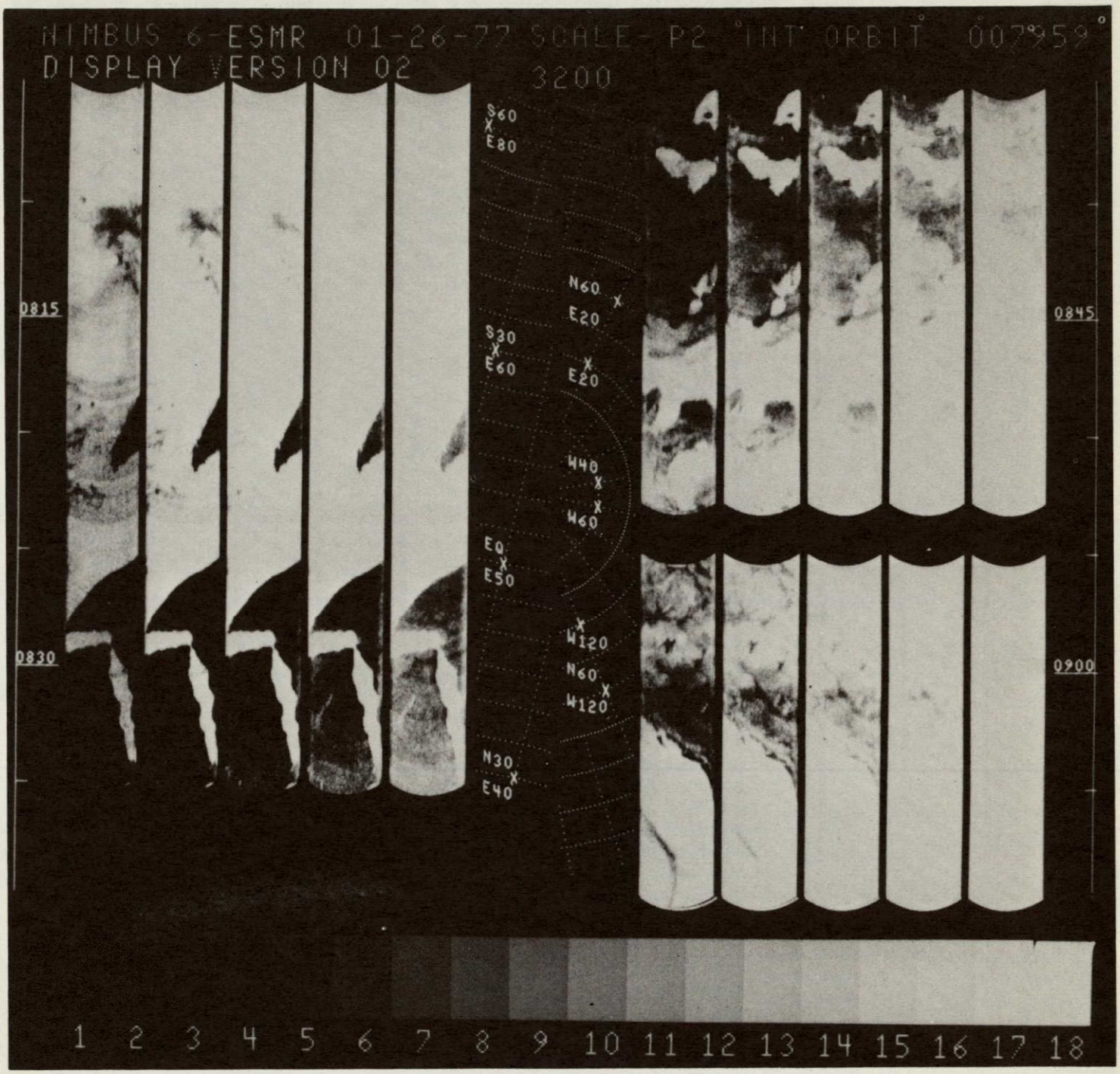
DISPLAY VERSION 02
3200
E20
W20
N30
W80
S60
W40
N60
W80
S30
W60
W100
W140
E180
EQ
W70
E120
1600
1615
1630
1645
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18



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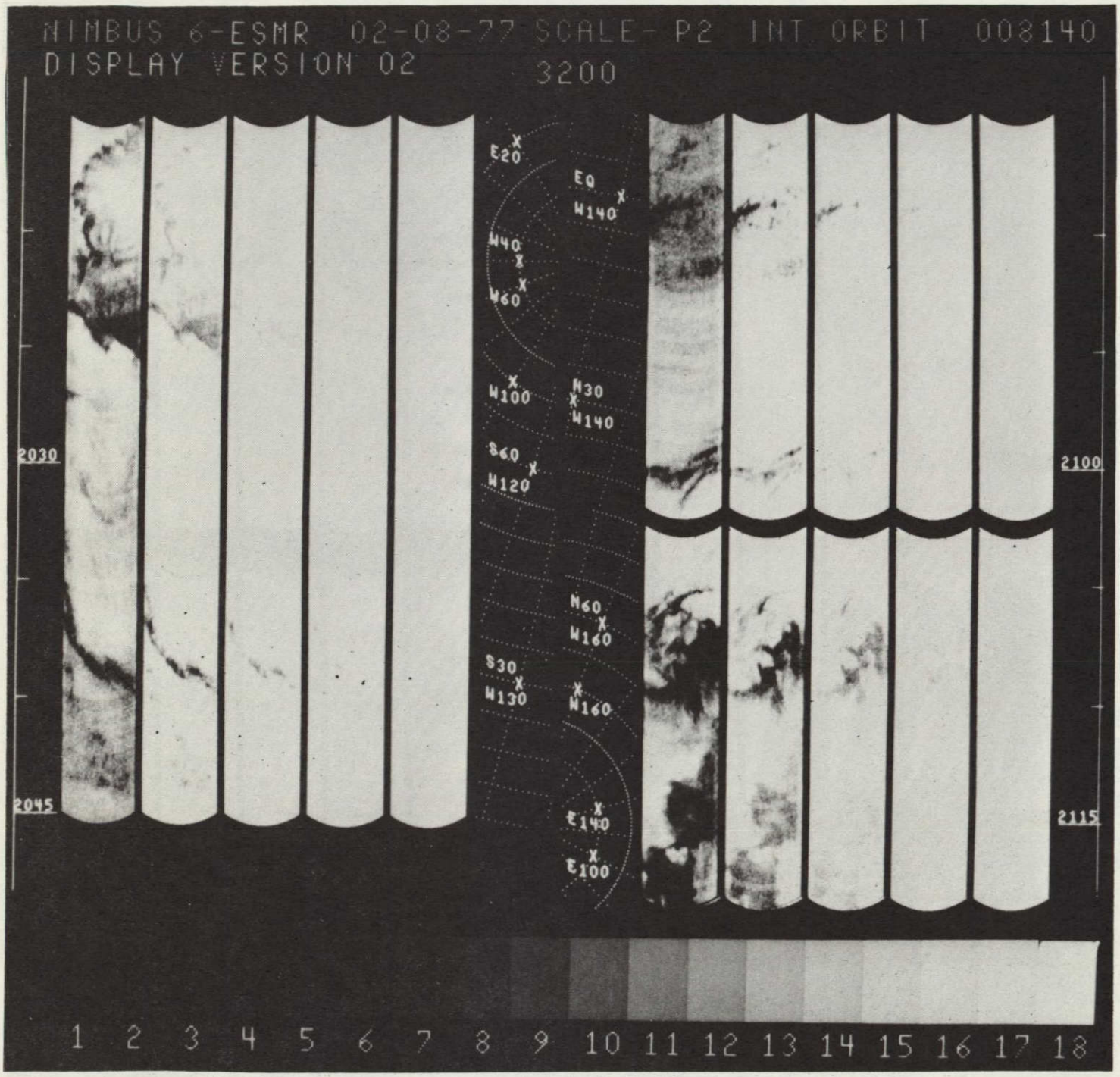
OF POOR QUALITY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DISPLAY VERSION 02
3200
E20
EQ
W140
W40
W60
W100
N30
W140
S60
W120
N60
W160
S30
W130
W160
E140
E100
2030
2045
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2115
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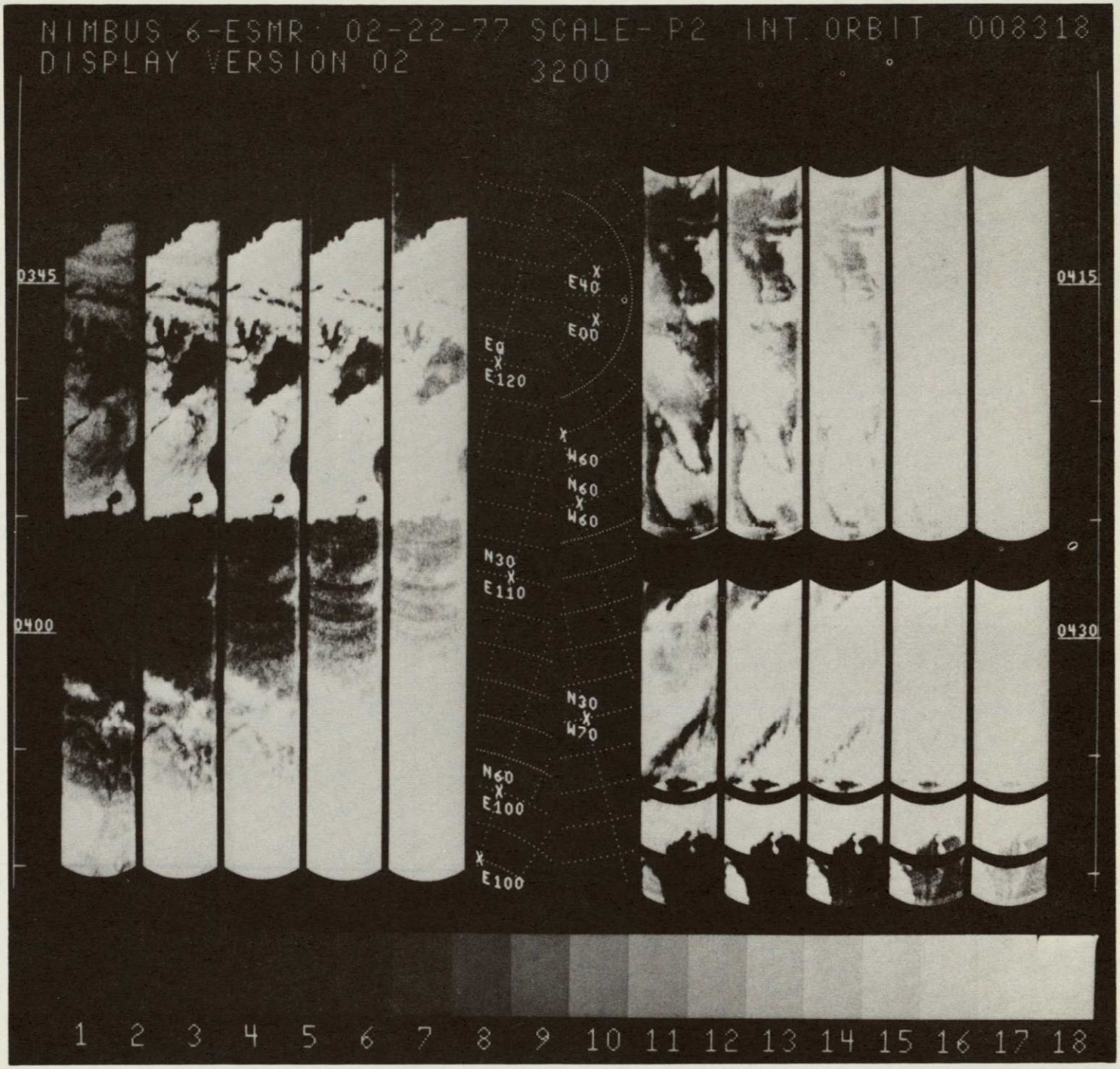

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SECTION 4

TEMPERATURE HUMIDITY INFRARED RADIOMETER MONTAGES

The Nimbus 6 Temperature Humidity Infrared Radiometer (THIR) subsystem is of the same design and operation as the THIR flown on Nimbus 4 and 5. The two-channel scanning radiometer measures earth radiation in two spectral bands. A 10.3 μm to 12.5 μm window channel provides an image of the cloud cover, and temperatures of the cloud tops, land, and ocean surfaces. A 6.5 μm to 7.1 μm (6.7 μm) channel provides information on the moisture content of the upper troposphere and stratosphere, and the location of jet streams and frontal systems. Ground resolution at the satellite subpoint is 8.2 km for the 11.5 μm channel and 22.5 km for the 6.7 μm channel. Both channels operate continuously to provide day and night global coverage. However, with only HDRSS recorder (B) available for part-time use on the satellite, gaps in global coverage occur over "blind" orbit areas, and sometimes over the Rosman and Alaska STDN stations, when the tape data are being transmitted to the ground. The blind orbits occur during a daytime pass over the western part of the Pacific Ocean and during a nighttime pass over the eastern part of the Atlantic Ocean. (Additionally, with the limited part-time (65 minutes) coverage by the HDRSS (B), nighttime passes north of the Equator are of limited duration.) These blind orbit areas happen when the Orroral, Australia is not available for playback of recorded data. Then the time between successive playbacks of the tape recorder becomes longer than the reduced record capability of HDRSS (B).

This section pictorially documents the data from the THIR. Section 4.1 contains all nighttime THIR 11.5 μm and 6.7 μm montages and Section 4.2 contains all daytime THIR 11.5 μm and 6.7 μm montages, arranged in chronological order. Key latitudes can be read from the superimposed grids. Grid points are identified where each swath crosses 60°N, 30°N, EQUATOR, 30°S and 60°S.

Vellum Location Guide overlays, attached to the back of this document, are to be used for general orientation with the data presented in each THIR montage. Proper alignment of the overlay grid is accomplished by matching the grid indices on the equator with the two "T" marks on each montage.

THIR photographic data and/or digital data can be ordered through the National Space Science Data Center (NSSDC), Code 601, Goddard Space Flight Center, Greenbelt, Maryland 20771.

THIR photographic data consist of 70 mm film strips produced from the radiometer output signals. The gray shades in each image correspond to temperature variations of the land, sea, and clouds. On a film positive the lightest tones represent cold temperatures, while the darkest tones represent warm temperatures. THIR photographic data are archived in separate 6.7 μm and 11.5 μm daytime and nighttime swaths. The approximate coverage of a full swath is from pole to pole.

When ordering THIR photographic data from NSSDC the following information should be given:

- Satellite (e.g. Nimbus 6)
- Date of data
- Data orbit number, channel (11.5 μm or 6.7 μm), and whether day or night data
- Data format, i.e., positive or negative transparencies, or prints
- Area of interest defined by latitude and longitude

In addition to the THIR film strips, photographic copies of the daily day or night montages prepared from film strips can be obtained.

Quantitative digital data are obtained when the original analog signals are digitized with full fidelity, and processed by an IBM 360 computer, where calibration and geographic referencing are applied. Each reduced radiation data tape prepared by the IBM 360 is called a Nimbus Meteorological Radiation Tape-THIR (NMRT-THIR). The NMRT can be used to generate grid print maps or to accomplish special scientific analyses. The format of this tape may be found in The Nimbus 6 User's Guide, Section 2.

Due to the large volume and the long computer running time required for processing THIR into NMRTs, Nimbus 6 THIR digital data are not routinely reduced to final NMRT format. Only those data which are specifically requested by the user will be processed. Requests should be made through NSSDC. The user is urged to make full use of the film strips which are abundantly available in nearly real time from the NSSDC.

A series of programs at GSFC produce printed and contoured data referenced to a grid on Polar Stereographic or Mercator map bases. These are called grid print maps. The advantages of the grid print map presentation are the display of absolute values of temperatures in their approximate location and geographical rectification of the data. Grid print maps may be produced for either a single orbit or a composite of several orbits. The following standard options are available and should be specified when requesting grid print maps from NSSDC.

- Map and Approximate Scale
  a. Polar Stereographic, 1:30 million
  b. Polar Stereographic, 1:10 million
  c. Multi-resolution Mercator maps are available down to 1:1 million scale.

- Maximum Scan Angle (50 degrees is practical limit)

- Field Values and Contouring. Unless otherwise specified, all maps will include field values and contouring except Mercator maps of scales larger than 1:20 million. A data population map, indicating the number of individual measurements contained in each grid point average, as well as a latitude-longitude description for geographically locating the data, will be provided along with each grid print map.

When ordering grid print map data, the following identifying information should be given:

- Satellite (e.g., Nimbus 6)

- Sensor (THIR)

- Channel (6.7 μm or 11.7 μm)

- Data Orbit Number

- Calendar Date of Equator Crossing

- Beginning and Ending Times of Data in GMT

- Latitude and Longitude Limits of Area of Interest

- Map Type and Map Scale

- Scan Angle Limits

- Contouring or No Contouring of Data Points

When ordering NMRTs, the "Calendar Date of Equator Crossing" and "Map Type and Map Scale" can be omitted.

Beginning and ending times of data in GMT can be interpolated using Table 4-1 which gives the elapsed time from either ascending or descending node as a function of latitude. These elapsed time values can be appropriately added or subtracted from node times given in Table 2-2.

A complete description of the THIR experiment may be found in The Nimbus 6 User's Guide, Section 2.

Table 4-1

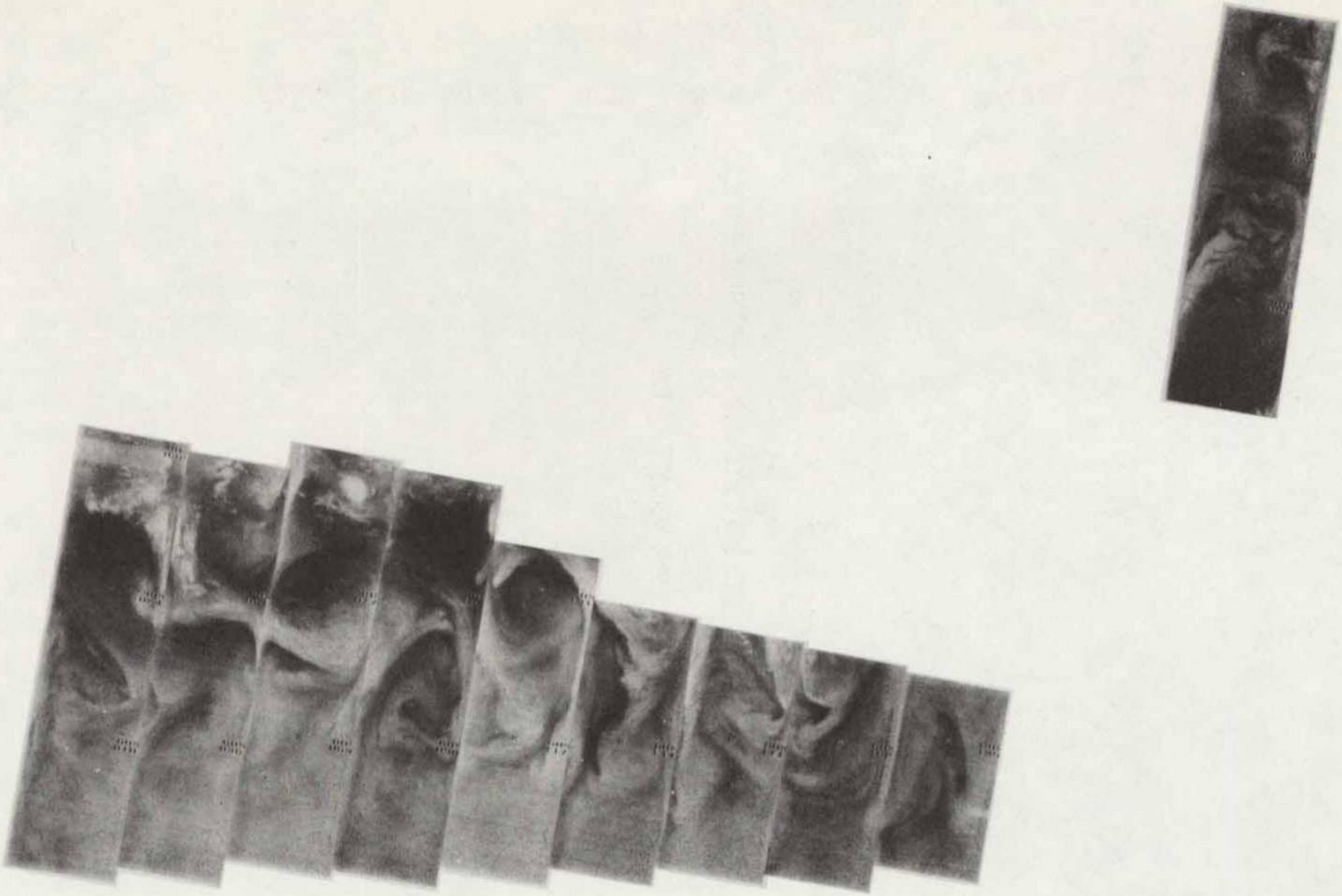
Latitude Versus Minutes From
Ascending or Descending Node

Latitude from AN or DN	Minutes and Seconds from AN or DN
0	0:00
5	1:31
10	3:02
15	4:33
20	6:03
25	7:34
30	9:05
35	10:36
40	12:08
45	13:40
50	15:12
55	16:44
60	18:18
65	19:52
70	21:33
75	23:26
78	24:44
80.1	26:49
78	29:00
75	30:09
70	31:51
65	33:35

SECTION 4.1

TEMPERATURE HUMIDITY INFRARED RADIOMETER

NIGHTTIME MONTAGES



7632 7631 7630 7629 7628 7627 7626 7625 7624 7623 7622 7621 7620

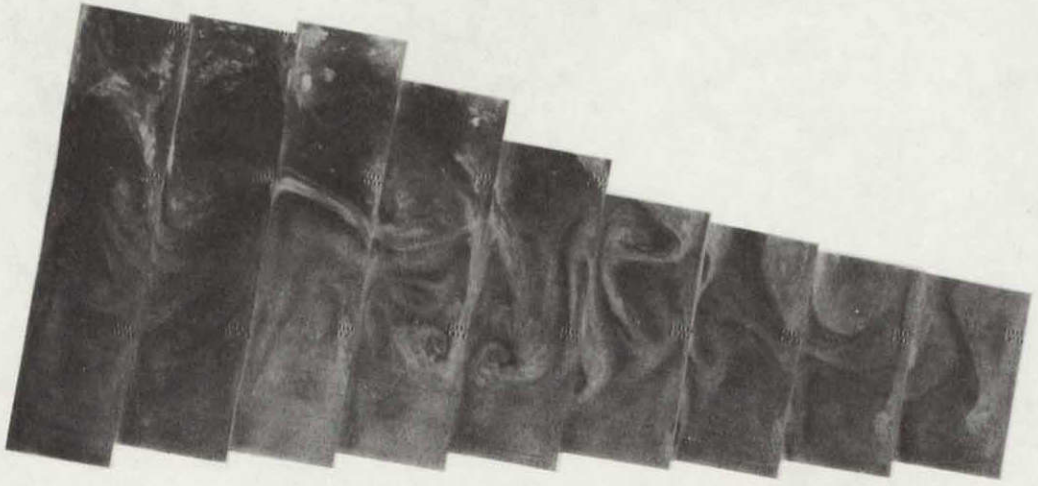
1 JAN 77

6.7μm

7632 7631 7630 7629 7628 7627 7626 7625 7624 7623 7622 7621 7620

1 JAN 77

11.5μm



7646 7645 7644 7643 7642 7641 7640 7639 7638 7637 7636 7635 7634 7633

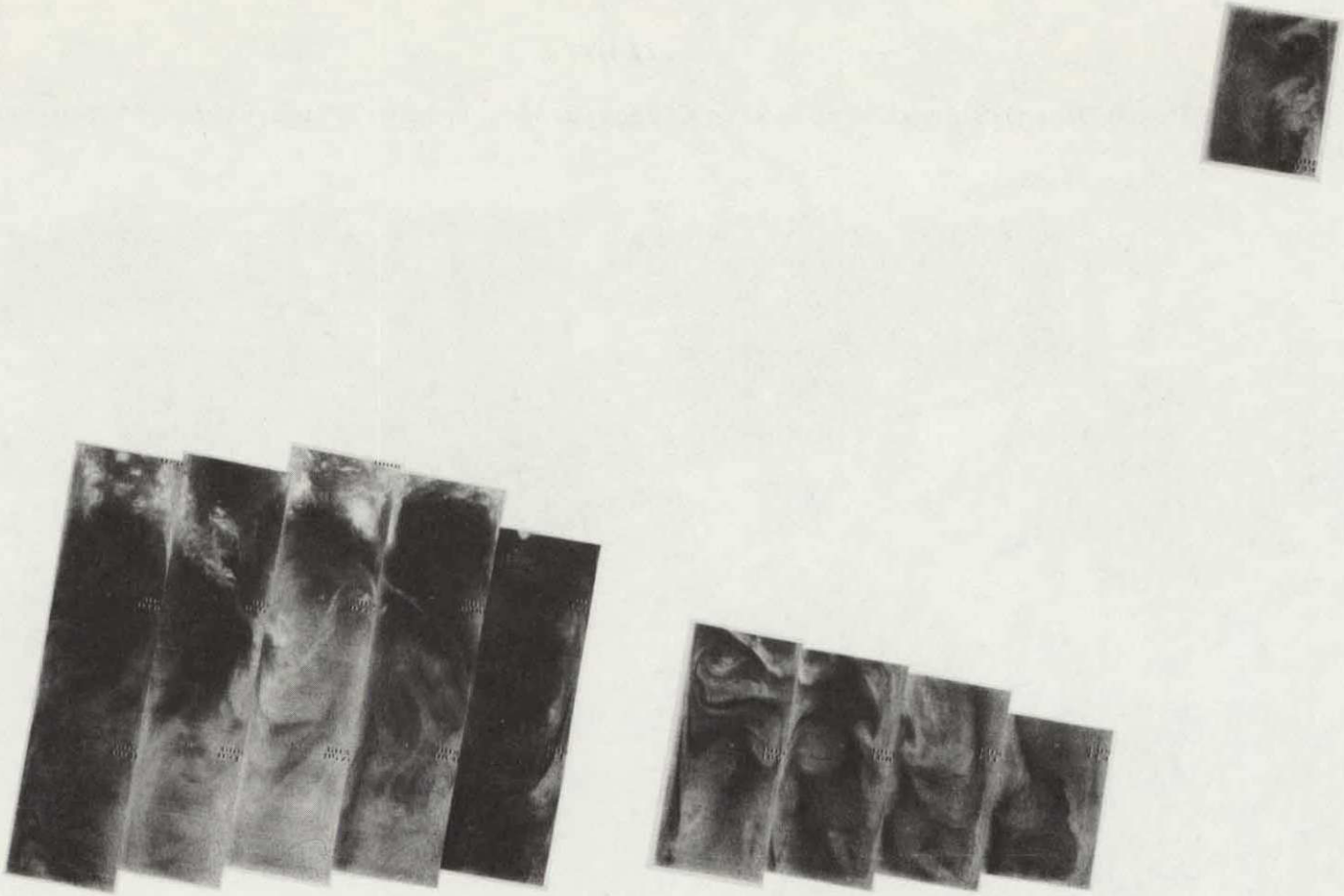
2 JAN 77

6.7μm

7646 7645 7644 7643 7642 7641 7640 7639 7638 7637 7636 7635 7634 7633

2 JAN 77

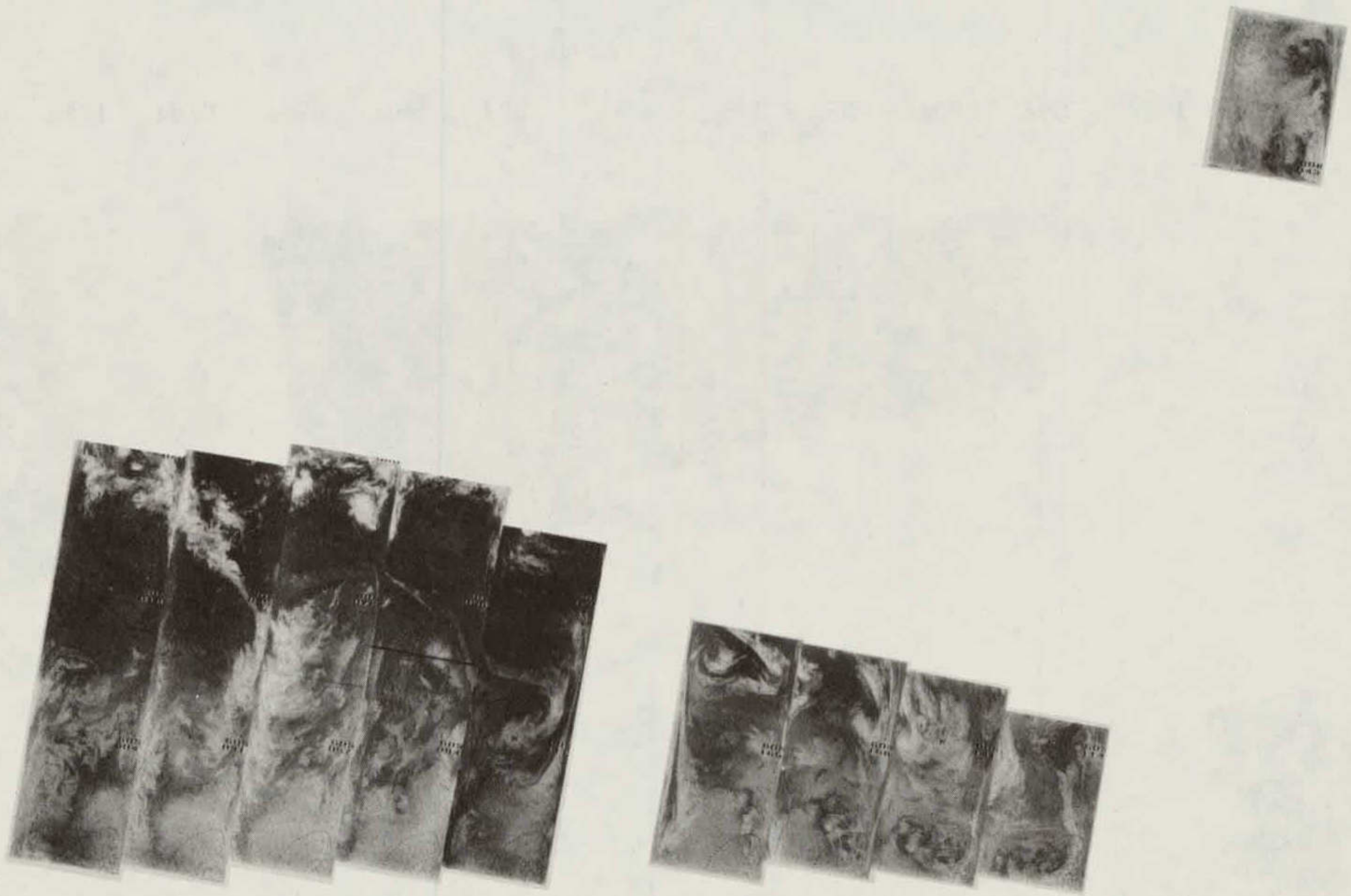
11.5μm



7659 7658 7657 7656 7655 7654 7653 7652 7651 7650 7649 7648 7647

3 JAN 77

6.7μm



7659 7658 7657 7656 7655 7654 7653 7652 7651 7650 7649 7648 7647

3 JAN 77

11.5μm

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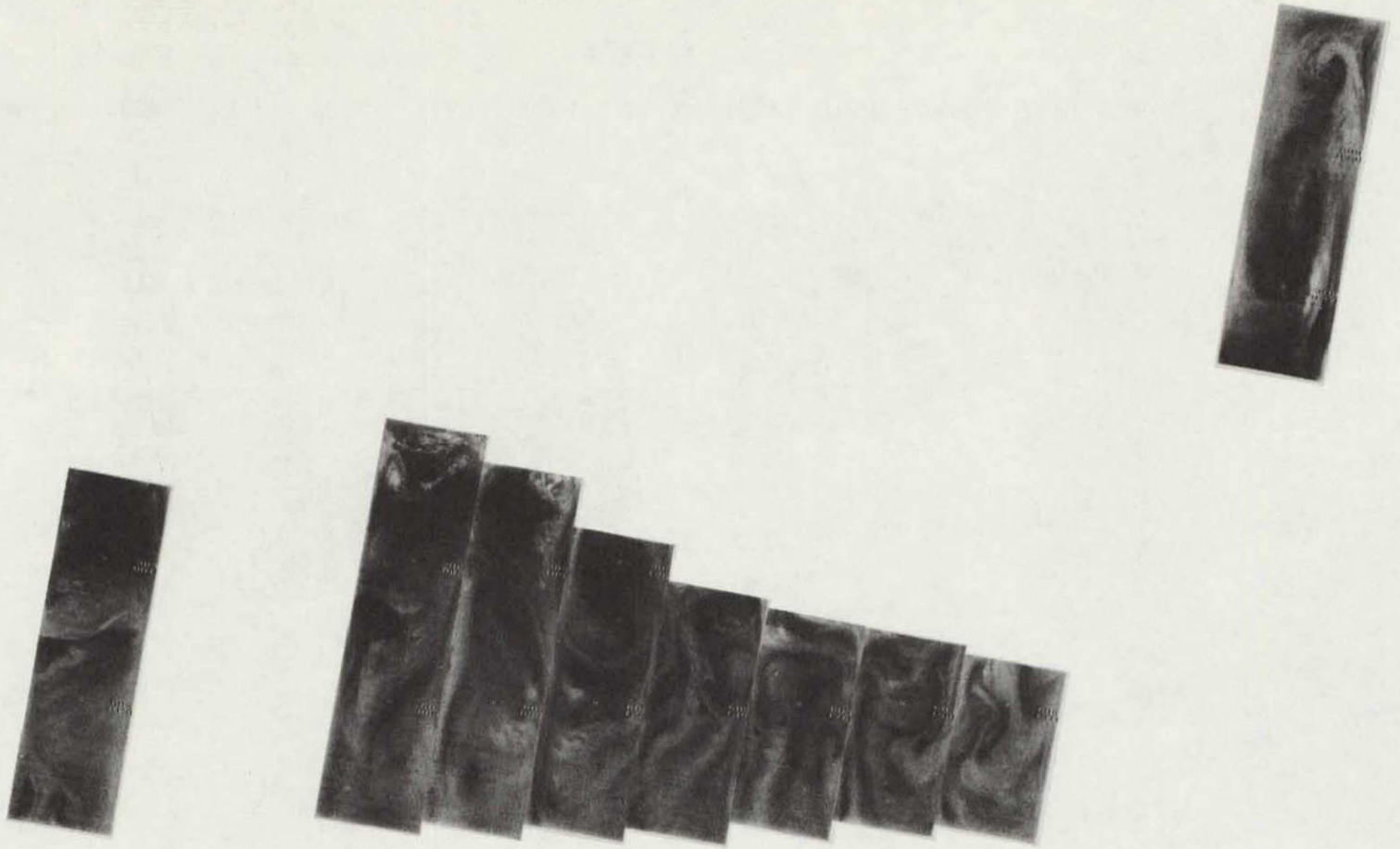
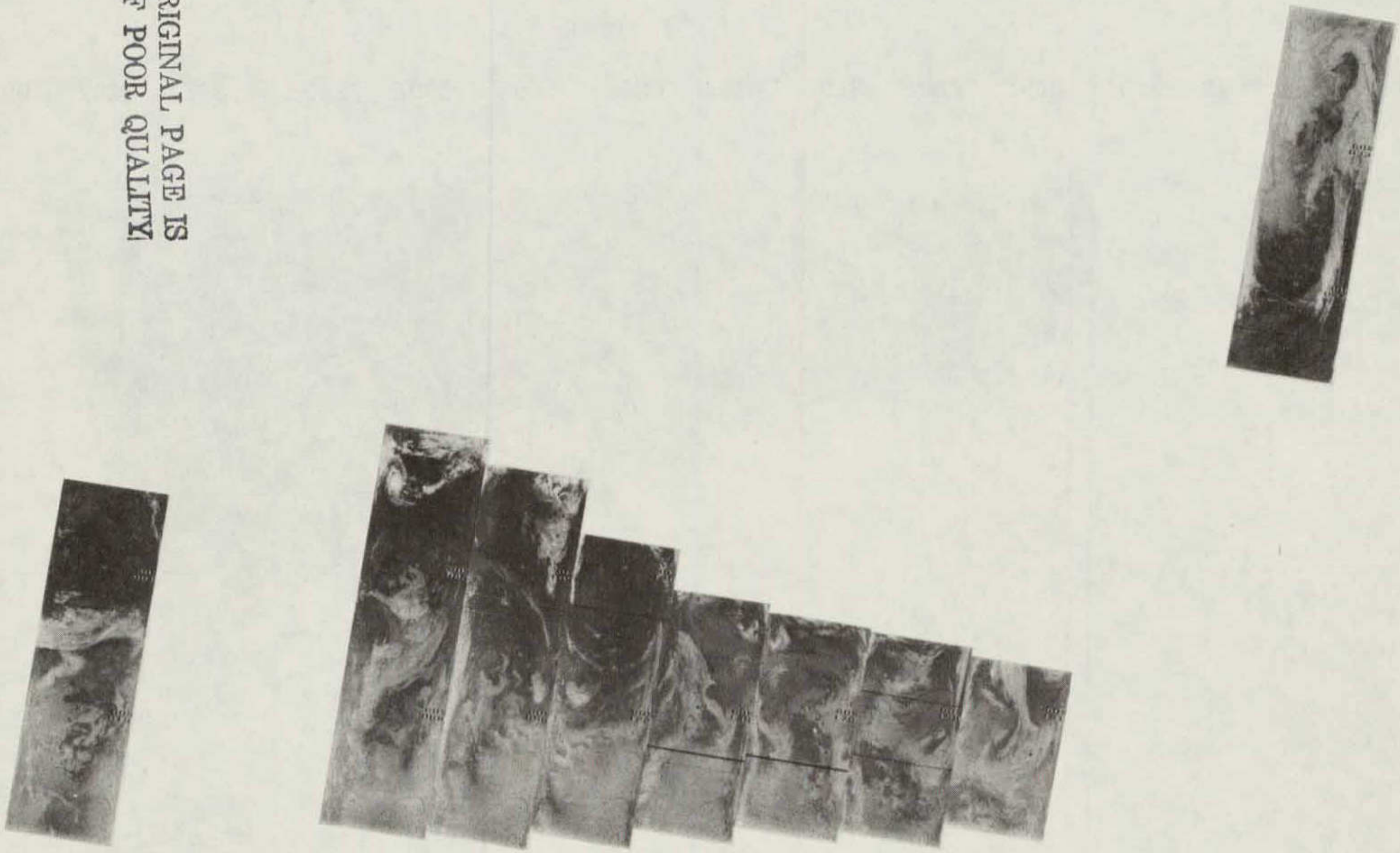


7673 7672 7671 7670 7669 7668 7667 7666 7665 7664 7663 7662 7661 7660

4 JAN 77

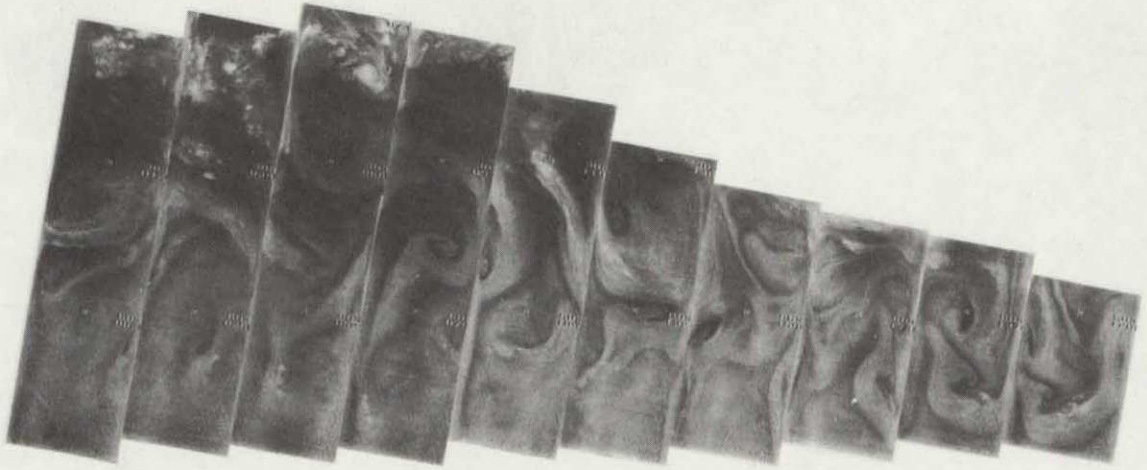
6.7μm



7673 7672 7671 7670 7669 7668 7667 7666 7665 7664 7663 7662 7661 7660

4 JAN 77

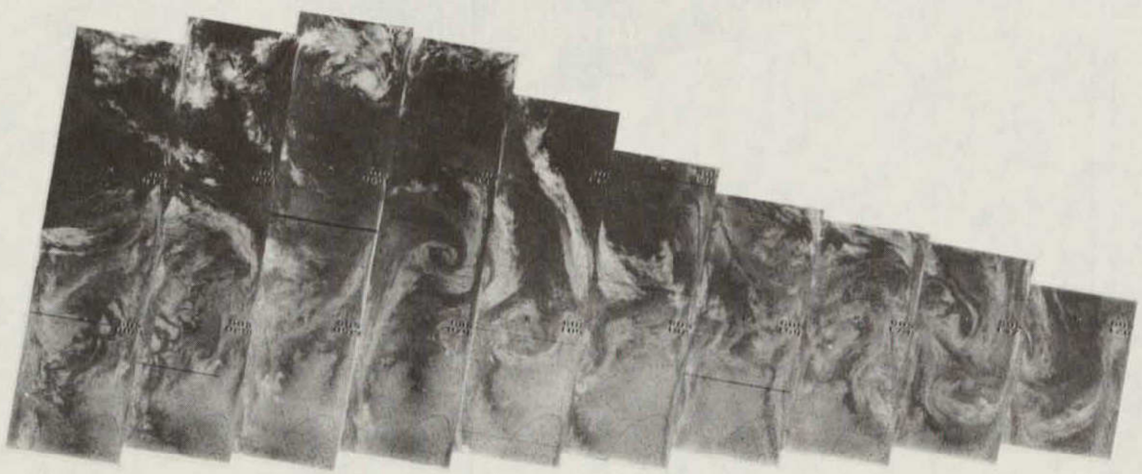
11.5μm



7686 7685 7684 7683 7682 7681 7680 7679 7678 7677 7676 7675 7674

5 JAN 77

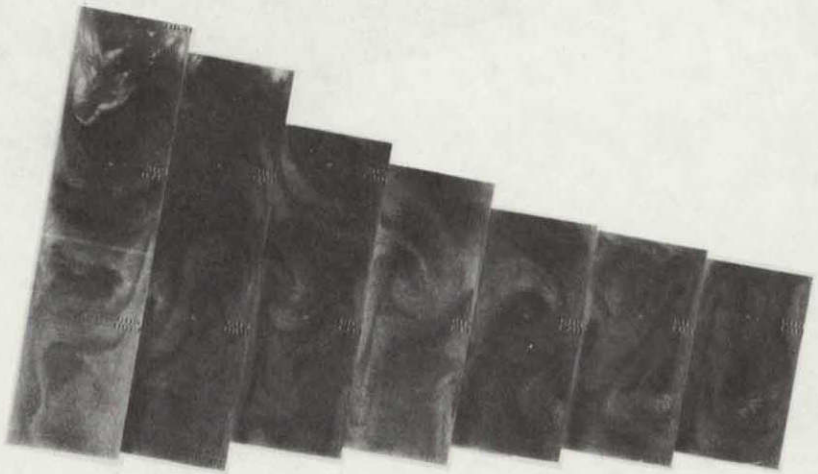
6.7μm



7686 7685 7684 7683 7682 7681 7680 7679 7678 7677 7676 7675 7674

5 JAN 77

11.5μm



7699 7698 7697 7696 7695 7694 7693 7692 7691 7690 7689 7688 7687

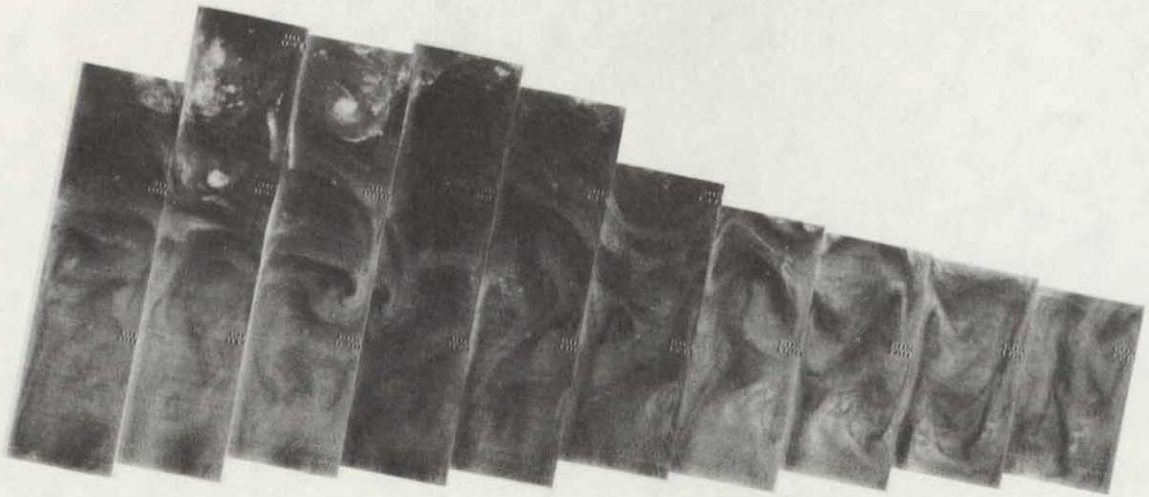
6 JAN 77

6.7μm

7699 7698 7697 7696 7695 7694 7693 7692 7691 7690 7689 7688 7687

6 JAN 77

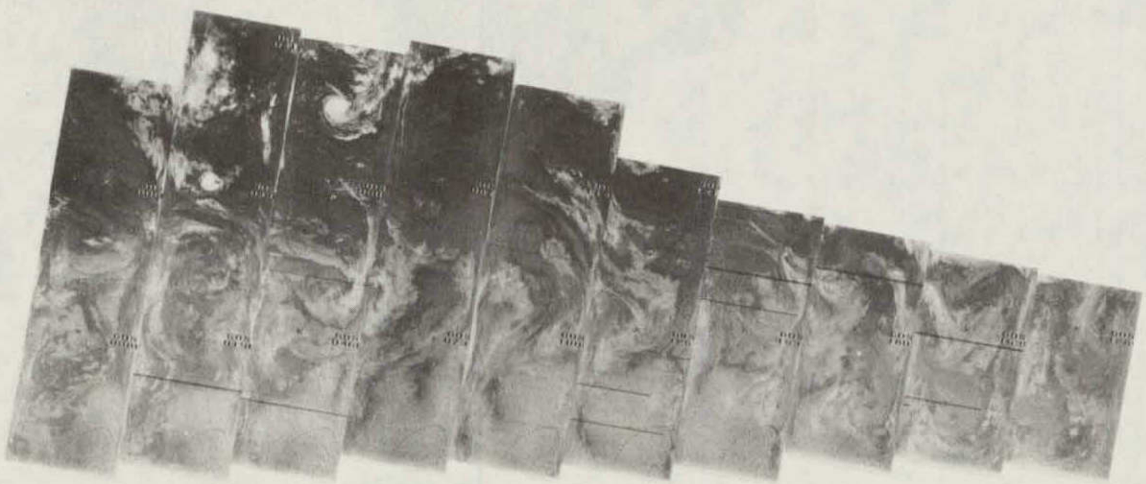
11.5μm



7713 7712 7711 7710 7709 7708 7707 7706 7705 7704 7703 7702 7701 7700

7 JAN 77

6.7μm



7713 7712 7711 7710 7709 7708 7707 7706 7705 7704 7703 7702 7701 7700

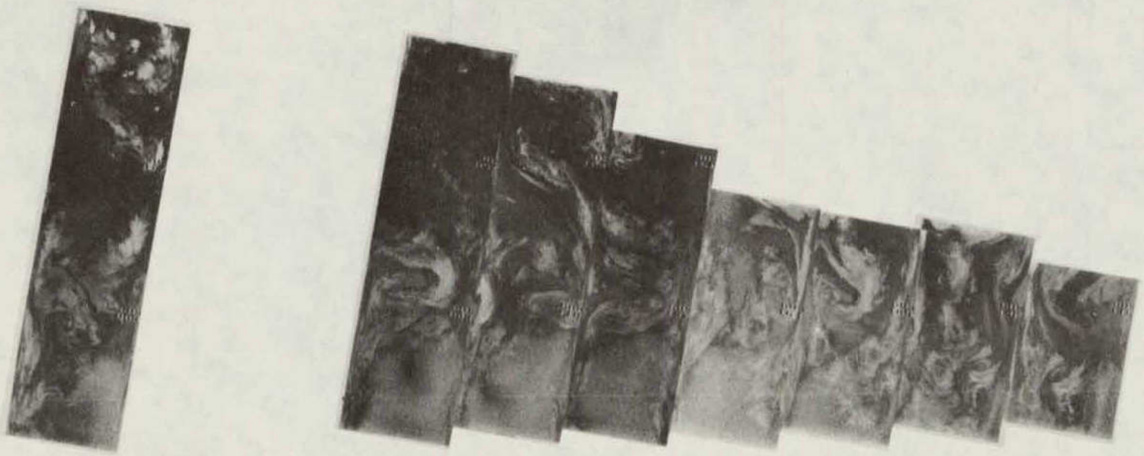
7 JAN 77

11.5μm

7726 7725 7724 7723 7722 7721 7720 7719 7718 7717 7716 7715 7714

8 JAN 77

6.7μm



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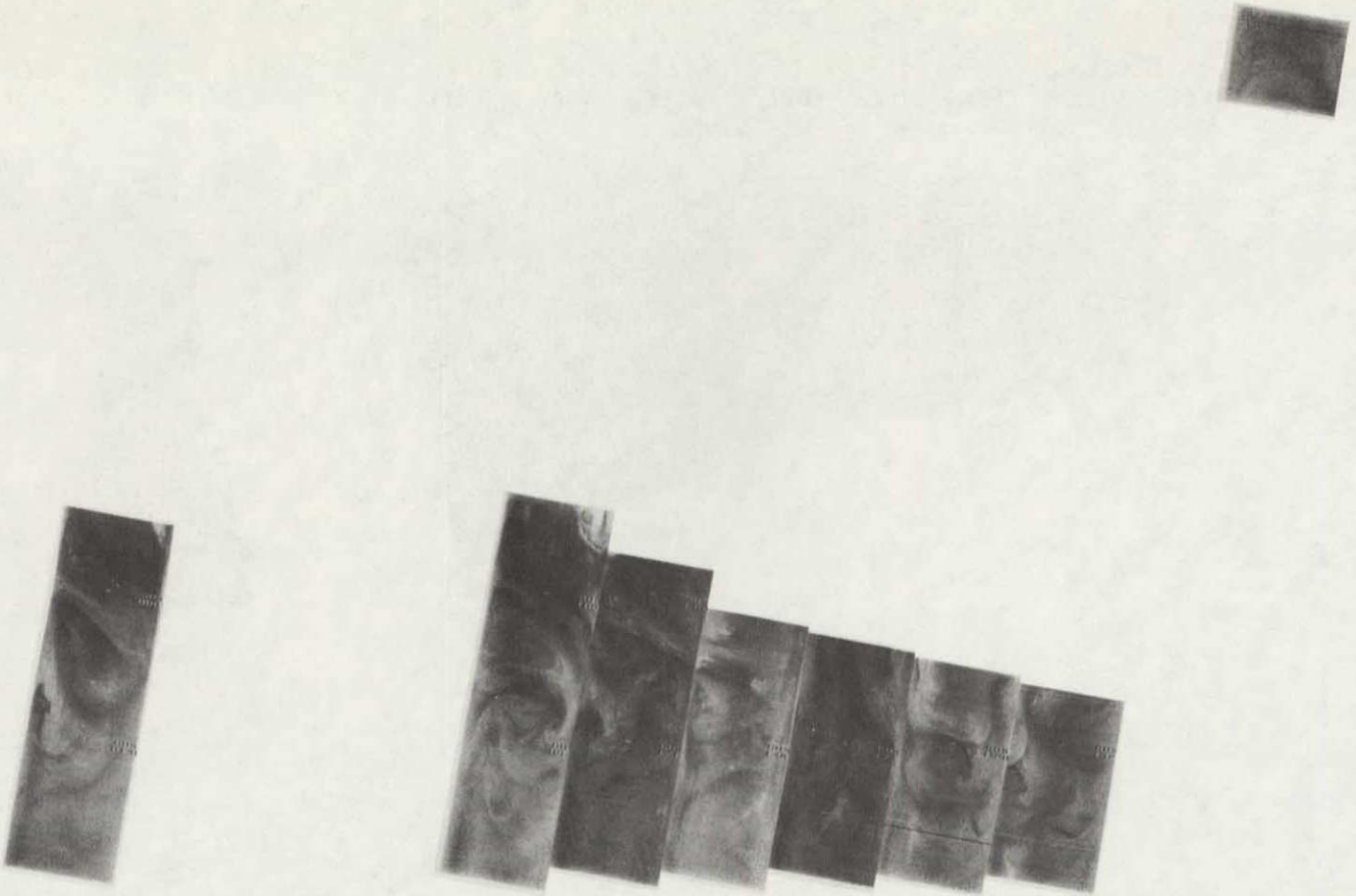
8 JAN 77

11.5μm



7740 7739 7738 7737 7736 7735 7734 7733 7732 7731 7730 7729 7728 7727

9 JAN 77

6.7μm

9 JAN 77

11.5μm

7753 7752 7751 7750 7749 7748 7747 7746 7745 7744 7743 7742 7741

10 JAN 77

6.7μm

7753 7752 7751 7750 7749 7748 7747 7746 7745 7744 7743 7742 7741

10 JAN 77

11.5μm

7766 7765 7764 7763 7762 7761 7760 7759 7758 7757 7756 7755 7754

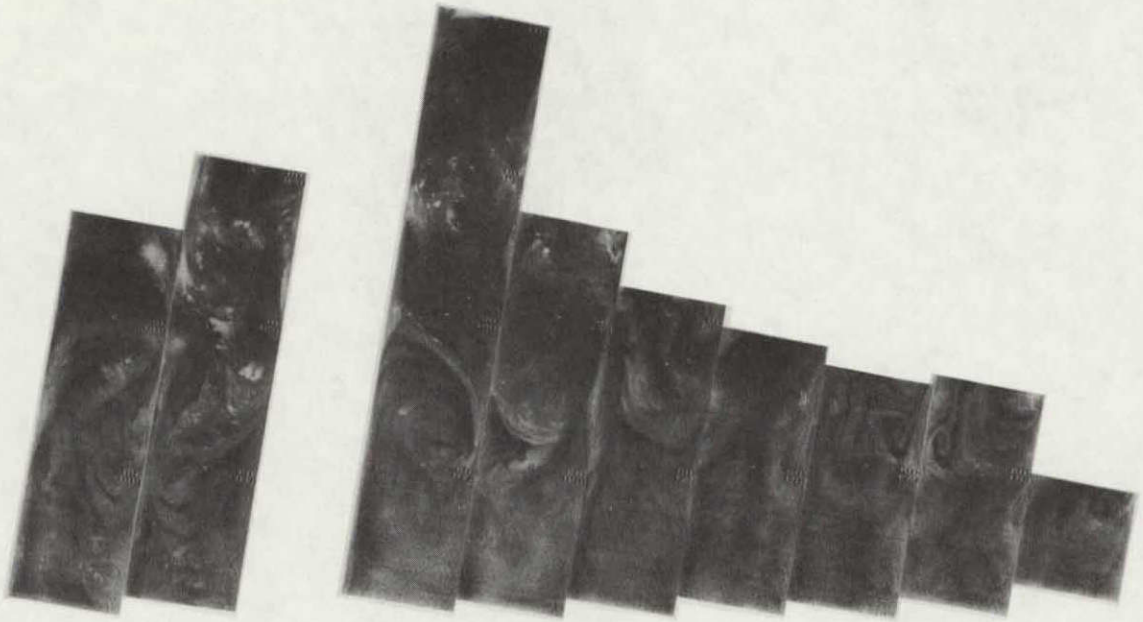
11 JAN 77

6.7μm

7766 7765 7764 7763 7762 7761 7760 7759 7758 7757 7756 7755 7754

11 JAN 77

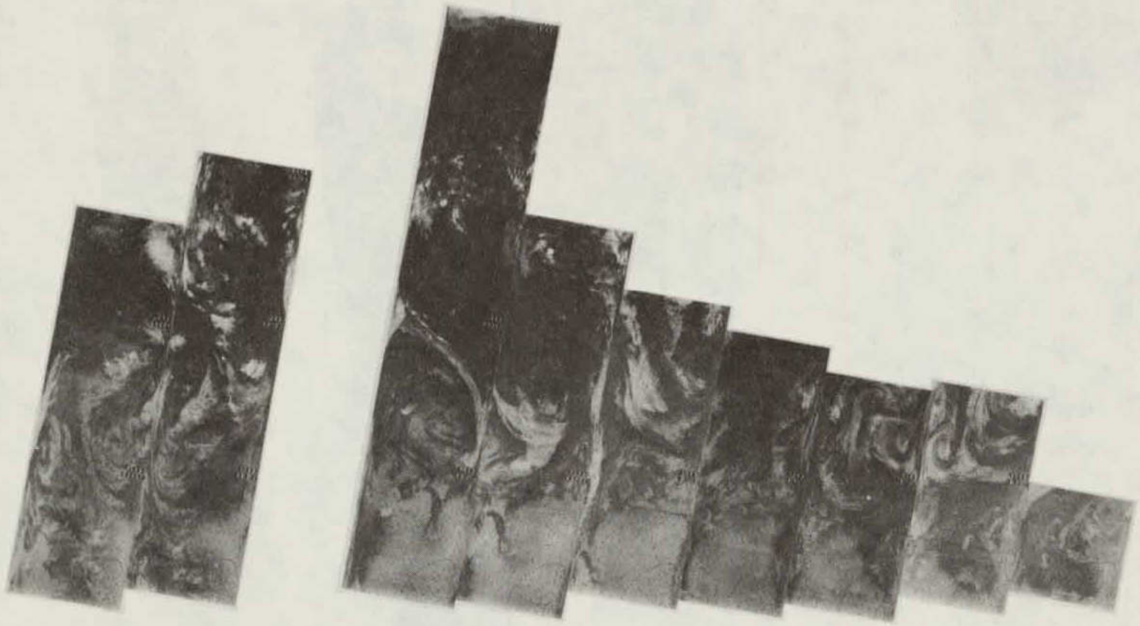
11.5μm



7780 7779 7778 7777 7776 7775 7774 7773 7772 7771 7770 7769 7768 7767

12 JAN 77

6.7μm



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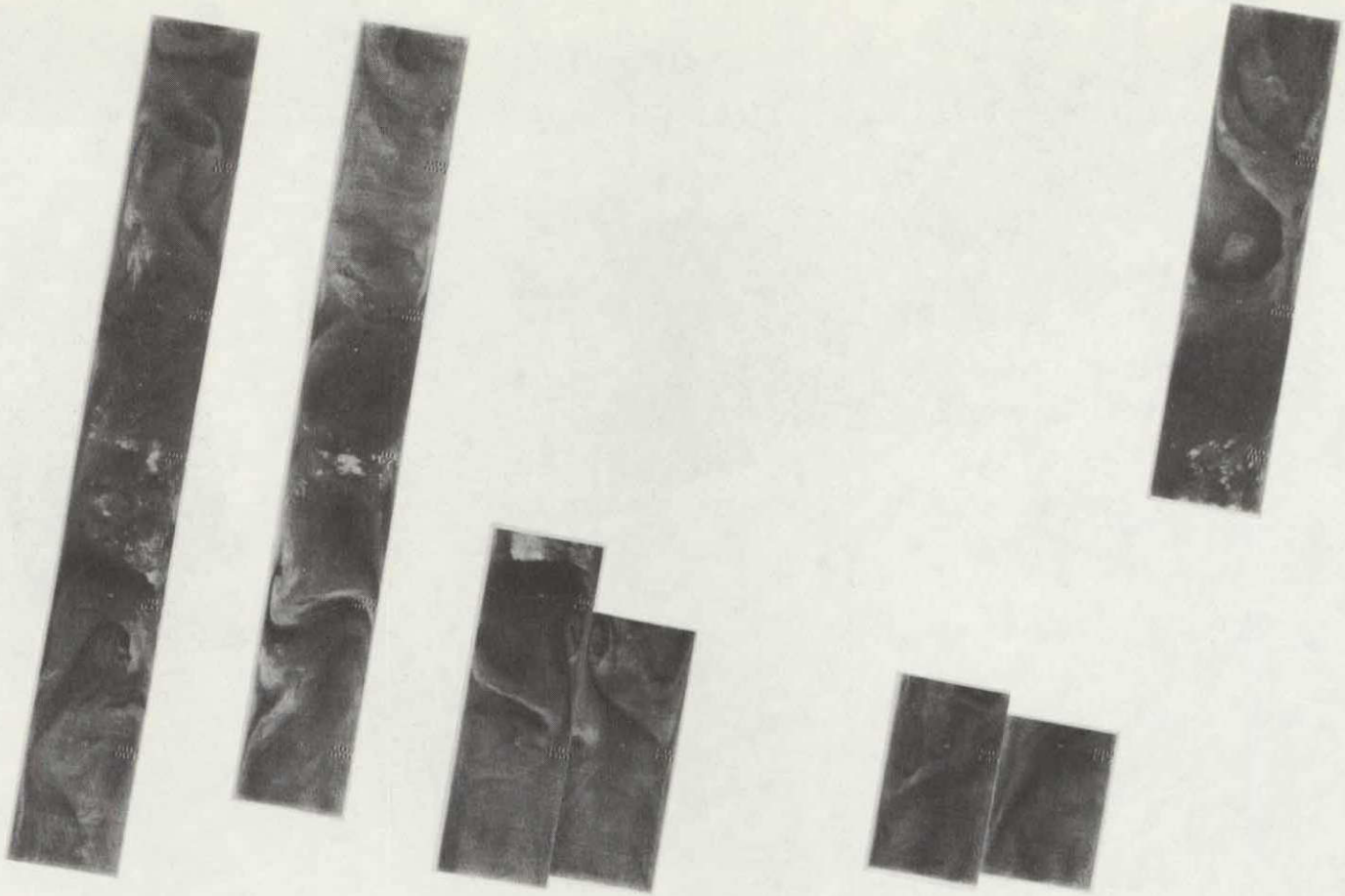
12 JAN 77

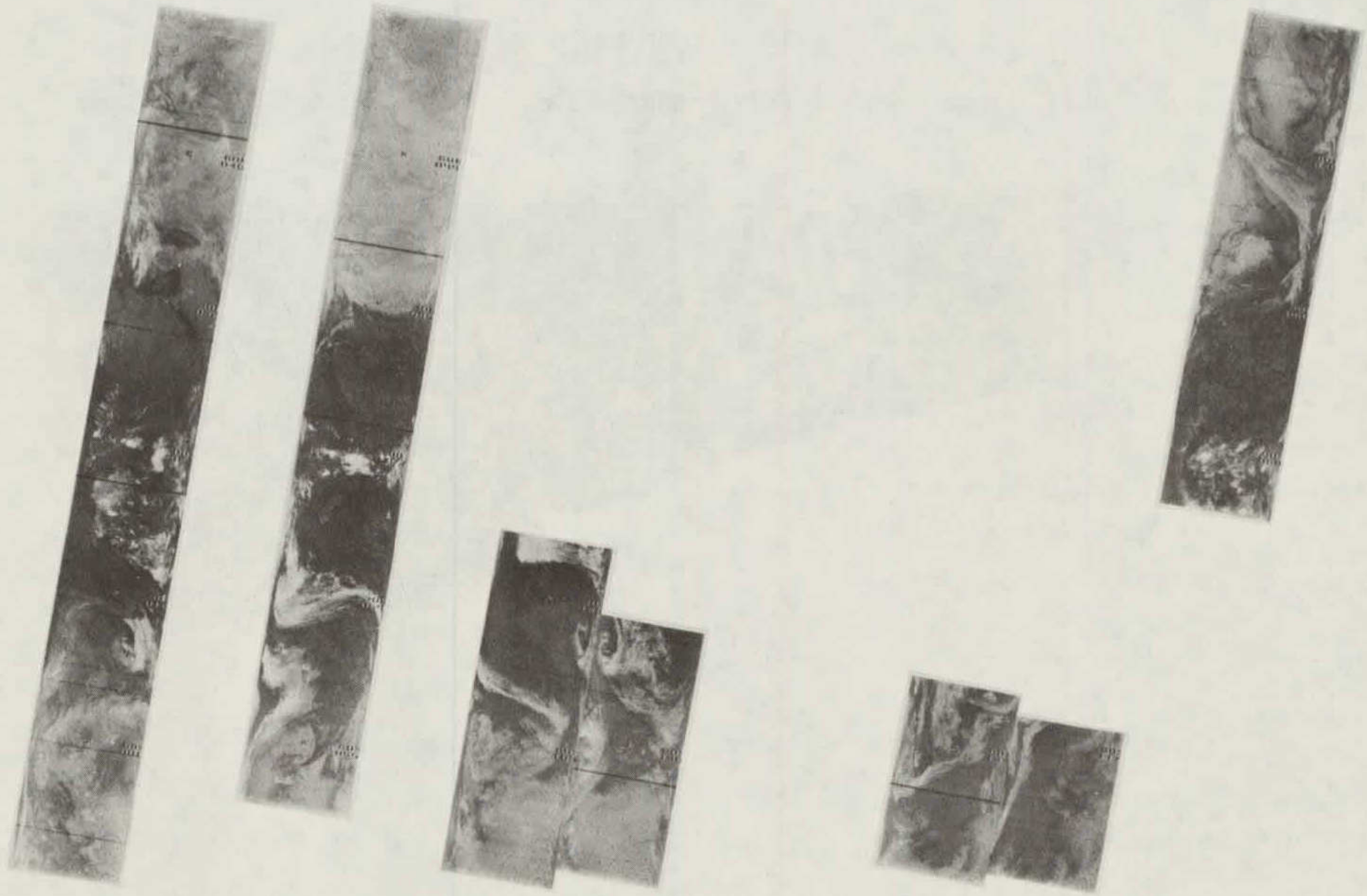
11.5μm



7793 7792 7791 7790 7789 7788 7787 7786 7785 7784 7783 7782 7781

13 JAN 77

6.7μm



7793 7792 7791 7790 7789 7788 7787 7786 7785 7784 7783 7782 7781

13 JAN 77

11.5μm

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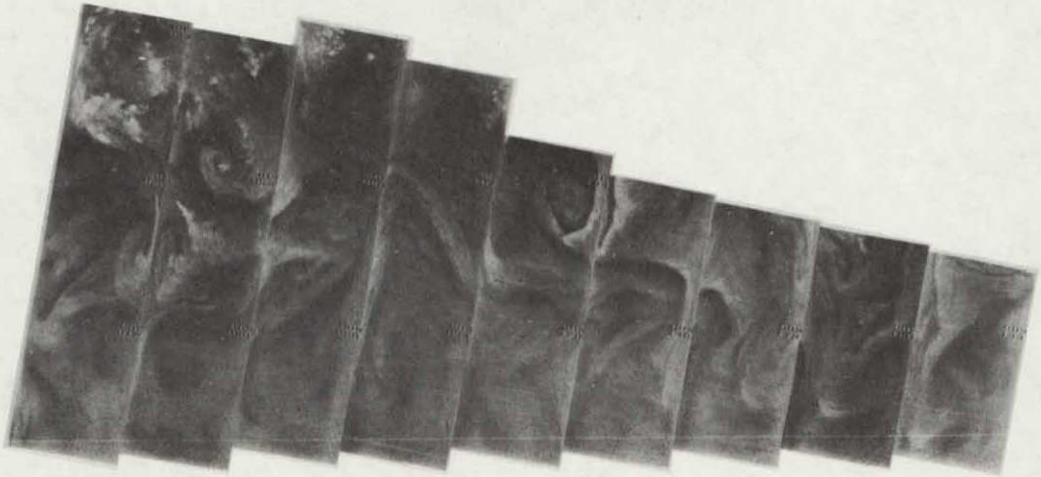


