International Council of Scientific Unions

SPECIAL COMMITTEE
ON
SOLAR-TERRESTRIAL PHYSICS

78 - 2

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IMS NEWSLETTER

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This month our "sermon" is the translation from IMS NL 78-1. Our version of the New Year's Greeting is: "Best Wishes for a Happy New Year. With this issue, IMS NL 78-1, begins the second half of the observational phase of the IMS. In this issue we present the usual information about latest program plans and about recent actual events. Besides that, papers are now being read at professional meetings, IMS "Workshops" have been held in several countries and still others are planned for this new year 1978. The first two ISEE satellites are successfully orbiting and GEOS-1 is declining, plans for launch of GEOS-B in time for it to play an observational role in the IMS are developing. The IMSCIE Office has already become a multinational effort in Boulder and we with great interest look forward to the remainder of IMS.

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PROGRAM PLANS FOR FEBRUARY 1978 - APRIL 1978

SPECIAL IMS HIGH-ALTITUDE SATELLITE PERIODS - 1978

Special IMS High-Altitude Satellite Intervals for February - April 1978 are given here. On page 4 of this IMS NL is a table listing all the Special Intervals for the first half of 1978 and showing the satellite configurations that were the basis for this designation by the IMS Satellite Situation Center. Times of the intervals given below were extended by six hours at start and end of each period from those given in the detailed table because the boundaries used in the exact model calculations may fluctuate during disturbances. These extended periods have been announced for 1976 and 1977 in IMS/SSC Reports and IMS NLs.

3 Feb	34/0400 UT to 4 Feb 35/0200 UT	12 Feb	43/1300 UT to 13 Feb 44/2300 UT
22 Feb	53/0800 UT to 23 Feb 54/0400 UT	20 Mar	79/0200 UT to 21 Mar 80/2200 UT
1 Apr	91/0200 UT to 3 Apr 93/0100 UT		

SPECIAL LOW-ALTITUDE SATELLITE CONJUNCTIONS

Magnetic flux tube conjunction times have been forecast by the IMS SSC for GEOS, ISEE, and selected low - altitude satellites and ground-based arrays on a weekly basis. These forecasts have been distributed via telex from the IMSCIE Office to provide two or three week advance notice of opportunities for coordinated data acquisition. In general, the numbers of intervals are too numerous for reproduction in these NLs.

SATELLITE LAUNCHES:

Feb 16 @ 0400 UT; N. Wakai; "ISS-B"; Tanegashima; SATELLITE - update in NL 78-1, pg 2

GROUND-BASED, BALLOON AND ROCKET CAMPAIGNS:

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

--------- ??? ; L.G. Smith; "14.533UE"; Wallops Island; ROCKET - E-region study, see NL 77-8, pg 3
--------- Feb 18; W.R. Sheldon; "15.160-15.163UE; Antarctica; ROCKETS (4)- plasma physics, see note below
--------- Feb 2; D.L. Matthews; Andoya; ROCKET - multi-national cooperation, note 77-11, pg 2
--------- Feb 12 & Feb 26 to Mar 10; P. Cloutier & H. Anderson; "29.007UE"; Poker Flat; ROCKET - aurora
--------- Feb 14; F. Scherb & D. Evans; "29.008UE"; Poker Flat; ROCKET - study proton aurora, note below
Feb 1 to Mar 31; V.D. Sokolov; Tixie, Zhigansk & Yakutsk; BALLOONS (75) - note below
Feb 1 to Mar 31; E. Llewellyn; "ATOMIC OXYGEN AND OZONE"; Ft. Churchill; ROCKET - note NL 77-12, pg 4
Feb 3 to Feb 26; L.J.C. Woolliscroft; "2ND HIGH LATITUDE CAMPAIGN"; Andoya; ROCKETS (2) - SL1424 & F6
Feb 16 to Mar 13; T.N. Davis & E. Wescott; "18.1017UE & 18.1018UE"; Poker Flat; ROCKETS (2)- Ba release
Feb 21 to Mar ??; D. Venkatesan; "AURORAL X-RAYS"; Ft Churchill; ROCKETS (3) - note in 77-11, pg 10
Feb 21 to Mar ??; B.A. Whalen; "ENERGETIC PARTICLE DETECTOR"; Ft. Churchill; ROCKET- note in 77-11, pg 10
Feb 27 to Mar 10; W. Sharp; "25.031UE"; Ft. Churchill; ROCKET - auroral studies, see update below
Feb 27 to Mar 17; E. Thrane, U. von Zahn; "Ferdinand 47-BUGATTI"; Andoya; ROCKET-note NL 77-12, pg 3
Feb 27 to Mar 17; E. Thrane, D. Krankowsky; "Ferdinand 48-TRINOM"; Andoya; ROCKET - with BUGATTI
Feb 27 to Mar 20; M. Baron; "WIDEBAND"; Poker Flat; ROCKET - see note below
xxxxxxxxxxxxxxxx; J. Ulwick; "EXCEDE II-SPECTRAL"; Poker Flat; ROCKET - now scheduled for Sep 1978
Feb 27 to Mar 20; J. Ulwick; "WIDEBAND-MULTI"; Poker Flat; ROCKET - rescheduled from Nov 1977
Feb 27 to Mar 20; J. Ulwick; "TMA"; Poker Flat; ROCKET - Nike-Javelin IC606.35-1, release
Feb 27 to Mar 20; J. Ulwick; "LWIR"; Poker Flat; ROCKETS (2) - Nike-Hydac IC607.15-1 & -2, infrared meas
Feb 27 to Mar 20; J. Ulwick; "AURORAL STRUCTURE"; Poker Flat; ROCKET - Coordinated launches, see note
Feb 27 to Mar 20; T.S. Jorgensen & M. Kelley; "18.1015UE & 18.1016UE"; Poker Flat; ROCKETS (2)- see below
xxxxxxxxxxxxxxxx; J.R. Winckler; "ECHO-V"; Poker Flat; ROCKET - Now scheduled for Oct 1978
Mar 1 to Mar 31; L.C. Hale; "15.170UE & 15.171UE"; Poker Flat; ROCKETS (2) - Super Arcas, plasma physics
Mar 20 to Apr 7; R.A. Goldberg; "18.214 & 18.215GM"; Poker Flat; ROCKETS (2) - broadened window
Mar 21 to Mar 31; R.A. Goldberg; "AUROROZONE"; Poker Flat; ROCKETS (6) - note in NL 78-1, pg 3
Apr 1 to Apr 13; W. Bernstein; "E PARALLEL B"; Ft. Churchill; ROCKET - 27.010AE, extensive update below
Apr 1 to Apr 30; G. Witt; "S27-TWILIGHT"; Kiruna; ROCKET - Nike-Orion 31.006UE, see note below
Apr 1 to Apr 30; A. Christensen; "18.1023UE"; White Sands; ROCKET - Nike-Tomahawk for plasma physics

