

BRAZILIAN PARTICIPATION ON THE EXAMETNET
PROGRAM

Meeting at Wallops Station
21-23 October 1968

REPORT LAFE-80

Conselho Nacional de Pesquisas
Comissão Nacional de Atividades Espaciais
Laboratório de Física Espacial

São José dos Campos
São Paulo - Brasil

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1. INTRODUCTION

In a meeting in August 1965, the Comissão Nacional de Investigações Espaciais (CNIE) of Argentina, the Comissão Nacional de Atividades Espaciais (CNAE) of Brazil and the National Aeronautics and Space Administration (NASA) of United States decided to establish a program of meteorological research with sounding rockets. This program was named Experimental Inter-American Meteorological Rocket Network (EXAMETNET). After a period used for personnel training at Wallops Station, Wallops Island, Va., those three countries started the above mentioned program in January 1966.

From that date 43 launchings (10 ARCAS, 26 HASP-CHAFF and 7 HASP-INSTRUMENTED) took place at Barreira do Inferno Rocket Launching Site, Natal, Brazil.

2. Activities Description

The Brazilian participation in the EXAMETNET program dating from September 1967 to August 1968 is as follows.

The performed launchings at Barreira do Inferno are presented in table 2.1. The interruption between January 31 and April 17, 1968, was caused by technical difficulties with the Radar computer and later due to delay in receiving the requested supply.

The interruption in August 1968 was caused by problems associated with importation difficulties.

Table 2.2 shows the proposed schedule to be followed. CNAE has already purchased 11 ARCAS and 7 more HASP CHAFF are to be ordered in near future.

The ARCAS will be launched monthly on the Wednesday before the 15th of each month, and the HASP-CHAFFS are to be launched in between.

TABLE 2.1

1967-1968 SCHEDULE

MONTH	Sept	Oct	Nov	Dec	Jan	Feb
WEEK	36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 01 02 03 04 05 06 07 08 09					
FIRING DATE	13	18	15	13	17	31
PAYLOAD	CH	CH	CH	CH	WO	CH

1
3
1

MONTH	Mar	Apr	May	Jun	Jul	Aug
WEEK	10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35					
FIRING DATE		17	01 15 29	12	24	
PAYLOAD		WO	CH WO CH	CH	AL	

Legend: CH = CHAFF
 WO = WOX - 1A
 AL = ARCASONDE - 1A

TABLE 2.2
1968-1969 SCHEDULE

MONTH	Sept	Oct	Nov	Dec	Jan	Feb
WEEK	36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 01 02 03 04 05 06 07 08 09					
FIRING DATE	18	16	13	18	15	12 26
PAYLOAD	A1	A1	A1	A1	A1	CH A1 CH

MONTH	Mar	Apr	May	Jun	Jul	Aug
WEEK	10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35					
FIRING DATE	12 26	16 30	14 04	18 02	16 30	13
PAYLOAD	A1 CH	A1 CH	A1 CH	A1 CH	A1 CH	A1

Legend: A1 = ARCASONDE - 1A
CH CHAFF

3. GROUND INSTRUMENTATION

The ground instrumentation for support of meteorological rocket launchings at the Barreira do Inferno Range at Natal consists of:

- a - MPS-19 Radar System
S - Band
- b - Ground Meteorological Detector
(GMD-1A)
Operation frequency - 1680 MHz
- c - Meteorological Data Receiving and Recording System
Operation frequency - 403 MHz
- d - Double Theodolite Warren-Knight Model WK-84
- e - A rail and a tubular launcher
- f - Anemometer Tower 42 meters high four Anemometers

4. Data Package Exchange

	Rocket Nº	Date of Launch	Date of Mailing	
			Argentina	U.S.A.
1	82 CNAE 6731	13 Sept 67	21 Sept 67	21 Sept 67
2	83 CNAE 6732	18 Oct 67	06 Nov 67	06 Nov 67
3	85 CNAE 6734	15 Nov 67	28 Nov 67	28 Nov 67
4	86 CNAE 6735	13 Dec 67	16 Jan 68	16 Jan 68
5	87 CNAE 6801	17 Jan 68	23 Jan 68	23 Jan 68
6	88 CNAE 6802	31 Jan 68	12 Feb 68	12 Feb 68
7	92 CNAE 6806	17 Apr 68	10 May 68	09 May 68
8	87 CNAE 6801 88 CNAE 6802	17 31 Jan 68	14 May 68	14 May 68
9	94 CNAE 6808	01 May 68	06 Jun 68	06 Jun 68
10	95 CNAE 6809	15 May 68	06 Jun 68	06 Jun 68
11	96 CNAE 6810	29 May 68	18 Jun 68	18 Jun 68
12	97 CNAE 6811	12 Jun 68	02 Jul 68	02 Jul 68
13	102 CNAE 6816	24 Jul 68	04 Sep 68	04 Sep 68

