International Council of Scientific Unions

SPECIAL COMMITTEE
ON
SOLAR-TERRESTRIAL PHYSICS

76 8

President: Dr. Francis S. Johnson *Vice-President:* Dr. J. W. King *Secretary:* Dr. E. R. Dyer

INTERNATIONAL MAGNETOSPHERIC STUDY

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IMS NEWSLETTER

CONTENTS

The IMS is indeed a complex program. Its components include satellites and space probes (IMS-dedicated or "of opportunity"), rockets, balloons, aircraft and ground based observations. The ground-based IMS work in turn includes campaigns of limited duration (such as ship cruises), special stations for the duration of the IMS and the basic STP monitoring networks of stations (MONSEE). In this NL we begin to provide more information on the special IMS ground stations which are beginning to come into operation, in addition to GBR campaigns. These NL are supposed to help the self-coordination of effort and data exchange among the now almost 2000 participants.

---JHA July 28

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PROGRAM PLANS FOR AUGUST 1976

SPECIAL IMS PERIODS

- - - - - - - to Aug 3 0400 UT IMP-J, VELA 5B, VELA 6A - Neutral Sheet

GBR Campaigns: (numbers refer to program details in IMS Bulletin No. 2 or in references in these NLs)

----------Phenomena-related Campaigns----------

--- to Dec 31; #0019; Jakimiec; USSR; Rocket - solar X-ray exper, cooperative with Interkosmos program
*--- to Aug 3; A-28; Ullaland; Karasjok (Norway); Balloons (5) - Complex experiment, see note below
Aug 1 to Aug 31; #0263,0311; Olesen, Ungstrup; Sdr Stromfjord; Rockets (2) - Complex exper, note below
*Aug 17 to Aug 21; #0258, 0193; Obayashi, Hirao; Kagoshima; Rocket - e- parameters and O3, note below
*Aug 21 to Aug 27; #0258, 0193, 0255; Obayashi, Hirao, Nakamura; Kagoshima; Rocket - E region, note below
*Aug 30 to Sep 8; #0416,0193,0255; Matsumoto, Hirao, Nakamura; Kagoshima; Rocket-experiments noted below

------Quasi-synoptic Observations involving Balloons, Rockets, Aircraft, Selected Surface Campaigns-------

--- to Aug 15; A-20; Koons; et al; New Zealand area & N. conjugate; Surface- VLF exp, satel; NL-4 p3
Jul 7, 14, 21, 28, #0162; Y. Corcuff; Gen Belgrano, Halley Bay; Surface; weekly VLF obser, see NL-5 p2

----------Observing Plans for Temporary Surface Stations----------

--- to Sep 30; #0115; R.W. Smith; Jordanstown; Surface - airglow interferom, intermittent operation
*--- to Oct 31; See page 5 for details of Japanese ground based programs for July through October 1976
(we have not received full information on Surface campaigns)

Notes on Program Plans for August 1976

* marks new or changed information from NL 76-7

A-28; Ullaland (Univ Bergen), same program as past NL reported for Ungstrup (#0311). Joint exper with: Iversen (Danish Space Res Inst), Egeland (Norwegian Inst Cosmic Phys),and Thrane (#0041). Three launchings, 5 balloons. Type A: X-rays, E-field, and CNA (riometer). Type B: X-rays with spatial information, VLF-goniometer, atmospheric infrasonic waves and B-field. Two A flights from Karasjok. Joint flight of 2 A and 1 B near end of window from Karasjok, Honningsvag, Sodankyla. Drift into conjugate area of ATS6 with telemetry to Andenes, Iceland, Greenland.

#0263, 0311; Olesen and Ungstrup, also postponed from June, 2 rockets from Sdr Stromfjord, Greenland to measure E-field, ELF/VLF waves, ionospheric currents, particle precipitation, plasma density and temperature. Daughter payload will measure part precip & plasma density. Launch to be when cleft (cusp) near and N. of Sdr Stromfjord, strong ionospheric current above there and Godhavn with backscatter echoes on 12 MHz & slant sporadic E traces indicating ionosphere instability of Farley & Buneman.

#0258,0193; Obayashi, Hirao, Mambo, Watanabe rocket exper to measure e-density and temperature, e-density by ground VLF wave and ozone.

#0258, 0193, 0255; Obayashi, Hirao, Nakamura, Itoh, Dote, Toyoda rocket exper to measure e-density & temperature, E-region irregularities, ion temp, e- energy spectrum, atmospheric & ground temp.

#0416,0193, 0255; Matsumoto, Hirao, Nakamura, Kawashima rocket exper to measure wave excitation, e-temp, wave & airglow excitation, Barium cloud.

PROGRAM PLANS FOR SEPTEMBER 1976

No Special Satellite Periods were selected for September 1976. Consult the 1976 International Geophysical Calendar for other special observational intervals. Attention is called to programs in Sept shown on pg 8.