7806 7805 7804 7803 7802 7801 7800 7799 7798 7797 7796 7795 7794

14 JAN 77

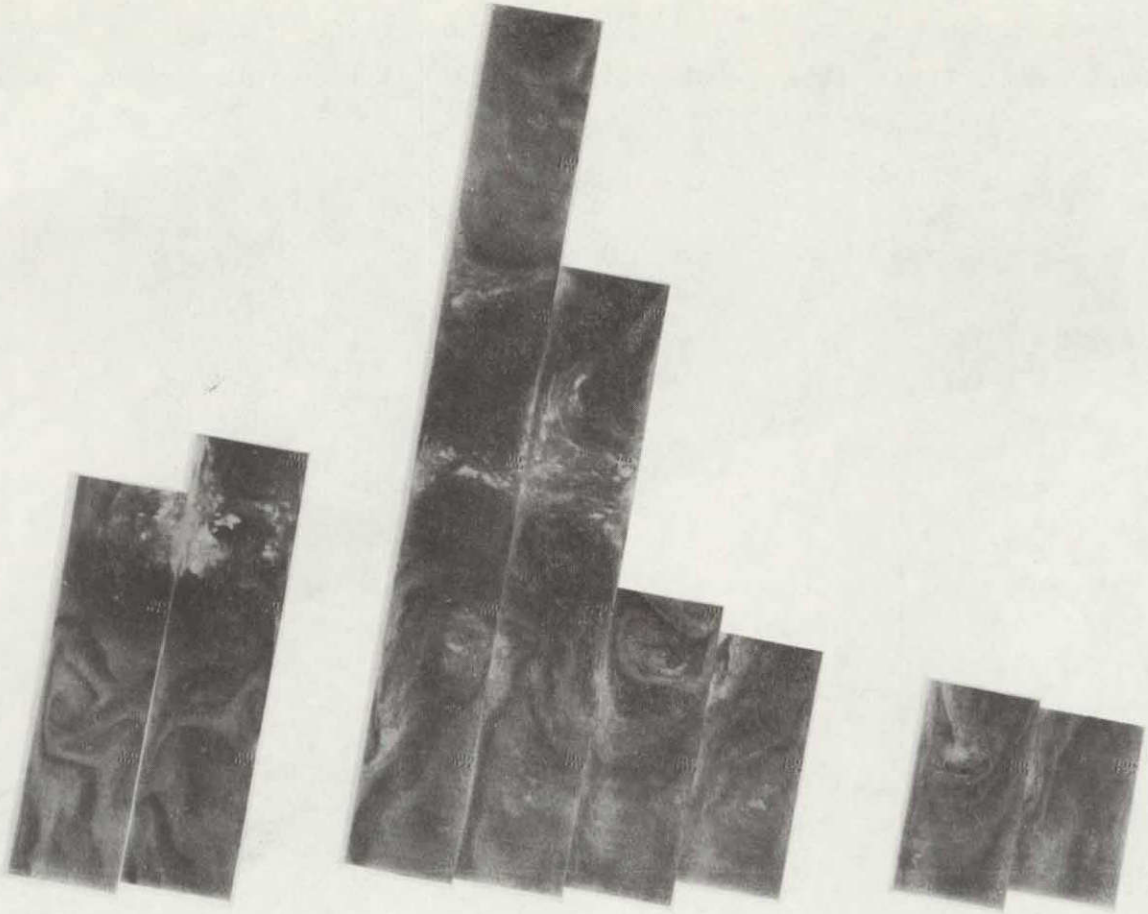
6.7μm

7806 7805 7804 7803 7802 7801 7800 7799 7798 7797 7796 7795 7794

14 JAN 77

11.5μm

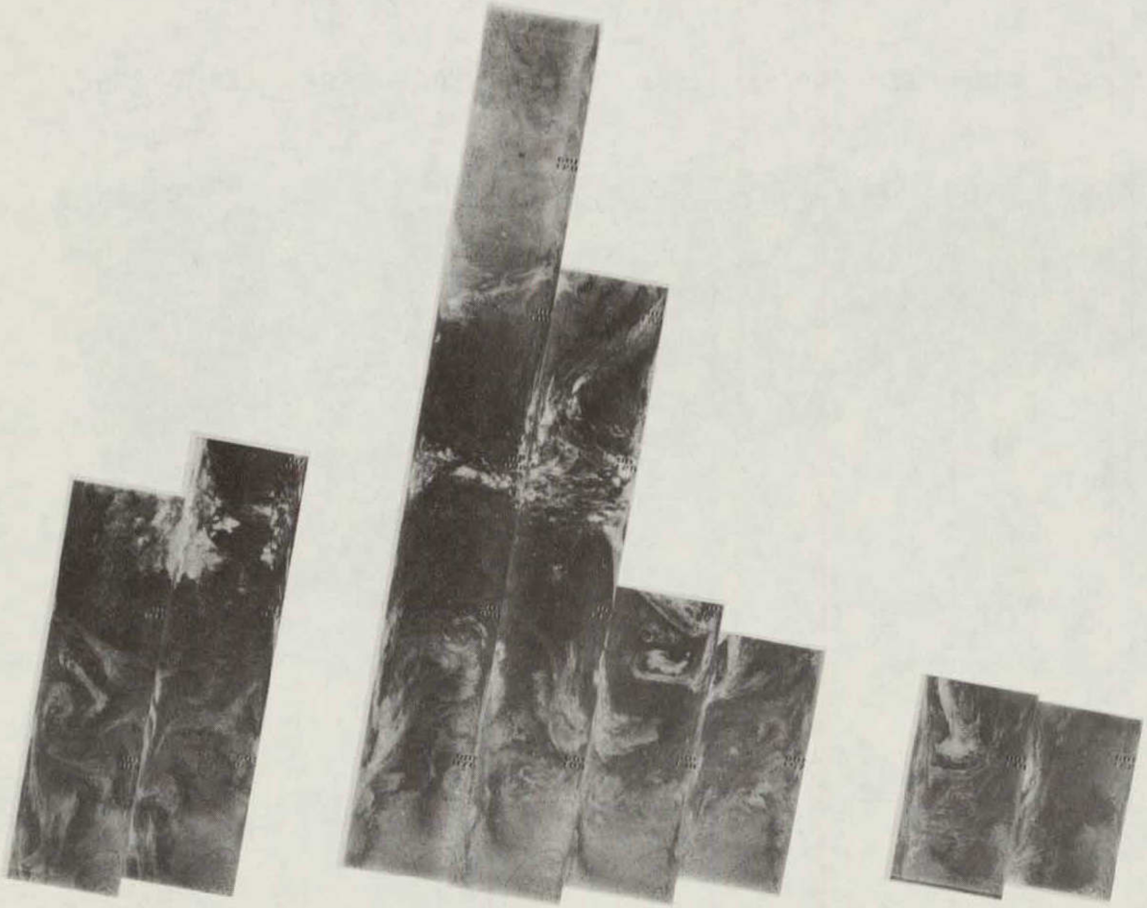
C-2



7820 7819 7818 7817 7816 7815 7814 7813 7812 7811 7810 7809 7808 7807

15 JAN 77

6.7μm



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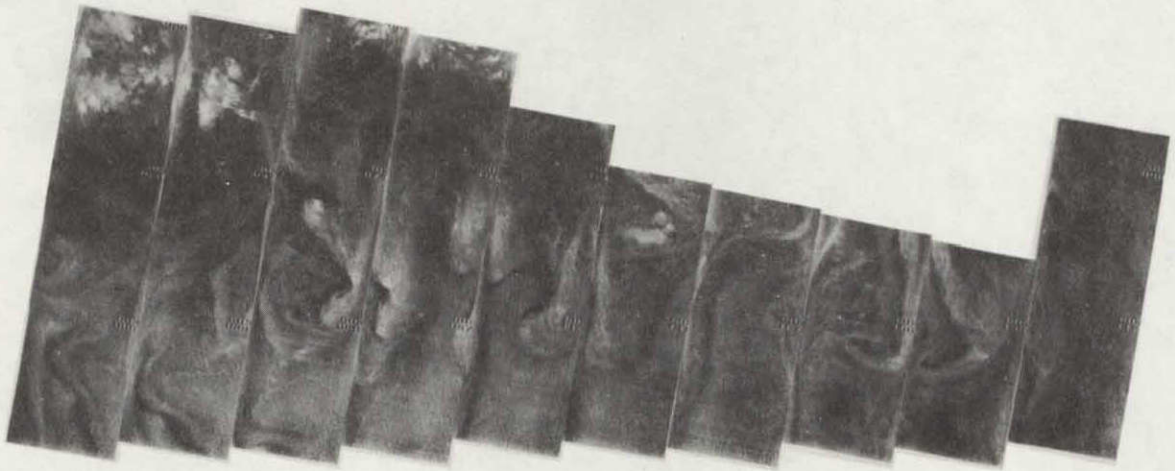
15 JAN 77

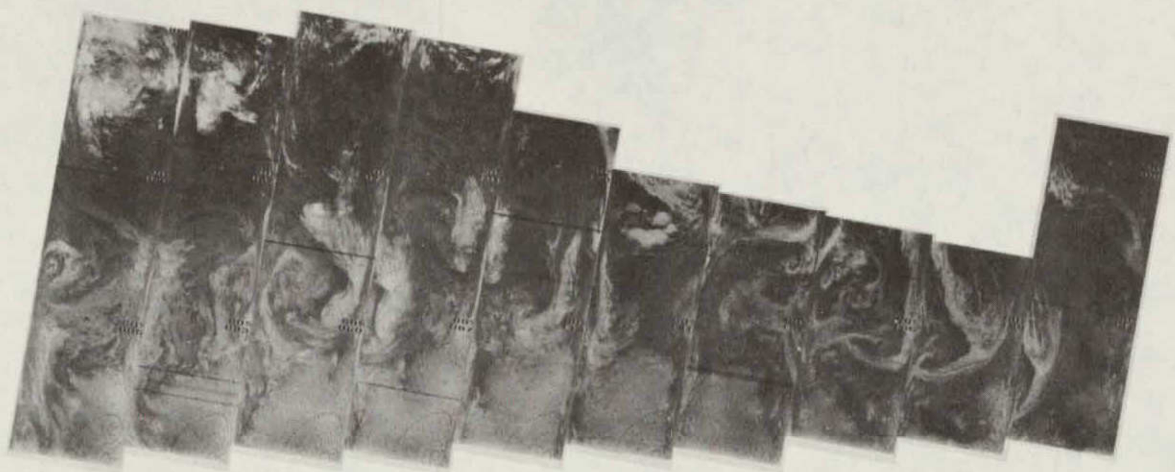
11.5μm



7833 7832 7831 7830 7829 7828 7827 7826 7825 7824 7823 7822 7821

16 JAN 77

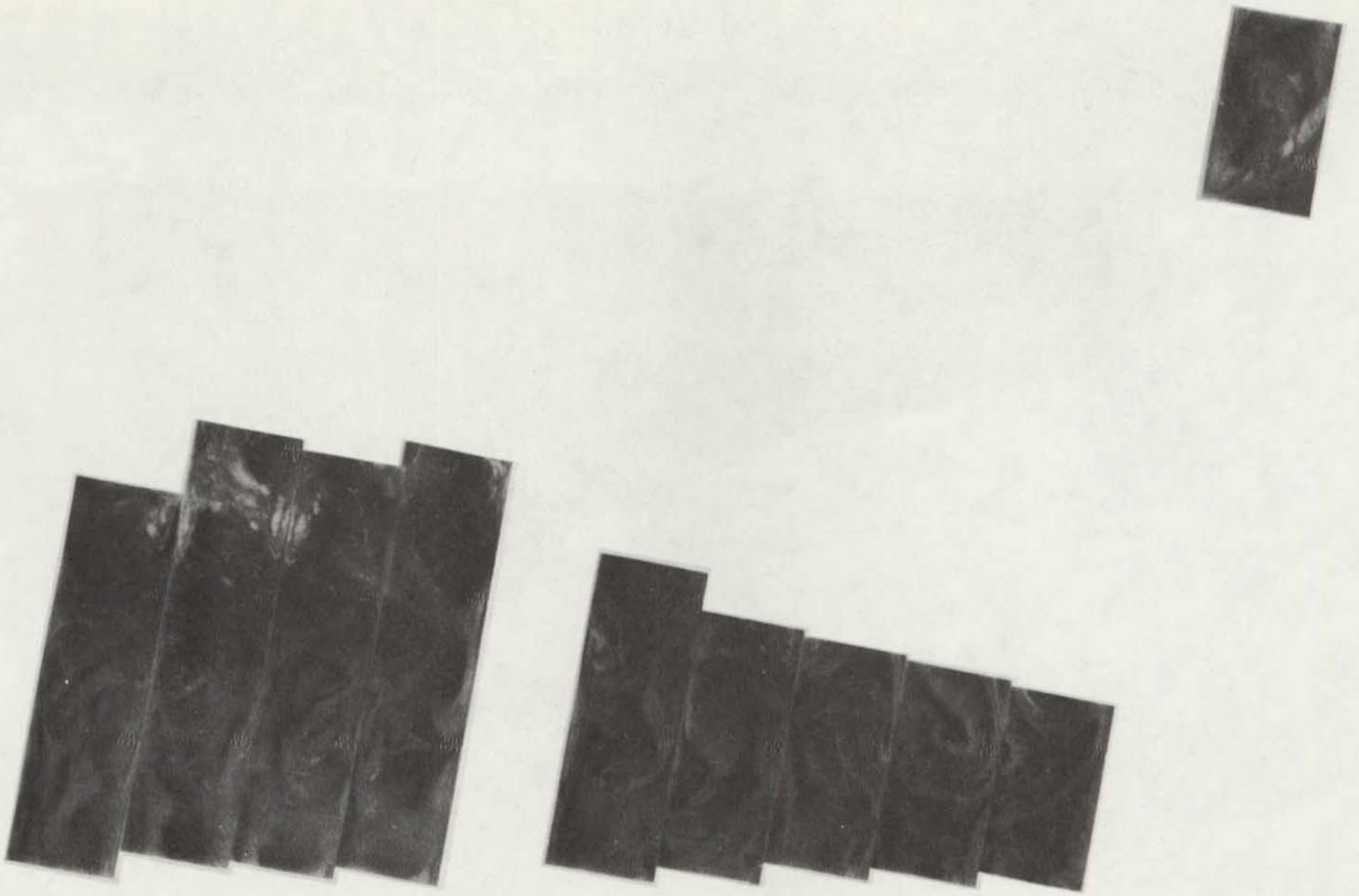
6.7μm



7833 7832 7831 7830 7829 7828 7827 7826 7825 7824 7823 7822 7821

16 JAN 77

11.5μm



7847 7846 7845 7844 7843 7842 7841 7840 7839 7838 7837 7836 7835 7834

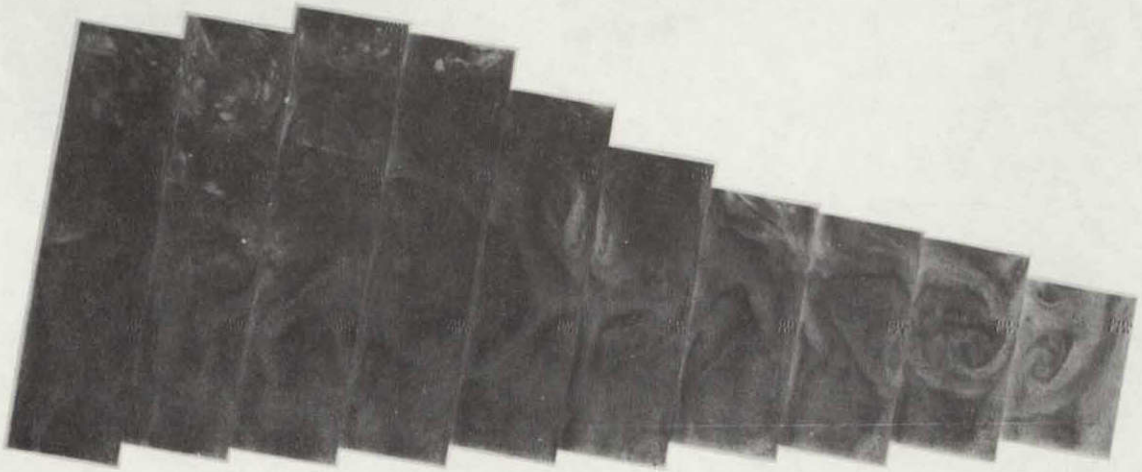
17 JAN 77

6.7μm

7847 7846 7845 7844 7843 7842 7841 7840 7839 7838 7837 7836 7835 7834

17 JAN 77

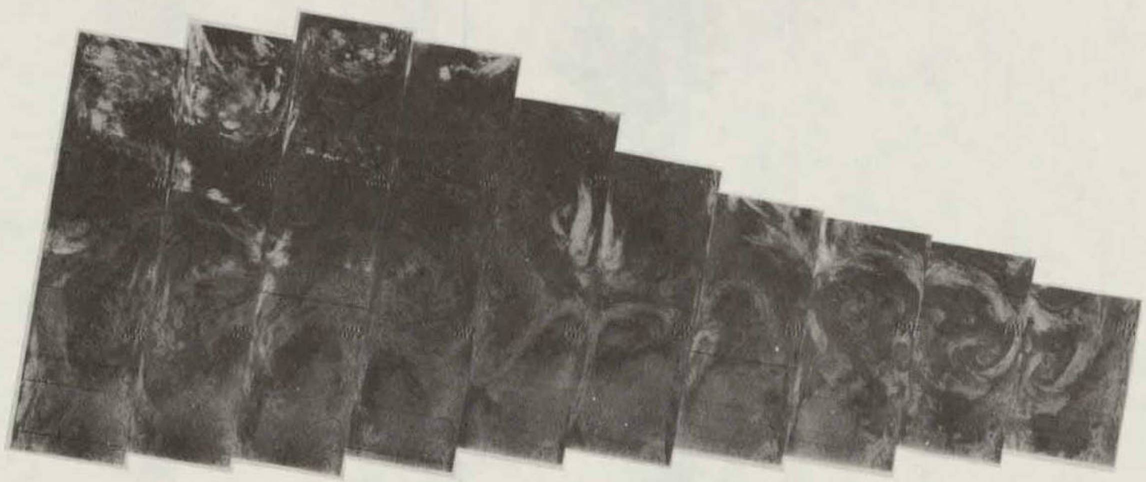
11.5μm



7860 7859 7858 7857 7856 7855 7854 7853 7852 7851 7850 7849 7848

18 JAN 77

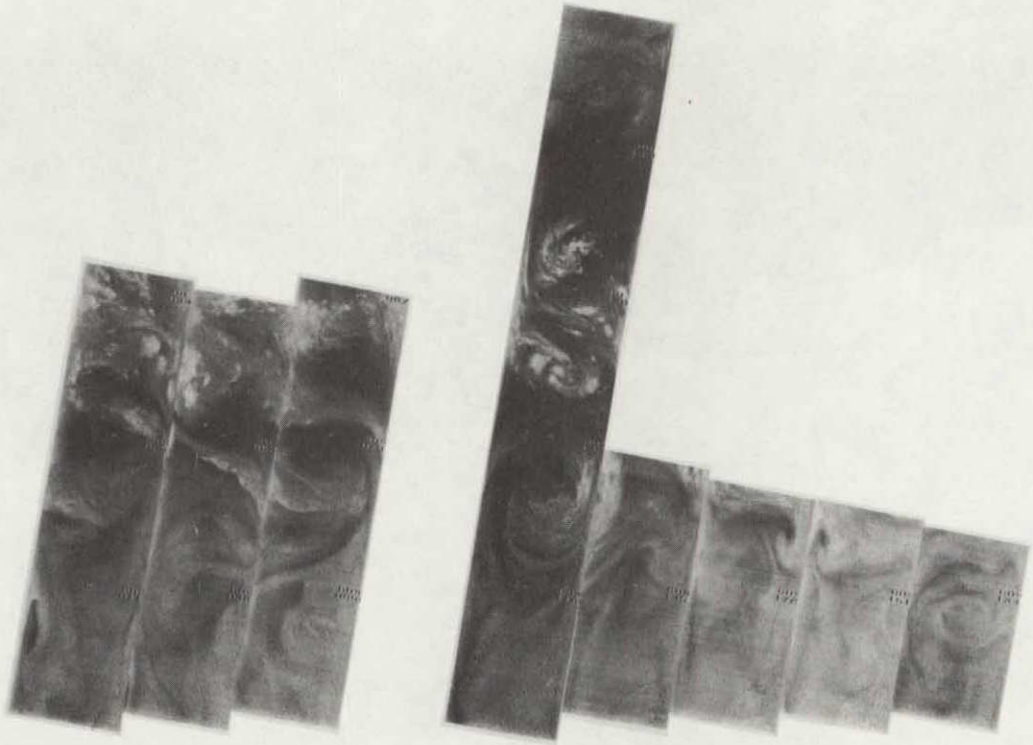
6.7μm



7860 7859 7858 7857 7856 7855 7854 7853 7852 7851 7850 7849 7848

18 JAN 77

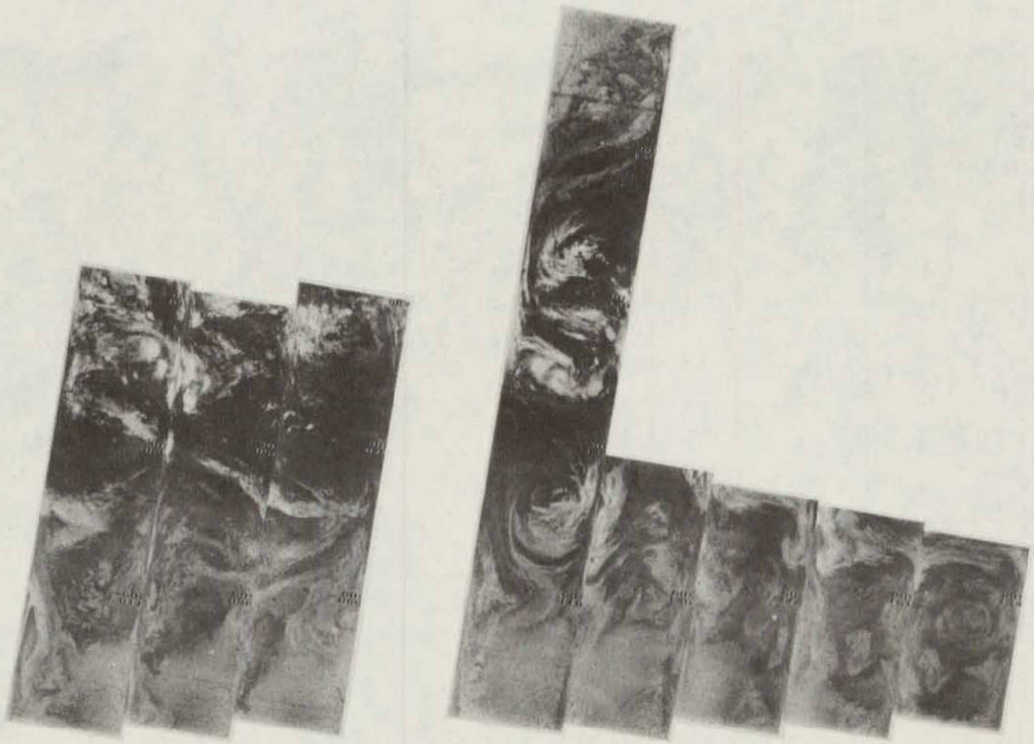
11.5μm



7873 7872 7871 7870 7869 7868 7867 7866 7865 7864 7863 7862 7861

19 JAN 77

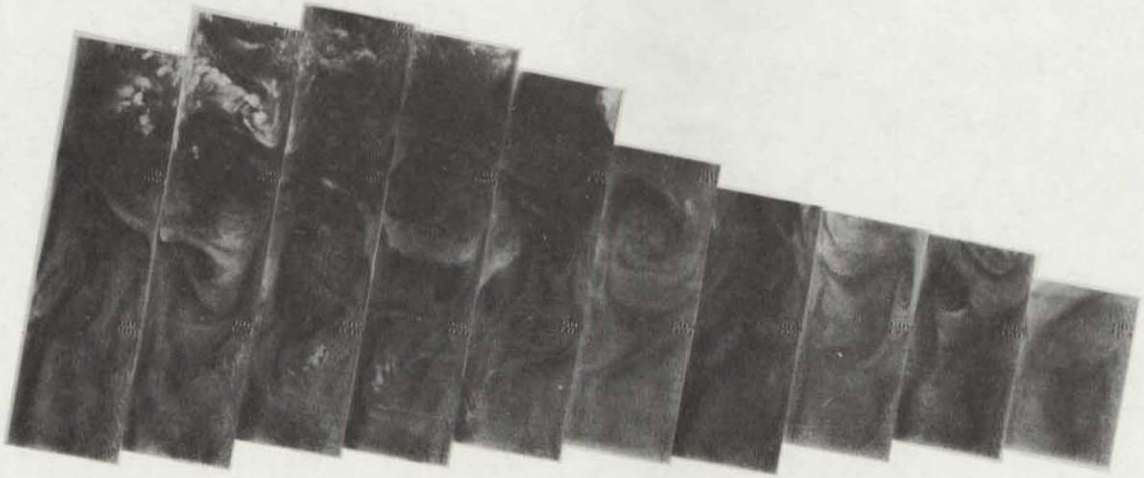
6.7μm



7873 7872 7871 7870 7869 7868 7867 7866 7865 7864 7863 7862 7861

19 JAN 77

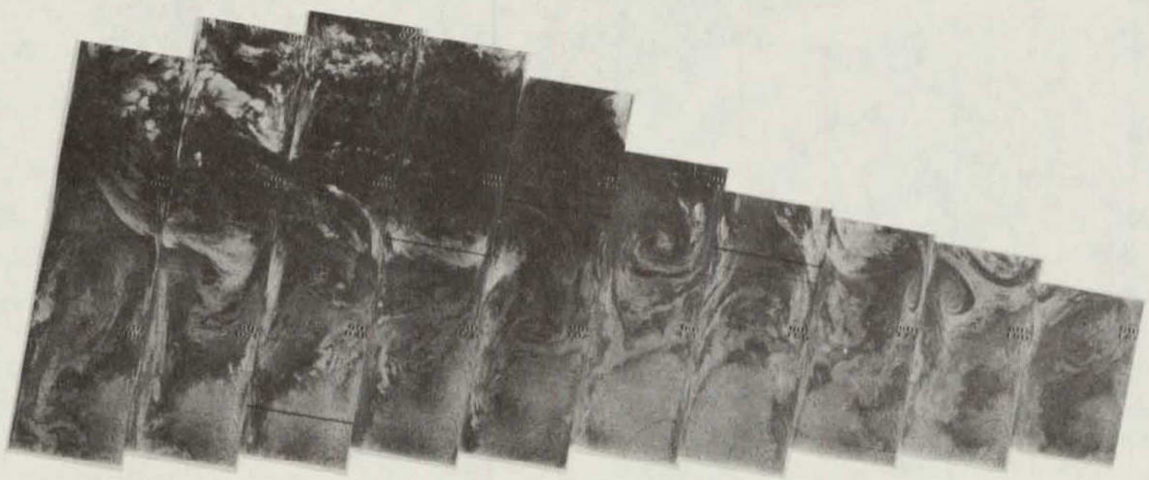
11.5μm



7887 7886 7885 7884 7883 7882 7881 7880 7879 7878 7877 7876 7875 7874

20 JAN 77

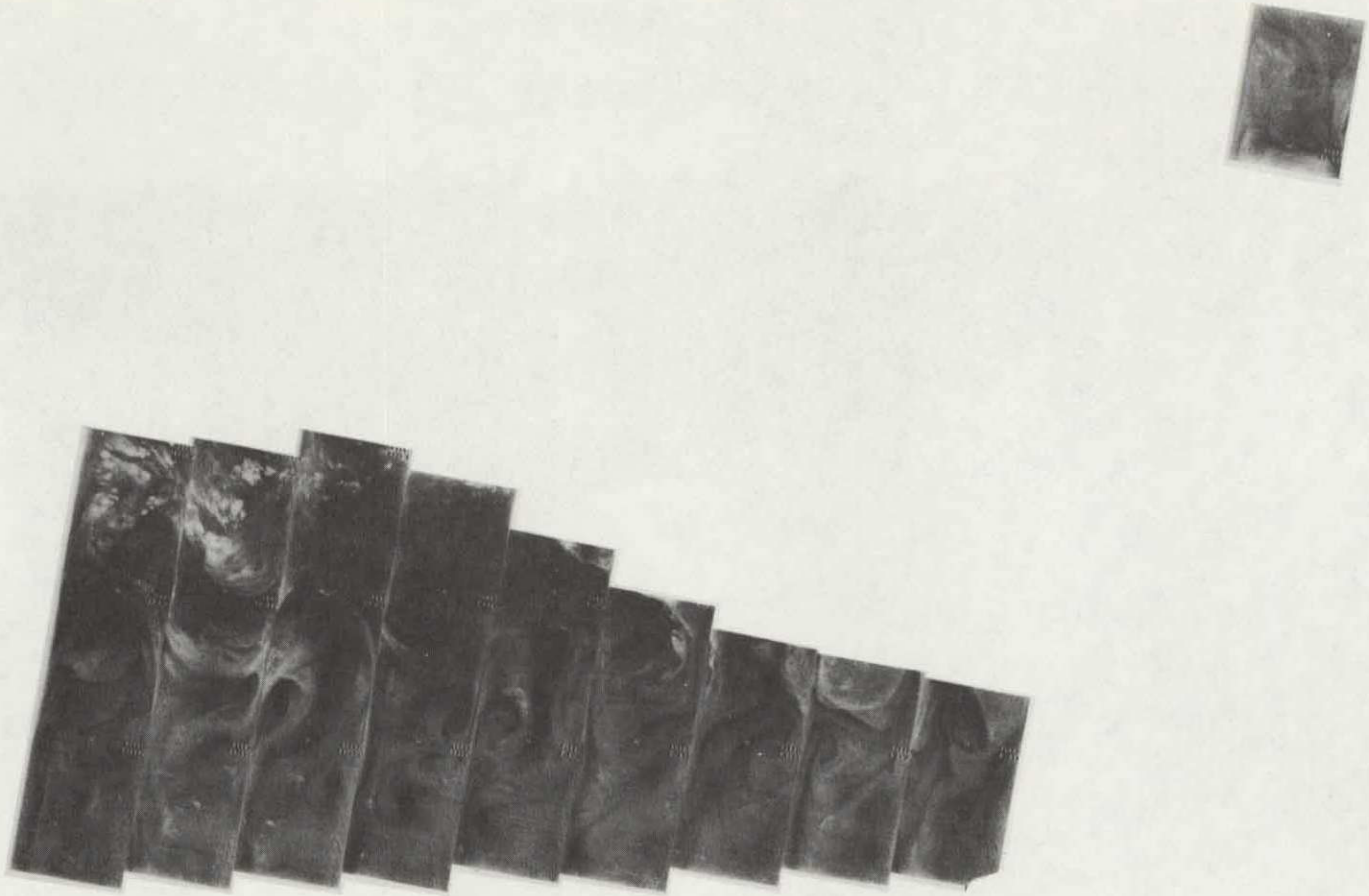
6.7μm



7887 7886 7885 7884 7883 7882 7881 7880 7879 7878 7877 7876 7875 7874

20 JAN 77

11.5μm



7900 7899 7898 7897 7896 7895 7894 7893 7892 7891 7890 7889 7888

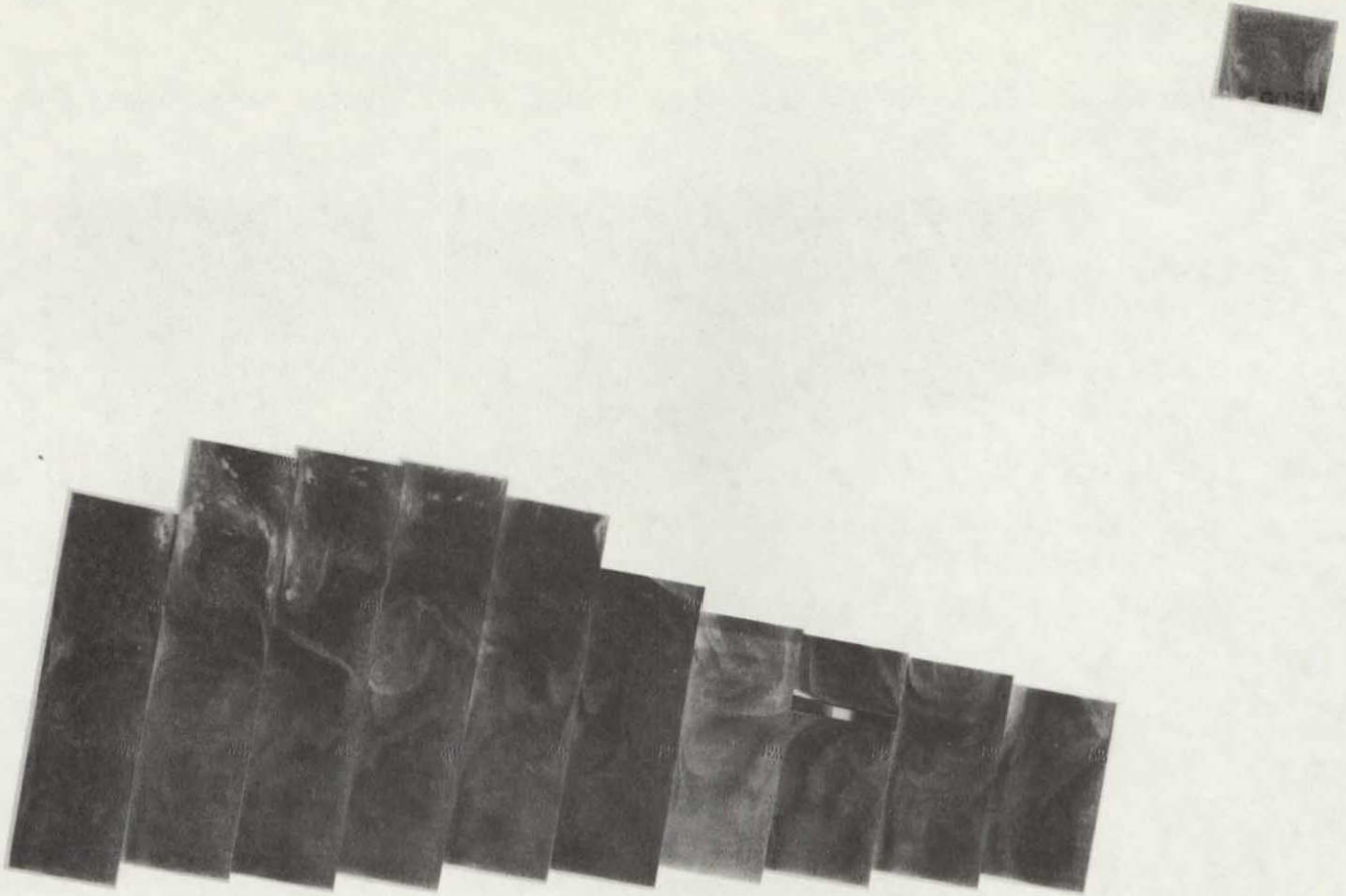
21 JAN 77

6.7μm

7900 7899 7898 7897 7896 7895 7894 7893 7892 7891 7890 7889 7888

21 JAN 77

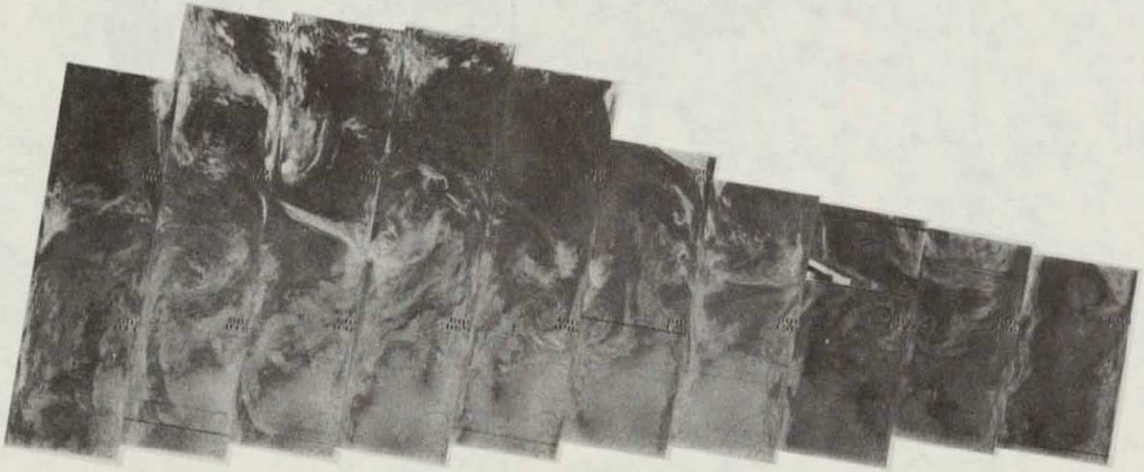
11.5μm



7914 7913 7912 7911 7910 7909 7908 7907 7906 7905 7904 7903 7902 7901

22 JAN 77

6.7μm



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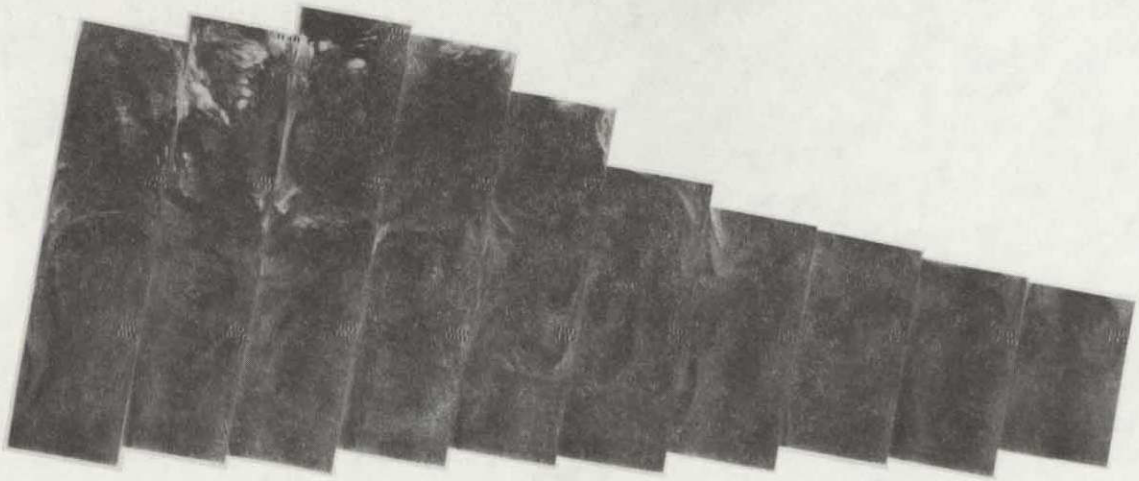
22 JAN 77

11.5μm



7927 7926 7925 7924 7923 7922 7921 7920 7919 7918 7917 7916 7915

23 JAN 77

6.7μm

7927 7926 7925 7924 7923 7922 7921 7920 7919 7918 7917 7916 7915

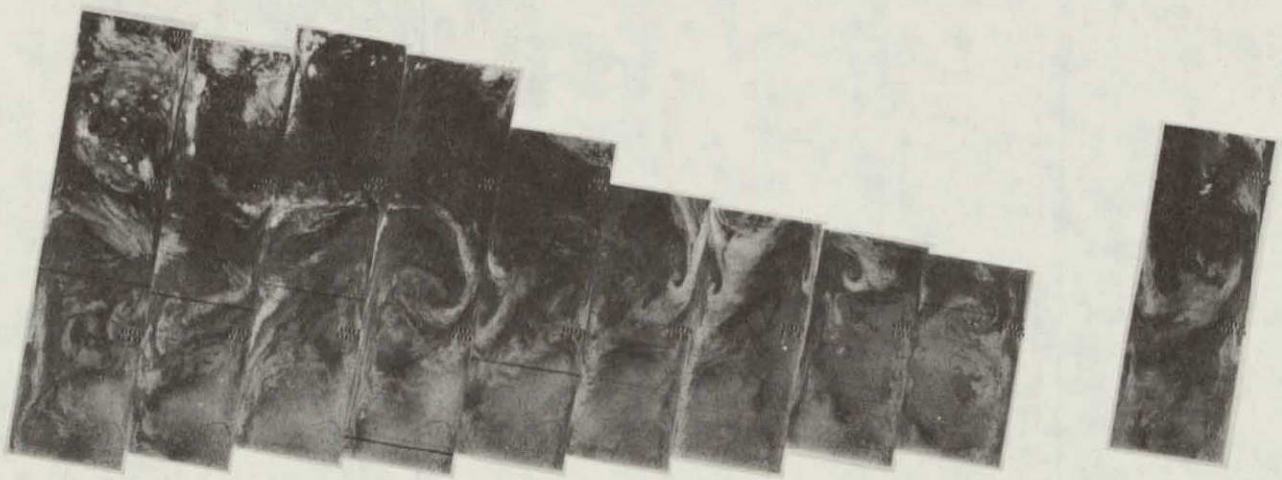
23 JAN 77

11.5μm

7940 7939 7938 7937 7936 7935 7934 7933 7932 7931 7930 7929 7928

24 JAN 77

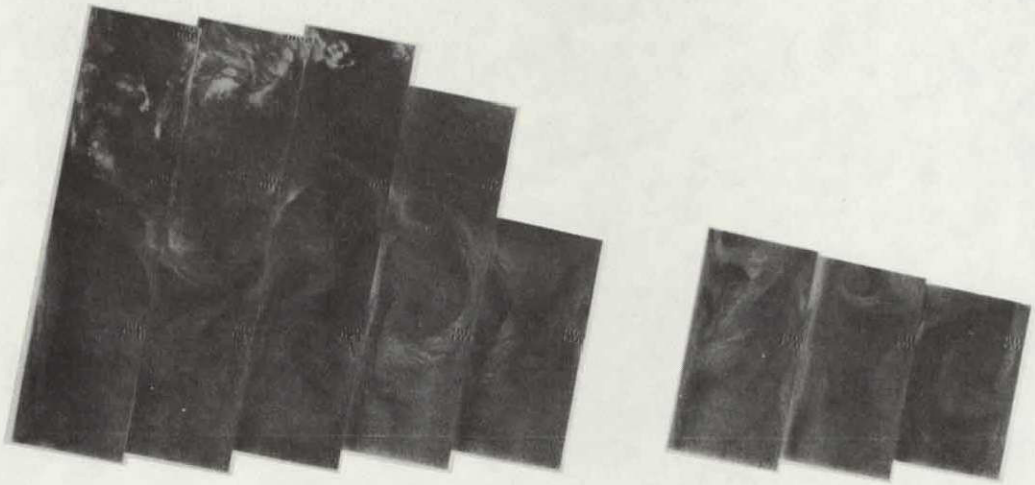
6.7μm



7940 7939 7938 7937 7936 7935 7934 7933 7932 7931 7930 7929 7928

24 JAN 77

11.5μm



7954 7953 7952 7951 7950 7949 7948 7947 7946 7945 7944 7943 7942 7941

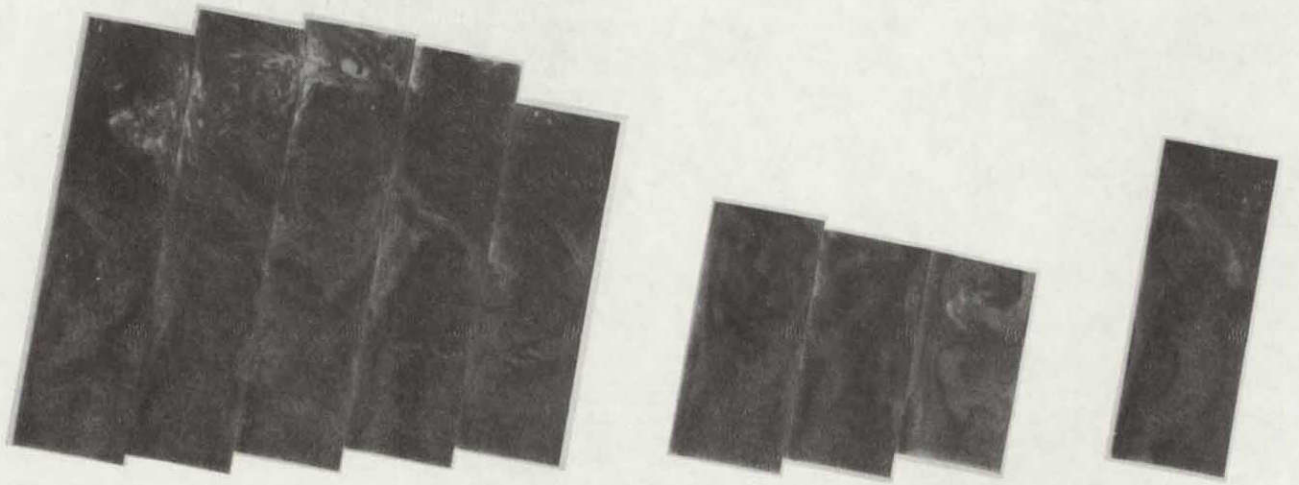
25 JAN 77

6.7μm

7954 7953 7952 7951 7950 7949 7948 7947 7946 7945 7944 7943 7942 7941

25 JAN 77

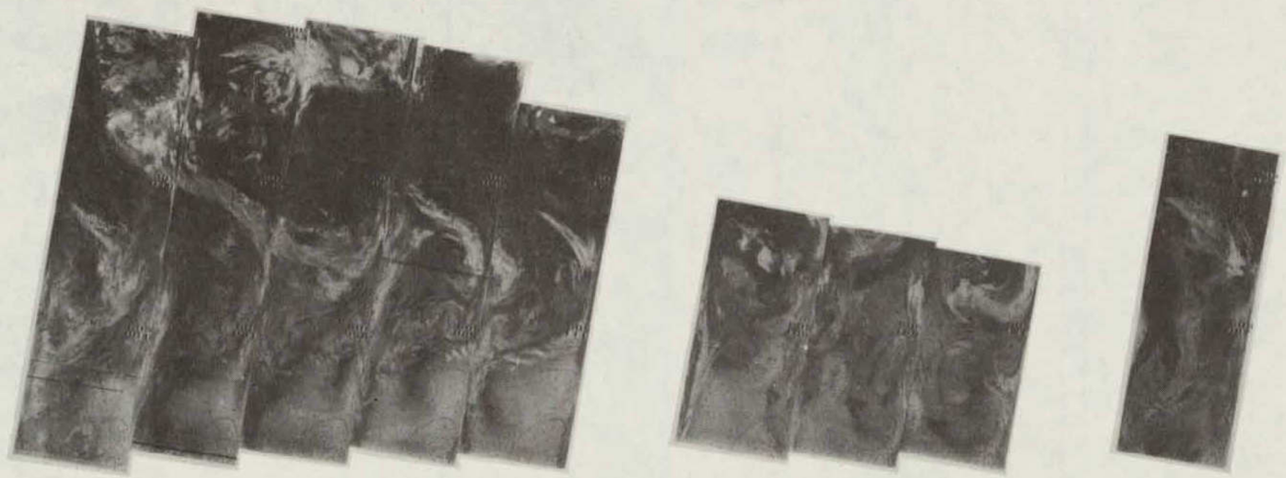
11.5μm



7967 7966 7965 7964 7963 7962 7961 7960 7959 7958 7957 7956 7955

26 JAN 77

6.7μm



7967 7966 7965 7964 7963 7962 7961 7960 7959 7958 7957 7956 7955

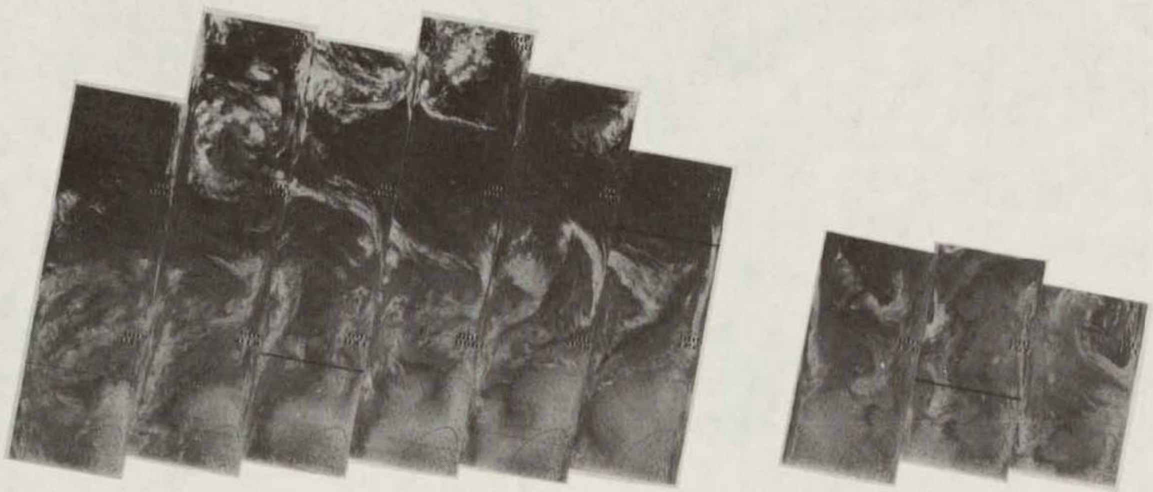
26 JAN 77

11.5μm

7981 7980 7979 7978 7977 7976 7975 7974 7973 7972 7971 7970 7969 7968

27 JAN 77

6.7μm



7981 7980 7979 7978 7977 7976 7975 7974 7973 7972 7971 7970 7969 7968

27 JAN 77

11.5μm

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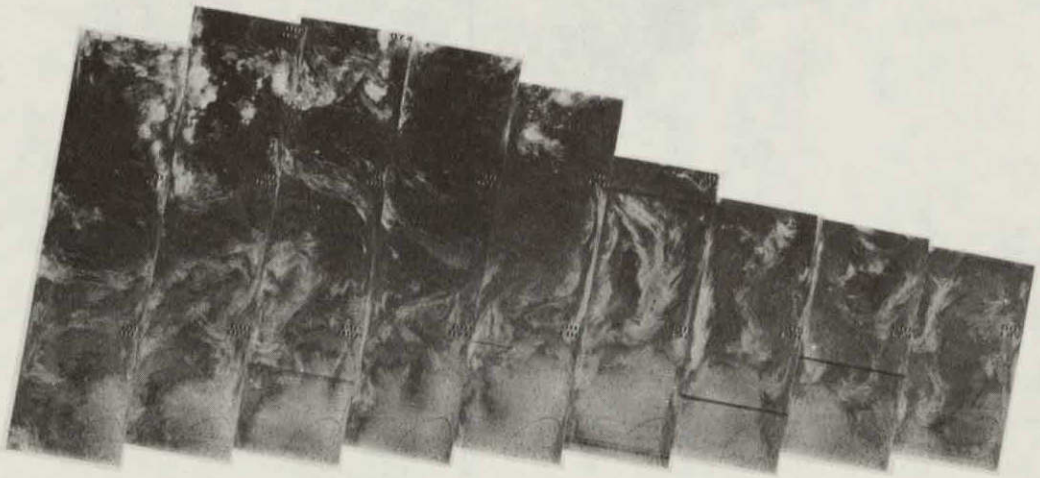
7994 7993 7992 7991 7990 7989 7988 7987 7986 7985 7984 7983 7982