5. METEOROLOGICAL DATA

ROCKET DATA

Date: Sep. 13, 1967 Time: 1500Z

Rocket type: JUDII Payload: CHAFF

ROCKET WINDS

Fall Vel	Alt	Winds	(m/s)
m/s	m	N-S	E-W
067	64000-	02	13
067	63000	21	-11
067	62000-	22	-05
056	61000	14	02
048	60000-	14	08
048	59000	07	04
042	58000-	01	-03
037	57000	-01	-08
042	56000-	-04	-15
033	55000	-02	-15
030	54000-	02	-04
030	53000	01	01
028	52000-	01	01
028	51000	-01	05
026	50000-	-06	06
024	49000	-08	08
026	48000-	-06	09
024	47000	-02	10
020	46000-	02	12
020	45000	04	12
021	44000	02	13
020	43000	-01	14
019	42000	00	09
017	41000	02	03
017	40000	05	02
017	39000	02	02

ROCKET WINDS

Fall Vel	Alt	Winds	(m/s)
m/s	m	N-S	E-W
016	38000	-03	03
016	37000	-04	07
014	36000	-03	07
013	35000	-06	03
013	34000	-05	-04
014	33000	-01	-17
012	32000	00	-23
011	31000	00	-24
013	30000	-02	-24
011	29000	-04	-22
010	28000	-05	-27
010	27000	-05	-28
010	26000	-03	-26
009	25000	02	-21
009	24000	01	-13
008	23000	02	-04
008	22000	02	06
008	21000	02	10
007	20000	02	07

RAWINSONDE DATA

Date: Sep. 13, 1967 Time: 1207Z

Press	Alt	Winds	(m/s)	RH	Temp
mb	m	N-S	E-W	%	°C
1009.7	00042	03	-02	77	27.4
0804.0	02000	01	-09	58	11.0
0630.7	04000	00	-06	18	04.7
0490.8	06000	04	-01	17	-09.0
0378.0	08000	09	-04	19	-21.3
0285.2	10000	00	-10	20	-37.2
0211.8	12000	-07	-03		-53.7
0153.1	14000	02	11		-67.5
0109.2	16000	-02	04		-76.9
0077.4	18000	-03	04		-72.8
0055.8	20000	01	08		-63.2
0040.4	22000	00	09		-63.0
0029.2	24000	-04	-11		-58.9
0021.6	26000	-01	-28		-50.5
0015.9	28000	-06	-27		-45.0
0011.8	30000	01	-23		-46.4
0008.8	32000	-02	-23		-42.8

ROCKET DATA

Date: Oct. 18 1967 Time: 1630Z
 Rocket Type: JUDI I Payload: CHAFF

ROCKET WINDS

Fall Vel	Alt	Winds (m/s)	
m/s	m	N-S	E-W
078	63000	02	41
067	62000	-06	40
056	61000	-17	31
056	60000	-17	24
048	59000	-14	23
042	58000	-13	18
037	57000	-14	12
033	56000	-10	-02
033	55000	-07	-02
033	54000	-11	-04
030	53000	-12	04
028	52000	-07	10
028	51000	-06	07
024	50000	-10	19
022	49000	-13	19
024	48000	-09	18
022	47000	-05	18
022	46000	-09	20
021	45000	-10	15
019	44000	-08	16
019	43000	-08	22
018	42000	-04	19
018	41000	02	20
019	40000	06	14

ROCKET WINDS

Fall Vel	Alt	Winds (m/s)	
m/s	m	N-S	E-W
016	39000	02	29
014	38000	-03	25
014	37000	-01	13
014	36000	01	05
014	35000	02	-04
013	34000	03	-16
013	33000	04	-20
013	32000	04-	-25
012	31000	03	-33
012	30000	01	-31
011	29000	-06	-31
010	28000	-08	-34
010	27000	-03	-34
010	26000	-01	-29
010	25000	01	-23
009	24000	-02	-17
008	23000	-05	-11
008	22000	-02	-03
008	21000	01	01
007	20000	-01	01

RAWINSONDE DATA

Date: Oct. 18, 1967 Time: 1323z

Press	Alt	Winds	(m/s)	RH	Temp
mb	m	N-S	E-W	%	°C
1010.1	00042	06	-05	64	28.4
0804.3	02000	03	-14	67	11.0
0634.0	04000	-01	-07	18	04.1
0492.6	06000	03	06	14	-05.4
0379.9	08000	01	10	15	19.4
0287.9	10000	03	05	15	-35.0
0212.9	12000	08	10	16	-51.7
0155.7	14000	09	13		-66.6
0110.9	16000	-01	12		-78.2
0078.5	18000	-02	02		-74.1
0055.9	20000	-04	-02		-72.2
0040.1	22000	04	-03		-59.8
0029.4	24000	-03	-12		-55.2
0021.7	26000	02	-27		-47.8
0016.1	28000	-05	-34		-41.5
0012.2	30000	02	-34		-38.3
0009.0	32000	04	-29		-36.5
0006.7	34000	07	-27		-34.4