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

Mar 7-9, Apr 12; Bauer, Evans; IISN; Global Network; SURFACE - incoherent scatter radars, see below
Monthly; Wright & Hilsenrath; "OZONESONDE"; Various Sites; ROCKETS - see Actualities, NL 77-10, pg 3

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

------ to Jan 31; Wilhelm; "SUBSTORM"; Andenes; SURFACE - cooperative with rocket program, see below
------ to Feb 25; Rycroft; "VLF"; N. Scandinavia; SURFACE - cooperative with rocket program, see below
------ to Apr 30; Eather; "MERIDIAN SCANNING PHOTOMETERS"; Churchill Chain; SURFACE - note in NL 77-11
Feb 27 to Mar 13; W. Heikkila, R. Pellinen; "AURORAL BREAKUP"; N. Europe; SURFACE - NL 77-12, pg 3
Feb 27 to Mar 13, Apr 20 to Oct 15; M. Siebert; "GEOMAGNETIC PULSATIONS"; N. Scandinavia; SURFACE - note
Feb 27 to Mar 13; R. Heacock; Alaska; SURFACE - extensive GB network, see details below

REGIONAL IMS SAT/GBR PROGRAM DETAILS, NOV 77-JAN 78

Program details for some of the brief listings given above have appeared in earlier IMS NLs.

WORLDWIDE NETWORK

IISN --- During our visit last month to CNET, M. Blanc shared the proposed program to be followed by the global incoherent scatter radar network. Observations are grouped into three topical areas: (1) Tides; (2) Electrodynamics; and (3) Substorm E Fields. Tidal observations will be during 7-9 March, 1-14 June, and 1-2 August 1978. The other two programs will be shared among the following seven dates with 4 days for substorm E field measurements (Doupnik coordinating) and 3 days for quiet-time electrodynamic measurements (also to be done on 8 March and 2 August). P. Simon, IUWDS, will provide activity forecasts for these observations 1 day before the following dates: 18 Jan, 12 Apr, 7 Jun, 6 Sep, 18 Oct, 15 Nov, and 13 Dec. Because the regular pattern of recurrent disturbances characteristic of the declining phase of solar cycle 20 (ended in June-July 1976) has not persisted into the new cycle 21, it may not be possible to schedule the substorm observations as far in advance as would be preferred, hence the 1-day warning.

(Continued on pg 3)

(Continued from pg 2)

N. SCANDINAVIA

PULSATIONS --- Siebert, Hillebrand and Wedeken will operate a digital magnetometer station at Kevo (see IMS NL 77-1) during the Heikkila - Pellinen campaign and will conduct their major summer campaign at the 6 stations SKA, KUN, IVA, MAR, and KUU from 20 April until about 15 October 1978. Hopefully this will be simultaneous with launch and activation of GEOS-2 (see satellite news, pg _). An updated program circular is in preparation showing the data coverage for the 1977 campaign. We were privileged to visit the Geophysikal Inst at Goettingen and observe the instrumentation and data processing systems for this program. The results were often striking array measurements of pulsations and we hope that as intervals of especially interesting data are identified, it will be possible to share these with other IMS participants.

USSR

Yakutsk Meridian --- Sokolov will supervise simultaneous launch of 25 balloons from each of 3 locations: Tixie, Zhigansk and Yakutsk. All 75 balloons will carry equipment to monitor bremsstrahlung radiation due to electron precipitation. Scintillation and gas-discharge counters will measure radiation in energy ranges from 60 to 200 KeV and greater than 200 KeV.

KIRUNA - ESRANGE

S27-TWILIGHT --- During April 1978, G. Witt, Meteorological Inst Stockholm Univ, will launch a Nike-Orion to about 140 km for a study of ultraviolet emission of NO in sunlit aurora. Primary objective is to study molecular emissions in sunlit aurora and thereby clarify the chemistry and excitation mechanics of nitric oxide. Principal experiments and project scientists for this multi-national launch are: UV ploychromator with NO gas cell for difference-absorption measurement of the (1-0) gamma band and N2 molecular transitions, G. Witt; UV scanning Ebert spectrometer (12.5 cm), P. Felman; Tilting-filter photometer for N2D forbidden line at 520 nm and filter radiometer for O2 1^gl, 27-micron emission, G. Witt; and ion and electron density probes, Faraday experiment, B. Holback.

POKER FLAT

18.1017 & 18.1018UE --- Davis & Wescott will launch two Nike Tomahawks to study perpendicular and parallel E fields up to several Re over discrete auroras to determine formation and dynamics of laminar V shocks. A Ba shaped charge payload will be injected upwards at 450 km and observed from the ground with sensitive TV and image intensified cameras over much of the dark northern hemisphere. Launch will be when there are clear viewing conditions at College and Fort Yukon and with appropriate auroral conditions for about 30 min each evening. For example, the streak could be well observed from 0539-0605 UT on Feb 26 or from 0633-0710 UT on Mar 13. Anyone interested and wanting to make coordinated observations may obtain look angles and launch information details from E. M. Wescott, Geophysical Institute, Univ of Alaska, telephone (907) 479-7576 or -7014.

WS610.51-2 --- Baron will launch the second of a pair of rockets to make observations of e- density and energetic particles in coordination with the Wideband Satellite radio beacon program. This launch will be coordinated with five rockets to be launched by Ulwick (see immediately following).

WIDEBAND MULTI, AURORAL STRUCTURE, LWIR, and TMA -- This complex of five rockets (2 LWIRs) will be launched simultaneously to study in detail the electron structure during a Wideband Satellite pass. Launch will be during the dark of the Moon and with good auroral conditions. Rocket AURORAL STRUCTURE (IC719.08-1) will measure E fields, energetic particle input, and electron irregularities structure; the two TMA rockets will make chemical releases to measure neutral wind; and LWIR will perform an infrared dynamics study of trapping mechanisms for 4.3 _ emissions. Coordination with the full complex of ground based instrumentation is planned and additionally the field widened interferometer of Utah State Univ.

18.1015 & 18.1016UE --- Kelley and Jorgensen will launch two Nike Tomahawks to study ionized and neutral thermospheric winds in the evening sector of the auroral oval. Ba and TMA releases (3 Ba flash strontium and 2 TMA trails) will be used to investigate the coupling between the neutral wind and the magnetosphere. Launch will be in good weather, at twilight and with a poleward gradient of E. Coordination with the Chatanika radar and with satellites S3-2 and TRIAD is planned.