28 JAN 77

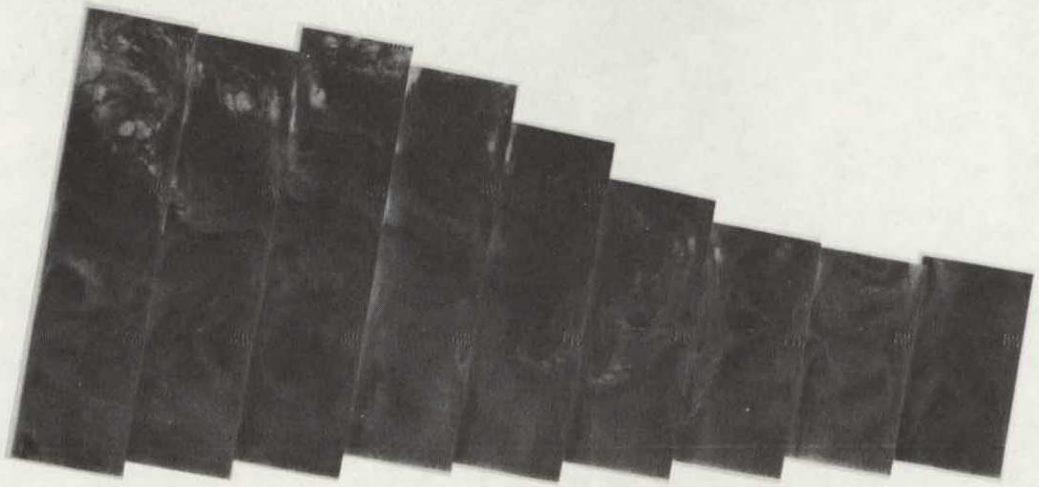
6.7μm



7994 7993 7992 7991 7990 7989 7988 7987 7986 7985 7984 7983 7982

28 JAN 77

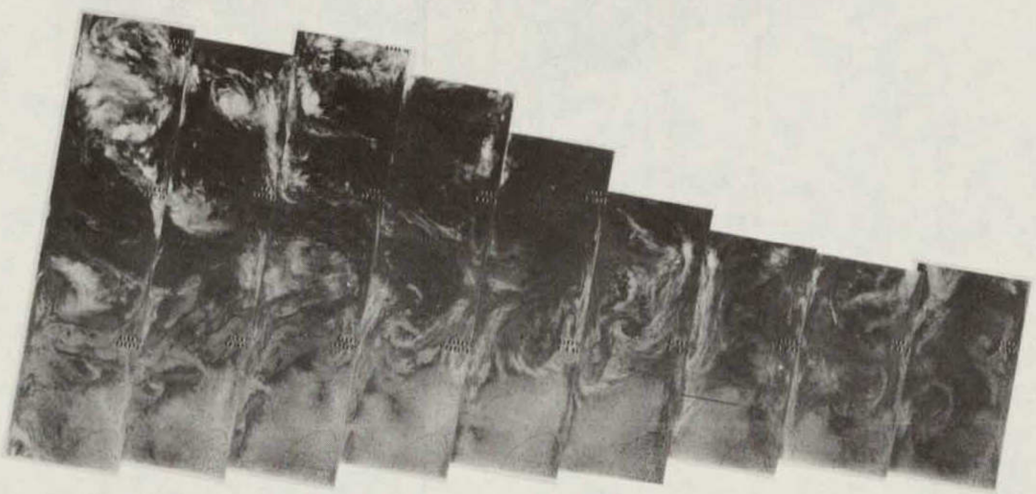
11.5μm



8007 8006 8005 8004 8003 8002 8001 8000 7999 7998 7997 7996 7995

29 JAN 77

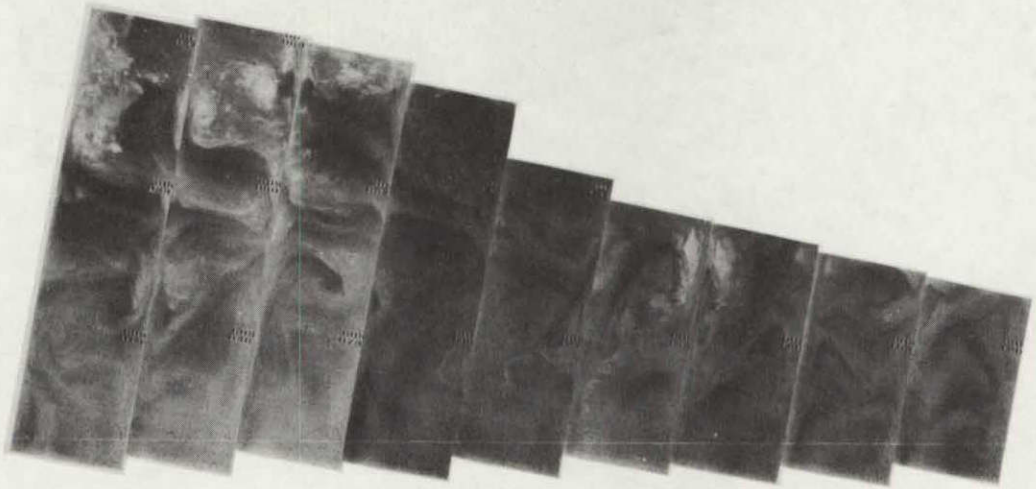
6.7μm



8007 8006 8005 8004 8003 8002 8001 8000 7999 7998 7997 7996 7995

29 JAN 77

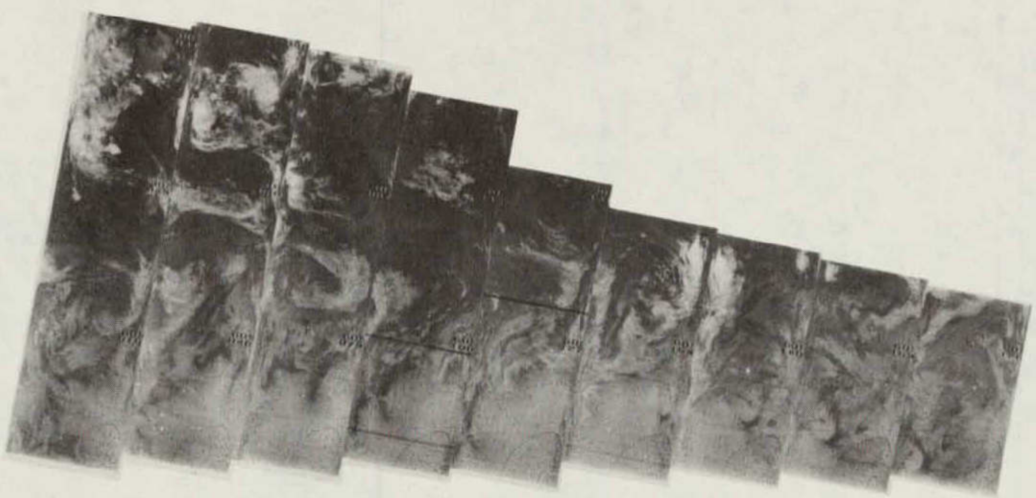
11.5μm



8021 8020 8019 8018 8017 8016 8015 8014 8013 8012 8011 8010 8009 8008

30 JAN 77

6.7μm



8021 8020 8019 8018 8017 8016 8015 8014 8013 8012 8011 8010 8009 8008

30 JAN 77

11.5μm

8034 8033 8032 8031 8030 8029 8028 8027 8026 8025 8024 8023 8022

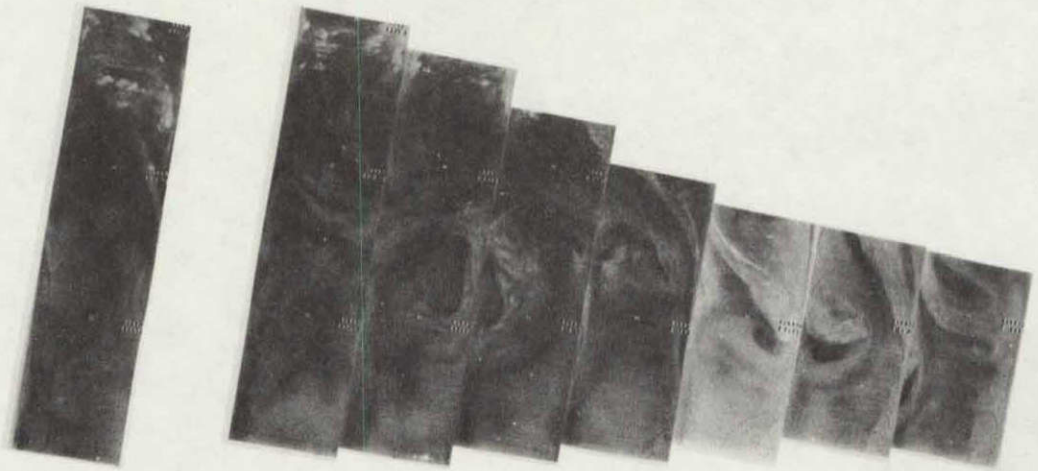
31 JAN 77

6.7μm

8034 8033 8032 8031 8030 8029 8028 8027 8026 8025 8024 8023 8022

31 JAN 77

11.5μm



8208 8207 8206 8205 8204 8203 8202 8201 8200 8199 8198 8197 8196

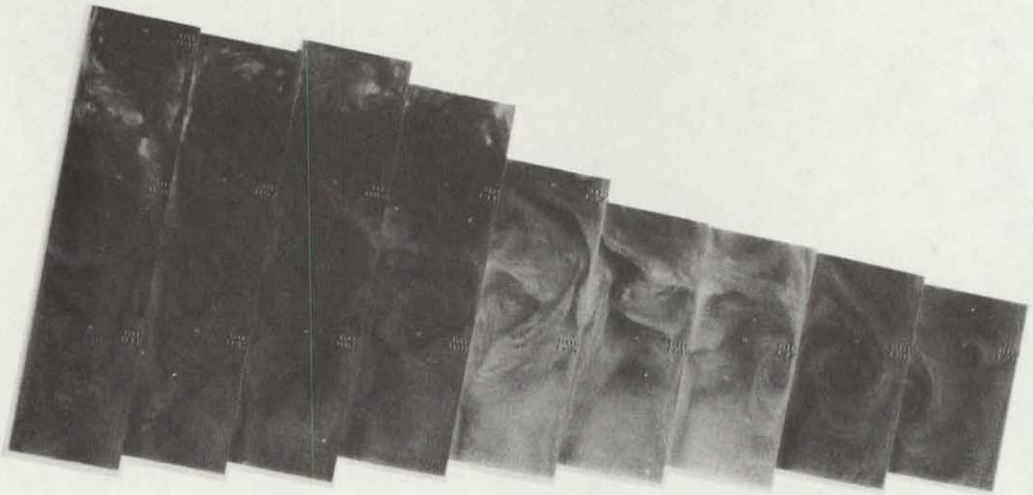
13 FEB 77

6.7μm

8208 8207 8206 8205 8204 8203 8202 8201 8200 8199 8198 8197 8196

13 FEB 77

11.5μm



8222 8221 8220 8219 8218 8217 8216 8215 8214 8213 8212 8211 8210 8209

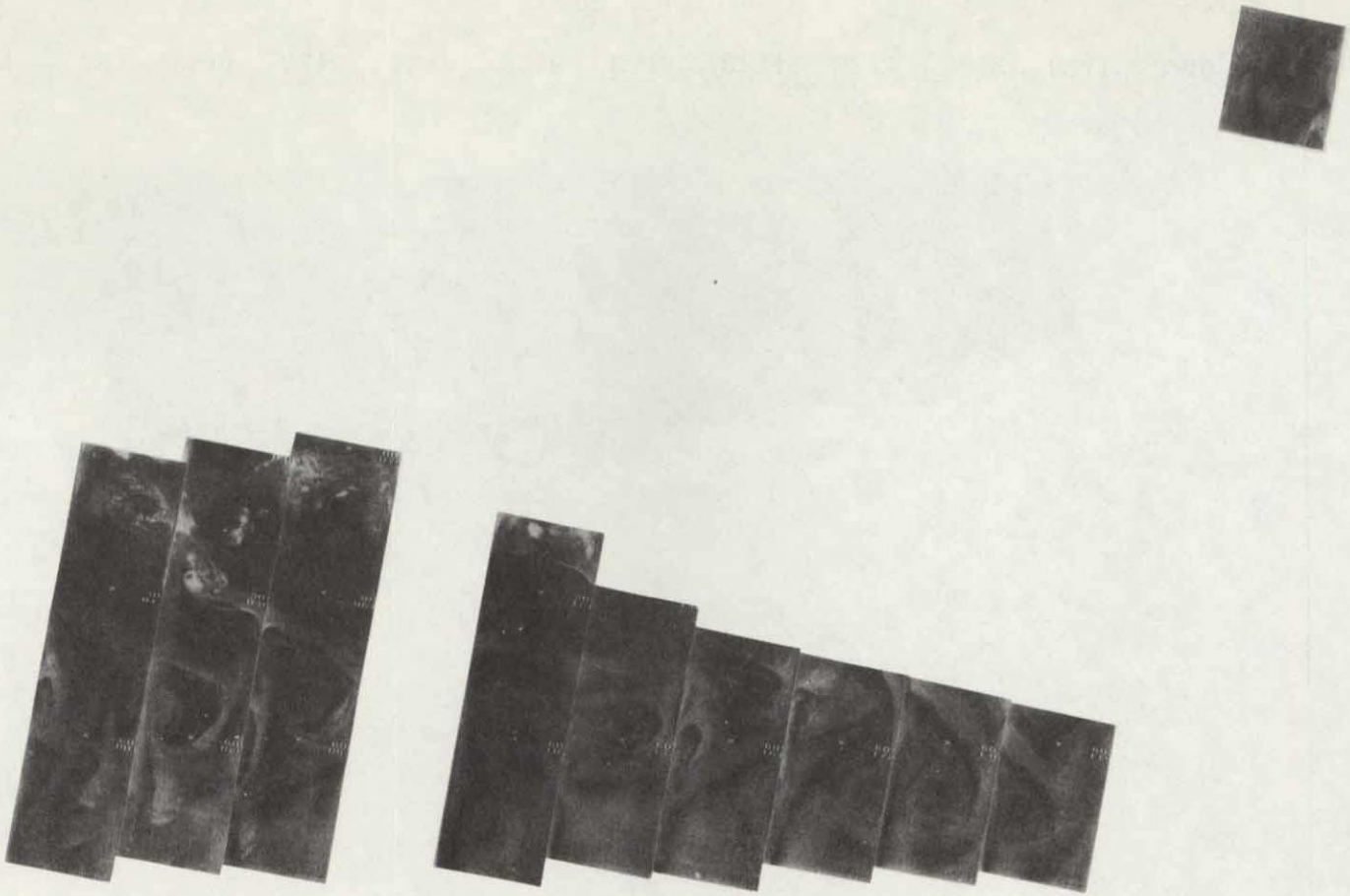
14 FEB 77

6.7μm

8222 8221 8220 8219 8218 8217 8216 8215 8214 8213 8212 8211 8210 8209

14 FEB 77

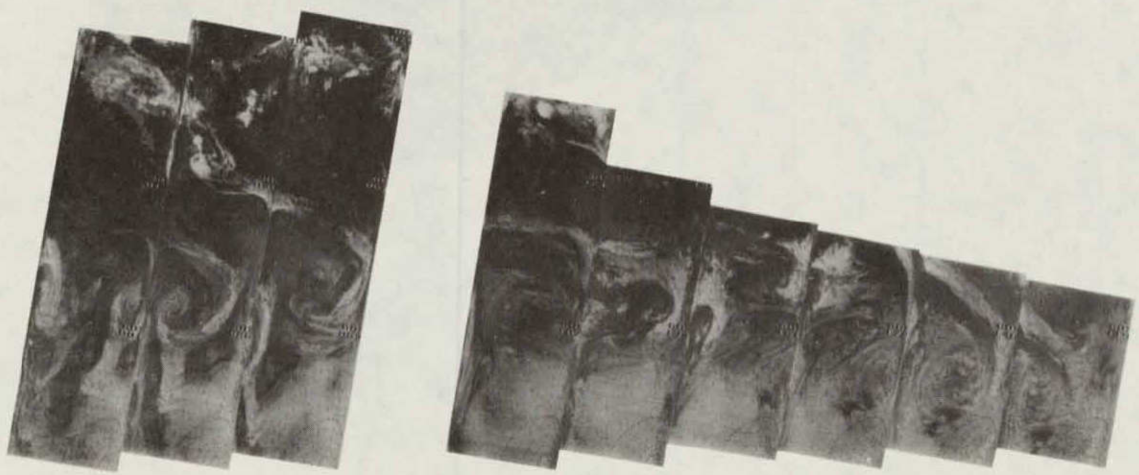
11.5μm



8235 8234 8233 8232 8231 8230 8229 8228 8227 8226 8225 8224 8223

15 FEB 77

6.7μm



8235 8234 8233 8232 8231 8230 8229 8228 8227 8226 8225 8224 8223

15 FEB 77

11.5μm

8248 8247 8246 8245 8244 8243 8242 8241 8240 8239 8238 8237 8236

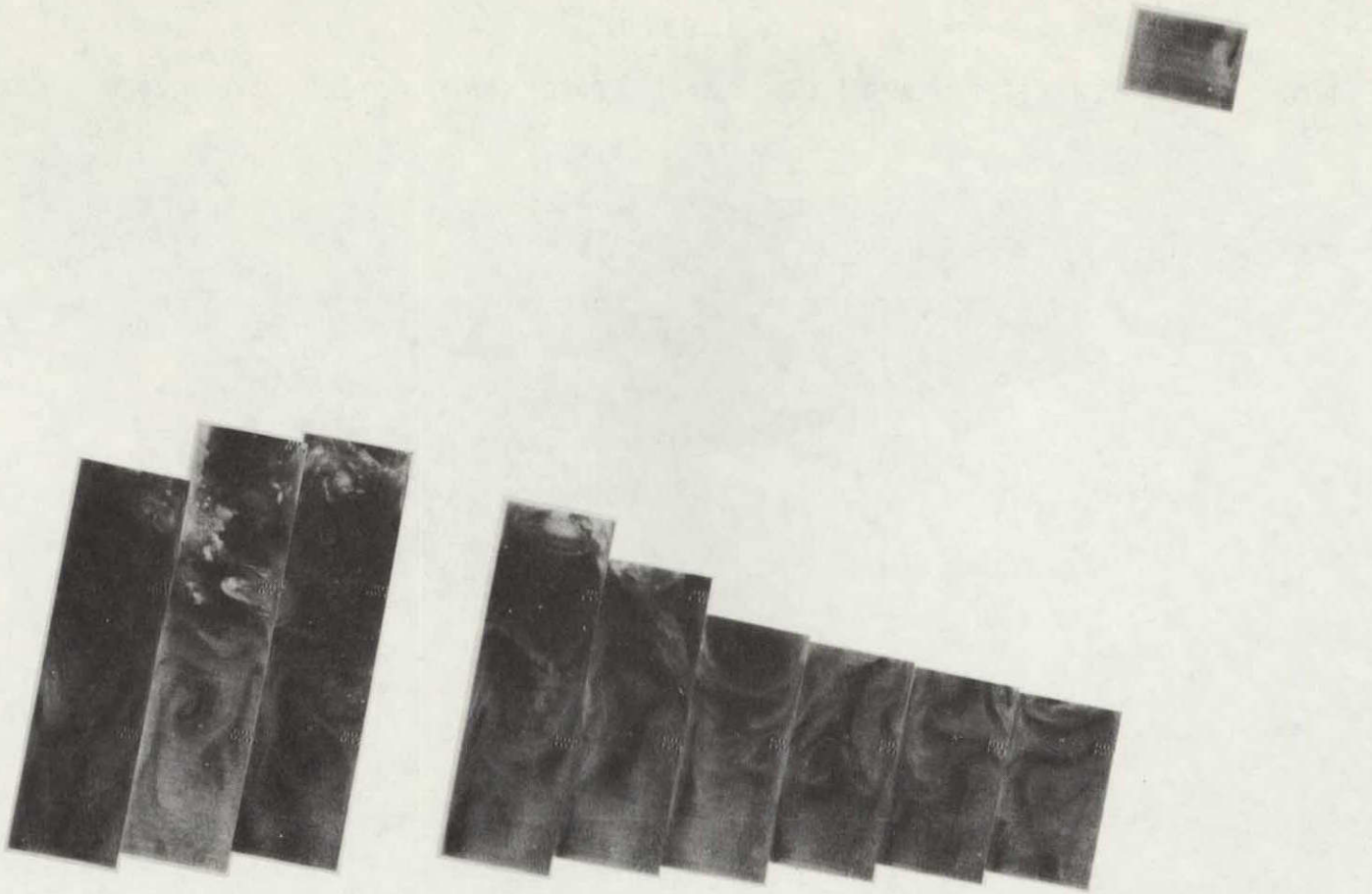
16 FEB 77

6.7μm

8248 8247 8246 8245 8244 8243 8242 8241 8240 8239 8238 8237 8236

16 FEB 77

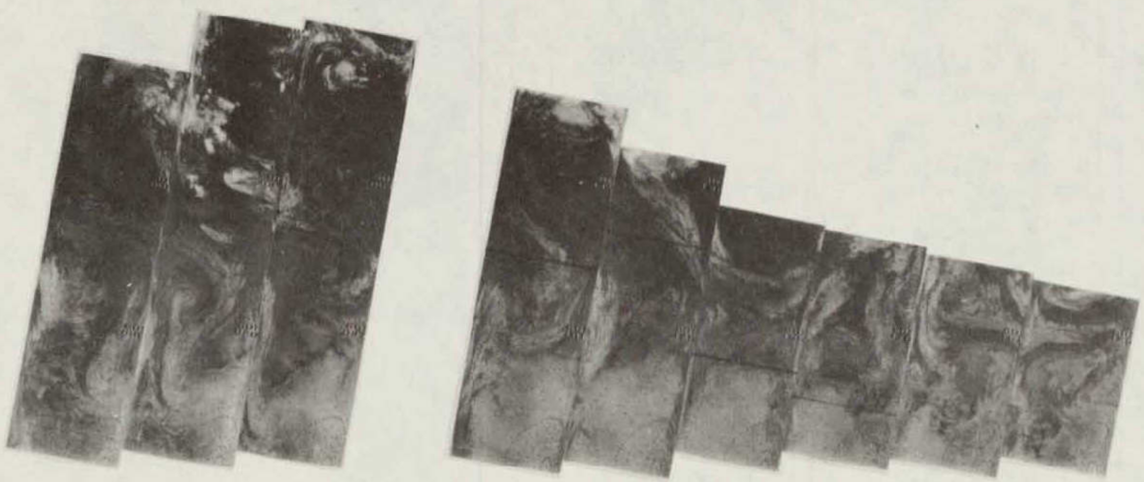
11.5μm



8262 8261 8260 8259 8258 8257 8256 8255 8254 8253 8252 8251 8250 8249

17 FEB 77

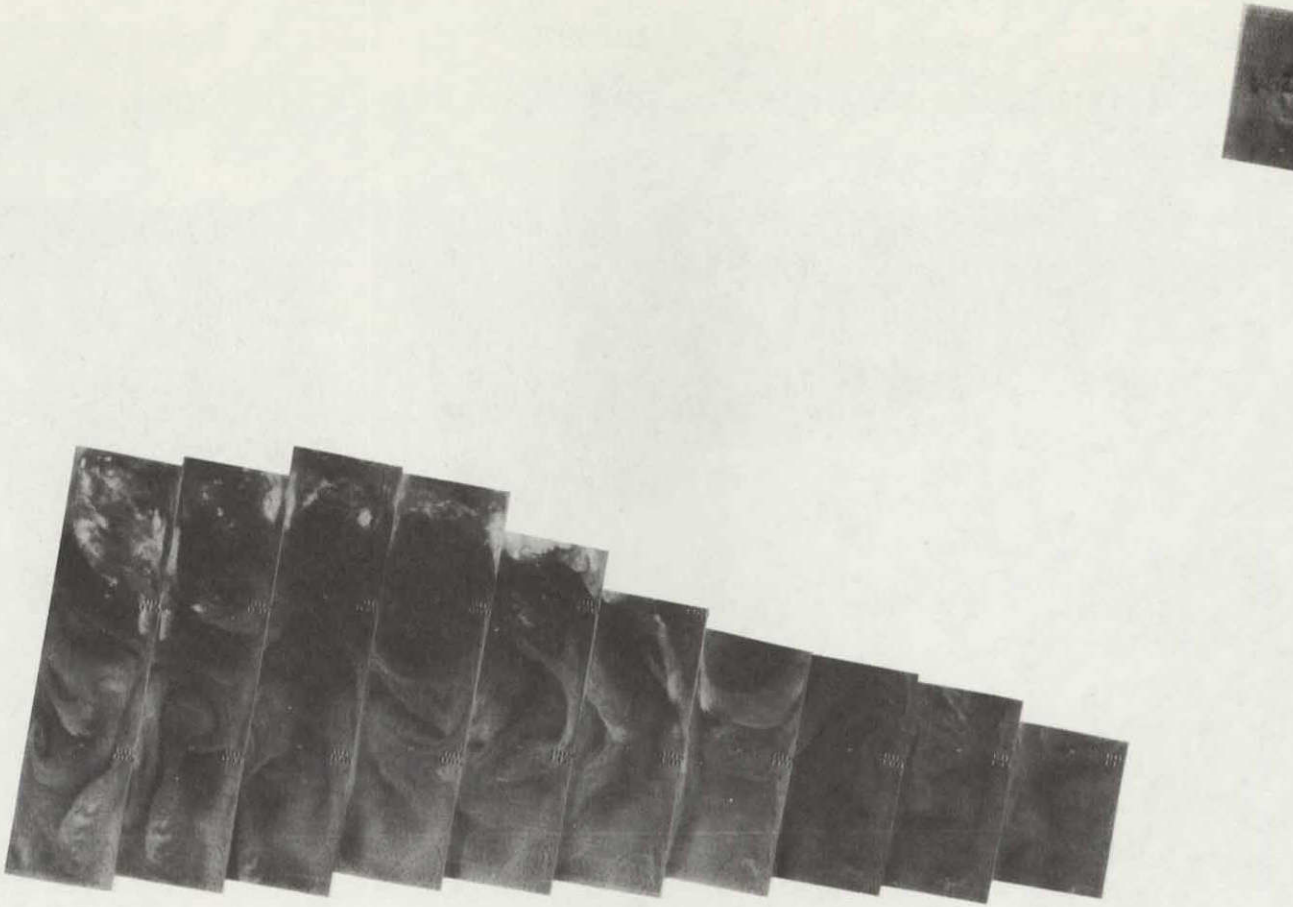
6.7μm



8262 8261 8260 8259 8258 8257 8256 8255 8254 8253 8252 8251 8250 8249

17 FEB 77

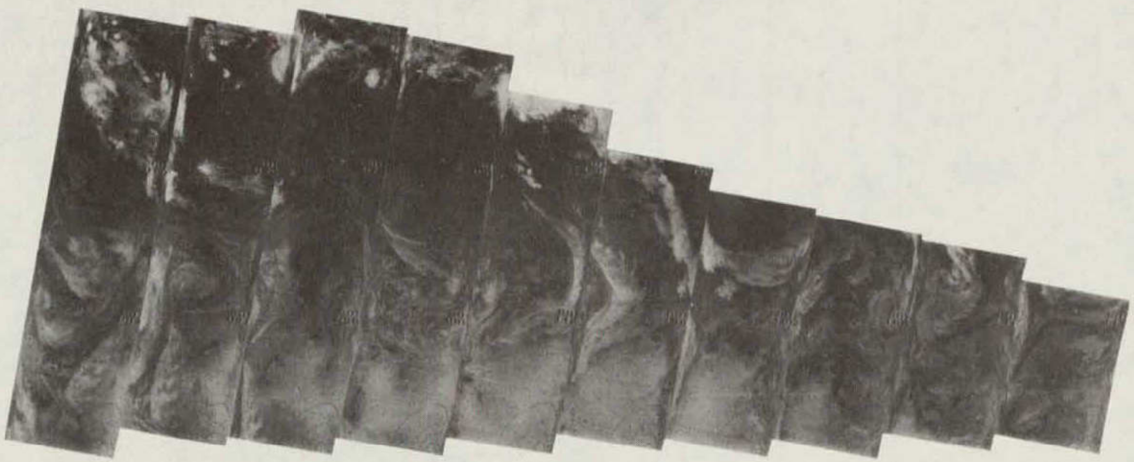
11.5μm



8275 8274 8273 8272 8271 8270 8269 8268 8267 8266 8265 8264 8263

18 FEB 77

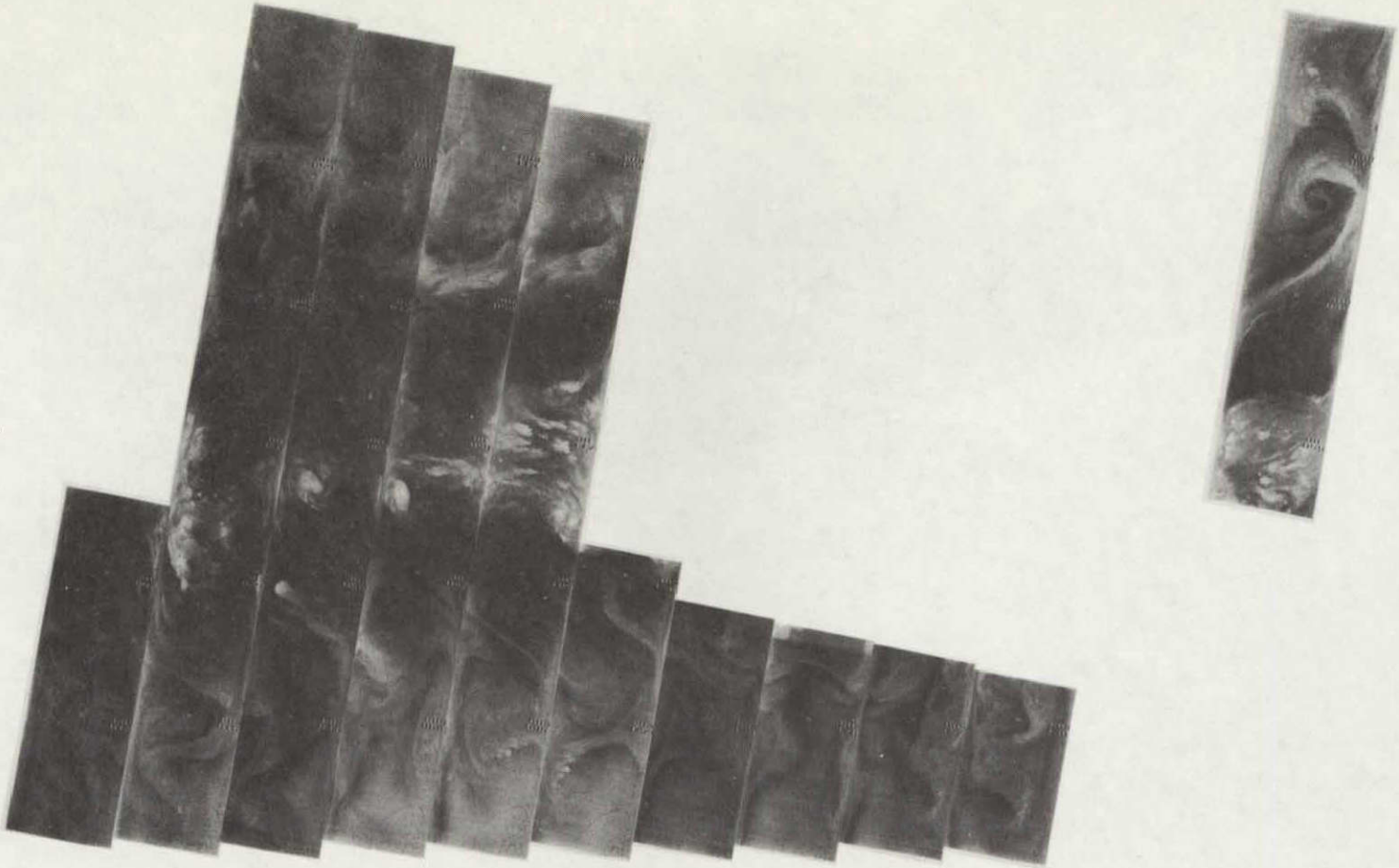
6.7μm



8275 8274 8273 8272 8271 8270 8269 8268 8267 8266 8265 8264 8263

18 FEB 77

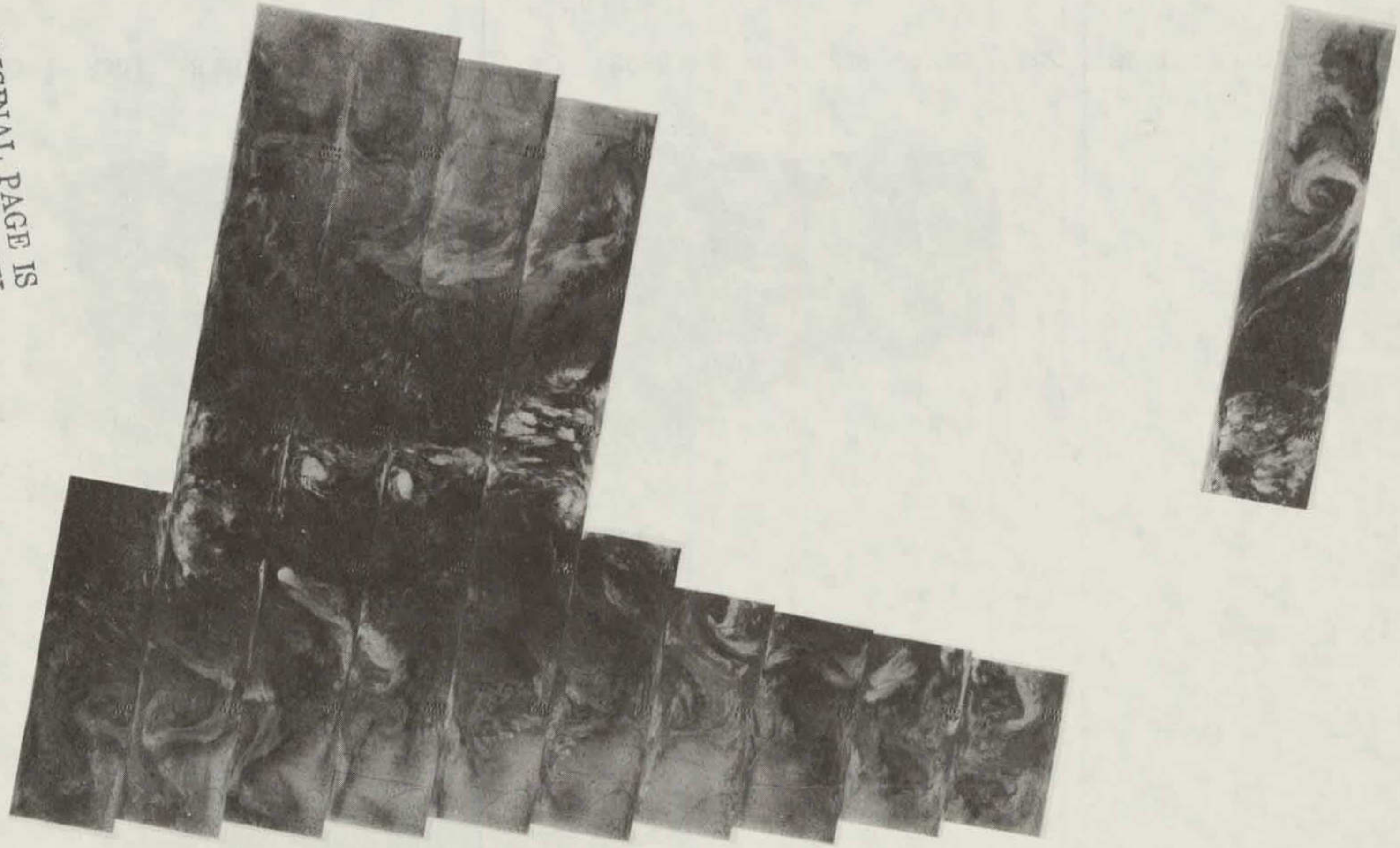
11.5μm



8289 8288 8287 8286 8285 8284 8283 8282 8281 8280 8279 8278 8277 8276

19 FEB 77

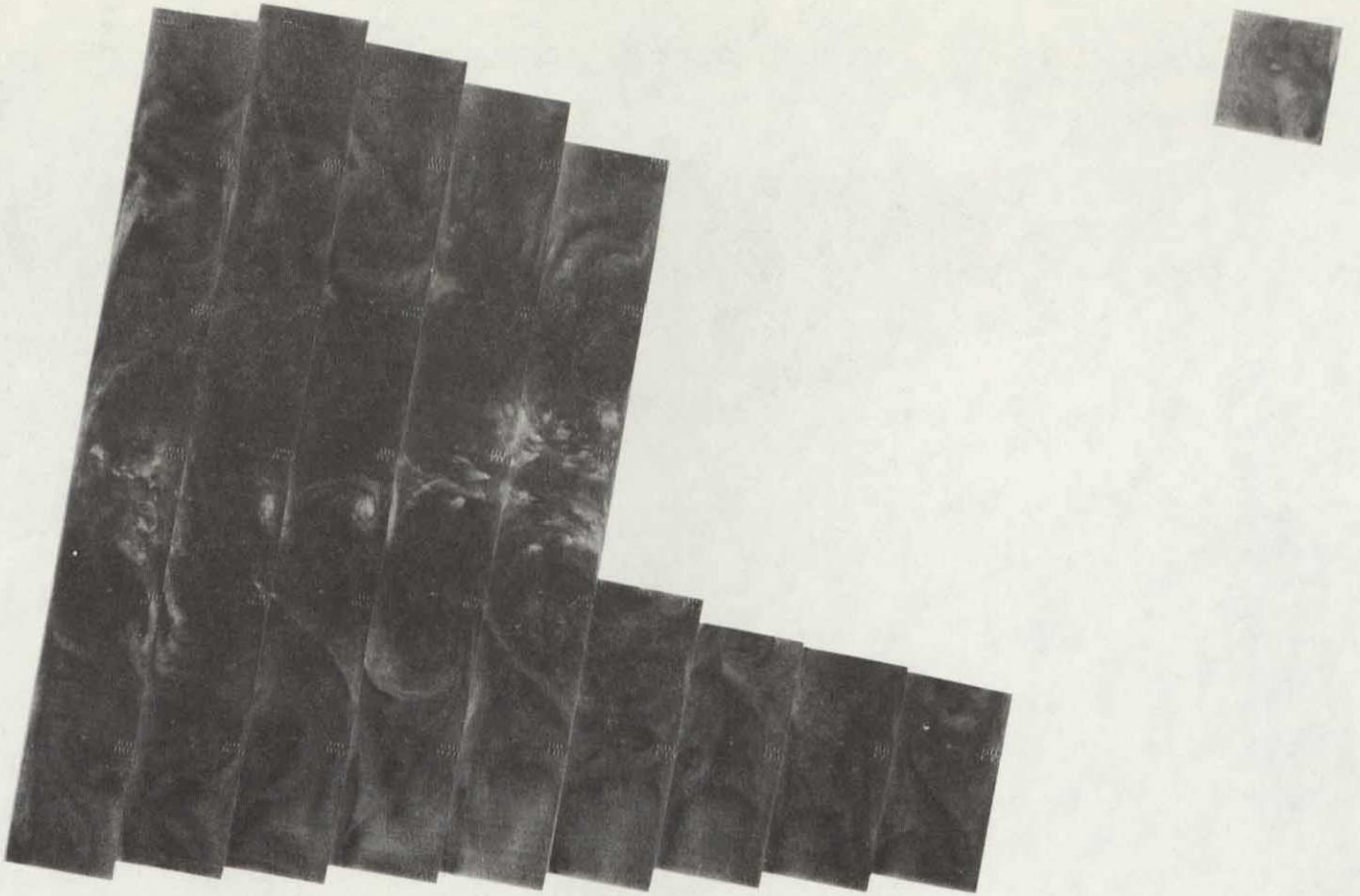
6.7μm



8289 8288 8287 8286 8285 8284 8283 8282 8281 8280 8279 8278 8277 8276

19 FEB 77

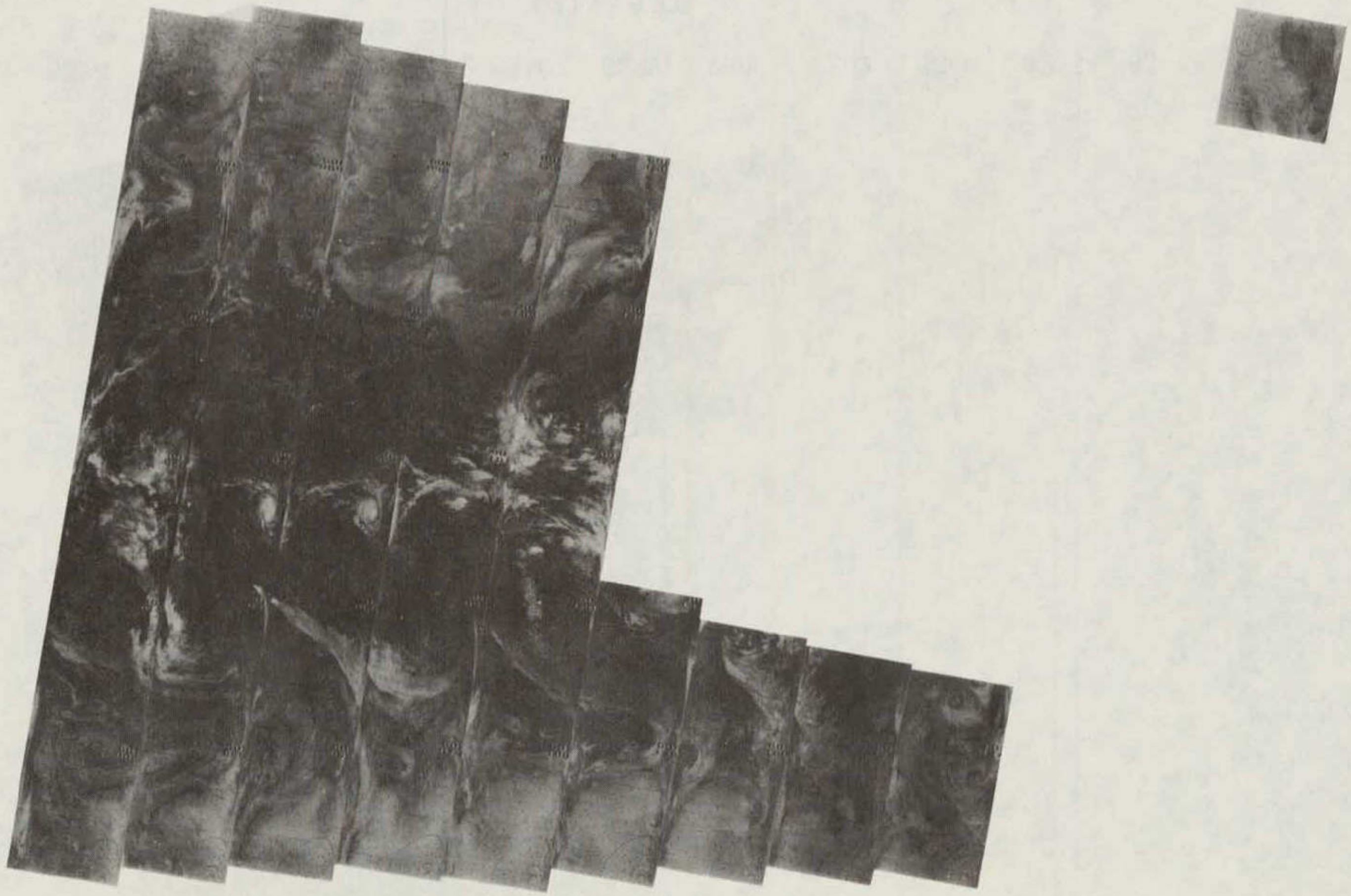
11.5μm



8302 8301 8300 8299 8298 8297 8296 8295 8294 8293 8292 8291 8290

20 FEB 77

6.7μm



8302 8301 8300 8299 8298 8297 8296 8295 8294 8293 8292 8291 8290

20 FEB 77

11.5μm

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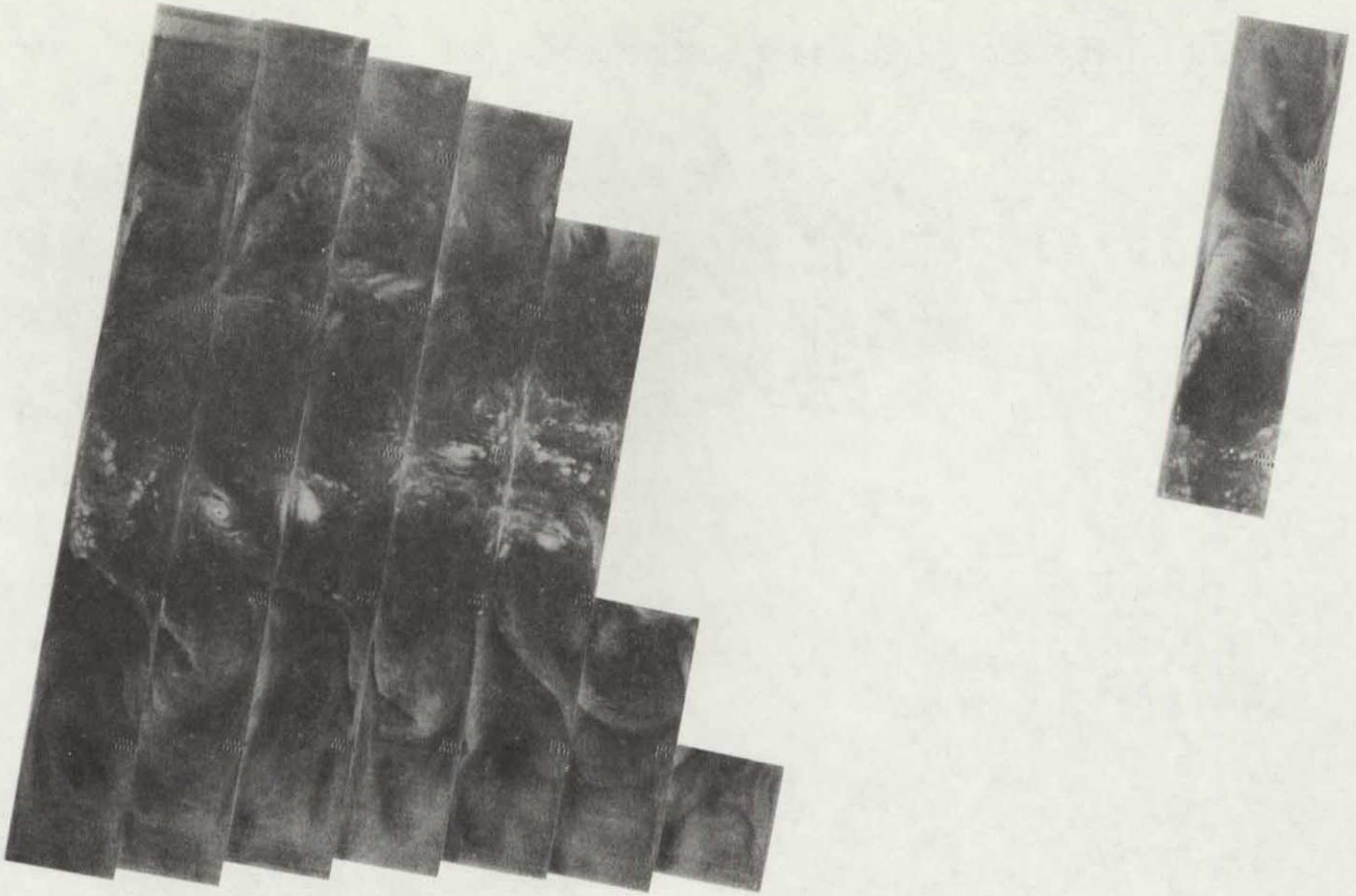
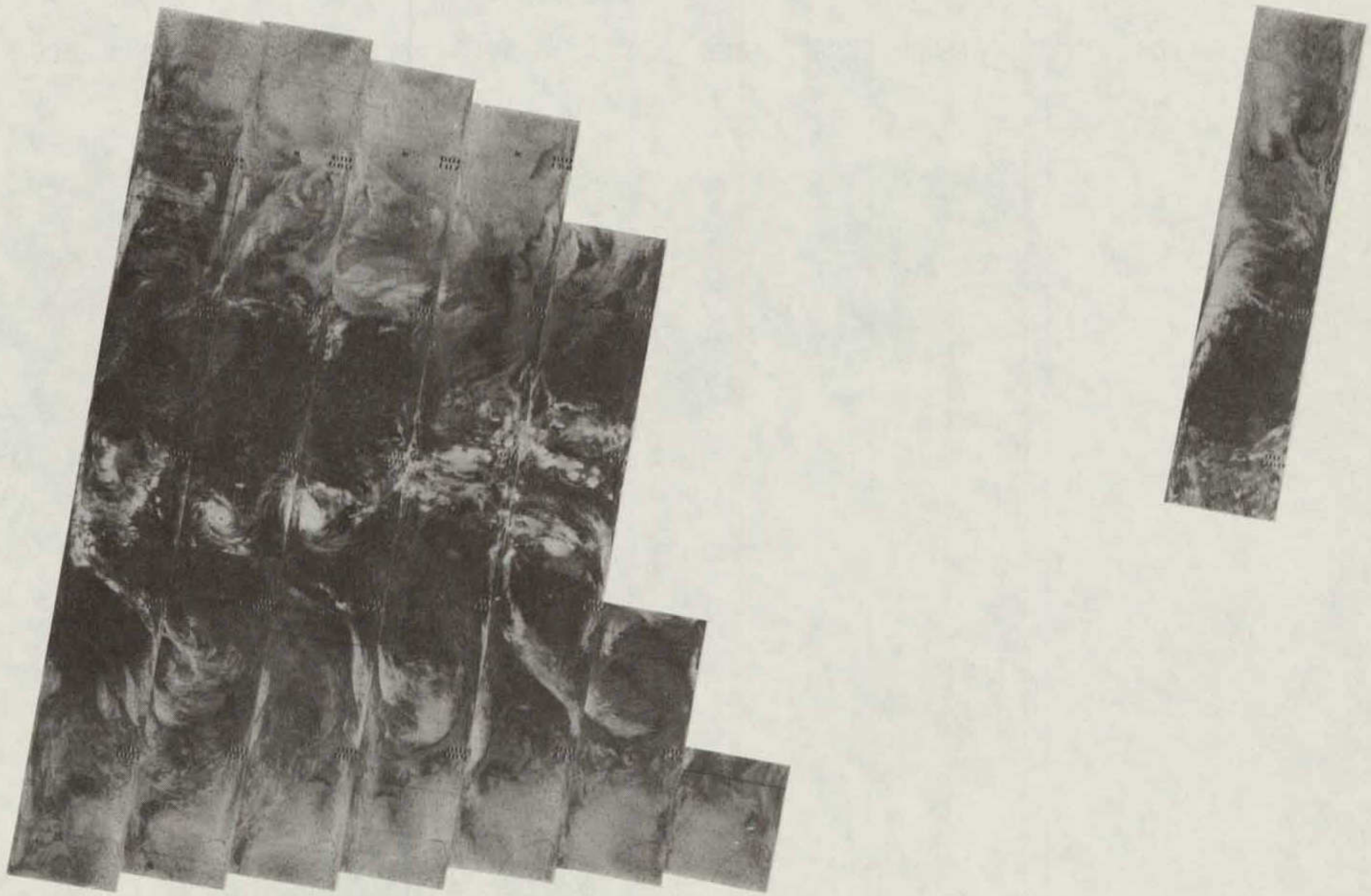


8315 8314 8313 8312 8311 8310 8309 8308 8307 8306 8305 8304 8303

21 FEB 77

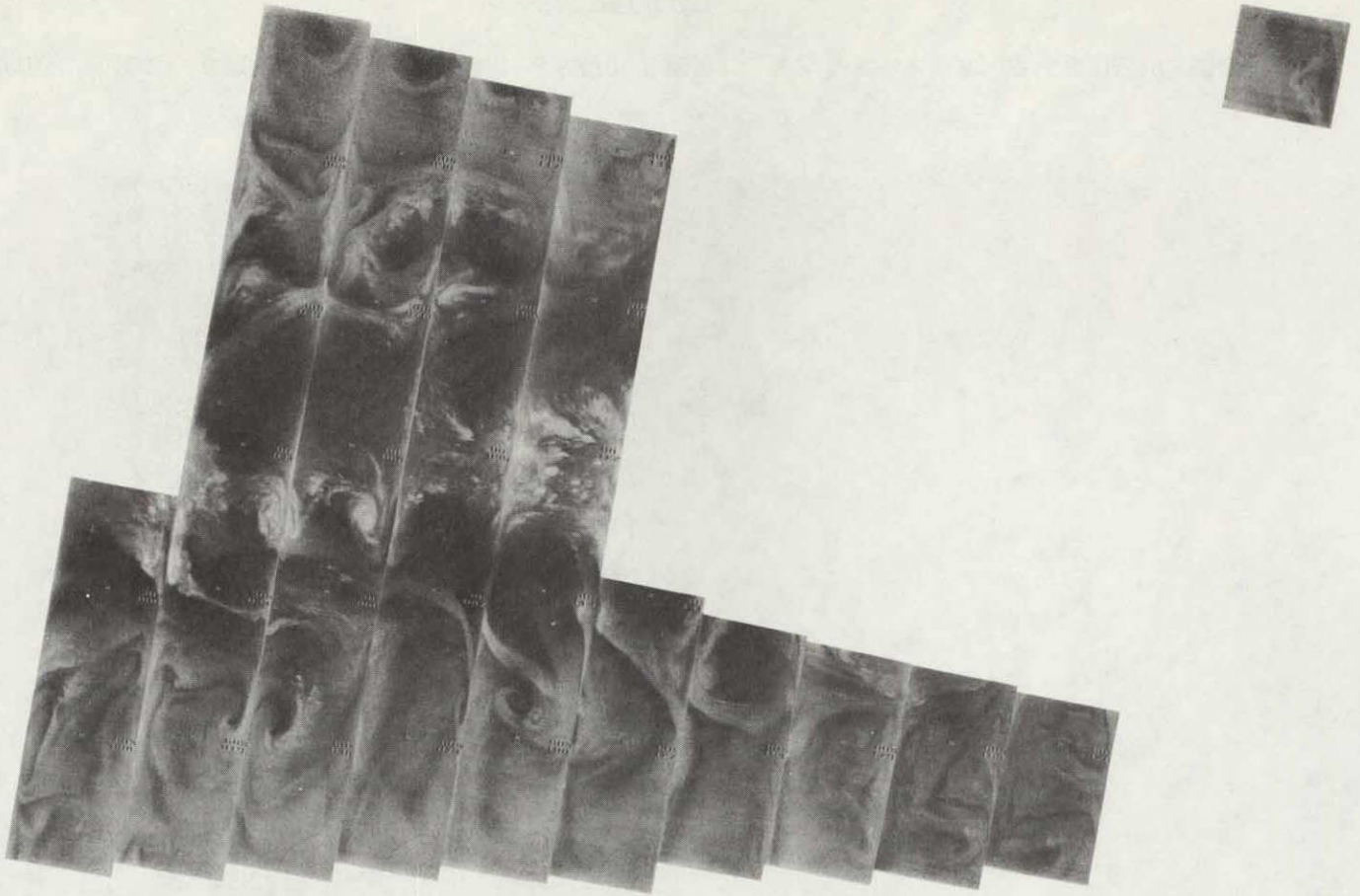
6.7μm



8315 8314 8313 8312 8311 8310 8309 8308 8307 8306 8305 8304 8303

21 FEB 77

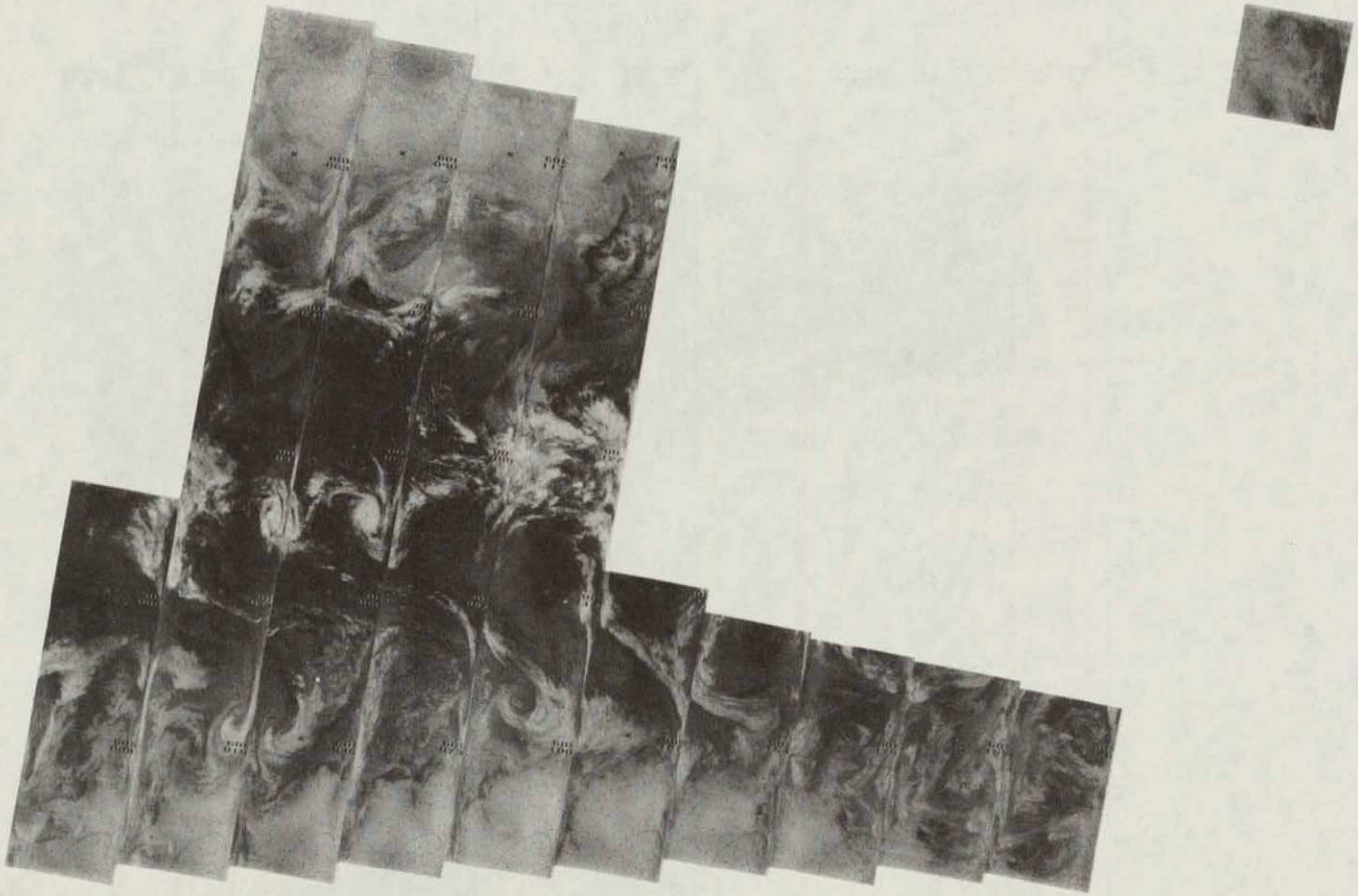
11.5μm



8329 8328 8327 8326 8325 8324 8323 8322 8321 8320 8319 8318 8317 8316

22 FEB 77

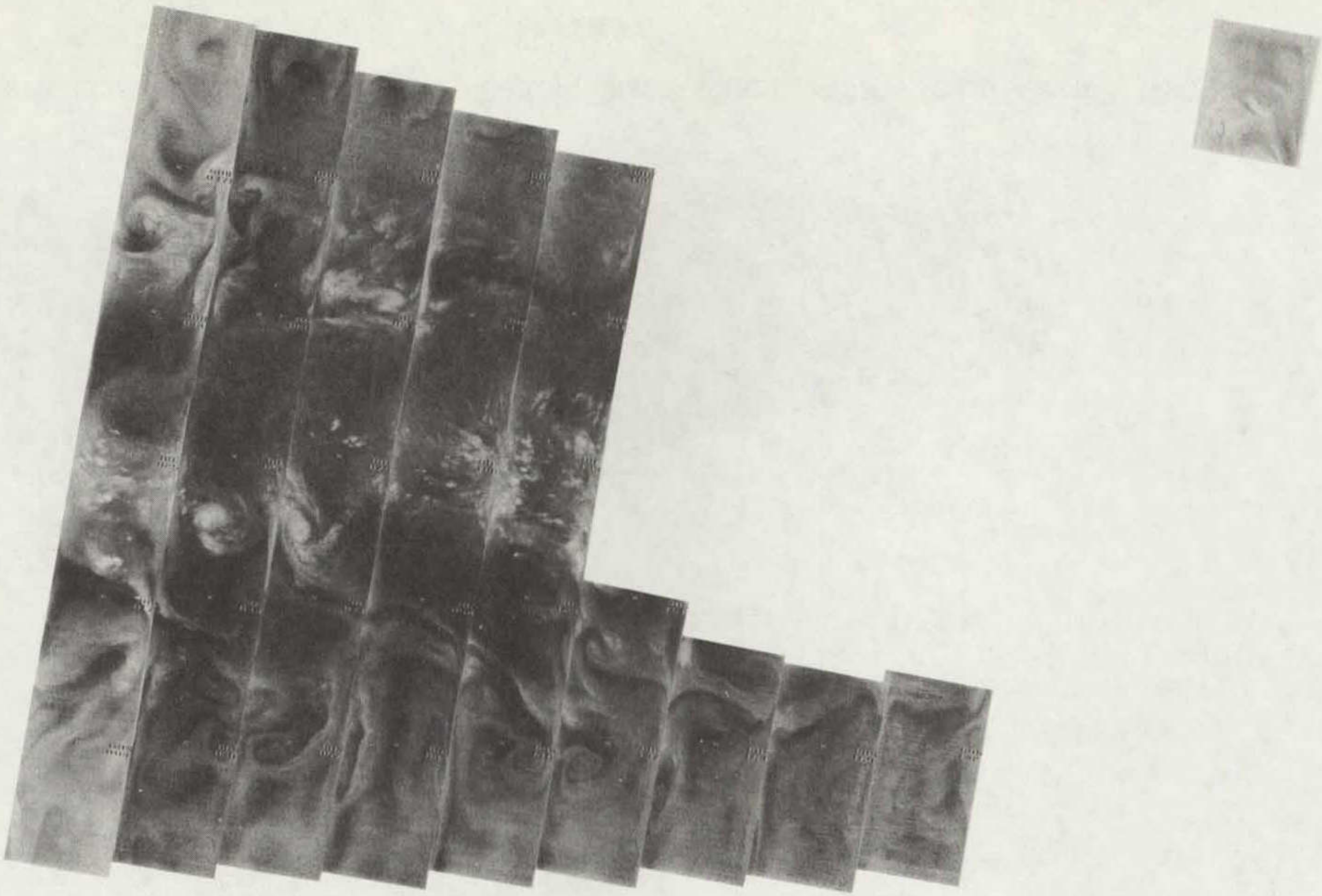
6.7μm



8329 8328 8327 8326 8325 8324 8323 8322 8321 8320 8319 8318 8317 8316

22 FEB 77

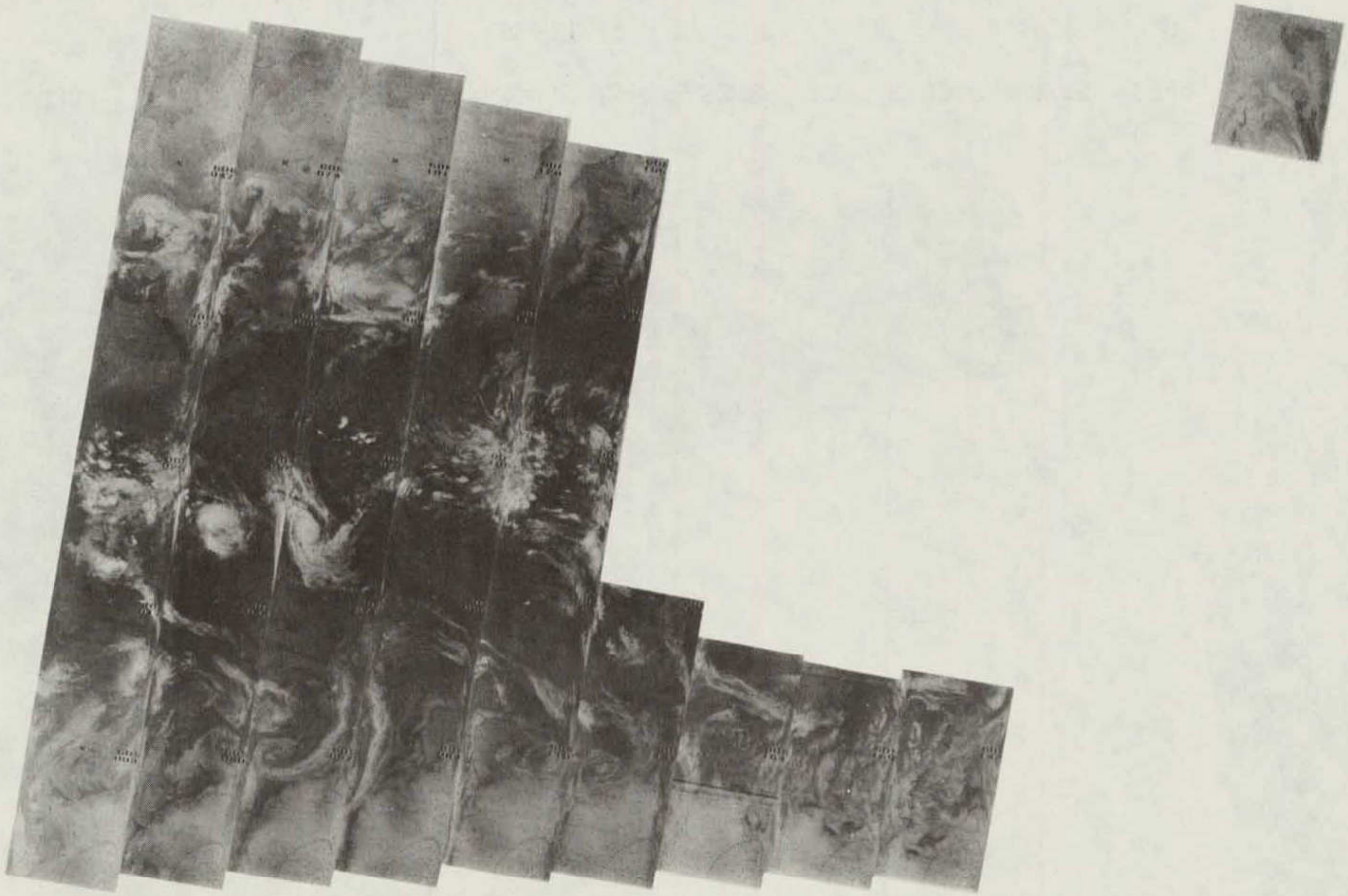
11.5μm



8342 8341 8340 8339 8338 8337 8336 8335 8334 8333 8332 8331 8330

23 FEB 77

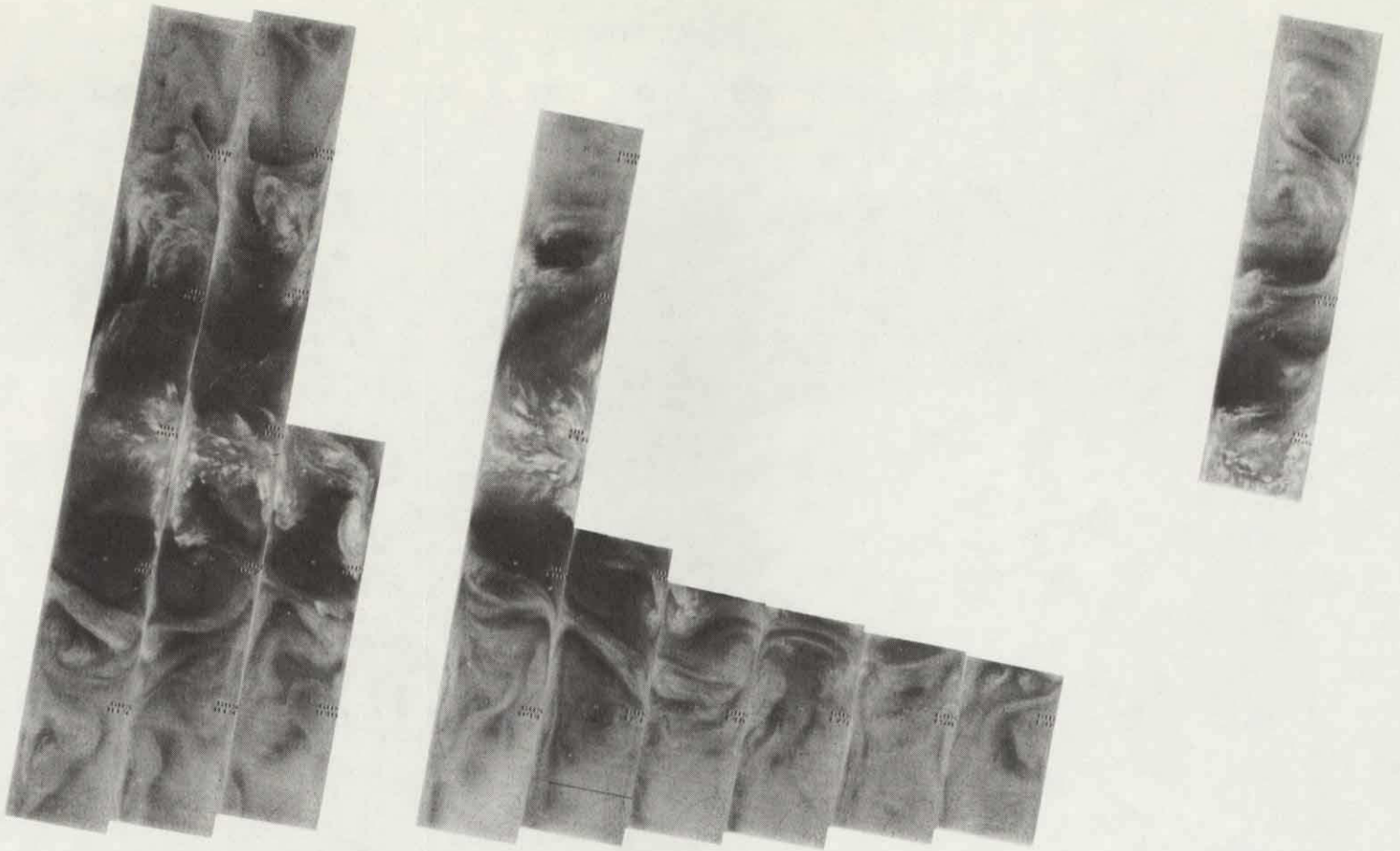
$6.7 \mu m$



8342 8341 8340 8339 8338 8337 8336 8335 8334 8333 8332 8331 8330

23 FEB 77

11.5μm



8356 8355 8354 8353 8352 8351 8350 8349 8348 8347 8346 8345 8344 8343

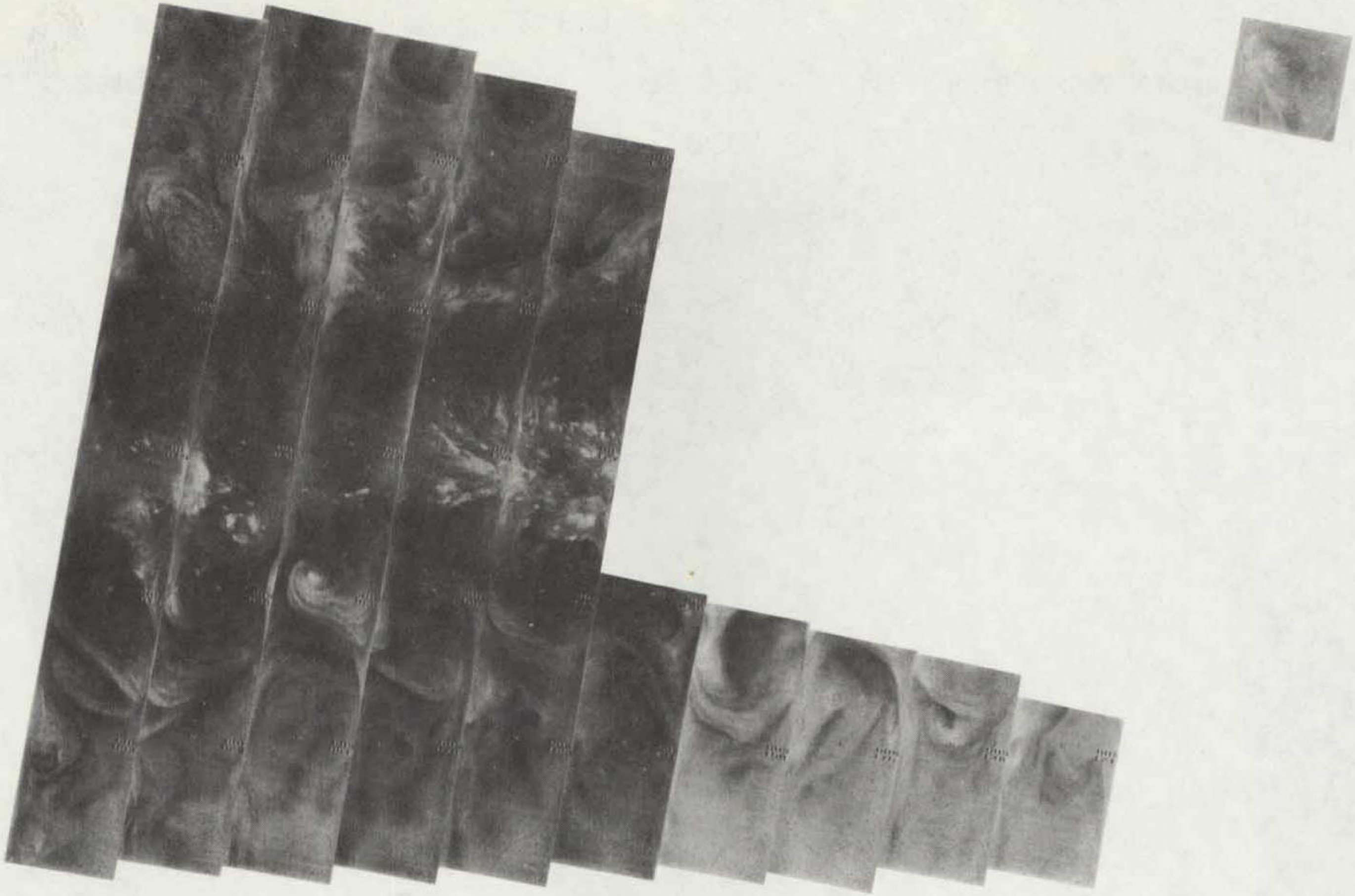
24 FEB 77

6.7μm

8356 8355 8354 8353 8352 8351 8350 8349 8348 8347 8346 8345 8344 8343

24 FEB 77

11.5μm



8369 8368 8367 8366 8365 8364 8363 8362 8361 8360 8359 8358 8357

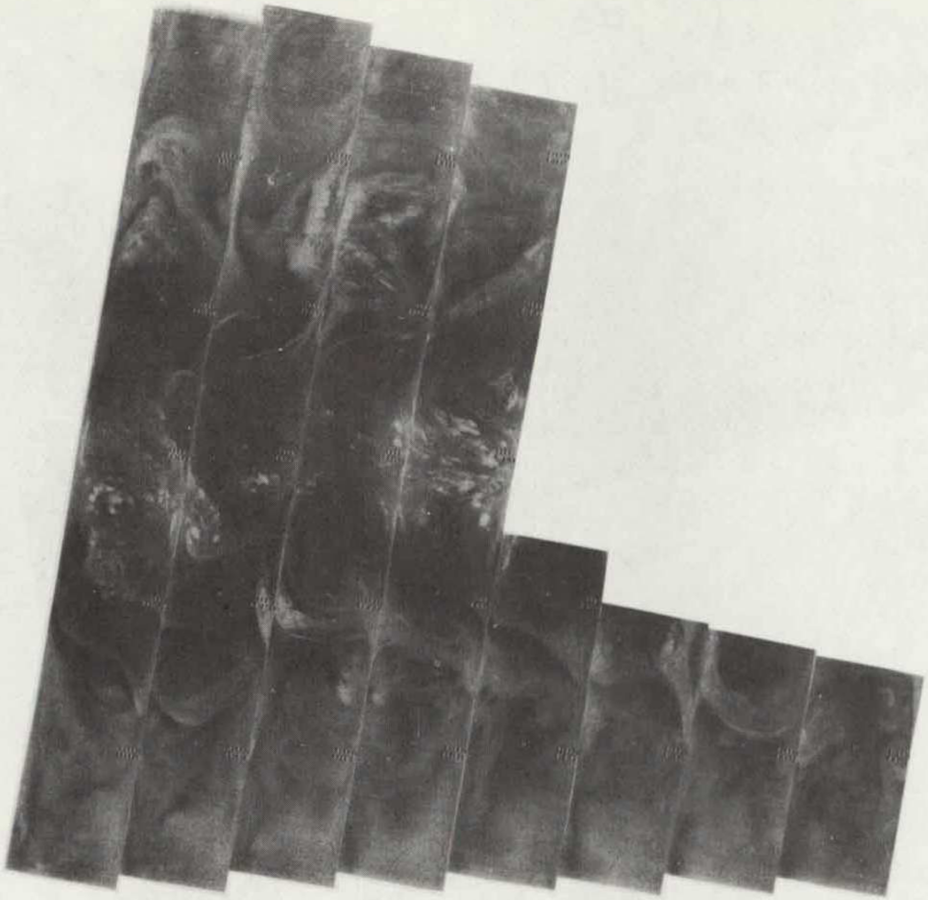
25 FEB 77

6.7μm

8369 8368 8367 8366 8365 8364 8363 8362 8361 8360 8359 8358 8357

25 FEB 77

11.5μm



8382 8381 8380 8379 8378 8377 8376 8375 8374 8373 8372 8371 8370

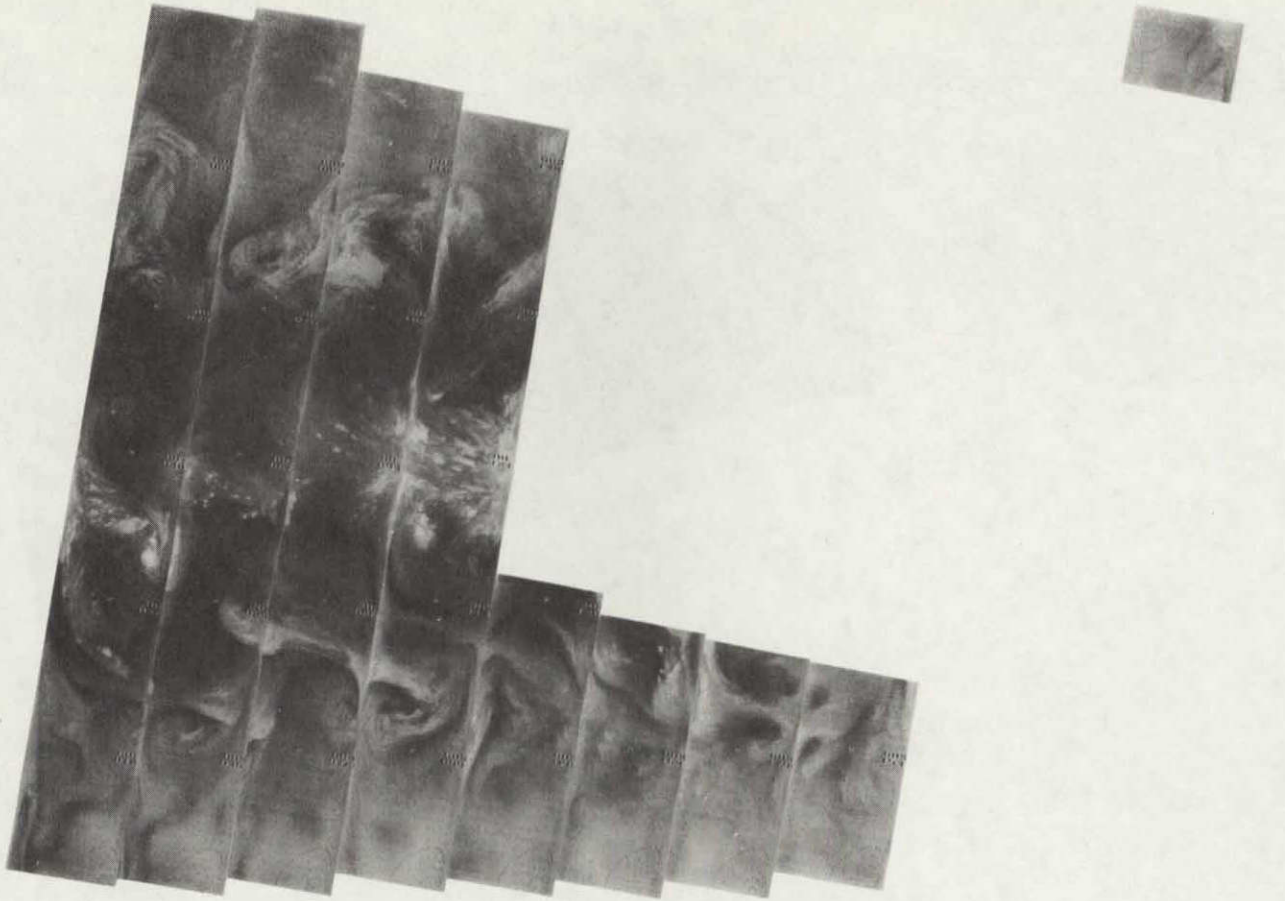
26 FEB 77

6.7μm

8382 8381 8380 8379 8378 8377 8376 8375 8374 8373 8372 8371 8370

26 FEB 77

11.5μm



8396 8395 8394 8393 8392 8391 8390 8389 8388 8387 8386 8385 8384 8383

27 FEB 77

6.7μm

8396 8395 8394 8393 8392 8391 8390 8389 8388 8387 8386 8385 8384 8383

27 FEB 77

11.5μm

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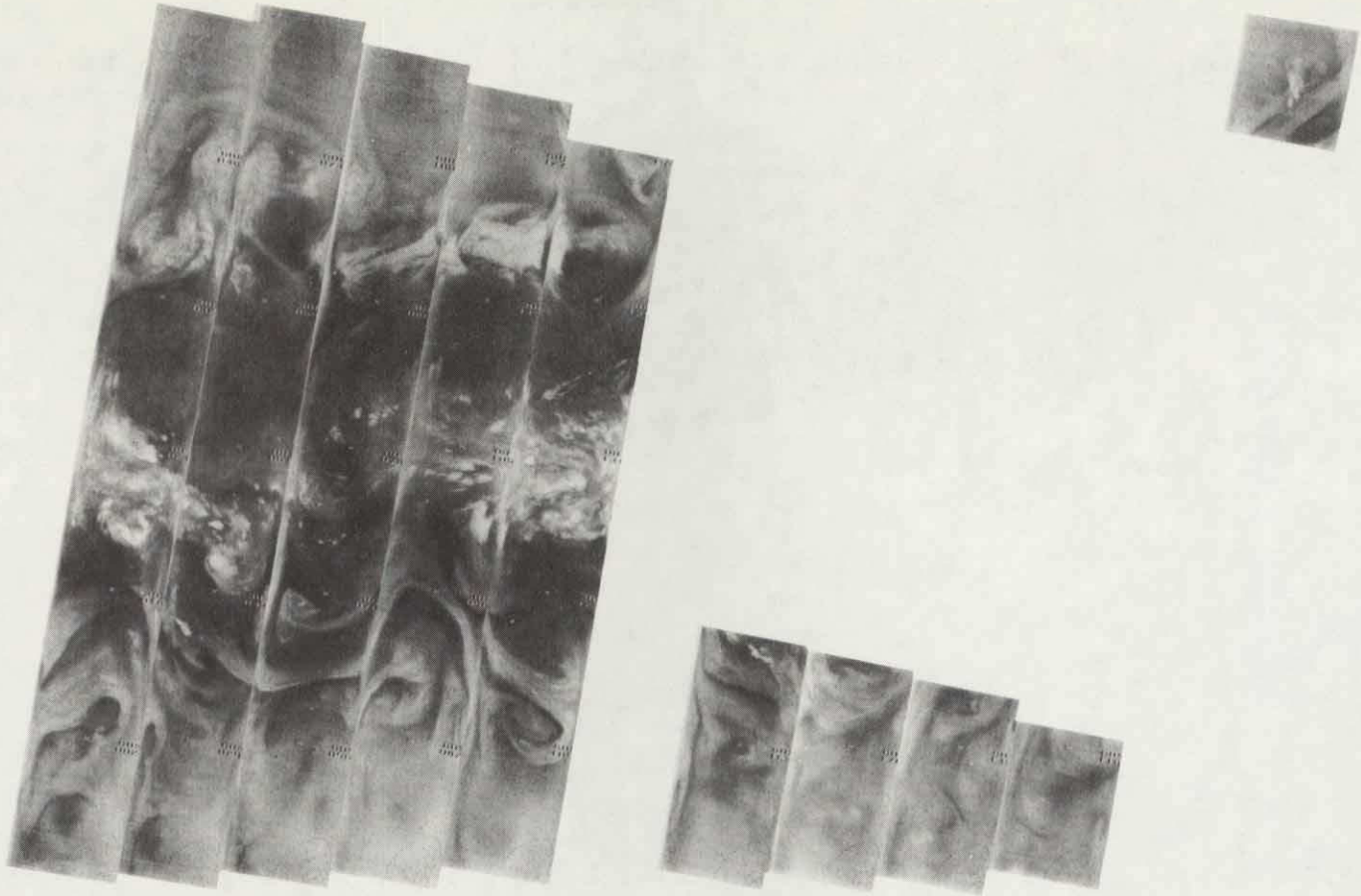
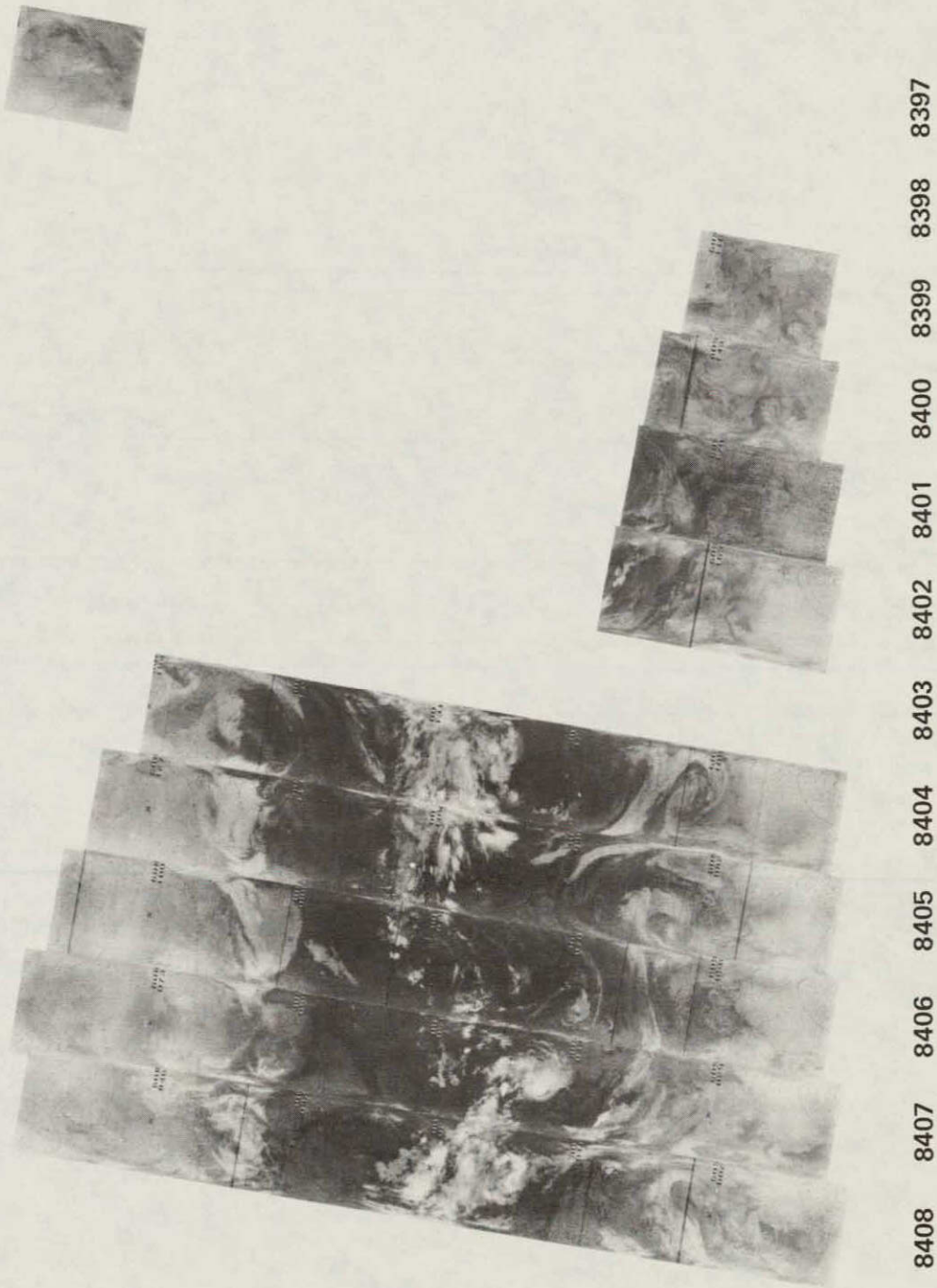