ROCKET DATA

Date: Nov 15, 1967 Time: 1400Z
 Rocket type: JUDI I Payload: CHAFF

ROCKET WINDS				ROCKET WINDS			
Fall Vel	Alt	Winds (m/s)		Fall Vel	Alt	Winds (m/s)	
m/s	m	N-S	E-W	m/s	m	N-S	E-W
084	66000	11	33	017	41000	-01	20
095	65000	17	18	017	40000	-03	23
091	64000	-01	-04	016	39000	-01	22
069	63000	-12	-15	016	38000	02	15
061	62000	-23	-17	016	37000	03	08
054	61000	-23	-15	015	36000	04	09
049	60000	-21	-14	014	35000	-01	04
051	59000	-19	-11	014	34000	-06	04
043	58000	-16	-13	013	33000	-01	-01
036	57000	-15	-11	011	32000	00	-12
036	56000	-15	-18	011	31000	-03	-24
034	55000	-03	-26	011	30000	-04	-32
030	54000	04	-29	011	29000	-01	-34
029	53000	04	-29	010	28000	00	-35
029	52000	10	-19	010	27000	-01	-32
026	51000	04	-11	010	26000	00	-28
024	50000	-01	-10	010	25000	-02	-23
025	49000	00	-04	009	24000	-01	-15
025	48000	01	03	008	23000	-03	07
023	47000	-05	07	008	22000	-02	01
022	46000	-09	10	008	21000	-01	08
020	45000	-03	14	007	20000	-02	03
018	44000	-02	12				
019	43000	-04	10				
018	42000	-02	14				

RAWINSONDE DATA

Date: Nov. 15, 1967 Time: 01023Z

Press	Alt	Winds	(m/s)	RH	Temp
mb	m	N-S	E-W	%	°C
1008.7	00042	03	-04	66	26.7
0803.0	02000	02	-06	23	16.3
0632.0	04000	-02	-04	25	04.8
0492.0	06000	-01	-03	32	-08.9
0378.0	08000	-12	10	21	-20.8
0284.8	10000	-16	07	31	-40.1
0213.3	12000	-11	06	27	-52.7
0153.8	14000	-19	18		-64.9
0109.6	16000	-02	19		-79.9
0106.0	16160	-03	16		-80.7
0077.1	18000	01	-02		-75.6
0055.2	20000	04	00		-64.8
0039.9	22000	-06	00		-61.0
0029.0	24000	02	-19		-57.4
0021.3	26000	02	-28		-54.4
0015.7	28000	04	-31		-44.9
0011.7	30000	01	-31		-42.1
0008.8	32000	01	-21		-32.0
0006.7	34000	-01	-04		-28.7
0005.0	36000	03	08		27.9
0050.0	20540	-02	07		-61.1
0030.0	23710	00	-17		-58.3
0020.0	26300	05	-27		-54.6
0010.0	30940	-04	-22		-34.2
0007.0	33720	00	-10		-29.5
0005.0	36000	00	-10		-29.5

ROCKET DATA

Date: Dec 13, 1967 Time: 1500Z

Rocket type: JUDII Payload: CHAFF

ROCKET WINDS

Fall Vel	Alt	Winds (m/s)	
m/s	m	N-S	E-W
066	63000	14	18
074	62000	-01	-02
056	61000	00	-27
047	60000	-01	-29
048	59000	-01	-20
043	58000	-07	-32
041	57000	-12	-46
038	56000	-16	-52
034	55000	-18	-56
032	54000	-17	-55
030	53000	-12	-57
030	52000	-05	-57
028	51000	03	-48
026	50000	06	-41
024	49000	07	-29
024	48000	07	-24
022	47000	04	-19
021	46000	02	-11
021	45000	-01	-09
019	44000	-04	-12
019	43000	-05	-12
018	42000	-06	-11
018	41000	-02	-12
017	40000	00	-14
016	39000	04	-13
017	38000	05	-07

ROCKET WINDS

Fall Vel	Alt	Winds (m/s)	
m/s	m	N-S	E-W
015	37000	03	-06
014	36000	-01	-10
014	35000	-01	-11
014	34000	03	-12
013	33000	07	-19
012	32000	02	-22
012	31000	-03	-25
012	30000	-02	-28
011	29000	-04	-34
010	28000	-06	-37
010	27000	-03	-32
009	26000	-02	-28
009	25000	-04	-26
009	24000	-04	-19
008	23000	-02	-10
008	22000	00	-02
008	21000	00	04
007	20000	-02	03

RAWINSONDE DATA

Date: Dec 13, 1967 Time: 1101Z

Press	Alt	Winds	(m/s)	RH	Temp
mb	m	N-S	E-W	%	°C
1007.7	00042	-03	-04	67	27.7
0802.0	02000	-02	-05	42	12.8
0629.0	04000	-03	-02	35	02.4
0490.0	06000	01	-02	39	-10.0
0376.0	08000	03	02	46	-22.8
0284.3	10000	13	-04	34	-37.4
0210.9	12000	17	00	29	-49.7
0152.0	14000	26	01		-71.1
0124.0	15170	15	-04		-80.0
0108.2	16000	11	-05		-78.6
0076.5	18000	00	-07		-80.1
0054.4	20000	-05	05		-67.5
0039.0	22000	02	00		-67.3
0027.9	24000	00	-18		-57.9
0020.8	26000	-02	-30		-50.0
0015.4	28000	-08	-36		-48.9
0011.5	30000	-03	-32		-43.3
0008.6	32000	-04	-26		-39.1
0006.4	34000	01	-13		-33.2
0004.9	36000	-07	-12		-31.3
0003.7	38000	06	-03		-30.0
0003.0	39230	06	-03		-27.5
0050.0	20450	00	-10		-67.8
0030.0	23560	00	-14		-60.1
0020.0	26170	00	-29		-49.9
0010.0	30770	00	-30		-40.3
0007.0	33480	-01	-17		-34.6
0005.0	35920	-07	-12		-31.7
0003.0	39230	06	-03		-27.5