FT CHURCHILL

E//B --- W. Bernstein has provided an extensive update of the program description for this complex multi-national payload for rocket 27.010AE to be launched in April from Ft Churchill. Experiments and co-investigators are: 10 e- detectors, Evans, Whalen and Wilhelm; e- accelerator, Whalen; DC E_B, VLF wave measurements, Koons; High Frequency waves, Kellogg; Retarding Potential Analyzer, Reasoner; Photometers, Cohen; and >45 KeV e-,p+ drift meters, Whalen. The 3 chief objectives are: (i) Identification & characterization of regions of B field aligned potential drops (E//B) through the low altitude injection, reflection and subsequent detection of electron beams of known energy, pitch angle, and current. A unique feature of the payload is the use of 4 throwaway detection systems (TADS) which will be ejected from the main rocket to increase the detection footprint. (ii) Study of the electron beam - plasma discharge in the flight environment. (iii) Study of the applicability of an electron beam modulated at VLF (3 kHz) frequencies as an antenna. There are a variety of secondary objectives particularly related to wave-particle relationships in the altitude range of 200 km during a reasonably intense auroral arc.

25.031UE --- W. Sharp telephoned the following announcement: "NASA 25.031 is scheduled to be launched from CRR on or after 27 Feb 1978, during a period of auroral and magnetic activity. There are two objectives for this launch: (i) to investigate the production and distribution of NO2 in aurora; and (ii) to monitor the angular distribution of low-energy electrons. The payload houses a 6-channel photometer, a 1/4-meter scanning ultraviolet spectrometer, a dual-mode neutral flash ion mass spectrometer, two low-energy (0.5-1000 eV) electron spectrometers, and a high-energy (0.05-25 KeV) particle spectrometer. The high-energy spectrometer and one low-energy spectrometer are deployed on rotating booms. Co-experimenters with Sharp on this payload are Winningham and Zipf."

CANADA & ALASKA

Heacock has responded to the call of Heikkila and Pellinen for coordinated observations of auroral breakup during the period 27 Feb to 13 March 1978, as mentioned in IMS NL 77-12. He will be operating a 3-comp induction magnetometer at College (response to 20 Hz), a 2-comp fluxgate magnetomeer at Ft Yukon (response to 1 Hz); a 2-comp induction magnetometer at Sachs Harbour, NWT (response to 5 Hz); a 3-comp ELF system (ind mag) near Poker Flat (resp 0.015-6 kHz); precipitation pulsations monitor by riometer technique near College (DC to 1 Hz); the same at Ft Yukon (DC to 0.2 Hz); and has a cooperative program with Australia to operate a 3-comp induction magnetometer at Macquarie Island (almost conjugate to College). Timing accuracy with the Alaskan equipment is 10 millisec, at Sachs Harbour it is 1 sec and at Macquarie is > 0.1 sec.

15.170 & 15.171UE --- L.C. Hale related that his plasma physics launches will carry two antennas (decametric and decimetric) to measure induced E fields. He will cooperate with Goldberg X-ray study under AUROROZONE.

IMS/SSC Special High-Altitude Satellite Intervals -

As mentioned last month, the IMS Satellite Situation Center has completed derivation of a set of special intervals for the first half of 1978 based upon configurations of high-altitude IMS satellites and satellites of opportunity. These are listed in the table below. The notation used is identical to that for previous special periods (see IMS/SSC Report No. 10 or NL 77-7). For each satellite orbit and each interval, an abbreviation is given that tells the general region in which the satellite will be located. Heavy-case letters indicate that the position was important in selecting that particular interval as offering unique possibilities for multi-satellite data comparisons. The abbreviations for orbit regions are: HT = High-latitude Magnetotail; MT = Mid-latitude Magnetotail; Sh = Neutral Sheet; DM = Dayside Magnetosheath; NS = Nightside Magnetosheath; I = Interplanetary Medium; C = Dayside access region (Cusp); S = Bow Shock Wave; and P = Magnetopause. An IMS/SSC Report will soon be available illustrating these intervals; however, unlike last year, the report will not include daily bar charts. These will be available on microfilm. By special agreements among experimenters, enhanced data acquisition and processing efforts will be made for these intervals.

DMSP Data for 20-21 Sept 1977 ---

ESA/IMSCIE Associate M. Candidi, H. Kroehl and T. Potemra are studying data from several satellites during the disturbed days of 20-21 Sept 1977. Precipitating electron data from the DMSP satellites are available at NGSDC and a program has been written to produce 3-D electron energy spectra from the multi-channel count information. Two such figures are shown on the facing page for 77/09/21. The spectra are grouped sequentially for each 20 seconds of the orbit. The top figure shows DMSP passage through the S. hemisphere auroral zone (-60 deg for first spectra), over the S. polar cap (maximum magnetic latitude reached -84.4 deg), and through the other side of the S. auroral zone (-60 deg for last spectra). At this UT time (around 0500 UT), the DMSP trajectory was approximately perpendicular to a line from the S. geographic pole through the S. geomagnetic pole and to the Sun. The lower figure, about 7 hours later), shows spectra during DMSP passage through the cusp (-68, -77.5, -67 deg start, max, and last mag lat). Near this time there was an AE- C cusp passage and TRIAD was also nearby.

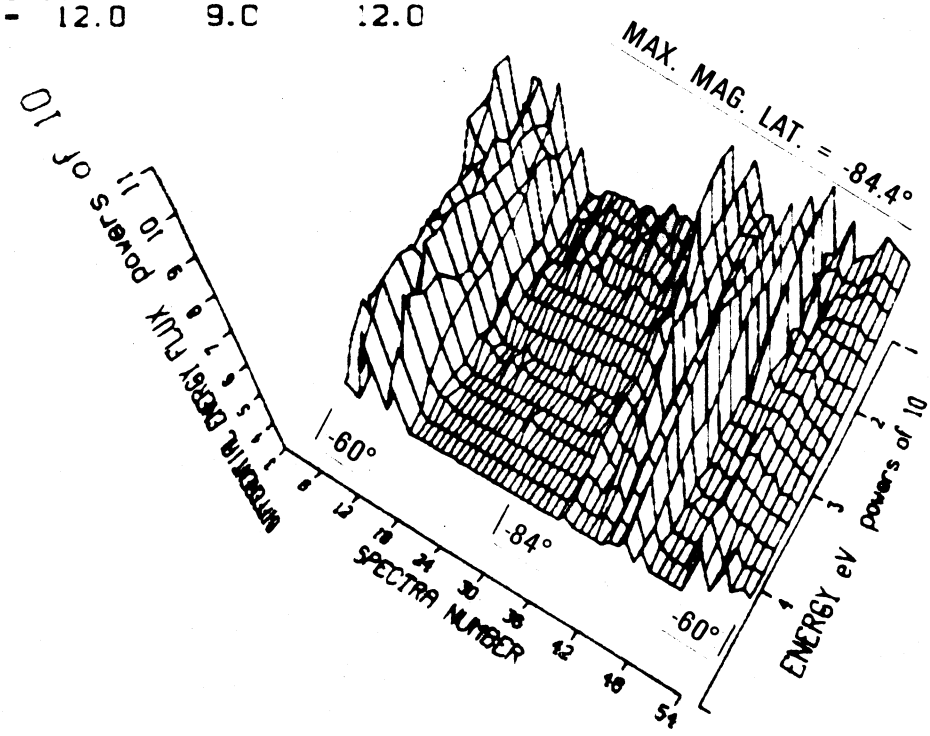
Similar spectral plots are in preparation at NGSDC/IMSCIE for the some 400 DMSP auroral and polar passes during the interval 1-15 Dec 1977.