8409 8408 8407 8406 8405 8404 8403 8402 8401 8400 8399 8398 8397

28 FEB 77

6.7μm



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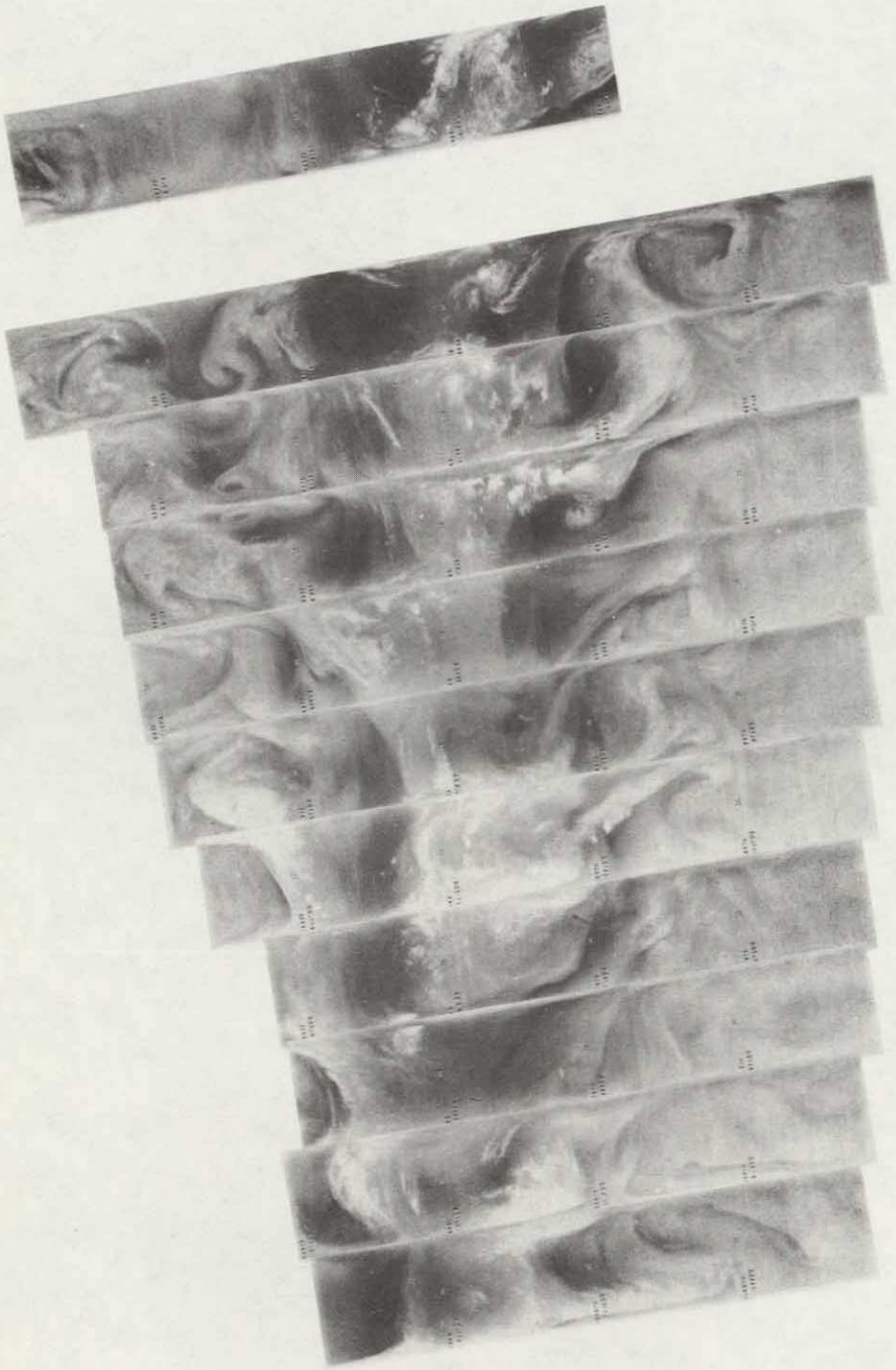
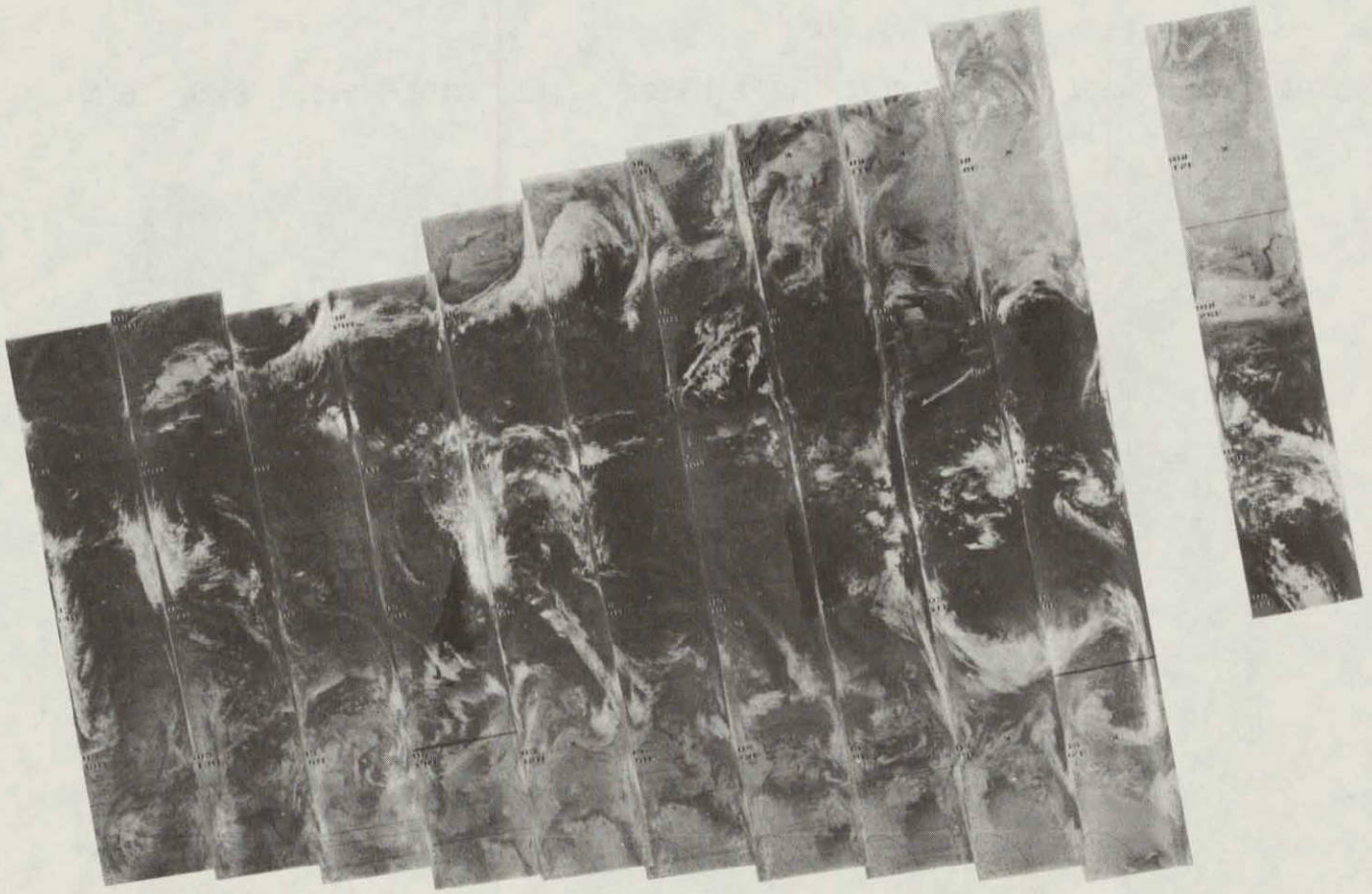
SECTION 4.2

TEMPERATURE HUMIDITY INFRARED RADIOMETER

DAYTIME MONTAGES

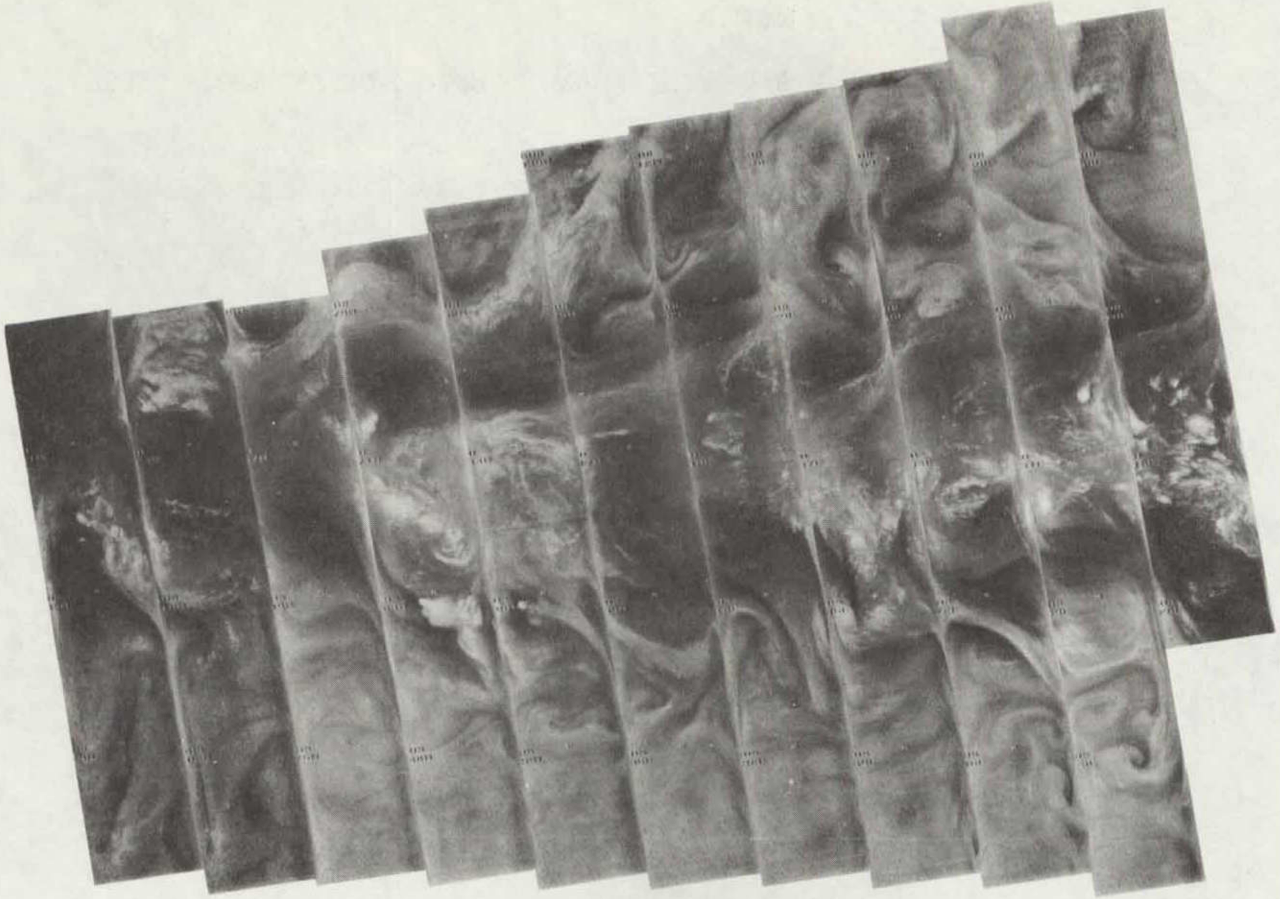




7632 7631 7630 7629 7628 7627 7626 7625 7624 7623 7622 7621 7620

1 JAN 77

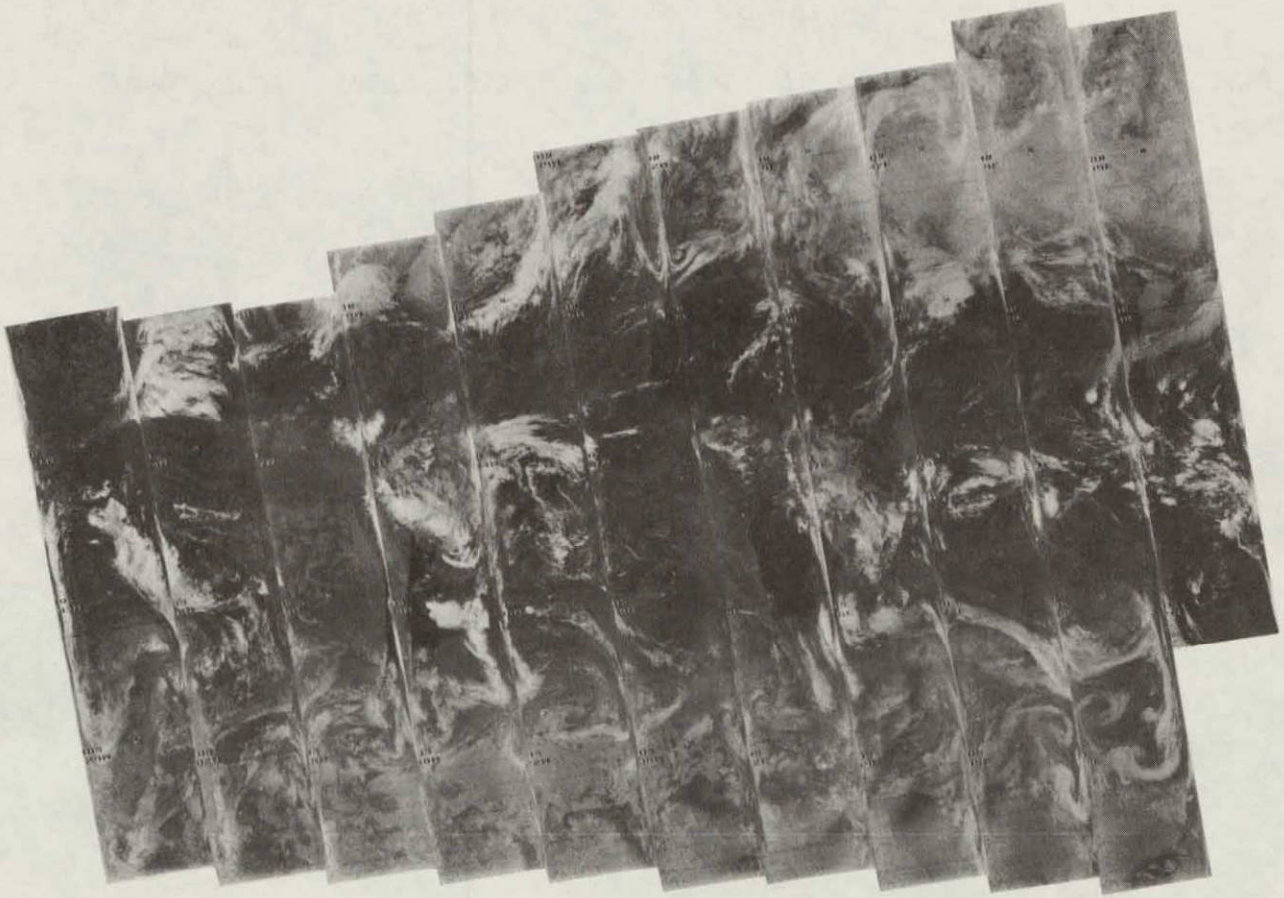
11.5μm



7646 7645 7644 7643 7642 7641 7640 7639 7638 7637 7636 7635 7634 7633

2 JAN 77

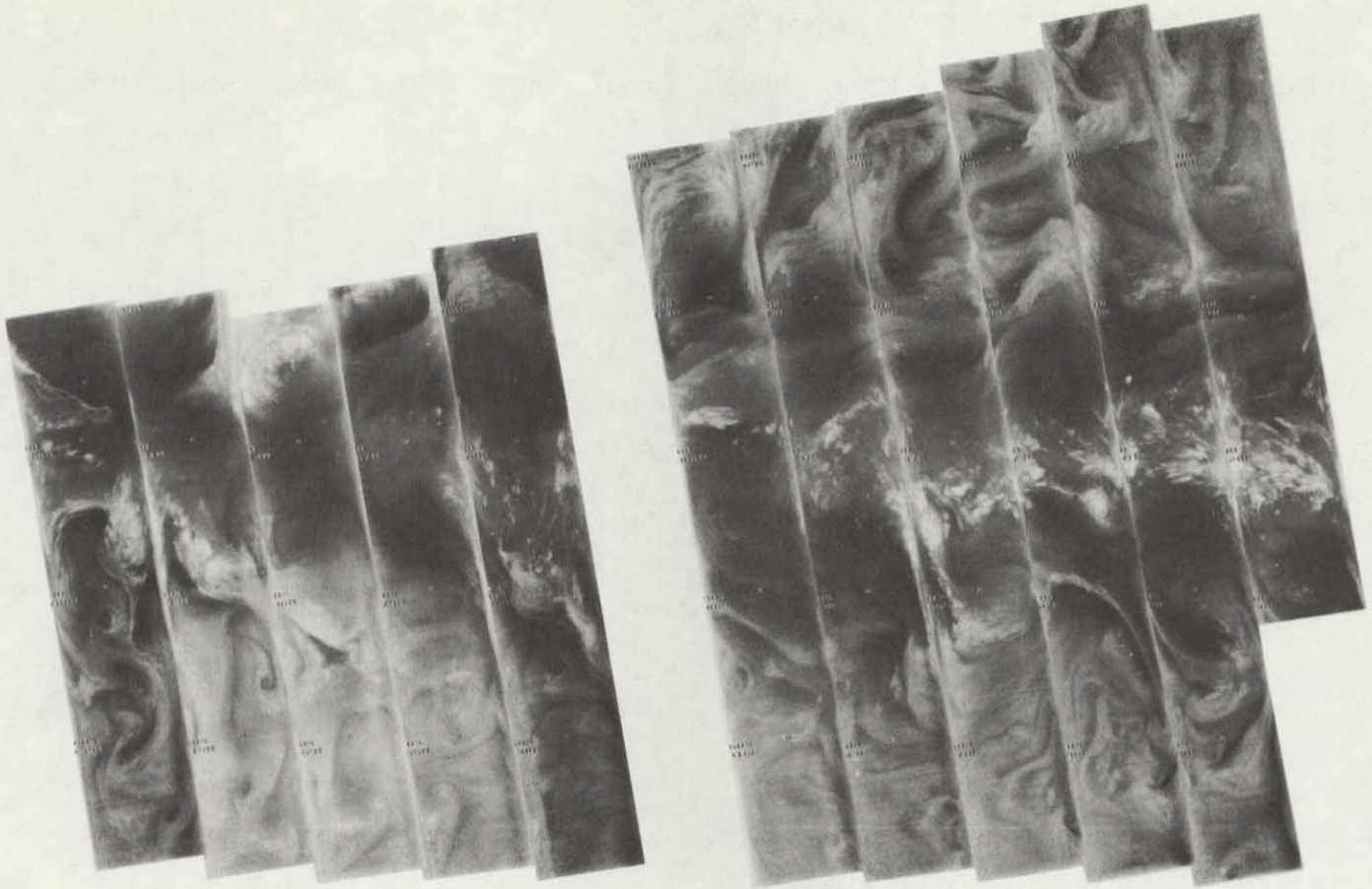
6.7μm



7646 7645 7644 7643 7642 7641 7640 7639 7638 7637 7636 7635 7634 7633

2 JAN 77

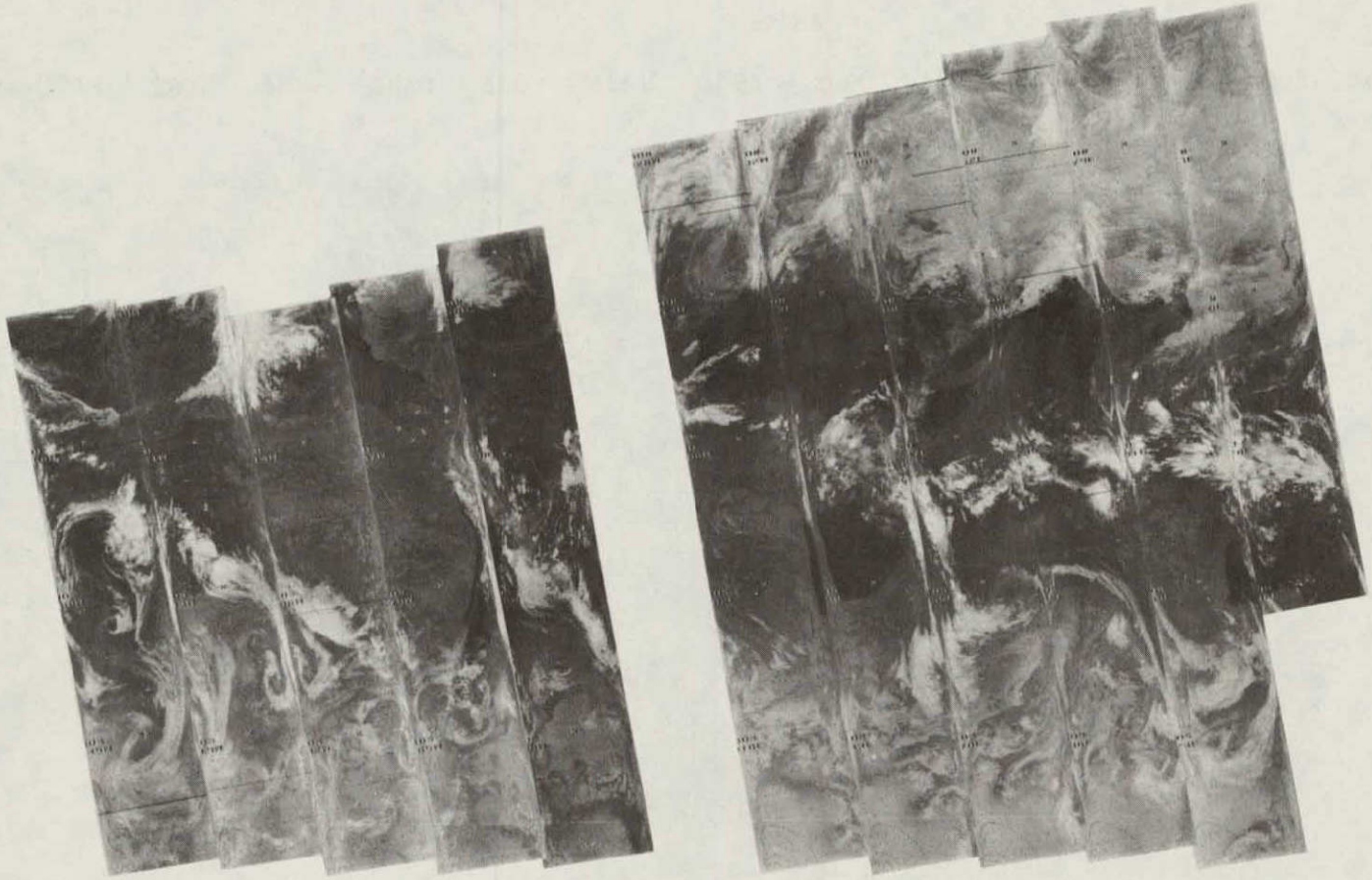
11.5μm



7659 7658 7657 7656 7655 7654 7653 7652 7651 7650 7649 7648 7647

3 JAN 77

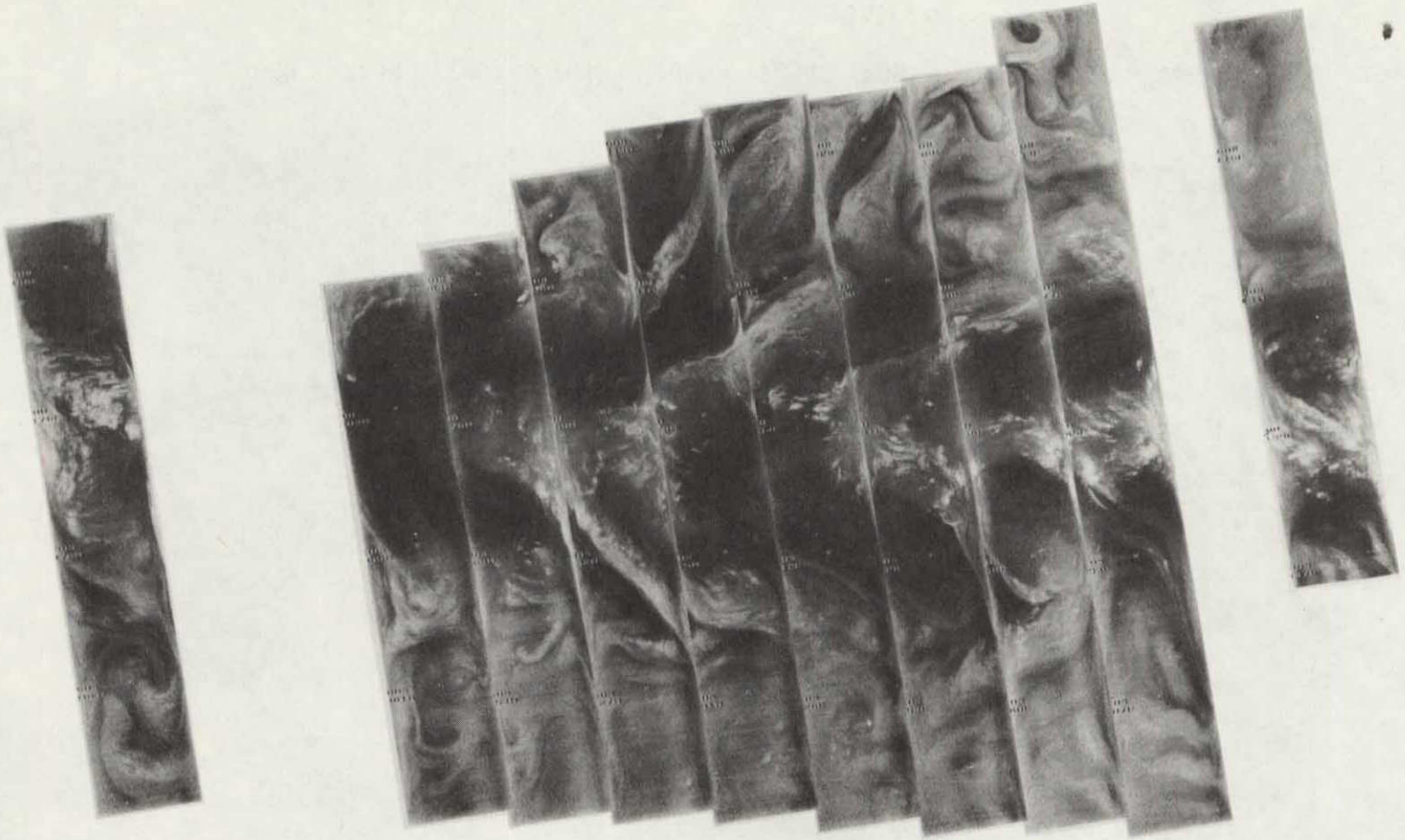
6.7μm



7659 7658 7657 7656 7655 7654 7653 7652 7651 7650 7649 7648 7647

3 JAN 77

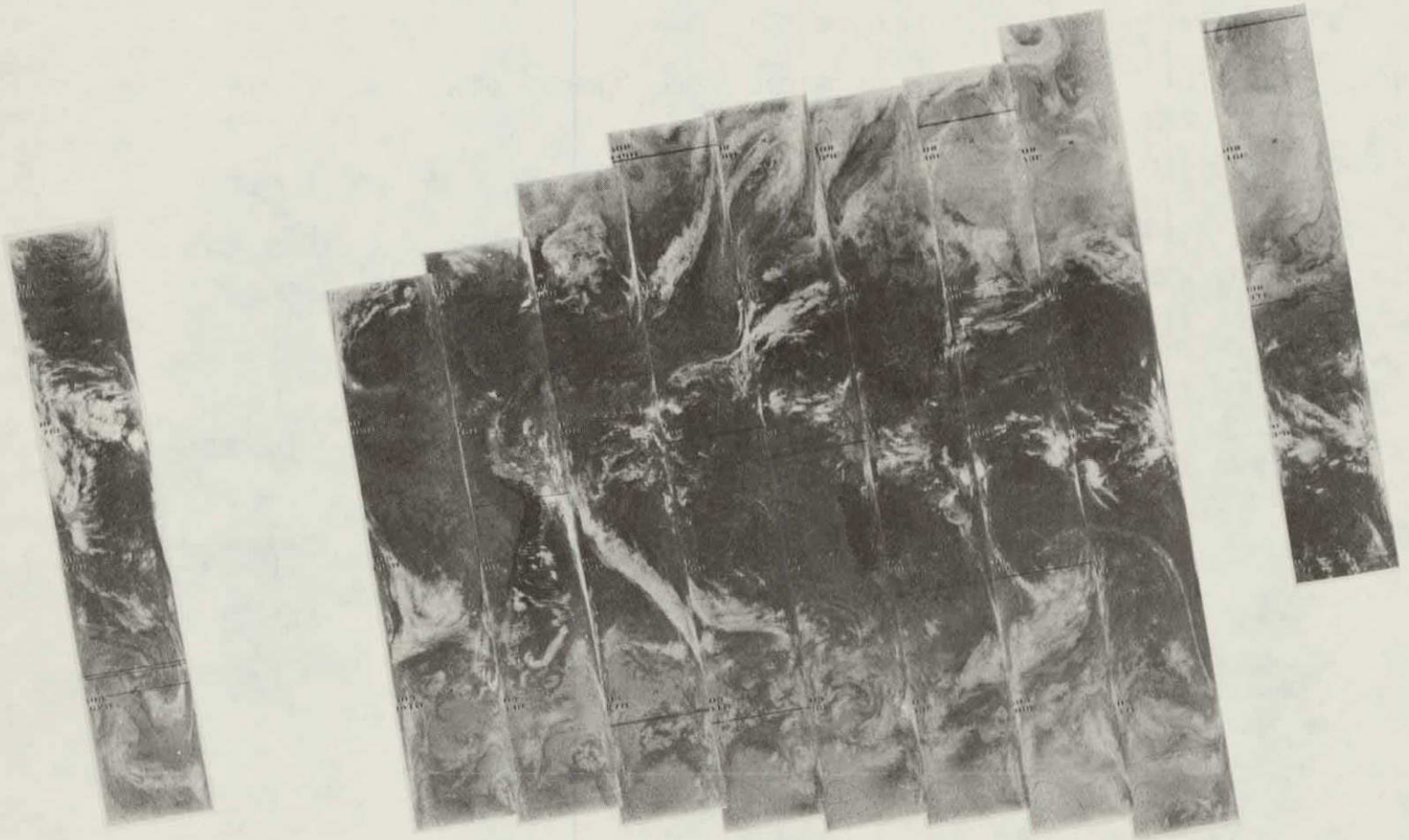
11.5μm



7673 7672 7671 7670 7669 7668 7667 7666 7665 7664 7663 7662 7661 7660

4 JAN 77

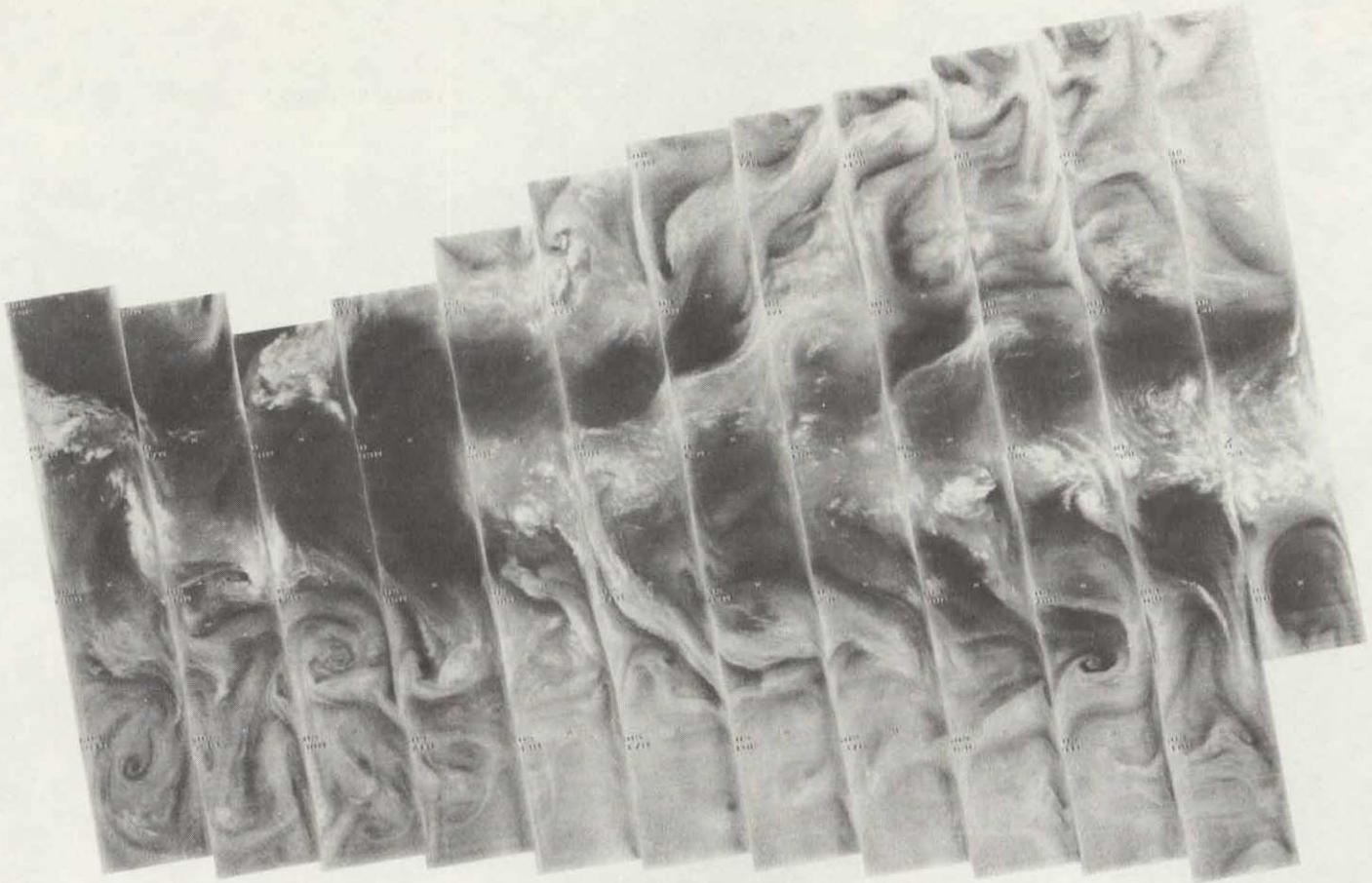
6.7μm



7673 7672 7671 7670 7669 7668 7667 7666 7665 7664 7663 7662 7661 7660

4 JAN 77

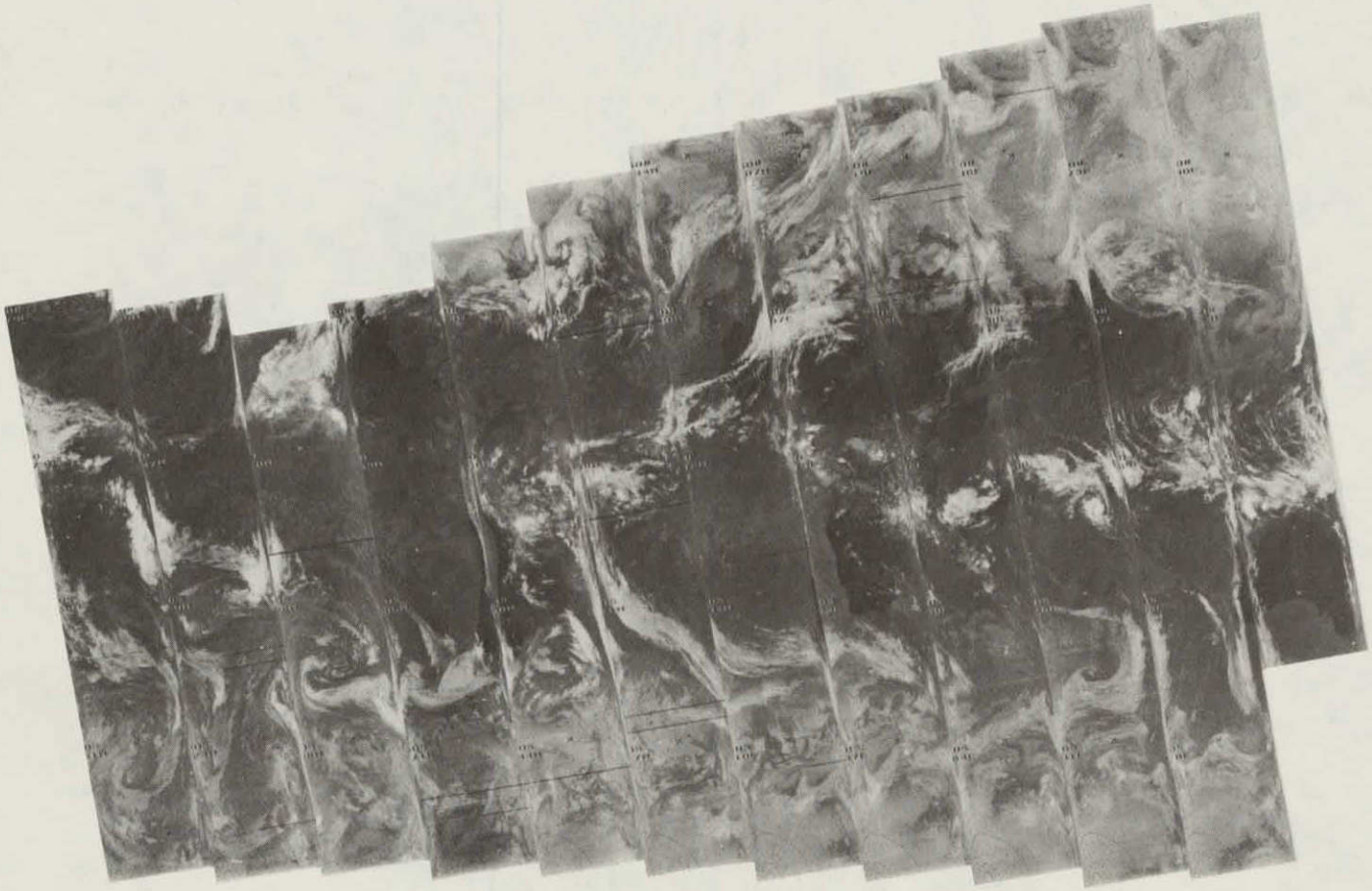
11.5μm



7686 7685 7684 7683 7682 7681 7680 7679 7678 7677 7676 7675 7674

5 JAN 77

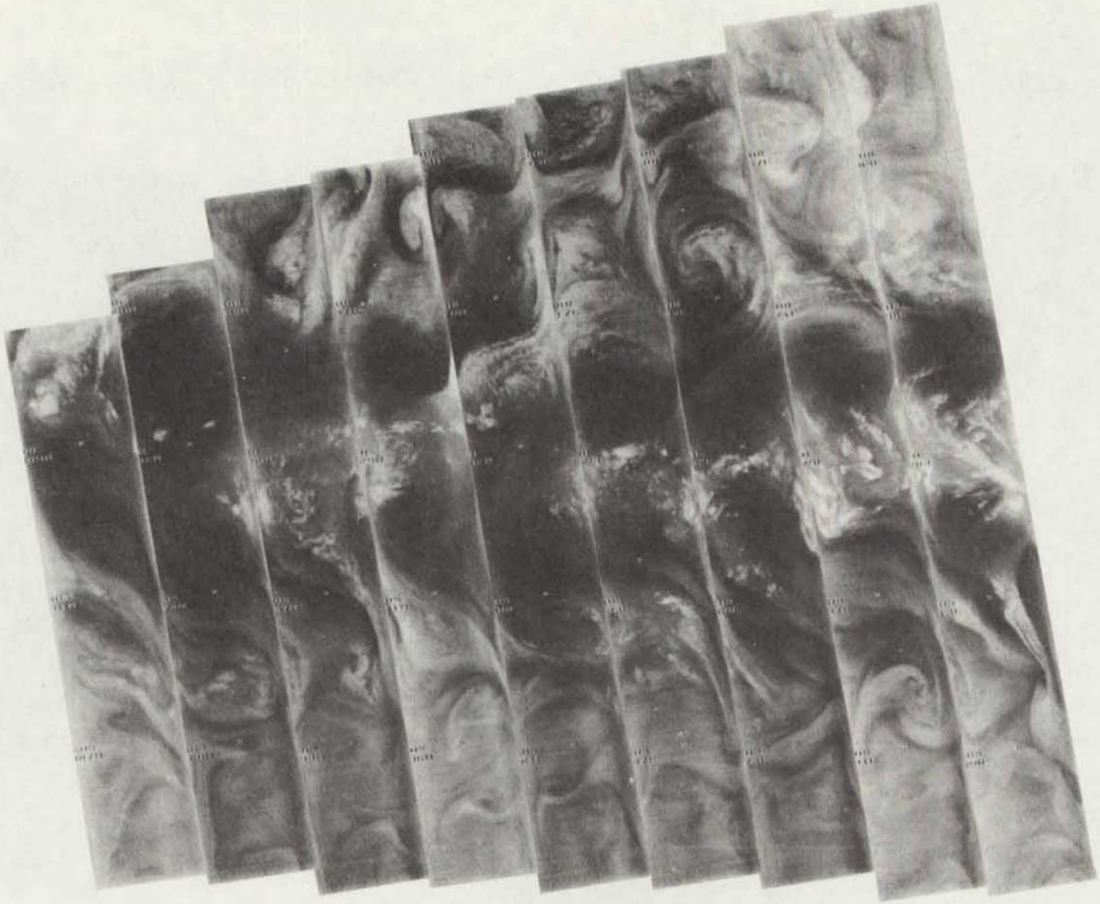
6.7μm



7686 7685 7684 7683 7682 7681 7680 7679 7678 7677 7676 7675 7674

5 JAN 77

11.5μm



7699 7698 7697 7696 7695 7694 7693 7692 7691 7690 7689 7688 7687

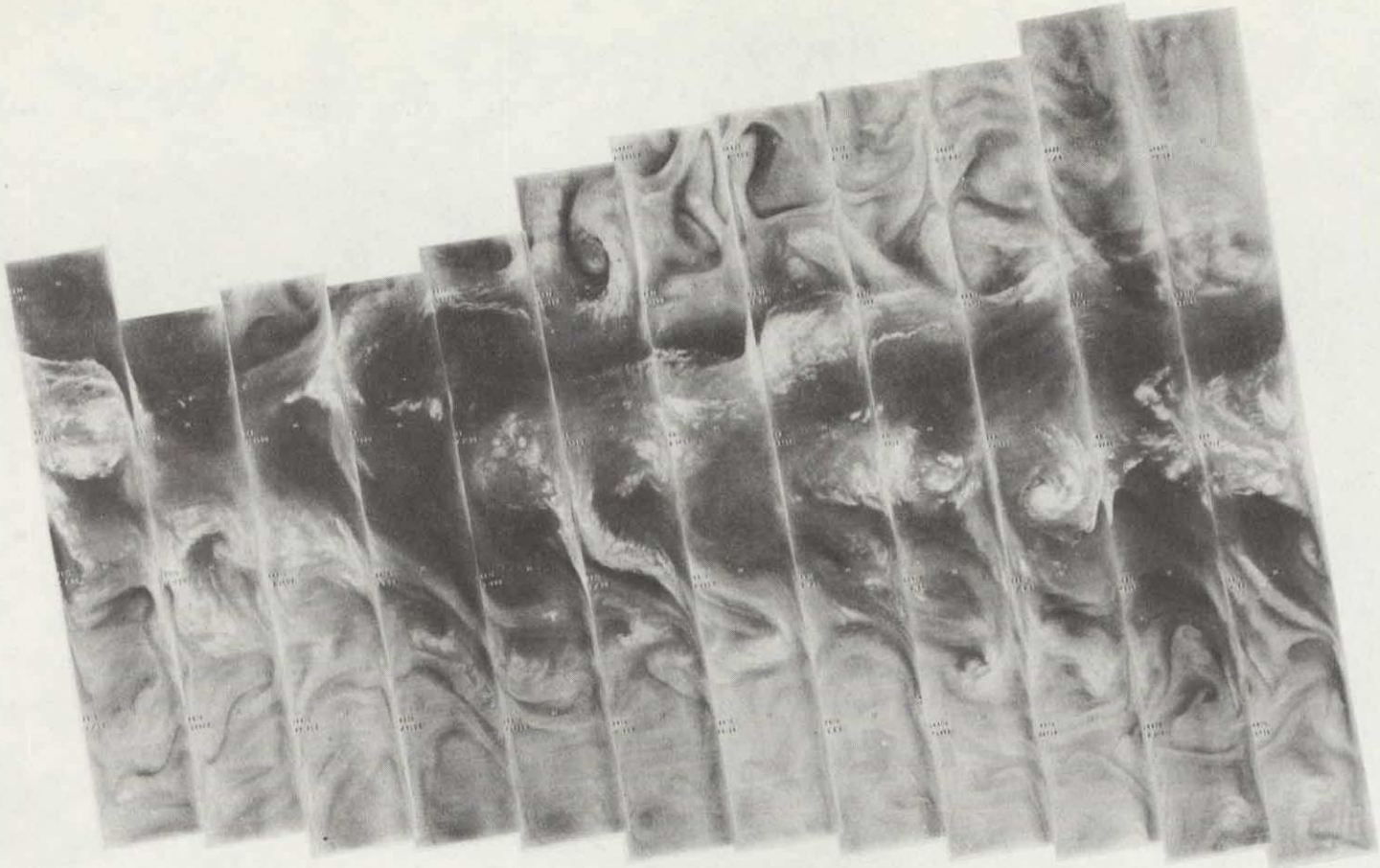
6 JAN 77

6.7μm

7699 7698 7697 7696 7695 7694 7693 7692 7691 7690 7689 7688 7687

6 JAN 77

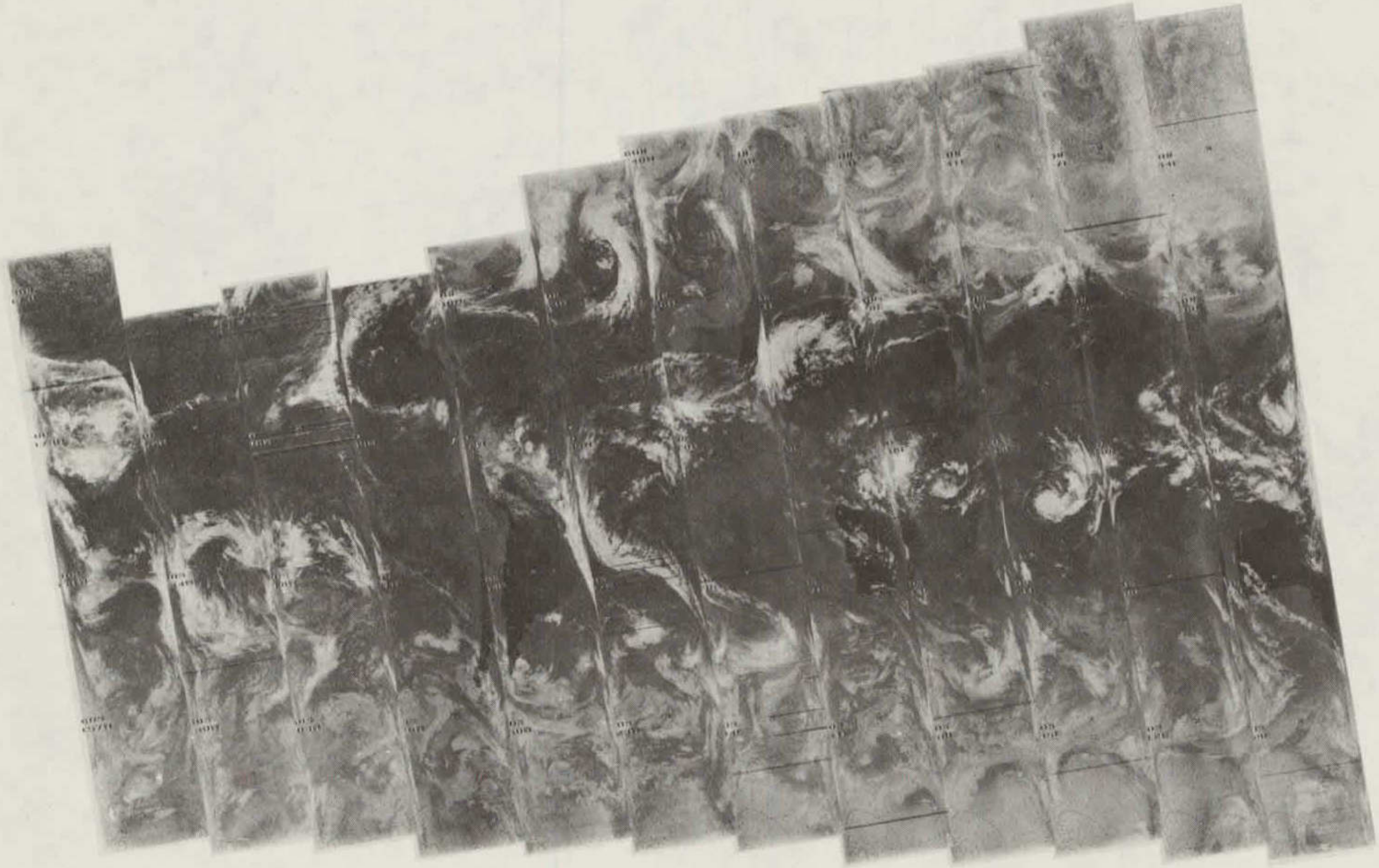
11.5μm



7713 7712 7711 7710 7709 7708 7707 7706 7705 7704 7703 7702 7701 7700

7 JAN 77

6.7μm



7713 7712 7711 7710 7709 7708 7707 7706 7705 7704 7703 7702 7701 7700

7 JAN 77

11.5μm

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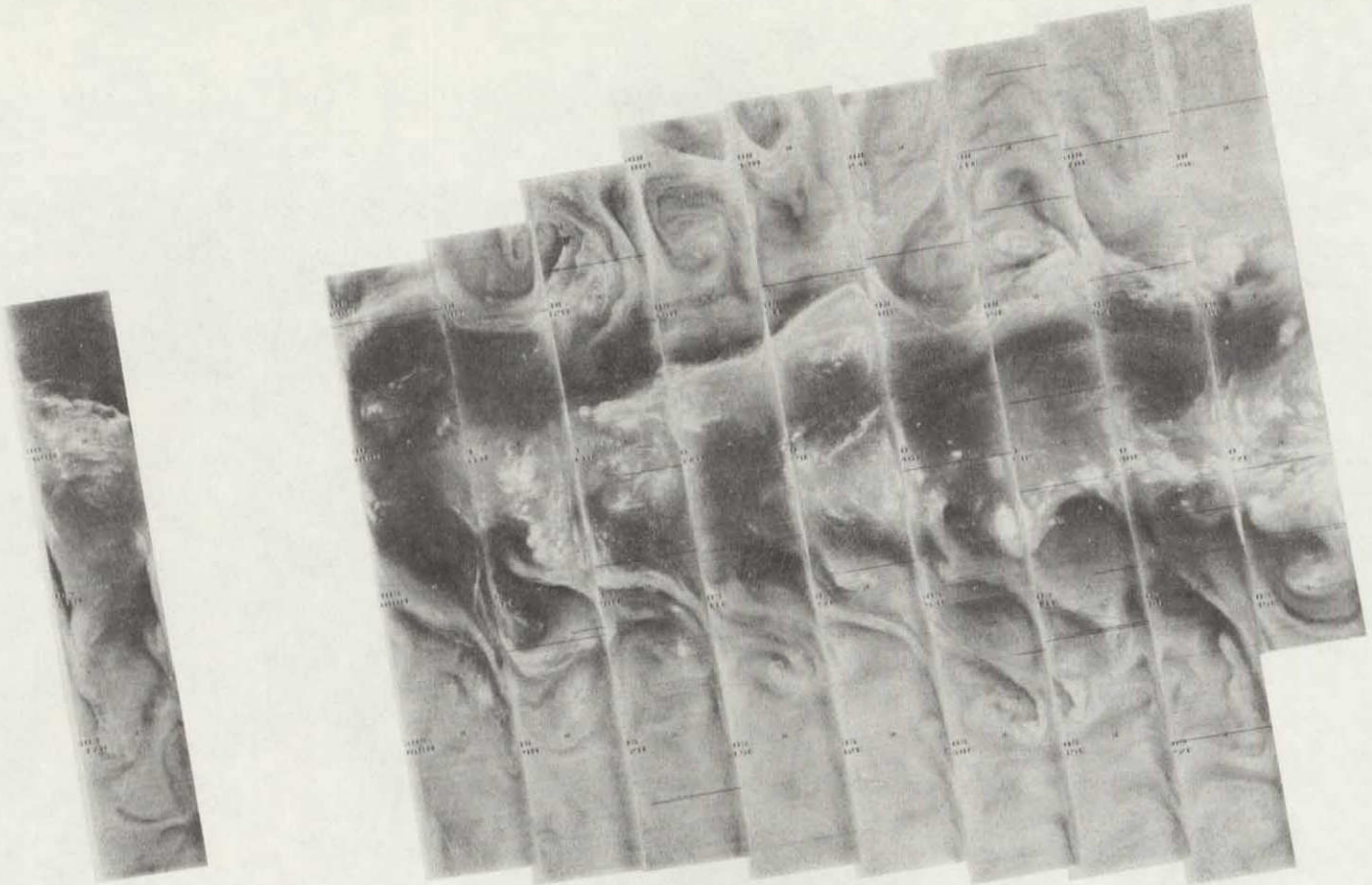
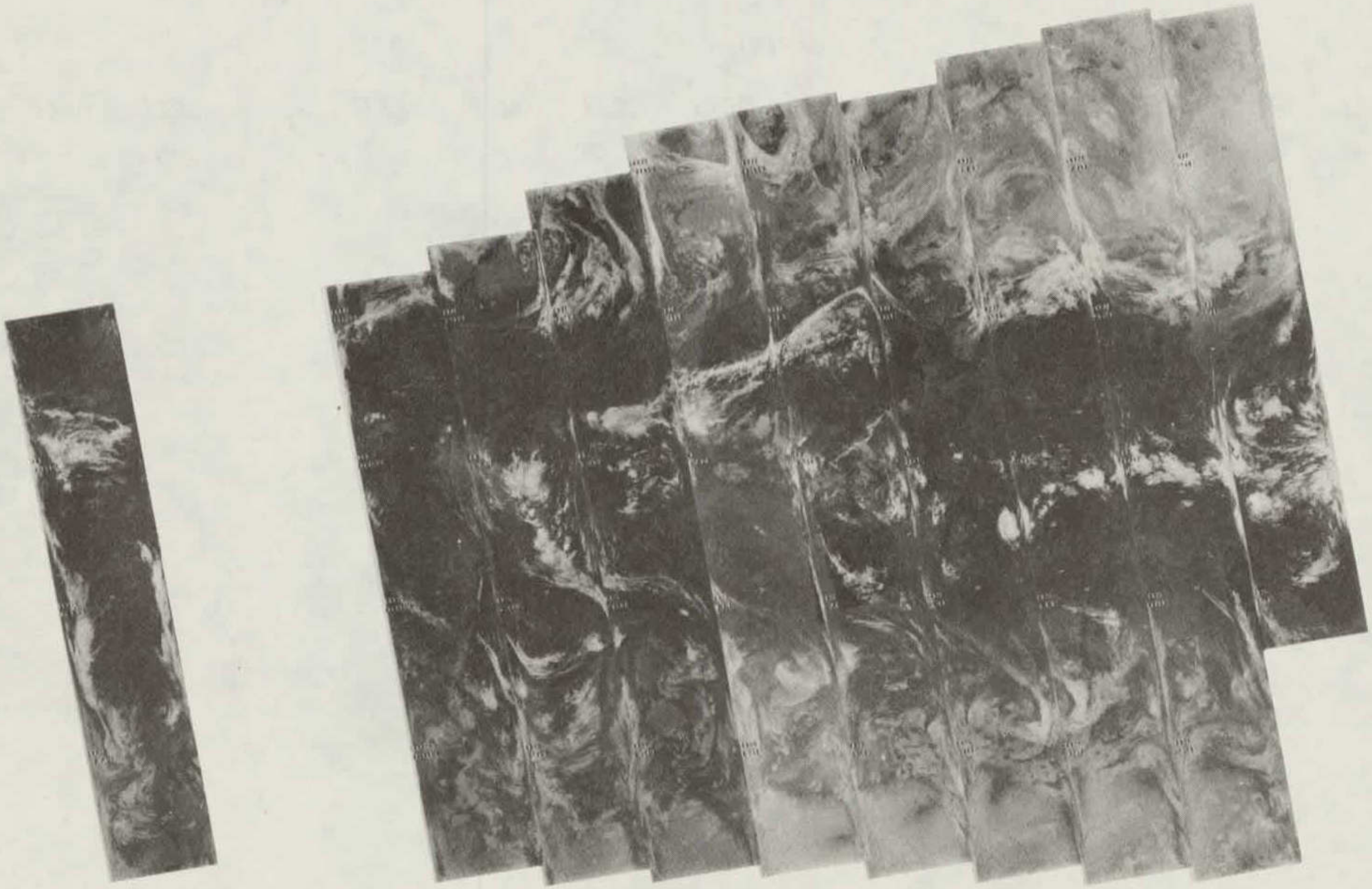


7726 7725 7724 7723 7722 7721 7720 7719 7718 7717 7716 7715 7714

8 JAN 77

6.7μm



7726 7725 7724 7723 7722 7721 7720 7719 7718 7717 7716 7715 7714

8 JAN 77

11.5μm

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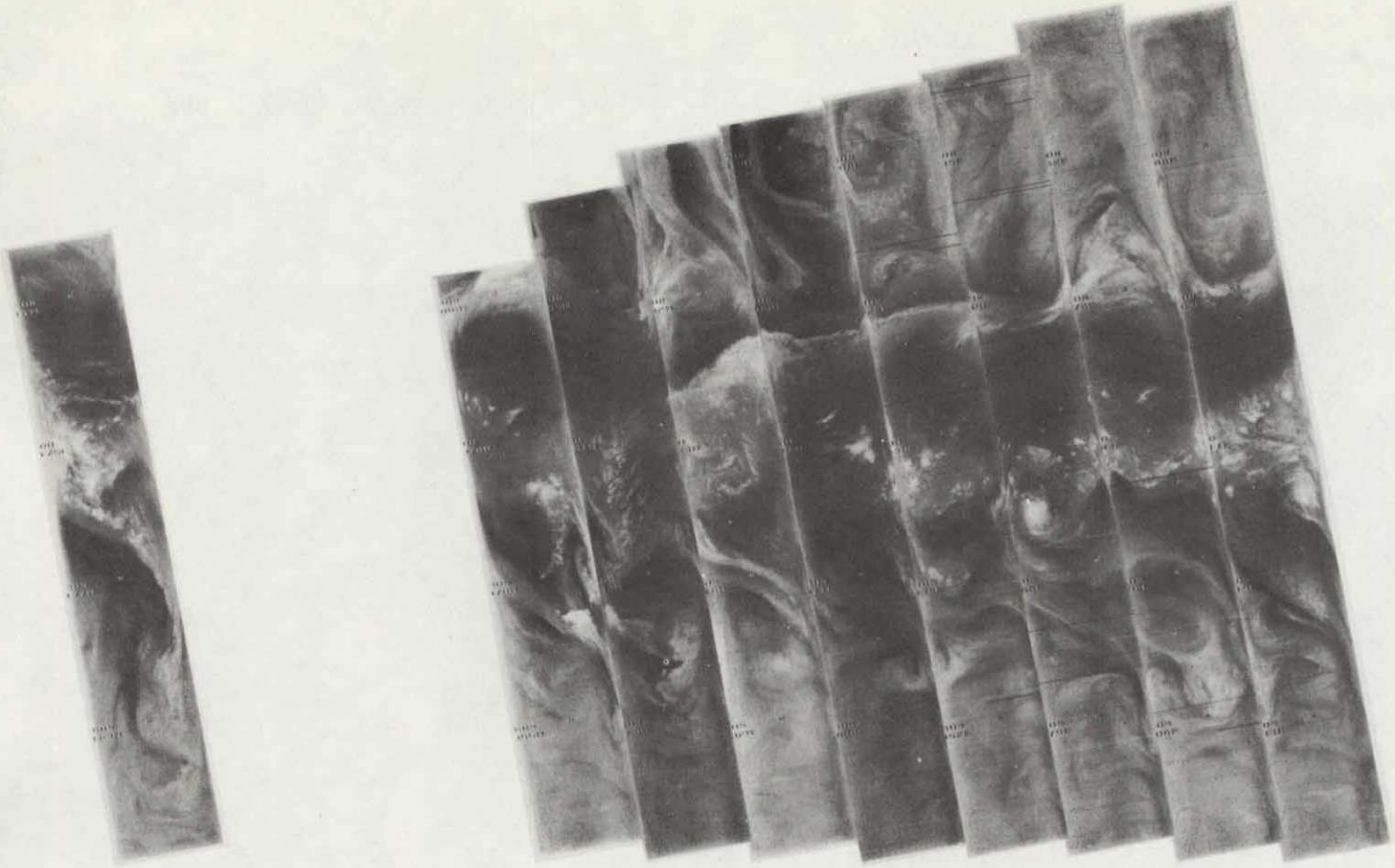