GBR Campaigns: (numbers refer to program details in IMS Bulletin No 2 or in references in these NLs)

----------Phenomena-related Campaigns----------

*--- to Sep 8; #0416,0193,0255; Matsumoto, Hirao, Nakamura; Kagoshima; Rocket - see August notes
*Sep 14 to Sep 19; #0259,0193; Ogawa,Hirao,Mori; Kagoshima; Rocket - E-fields and conductivity, note below
*Sep 17 to Sep 22; #0429,, 0217, 0193; Tohmatsu, Oya, Hirao; Kagoshima; Rocket - see note below
Sep 19 to Oct 2; A-24; Goldberg; Poker Flat; Rockets (3) - High altitude launches, complex program
Sep 19 to Oct 2; A-25; Hilsenrath; Poker Flat; Rockets (3) - Low alt, coordinated with A-24 above
Sep 19 to Oct 2; #0337; Heath; Poker Flat; Rockets (3) - Coordinated with A-24 above, see notes
Sep 19 to Oct 2; A-27; Barcus; Poker Flat; Balloons - Coordinated with A-24 above

------Quasi-synoptic Observations involving Balloons, Rockets, Aircraft, Selected Surface Campaigns-------

Sep 1...30; #0458; Charakchyan; Mirny, Murmansk, Moscow, Alma Ata; Balloons - daily launch, cosmic rays

----------Observing Plans for Temporary Surface Stations----------

--- to Sep 30; #0115; R.W. Smith; Jordanstown; Surface - airglow interferom, intermittent operation
*--- to Oct 31; See page 5 for details of Japanese ground based programs for July through October 1976
(we have not received full information on Surface campaigns)

Notes on Program Plans for September 1976

* marks new or changed information from NL 76-7

#0259,0193; Ogawa, Hirao, Mori rocket measures e-density & temp, ionospheric current, DC electric field and plasma irregularities.

#0429,0217,0193; Tohmatsu, Oya, Hirao, Ogawa, Ozio rocket for O3,O2,N, NO, plasma wave excitation e-temperature and Lyman-α.

A-24; Goldberg announces a complex program of 9 or 10 rocket launches (see calendar on pg 8) coord with balloons and ground observations at or near Poker Flat launch facility. Other participants are: A-25 Hilsenrath, #0337 Heath, A-26 Barcus, Kruger, Williamson, Hale, Szuszczewicz and Jones. High-alt rockets too carry GM counters, X-ray, NRL ion temp and density probe, exper to measure ozone, temp, pressure and wind velocity. Low-al simultaneous launches will measure conductivity below 75 km. Balloons to monitor cosmic rays and X-rays at 40 km. Objective to monitor bremstrahllung X-rays as possible energy transfer mechanism from high altitude down to stratosphere and lower mesosphere. Auroral zone launches are similar to Antarqui program of May 1975 in Peru.

SPECIAL IMS PERIODS

No Special Satellite Periods were selected for October 1976. Consult the 1976 International Geophysical Calendar for other special observational intervals. Attention is called to programs in Oct shown on pg 8.

GBR Campaigns: (numbers refer to program details in IMS Bulletin No 2 or in references in these NLs)

----------Phenomena-related Campaigns----------

--- to Oct 2; A-24; Goldberg; Poker Flat; Rockets (3) - High altitude launches, complex program
--- to Oct 2; A-25; Hilsenrath; Poker Flat; Rockets (3) - Low alt, coordinated with A-24 above
--- to Oct 2; #0337; Heath; Poker Flat; Rockets (3) - Coordinated with A-24 above, see notes
--- to Oct 2; A-26; Barcus; Poker Flat; Balloons - Coordinated with A-24 above
Oct 1 to Oct 31; #0443; Hultqvist; Kiruna (ESRANGE); Rockets (2) - energetic particles & hot plasma
Oct 1 to Oct 31; #0172; Falthammar; Kiruna (ESRANGE); Rockets (2) - E-fields
Oct 1 to Nov 30; #0145; Wrenn; Andoya; Rockets (3) - e- and p+ measurements
Oct 1 to Nov 30; A-18; Wooliscroft; S. Uist; Rockets (2) - P139, P140H, ion mass spectrometer
Oct 1 to Dec 31; #0531, et al; Lazutin, et al; Kiruna (ESRANGE); Balloons-Possible rescheduled SAMBO 1B
Oct 1 to Dec 31; #0332; DeMendonca; Sao Paulo; Balloons (13) - X-rays, gamma rays, UV, joint program

------Quasi-synoptic Observations involving Balloons, Rockets, Aircraft, Selected Surface Campaigns------

Oct 1...31; #0458; Charakchyan; Mirny, Murmansk, Moscow, Alma Ata; Balloons - daily launch, cosmic rays

----------Observing Plans for Temporary Surface Stations----------

--- to Oct 31; See pg. 5 for detailed list of Japanese Ground Based IMS Observations, Jul to Oct 1976

Notes on Program Plans for October 1976

Information on rocket and balloon programs listed above comes from several sources, e.g. project scientists, national reports, launch range schedules, regional IMS information center, direct contact by TIMSCIE Office, and IMS Bulletin No. 2. Sometimes information about the same programs but from different sources will conflict. For October 1976, P. Simon has just reported several changes for European IMS programs. Basis for the Kiruna and Andoya launch information is the European Space Agency/Programme Advisory Committee on Special Projects (Sounding Rockets) report, rev. 1, released July 7, 1976. Annexes I and II of the report give the launching programmes for Kiruna (ESRANGE) and Andoya for several years. Programs #0443 and 0172 listed above are not shown on the Kiruna schedule. The rescheduled SAMBO 1B balloon program is "under consideration." #0145 is not shown on the Andoya range schedule. We will attempt to become more accurate on program status with succeeding NLs.