IMS/SSC Special Periods for Days 1-181 1978 by Region

Special Period No.	Approx. Time (d/h)	Satellite Regions								Comments
		Vela 5A	Vela 5B	Vela 6A	Vela 6B	Solrad 11B	IMP-H	IMP-J	ISEE 1	
	1/22	I	**P**	MT	**P**	**P**	NS	**I**	**P**	Boundary encounters within 3½ h.
1	2/11	I	**MT**	**MT**	DS	**MT**	**MT**	**I**	NM	4 in tail for 1 h.
	2/19	I	**Sh**	**HT**	I	**MT**	**HT**	**I**	NM	4 in tail for 4 h.
2	34/10	I	DS	**MT**	**HT**	**MT → Sh**	I	**Sh**	**HT**	5 in tail for 4 h.
	34/20	I	**P**	**Sh → MT**	**P**	**P**	I	**HT**	**MT → Sh**	Boundary encounters within 1 h.
	43/19	I	DS	**Sh**	**HT**	**HT**	NS	**I**	**MT**	4 in tail for 3 h.
3	44/13	I	**MT**	**HT**	DS	**Sh**	I	**I**	**HT**	4 in tail for 1 h.
	44/17	I	**Sh**	**HT**	DS	**Sh**	I	**I**	**Sh**	
4	53/14	I	**P**	**Sh → MT**	**P**	**P**	**HT**	**I**	**HT**	Boundary encounters within 2½ h.
	53/22	I	**MT**	**HT**	DS	**HT**	**HT**	**I**	**Sh**	5 in tail for 2 h. 3 in high-latitude tail for 15 h.
5	79/8	**HT**	DS	I	S	P	**HT**	**I**	**HT**	3 in tail for 11 h.
	80/16	NS	I	DS	**HT**	**Sh → MT**	**Sh → MT**	**I**	**MT → Sh**	
	91/8	I	**P**	**HT**	**P**	**MT**	**P**	**I**	**HT**	Boundary encounters within 1½ h.
6	91/13	I	NM	**HT**	NS	**HT**	**HT**	**I**	**HT**	4 in tail for 1 h.
	92/19	P	NM	NS	I	I	**Sh**	**I**	**Sh**	2 in sheet for 5 h.
7	129/7	I	**P**	HT	**P**	I	**P**	**I**	NM	Boundary encounters within 1½ h.
	130/11	NS	**MT**	NS	I	S	**MT**	**I**	**MT**	3 in tail for 3 h.
	142/18	I	DS	P	**Sh**	**HT**	**HT**	**I**	**MT**	4 in tail for 3 h.
8	143/2	I	DS	NM	**MT**	**HT**	**HT**	**I**	**Sh**	
	143/10	I	**P**	HT	**P**	**P**	HT	**I**	DM	Boundary encounters within 3 h.
	151/20	DS	I	NS	**MT**	**Sh**	I	**HT**	**HT**	
9	152/2	I	I	NS	**HT**	**Sh**	I	**HT**	**HT**	4 in tail for 2 h.
	152/7	I	DS	NM	**Sh**	**Sh**	NS	NS	**Sh**	
	153/23	**DS**	MT	**NS**	I	**NS**	**NS**	**I**	**NS**	5 in magnetosheath for 2 h.
10	179/12	**P**	I	I	NM	**P**	HT	**I**	**P**	Boundary crossing within 2 h.
	179/21	**DS**	I	**DS**	MT	**DS**	HT	**I**	**DS**	4 in magnetosheath for 4 h.

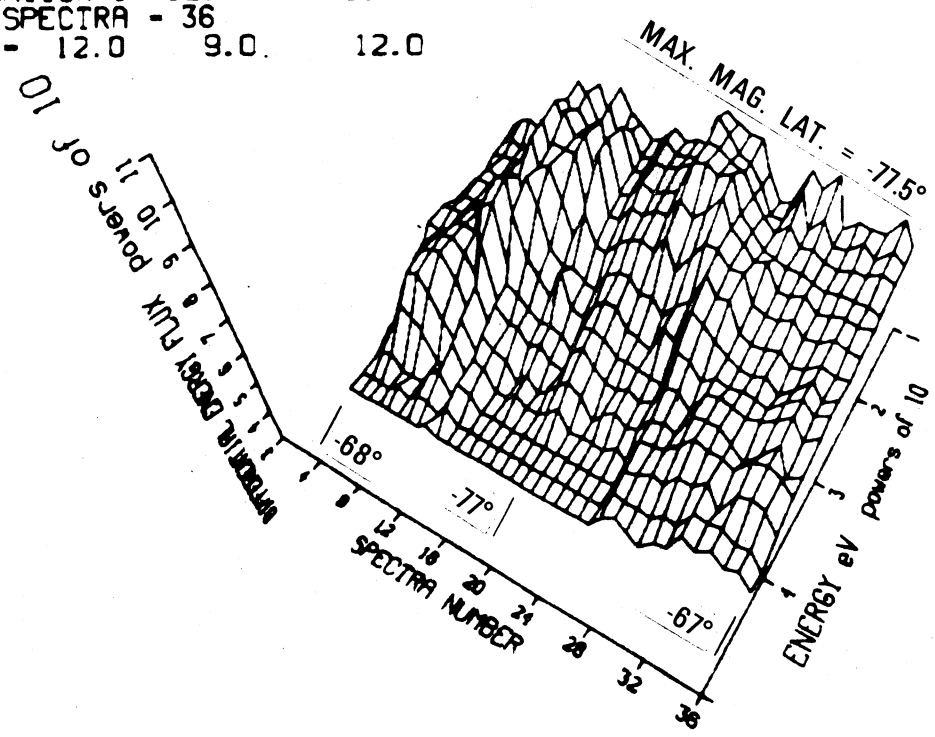
DATE - 770921
TIME OF FIRST SPECTRA - 045625
TIME OF LAST SPECTRA - 051445
TIME SEPARATION IN SECONDS - 20
NUMBER OF SPECTRA - 56
VIEWPOINT - 12.0 9.0 12.0