7740 7739 7738 7737 7736 7735 7734 7733 7732 7731 7730 7729 7728 7727

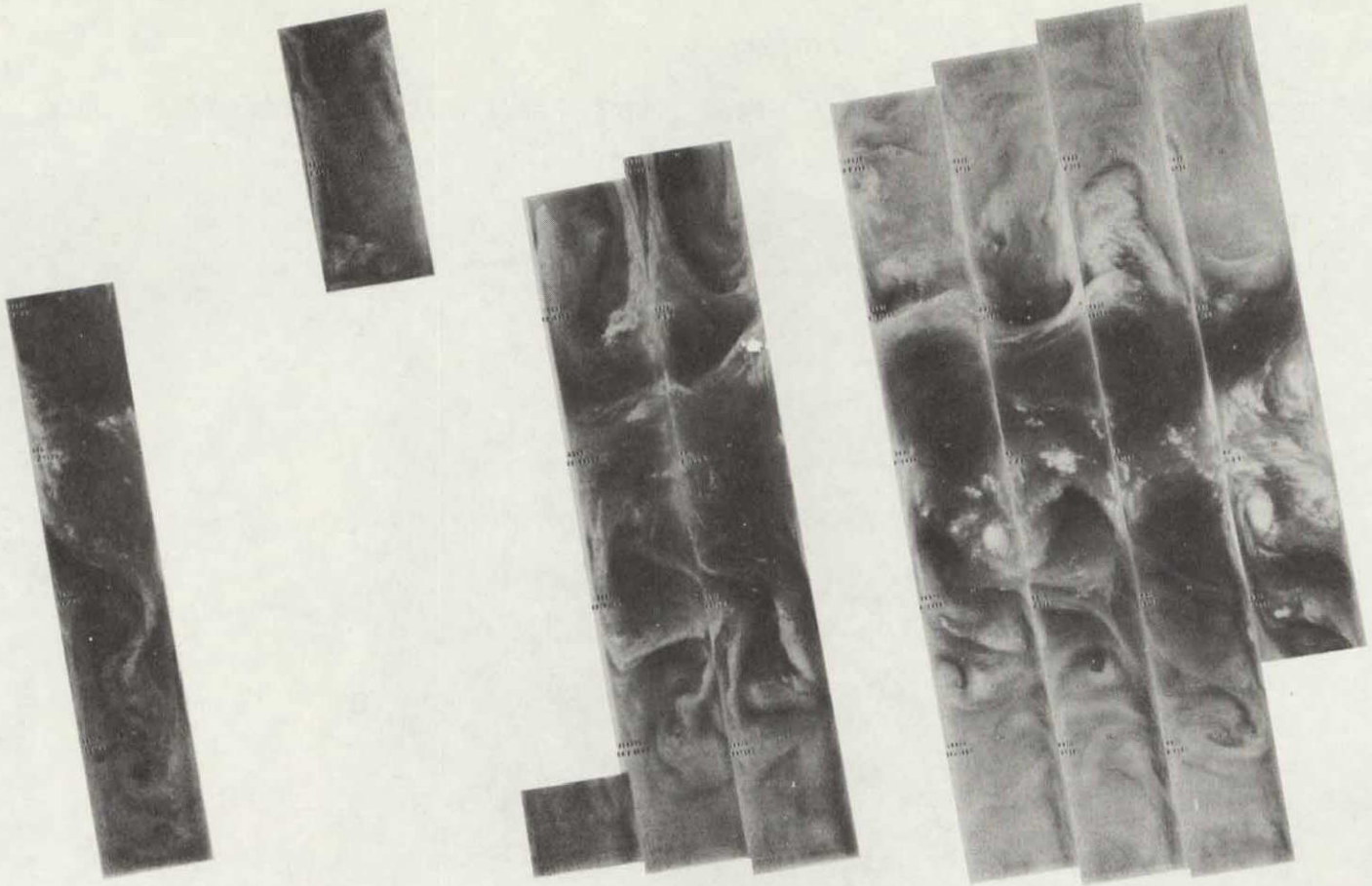
9 JAN 77

6.7μm

7740 7739 7738 7737 7736 7735 7734 7733 7732 7731 7730 7729 7728 7727

9 JAN 77

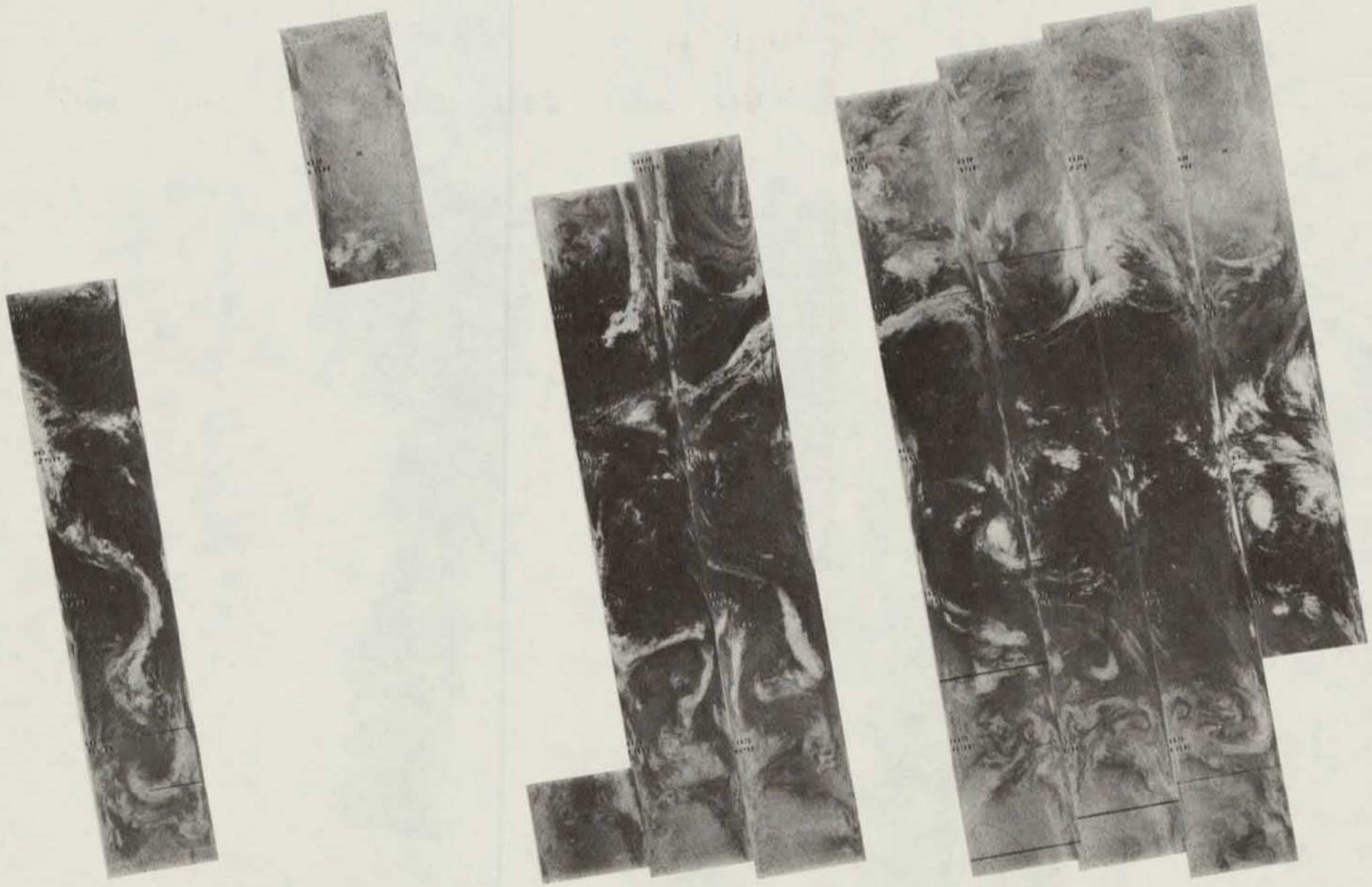
11.5μm



7753 7752 7751 7750 7749 7748 7747 7746 7745 7744 7743 7742 7741

10 JAN 77

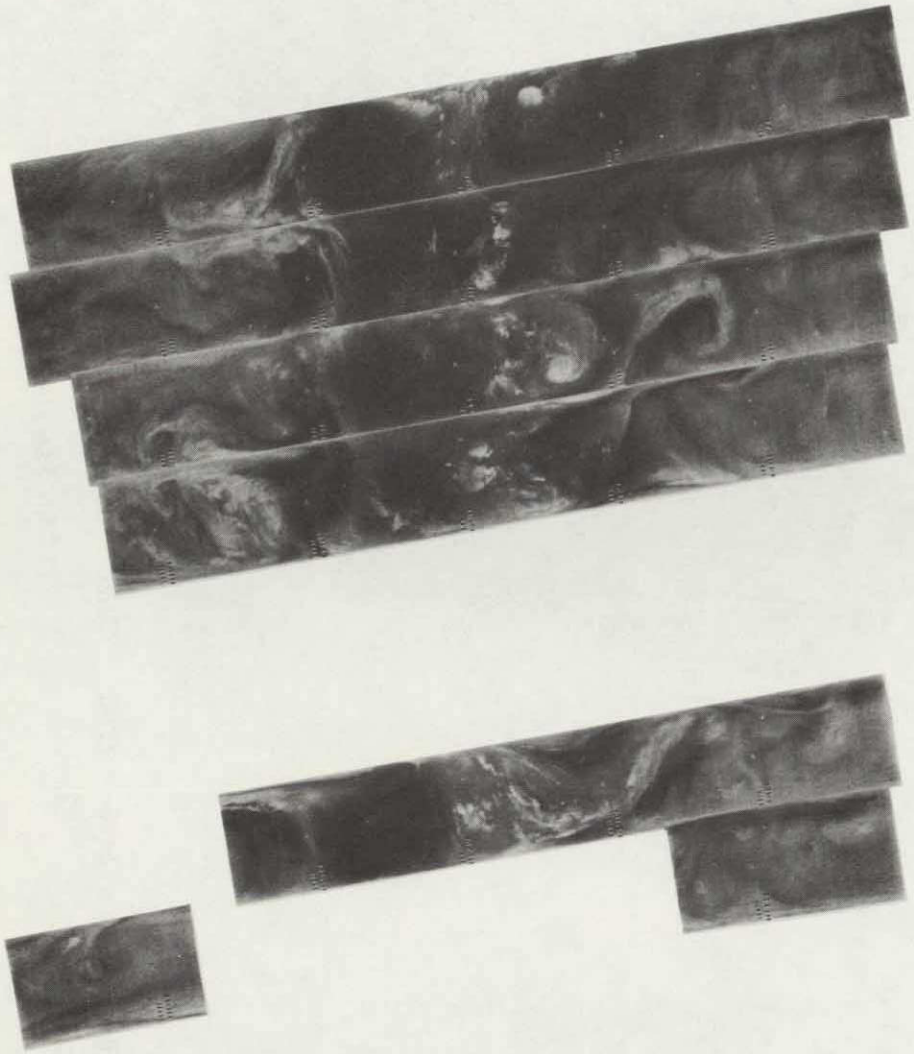
6.7μm



7753 7752 7751 7750 7749 7748 7747 7746 7745 7744 7743 7742 7741

10 JAN 77

11.5μm



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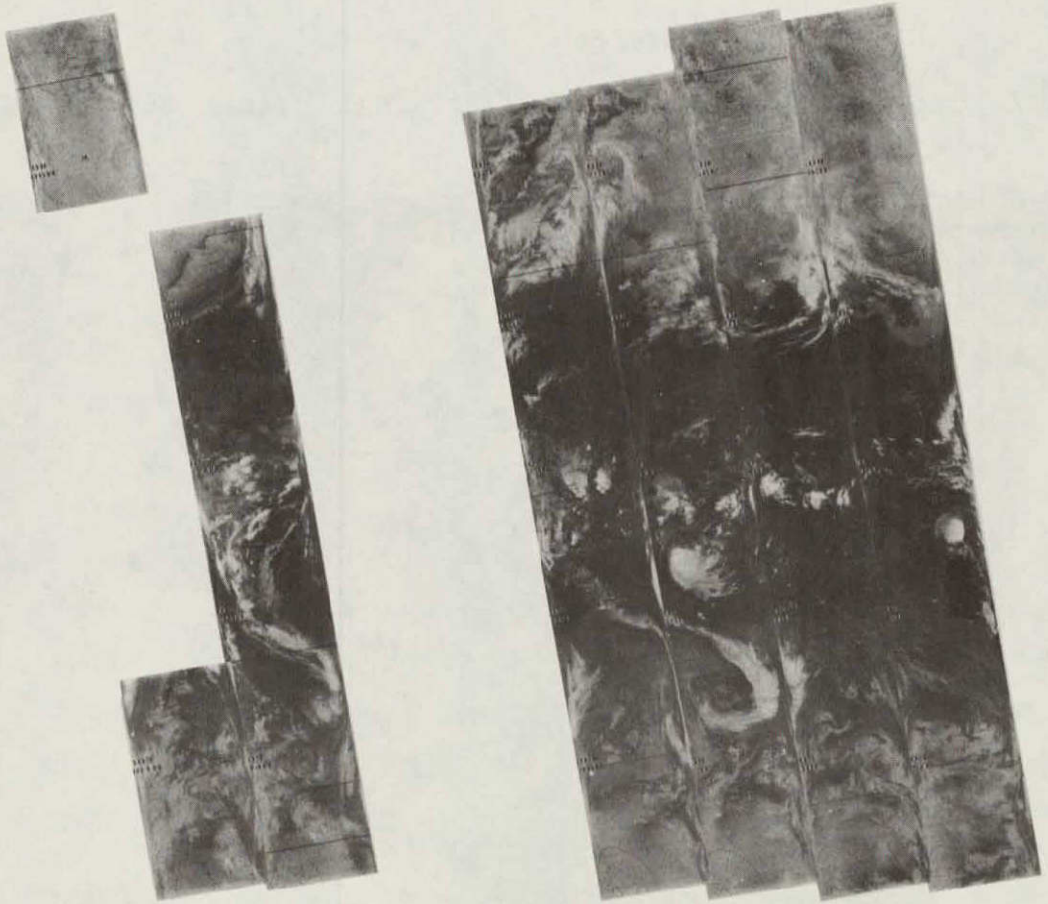
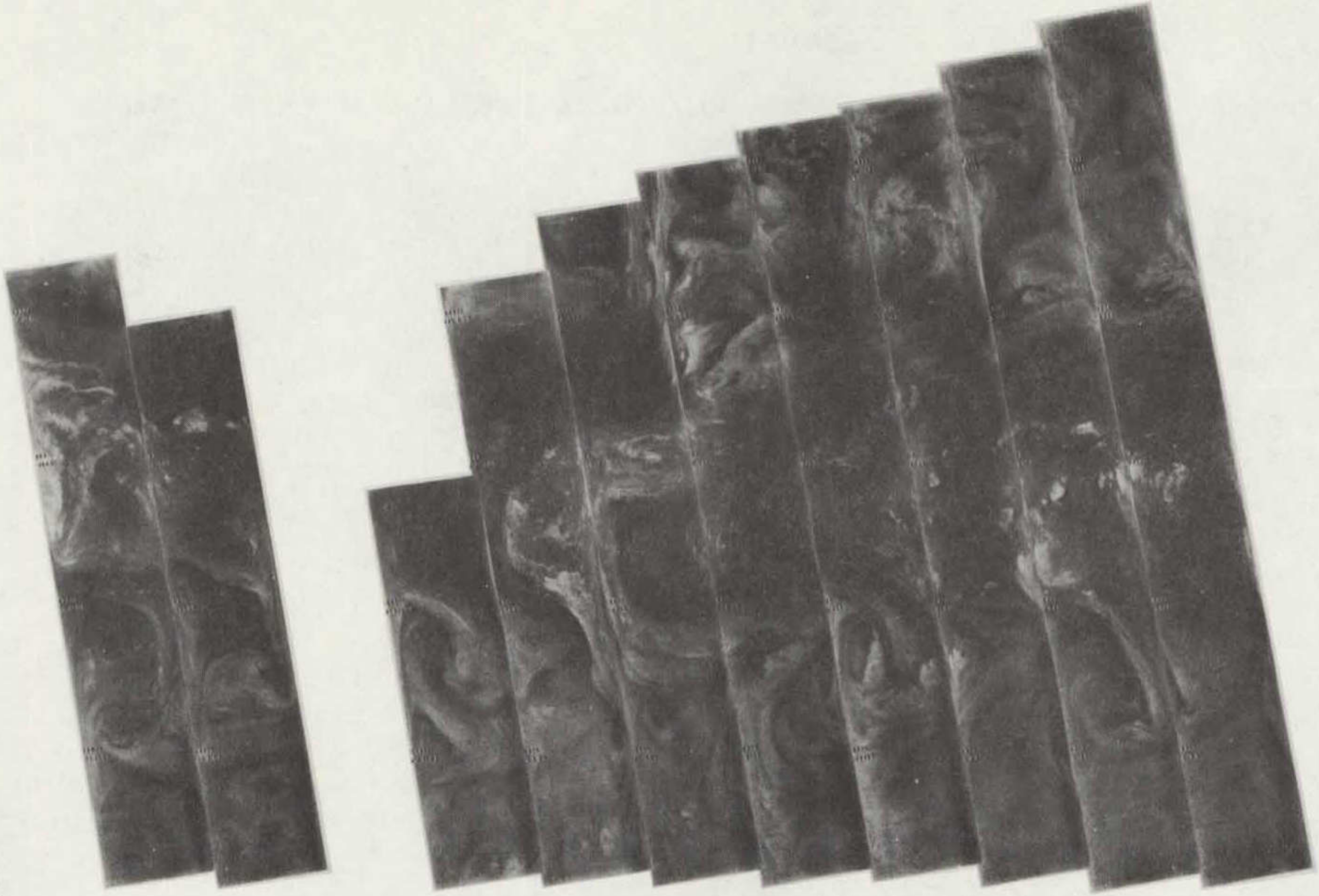


7766 7765 7764 7763 7762 7761 7760 7759 7758 7757 7756 7755 7754

11 JAN 77

11.5μm



7780 7779 7778 7777 7776 7775 7774 7773 7772 7771 7770 7769 7768 7767

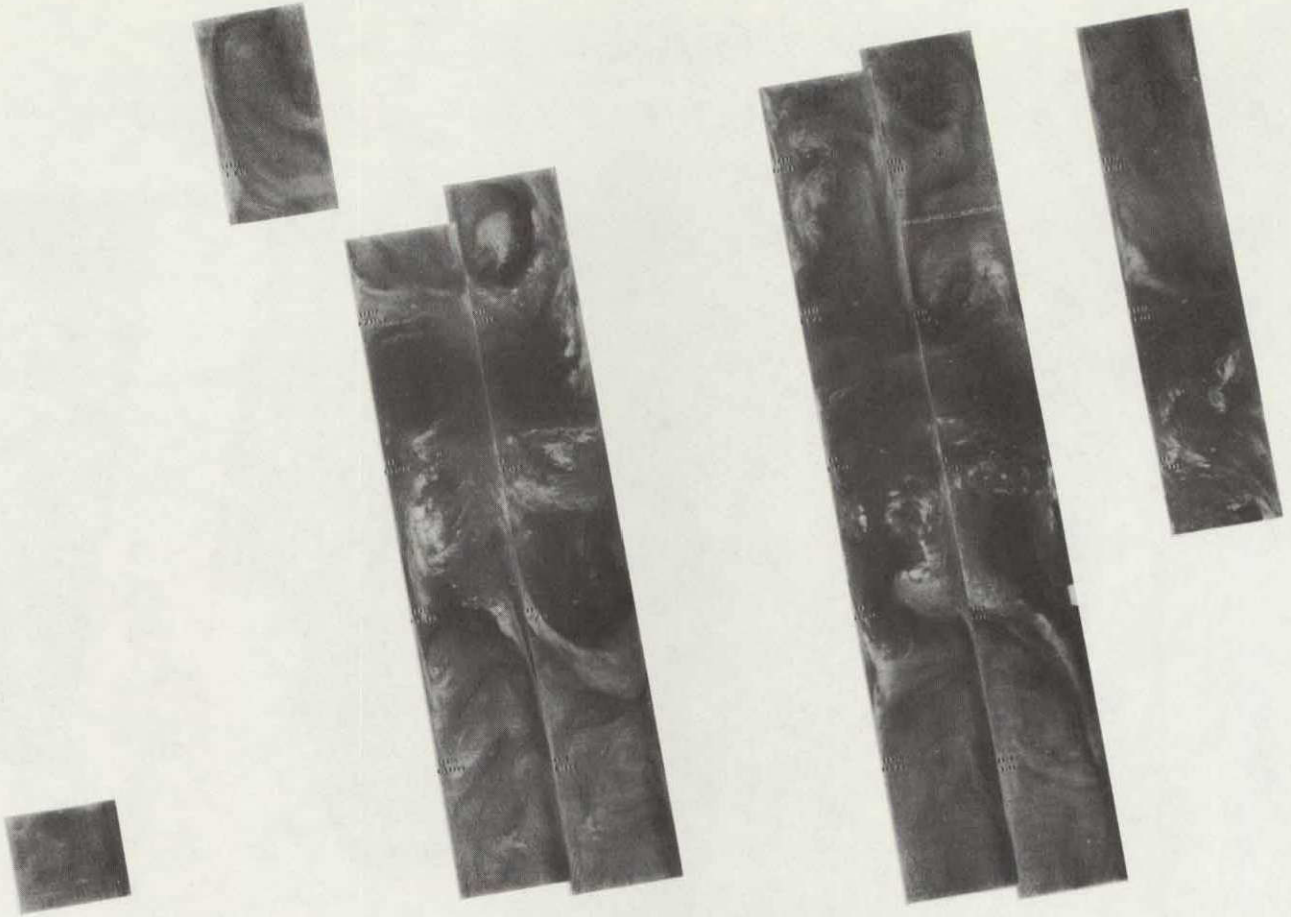
12 JAN 77

6.7μm

7780 7779 7778 7777 7776 7775 7774 7773 7772 7771 7770 7769 7768 7767

12 JAN 77

11.5μm



7793 7792 7791 7790 7789 7788 7787 7786 7785 7784 7783 7782 7781

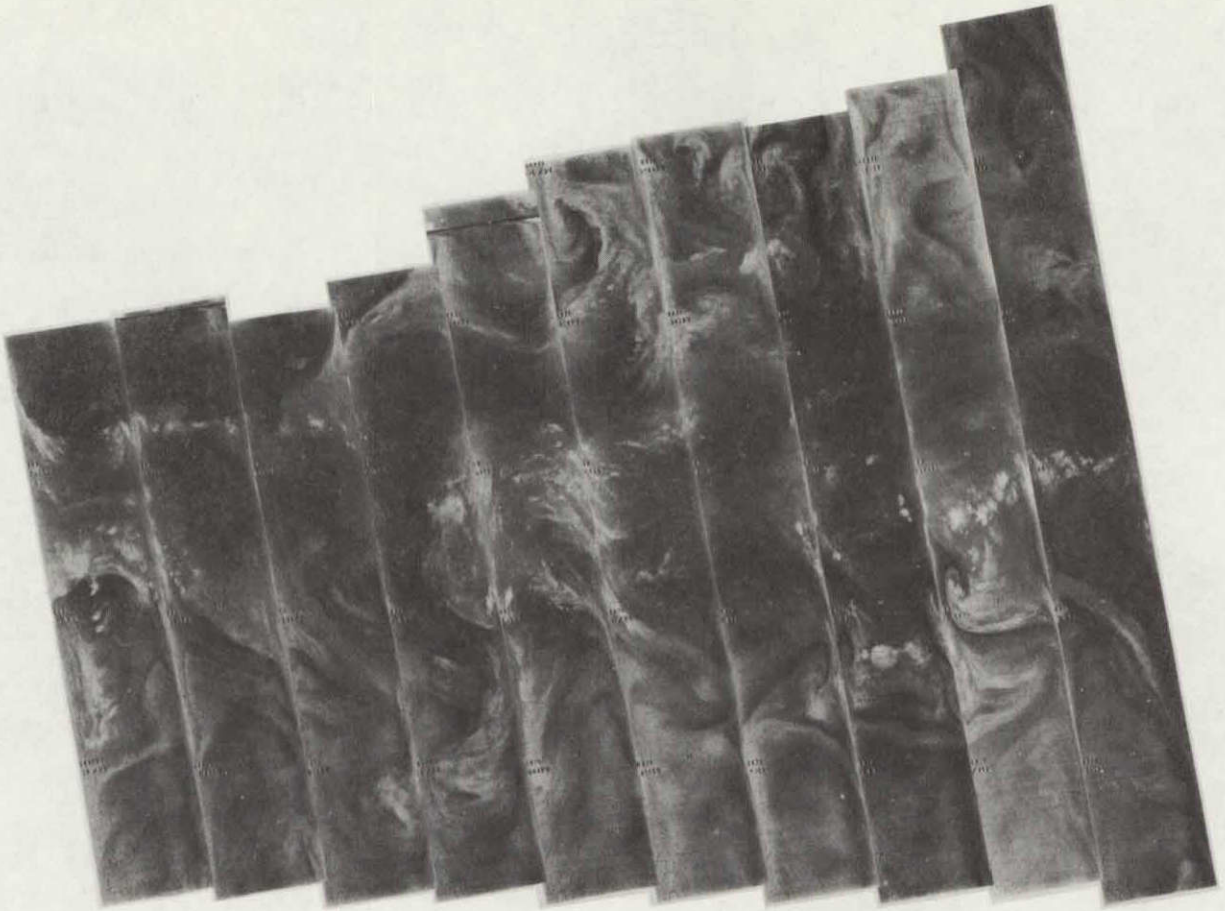
13 JAN 77

6.7μm

7793 7792 7791 7790 7789 7788 7787 7786 7785 7784 7783 7782 7781

13 JAN 77

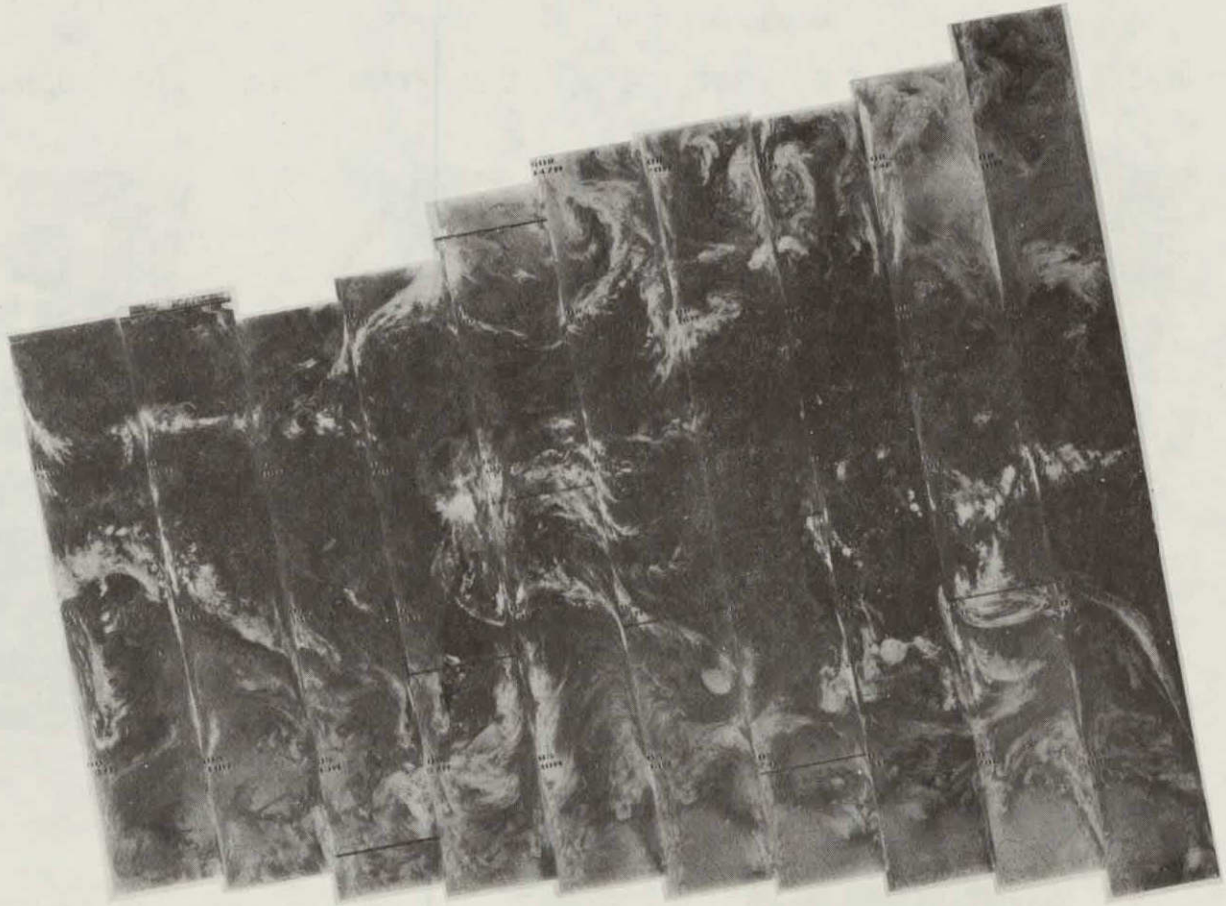
11.5μm



7806 7805 7804 7803 7802 7801 7800 7799 7798 7797 7796 7795 7794

14 JAN 77

6.7μm



7806 7805 7804 7803 7802 7801 7800 7799 7798 7797 7796 7795 7794

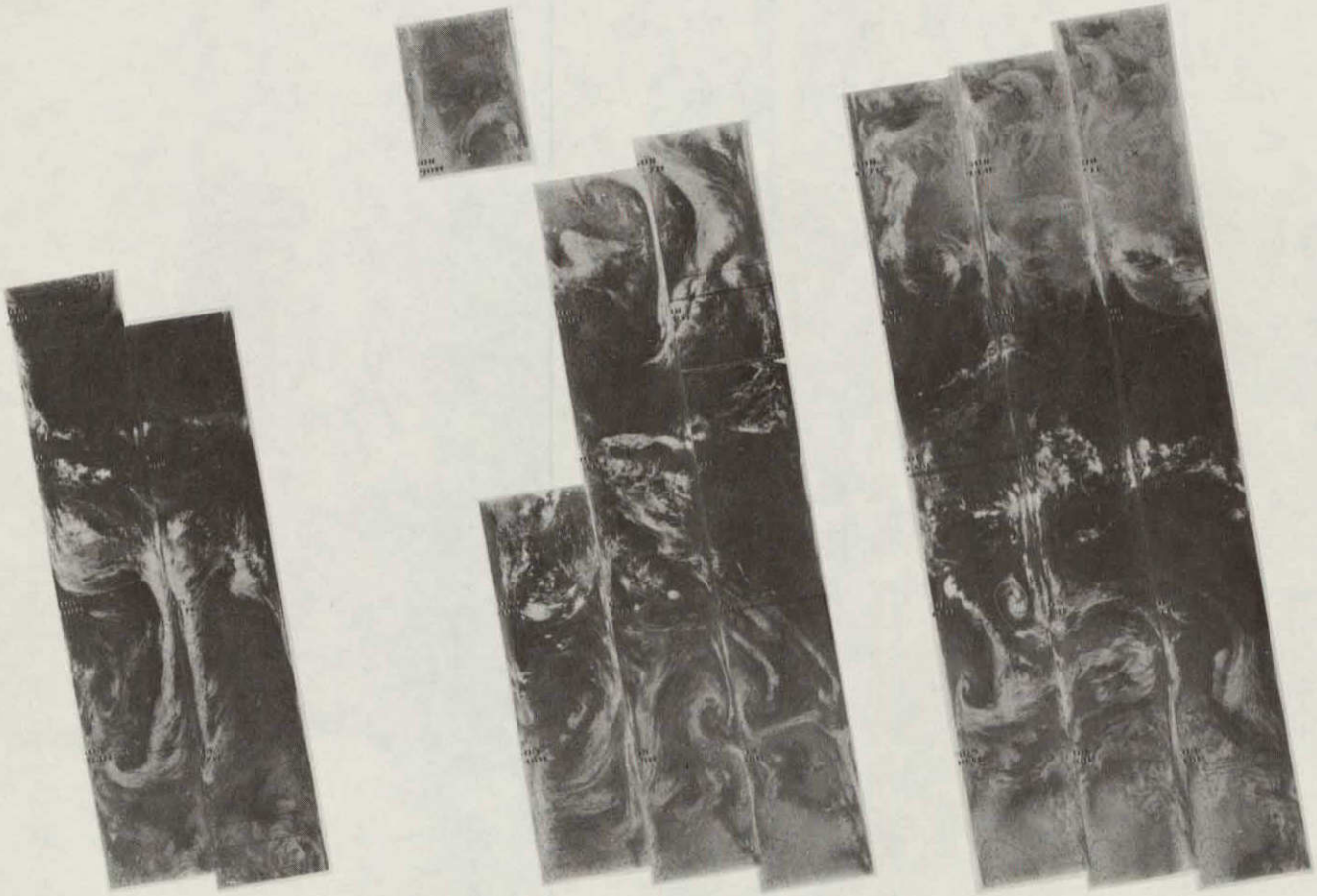
14 JAN 77

11.5μm

7820 7819 7818 7817 7816 7815 7814 7813 7812 7811 7810 7809 7808 7807

15 JAN 77

6.7μm



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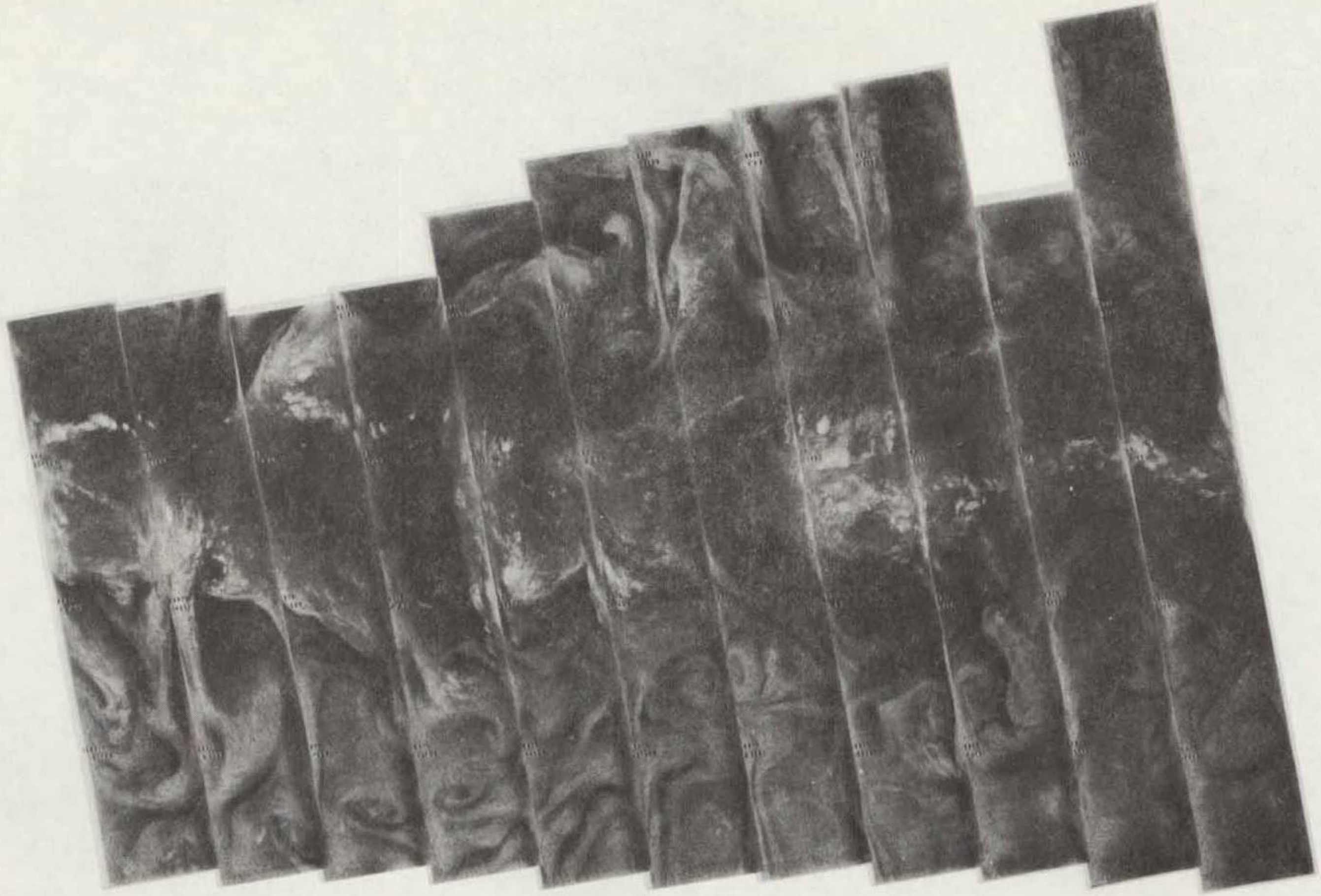
15 JAN 77