NOTES ON ACTUALITIES

The 2-month chart of confirmed actualities is omitted from NL 76-8 because of the scarcity of information to be shown and the large amount of program information for this issue. New actualities for earlier months of 1976 and confirmed results since April are given below. A compilation of all such reports available from the TIMSCIE Office will be distributed with some future NL.

A-31; Maehlum (Norwegian Defence Res Estab), Thrane (#0041), Maseide (NICP), Stadsnes (Univ Bergen), Soraas (Univ Bergen), Maynard (NASA), Egeland/Holtet (NICP). Detect high energy electron pulse reflected from potential slope above ionosphere, production of secondary e-, excitation process, generation and propagation of EM and ES wavefields through artificial pulse interaction with ambient plasma. Launched Andoya - 1 Feb 1976 at 192855 UT to 221 km alt. Project Ferdinand 45 (POLAR V). Data reduction in progress.

JISS; Matuura (#0242) has provided information on the experimental results from JISS prior to its demise. 4 main missions: RAN (radio noise meas) RPT (plasma meas), TOP (topside soundings), and PIC (positive ion composition meas) began on 3, 5, 15, and 25 March respectively. All exper worked well and data was collected as shown:

Mission	Number of passes real time mode	Number of revol'ns stored mode
RAN	42	10
RPT	34	8
TOP	24	7
PIC	10	3

Real time data 10 min per pass, stored data for maximum of 112 min.

IISN; Bauer (#0004) reports on incoherent scatter radar observations for April. April 13 at 0300 to 15 at 1900 UT some technical problems at Monpazier until 14/1600 UT. April 29 at 0300 to 1900 UT during solar eclipse. Fixed altitude at 200 km, good data at Mende, intermittent at Mon.

A-12; Crochet, coherent ground-based radar at Addis Ababa; observations 1000-1900UT on April 14,15,16,17,19,21,22,23,24,25,26,29,30,May 1,2.

#0288; Rycroft, at S. Uist, Cape Wrath and Ardnamurchan operated ELF/VLF goniometers from April 29 through June 5. Supported several rockets.

A-19; Williams, S. Uist, rocket launched at 1222 UT on 6 May to measure Lyman-α and e-density. Coordinated with separate launch at 1144 UT by K. Norman (MSSL). This mass spectrometer experiment had not been previously reported in IMS NL.

IISN; Bauer (#0004) reports that for May 12/0300 to 16/1900 UT good data recorded except for the beginning at Monpazier.

#0400; Fitz (Fremouw), satellite P76-5 launched from California at 0742 UT on 22 May. Carries multifrequency, coherent radio beacon. See note NL 76-7 p.4 for details. International cooperation in observations is invited.

#0149; Bullough, at S. Uist 2 rockets launched. Both carried experiments measuring AC/DC E-field. First launch at 0440 UT on 4 June suffered partial data loss. Simultaneous rocket and ground record of emissions and whistlers. Second at 0456 UT into morning emissions event also measured B-fields. Good joint rocket/ground data.

A-29; (no name given in actuality report), rocket S210JA-20 launched from Syowa on 25 June 1976, at 0240 (45 EST LT) into bright 5577 A aurora with -500 bay. Measured VLF emissions at 300 Hz to 10 kHz, HF emissions at 1 MHz to 10MHz e- density & temperature, and e- flux of energy greater than 30 kev.Coordinated with ISIS I, II.

Note on IMS Newsletter (NL) Distribution List -- Mailing labels for the NL are now in standardized format and routinely produced by computer. It's now possible for TIMSCIE Office to consider the utility of printing an address supplement for mailing with an NL to give some 1562 names (perhaps addresses) of persons interested in IMS. With 45 addresses to a NL-sized page, we fill nearly 35 pages, an expensive supplement. Might such a list be useful?