ROCKET DATA

Date: Jan 17, 1968 Time: 1500Z

Rocket type: JUDI I Payload: WOX-IA

ROCKET WINDS

Fall Vel	Alt	Winds	(m/s)
m/s	m	N-S	E-W
067	50000	-06	-53
057	49000	-05	-52
059	48000	-08	-55
061	47000	-10	-52
059	46000	-08	-59
057	45000	-05	-54
056	44000	-02	-52
051	43000	-01	-52
048	42000	04	-46
043	41000	06	-36
041	40000	05	-33
038	39000	-01	-28
035	38000	-04	-22
033	37000	-04	-20
033	36000	-01	-22
028	35000	02	-26
028	34000	01	-30
025	33000	-03	-32
024	32000	-04	-37
021	31000	-03	-38
019	30000	-02	-38
018	29000	-03	-38
017	28000	-05	-38
015	27000	-03	-37
013	26000	00	-33
013	25000	03	-27

ROCKET WINDS

Fall Vel	Alt	Winds (m/s)
m/s	m	N-S E-W
013	25000	03 -27
012	24000	-02 -19
010	23000	-04 -11
010	22000	01 -03
009	21000	08 -07
008	20000	09 -06

ROCKET DATA

Date Jan 17, 1968 Time: 1500Z

Rocket type: JUDI I Payload: WOX-IA

THERMODYNAMICS

Alt	Temp	Press	Dens	Winds	(m/s)
m	°C	mb	g/m ³	N-S	E-W
28160	-47.8	-	-	-04	-38
27040	-51.9	17.661	28.105	-03	-37
26700	-53.2	18.754	30.021	-02	-36
26610	-52.7	18.992	30.333	-02	-36
26270	-56.9	20.008	32.576	-01	-34
25880	-58.7	21.275	34.930	00	-32
25360	-57.1	23.211	37.827	05	-29
24930	-61.4	24.653	40.992	03	-26
24140	-60.3	27.988	46.298	-01	-20
23840	-63.2	29.437	49.367	-02	-18
22950	-59.7	33.802	55.758	-04	-10
22800	-64.7	34.638	58.508	-03	-09
22460	-65.5	36.729	62.279	-03	-06
21790	-63.6	40.087	67.356	-03	-04
21150	-68.6	45.468	78.265	-03	-06
20510	-66.3	50.067	85.225	-02	-07
20240	-69.2	52.875	91.283	00	-06
20000	-66.9	55.000	93.892	01	-06

RAWINSONDE DATA

Date: Jan 17, 1968 Time: 1046Z

Press	Alt	Winds	(m/s)	RH	Temp
mb	m	N-S	E-W	%	°C
1008.4	00042	03	-03	60	28.4
0804.0	02000	00	-07	51	15.0
0603.0	04000	00	-06	32	00.1
0480.0	06000	03	-02	19	-09.9
0376.0	08000	01	13	21	-23.4
0283.5	10000	04	08	24	-38.0
0212.8	12000	-01	30	24	-49.8
0153.6	14000	06	41		-66.4
0119.0	15470	20	-33		-75.0
0109.6	16000	11	12		-75.2
0079.0	17850	04	03		-82.9
0077.6	18000	05	04		-82.1
0055.0	20000	02	-06		-66.9
0039.5	22000	-05	-01		-65.0
0028.6	24000	-06	-23		-59.7
0020.9	26000	03	-34		-57.2
0015.3	28000	03	-38		-50.2
0011.4	30000	01	-38		-43.6
0008.5	32000	-05	-35		-36.0
0006.4	34000	00	-30		-31.1
0004.9	36000	00	-27		-27.3
0003.7	38000	-04	-22		-24.9
0003.0	39320	00	-30		-26.0
0050.0	20500	01	-06		-66.2
0030.0	23630	-04	-22		-59.3
0020.0	26170	00	-36		-56.2
0010.0	30730	00	-38		-40.7
0007.0	33250	-02	-33		-33.0
0005.0	35970	00	-27		-27.6
0003.0	39320	00	-30		-26.0

ROCKET DATA

Date: Jan 31, 1968 Time: 1512Z

Rocket type: JUDI I Payload: CHAFF

ROCKET WINDS				ROCKET WINDS			
Fall Vel	Alt	Winds	(m/s)	Fall Vel	Alt	Winds	(m/s)
m/s	m	N-S	E-W	m/s	m	N-S	E-W
027	52000	-08	09	010	27000	-03	-37
026	51000	-05	03	010	26000	-02	-37
025	50000	00	-08	009	25000	02	-29
024	49000	03	-19	009	24000	00	-20
024	48000	03	-29	009	23000	-04	-12
022	47000	00	-40	008	22000	-01	-07
022	46000	-02	-41	008	21000	01	-03
021	45000	-05	-37	007	20000	-01	-02
019	44000	-05	-28				
020	43000	-08	-22				
019	42000	-05	-23				
018	41000	-02	-27				
017	40000	03	-33				
016	39000	10	-29				
016	38000	08	-27				
016	37000	03	-27				
014	36000	04	-27				
013	35000	05	-30				
013	34000	05	-34				
014	33000	03	-37				
013	32000	01	-40				
013	31000	01	-42				
012	30000	00	-45				
011	29000	-03	-44				
010	28000	-03	-41				