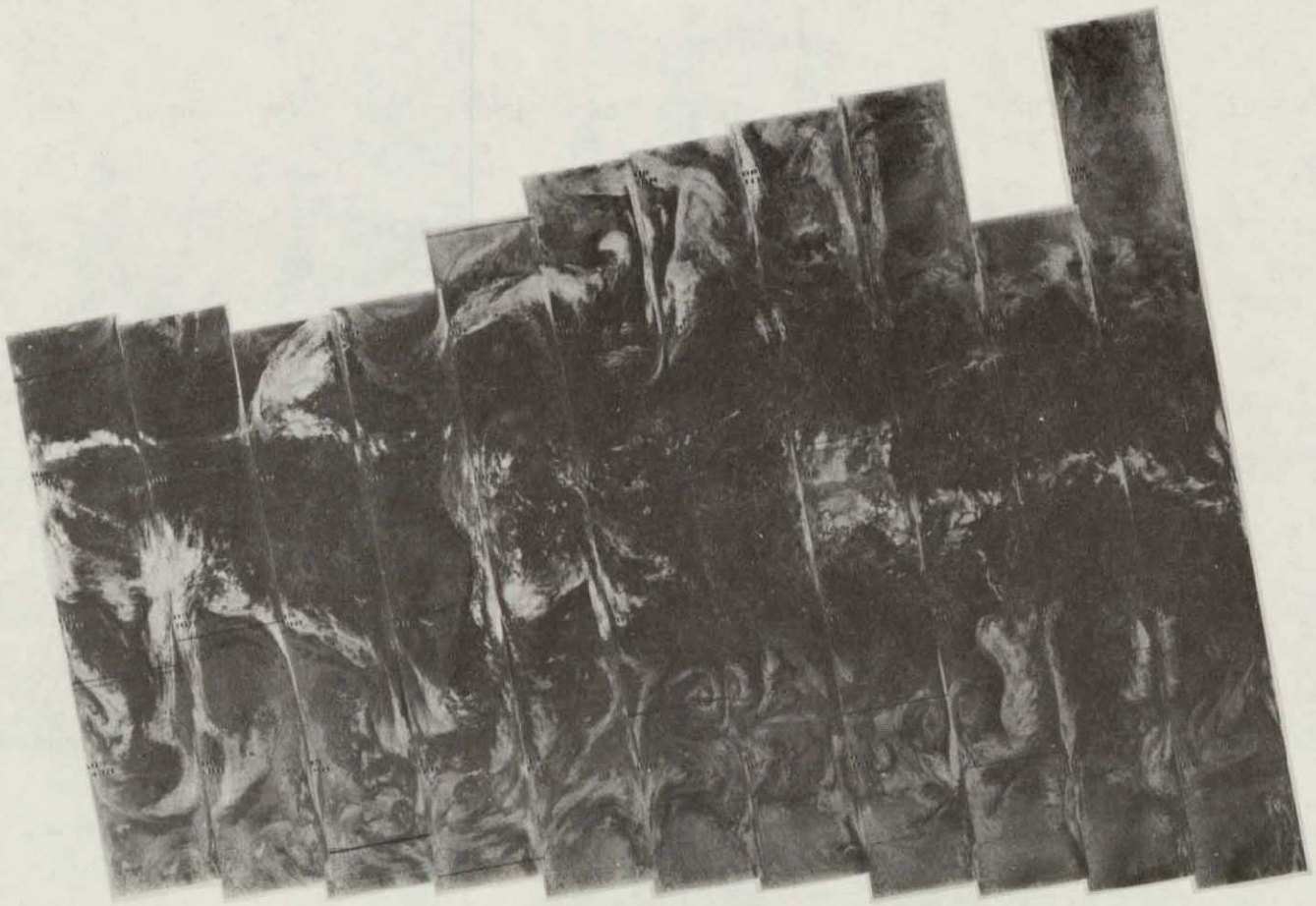
11.5μm



7833 7832 7831 7830 7829 7828 7827 7826 7825 7824 7823 7822 7821

16 JAN 77

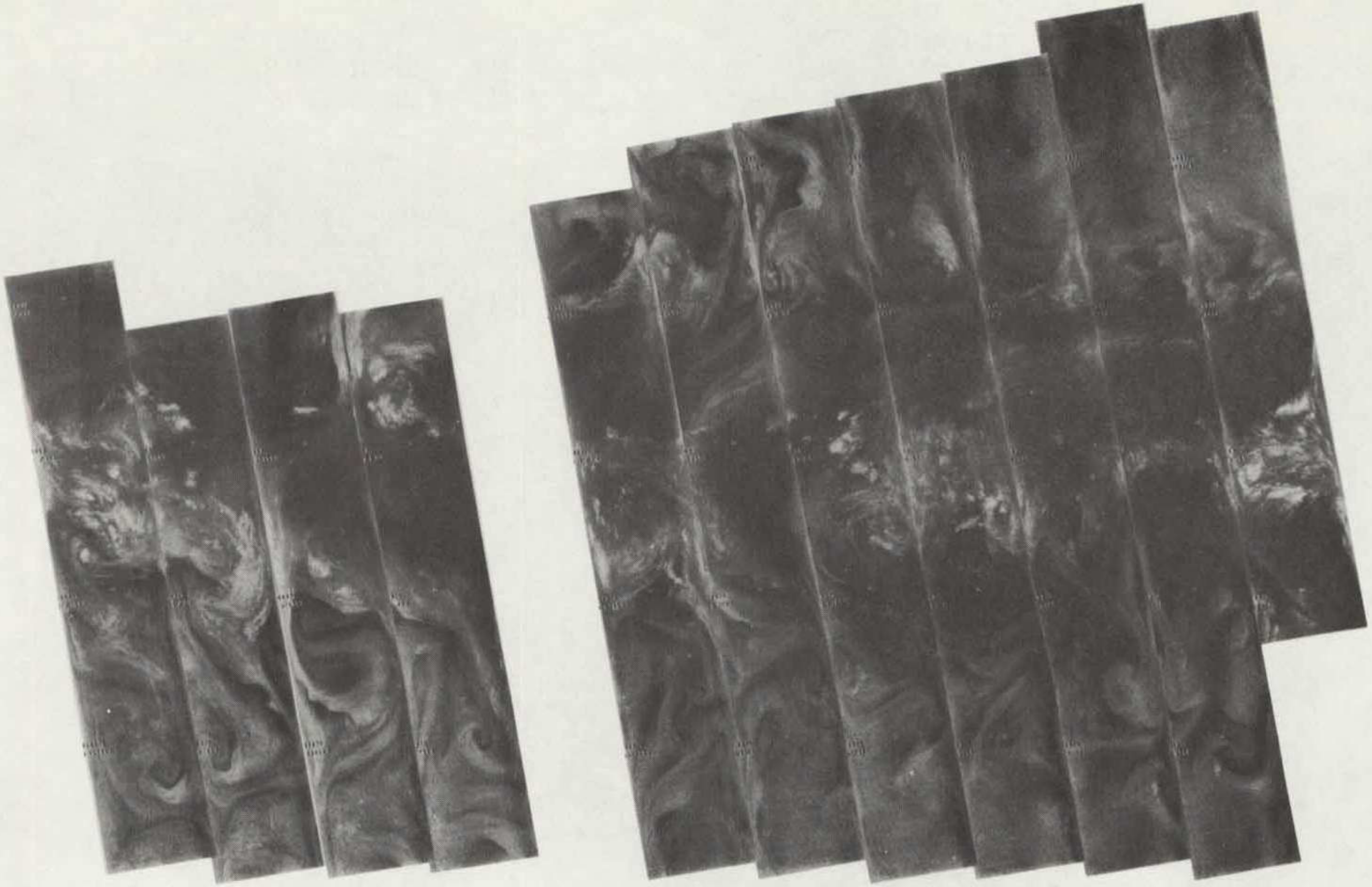
6.7μm



7833 7832 7831 7830 7829 7828 7827 7826 7825 7824 7823 7822 7821

16 JAN 77

11.5μm



7847 7846 7845 7844 7843 7842 7841 7840 7839 7838 7837 7836 7835 7834

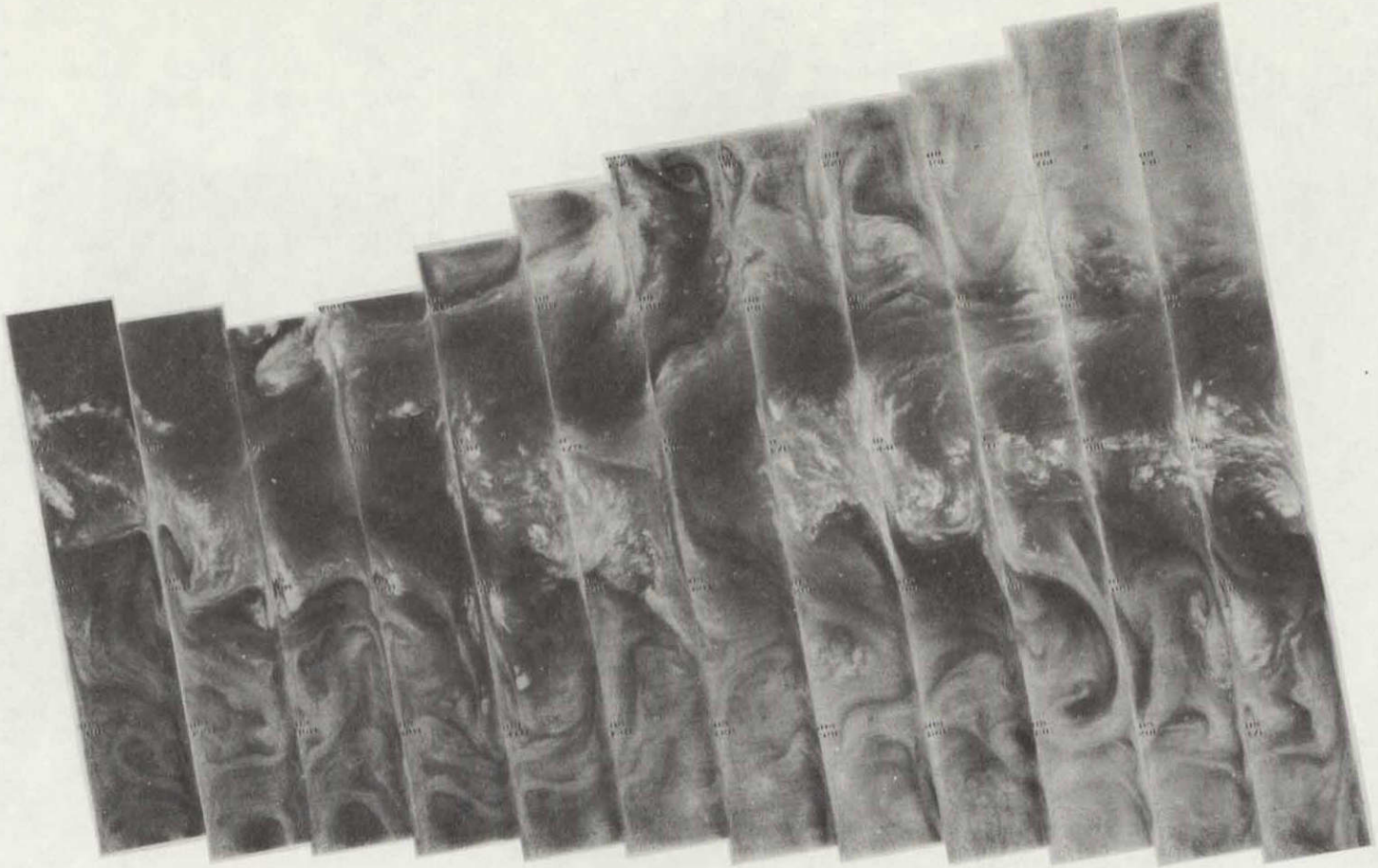
17 JAN 77

6.7μm

7847 7846 7845 7844 7843 7842 7841 7840 7839 7838 7837 7836 7835 7834

17 JAN 77

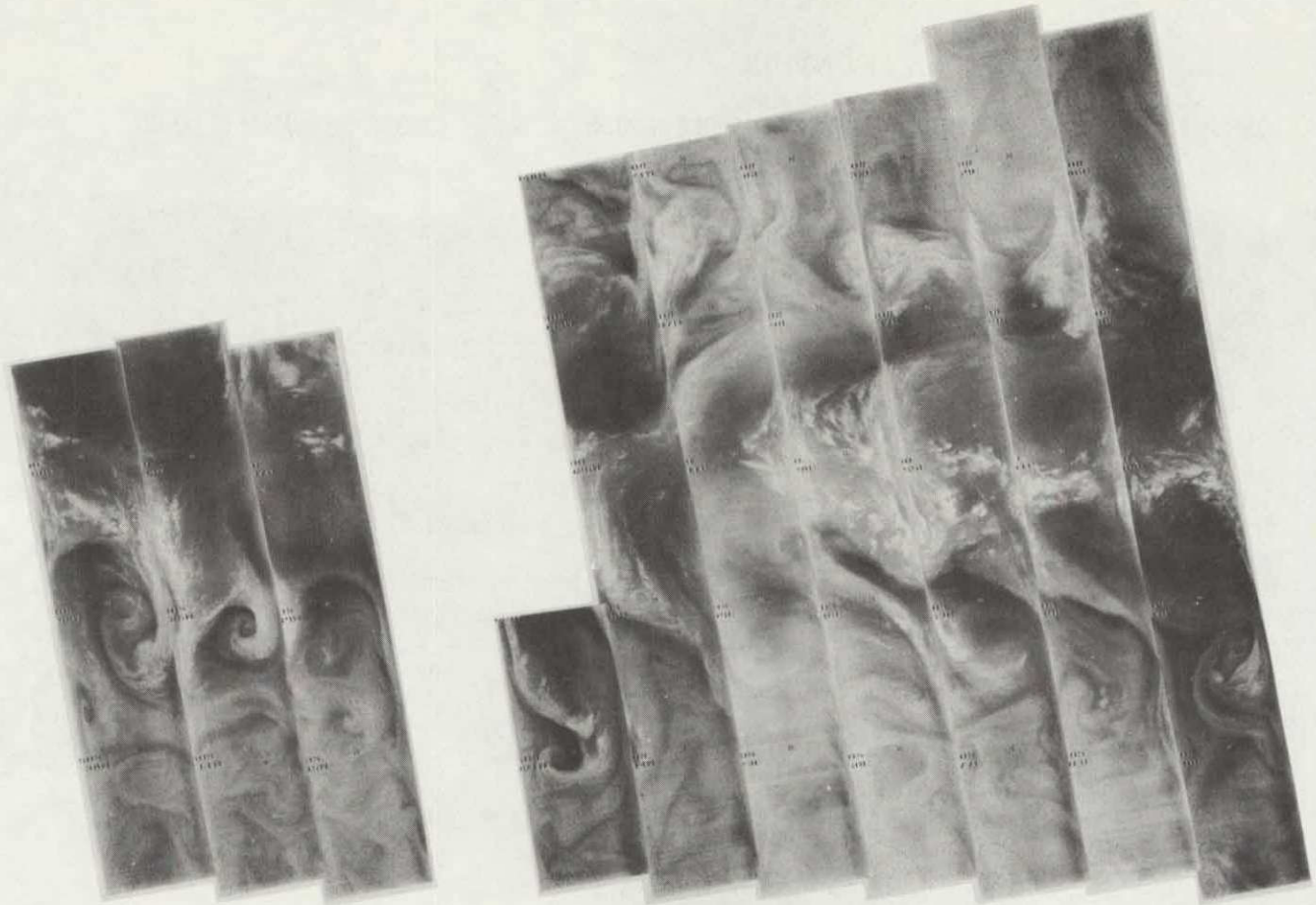
11.5μm



7860 7859 7858 7857 7856 7855 7854 7853 7852 7851 7850 7849 7848

18 JAN 77

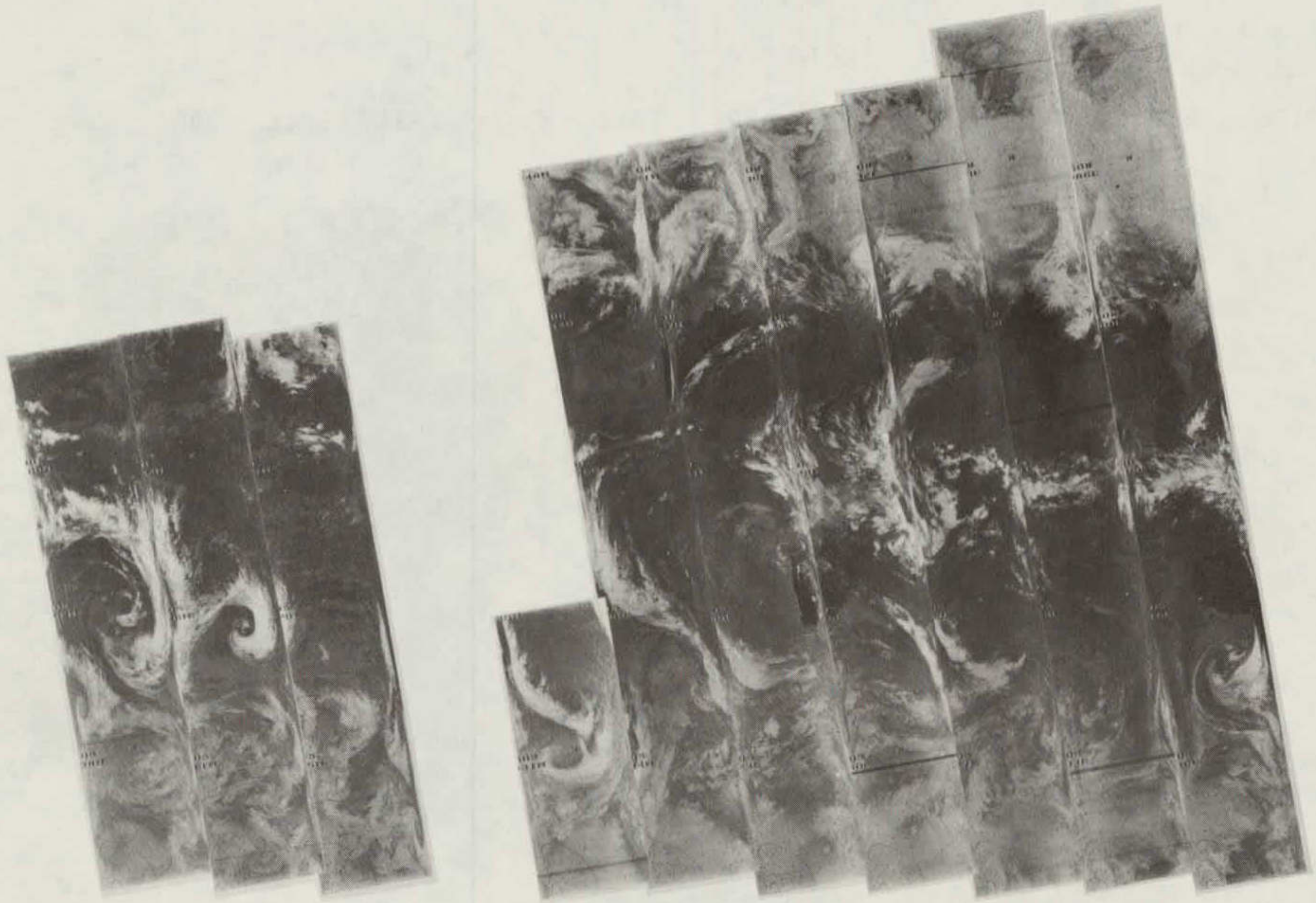
6.7μm



7873 7872 7871 7870 7869 7868 7867 7866 7865 7864 7863 7862 7861

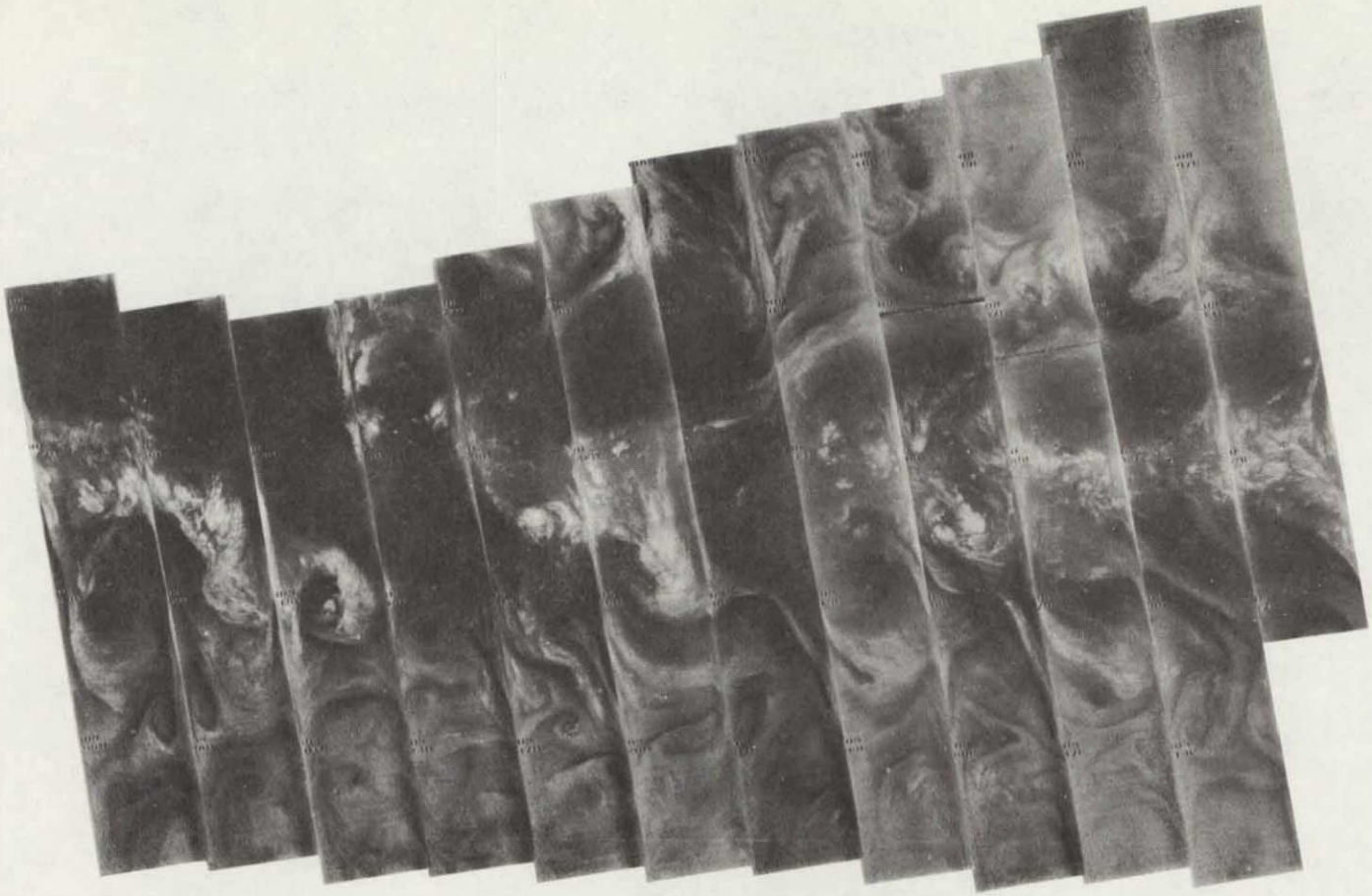
19 JAN 77

6.7μm



19 JAN 77

11.5μm



7887 7886 7885 7884 7883 7882 7881 7880 7879 7878 7877 7876 7875 7874

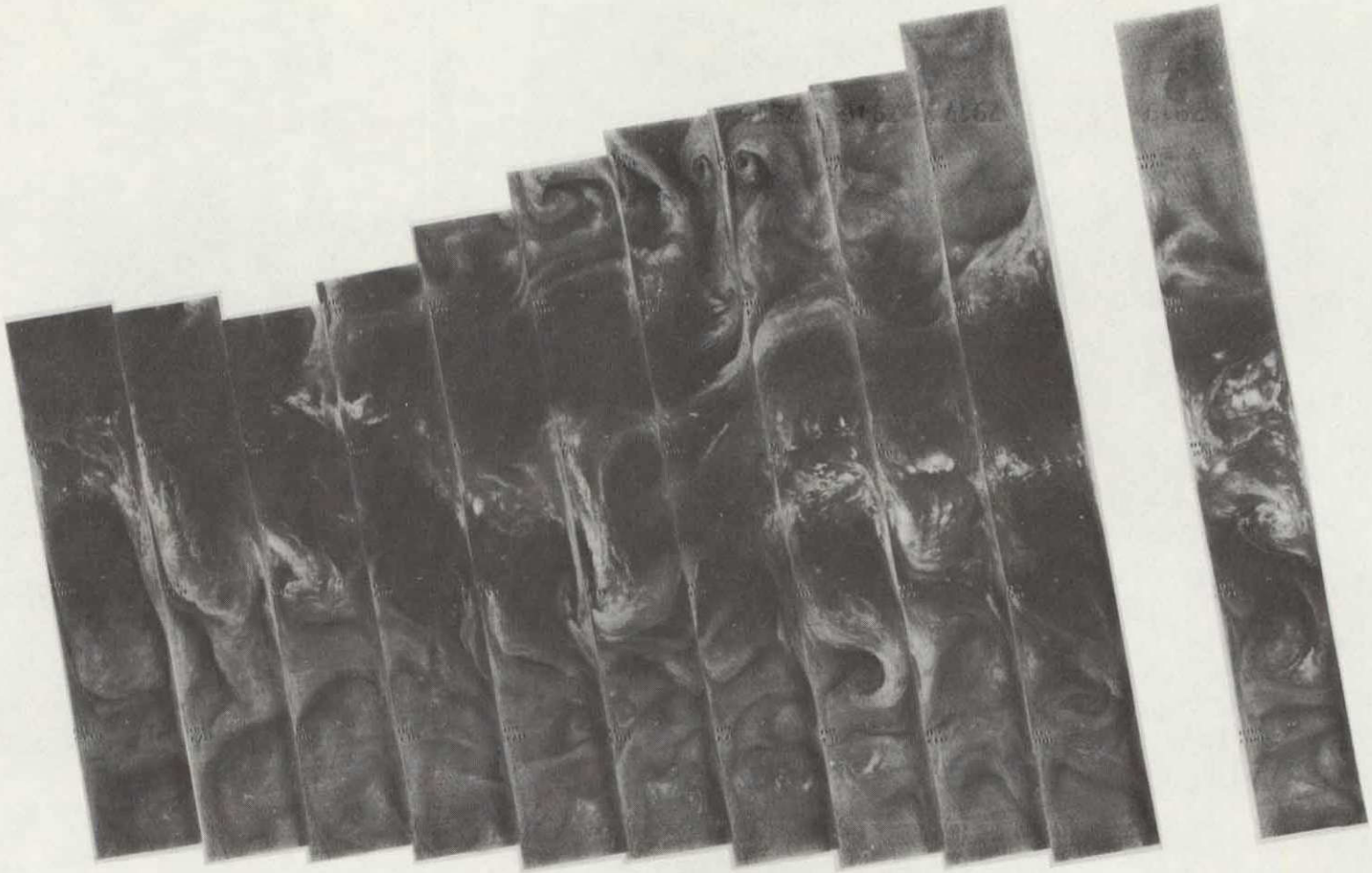
20 JAN 77

6.7μm

7887 7886 7885 7884 7883 7882 7881 7880 7879 7878 7877 7876 7875 7874

20 JAN 77

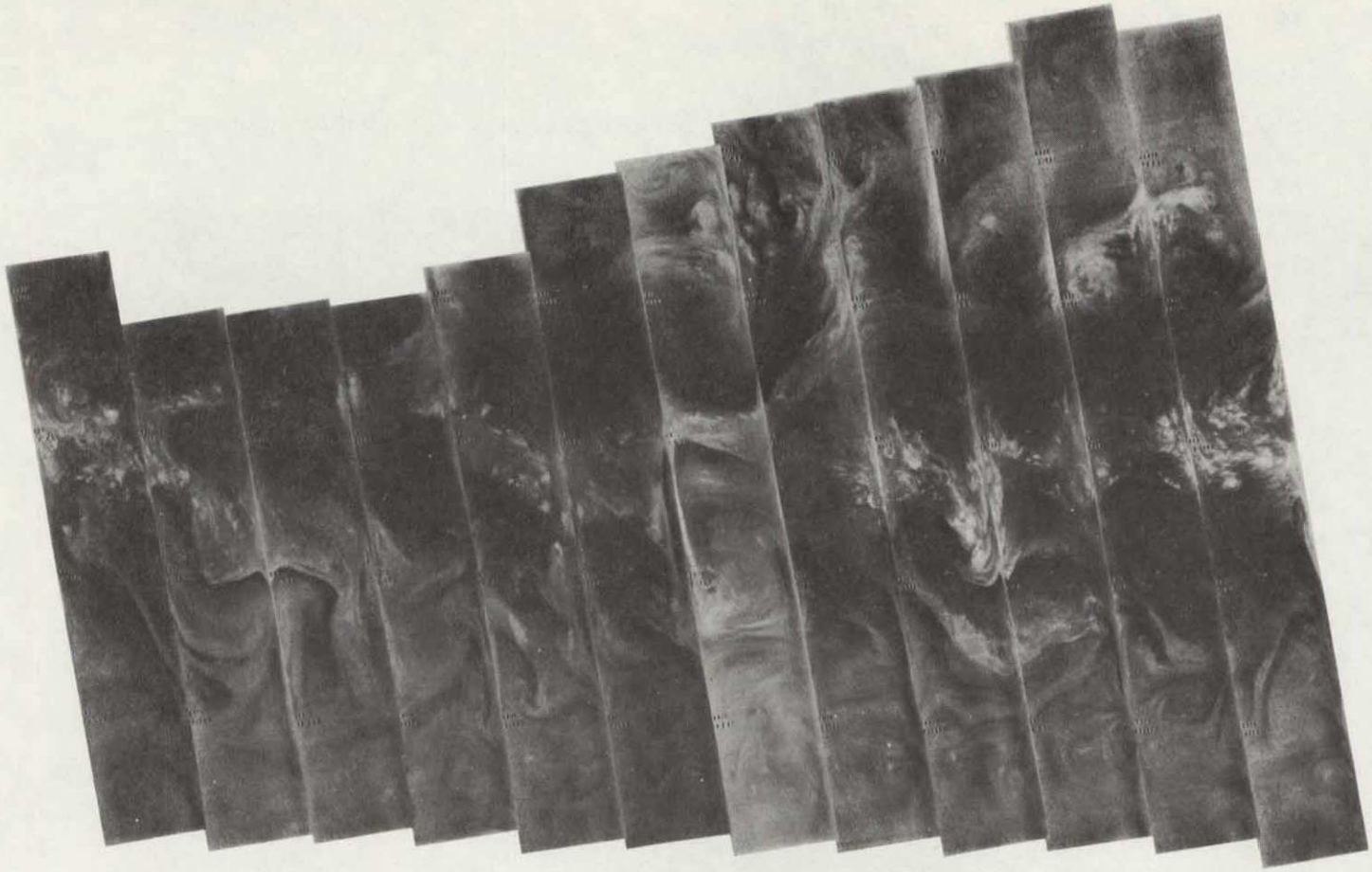
11.5μm



7900 7899 7898 7897 7896 7895 7894 7893 7892 7891 7890 7889 7888

21 JAN 77

6.7μm



7914 7913 7912 7911 7910 7909 7908 7907 7906 7905 7904 7903 7902 7901

22 JAN 77

6.7μm

7914 7913 7912 7911 7910 7909 7908 7907 7906 7905 7904 7903 7902 7901

22 JAN 77

11.5μm

7927 7926 7925 7924 7923 7922 7921 7920 7919 7918 7917 7916 7915

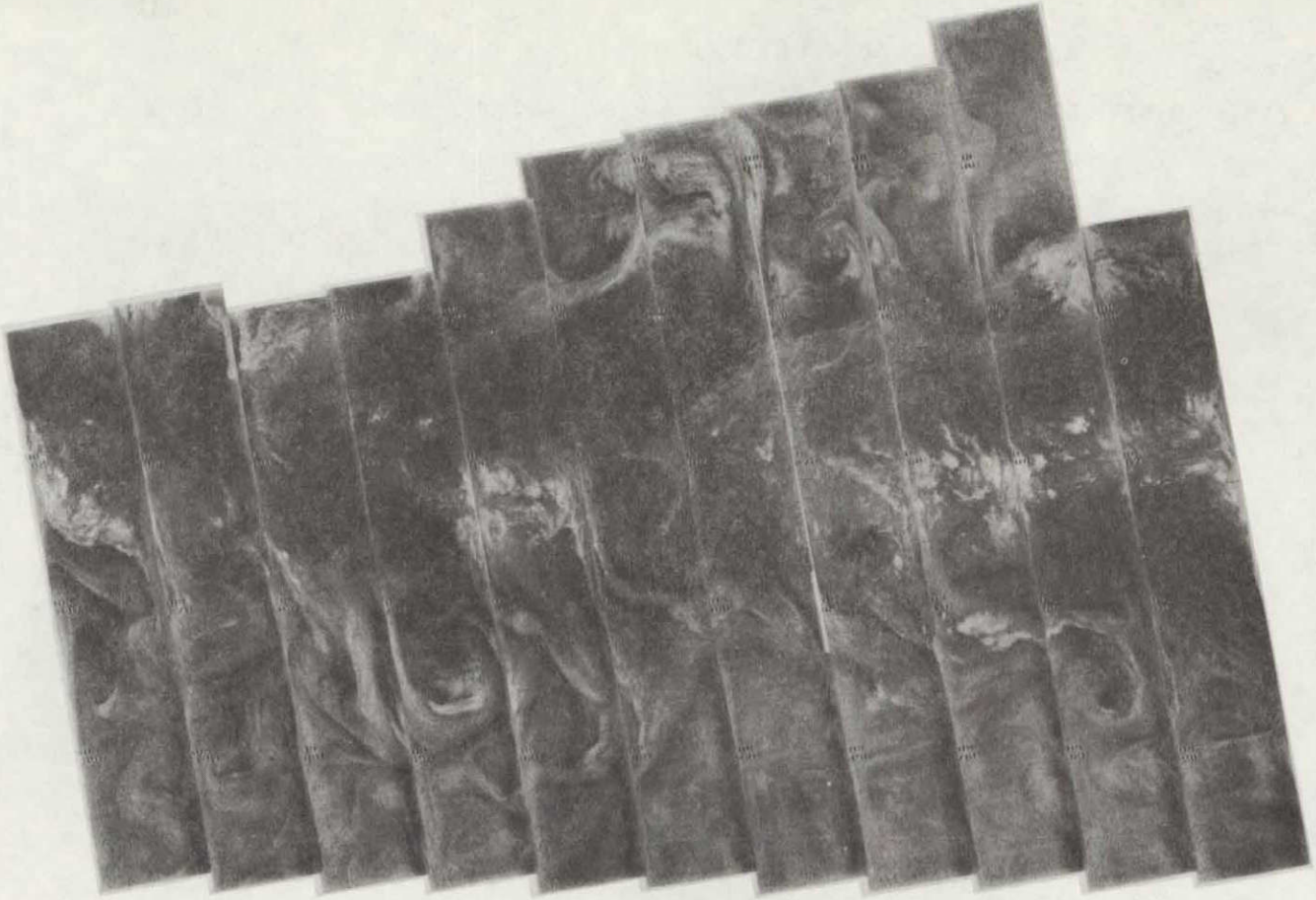
23 JAN 77

6.7μm

7927 7926 7925 7924 7923 7922 7921 7920 7919 7918 7917 7916 7915

23 JAN 77

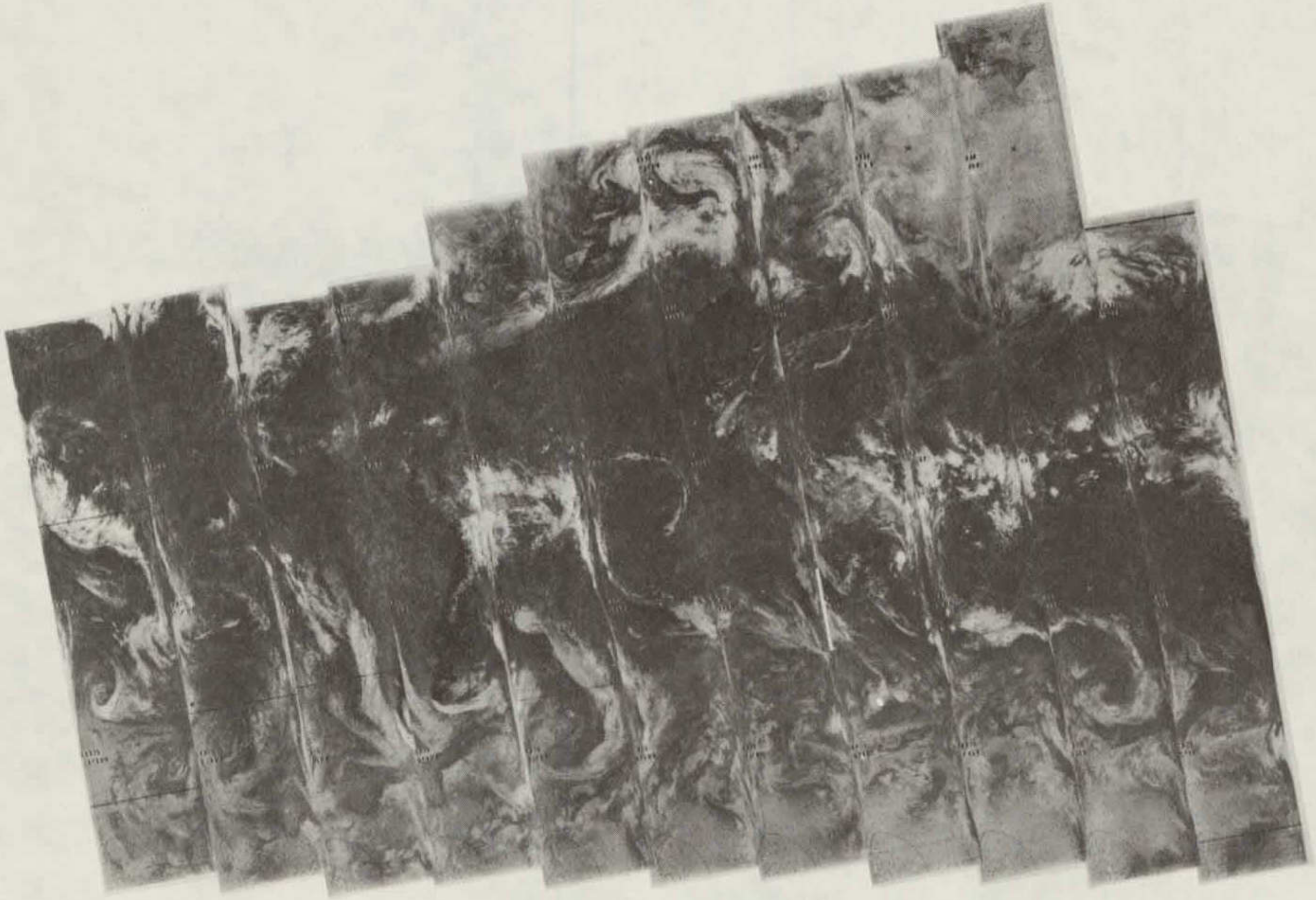
11.5μm



7940 7939 7938 7937 7936 7935 7934 7933 7932 7931 7930 7929 7928

24 JAN 77

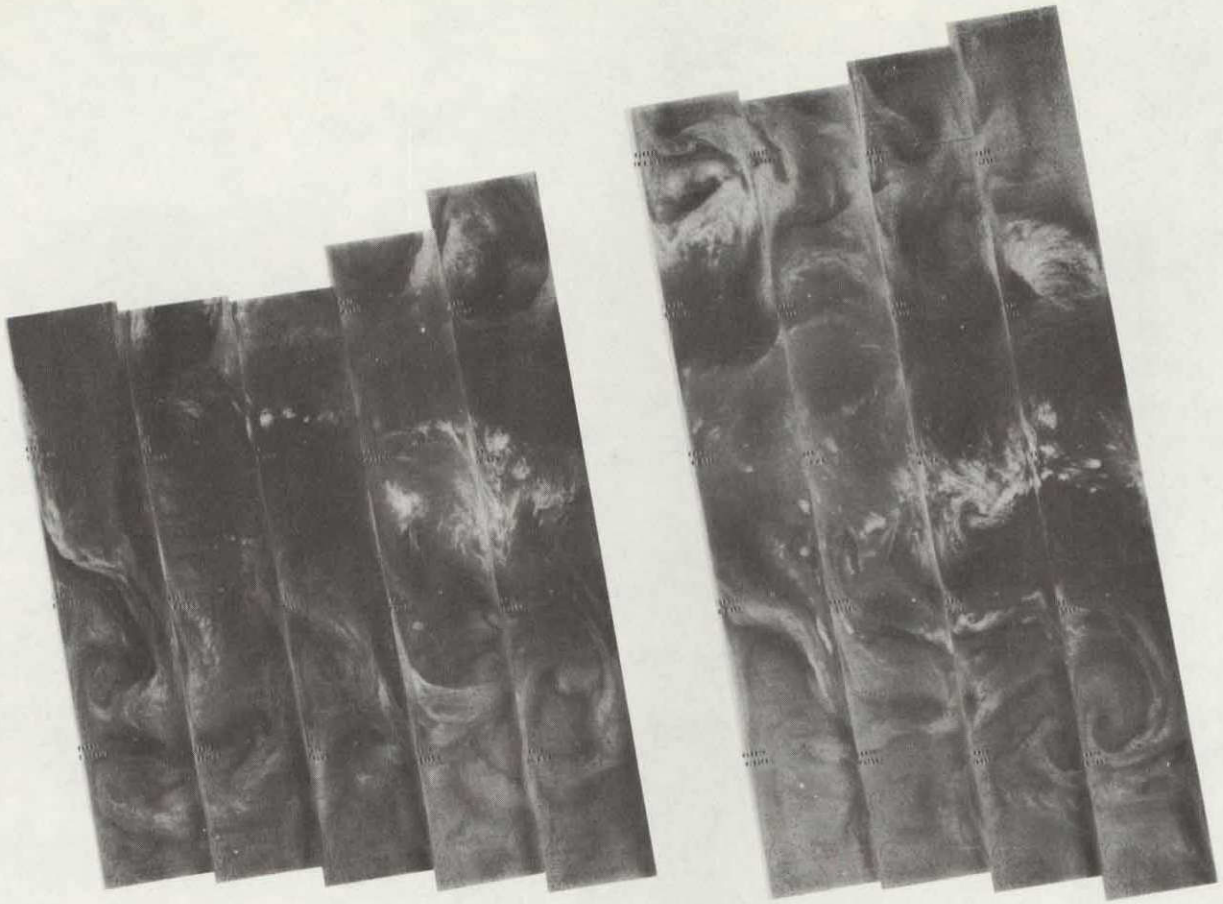
6.7μm



7940 7939 7938 7937 7936 7935 7934 7933 7932 7931 7930 7929 7928

24 JAN 77

11.5μm



7954 7953 7952 7951 7950 7949 7948 7947 7946 7945 7944 7943 7942 7941

25 JAN 77

6.7μm

7954 7953 7952 7951 7950 7949 7948 7947 7946 7945 7944 7943 7942 7941

25 JAN 77

11.5μm

7967 7966 7965 7964 7963 7962 7961 7960 7959 7958 7957 7956 7955

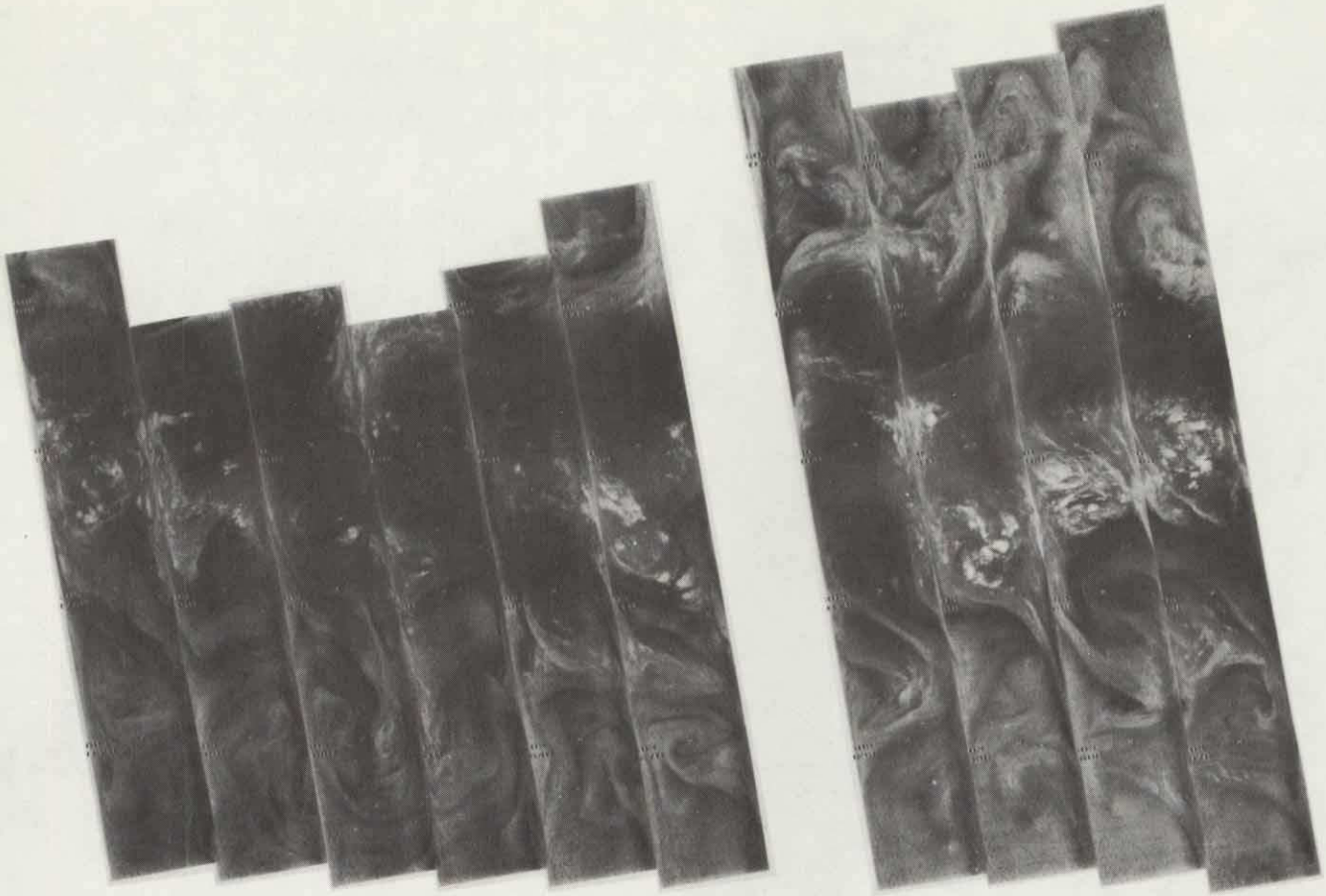
26 JAN 77

6.7μm

7967 7966 7965 7964 7963 7962 7961 7960 7959 7958 7957 7956 7955

26 JAN 77

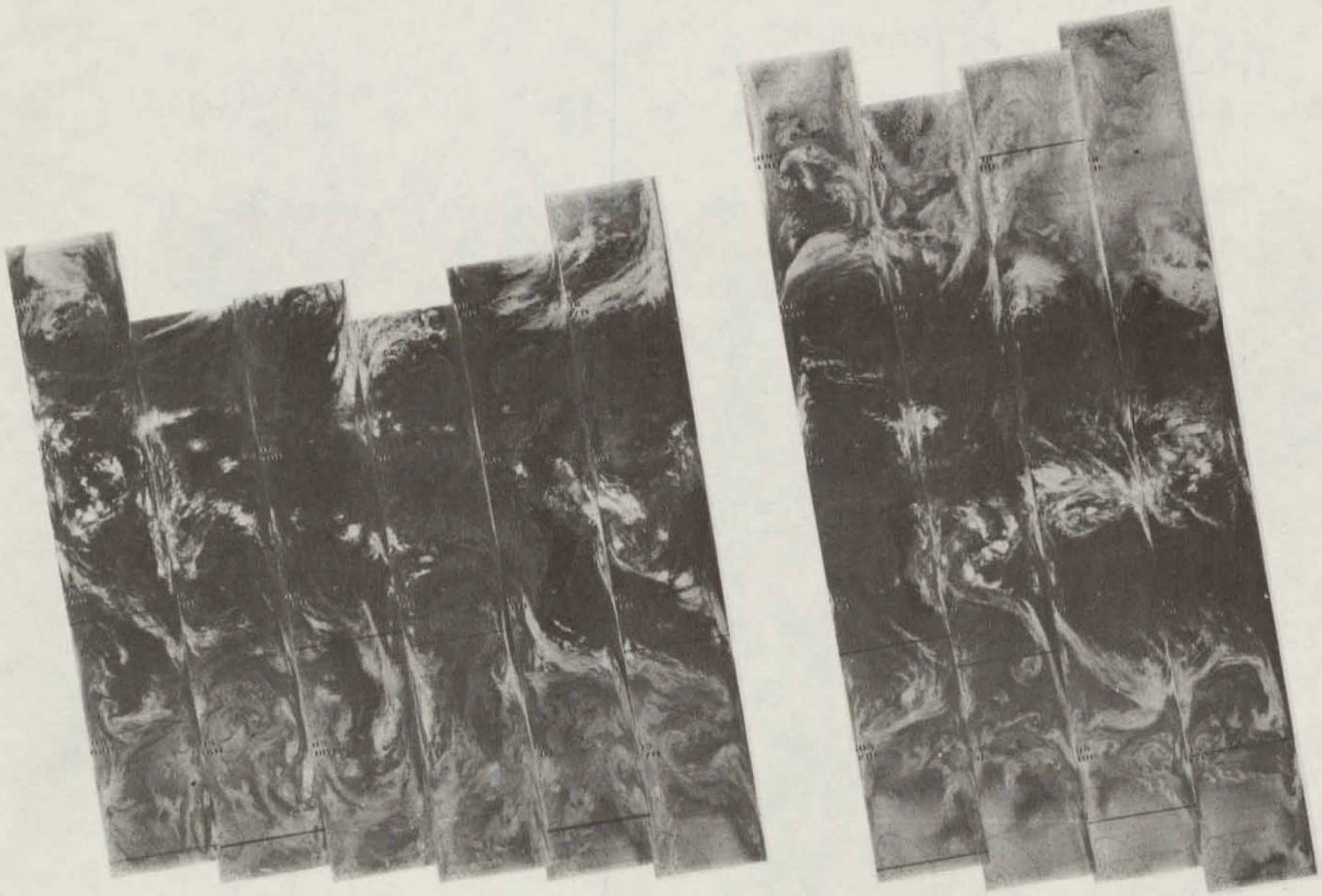
11.5μm



7981 7980 7979 7978 7977 7976 7975 7974 7973 7972 7971 7970 7969 7968

27 JAN 77

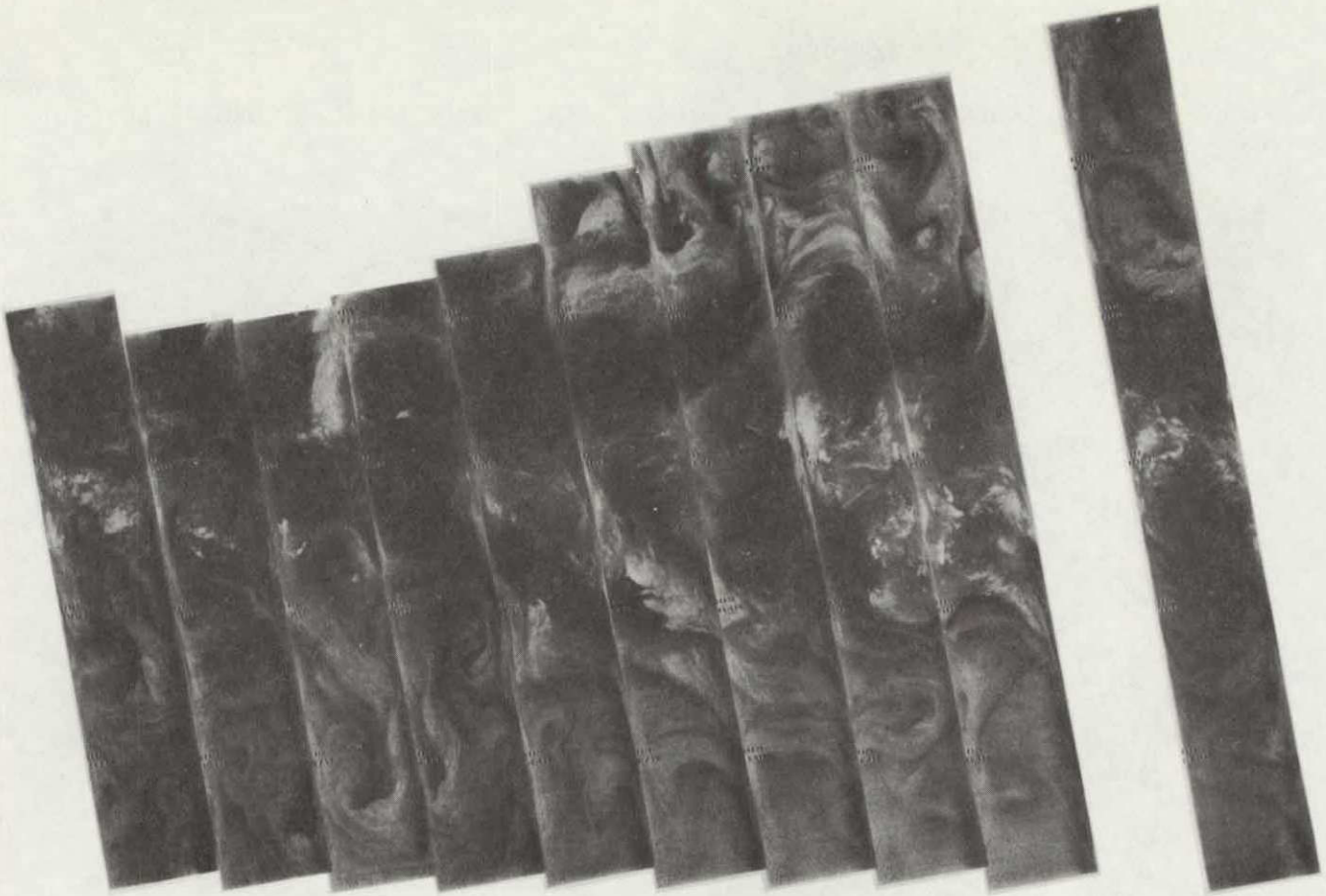
6.7μm



7981 7980 7979 7978 7977 7976 7975 7974 7973 7972 7971 7970 7969 7968

27 JAN 77

11.5μm



7994 7993 7992 7991 7990 7989 7988 7987 7986 7985 7984 7983 7982

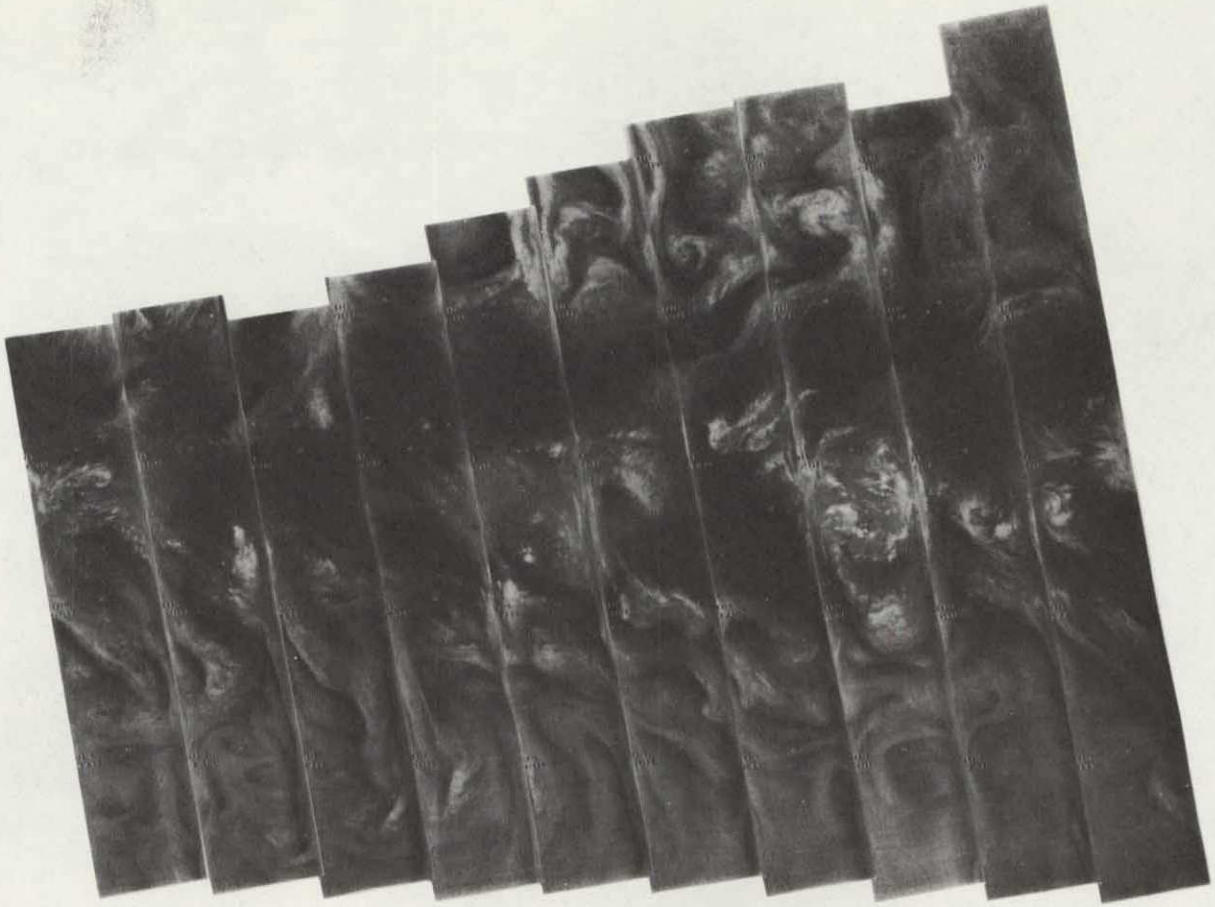
28 JAN 77

6.7μm

7994 7993 7992 7991 7990 7989 7988 7987 7986 7985 7984 7983 7982

28 JAN 77

11.5μm



8007 8006 8005 8004 8003 8002 8001 8000 7999 7998 7997 7996 7995

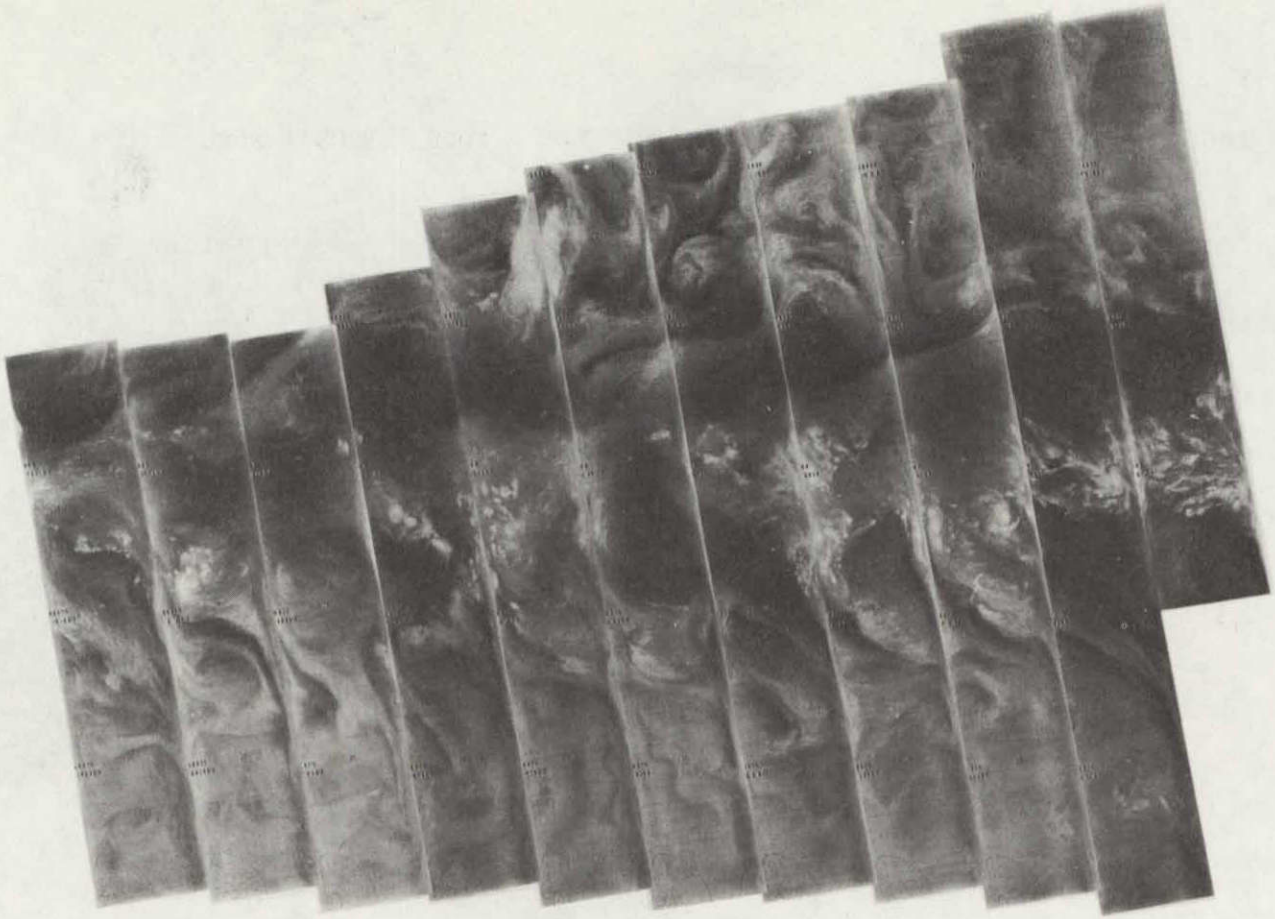
29 JAN 77

6.7μm

8007 8006 8005 8004 8003 8002 8001 8000 7999 7998 7997 7996 7995

29 JAN 77

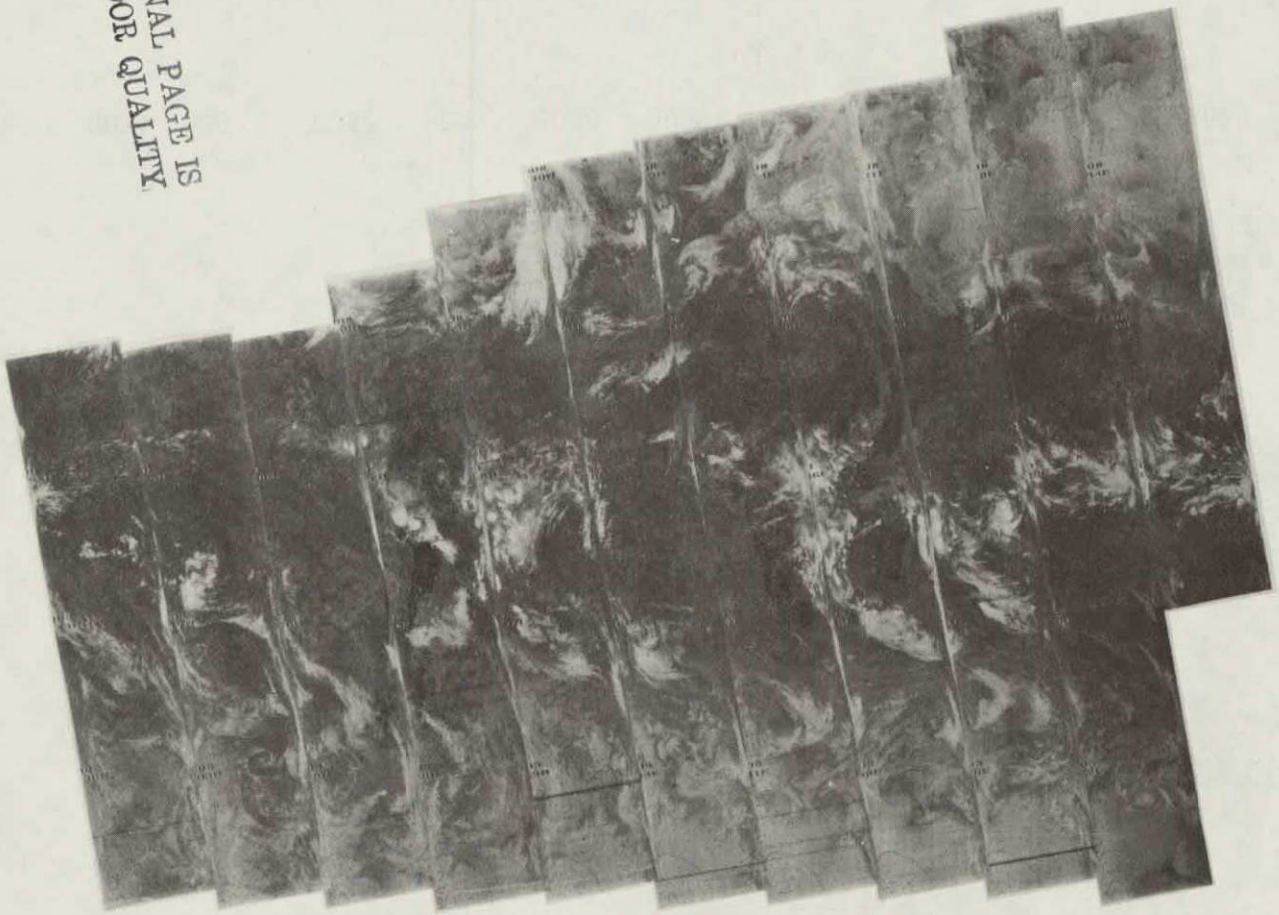
11.5μm



8021 8020 8019 8018 8017 8016 8015 8014 8013 8012 8011 8010 8009 8008

30 JAN 77

6.7μm



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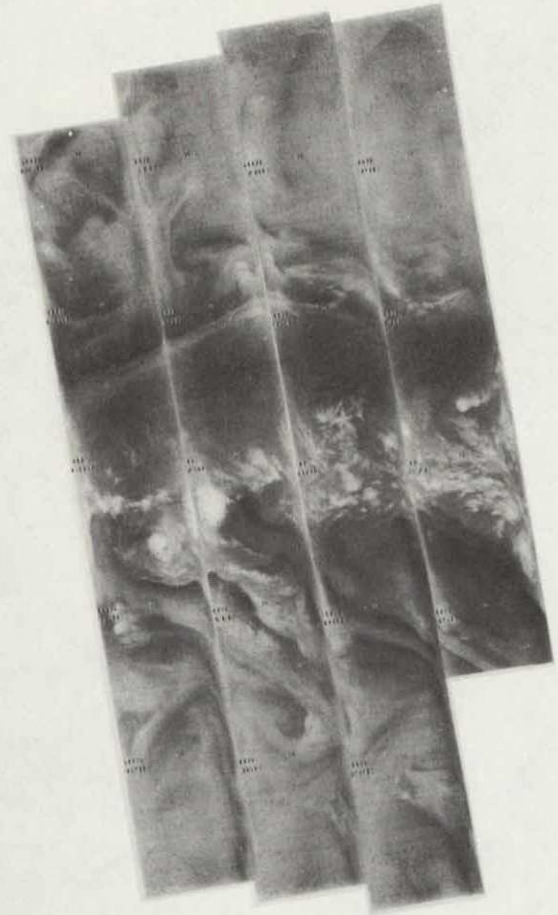
30 JAN 77

11.5μm



8034 8033 8032 8031 8030 8029 8028 8027 8026 8025 8024 8023 8022

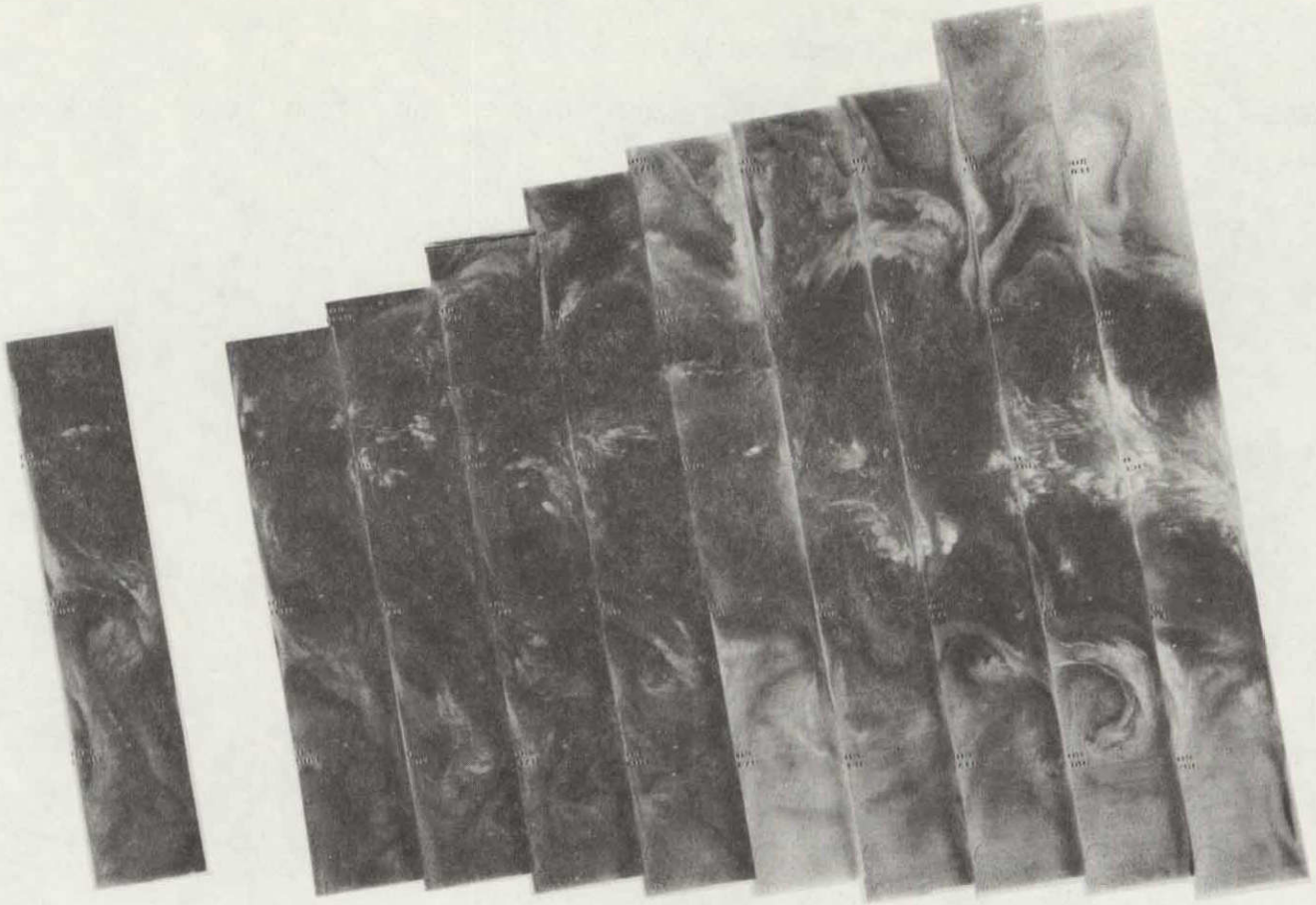
31 JAN 77

6.7μm

8034 8033 8032 8031 8030 8029 8028 8027 8026 8025 8024 8023 8022

31 JAN 77

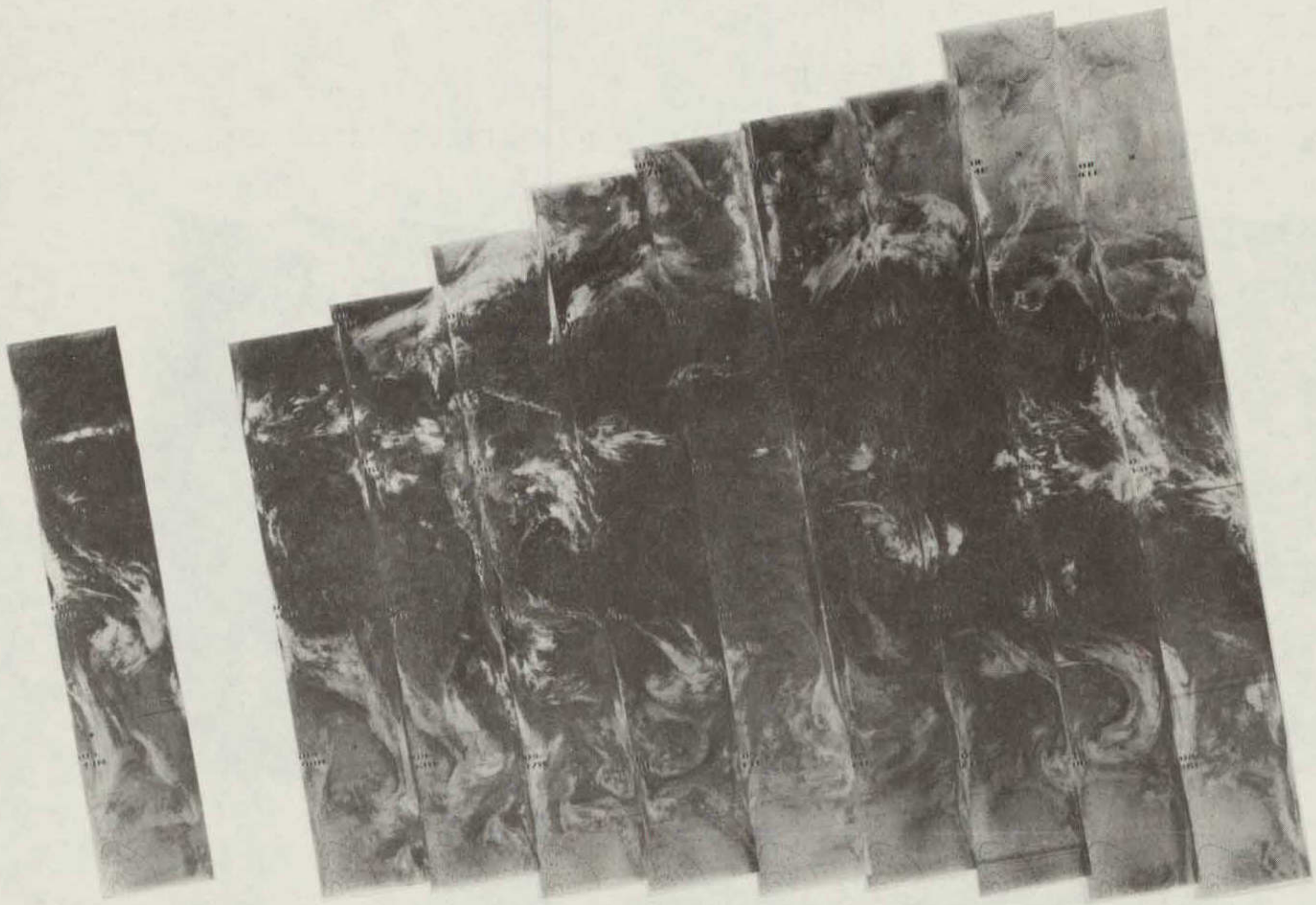
11.5μm



8208 8207 8206 8205 8204 8203 8202 8201 8200 8199 8198 8197 8196

13 FEB 77

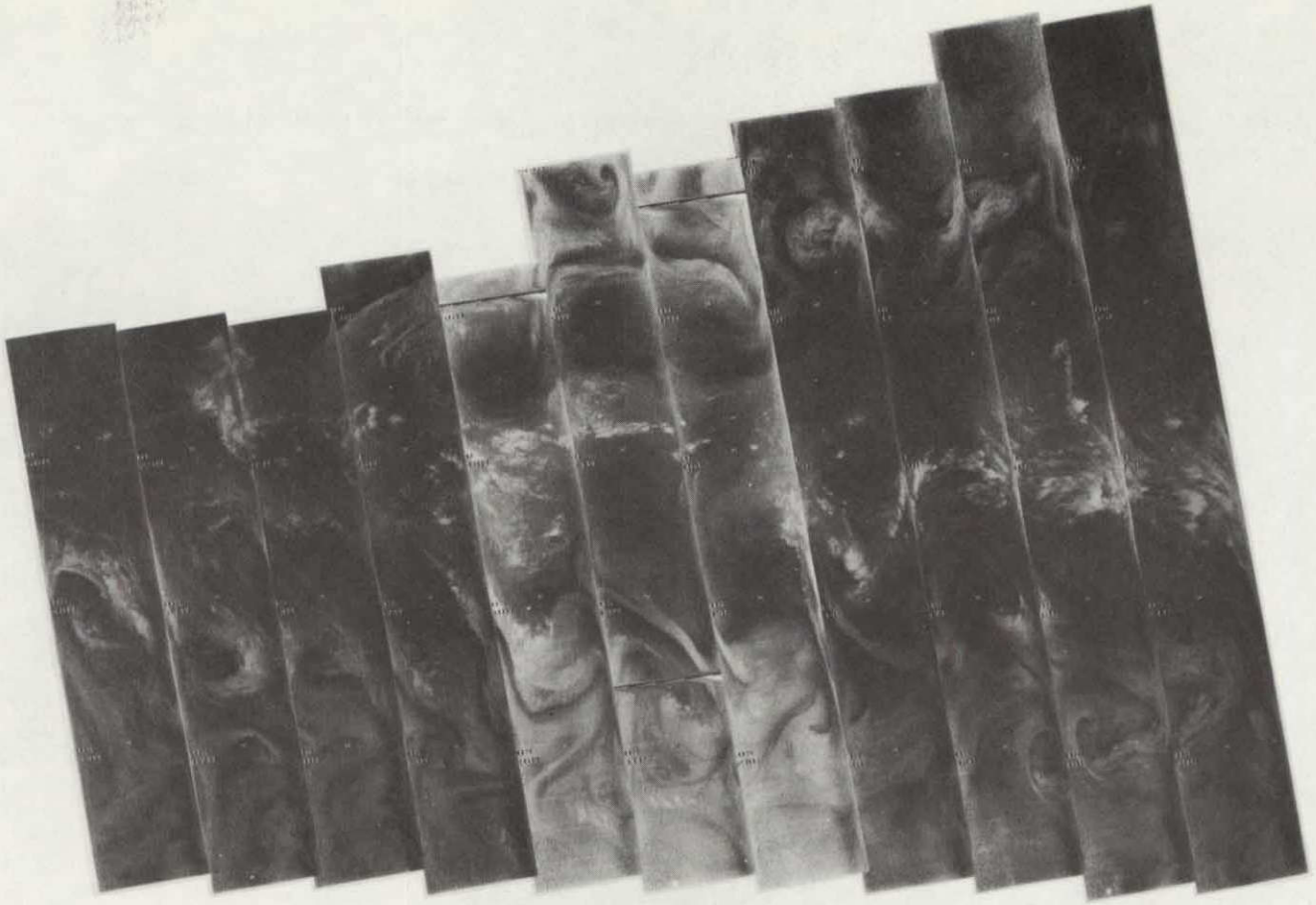
6.7μm



8208 8207 8206 8205 8204 8203 8202 8201 8200 8199 8198 8197 8196

13 FEB 77

11.5μm

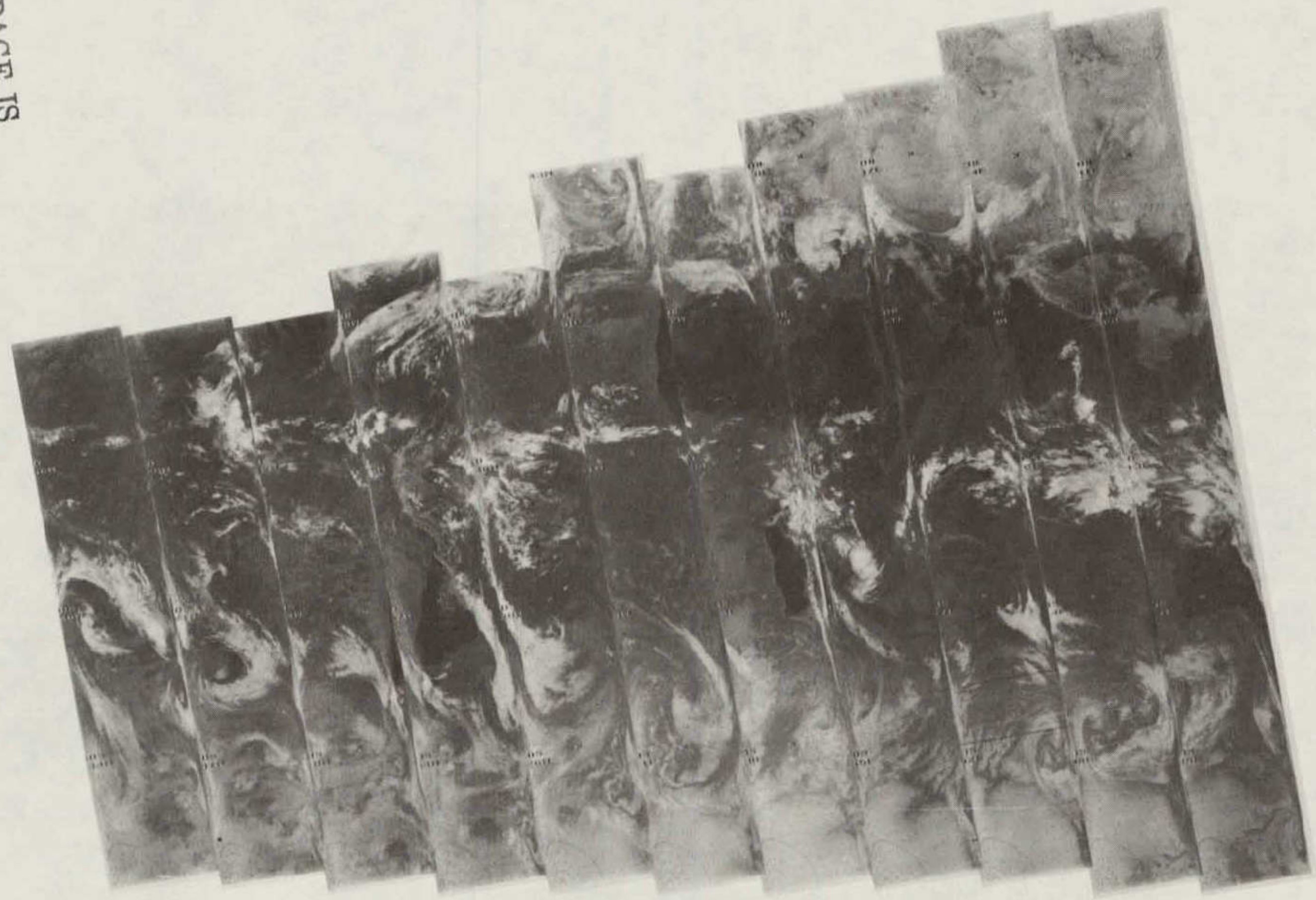


8222 8221 8220 8219 8218 8217 8216 8215 8214 8213 8212 8211 8210 8209

14 FEB 77

6.7μm

4166



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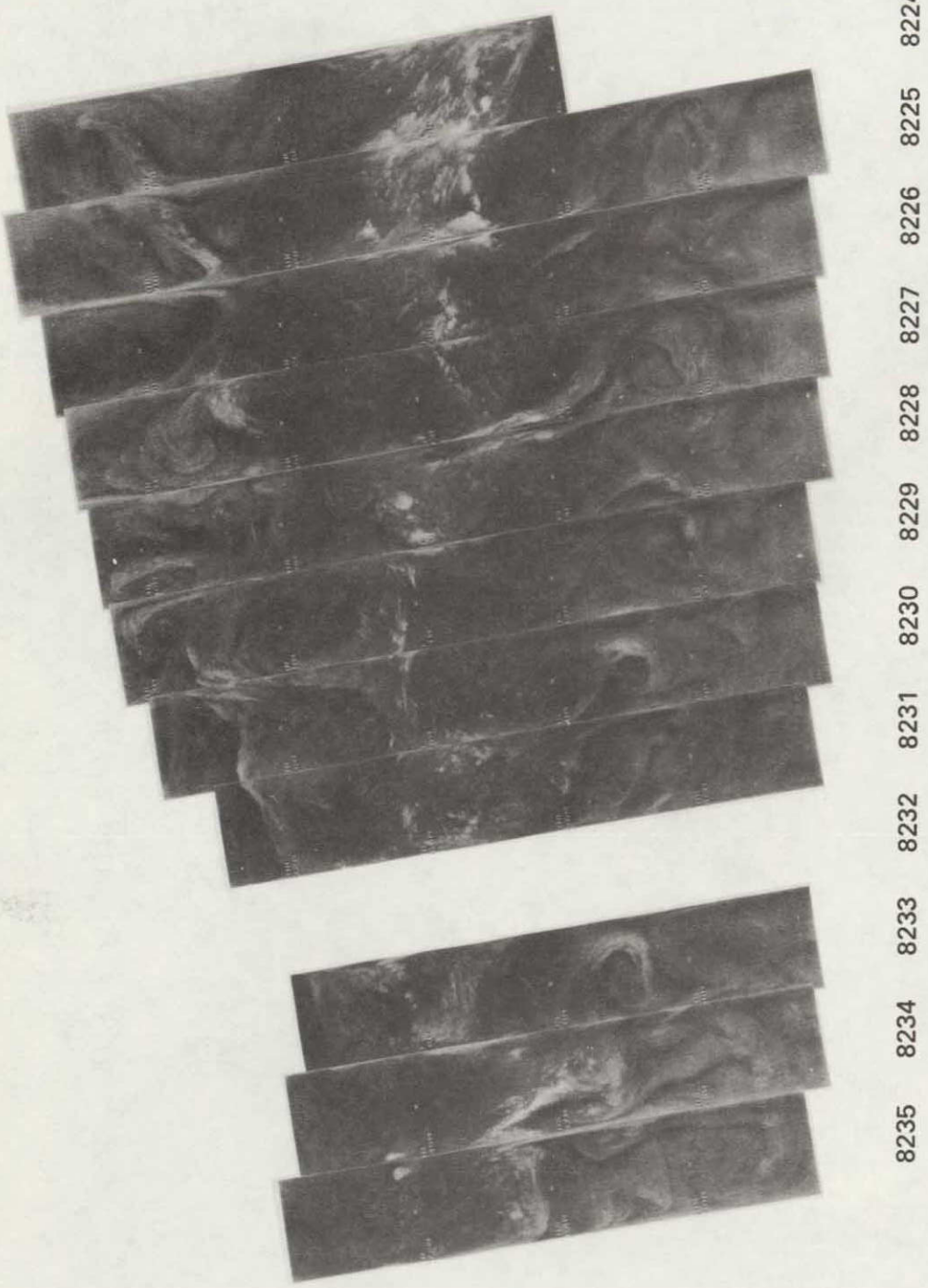
14 FEB 77

11.5μm



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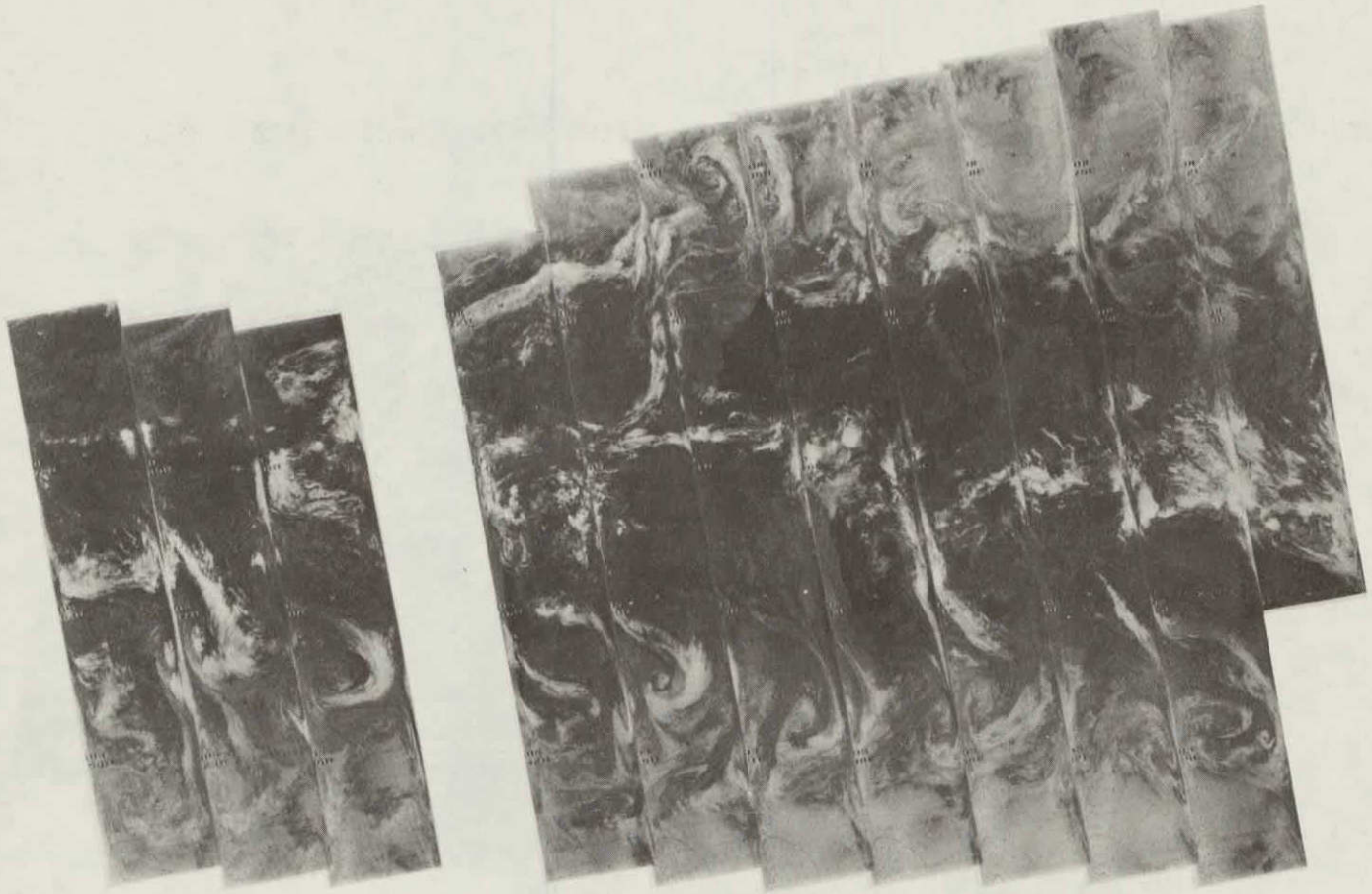
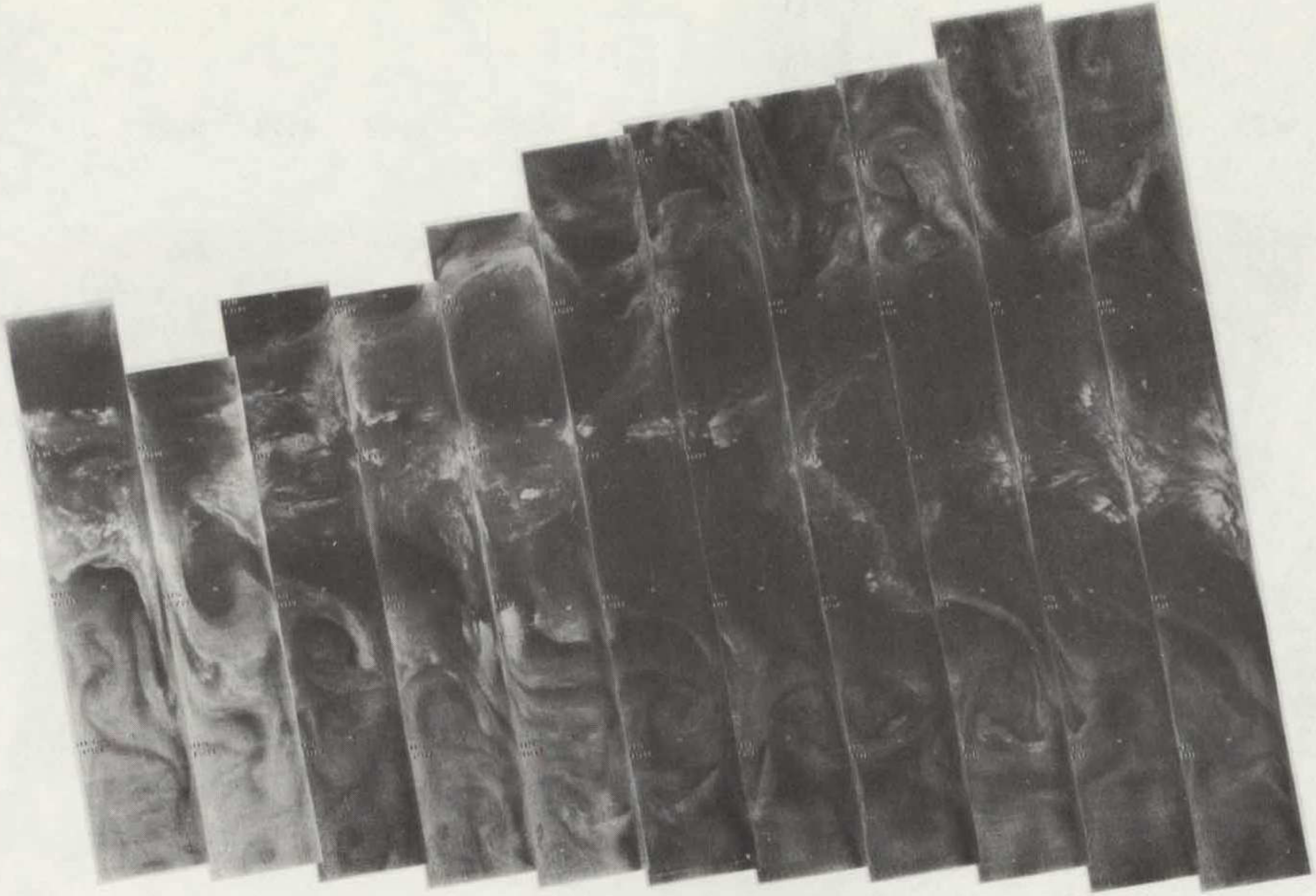