Solar Minimum Epoch -- Opportunity for Experiments

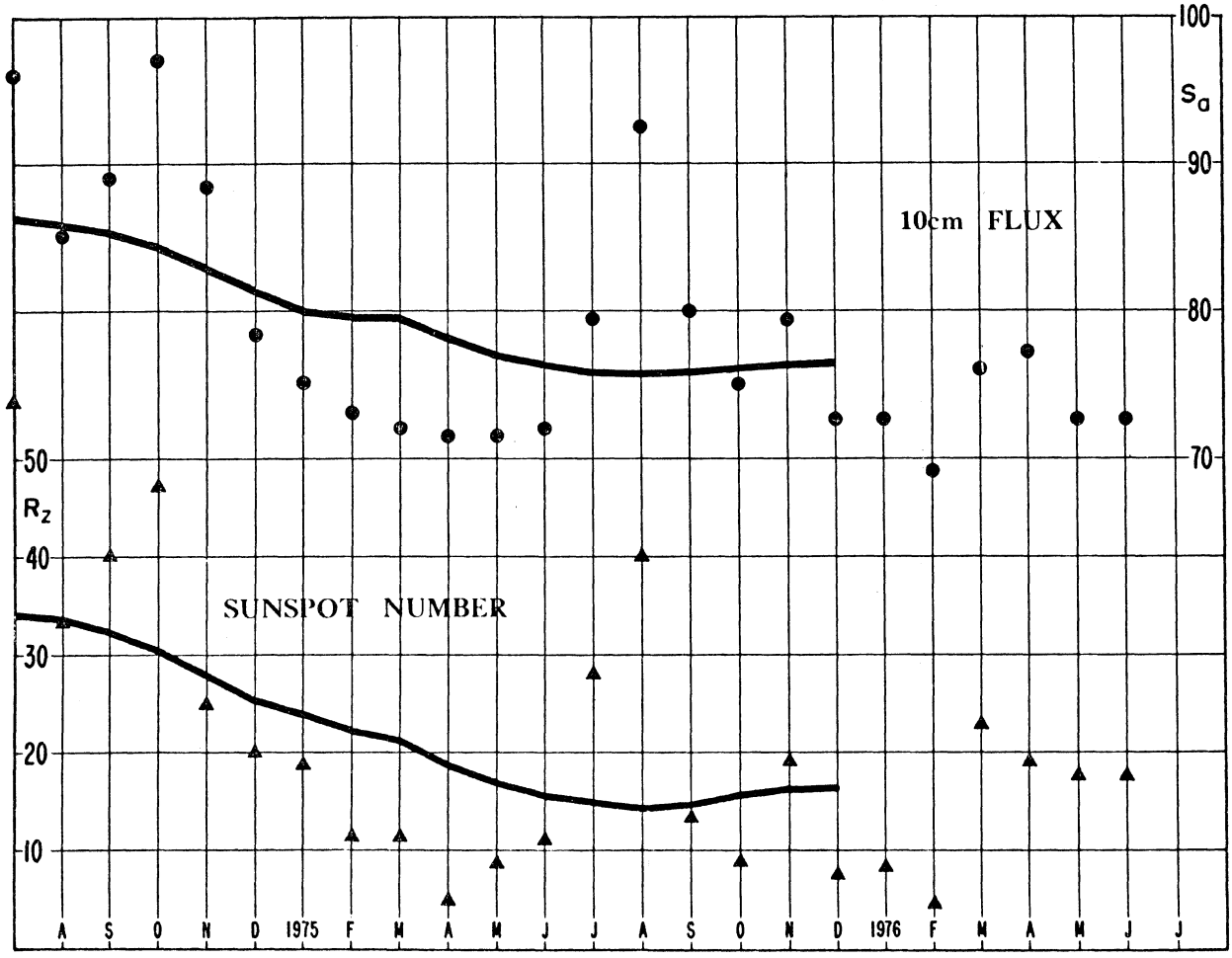
Everyone agrees we are very near the minimum of the 11-year solar activity cycle. The "statistical" minimum is usually defined from the 13-month smoothed values of the relative sunspot number (Zurich), or in recent decades of the 10cm solar radio flux (Ottawa). Thus the minimum epoch is not determined until it is six months past! The figure shows the present situation, showing both smoothed and monthly data. The dying cycle (cycle 20) is already longer than recent ones (more than 11 compared to 10 years) and is not yet near the minimum value of 1964 (9.6) or 1954 (3.4) or 1944 (7.7). Observers call it an unusual minimum, but much about solar activity and STP is still enigmatic. IMS and other SCOSTEP programs are aimed at making it less so.

However, another and more physical manifestation of sunspot minimum has been pointed out by Wilcox, and provides opportunities for special observations and experiments if indeed the minimum is at hand. Near each of the past 5 sunspot minima there has been an interval of about 3 months during which the interplanetary magnetic field observed near earth has had predominantly "away" (positive) polarity. See Wilcox in Comments on Astrophysics and Space Physics, 4, 141, 1972. Wilcox advises it appears that another such interval may be beginning. During 26 of the past 27 days the Stanford Solar Observatory observed the mean solar magnetic field to have away polarity. The interplanetary magnetic field inferred at earth from polar magnetograms has had only a few scattered days of "toward" (negative) polarity during the past 27 days. Two well-defined toward sectors observed in the past few months have broken up. Previous observations suggest that this puzzling predominance of away polarity may continue for approximately 2 more months, and that we are now near statistical sunspot minimum.

There is other evidence. Helen Dodson Prince reports a study by Marquette on the relative frequency of days of very low 2800 MHz solar flux. In 1954 and 1964 these peaked about three months before statistical minimum and a very sharp peak in February 1976 may perhaps indicate the minimum is imminent. Further, an appreciable number of high latitude (new cycle) sunspots have been seen, a necessary condition for solar minimum conditions. Simon also calls attention to the cumulated number of spotless days, high cosmic ray level and low geomagnetic activity.

IMS experimenters and observers may want to take this STP condition into account in their programs in the next couple of months -- if nature cooperates. Of special interest will be solar magnetic fields -- particularly full disk observations with well determined zero levels. H-alpha observations which can be used to deduce the fields are also of interest. In situ measures of the interplanetary medium -- particles and fields -- should be as continuous as possible. We should also have as good coverage as possible of magnetospheric boundaries. Exploratory observations of the polar (and lower latitude) ionosphere may give new clues. And it will be interesting to see if magnetic substorm activity is peculiar under "quietest" sun conditions when interplanetary sector structure has disappeared. Even cosmic ray observers should be alert -- a predominantly "away" polarity of the IMF at sunspot minimum was inferred independently by Thompson from the anomalous diurnal variation in cosmic rays during the 1954 minimum.