RAWINSONDE DATA

Date: Jan 31, 1968 Time: 1147Z

Press	Alt	Winds	(m/s)	RH	Temp
mb	m	N-S	E-W	%	°C
1007.4	00042	01	-05	66	29.6
0802.1	02000	01	-06	44	14.2
0630.2	04000	-03	-11	18	04.8
0491.0	06000	-02	-01	16	-05.6
0378.2	08000	02	-04	14	-19.3
0287.0	10000	-02	03	16	-35.8
0213.6	12000	-07	01	17	-49.3
0155.7	14000	-09	17		-65.0
0111.2	16000	-08	07		-80.0
0095.0	16840	04	04		-84.3
0077.8	18000	07	-09		-82.2
0054.7	20000	-04	-05		-78.5
0039.4	22000	-01	-10		-61.4
0028.6	24000	00	-17		-58.1
0021.0	26000	-01	-36		-53.1
0015.6	28000	-06	-32		-46.8
0011.6	30000	-04	-42		-41.5
0008.6	32000	-02	-41		-37.3
0006.5	34000	06	-36		-27.0
0050.0	20470	03	-09		-66.1
0030.0	23620	-03	-20		-59.3
0020.0	26200	00	-37		-50.7
0010.0	30840	00	-45		-38.7
0007.0	33350	06	-35		-28.5

ROCKET DATA

Date: Apr 17, 1968 Time: 1500Z

Rocket type: JUDII Payload: WOX-IA

ROCKET WINDS

Fall Vel	Alt	Winds	(m/s)
m/s	m	N-S	E-W
090	54000	-08	13
076	53000	-10	18
074	52000	-09	18
074	51000	-03	07
071	50000	00	04
068	49000	02	15
068	48000	-03	21
076	47000	00	24
058	46000	05	23
046	45000	03	17
050	44000	01	17
052	43000	09	23
046	42000	04	17
042	41000	05	21
042	40000	08	27
037	39000	05	25
035	38000	00	25
033	37000	00	21
029	36000	-01	20
029	35000	00	10
026	34000	-01	-07
023	33000	-02	-13
023	32000	00	-31
021	31000	-04	-43

ROCKET WINDS

Fall Vel	Alt	Winds	(m/s)
m/s	m	N-S	E-W
020	30000	04	-35
020	29000	-04	-36
017	28000	-04	-35
015	27000	-02	-30
014	26000	00	-27
013	25000	02	-25
012	24000	00	-21
011	23000	-02	-18
010	22000	-02	-13
009	21000	00	-06
008	20000	-02	-01

Remarks: No Rocket Thermodynamics data available

RAWINSONDE DATA

Date: Apr 17, 1968 Time 1058Z

Press	Alt	Winds	(m/s)	RH	Temp
mb	m	N-S	E-W	%	°C
1007.6	00042	02	00	84	27.8
0805.0	02000	03	-04	60	19.5
0636.0	04000	01	-05	29	08.9
0497.0	06000	01	-06	35	-02.9
0384.0	08000	-02	-10	22	-15.9
0293.0	10000	-06	-10	27	-30.8
0218.6	12000	-05	-08	29	-47.9
0160.0	14000	02	-12		-64.4
0114.3	16000	-04	-01		-74.5
0084.0	17220	-02	05		-82.4
0080.4	18000	05	-04		-80.3
0057.6	20000	01	06		-66.7
0041.8	22000	-01	-12		-58.0
0030.5	24000	-01	-21		-52.9
0022.7	26000	02	-25		-47.5
0016.9	28000	-01	-31		-44.7
0012.7	30000	-03	-39		-38.8
0009.4	32000	02	-36		-33.3
0007.1	34000	00	-15		-30.3
0005.4	36000	-	-		-27.7
0005.0	36370	-	-		-26.7
0050.0	20810	02	-06		-60.5
0030.0	24060	00	-22		-52.5
0020.0	26720	00	-30		-46.3
0010.0	31440	-03	-38		-34.1
0007.0	34320	00	-15		-29.7
0005.0	36370	-	-		-26.7

ROCKET DATA

Date: May 01, 1968 Time: 1500Z

Rocket type: JUDI I Payload CHAFF

ROCKET WINDS

Fall Vel	Alt	Winds	(m/s)
m/s	m	N-S	E-W
052	61000	-04	13
049	60000	-09	12
043	59000	-06	17
039	58000	-08	25
040	57000	-02	28
040	56000	01	29
034	55000	00	21
031	54000	-02	17
030	53000	-09	13
028	52000	-17	07
026	51000	-17	10
025	50000	-09	14
024	49000	-05	13
024	48000	-05	16
023	47000	02	20
021	46000	07	25
021	45000	10	32
021	44000	11	38
020	43000	10	41
018	42000	04	38
017	41000	00	33
016	40000	-04	27
016	39000	-05	33

ROCKET WINDS

Fall	Alt	Winds	(m/s)
m/s	m	N-S	E-W
017	38000	00	19
016	37000	-03	26
015	36000	-07	25
015	35000	-02	19
013	34000	06	13
013	33000	08	00
012	32000	04	-15
012	31000	-01	-26
012	30000	-03	-35
011	29000	00	-36
011	28000	00	-34
010	27000	-02	-36
010	26000	-02	-37
009	25000	00	-34
009	24000	00	-29
009	23000	-01	-22
008	22000	00	-14
008	21000	00	-02
007	20000	-02	04