8235 8234 8233 8232 8231 8230 8229 8228 8227 8226 8225 8224 8223

15 FEB 77

11.5μm

4169



8248 8247 8246 8245 8244 8243 8242 8241 8240 8239 8238 8237 8236

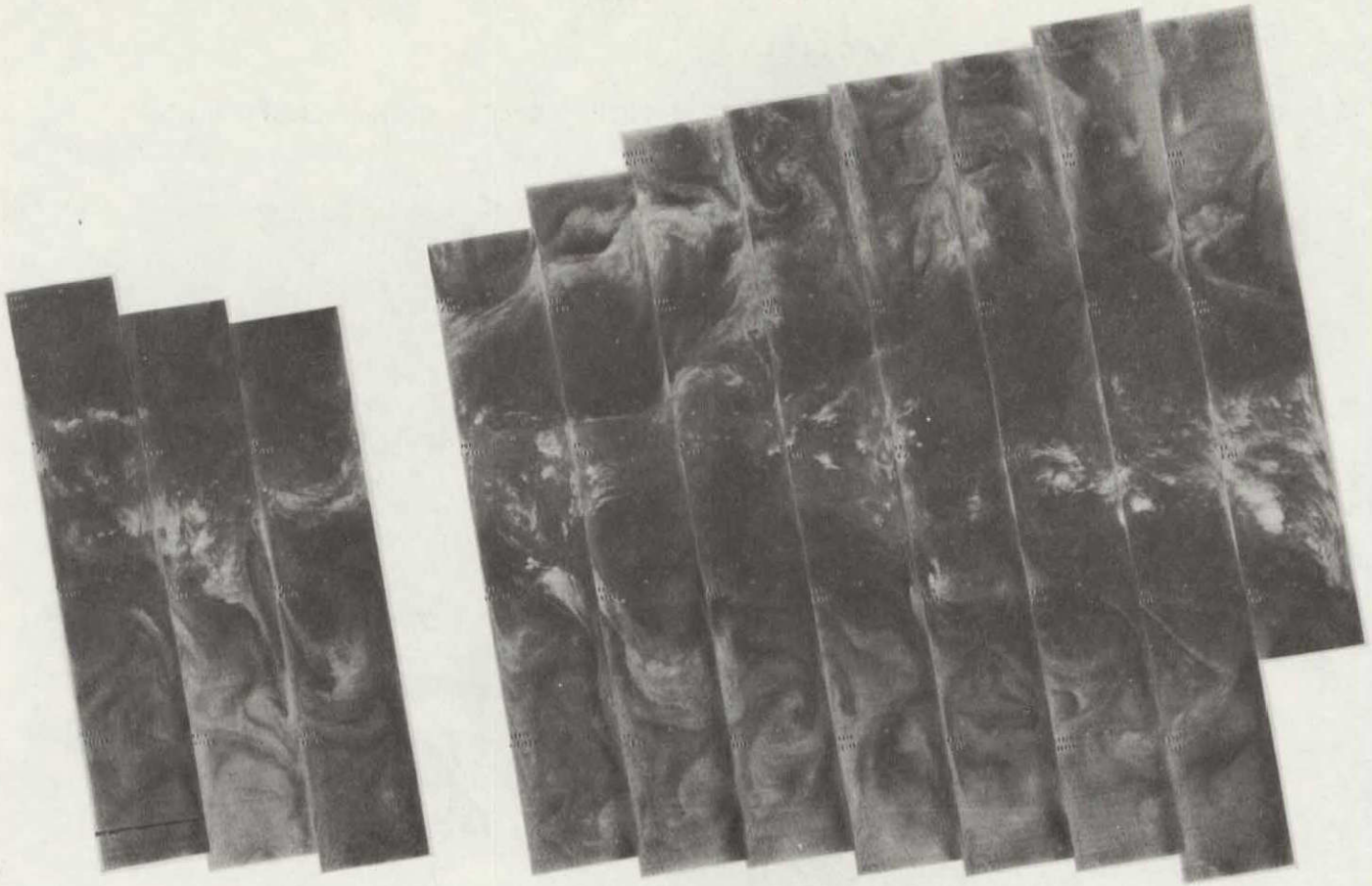
16 FEB 77

6.7μm

8248 8247 8246 8245 8244 8243 8242 8241 8240 8239 8238 8237 8236

16 FEB 77

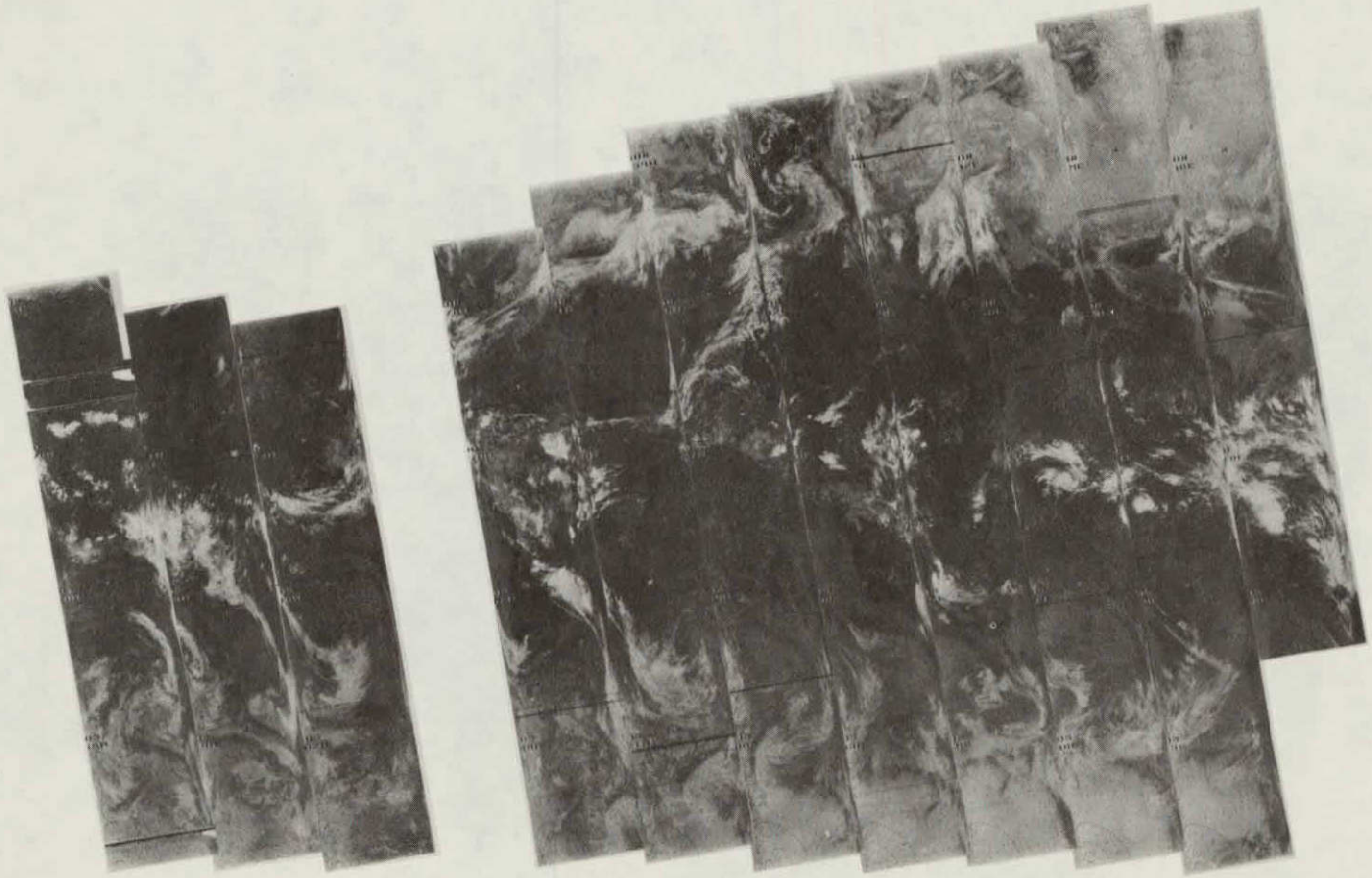
11.5μm



8262 8261 8260 8259 8258 8257 8256 8255 8254 8253 8252 8251 8250 8249

17 FEB 77

6.7μm



8262 8261 8260 8259 8258 8257 8256 8255 8254 8253 8252 8251 8250 8249

17 FEB 77

11.5μm

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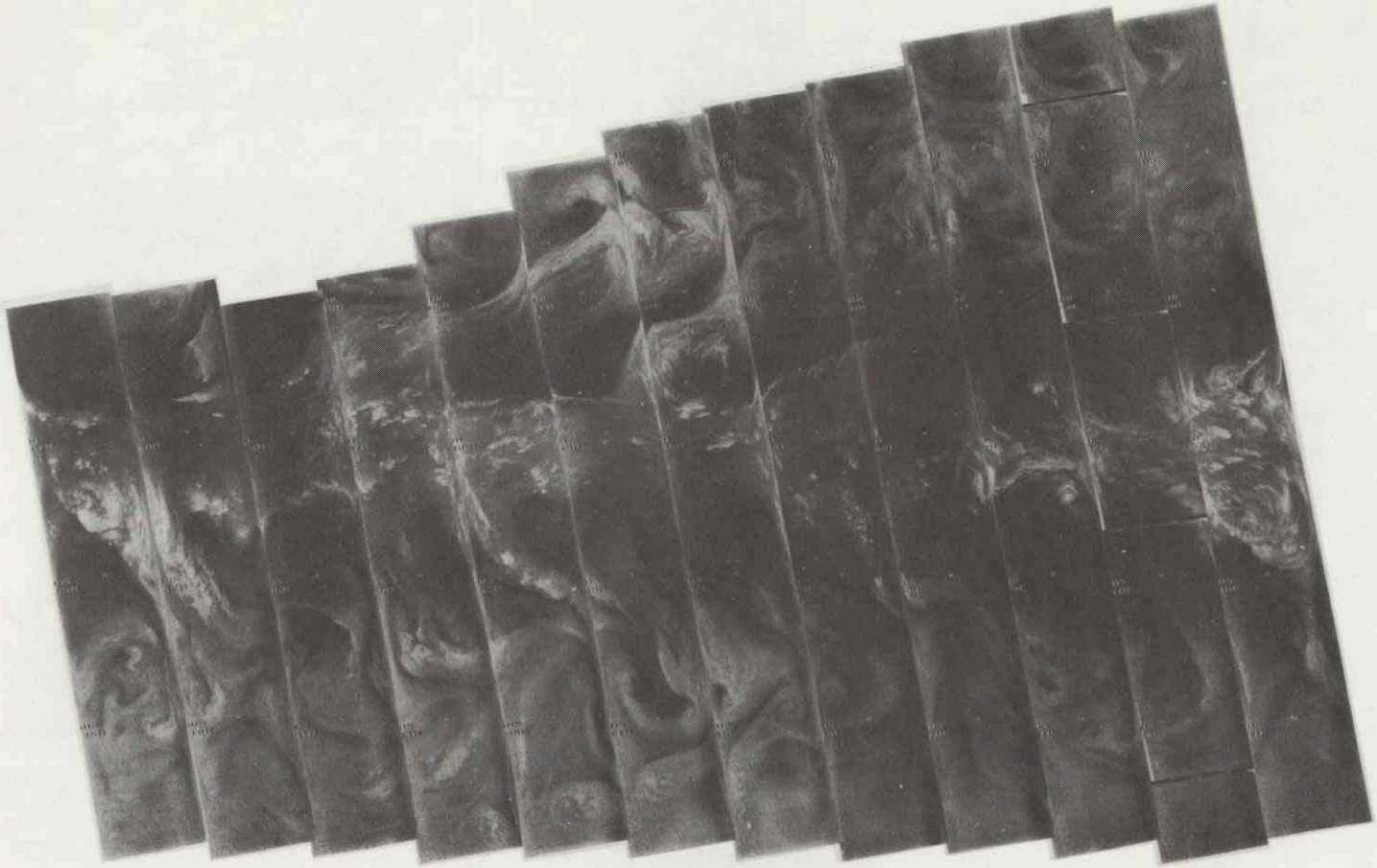


8275 8274 8273 8272 8271 8270 8269 8268 8267 8266 8265 8264 8263

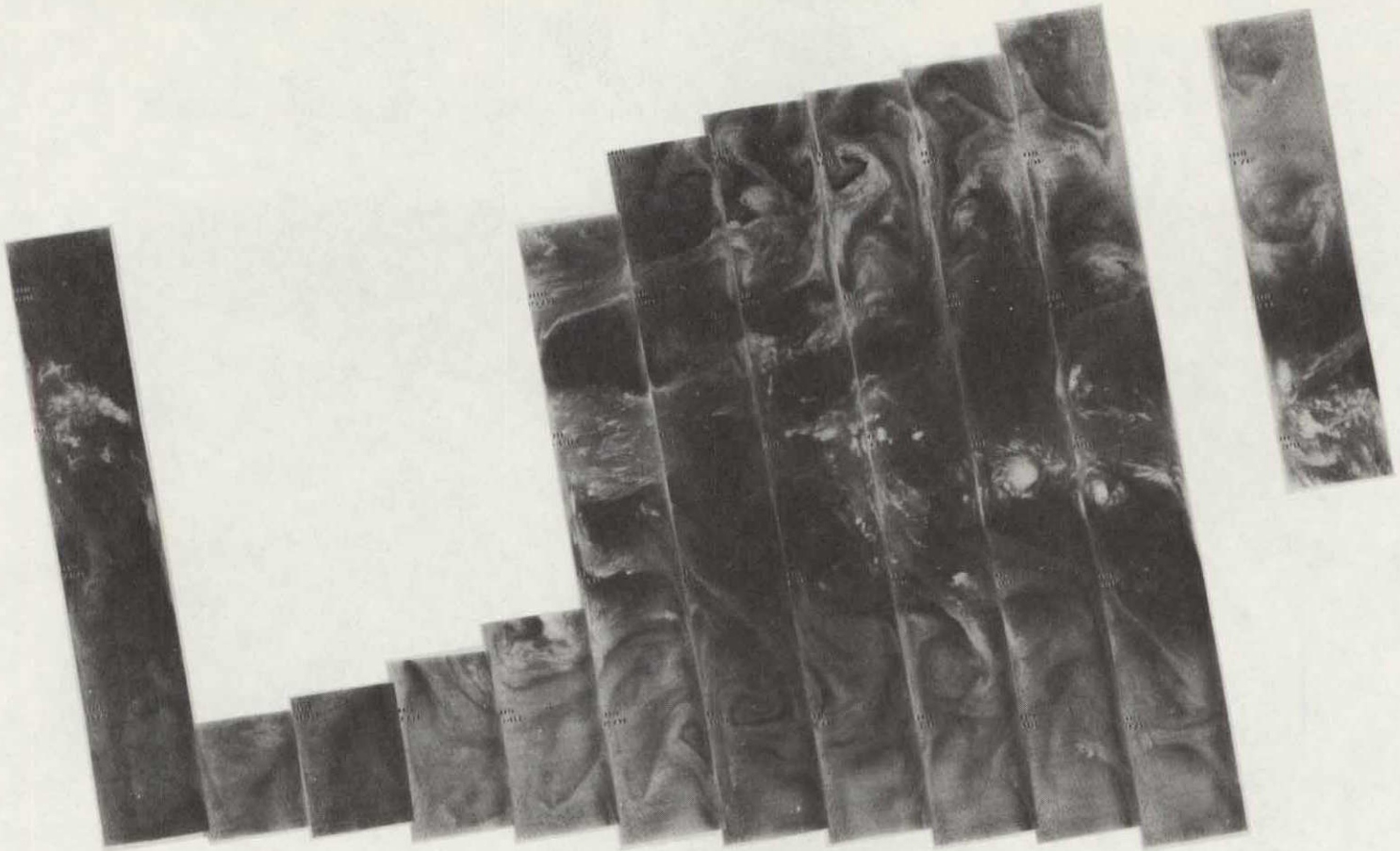
18 FEB 77

6.7μm

8275 8274 8273 8272 8271 8270 8269 8268 8267 8266 8265 8264 8263

18 FEB 77

11.5μm



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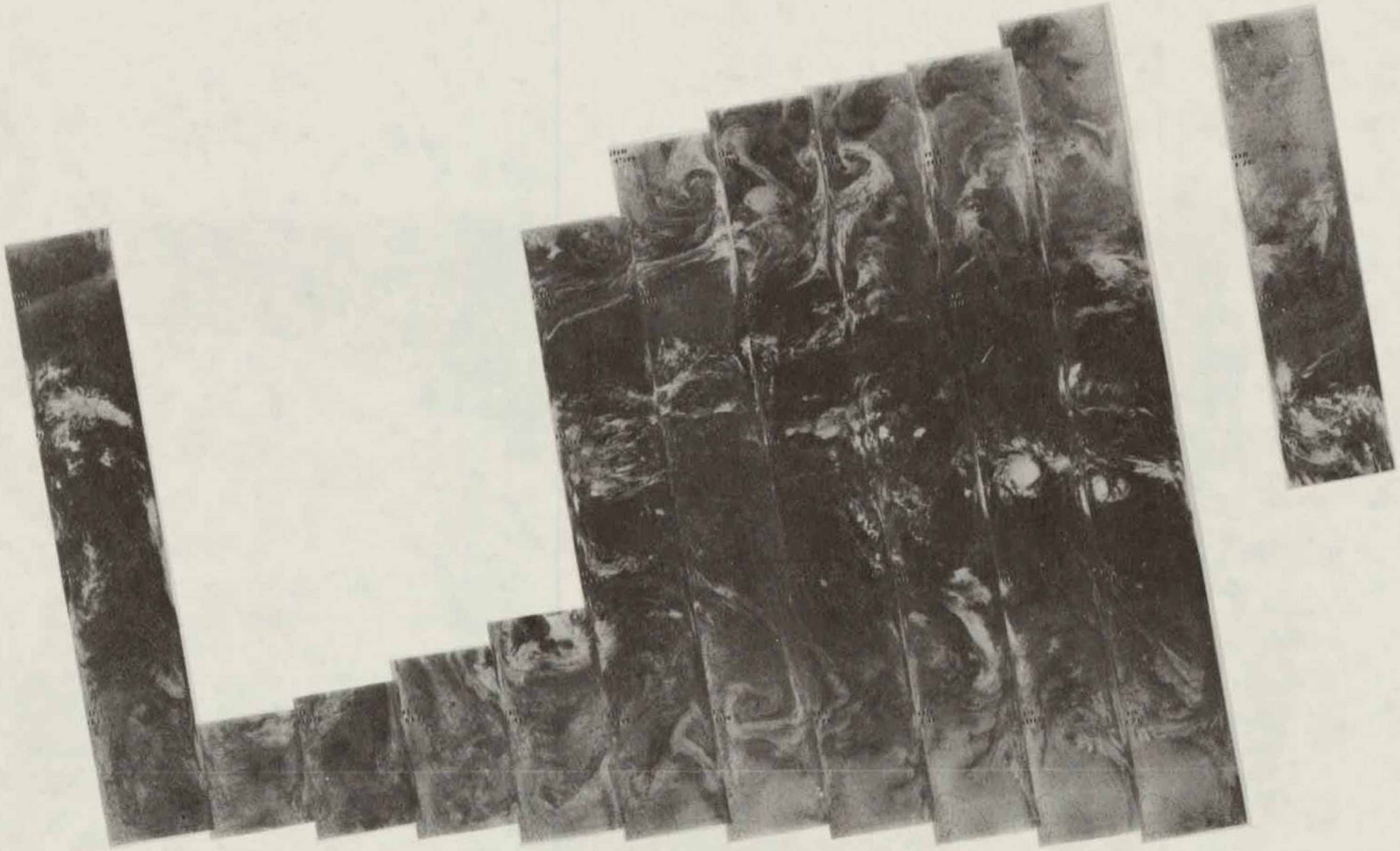
19 FEB 77

6.7μm



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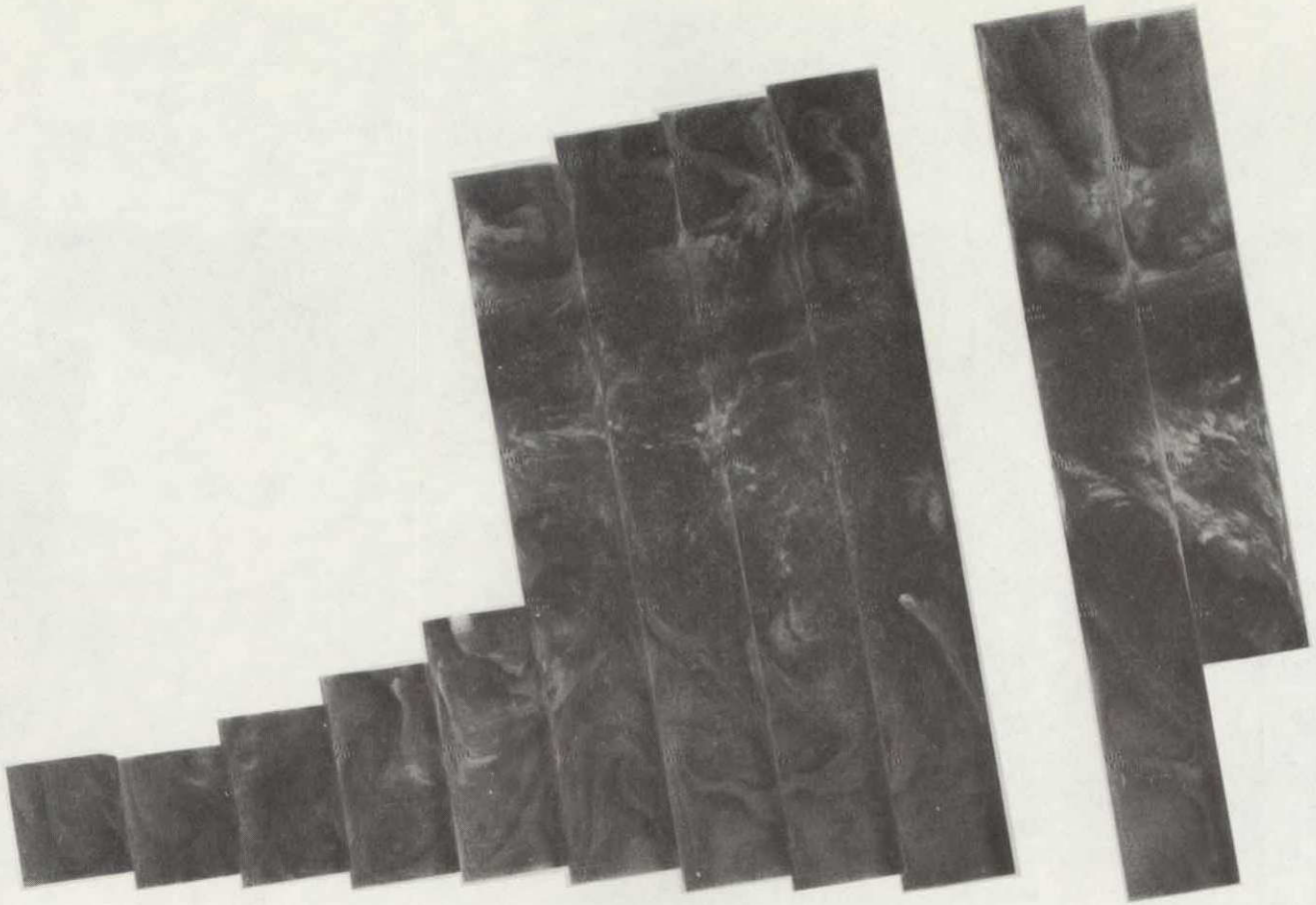
19 FEB 77

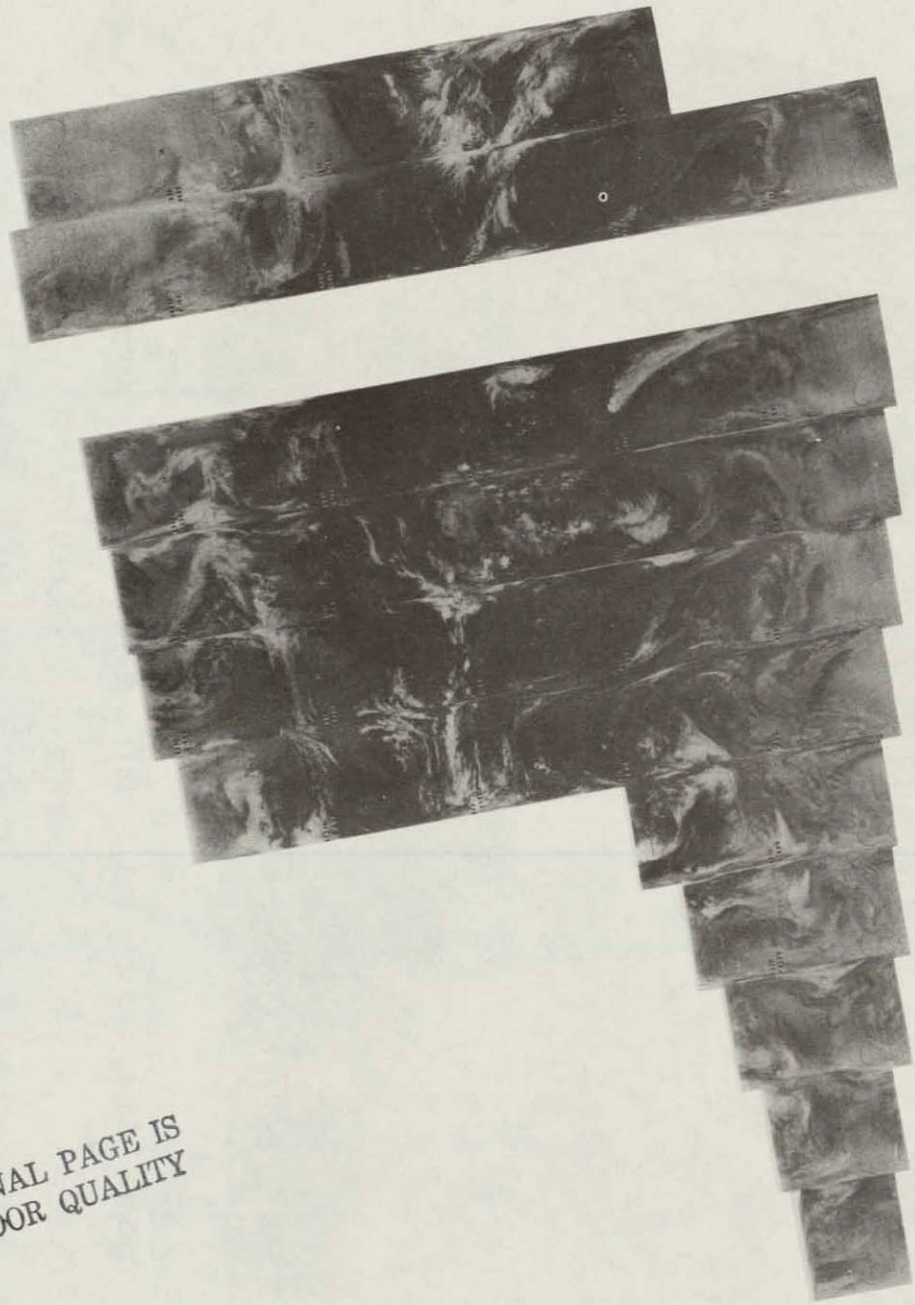
11.5μm

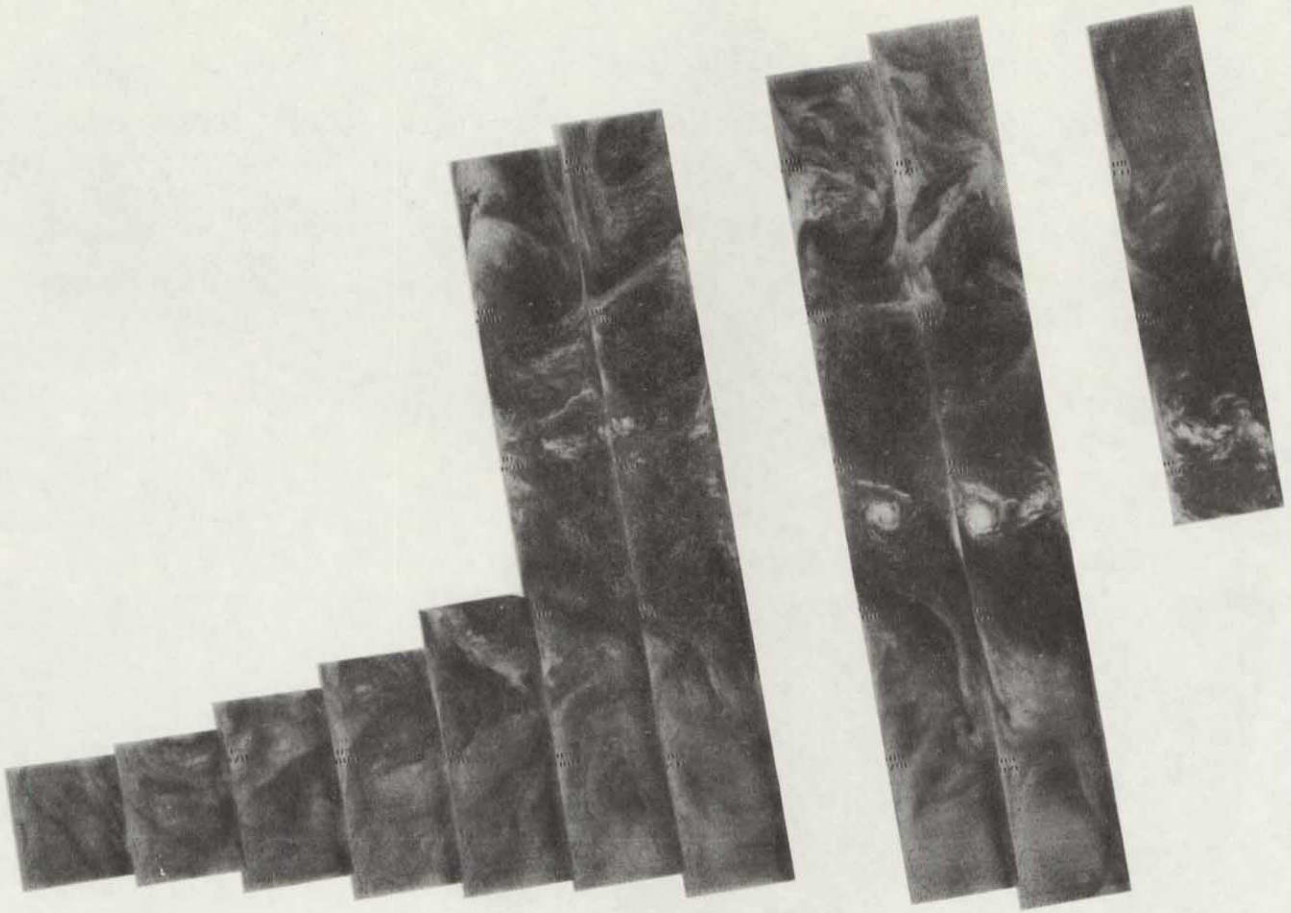


8302 8301 8300 8299 8298 8297 8296 8295 8294 8293 8292 8291 8290

20 FEB 77

6.7μm

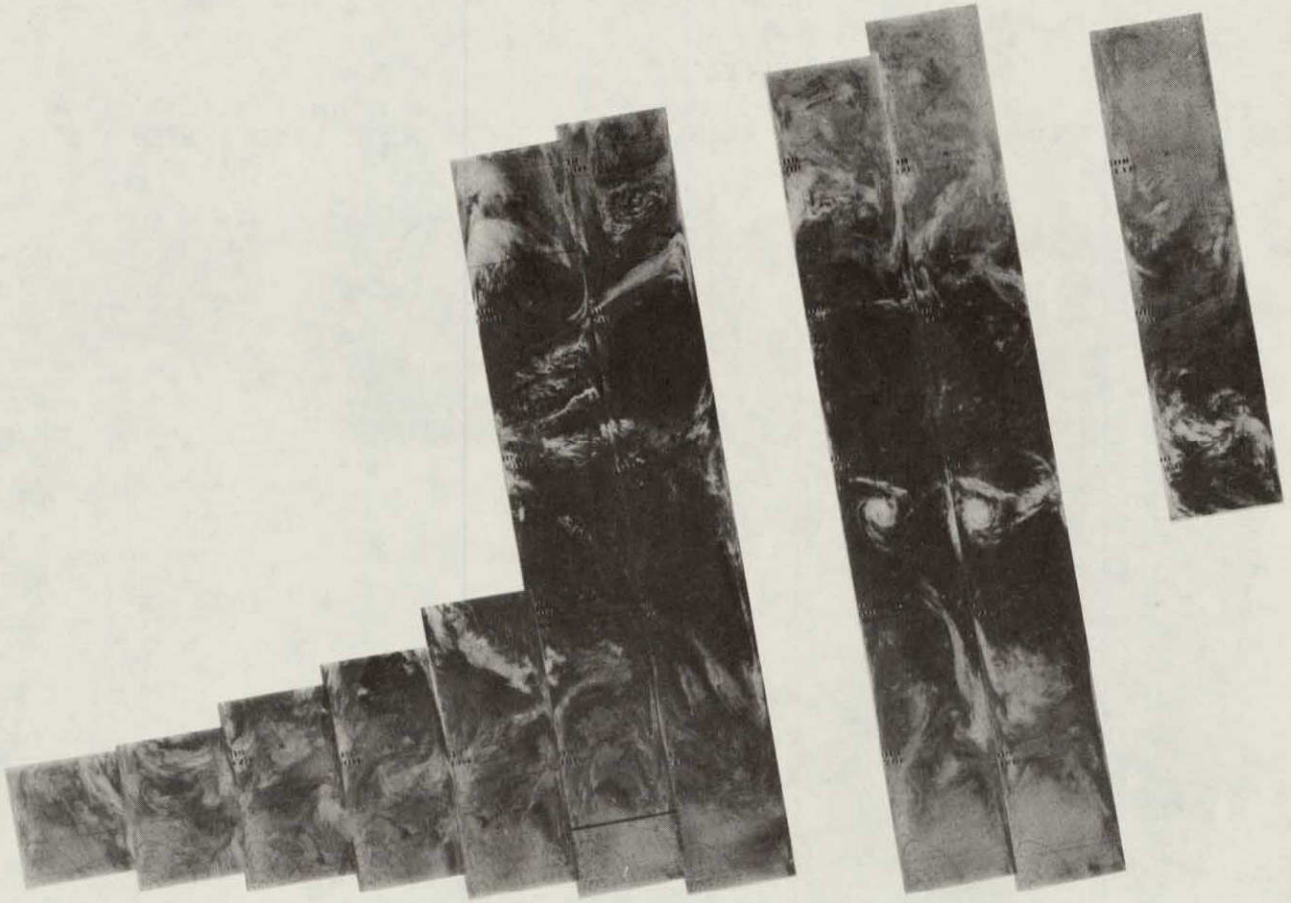




8315 8314 8313 8312 8311 8310 8309 8308 8307 8306 8305 8304 8303

21 FEB 77

6.7μm



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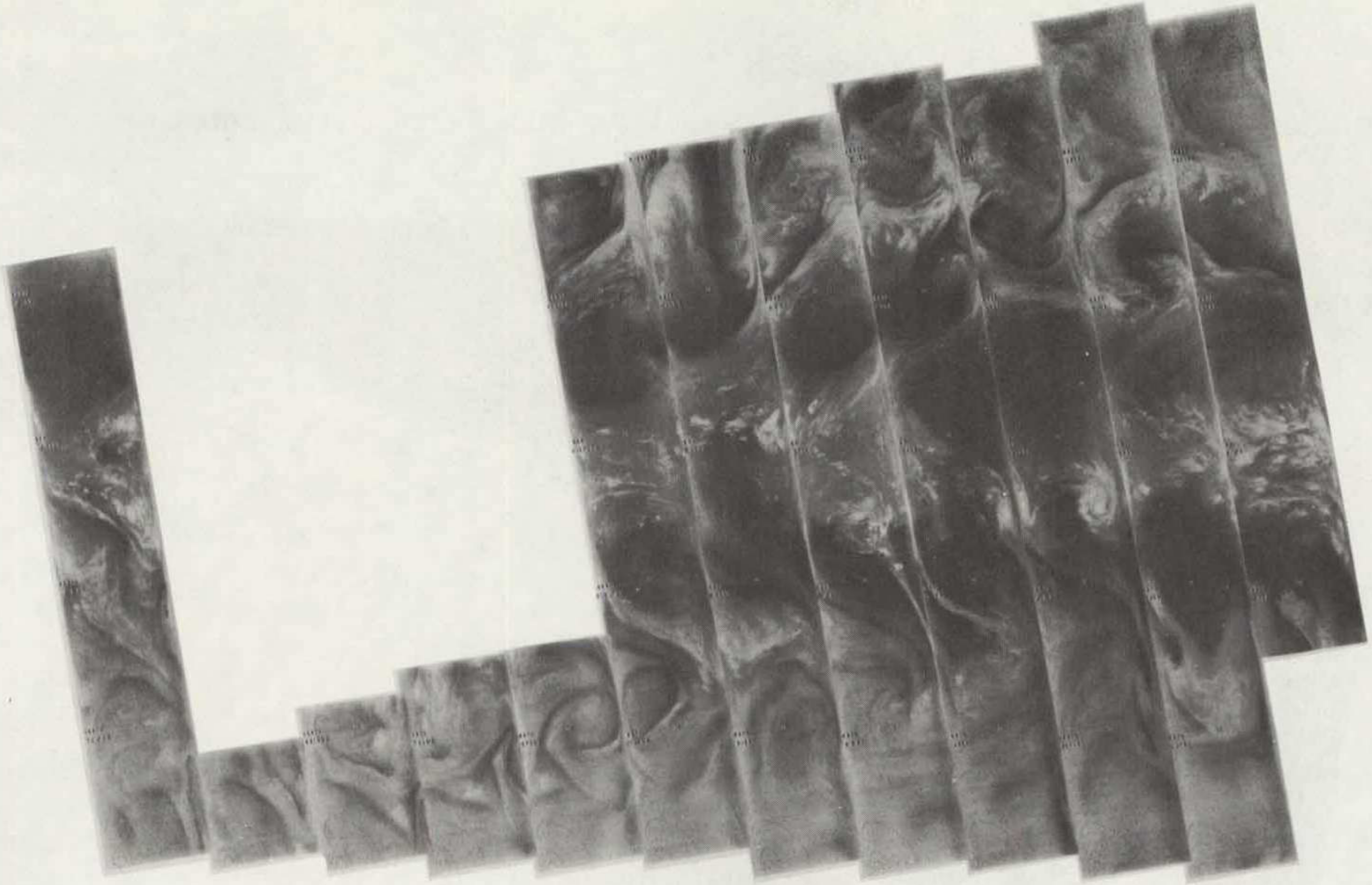
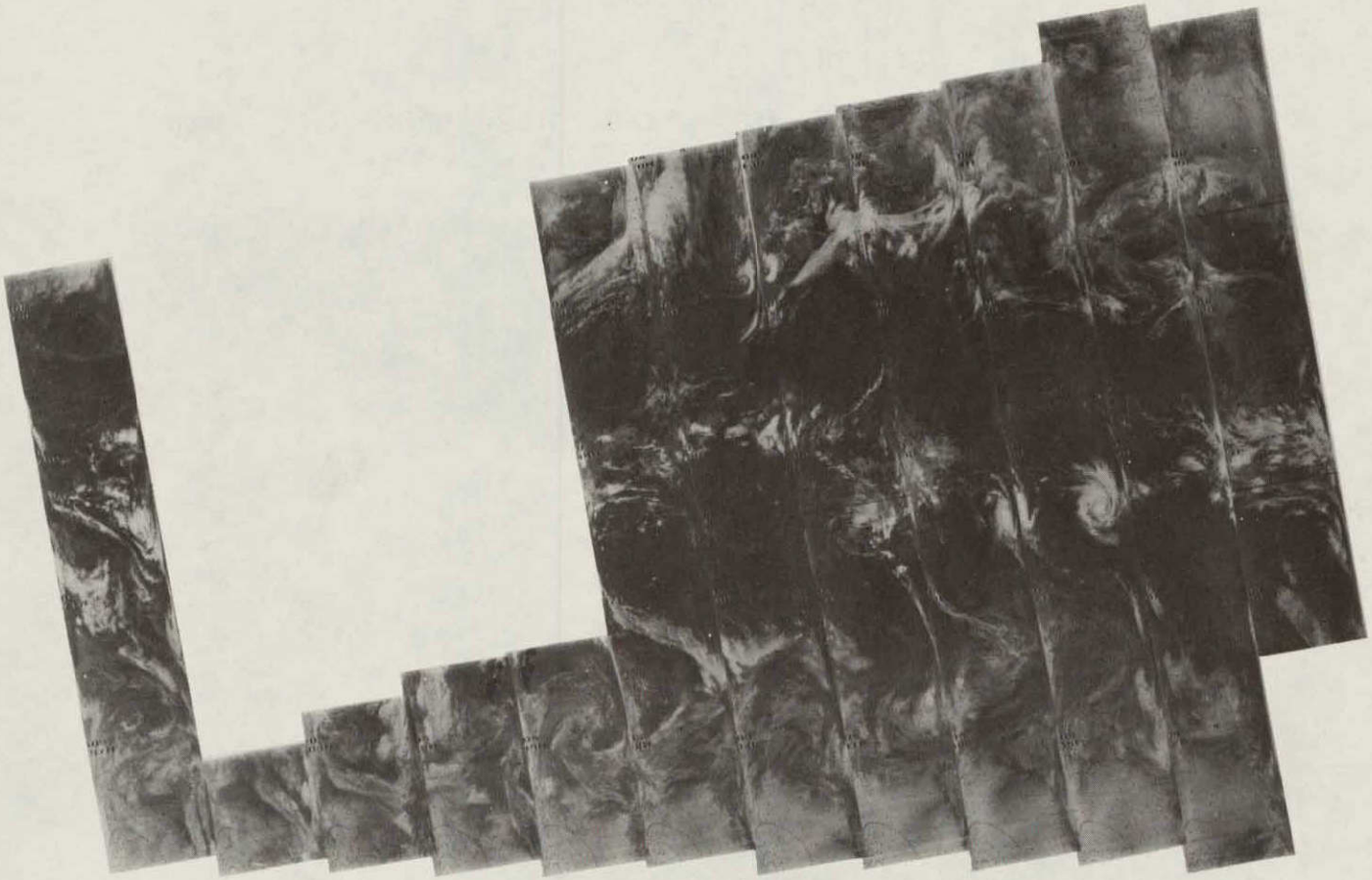
21 FEB 77

11.5μm



22 FEB 77

6.7μm



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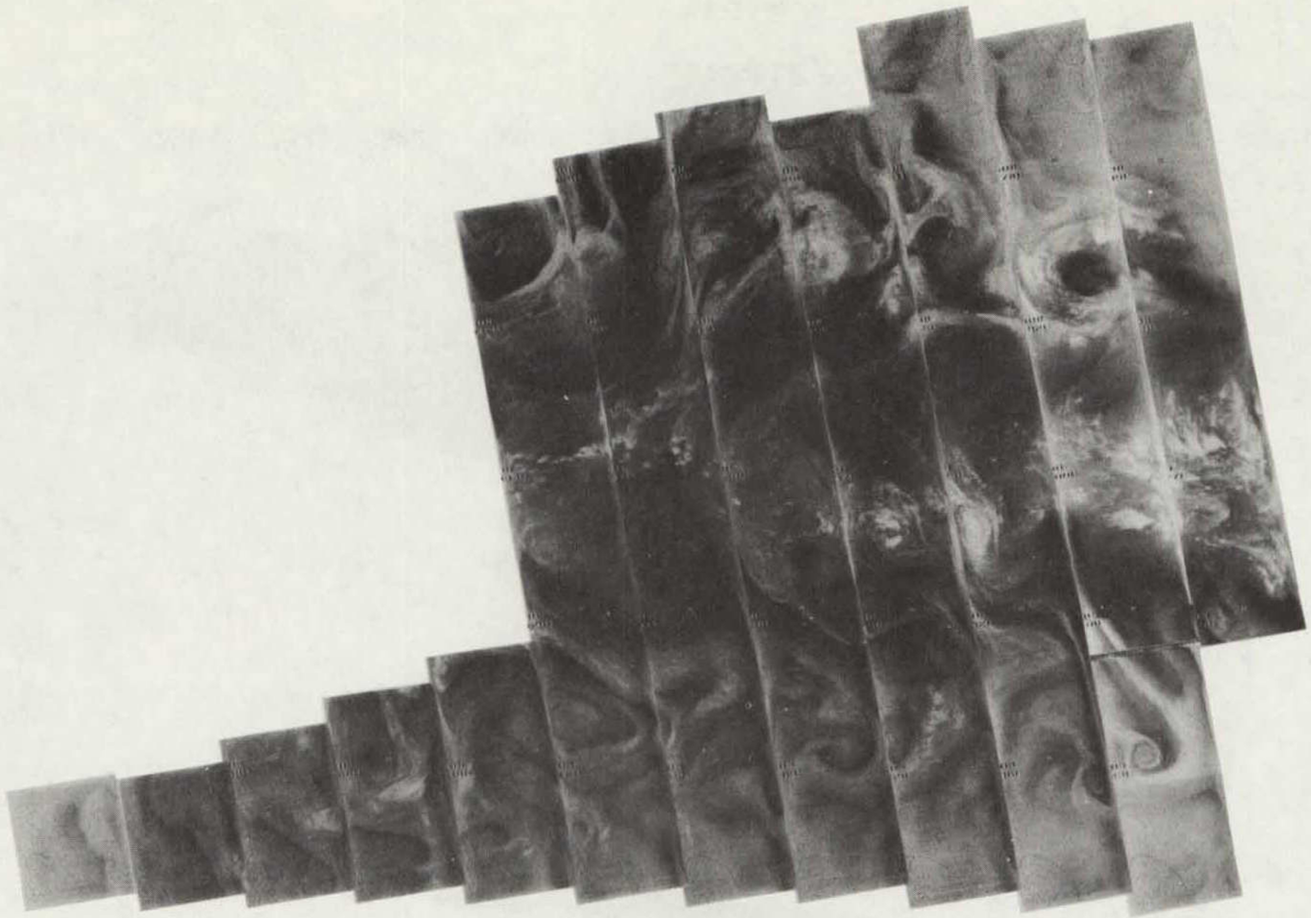
22 FEB 77

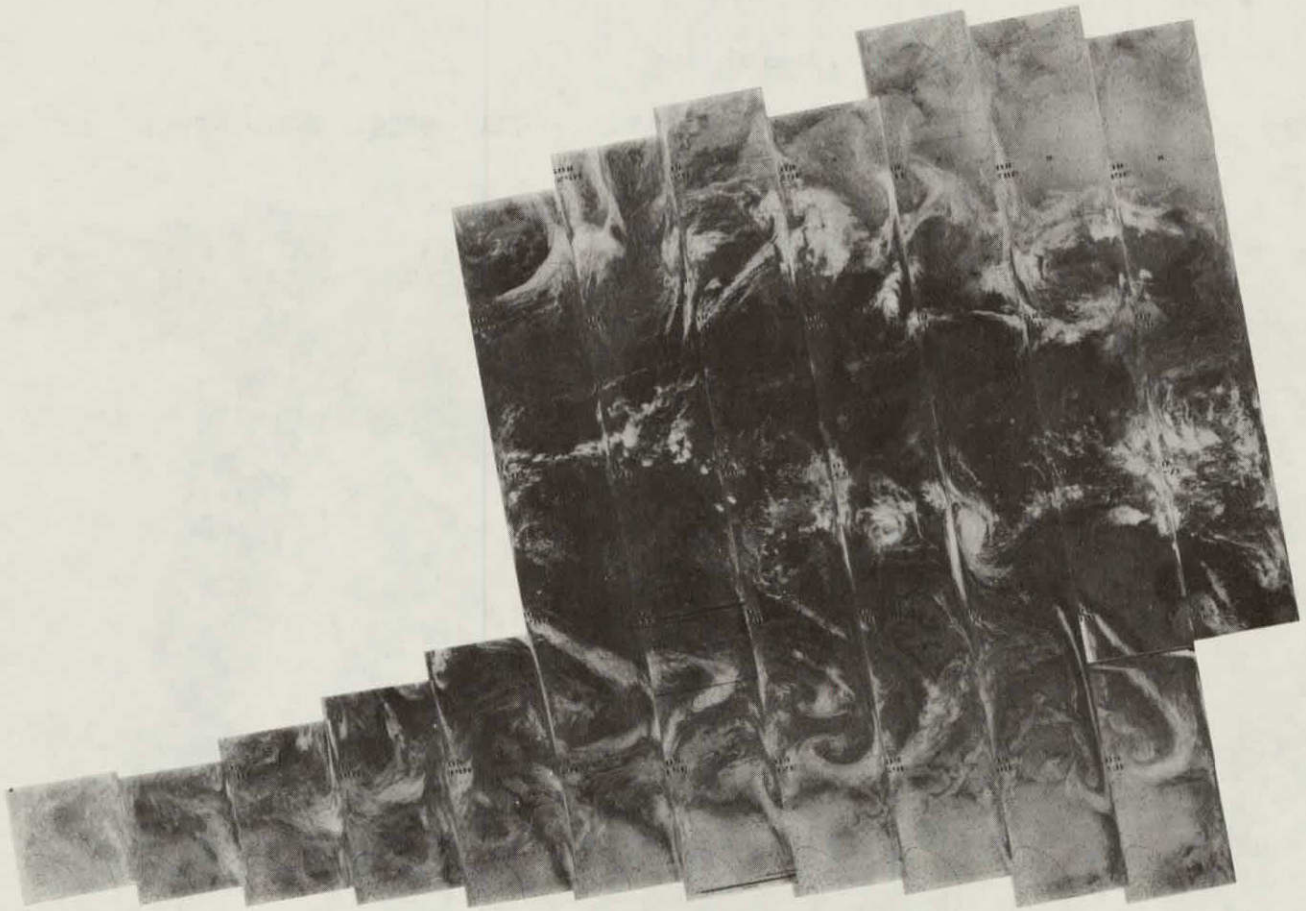
11.5μm



8342 8341 8340 8339 8338 8337 8336 8335 8334 8333 8332 8331 8330

23 FEB 77

6.7μm



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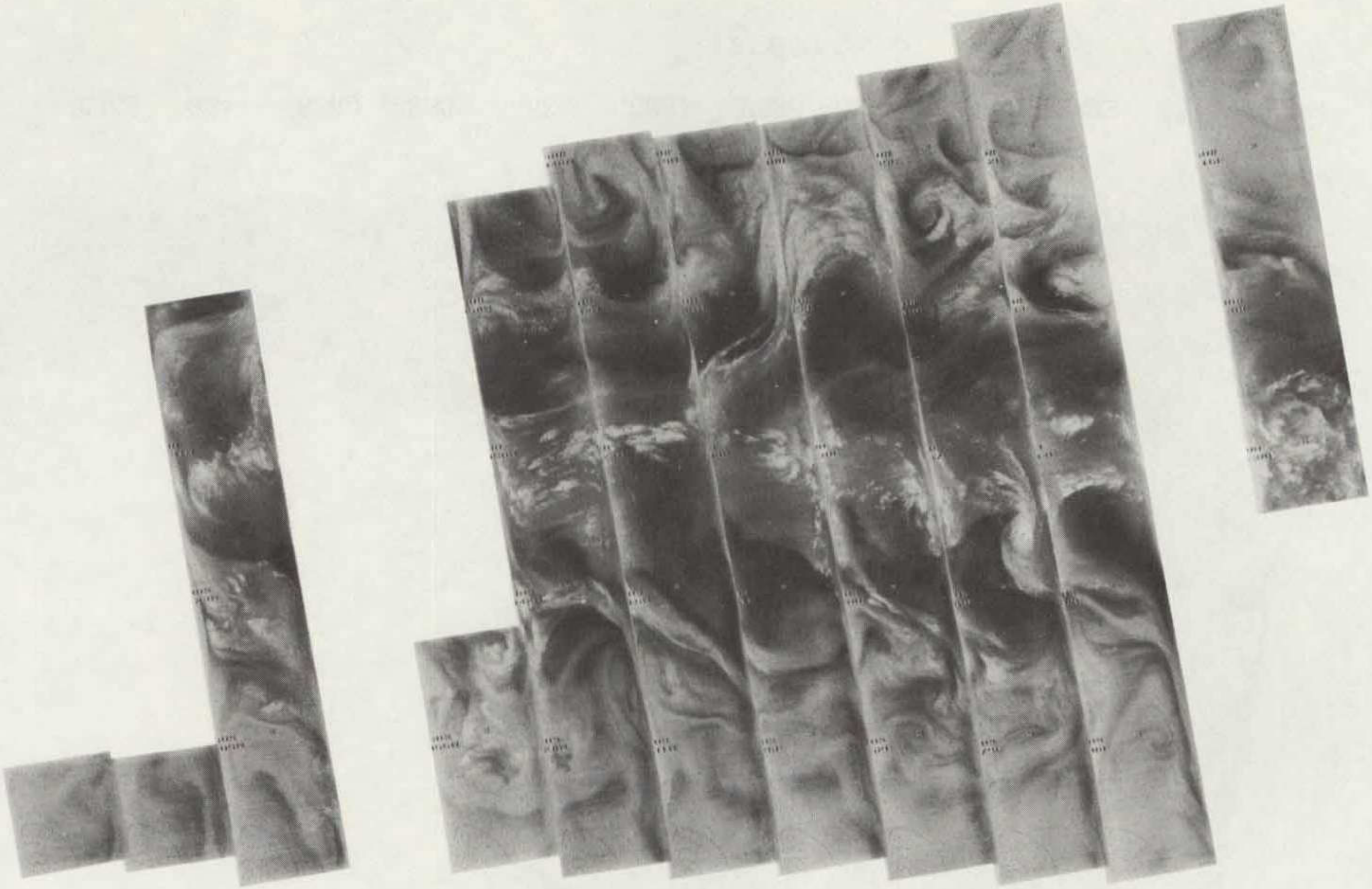
23 FEB 77

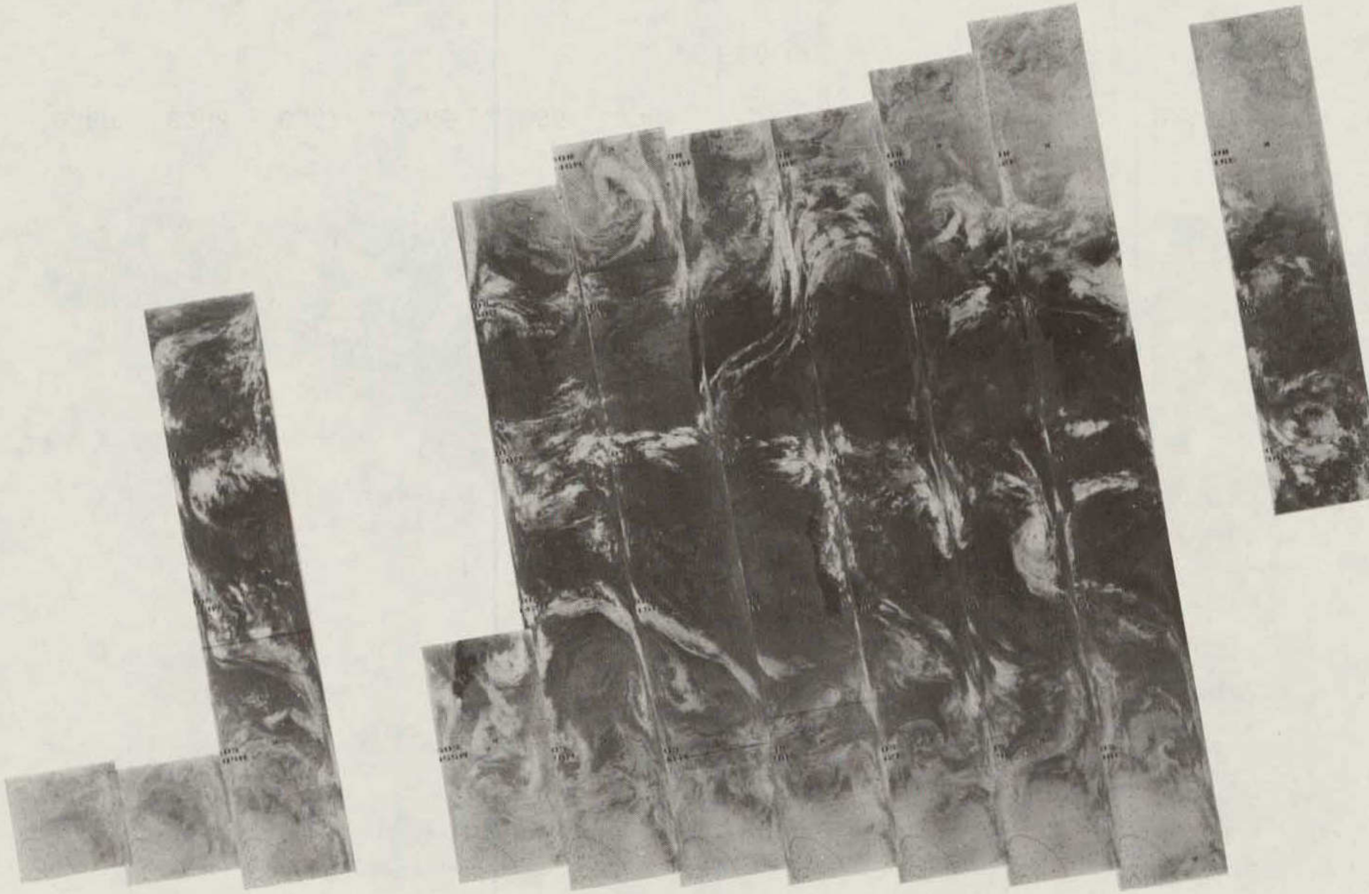
11.5μm



8356 8355 8354 8353 8352 8351 8350 8349 8348 8347 8346 8345 8344 8343

24 FEB 77

6.7μm



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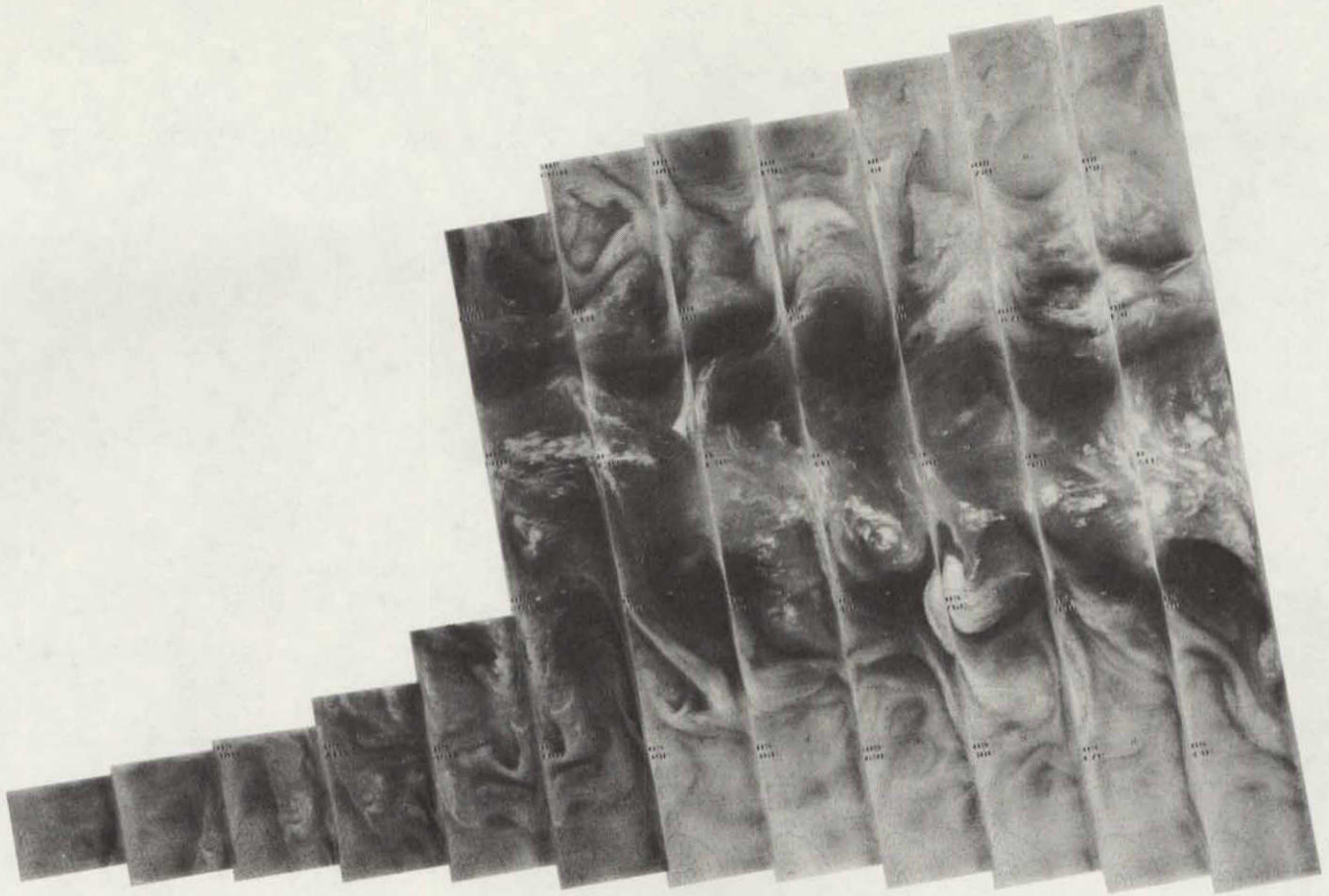
24 FEB 77