At the 1975 meeting of the IMS (and MONSEE) Steering Committee in Austria, it was envisaged that the time of predominantly "away" polarity might be suitable for an interval for special study -- a predicted "retrospective" interval. No decision has been made since one must wait and see if the quick-look data indicate such a study may be scientifically worthwhile. If so, one or more special data compilations will likely be organized and one or more symposia. It is suggested that IMS participants may want to anticipate this possibility through their programs of observation and reduction. (AHS)

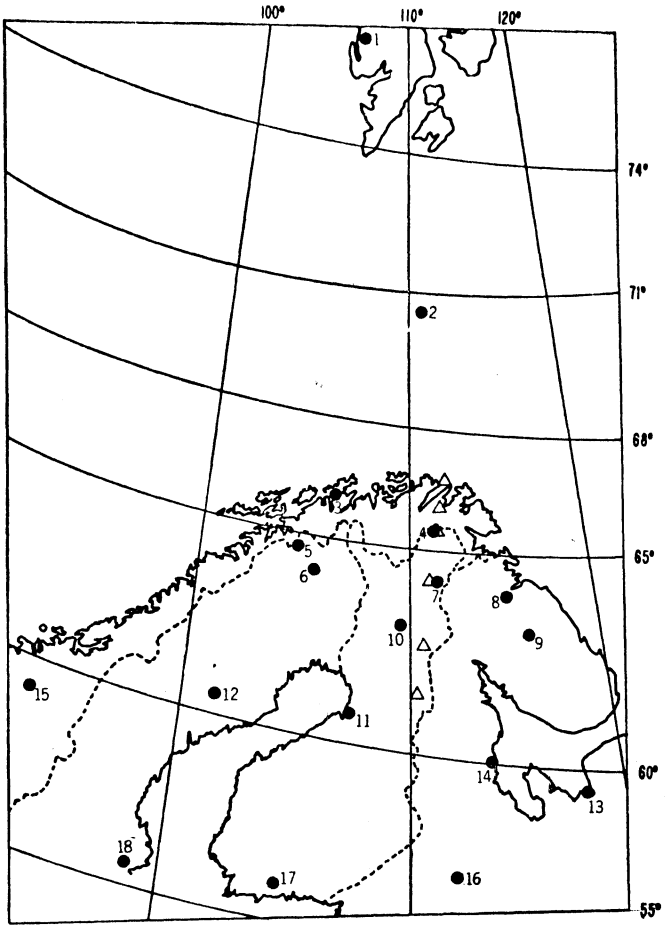


JAPANESE IMS OBSERVATIONS, GROUND-BASED, JULY - OCTOBER 1976 (from Nishida, July 1976)

Object	Method	Site (Geomag. lat. long.)	Interval	Observer
ULF waves I&II	high speed dynamic wave analyzer	Onagawa (28.3, 206.8)	continuous	T. Saito (A)
ULF waves	observatory network	Thompson (65, 321) etc.	from late August	T. Oguti (0414)
ULF waves	SQUID magnetometer	Fukuoka(22.5)	7 days/month	T. Kitamura (C)
ULF waves	induction magnetometer	Memambetsu (34.0, 208.4)	continuous	M. Kawamura (G)
		Kakioka (26.0, 206.0)	in preparation	
		Kanoya (20.5, 198.1)	continuous	
		Chichijima (17.1, 208.9)	continuous	
Aurora	TV	Churchill (68, 322)	from late August	T. Oguti (0414)
		Thompson (65, 321) etc.		
VLF	direction finder	Churchill (68, 322)	from late August	T. Oguti (0414)
		Thompson (65, 321) etc.		
Whistler propagation	direction finder	Moshiri (34, 207)	10 days/ Sep. Oct.	T. Okada (B)
ELF-VLF emission		Moshiri (34, 207)	continuous	J. Ohtsu (0262)
Electron density	whistler detector	Yamaoka (24.6, 203.2)	continuous	A. Kimpara (0216)
Electron density	whistler detector	Moshiri (34, 207)	continuous	A. Iwai (B)
		Sakushima (24, 203)		
		Kagoshima (21, 198)		
Polar ionosphere	VLF-signal phase	Toyokawa (24.5, 203.9)	continuous	T. Kamada (0427)
		Syowa (-70.0, 79.6)		
Ionosph. irregularities	LF, intensity and phase	Toyokawa (24.5, 203.9)	continuous	A. Iwata (0428)
		Sakurashima (24.4, 203.7)		
F-region irregularities	HF Doppler, VLF whistler	Sugadaira (26, 204)	continuous	T. Okuzawa (D)
Low ionosph. disturbance	VLF (NLK, NWC)	Nishinomiya (24.3, 202.6)	continuous	T. Sato (E)
Low ionosphere	VLF (NWC)	Kasugai (24.7, 203.6)	continuous	A. Kimpara (0216)
Velocity ionosph. observation	HF Doppler	Uji (24, 204)	continuous	T. Ogawa (0259)
Ionospheric wind	meteor radar	Akita (29.5, 205.4)	2 days/week	T. Ishimine (F)
Minor constituent	Lidar	Fukuoka (22.5)	4 days/month	M. Hirono (C)
Geocoronal H and He	Michelson photometer III	Nobeyama (26, 206)	from Oct. 15	T. Tohmatsu (0429)
		Kakioka (26, 207)		
Magnetospheric glow	Fourier transform interferometer	Nobeyama (26, 206)	in preparation	M. Nakamura (0255)
Airglow	photometer	Niigata (28, 205)	10 days/month	B. Saito (0029)
Airglow	tilting filter	Ishigaki (13, 192)	40 days/year	M. Okuda (0418)
Solar wind velocity	interplanetary scintillations	Toyokawa (25, 205) IV	Aug. 15 - Oct. 31	T. Kakinuma (0209)
		Fujigane (25, 206)		
		Sugadaira (26, 206)		
Jovian magnetosphere	20.0030 - 24.5000 MHz emission	Zao(28, 206.8)	continuous	H. Oya (0217)
Distant solar wind	comet photography	Hida (26, 205)	whenever possible	A. Hattori (0430)
Distant solar wind	comet photography	Dodaira	continuous	K. Tomita (H)
Cosmic ray modulation	underground telescope	Sakashita (26, 205)	provisional	K. Nagashima (0253)
Cosmic ray modulation	underground telescope	Misato (26, 204)	continuous	S. Mori (0247)
Cosmic ray modulation	neutron monitor	Fukushima (28, 208)	continuous	T. Kanno (0093)
Cosmic ray modulation	neutron monitor	Morioka (30, 208)	continuous	H. Takahashi (0420)
Solar active region	high resolution photography	Okayama	after November V	F. Moriyama (0249)
Solar active region	8-cm radioheliograph, 9400-, 3750-, 2000- and 1000-MHz radiopolarimeter	Toyokawa (25, 204)	continuous	H. Tanaka (0307)
Solar flare monitor	VLF-signal phase	Toyokawa (25, 204)	continuous	T. Kamada (0427)
Solar radio emission	6.0- and 37.5-GHz	Kasugai (25, 203)	continuous	A. Kimpara (0216)
Solar radio emission	radiospectrograph	Nobeyama (26, 206)	from Aug. 1 cont	K. Kai (0412)