MAGNETIC LATITUDE, FIRST SPECTRA - -60.0
MAGNETIC LATITUDE, LAST SPECTRA - -60.0



DATE - 770921
TIME OF FIRST SPECTRA - 114211
TIME OF LAST SPECTRA - 115407
TIME SEPARATION IN SECONDS - 20
NUMBER OF SPECTRA - 36
VIEWPOINT - 12.0 9.0 12.0

MAGNETIC LATITUDE, FIRST SPECTRA - -67.6
MAGNETIC LATITUDE, LAST SPECTRA - -66.7



SCATHA

Space Craft Charging At High Altitude (SCATHA) --- This developing satellite program, also called Space Test Program P78-2, may be of interest to many IMS participants. The program description, list of experimenters, and the figures below and on the facing page are taken from a paper appearing in "Proceedings of the Spacecraft Charging Technology Conference", AFGL-TR-77-0051, Feb 1977, from SCATHA management documents, and from the IMS Satellite Situation Center. We thank SCATHA Project Team Chairman E.C. Whipple, Jr. and C.P. Pike and H. Garrett for their assistance in obtaining the information. Addresses for most of the scientists named below are to be found in the Supplement to IMS NL 77-7, distributed last July to all NL recipients. Anyone wishing additional information is encouraged to contact Dr. Whipple or the IMSCIE Office could provide copies of our more detailed program descriptions.

The fundamental purpose of satellite P78-2 is to carry out a comprehensive investigation of the spacecraft charging phenomenon near synchronous altitude. The flight is an integral part of a broader investigation of spacecraft charging. Prime mission objectives include generation of data useful to engineering applications, data useful to the development of a S/C charging specification and a design guideline monograph, and data for the verification and validation of S/C charging phenomena models. In particular, data from this program will be used in developing an environmental atlas, in testing the effectiveness of active control of spacecraft potentials and charging effects, will support the formation of models and their testing, assist in updating specifications and support new design guidelines, will provide realistic information about the space environment, test material degradation in space, and will provide data for scientific analyses of spacecraft charging phenomena.

P78-2 is scheduled for launch in January 1979, and will be operational during the last year of the observational phase of the IMS. It will spend 3-1/2 revolutions in a transfer orbit and then will be injected in a 2.5 deg inclined, near-synchronous final orbit. We understand from SSC staff that other orbit inclinations (from 2.5 to 23 deg) are still under consideration. Orbit elements used by the SSC in calculating the "SCATHA Orbit Projection Plot" shown on the facing page are --- Epoch: Jan 13, 1979 at 18h 30m 27.43s; Semi-Major Axis: 41,694.623 km; Eccentricity: 0.17903464; Period 23.54 h; Perigee height: 27,851 km; and Apogee height: 42,781 km. Inclination: 2.5 deg; Mean Anomaly: 180.0 deg; Argument of perigee: 180.0 deg; Right Ascension Ascending Node: 250.0 deg; Nominal drift of the satellite orbit will be 6 deg/day to the east, accounting for the shift shown in the SSC map of SCATHA magnetic foot-tracks during two 24-hr intervals soon after launch. SSC calculations of possible magnetic conjunctions between SCATHA and low-altitude satellites showed one conjunction per satellite each 8 hours, many more than with GEOS-1.

The planned ascending node of 250 deg will result in spacecraft passage through the synchronous altitude point at about local midnight some 10 days after start of the first eclipse season given nominal launch date and final achieved orbit. Early mission activities will include transfer orbit, experiment activation and checkout, data gathering during the electric field detector (experiment SC10) deployment and particle beam systems (SC4) checkout. Upon conclusion of these preliminary observations, experiment operations will be divided between eclipse periods sets and non-eclipse periods when the SC4 gun and substorm data collection programs will operate. Required mission duration is one year but expendables are to be provided for two years of operation.

During the transfer orbit passes, three experiments will be activated to take data over a wide range of altitudes: Spacecraft Sheath Electric Fields (SC2), San Diego Particles Detectors (SC9), and Thermal Control and Contamination (ML12). After insertion into final orbit, each experiment (excluding SC4) will be independently activated and checked out under supervision of the responsible experimenter. The Electric Field Detector (SC10) antennas will begin deployment about 10 days later to allow for the Surface Potential of Selected Materials (SC1) experiment and SC2 to collect data before deployment. The antennas will then be extended to 10 meters (tip-to-tip) followed by a 10-day data collection period, 20 m tip-to-tip with another 10-day observation interval, and finally the will be deployed to the full 100 m. SC4 will be checked out just prior to start of the first eclipse and will be operated first with only the Thermal Electron Measurements (SC6) detectors turned-on. Then each of the experiments will be operated sequentially with SC4 first with short gun operations and then with increasing time intervals to minimize the possibility of damage to experiments when the guns are operating. Operations during this time will be stringently monitored with each experiment monitored individually in real time by the responsible scientist. Rapid response will be required in instrument damage indications are received. Large quantities of data will have to be analyzed in a short time and provision made for prompt reaction to observations. Following instrument checkouts with system SC4, the magnetometers will be calibrated (SC11) and tests run to determine optimal experiment modes for each program.

P78-2 will experience eclipse seasons in the spring and fall of 1979, with the first beginning shortly after the initialization part of the mission. These eclipse seasons offer interesting periods for the study of spacecraft charging effects and emphasis will be on collecting the maximum possible amount of data during the first eclipse period. Main emphasis will be on engineering applications data, ML12 studies, high resolution operation of particle counters (see diagram below for energy ranges of detectors), and initial SC4 gun operations. Planning is for a dynamic approach to take advantage of early data analysis results and possible substorm events of special interest during this period. Operational plans for the second eclipse season will be highly dependent on results from the first eclipse. Probably priority will be given to operation of the SC4 guns during the second eclipse.