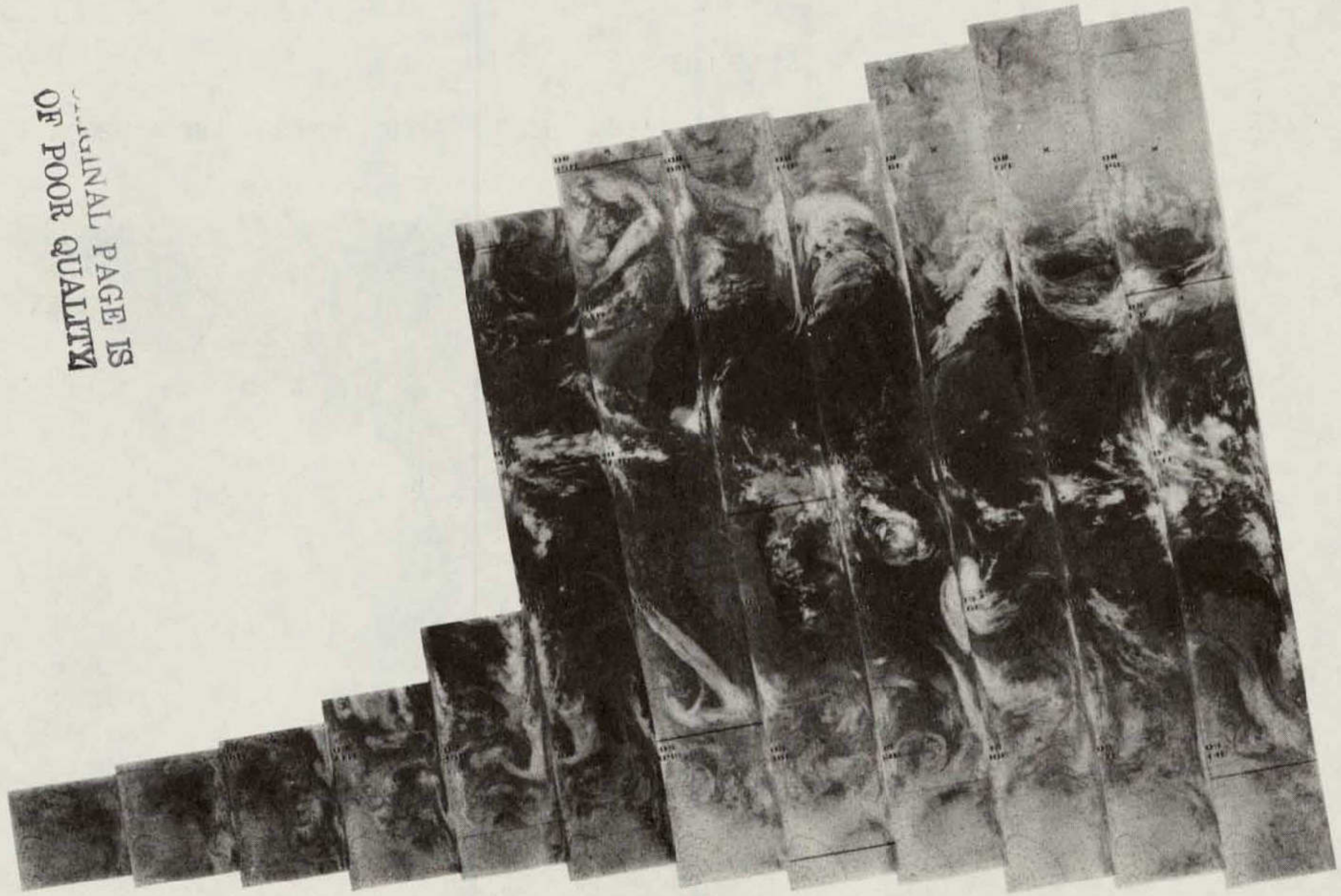
11.5μm



8369 8368 8367 8366 8365 8364 8363 8362 8361 8360 8359 8358 8357

25 FEB 77

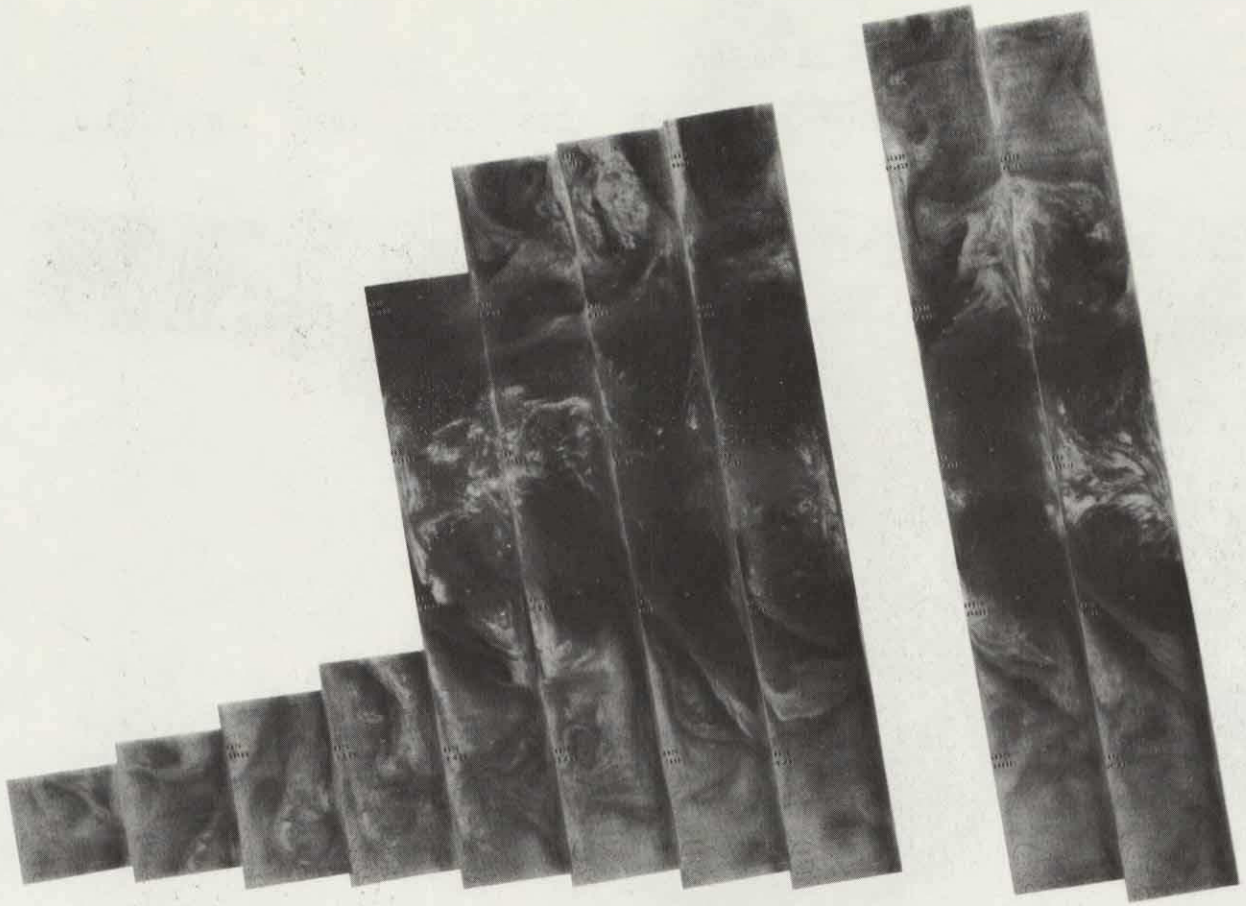
6.7μm



8369 8368 8367 8366 8365 8364 8363 8362 8361 8360 8359 8358 8357

25 FEB 77

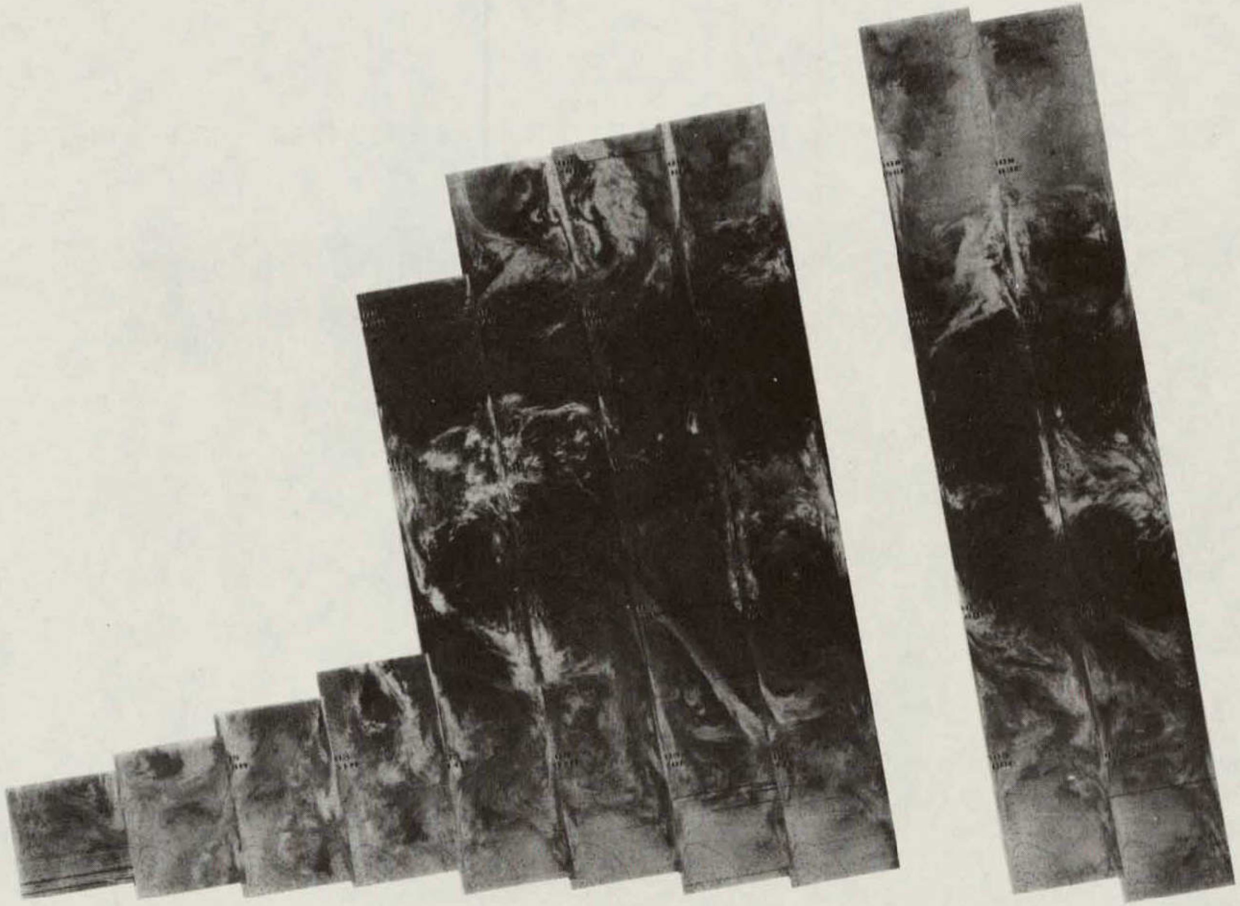
11.5μm



8382 8381 8380 8379 8378 8377 8376 8375 8374 8373 8372 8371 8370

26 FEB 77

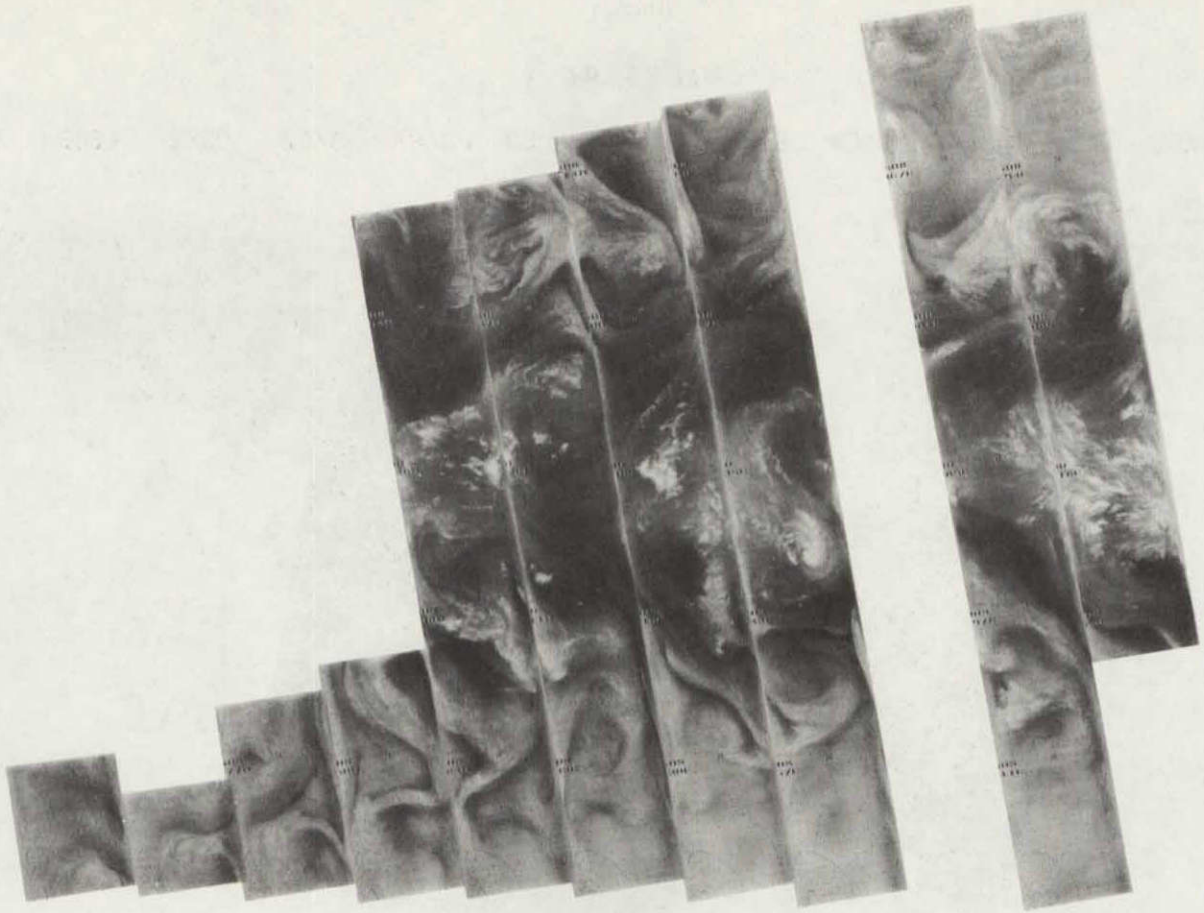
6.7μm



8382 8381 8380 8379 8378 8377 8376 8375 8374 8373 8372 8371 8370

26 FEB 77

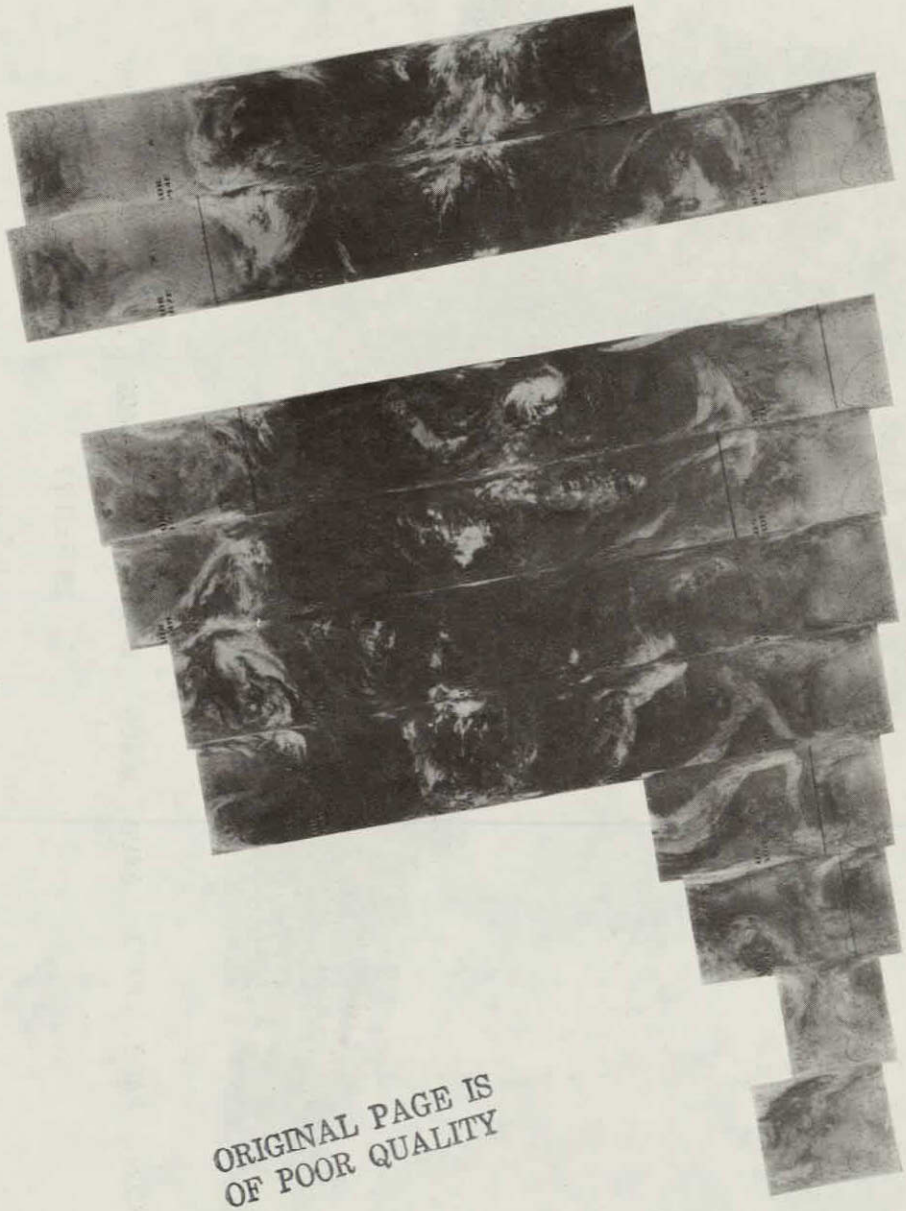
11.5μm

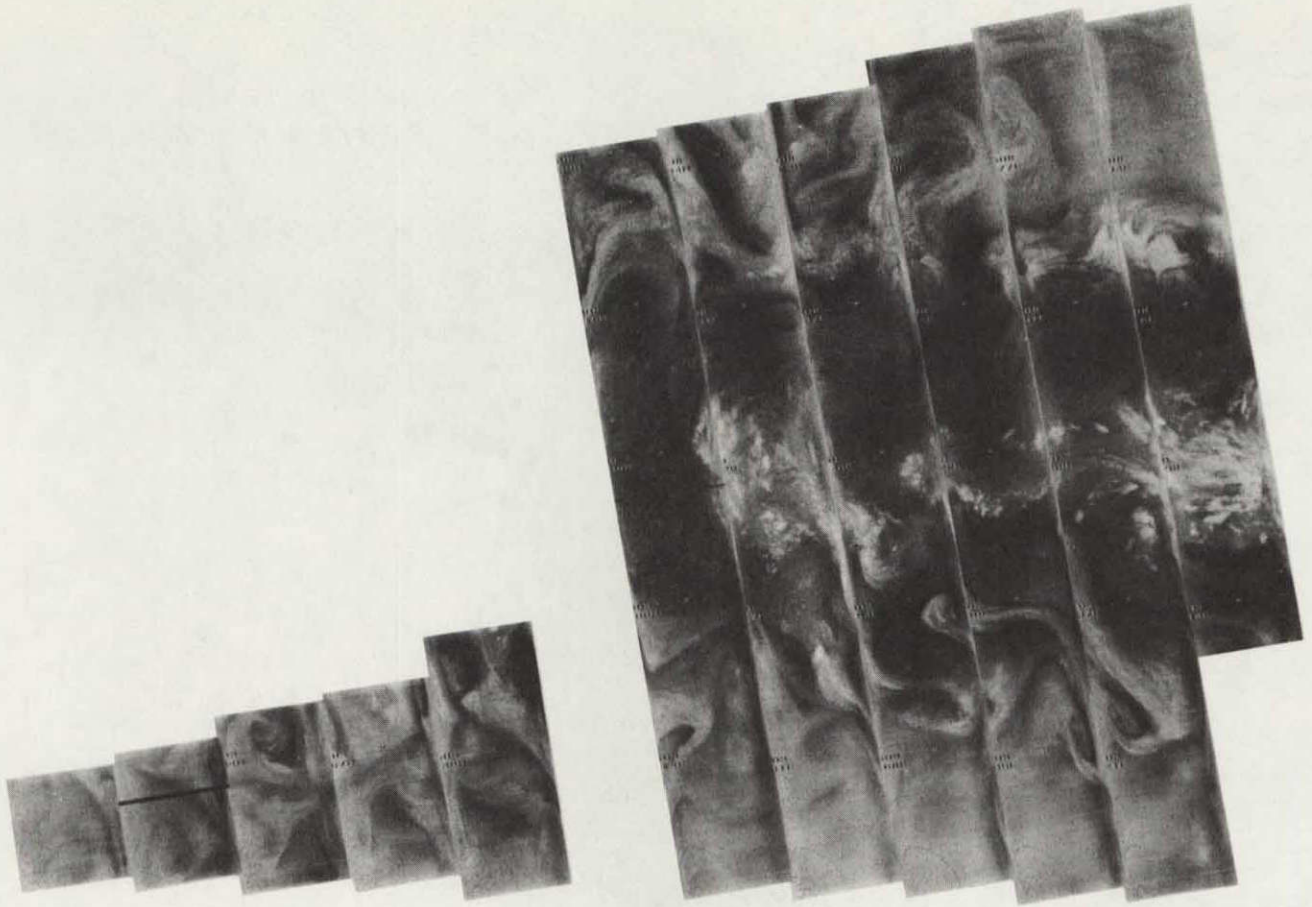


8396 8395 8394 8393 8392 8391 8390 8389 8388 8387 8386 8385 8384 8383

27 FEB 77

6.7μm

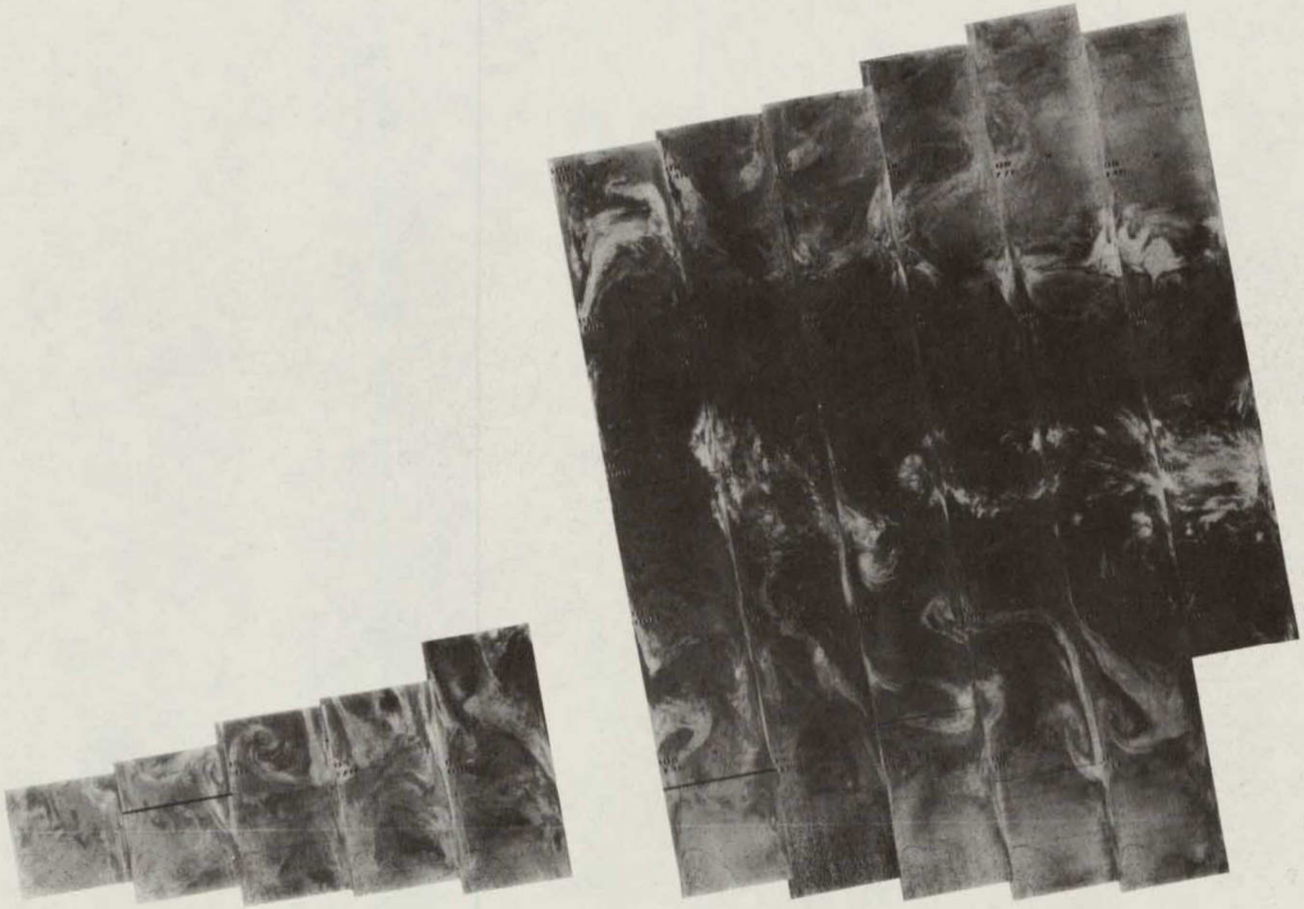




8409 8408 8407 8406 8405 8404 8403 8402 8401 8400 8399 8398 8397

28 FEB 77

6.7μm



8409 8408 8407 8406 8405 8404 8403 8402 8401 8400 8399 8398 8397

28 FEB 77

11.5μm

SECTION 5

CORRECTIONS TO THE NIMBUS 6 USER'S GUIDE

This section presents all corrections or additions to The Nimbus 6 User's Guide, which now are known to be necessary. If additional corrections are required, they will appear in a subsequent catalog. All corrections will be carried forward cumulatively into each new catalog.

5.1 THIR Corrections to the User's Guide

The THIR mirror on Nimbus 6 rotates counterclockwise. Therefore, replace lines one through four on page 14 with the following:

> ". . . rotation is such that, when combined with the velocity vector of the satellite, a left-hand spiral results. Therefore, the mirror scans across the earth from west to east in the daytime when traveling northward, and from east to west at night when traveling southward."

The information in Figure 2-4 on page 17 is correct. However, the direction of scan is counterclockwise, and not clockwise as shown.

5.2 HIRS Corrections to the User's Guide

On page 40, Table 3-2, under "Detector Summary" change LnSe to LnSb.

The CHANNEL (and) RANGE information in the swath displays for HIRS has been changed since launch, making Table 3-5 on pages 54 and 55 in the User's Guide incorrect. The table below labeled Table 5-1 provides the correct information.

5.3 SCAMS Corrections to the User's Guide

The information contents of the image in the swath displays for SCAMS has been changed since launch, making Tables 4-5, 4-6, and 4-7 in the User's Guide incorrect. Thus, the table below labeled Table 5-2 replaces Tables 4-5 and 4-6 in the User's Guide, and the table labeled 5-3 replaces Table 4-7 in the User's Guide. All the images display the same parameters. Therefore, these new tables do not list all the possible displays, as were listed in the old Tables 4-5, 4-6, and 4-7.

On page 44, Figure 3-3, the SCAMS elements are shown with a right-to-left (clockwise) stepping pattern when looking in the direction of satellite motion. The SCAMS elements should be corrected to show a left-to-right (counterclockwise) stepping pattern.

Table 5-1
This table replaces Table 3-5 on pages 54 and 55 in The Nimbus 6 User's Guide

Table 3-5

Temperature Range of Gray Scale, and Channel of HIRS Data for each Swath on each HIRS Image Display Between Orbit 426 and 4697 (14 July 1975 through 27 May 1976)

		SWATH NUMBER									
		1	2	3	4	5	6	7	8	9	10
Coverage Period 14 July-20 July Orbits 426-513	HIRS Channel Display (channel-range)*	08-08	09-09	10-10	16-16	17-17	18-18	12-12	14-14	03-03	15-15
	Temperature Range (°K) (black to white)	300-200	290-210	260-210	310-270	100-900	0-30	290-210	260-210	240-210	280-210
Coverage Period 22 July-31 July Orbits 538-545 548-549 600-613 615-647 651-657 659	HIRS Channel Display (channel-range)*	08-08	09-09	10-10	16-16	17-17	17-17	12-12	14-14	03-03	15-15
	Temperature Range (°K) (black-white)	300-200	290-210	260-230	310-270	100-900	100-900	280-200	280-200	280-200	280-200
Coverage Period 23 July-6 Aug Orbits 546-547 553-599 614 648-650 658 660-747	HIRS Channel Display (channel-range)*	08-08	16-16	16-21	18-18	17-17	10-10	12-12	14-14	03-03	15-15
	Temperature Range (°K) (black-white)	300-200	310-270	300-200	0-30	100-900	260-230	280-200	280-200	280-200	280-200

Table 3-5 (Continued)

		SWATH NUMBER									
		1	2	3	4	5	6	7	8	9	10
Coverage Period 7 Aug. - 27 May Orbits 748-4697	HIRS Channel Display (channel-range)*	08-08	16-16	16-21	18-18	17-17	10-10	12-12	14-14	03-03	15-15
	Temperature Range (°K) (black-white)	310-230	310-230	310-270	0-50	100-900	280-210	300-210	300-210 **	240-185	300-185 ***

*The HIRS channel number is number before the hyphen. The number after the hyphen is the computer program table used to display the data from each channel as temperatures (°K) The range of temperatures displayed in each swath is given beneath each "HIRS Channel Display." The 18 steps of the scale are used to represent the division of each temperature range into 18 approximately equal temperature intervals. The central wavelength (in μm) of each channel on these displays is. channel 3 = 14.4, 8 = 11.0, 9 = 8.2, 10 = 6.7, 12 = 4.52, 14 = 4.40, 15 = 4.24, 16 = 3 71, 17 = 0.61, and 18 is the temperature difference between channel 16 and channel 8. The values of channel 17-17 are albedo, represented as "counts" between 100 (blackest) and 900 (whitest). The values for 16-21 represent a second temperature range for channel 16 data Table 3-1 on page 39 of the User's Guide provides detailed spectral information and the purpose of each of the HIRS channels

**14-14 temperature range changed to 270-210 on orbit 3166A (26 January 1976)

***15-15 temperature range changed to 275-210 on orbit 3166A (26 January 1976)

Table 5-2

This table replaces Tables 4-5 and 4-6 (on pages 79 through 81) in the Nimbus 6 User's Guide and Table 5-2 in the Nimbus 6 Data Catalog Volume 4

Table 4-5 and 6

Parameter Limits of the Gray Scale for Parameters 1, 2, 3, 5, 11, 12, and 16 on the SCAMS Image Displays between Orbits 426 and 4751 (14 July 1975 and 31 May 1976)

	Swath		1	2	3	4	5
Orbits 426 thru 1425 14 July 75 thru 26 Sept. 75	Parameter		3	2	16	11	12
	Gray Scale Value	black	280 °K	320 °K	10 °K	60 g/mm^2	1.5 g/mm^2
		white	210	100	-22	0.0	-0.1*
Orbits 1426 thru 3675 26 Sept. 75 thru 12 Mar. 76	Parameter		3	2	16	11	12
	Gray Scale Value	black	280 °K	320 °K	10 °K	60 g/mm^2	2.0 g/mm^2
		white	210	100	-22	0.0	0.0
Orbits 3676 thru 3899 12 Mar. 76 thru 29 Mar. 76	Parameter		5	2	16	11	12
	Gray Scale Value	black	240 °K	320 °K	10 °K	70 g/mm^2	2.0 g/mm^2
		white	200	100	-22	0.0	0.0
Orbits 3900 thru 3929 29 Mar. 76 thru 31 Mar. 76	Parameter		1	1	1	5	5
	Gray Scale Value	black	220 °K	265 °K	300 °K	240 °K	280 °K
		white	130	210	260	200	220
Orbits 3930 thru 4584 31 Mar. 76 thru 19 May 76	Parameter		1	1	1	2	3
	Gray Scale Value	black	220 °K	265 °K	300 °K	320 °K	280 °K
		white	130	210	260	100	220
Orbits 4585 thru 4751 19 May 76 thru 31 May 76	Parameter		1	1	1	5	3
	Gray Scale Value	black	220 °K	260 °K	290 °K	240 °K	280 °K
		white	130	200	245	180	220

*1.6 to 0.0 between orbit 426 and 477

Parameters 1, 2, 3, 5, and 16 represent uninverted antenna temperatures for channels 1 (22.24 GHz), 2 (31.65 GHz), 3 (52.85 GHz), and 5 (55.45 GHz). Parameter 16 is the temperature difference between channels 2 and 3. Parameters 11 and 12 represent inverted antenna temperatures of integrated atmospheric water vapor (channel 11) and integrated liquid water from clouds or precipitation.

Table 5-3

This table replaces Table 4-7 (on pages 82 and 83) in The Nimbus 6 User's Guide

Table 4-7

Contour Program Options used for Parameters 13, 14, and 15 on the SCAMS Image Display

Contour options	Parameters			Valid for orbits
	13 Mean temperature between 1000 mb and 500 mb	14 Mean temperature between 500 mb and 250 mb	15 Mean temperature between 250 mb and 100 mb	
Contour interval	4°K	4°K	4°K	426-851 (14 July-14 Aug. 1975)
Contour thickness	1°K	1°K	1°K	
Contour interval	4°K	4°K	4°K	852-4751 (14Aug.-1975-31 May 1976)
Contour thickness	2°K	2°K	2°K	

Section 4.5.3 "Tape Format" on page 83 of the User's Guide states that each tape will have "five files, i.e., a short header file. . .and four data files, . . ." There will not be a header file on the archival tape. The sentence should be changed to read: "The tapes will be standard 9-track 1600 BPI tapes, each containing four data files, one for each of four days."

In Table 4-8 on page 80 the "Pitch error" and "Roll error" "Dimensional Units" should be changed to counts (from Deg) and the "Multiplier Used" should be changed to 1 (from 32). In the same table the "Playback orbit" should be followed by one "I*2 Spare", and then by the "Reference orbit", which should be changed to I*4 (rather than I*2). (Reference orbit = year * 100,00 + day * 100 + finish hour.) The "Dimensional Units" for the "Geopotential thicknesses" on page 85 of the same table should be changed to "°K" (from DM).

The following SCAMS information has been edited by the experimenter and briefly outlines the current status of data availability, retrieval methods, and a current table of theoretical brightness temperature values.

The SCAMS instrument operated from June 15, 1975 to May 31, 1976. The data from this experiment has been processed and can be obtained from the National Space Science Data Center at GSFC. The digital data, including instrument output, calibrated antenna temperatures, deconvolved brightness temperatures, and retrieved atmospheric parameters, are recorded on a set of 87 9-track tapes. With three exceptions, each

tape contains four contiguous days of data. Channel 1 and 2 brightness temperatures and five atmospheric parameters from these tapes have been dumped in a condensed format on microfiche. A typical fiche contains somewhat less than two days of data. Photographic images for individual orbits are also available.

At this time, the archived data represent the "first cut" at retrievals, and can be improved with respect to calibration of the oxygen band channels and inversion of the H_2O channels. Data prior to January 2, 1976 was calibrated by assuming the radiometric temperatures of the calibration targets to be equal to their physical temperatures. Comparisons with radiosondes indicated that a more accurate calibration would be obtained with an offset of -1.2°K on the oxygen band target. The archived data starting with January 2, 1976 incorporates this correction. Strictly speaking, the previous data should be recalibrated and reinverted, but for most purposes an adequate approximation can be obtained by simply subtracting 1° from the oxygen band antenna and brightness temperatures and the retrieved temperature profile. No corrections was made to the H_2O targets, for lack of evidence that any was necessary.

All of the archived water vapor and liquid water retrievals were obtained by a linear algorithm. Improved retrievals, particularly in humid regions, can be obtained by use of the following nonlinear equations:

$$\text{vapor} \quad (\text{mm}) = 72 + 12\,\alpha$$

$$\text{liquid} \quad (\text{mm}) = 0.4\,\beta$$

where

$$\alpha = \left[7.34 \ln \left(\frac{280 - T_{01}}{280 - T_{B1}} \right) - 3.75 \ln \left(\frac{280 - T_{02}}{280 - T_{B2}} \right) \right] \cos \theta$$

$$\beta = \left[-3.34 \ln \left(\frac{280 - T_{01}}{280 - T_{B1}} \right) + 9.71 \ln \left(\frac{280 - T_{02}}{280 - T_{B2}} \right) \right] \cos \theta$$

T_{B1} and T_{B2} are the measured brightness temperatures at 22.23 and 31.65 GHz, and T_{01} and T_{02} are brightness temperatures computed for a tropical model atmosphere containing 72 mm precipitable water vapor; the latter are listed in table 5-4 as a function of view angle θ.

The following information, describing how the antenna temperatures are computed from the SCAMS instrument digital data, should be added after SCAMS Section 4.5 of the User's Guide.

Table 5-4

Theoretical brightness temperatures for a saturated tropical troposphere with no clouds and a smooth ocean surface. (Valid for period 2 January 1976 - 31 May 1976)

θ view angle	T_{01}	T_{02}
0	225.6	178.2
8°	225.9	177.9
17°	226.9	177.3
26°	229.2	177.5
34°	233.9	180.1
44°	242.0	187.4
53°	254.5	203.0

4.6 Post-launch Calibration

Antenna temperatures are computed from the SCAMS Instrument digital data for each of the five channels by the equation:

$$T_A = T_{AS} + \frac{T_{AC} - T_{AS}}{d_{T_C} - d_s} (d - d_s)$$

where T_A is antenna temperature for the earth (positions 0-12), T_{AS} is the space antenna temperature (position 13), T_{AC} is the calibration target antenna temperature (position 14), d is earth data in counts, d_s is space data in counts, and d_c is calibration target data in counts. The digital data matrix is described in Table 4-2 of the Nimbus 6 User's Guide. The space calibration antenna temperature is assumed constant at 3° K for all five channels. The target antenna temperature is computed by

$$T_{AC} = T_C + T_{CO}$$

The constant offset T_{CO} is currently zero for channels 1 and 2. The target temperatures (T_C) are given by

$$T_C = a_0 + a_1 (R - R_{25}) + a_2 (R - R_{25})^2$$

where the thermistor resistances (R) are computed by

$$R = R_1 + \frac{R_2 - R_1}{d_{R2} - d_{R1}} (d_R - d_{R1})$$

and values of the other constants are listed in Table 4-9a. Note that channels 3, 4, and 5 share the same calibration target. Also listed in Table 4-9a are word numbers in the digital data matrix containing data values d_R, d_{R1}, d_{R2}, and the recent addition of the T_{CO} value for channels 3, 4, and 5.

5.4 ESMR Corrections to the User's Guide

The following are corrected equations for the ESMR Section of the User's Guide:

page 90

$$X \text{ (km)} = (636 + 10.8P = 0.32P^2) R_j$$

page 96

$$T_B = T_A - (T_A - T_C) \frac{(C - C_A)}{(C_C - C_A)}$$

page 101

$$T_{\substack{\text{Horizontal} \\ \text{True}}} = 1 + a\, T_{\substack{\text{Horizontal} \\ \text{Nominal}}} - T_{\substack{\text{Vertical} \\ \text{Nominal}}}$$

$$T_{\substack{\text{Vertical} \\ \text{True}}} = 1 + b\, T_{\substack{\text{Vertical} \\ \text{Nominal}}} - b\, T_{\substack{\text{Horizontal} \\ \text{Nominal}}}$$

page 106

$$N_j = 256 (T_{Hi} - 100) + T_{Vi} - 100$$

The following information supplements Section 5.3.2 in the User's Guide.

The display format and temperature ranges of the images in the swath displays for ESMR has been changed twice since launch. The first revision occurred after orbit 3932 in which each ESMR scan line is displayed once prior to orbit 3932 and twice after orbit 3933. Similarly, each of the 71 scan-spot elements is displayed once through orbit 3932 and twice after orbit 3933.

Table 5-5

This table accompanies Section 4.6 "Post-launch Calibration", and should be added to the end of the SCAMS section of the User's Guide

Table 4-9

Thermistor Calibration Constants
used to Calculate the SCAMS Target Temperatures

channel / constant	1	2	3,4,5
a_0	298.16		
a_1	.46485	.46535	.46814
a_2	$3.0 \cdot 10^{-5}$	$2.9 \cdot 10^{-5}$	$3.0 \cdot 10^{-5}$
R_{25}	603.75	602.98	599.71
R_1	495.6		
R_2	603.4		
d_R (word no.)	1	11	2
d_{R1} (word no.)	61		62
d_{R2} (word no.)	71		72

Table 5-6

This table replaces Table 4-9 in Section 4.6 "Post-launch Calibration" and should be added to the end of the SCAMS section of the User's Guide.

Table 4-9a

Thermistor Calibration Constants
used to Calculate the SCAMS Target Temperatures

channel / constant	1	2	3,4,5
a_0	298.16		
a_1	.46485	.46535	.46814
a_2	$3.0 \cdot 10^{-5}$	$2.9 \cdot 10^{-5}$	$3.0 \cdot 10^{-5}$
R_{25}	603.75	602.98	599.71
R_1	495.6		
R_2	603.4		
d_R (word no.)	1	11	2
d_{R1} (word no.)	61		62
d_{R2} (word no.)	71		72
T_{CO}	0		-1.2°K

Through orbit 3932 (31 March) the ESMR displays contained 20 swaths of data, as shown in the ESMR image displays up to orbit 3932 in Section 3.3. The swaths are numbered (numbers not shown) from 1 on the left to 20 on the right. Each of the ten swaths on the left has the same geographic coverage. However, each swath displays either horizontally or vertically polarized data at a temperature range as listed in Table 5-5a. The right set of ten swaths has a similar format, and displays the earliest recorded data. If the right swaths were cut and placed above the group on the left, the new display would show the continuous coverage recorded for that orbit. Swaths 1 and 11 have the same polarization and temperature range. Similarly, swaths 2 and 12, 3 and 13, etc., are the same. The tables here labeled 5-8 and 5-9 replace Table 5-5 on page 105 of the User's Guide.

As stated above, the ESMR display format was modified at orbit 3933 (31 March 1976) and again at orbit 6185 (15 September 1976). From orbit 3933 through orbit 6184, the following format was used:

The new displays contain ten swaths of data plus a geographic grid overlay for each swath, as shown in the ESMR image displays after orbit 3933 in Section 3.3, of the Nimbus 6, Data Catalog, Volume 5.

The swaths are numbered (numbers not displayed) from 1 on the left to 10 on the right. Each of the five swaths on the left has the same geographic coverage. However, each swath displays either horizontally or vertically polarized data at a temperature range as listed in Table 5-5b. The right set of five swaths has a similar format, and displays the latest recorded data. If the right swaths were cut and placed below the group on the left, the new display would show the continuous coverage of that display.

Swaths 1 and 6 display the same parameter. That is, the temperature range and polarization for swaths 1 and 6 are the same. Similarly, swaths 2 and 7, 3 and 8, 4 and 9, and 5 and 10 display the same parameters. Table 5-5b is set up to show this duplication of parameter information.

Data time (GMT) references for the left set of five swaths are shown adjacent to the vertical line at the left. Time tick marks are every five minutes with hour and minute annotation every fifteen minutes. Data time references for the right set of five swaths are shown in a similar manner adjacent to the vertical line at the right.

The center portion of the display contains two swaths of grid overlay information: the left grid for overlay on each of the five swaths on the left, and the right grid for overlay on each of the five swaths on the right. The grid longitudes are generated at ten degree intervals between 55 degrees south and 55 degrees north, and at 20 degree intervals from 55 degrees to the Poles. Latitude grids are generated every five degrees. All grid lines consist of a series of dots at one degree intervals. Latitudes are labeled at 60°S, 30°S, EQ, 30°N, and 60°N. Longitude labels are normally placed next to each latitude label.

Table 5-7

This table replaces Table 5-5 on page 105 in the User's Guide

Table 5-5

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 426 through 827 (14 July through 12 August 1975)

Gray Scale Number		Swath Number and ESMR Display Parameter									
		1 and 11 (T_H)	2 and 12 (T_V)	3 and 13 $\frac{T_H+T_V}{2}$	4 and 14 (T_H)	5 and 15 (T_V)	6 and 16 $\frac{T_H+T_V}{2}$	7 and 17 (T_H)	8 and 18 (T_V)	9 and 19 $\frac{T_H+T_V}{2}$	10 and 20 (T_V-T_H)
(black)	1	> 200			> 250			> 300			> 50
	2	196-200	same	same	246-250	same	same	296-300	same	same	46-50
	3	193-196	as	as	243-246	as	as	293-296	as	as	43-46
	4	190-193	1 and 11	1 and 11	240-243	4 and 14	4 and 14	290-293	7 and 17	7 and 17	40-43
	5	187-190			237-240			287-290			37-40
	6	184-187			234-237			284-287			34-37
	7	181-184			231-234			281-284			31-34
	8	178-181			228-231			278-281			28-31
	9	175-178			225-228			275-278			25-28
	10	171-175			221-225			271-275			21-25
	11	168-171			218-221			268-271			18-21
	12	165-168			215-218			265-268			15-18
	13	162-165			212-215			262-265			12-15
	14	159-162			209-212			259-262			09-12
	15	156-159			206-209			256-259			06-09
	16	153-156			203-206			253-256			03-06
	17	150-153			200-203			250-253			00-03
(white)	18	< 150			< 200			< 250			< 00

T_H = Brightness temperature derived from the ESMR horizontal polarization channel data

T_V = Brightness temperature derived from the ESMR vertical polarization channel data

Table 5-8

This table follows the new Table 5-6 (above), which replaced
Table 5-5 on page 105 in the User's Guide

Table 5-5a

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays
for Orbits 828 through 3932 (13 August 1975 through 31 March 1976)
(Brightness Temperatures are in °K)

Gray Scale Number		Swath Number and ESMR Display Parameter									
		1 and 11 (T_H)	2 and 12 (T_V)	3 and 13 $\frac{T_H+T_V}{2}$	4 and 14 (T_H)	5 and 15 (T_V)	6 and 16 $\frac{T_H+T_V}{2}$	7 and 17 (T_H)	8 and 18 (T_V)	9 and 19 $\frac{T_H+T_V}{2}$	10 and 20 (T_V-0.6T_H)
(black)	1	> 200	> 230	> 210	> 250	> 270	> 250	> 290	> 300	> 280	> 140
	2	196-200	226-230	206-210	246-250	267-270	247-250	287-290	298-300	278-280	136-140
	3	191-196	223-226	203-206	243-246	264-267	244-247	284-287	295-298	275-278	133-136
	4	187-191	219-223	199-203	239-243	261-264	241-244	281-284	293-295	273-275	129-133
	5	183-187	215-219	195-199	235-239	258-261	238-241	278-281	290-293	270-273	125-129
	6	178-183	211-215	191-195	231-235	254-258	234-238	274-278	288-290	268-270	121-125
	7	174-178	208-211	188-191	228-231	251-254	231-234	271-274	285-288	265-268	118-121
	8	169-174	204-208	184-188	224-228	248-251	228-231	268-271	283-285	263-265	114-118
	9	165-169	200-204	180-184	220-224	245-248	225-228	265-268	280-283	260-263	110-114
	10	161-165	196-200	176-180	216-220	242-245	222-225	262-265	278-280	258-260	106-110
	11	156-161	193-196	173-176	213-216	239-242	219-222	259-262	275-278	255-258	103-106
	12	152-156	189-193	169-173	209-213	236-239	216-219	256-259	273-275	253-255	99-103
	13	148-152	185-189	165-169	205-209	233-236	213-216	253-256	270-273	250-253	95-99
	14	143-148	181-185	161-165	201-205	229-233	209-213	249-253	268-270	248-250	91-95
	15	139-143	178-181	158-161	198-201	226-229	206-209	246-249	265-268	245-248	88-91
	16	134-139	174-175	154-158	194-198	223-226	203-206	243-246	263-265	243-245	84-88
	17	130-134	170-174	150-154	190-194	220-223	200-203	240-243	260-263	240-243	80-84
(white)	18	< 130	< 170	< 150	< 190	< 220	< 200	< 240	< 260	< 260	< 80

T_H = Brightness temperature derived from the ESMR horizontal polarization data

T_V = Brightness temperature derived from the ESMR vertical polarization data

Table 5-9

This table follows the new Table 5-5a (above), which replaced Table 5-5 on page 105 in the User's Guide

Table 5-5b.

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 3933 through 5155 (31 March through 30 June 1976)

(Brightness Temperatures are in °K)

Gray Scale Number	Swath Number and ESMR Display Parameter				
	1 and 6 (T_H)	2 and 7 (T_H)	3 and 8 (T_H)	4 and 9 (T_V)	5 and 10 $\left(\frac{T_H + T_V}{2}\right)$
(black) 1	>200	>230	>210	>250	>270
2	196-200	296-230	206-210	246-250	267-270
3	191-196	223-226	203-206	243-246	264-267
4	187-191	219-223	199-203	239-243	261-264
5	183-187	215-219	195-199	235-239	258-261
6	178-183	211-215	191-195	231-235	254-258
7	174-178	208-211	188-191	228-231	251-254
8	169-174	204-208	184-188	224-228	248-251
9	165-169	200-204	180-184	220-224	245-248
10	161-165	196-200	176-180	216-220	242-245
11	156-161	193-196	173-176	213-216	239-242
12	152-156	189-193	169-173	209-213	236-239
13	148-152	185-189	165-169	205-209	233-236
14	143-148	181-185	161-165	201-205	229-233
15	139-143	178-181	158-161	198-201	226-229
16	134-139	174-178	154-158	194-198	223-226
17	130-134	170-174	150-154	190-194	220-223
(white) 18	<130	<170	<150	<190	<220

T_H = Brightness temperature derived from the ESMR horizontal polarization data

T_V = Brightness temperature derived from the ESMR vertical polarization data

From orbit 6185 (15 September 1976) through the current data catalog period, the new ESMR image display has the following format:

Since an anomaly renders the Horizontal channel unuseable, the new ESMR format was devised to display the Vertical channel with five different temperature ranges and polarization for each individual swath. That is, the temperature range and polarization for swaths 1 and 6 are the same. Swaths 2 and 7, 3 and 8, 4 and 9, and 5 and 10 display the same parameters. Thus, four additional swaths of data are dedicated to the Vertical channel display for a total of 5 swaths as described above.

Data time (GMT) references and grid overlay information remain unchanged. Please refer to Table 5-10 for new parameter information.

5.5 ERB Corrections to the User's Guide

Post-launch calibration procedures are described below. While the numbers are not for the period of this catalog, the calibration procedure is valid for all data. This information can be added as section 6.5a to the User's Guide and would fit on page 134.

6.5a Post-launch Calibration

The observations from the wide angle channels (11 and 12), which measure the total energy (< 0.2 μm to > 50 μm) emitted and reflected by the earth, depend on the prelaunch calibration and pertinent instrument temperatures. Assuming unit emissivity for the target scene, the irradiance from the scene is given by,

$$H_T = [\Delta W - \epsilon_s F_s \sigma T_s^4 + \epsilon_d F_d \sigma (T_d + Kv)^4]$$

where

ΔW = effective thermopile irradiance (w m^{-2})

σ = 5.6697 x 10^{-8} w m^{-2} (deg. K)$^{-4}$

ϵ_s = emissivity of FOV stop = 0.965

F_s = view factor of the FOV stop = 0.18892

T_s = temperature (°K) of the FOV stop

ϵ_d = emissivity of the thermopile = 0.977

F_d = view factor of the thermopile = 0.80461

T_d = temperature (°K) of the thermopile base

Table 5-10

Brightness Temperature Value for each Step of the Gray Scale on ESMR Image Displays for Orbits 6185 (15 September 1976) through the present Catalog period

(Brightness Temperatures are in °K)

Gray Scale Number	Swath Number and ESMR Display Parameter				
	1 and 6 (T_V)	2 and 7 (T_V)	3 and 8 (T_V)	4 and 9 (T_V)	5 and 10 (T_V)
(black) 1	>240	>254	>270	>280	>300
2	236-240	251-254	266-270	277-280	296-300
3	233-236	248-251	263-266	274-277	293-296
4	230-233	245-248	260-263	271-274	290-293
5	227-230	242-245	257-260	268-271	287-290
6	224-227	239-242	254-257	265-268	284-287
7	221-224	236-239	251-254	262-265	281-284
8	218-221	233-236	248-251	259-262	278-281
9	215-218	230-233	245-248	256-259	275-278
10	212-215	227-230	242-245	253-256	272-275
11	209-212	224-227	239-242	250-253	269-272
12	206-209	221-224	236-239	247-250	266-269
13	203-206	218-221	233-236	244-247	263-266
14	200-203	215-218	230-233	241-244	260-263
15	197-200	212-215	227-230	239-241	257-260
16	193-197	208-212	223-227	237-239	253-257
17	190-193	205-208	220-223	235-237	250-253
(white) 18	<190	<205	<220	<235	<250

T_V = Brightness temperature derived from the ESMR vertical polarization data

K = factor relating thermopile base temperature to thermopile surface temperature = 0.0031°K per count

v = thermopile output in digital counts

The effective thermopile irradiance (ΔW) is obtained from the thermopile output (v) as follows:

$$\Delta W = a_o\ (T_m) + a_1\ (T_m) \cdot v$$

where

$$a_o = C_o + C_1\ T_m,$$

and

$$a_1 = d_o + d_1\ T_m$$

are derived from prelaunch calibrations and depend on the module temperature (T_m, °C). The coefficients C_o, C_1, d_o, d_1 are given below. In calibrating channel 11 and channel 12 (W) with the FOV stop out, the quantity F_s in the equation for H_T is set to zero.

	Ch. 11	Ch. 12 (W)	Ch. 12 (N)
C_o:	9.86	10.4	8.38
C_1:	0.18358	0.23235	0.18483
d_o:	0.6042	0.6035	0.6014
d_1:	-8.254×10^{-4}	-6.109×10^{-4}	-5.879×10^{-4}

The observations from the other two wide-angle channels (13 and 14), which measure the shortwave radiation (0.2 μm to 4.0 μm), and (0.7 μm to 3.0 μm), are transformed to irradiance (H) by,

$$H = \frac{(V - V_o)}{S_T}$$

where V is the digital counts, V_o is the offset (in counts) observed from dark FOV's, and S_T is the sensitivity (w m^{-2} $count^{-1}$) obtained from the equation: $S_T + S_o\,(1+(0.01) \cdot (T-25) \cdot STC)$, where S_o is the sensitivity at 25°C, T is the detector temperature (°C), and STC is the sensitivity temperature coefficient (percent per degree C). These constants are given below:

Ch	V_o	S	STC
13	-41	2.004	0.04
14	-44	3.989	0.03

The interpretation of digital counts (V) from the shortwave scanning channels (15-18) gives the radiance (w m^{-2} sr^{-1}) of the scene (N_s) by,

$$N = \frac{(V - V_o)}{S_T}$$

where V_o is the offset (counts) obtained during views of the internal blackbody or space. The sensitivity S_T at temperature T(°C) is obtained using the equation for S_T described above, and the constants given below.

Ch	V_o	S	STC
15	-3	3.155	0.0
16	0	3.275	0.03
17	-1	3.116	-0.01
18	15	2.963	-0.05

A series of checks on the sensitivity of these channels, using the on-board diffuse target, indicated no noticeable degradation over the July-August period of operation.

The longwave scanning channels (19-22) have had numerous inflight calibrations which have remained essentially unchanged since 3 July. The calibration coefficients, a_0 and a_1 relate digital counts (V) to the scene radiance N (w m^{-2} sr^{-1}) as follows:

$$N_s = N_m + a_0 + a_1 \cdot V$$

where N_m is the radiance of the detector module. The radiance N_s is the actual radiance measured within the spectral limits of the filter (4.5 μm to 50 μm). The calibration coefficients, obtained from inflight calibrations on 3 July, are as follows:

Ch	a_0	a_1
19	-0.82	0.09583
20	-0.60	0.10535
21	-1.26	0.10168
22	-0.29	0.10338

The deviations of these calibration coefficients as derived from inflight calibrations from 29 July to 20 August are shown in Table 6-6a. The only change which indicates a need for updating the calibration coefficients is the change in the intercept of channel 20.

Periodic checks of the electronic gains of channels 1 through 14 have shown that the electronic gains have remained within 0.5 percent of the prelaunch values, with few exceptions. Table 6-6a shows the percentage of maximum deviation in the gain ratios

(current/prelaunch) for the three steps in the calibration staircase voltage. The 6.5 percent change in the high-level gain of channel 2 and the gain changes in channels 6, 7, and 8 are believed to be caused by radio-frequency interference with the electronic calibration circuit and is neither a real change in the electronic gain nor nonlinearities of the channels.

Table 5-11

This table is part of the new Section 6.5a "Post-launch Calibration" to be added to the ERB section of the User's Guide

Table 6-6a

Stability of Calibration of the
ERB Longwave Scanning Channels
(between 29 July and 20 August 1975)

	Channel 19		Channel 20		Channel 21		Channel 22	
Date	Δa_o	Δa_1	Δa_o	Δa_1	Δa_o	Δa_1	Δa_o	Δa_1
7/29	-0.07	-0.4	1.12	0.5	-0.07	-0.4	0.36	-0.3
8/5	0.50	-0.3	1.22	0.1	0.08	-0.3	0.11	-0.2
8/8	0.68	-0.4	1.33	0.1	0.04	-0.2	-0.003	-0.1
8/12	-0.06	-0.2	0.74	-0.4	-0.09	-0.3	0.17	-0.2
8/17	0.69	-0.3	1.49	0.2	0.20	-0.3	0.16	-0.2
8/20	-0.22	-0.3	1.53	0.2	0.04	-0.2	0.13	-0.4

Δa_o = change in intercept (w m^{-2} sr^{-1})

$$= (a_o)_{current} - (a_o)_{7/3/75}$$

Δa_1 = change in slope (% w m^{-2} sr^{-1} ct^{-1})

$$= \frac{[(a_1)_{current} - (a_1)_{7/3/75}]}{(a_1)_{7/3/75}} \times 100$$

Table 5-12

This table is part of the new Section 6.5a "Post-launch Calibration" to be added to the ERB section of the User's Guide

Table 6-6b

Percentage Change of the Maximum Deviation in the Gain Ratio between Post-launch and Prelaunch Gain Values for ERB channels 1 through 14 (20 June and 17 August 1975)

Ch	$G_{0\text{-}39}$	$G_{30\text{-}60}$	$G_{60\text{-}90}$
1	-0.2	0.2	-0.1
2	0.1	-0.3	-6.5
3	±0.1	-0.1	-0.2
4	±0.1	-0.2	-0.1
5	±0.1	-0.2	0.2
6	2.6	1.8	-2.1
7	1.3	2.1	-0.6
8	1.6	1.3	-0.9
9	0.4	-0.6	±0.1
10	0.7	-0.5	±0.2
11	-0.4	0.3	0.4
12	0.2	-0.2	0.4
13	-0.3	0.2	0.3
14	+0.2	-0.1	0.3

Table 6-7, the ERB Compacted Archival Tape Format, on pages 136 through 139 of the User's Guide, should be changed as follows:

Directory Record (Page 136)

Delete last line of section A which reads:

"135-340	Zero fill	1"

and add the following:

135-149	Orbital Elements	
135	Day of Epoch	1
136	Year of Epoch	1
137	Hours	1
138	Minutes (including fraction)	100
139	Eccentricity	10^5
140	Argument of Perigee (integer part)	1
141	Argument of Perigee (fraction part)	10^3
142	Right Ascension (integer part)	1
143	Right Ascension (fraction part)	10^3
144	Inclination (integer part)	1
145	Inclination (fraction part)	10^3
146	Semimajor Axis (km, integer part)	1
147	Semimajor Axis (km, fraction part)	10^3
148	Mean Anomaly (integer part)	1
149	Mean Anomaly (fraction part)	10^3
150	Sun-Earth Distance (A. U.)	10^4
151-340	Zero fill	1

Orbital Summary Record (Page 139)

Delete last line of table, which reads:

17-340	Zero fill	1"

and add the following:

17-26	Solar Irradiances (Chs. 1-10) Normalized to mean sun-earth distance	Chs. 1-5:10 Chs. 6-10:100
27	Solar Channels Assembly Gamma Angle (positive to right of track)	1
28-340	Zero fill	1

5.6 LRIR Corrections to the User's Guide

Table 5-13

Post-launch analysis of relative spectral response data and orbital data leads to the following corrected values for Table 7-2, on page 154 of the User's Guide

Table 7-2

Optical Characteristics of LRIR Channels

Channel		Band Pass (50% Peak Response)	Field-of-view (km)		Random noise in orbit* $\pm 1\sigma$(watts/m^2-sr)
No.	Abbrev.		Vertical	Horizontal	
1	NCO_2	649-672 cm^{-1} (14.9-15.4 μm)	2.0	20	0.0023
2	BCO_2	592-700 cm^{-1} (14.3-16.9 μm)	2.0	20	0.0040
3	O_3	984-1169 cm^{-1} (8.6-10.2 μm)	2.0	20	0.011
4	H_2O	412-446 cm^{-1} (22.4-24.3 μm)	2.5	25	0.008

*Noise will gradually increase as the detector temperature increases during the useful life of the experiment.

5.7 PMR Corrections to the User's Guide

There are no PMR corrections to the User's Guide.

5.8 TWERLE Corrections to the User's Guide

Table 5-14

The following are address changes to Table 9-2
on page 186 in the User's Guide

Table 9-2

Nimbus RAMS Experiments - Address Changes

Address Changes

OLD	NEW
Mr. G. R. Cresswell Division of Fisheries & Oceanography Commonwealth Scientific & Industrial Research Organization Melbourne, Australia	Mr. G. R. Cresswell Division of Fisheries & Oceanography CSIRO P. O. Box 21 Cronulla, N. S. W. 2230 Australia
A. J. Dyer CSIRO P. O. Box 77 Mordialloc, Vic 3195 Australia	Dr. A. J. Dyer Division of Atmospheric Physics CSIRO Station Street ASPENDALE 3195 Victoria, Australia
Professor Pierre Lacombe, Director Laboratory d'Oceanographic Museau Historie Naturelle de Paris 43 Rue Cuvier Paris, France	Professor Pierre Lacombe, Director Laboratoire d'Oceanographie Physique Museum National d'Histoire Naturelle 43-45 Rue Cuvier 75005 Paris, France
Professor P. Tchernia Museum d'Historie Naturelle de Paris 43 Rue Cuvier Paris, France	Professor P. Tchernia Laboratoire d'Oceanographie Physique Museum National d'Histoire Naturelle 43-45 Rue Cuvier 75005 Paris, France

Table 9-2 (Continued)

Dr. Norbert Untersteiner, Program Director Project AIDJEX 4059 Roosevelt Wave, N. E. Seattle, WA 98105	Dr. Norbert Untersteiner AIDJEX Coordinator University of Washington 4059 Roosevelt Way, N. E. Seattle, Washington 98105
Dr. Donald V. Hansen, Director Physical Oceanography AOWL NOAA U. S. Department of Commerce Miami, Florida	Dr. Donald V. Hansen, Director Physical Oceanography Laboratory AOML/NOAA 15 Rickenbacker Causeway Virginia Key Miami, Florida 33149
Vincent E. Lally National Center for Atmospheric Research P. O. Box 1470 Boulder, Colordao 80302	Mr. Vincent E. Lally National Center for Atmospheric Research P. O. Box 3000 Boulder, Colorado 80302
J. Lentfer Wildlife Research U. S. Department of Interior 813 D. Street Anchorage, Alaska	Mr. Jack W. Lentfer Fish and Wildlife Service Department of Interior 4454 Business Park Blvd. Anchorage, Alaska 99503
H. Brann Bureau of Meteorology Melbourne, Victoria Australia	Mr. H. N. Brann Bureau of Meteorology P. O. Box 1289K Melbourne, Victoria 3001 Australia
Robert Kee Development Engineering Division Code 6201 U. S. Naval Oceanographic Office Washington, D. C. 20390	Mr. Robert Kee Code 6220 U. S. Naval Oceanographic Office Washington, D. C. 20373

Table 9-2 (Concluded)

F. Anderson South African Council for Scientific & Industrial Research Congella, Natal, South Africa	Mr. Frank P. Anderson CSIR, Institute for Technology P. O. Box 17001 Congella 4013 South Africa
H. Stommel Professor of Oceanography MIT Cambridge, Massachusetts	Professor Henry Stommel Department of Meteorology Room 54-1416 Massachusetts Institute of Technology Cambridge, Massachusetts 02139
B. Buck Polar Research Lab. Santa Barbara California 93101	Mr. B. M. Buck, President Polar Research Laboratory, Inc. 123 Santa Barbara Street Santa Barbara, California 93101
John A. Knauss Graduate School of Oceanography University of Rhode Island Kingston, Rhode Island 02881	Dr. P. L. Richardson Woods Hole Ocean Institute Woods Hole, Massachusetts 02543

5.9 T&DRE Corrections to the User's Guide

There are no T&DRE corrections to the User's Guide.

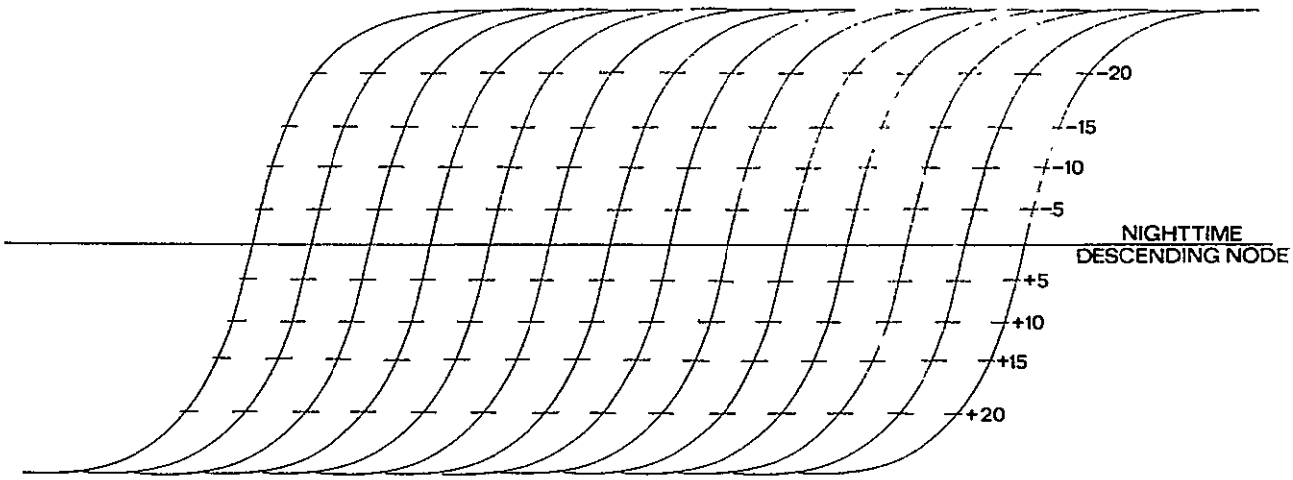
Table 5-15

The following are new TWERLE users, added since launch.
This information should be added to Table 9-2
(Nimbus RAMS Experiments) on page 186 in the User's Guide.

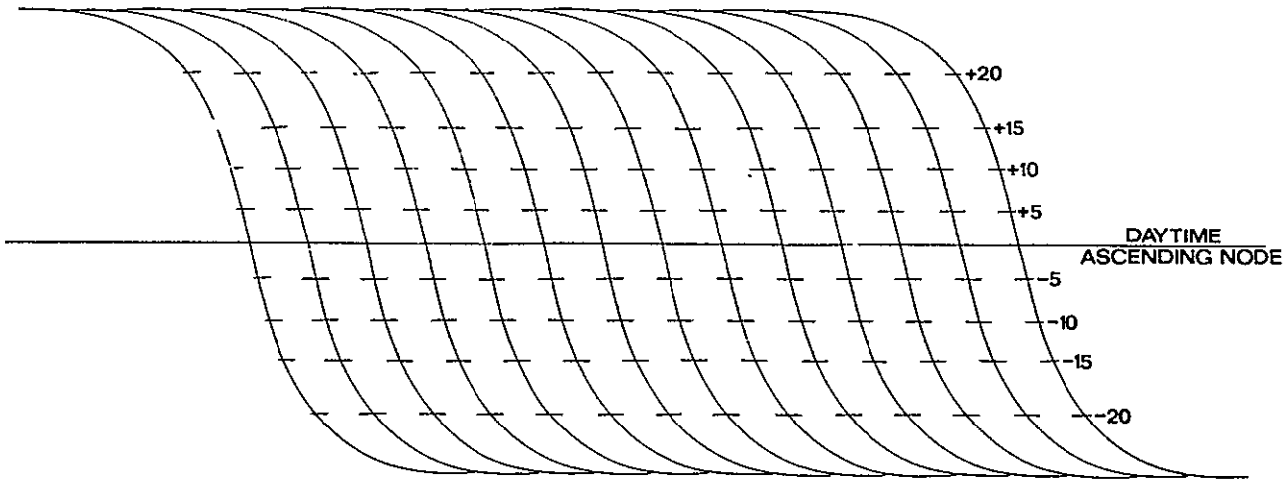
Principal Investigator	Experiment Title	Platform		
		Number	Type	Deployment Area
Dr. A. D. Kirwan, Jr. Department of Oceanography College of Geosciences Texas A & M University College Station, Texas 77843	Anomaly Dynamics Study (ADS)	32	Drifting Buoys	North Pacific
Mr. David F. Thomas, Jr. SATD-MEB-SDS, Mail Stop 322 NASA Langley Research Center Hampton, Virginia 23665	Air-droppable In Situ Platforms for Long Duration Measurements near Hurricanes	10	Ocean Platforms	Western Atlantic near North America
Dr. P. Roger Williamson Department of Applied Physics & Information Science University of California – San Diego La Jolla, California 92037	Stratospheric Monitoring with Longterm Balloon Flights	3	Super-pressure Balloons	Southern Hemisphere
Mr. J. C. O'Rourke Canadian Marine Drilling Ltd. P. O. Box 200 Calgary, Canada T2P 2H8	Arctic Ice Dynamics	2-4	Sea Ice Platforms	Beaufort Sea
Dr. J. Michael Hall NOAA Data Buoy Office National Space Tech Office Bay St. Louis, Mississippi 39520	East Coast Drifting Experiment	24	Drifting Buoys	Atlantic Ocean
	High Impact Detection and Determination on Large Buoys	10	Buoy	Atlantic Ocean, Gulf of Mexico, & North Pacific Ocean
	Reliability Enhancement Experiment	3	Buoy	Santa Barbara, California & Arctic Ocean
Mr. Robert Oehlkers University of Wisconsin Space Science and Engineering Center 1225 W. Dayton St. Madison, Wisconsin 53706	Buoy Experiments in Lake Michigan	10	Buoy	Lake Michigan

Table 5-15 (Continued)

Capt. E. A. Delaney USCG Oceanographic Unit Bldg. 159E Navy Yard Navy Yard Annex Washington, D.C. 20590	North Atlantic and Labrador Current Studies	1	Drifting Buoys	North Atlantic, Labrador Coast
Dr. R. H. Goodman Innovative Ventures, Ltd. 4632 11th St. Calgary Alberta, Canada T2E2W7	Ice Monitoring in the Canadian Arctic and Labrador Region	2	Drifting Buoys	Canadian Arctic, Labrador
Dr. D. Halpern NOAA Pacific Marine Env. Labs. Univ. Washington WB10 Seattle, Washington 98195	Ocean Circulation Studies and Pacific Equatorial Waters	3	Drifting Buoys, Moored Buoys.	Mid-Pacific Equatorial



NIMBUS SUBSATELLITE TRACKS OVERLAY



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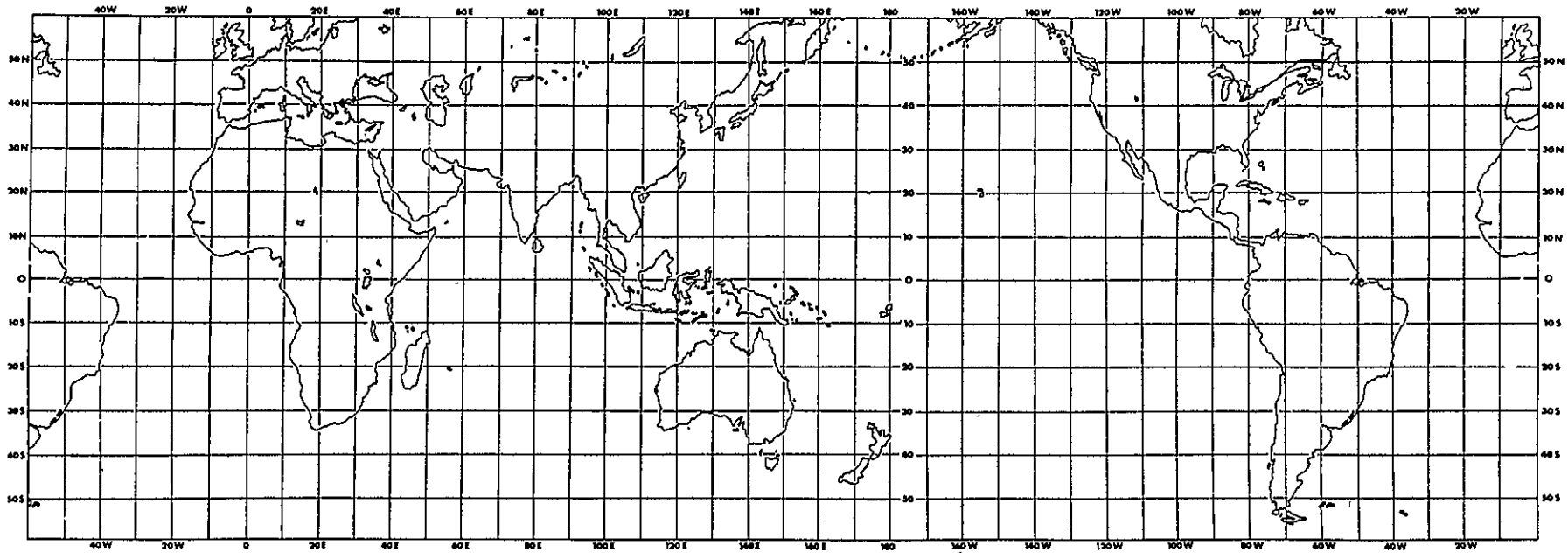
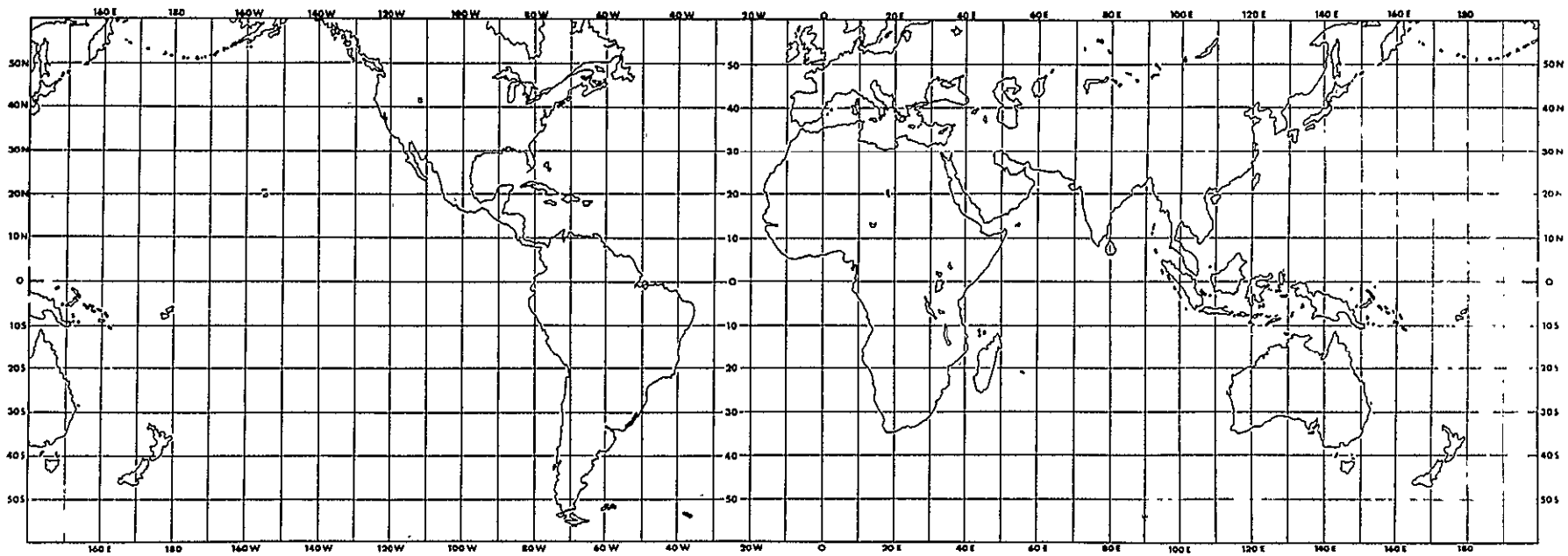


LOCATION GUIDE
AVERAGE SCALE FOR NIMBUS
THIR NIGHTTIME MONTAGES



LOCATION GUIDE
AVERAGE SCALE FOR NIMBUS
THIR DAYTIME MONTAGES