(A) Same as 0217; (B) Same as 0262; (C) Kyushu University; (D) Same as 0287; (E) Hyogo College of Medicine; (F) Same as 0185; (G) Same as 0227; (H) Same as 0306. I Plasmasphere II Auroral Flare III Geocorona IV Heliosphere V Solar Active Region

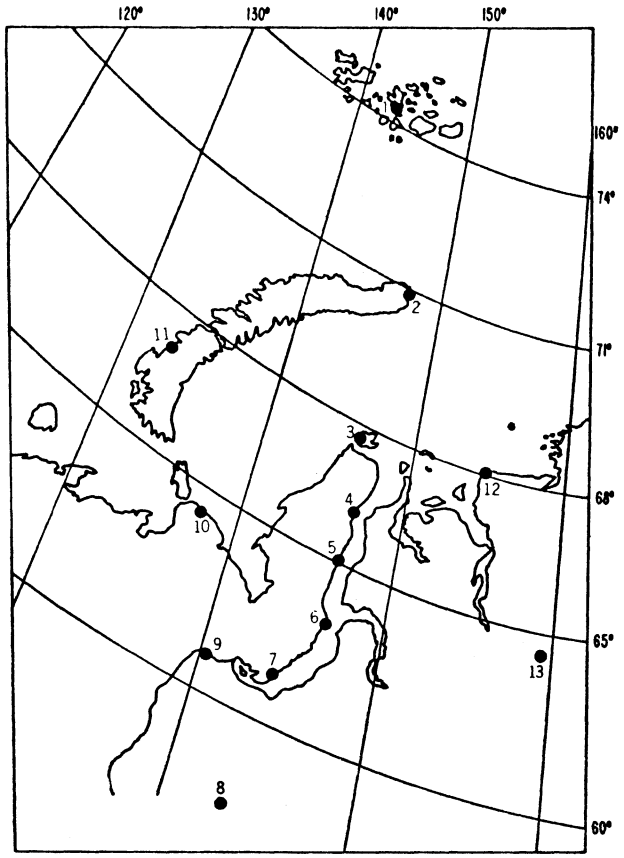
GEOMAGNETIC MERIDIAN PROJECT INSTRUMENTED SITES



105 DEGREE MERIDIAN CHAIN

Locations for magnetic variations recording in the region of the 105 deg geomagnetic meridian. Stations are:

1.	NY ALESUND	75.5	2.	BEAR ISLAND	71.0
3.	TROMSO	66.3	4.	KEVO	65.8
5.	ABISKO	64.9	6.	KIRUNA	64.3
7.	IVALO	65.1	8.	MURMANSK	64.6
9.	LOVOSERO	63.6	10.	SODANKYLA	63.4
11.	OULU	61,9	12.	LYCKSELE	61.2
13.	ARCHANGELSK	59.5	14.	KEM	60.6
15.	DOMBAS	59.6	16.	PETROZAVODSK	56.8
17.	NURMIJARVI	57.6	18.	LOVO	55.9



145 DEGREE MERIDIAN CHAIN

Instrumented locations on and near the 145 deg geomagnetic meridian. stations are:

1.	HEISS ISL	74.3 MRIF	2.	C.ZHELANIA	71.1 MRF
3.	BELIY ISL	67.8 M	4.	TAMBEY	66.2 M
5.	SEYKHA	65.1 M	6.	C.KAMENNIY	63.6 M
7.	YAR-SALE	62.1 M	8.	SALEKHARD	61.8 MRAIF
9.	NUMTO	59.0 M	10.	AMDERMA	64.7 MR
11.	M.KARMAKULY	67.4 M	12.	DIXSON ISL	68.0 MRI
13.	NORILSK	64.3 MRI			

M = magnetometer, R = riometer, A = all-sky camera, I = ionosonde, F = photometer.