RAWINSONDE DATA

Date: May 01, 1968 Time: 1154Z

Press	Alt	Winds	(m/s)	RH	Temp
mb	m	N-S	E-W	%	°C
1007.5	00042	03	-04	76	28.7
0803.0	02000	03	-09	41	15.7
0630.8	04000	01	-04	47	04.6
0490.8	06000	-03	-01	58	-08.7
0377.0	08000	-02	02	18	-19.3
0285.1	10000	07	-01		-35.0
0212.0	12000	15	04		-51.8
0154.8	14000	11	14		-66.4
0110.4	16000	07	08		-76.9
0088.0	17220	03	-05		-84.4
0077.4	18000	-01	07		-82.5
0065.5	20000	-01	07		-71.3
0040.2	22000	01	-12		-61.2
0029.4	24000	02	-27		-54.5
0021.6	26000	01	-34		-48.4
0016.1	28000	-03	-35		-43.8
0011.9	30000	-06	-39		-42.9
0009.0	32000	-04	-24		-29.0
0006.8	34000	06	10		-30.4
0006.0	34720	11	14		-25.5

ROCKET DATA

Date: May 15, 1968 Time: 1500Z

Rocketd type: JUDI I Payload: WOX-IA

ROCKET WINDS

Fall Vel	Alt	Winds (m/s)	
m/s	m	N-S	E-W
052	51000	-04	35
065	50000	-14	29
062	49000	00	32
061	48000	00	33
061	47000	05	32
059	46000	06	29
057	45000	07	29
054	44000	03	30
048	43000	00	33
045	42000	00	29
045	41000	-02	22
040	40000	03	25
037	39000	04	29
036	38000	03	33
033	37000	05	33
030	36000	03	32
027	35000	06	30
025	34000	09	26
024	33000	07	20
023	32000	02	15
021	31000	-04	-03
020	30000	-03	-25
018	29000	00	-32

ROCKET WINDS

Fall Vel	Alt	Winds (m/s)	
m/s	m	N-S	E-W
016	28000	-03	-31
016	27000	-03	-29
013	26000	-03	-27
013	25000	-01	-24
012	24000	-02	-19
011	23000	-01	-15
010	22000	01	-07
008	21000	-06	04
007	20000	-05	05

ROCKET DATA

Date: May 15, 1968 Time: 1500Z

Rocket type: JUDI I Payload: WOX-IA

THERMODYNAMICS

Alt	Temp	Press	Dens	Winds	(m/s)
m	°C	mb	g/m ³	N-S	E-W
37730	-31.4	3.992	5.814	04	33
36240	-30.9	4.895	7.114	04	33
35970	-31.2	5.093	7.411	03	32
35570	-32.4	5.361	7.840	04	31
34690	-33.3	6.123	8.988	06	28
34020	-37.1	6.617	9.870	09	26
32770	-37.3	8.012	11.961	06	19
31910	-35.8	9.034	13.401	-01	14
31670	-35.4	9.419	13.949	-06	10
30880	-37.1	10.553	15.741	-06	-04
30750	-38.5	10.758	16.142	-07	-07
30510	-38.3	11.202	16.794	-08	-11
29930	-41.6	12.154	18.481	-03	-26
29720	-41.4	12.439	18.898	-02	-27
28930	-44.4	14.005	21.556	-01	-32
28250	-46.0	15.442	23.936	-03	-31
27680	-45.6	16.938	26.209	-03	-30
27190	-47.5	18.274	28.514	-03	-29
26940	-46.6	18.862	29.314	-03	-29
26270	-51.2	20.836	33.053	-03	-28
25480	-50.6	23.585	37.314	-02	-26
25120	-53.4	24.949	39.975	-01	-24
24690	-54.2	26.537	42.674	-02	-23

ROCKET DATA

Date: May 15, 1968 Time: 1500Z

Rocket type: JUDI I Payload: WOX-IA

Thermodynamics

(Cont.,)

Alt	Temp	Press	Dens	Winds	(m/s)
m	°C	mb	g/m ³	N-S	E-W
24440	-57.2	27.421	44.708	-01	-21
23620	-57.0	31.718	51.666	-01	-17
23010	-58.8	34.337	56.403	-01	-15
22710	-25.5	36.167	59.050	00	-13
22520	-59.5	37.241	61.373	00	-12
22400	-58.6	37.912	62.217	00	-11
22310	-61.5	38.439	63.943	01	-10
22160	-62.3	39.686	66.271	01	-09
21980	-61.3	40.695	67.635	00	-07
21580	-62.9	43.052	72.098	-01	-07
21400	-61.7	43.443	72.339	-06	-04
21180	-65.5	45.932	77.884	-07	02
20480	-62.4	51.819	86.573	-05	04
20270	-67.2	53.417	91.323	-05	05
20030	-66.3	55.263	94.074	-05	05
20000	-67.6	55.900	95.753	-05	05