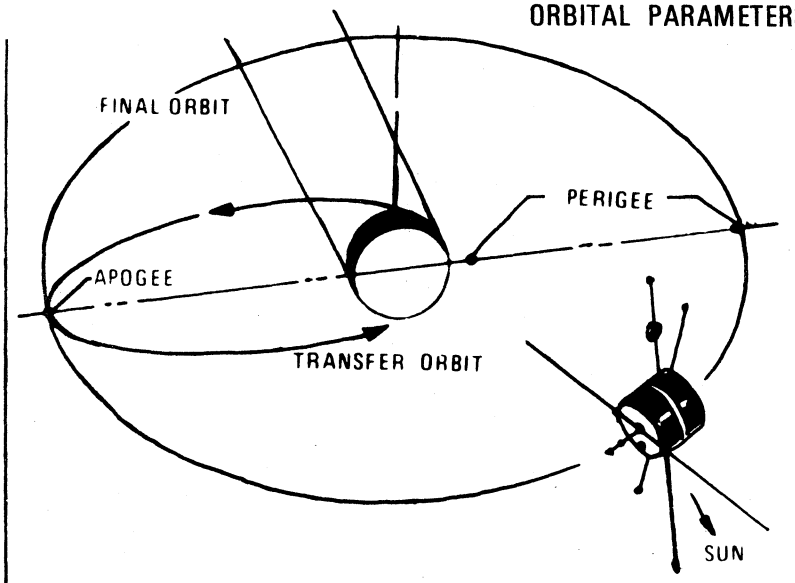
General data collection will take place during the period between eclipses and special studies will be conducted related to substormd as opportunities arise. SC4 operations during quiet times are planned. After the second eclipse ends, emphasis will be placed on filling-in missing data dependent on past payload performance, data acquisition opportunities and results of data analysis.

The table on pg 8 gives particle experiment numbers, energy range of detectors, and responsible scientists. All SCATHA experimenters are listed below and the name and number of their experiments are given. Abbrievated institutional affiliations are given for each participant to aid with references to the IMS NL 77-7 Supplement listing of Newsletter recipients.

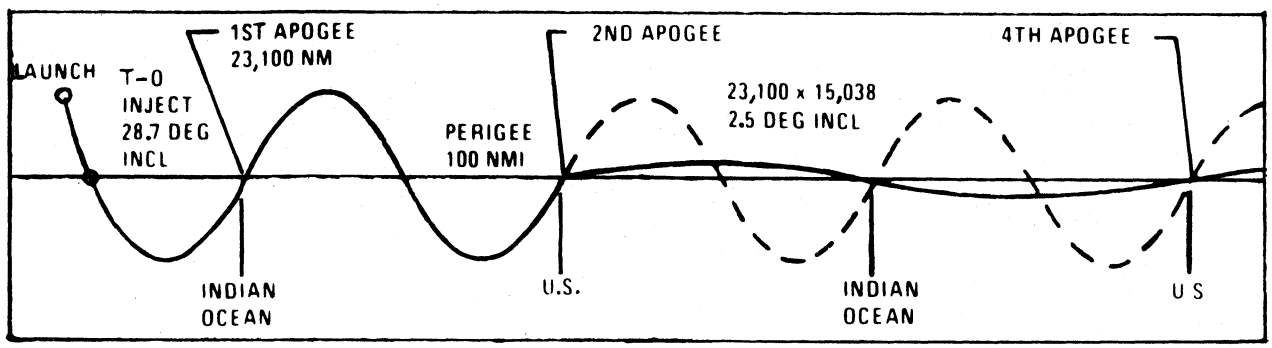
SC1 - Surface Potential of Selected Materials, Transient Shape Identifier & Counter Pulse Shape, H. Koons (Aerospace); SC2 - Spacecraft Sheath Electric Fields, J. Fennell (Aerospace); SC3 - High Energy Particle Spectrometer, J. Reagan (Lockheed); SC4 - Particle Beam Systems (electron gun and Xenon ion beam system with neutralizer), H.A. Cohen (AFGL); SC5 - Rapid Scan Particle Detector, D. Hardy (AFGL); SC6 - Thermal Electron Measurements, R. Sagalyn (AFGL); SC7 - Light Ion Mass Spectrometer, D. Reasoner (NASA); SC8 - Lockheed Energetic Ion Spectrometer, R. Johnson (Lockheed); SC9 - San Diego Particles Detectors, S.E. DeForest and E.C. Whipple, Jr (UCSD); SC10 - Electric Field Detector, T. Aggson; SC11 - Magnetic Field Monitor, B. Ledley (NASA); and ML12 - Thermal Control and Contamination, D.F. Hall (Aerospace).

(Figures pg 7, Table pg 8)