These two maps of GMP stations and nearby recording sites are taken from GMP Circular Letters distributed by A.N. Zaitzev, IZMIRAN. Studies with data from these and other networks were the subject of a recent GMP Symposium in Leningrad (see NL 76-7, pg 7). Coordinates are geomagnetic latitude (N) and longitude (E).

GENERAL NEWS

Canada-US Rocket Cooperation. B.W. Currie, Canadian IMS Coordinator, sends word that joint Canada/US discussions about US rocket and balloon programs to launch from Ft. Churchill between 1 July 1976 and 30 June 1977 are completed. W.C. Galvin (NASA) and Z.R. Charko (NRC) are co-chairmen of the working group. All proposed US rocket and balloon programs to be launched inside Canada must be discussed by this group before approval will be given. Next working group meeting in Washington, Oct 1976. The present US/Canada agreement may be extended during IMS. Meanwhile, any American wishing to launch a rocket or balloon from Canada should discuss the program with W.C. Galvin, Office of Tracking and Data Acquisition, NASA Headquarters, Washington, D.C. 20546.

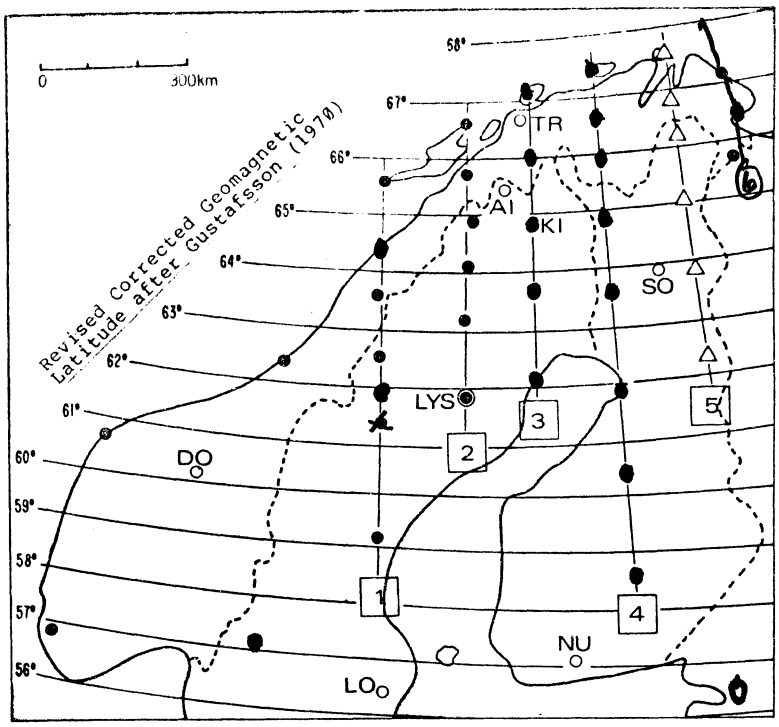
Satellite Situation Center - J. Vette (SSC) requests that experimenters collecting data from satellites please provide information about this to the SSC. Orbit plots for specific satellites will then be prepared only for those segments for which data was being taken. The TIMSCIE Office will forward any information of this type to the SSC as it is received.

SOLRAD 11B orbit was raised July 5 and station keeping will take place about every 6 weeks. Next orbit adjustment will be to 11A. Details about experiments on these satellites and data availability will be in the next IMS NL, 76-9.

During 1976, Interplanetary Magnetic Field data from satellite IMP-J will be made available for the designated Special Satellite Intervals. Data will be in World Data Center A for Rockets & Satellite about 6 months after it is recorded.

K. Hills, Rice Univ, asked the SSC to compute orbit plots for the Moon as a "satellite of opportunity" because of the plasma detector on the Lunar surface from Apollo 14 LM/ALSEP (Report on Active & Planned, pg 22).

MAP OF N. SCANDINAVIA IMS MAGNETOMETER ARRAY STATUS (April 1976)



Univ Munster Sites: + (installed), ● (planned)
Tech Univ Braunschweig IMS magnetometers △
Permanent magnetic observatory O
[2] Profile Number (meridian chain)

N. SCANDINAVIA IMS MAGNETOMETER ARRAY

In cooperation with several Scandinavian groups, the Univ of Munster (Untiedt, #0312,(Kuppers and Baumjohann)) is setting up a magnetometer array - with an approximate spacing of 100-150 km - in Northern Scandinavia. The completed array, as shown in the map, will consist of 30 GOUGH-REITZEL magnetometers on 4 N-S parallel profiles and at some separate sites. A fifth profile represents the magnetometer chain of Kertz and Maurer (#0243). Installation of the 16 remaining magnetometers is planned for the summer of 1976. Operation is planned at least until the summer of 1978.

The suspended magnet variometers record H-, D- and Z-variations on 35 mm film with a range of resolution of 2 nT. For selected intervals, the analog records may be digitized with a sample interval of once per 10 sec.

The magnetometers of Maurer are digital fluxgates, recording on magnetic tape each 30 sec. For special intervals such as nearby rocket launches, the sampling interval can be reduced to 5 sec.