DAWINSONDE DATA

Date: May 15, 1968 Time: 1203Z

Press	Alt	Winds	(m/s)	RH	Temp
mb	m	N-S	E-W	%	°C
1006.6	00042	05	-04	73	28.2
0801.0	02000	03	-06	63	15.7
0630.0	04000	00	-03	36	04.8
0493.0	06000	-02	-02	61	-07.2
0379.0	08000	12	-07		-18.9
0288.0	10000	03	00		-35.0
0221.0	12000	-12	16		-49.8
0155.3	14000	01	13		-67.2
0110.5	16000	-01	07		-78.2
0098.0	16960	01	04		-81.3
0078.4	18000	-05	-11		-75.1
0055.9	20000	-05	04		-67.6
0040.3	22000	-02	-11		-63.4
0029.4	24000	-05	-16		-56.7
0021.5	26000	00	-27		-49.3
0015.9	28000	-03	-30		-44.5
0011.9	30000	-04	-31		-40.8
0008.5	32000	02	11		-34.8
0006.8	34000	05	28		-29.9
0005.0	36000	07	29		-23.2
0050.0	20610	-04	07		-62.9
0030.0	23780	-06	-16		-54.9
0020.0	26400	00	-27		-50.5
0010.0	51060	-04	-08		-37.3
0007.0	33880	03	28		-30.1
0005.0	36000	07	29		-23.2

ROCKET DATA

Date: May 29, 1968 Time: 1500Z

Rocket type: JUDIZ Payload: CHAFF

ROCKET WINDS

Fall Vel	Alt	Winds	(m/s)
m/s	m	N-S	E-W
057	61000	02	-01
051	60000	-04	-06
045	59000	-00	-06
039	58000	07	-11
038	57000	-12	-19
036	56000	08	-26
034	55000	06	-23
032	54000	05	-22
029	53000	01	-25
029	52000	01	-23
027	51000	03	-17
025	50000	01	-13
024	49000	01	-11
023	48000	04	-10
022	47000	07	-09
022	46000	07	-10
020	45000	05	-10
019	44000	03	-07
019	43000	04	-02
012	42000	07	-01
017	41000	07	01
017	40000	04	03
016	39000	02	07
016	38000	03	11
015	37000	04	11

ROCKET WINDS

Fall Vel	Alt	Winds	(m/s)
m/s	m	N-S	E-W
014	36000	06	14
014	35000	05	17
013	34000	05	15
013	33000	03	07
012	32000	02	-03
012	31000	05	-16
012	30000	00	-27
011	29000	02	-33
011	28000	01	-35
011	27000	-01	-33
010	26000	-02	-33
010	25000	-01	-29
009	24000	00	-26
009	23000	00	-28
008	22000	-01	-24
007	21000	-02	-12
007	20000	-07	-13

RAWINSONDE DATA

Date: May 29, 1968 Time: 1145Z

Press	Alt	Winds	(m/s)	RH	Temp
mb	m	N-S	E-W	%	°C
1010.5	00042	03	-01	88	24.3
0805.0	02000	02	-05	90	13.8
-	04000	-02	-05		-
-	06000	-04	-05		-
-	08000	06	-01		-
-	10000	-03	02		-
-	12000	-01	06		-
-	14000	10	10		-
-	16000	-07	06		-
-	18000	02	06		-
-	20000	-02	-04		-
-	22000	00	-24		-
-	24000	-02	-26		-
-	25900	-06	-30		-

ROCKET DATA

Date: Jun 12, 1968 Time: 1502Z

Rocket type: JUDI Z Payload: CHAFF

ROCKET WINDS

Fall Vel	Alt	Winds	(m/s)
m/s	m	N-S	E-W
087	63000	14	26
069	62000	24	12
061	61000	21	10
050	60000	17	02
045	59000	13	-09
042	58000	12	-10
038	57000	15	-10
038	56000	08	-13
034	55000	-03	-24
033	54000	-06	-26
031	53000	-04	-11
029	52000	06	-03
026	51000	08	00
025	50000	-02	03
024	49000	-04	-01
024	48000	-04	06
023	47000	-03	13
021	46000	-03	12
020	45000	-03	09
019	44000	-04	10
019	43000	-04	18
018	42000	-04	20
017	41000	-03	17
017	40000	-04	12
017	39000	-07	09
017	38000	-06	08

ROCKET WINDS

Fall Vel	Alt	Winds	(m/s)
m/s	m	N-S	E-W
016	37000	-02	11
015	36000	01	09
014	35000	03	09
013	34000	00	07
013	33000	-02	01
013	32000	-01	-03
012	31000	-04	-03
012	30000	-05	-08
011	29000	-01	-21
011	28000	-01	-30
010	27000	-02	-33
010	26000	-02	-33
009	25000	-02	-30
009	24000	00	-24
008	23000	01	-22
008	22000	-01	-21
008	21000	00	-14
007	20000	05	00

RAWINSONE DATA

Date: Jun 12, 1968 Time: 1201Z

Press	Alt	Winds	(m/s)	RH	Temp
mb	m	N-S	E-W	%	°C
1012.2	00042	05	-01	88	24.6
0805.0	02000	08	-09	87	12.3
0633.0	04000	-05	-01	57	02.9
0492.0	06000	03	-07	14	-06.9
0378.0	08000	11	-06	17	-20.7
0286.8	10000	-05	-09	40	-38.7
0212.0	12000	-06	00		-53.5
0154.7	14000	-06	10		-68.7
0126.0	15230	-09	11		-76.5
0109.7	16000	-10	16		-76.3
0077.8	18000	-05	09		-74.0
0055.3	20000	07	00		-69.4
0040.0	22000	-01	-21		-60.3
0029.0	24000	-03	-23		-53.7
0021.5	26000	-02	-31		-49.5
0015.9	28000	00	-03		-41.5
0013.0	29280	02	-16		-37.4
0050.0	20550	01	-09		-66.5
0030.0	23730	-02	-22		-54.7
0020.0	26360	00	-33		-47.1