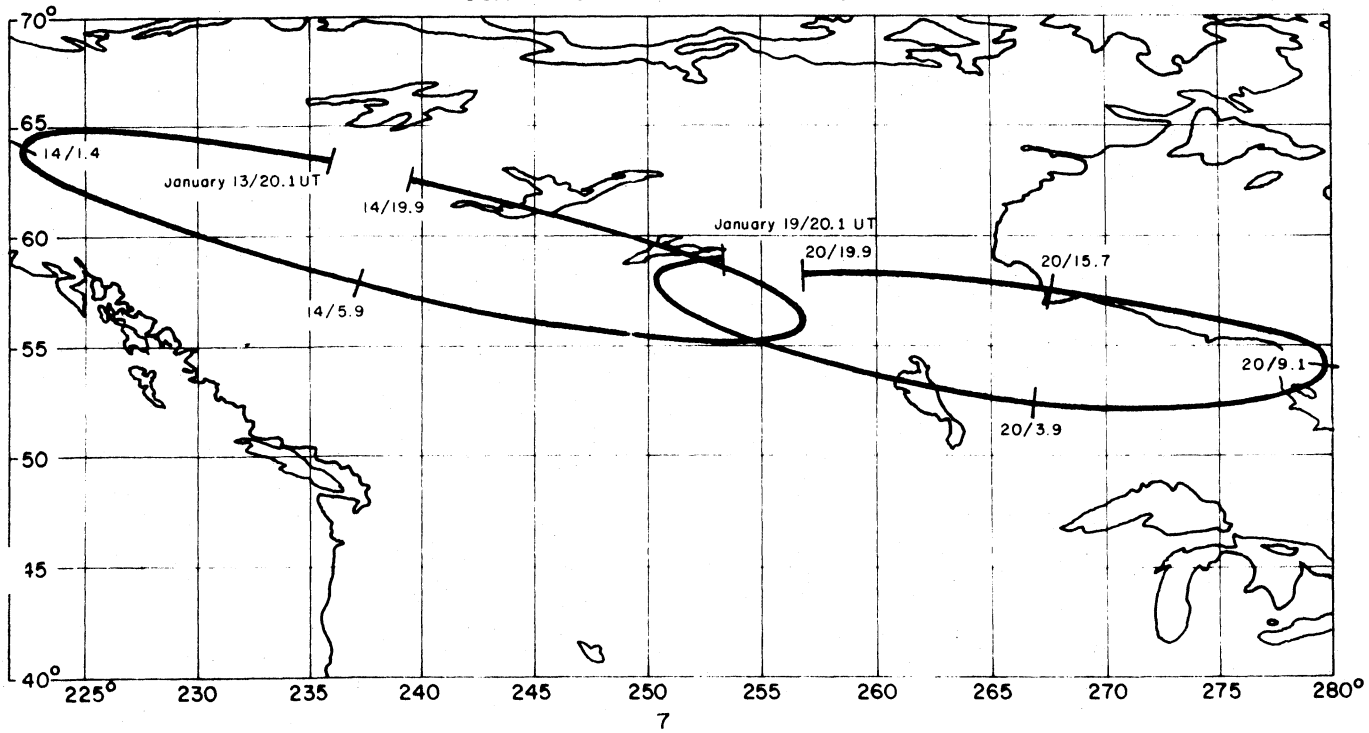
ORBITAL PARAMETERS



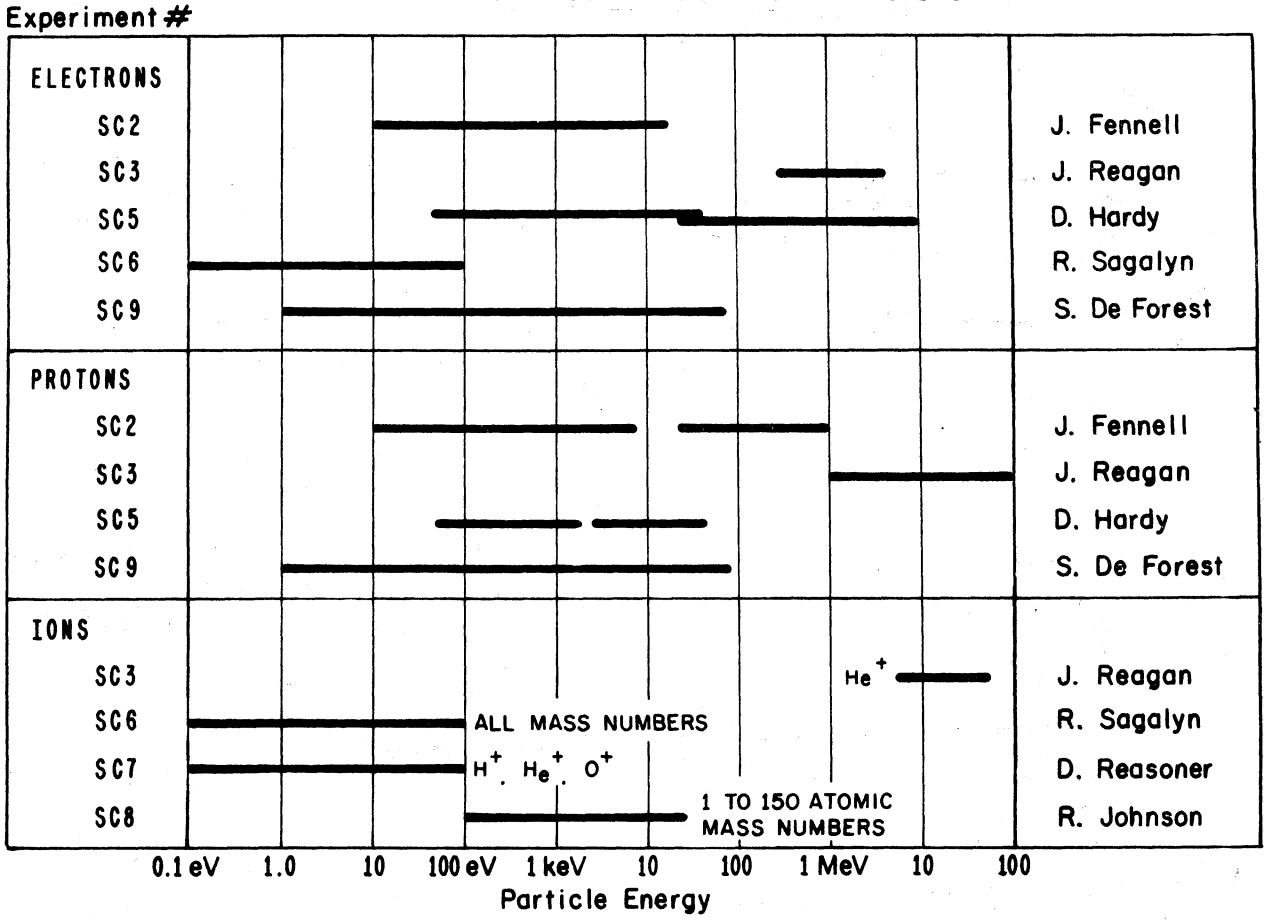
ON-ORBIT OPERATIONS
OPERATIONAL MODES RECORD REAL TIME
ECLIPSE PERIODS SEP 2 OCT 15 82.5 MINUTES MAX FEB 20 APR 21 58.0 MINUTES MAX
SPIN AXIS PRECESSION 7 DEG EACH 7 DAYS



SCATHA ORBIT-PROJECTION PLOT



ENERGY RANGES OF SCATHA's PARTICLE DETECTORS



ACTUALITIES

SATELLITES

KAGOSHIMA, JAPAN

EXOS-A --- Japanese IMS satellite EXOS-A was launched on 4 Feb 1978 at 0700 UT from Kagoshima Space Center. Nominal parameters of the elliptical orbit are: Period = 134 min; Inclination = 65.4 deg; Perigee altitude = 642 km; and Apogee altitude = 3977 km. The national name of this satellite is "KYOKKO" which means 'Aurora'. Telemetry is on 136.725 MHz and the tracking frequency is 400.45 MHz. All experiments are to be turned-on within 22 days. Experiment descriptions were given in IMS NL 77-12 and details are in WDC-A for R&S "Report on Active & Planned Spacecraft and Experiments", 77-03, Sept 1977. A. Nishida reports at press time that observations of e- density, temperature and electrostatic plasma waves have begun. Measurements requiring high voltage will begin on 24 Feb. Telemetry is being received at Kagoshima and Syowa. Reception at Ft Churchill will start in late Feb. The international designation of EXOS-1 is 1978-014A.

GEOS-1 --- From K. Knott: "The satellite is going through a difficult operational phase. From 16 Dec to 16 Feb, eclipse encounters reduce the power available for experiment operation significantly. By some timesharing between experiments and by reducing the acquisition time, a reasonable amount of data is, however, still collected during each European pass. The local time of apogee for GEOS-1 at present is between 3 and 4 am. Around the middle of Feb the lines of apsides of GEOS-1 and ISEE will coincide. Since early Dec, data from two axes of the onboard magnetometer indicate a partial failure in this instrument. Reason is under investigation.