The map and program information were shared by W. Baumjohann from his paper presented at the GMP Symposium in Leningrad, May 1976.

CUMULATIVE LISTING OF A-NUMBER PROGRAMS:

A-1; Offerman, German Aeronomy rocket program. Launches near Huelva, Spain of 20 Skua,2 Skylark II, 2 Petrel, Nike-Apache, and Skua IV.

A-2; CCOG Circular Letter Nr. 6, Feb 75, pg 9 W. Stoffregen, Alvagen 29A, S-752 45 UPPSALA, Sweden. Simultaneous launches: upper rocket carries e-gun that fires down along field line, lower rocket has experiments to measure particles and fields. USA, UK, Norway, Austria.

A-3; N. Kawashima (same address as #0258); Kagoshima; Rocket - 1400LT 206km

A-4; T. Itoh (same address as #0258); Kagoshima; Rocket - 1400LT 206km

A-5; J. Nakamura, College of Gen. Educ. Univ. Tokyo; Kagoshima; Rocket - 1400LT 206km

A-6; T. Ozio; Kagoshima; Rocket - 1400LT 206km

A-7; Evans and Bernstein (for address see Program #0170), Investigation of low altitude (<2000 km) auroral particle acceleration mechanisms.

A-8; J.R. Winckler, School of Physics and Astronomy, Univ. of Minnesota, Minneapolis, Minnesota, 55455, USA. Black Brant V-C into evening quiet-arc conditions. High-power e-gun, particle detectors, photometers, E-fields, plasma. Investigate dynamics of electron beam in magnetosphere, beam/plasma interactions in ionosphere. Simultaneous TV auroral imagery from ground. A continuing series.

A-9, A-10; O.A. van der Westhuysen, Secretary SANCGASS, S. African CSIR, P.O. Box 395, Pretoria, S. Africa.

A-11; S. Miyazaki (same address as #0185); Syowa; Rockets (2) - 0300LT 210km, 2000LT 130km

A-12; Crochet, coherent radar described in "French Contribution to the IMS," August 1975, item GR-4. Contact P. Simon, DASOP 92190 Meudon, Fr.

A-13; Heikkila (same address as #0186 Hanson), a multi-national rocket experiment coordinated with #0356 and ground campaigns. Black Brant V-C carries experiments listed: (1) Spectrometers, soft particles, high energy and secondary elect; Heikkila & Winningham. (2) Swept-freq adm. probe R. Kist. (3) Energetic e- and p+, ion drift meter; B. Whalen. (4) Fast ion spectrometer; Freeman, Hills, Meister. (5) UV and visible photometers, 2 Lang. probes; Christensen. (6) Thermal ion mass spectrometer; Hoffman. (7) Retarding potential analyzer, thermal ions; Hanson. All-sky camera, merid scan photom, riometer, ionos, and magnetometers at launch site.

A-14; CANCELLED

A-15; D. Baker, Utah State Univ will make quick-scan airglow and auroral emission observations with cryogenic field-widened inter/spectr. Full U of Alaska ground support includes ionosondes, riometer, magnetometers, all-sky camera, etc. Contact A.T. Stair, AFGL/OPR, Hanscomb AFB, MA 01731, USA.

A-16; P.T. Berkey (same address as #0128).

A-17; Heppner, campaign of 4 Nike Tomahawks. Each rocket will have: 4 cannisters to sequentially release Barium compound to monitor E-fields and neutral winds between 220-310 km. 1 trail generator for lower alt neutral winds @ 180-80 km.

A-18; Woolliscroft, launch scheduled in Jan was postponed because of delay in experiment delivery. Now expects two launches at S. Uist in Apr and May window. See A-19 note.

A-19; Williams, also postponed to Apr-May because of delay in A-18 above. Launches will be coord. #0070; Dr. J. M. Davis, American Science and Engineering, 955 Massachusetts Ave, Cambridge, MA 02139 USA, is observing solar imagery @ 8-60 A and spectra from 10-25 A. Analysis is jointly with Evans (same address as #0207).

A-20; Koons, Morgan, Dowden (0167), Unwin (0313), Keys (0323) multi-national VLF program. VLF signals from portable transmitter to broadcast from New Zealand. Receivers to operate at Dunedin NZ, and in N conjugate region near Cold Bay, Al. Photometers and riometers at Lauder, NZ. VLF & particle data to be obtained from satel ISIS II and SSS when over transmitter & conjugate region.

A-21; Kennedy (Wht Sands Miss Range); Poker Flat; Rockets (7)- ARCAS ozone measurements

A-22; Jefferies (formerly Peek); Kauai; Rocket - Ba injection and other exper, notes

A-23; Martelli, with Bryant, #0152.

A-24; Goldberg, 3 rockets from Poker Flat in new program "AURORA", high alt X-rays.

A-25; Hilsenrath; Poker Flat; 3 low alt rockets with A-24, energy transfer.

A-26; Greenwald, "STARE" 2-station auroral backscatter radar in Scandinavia.

A-27; Barcus; Poker Flat balloons coord with A-24.

A-28; Ullaland; 5 balloon flights from Karasjok, complex exper, drift across ATS-6 field line.

IMS CALENDAR OF GBR CAMPAIGNS JULY - DECEMBER 1976
(As of 27 July 1976)