ROCKET DATA

Date: Jul 24, 1968 Time: 1602Z

Rocket type: ARCAS Payload: Arcasonde - 1A

ROCKET WINDS

Fall Vel	Alt	Winds	(m/s)
m/s	m	N-S	E-W
054	60000	-18	86
086	59000	-04	39
100	58000	01	-03
100	57000	00	-17
105	56000	-01	-29
095	55000	-01	-38
083	54000	00	-47
076	53000	03	-43
080	52000	01	-38
074	51000	00	-29
068	50000	-03	-20
066	49000	-03	-12
062	48000	01	-08
057	47000	04	-08
052	46000	00	-09
046	45000	01	-07
044	44000	04	-05
043	43000	03	-03
038	42000	-02	-01
037	41000	-03	02
034	40000	-03	04
030	39000	01	01
028	38000	01	01
026	37000	03	-01
024	36000	03	-01
022	35000	01	03

ROCKET WINDS

Fall Vel	Alt	Winds	(m/s)
m/s	m	N-S	E-W
021	34000	02	08
019	33000	01	08
016	32000	01	06
015	31000	04	11
014	30000	04	12
012	29000	-01	06
011	28000	-03	-17
010	27000	00	-24
009	26000	00	-29
008	25000	00	-31
006	24000	02	-33
006	23000	03	-31
006	22000	02	-23
006	21000	-03	-09
005	20000	-04	00

ROCKET DATA

Date: Jul 24, 1968 Time:1602Z

Rocket type: ARCAS Payload: Arcasonde - IA

THERMODYNAMICS

Alt	Temp	Press	Dens	Winds	(m/s)
m	°C	mb	g/m ³	N-S	E-W
56910	-02.5	0.368	0.478	-02	-28
53710	03.6	0.549	0.698	02	-46
50540	-03.9	0.814	1.064	-01	-25
49930	-01.7	0.879	1.140	-03	-20
44810	-10.0	1.691	2.262	01	-07
41700	-11.8	2.533	3.412	-03	-01
38920	-17.3	3.612	4.971	01	01
37370	-18.9	4.423	6.128	02	00
36580	-23.7	4.913	6.936	03	-01
35720	-23.7	5.526	7.800	03	01
34080	-29.9	6.898	9.985	02	08
32980	-29.3	8.027	11.591	01	08
30780	-35.8	10.986	16.299	04	10
29230	-35.0	13.646	20.177	-01	14
28770	-39.6	14.620	22.043	-10	12
28290	-39.6	15.700	23.671	-11	-12
27370	-45.1	18.000	27.794	-01	-21
26460	-47.5	20.371	31.790	01	-27
25880	-46.8	22.285	34.669	00	-29
24750	-50.2	26.534	41.909	01	-32
23470	-51.7	32.220	51.295	03	-32
21730	-61.8	42.510	70.829	-01	-21
20420	-64.0	52.650	88.647	-06	-03
20000	-62.1	56.100	92.989	-04	00

RAWINSONDE DATA

Date: Jul 24, 1968 Time: 1115Z

Press	Alt	Winds	(m/s)	RH	Temp
mb	m	N-S	E-W	%	°C
1018.1	00042	06	00	69	24.8
0805.7	02000	03	02	36	13.2
0632.8	04000	-01	-09		03.2
0492.0	06000	-03	-07		-07.5
0379.8	08000	-08	-02		-21.3
0286.7	10000	-10	-03		-35.9
0212.6	12000	-04	04		-53.0
0154.6	14000	-02	00		-69.0
0130.0	14980	-01	11		-75.1
0110.0	16000	01	-01		-71.4
0093.0	16950	-06	-02		-77.5
0078.2	18000	06	04		-71.8
0056.1	20000	-08	-06		-62.1
0040.6	22000	04	-22		-62.0
0029.7	24000	-05	-34		-54.0
0021.6	26000	06	-27		-47.4
0016.3	28000	-01	-20		-45.6
0012.2	30000	03	09		-39.3
0009.0	32000	02	06		-38.6
0006.8	34000	00	06		-37.2
0005.1	36000	-07	00		-35.9
0004.0	37490	-03	-01		-34.8
0050.0	20650	-04	-12		-63.4
0030.0	23840	-05	-34		-54.1
0020.0	26490	01	-27		-46.8
0010.0	31150	06	13		-39.3

RAWINSONDE DATA

Date: Jul 24, 1968 Time: 1115Z

Press	Alt	Winds	(m/s)	RH	Temp
mb	m	N-S	E-W	%	°C
0007.0	33310	04	07		-36.7
0005.0	35940	-03	-01		-35.8
0003.0	40290	-05	04		-15.6
0002.0	43480	06	-07		-10.8
0001.0	48930	-05	-23		-03.4