GEOS-B --- Beginning at least with the failure of GEOS-1 to attain the planned geostationary orbit, interest has been high in the possibility of placing the backup GEOS satellite into the proper orbit. Naturally, satellite launches are expensive and launch windows are not always available. As a result of ESA decision, agreement of GEOS experimenters, and negotiations with NASA, it appears sure that GEOS-B will have a chance to become GEOS-2. Preparation of the backup GEOS satellite has been in progress for months and some lessons learned from GEOS-1 and ISEE-A&B have been applied already to improve GEOS-B experiments. According to K. Knott, the only remaining tests for GEOS-B are boom deployment and mass balancing. The spacecraft could be ready to launch in April. However, there seem not to be any launchers available at that time. The present best assumption is that GEOS-B will be launched in late June 1978. This would be too late (probably) for coordination with the SBARMO balloon campaign and it may inconveniently overlap with the Innsbruck ESLAB Symposium; however, the summer 78 launch would permit almost 1-1/2 years of data acquisition by GEOS-2 during the remainder of the observational phase of IMS. It also offers the possibility that this important satellite would be in position during the peak of solar cycle # 21 (late 79 or early 80). This probable launch of GEOS-B makes it important to consider the continuation of CCOG efforts, extension of IMS GBR programs in Europe, and the integration of GEOS-2 into planning for multi-satellite programs during 78-80.

PROGNOZ-6 --- A detailed description of the scientific program of this satellite is "in the

mail" to P. Simon and will be shared in the first IMS NL after it becomes available.

KOSMOS-900-OVAL --- This satellite was launched according to the USSR national program and I.Zhulin hopes to send us a detailed program of observations. Nominal orbit information is: launched on 30 March 1977; Period 94.4 min; Apogee altitude 523 km; Perigee altitude 460 km; Inclination 83 degrees. On-board measurements comprise ionospheric plasma parameters, particle fluxes, and some spectral characteristics of auroras.

LOW-ALTITUDE SATELLITES --- From being present during recent attempts to find data from low-altitude satellites during times when they were forecast to be in magnetic conjunction with GEOS or ISEE, I can begin to appreciate the difficulties in multi-satellite studies. The IMS SSC sends the following information about their continuing work to make possible such comparisons. "In the next few weeks, IMS SSC will be recalculating S3-3 and S3-2 encounters with ESA-GEOS for the interval 1 May to the present using definitive orbit data. Our initial emphasis will be on the priority intervals identified at the fall AGU and appearing in NL 78-1. The problems that we have been finding with the accuracy of the magnetic encounter times have arisen from the drag formulation used by the people who generate the ephemeris tapes for us. Even with our present understanding of the S3-3 and S3-2 orbits, it is doubtful if we can predict encounter times over the necessary 4-week period more accurately than 15-20 min. Performing the calculations with definitive orbit element sets, however, we believe that an accuracy of 1 to 2 min can be obtained. For the other satellites (i.e. DMSP, ISIS, AE-C, TRIAD, etc.) in most cases the predicted encounter times are accurate to a few min. The possible exceptions are the first two or three weeks of predictions for TRIAD and DMSP-5D-F1 and -F2 which may be in error by 10 or 15 min. We will, of course, recalculate these too. Our general philosophy with these predicted encounter times is 'if data are obtained from a pass that has an encounter time, then an actual encounter will be observed at some time during that pass."

ISEE-1 --- K. Ogilvey reports that "ISEE-A is still functioning perfectly. Nothing to report." We understand that experimenter's data tapes have now been distributed covering the period from experiment turn-on through 11 Nov. However, the satellite orbit/attitude tapes for only the first three days are currently available. However, interest among experimenters is already forming around event dates because of phenomena observed in the data. One such time is 26 October 1977, when an interplanetary shock caused a "sudden commencement" on the surface at 2330 UT. This seems to have been well-recorded at many sites. ISEE recorded the shock at 23:27:32 UT (near apogee) and Voyager-1 recorded its passage on 28 Oct at 06:52 UT. Also there seems to be considerable anticipation about possibilities for the multiple-satellite conjunction of 15 Nov when ISEE and GEOS were "together" for several hours and many low-altitude satellites passed through the flux region as shown in the SSC map in IMS NL 77-11, pg 8. At the request of experimenters, the IMS SSC has added the Alberta Meridian Chain to the list for which ISEE magnetic conjunction times are forecast and telexed weekly. Probably the Alaska Meridian Chain will be similarly added now that it is operational.

ISEE PLASMASPHERE PASSAGES --- January - June 1978 IMS SSC supplied the following plasmasphere entry and exit times for ISEE based on a simple plasmapause boundary model as described in NL 77-9. This six month prediction is subject to some uncertainty (10-15 min errors possible) and monthly projections will be prepared on a routine basis to update the table below.

MODELED ISEE-1 PLASMASPHERE ENTRY & EXIT TIMES --- January through June 1978

Entry Time	Exit Time	Entry Time	Exit Time	Entry Time	Exit Time	Entry Time	Exit Time
Day/ Hour	Day/ Hour	Day/ Hour	Day/ Hour	Day/ Hour	Day/ Hour	Day/ Hour	Day/ Hour
2/ 6.31	2/ 8.15	47/15.99	47/18.22	93/ 2.00	93/ 4.06	138/12.04	138/14.70
4/15.58	4/17.91	50/ 1.63	50/ 3.20	95/11.22	95/13.99	140/21.87	140/23.12
7/ 1.17	7/ 2.81	52/10.62	52/12.93	97/21.31	97/22.68	143/ 6.54	143/ 9.74
9/10.23	9/11.62	54/20.27	54/22.04	100/ 5.96	100/ 8.66	145/16.56	145/17.60
11/19.64	11/21.74	57/ 5.46	57/ 7.50	102/15.64	102/17.92	148/ 1.25	148/ 3.70
14/ 5.15	14/ 6.85	59/14.84	59/17.15	105/ 0.89	105/ 2.94	150/10.79	150/13.43
16/14.33	16/16.59	62/ 0.55	62/ 2.07	107/10.02	107/12.97	152/20.80	152/21.71
18/23.99	19/ 1.58	64/ 9.47	64/11.83	109/20.12	109/21.48	155/ 5.24	155/ 8.37
21/ 9.03	21/11.12	66/19.14	66/20.98	112/ 4.80	112/ 7.55	157/15.31	157/16.34
23/18.39	23/20.52	69/ 4.31	69/ 6.35	114/14.50	114/16.93	159/23.99	160/ 2.06
26/ 3.91	26/ 5.56	71/13.65	71/16.07	116/23.83	117/ 1.75	162/ 9.40	162/11.90
28/13.04	28/15.29	73/23.47	74/ 0.95	119/ 8.87	119/11.96	164/19.47	164/20.33
30/22.76	31/ 0.38	76/ 8.32	76/10.79	121/19.00	121/20.30	167/ 3.80	167/ 6.64
33/ 7.83	33/ 9.89	78/17.98	78/19.94	124/ 3.64	124/ 6.40	169/14.06	169/53.08
35/17.17	35/19.33	81/ 3.13	81/ 5.18	126/13.28	126/15.85	171/22.61	172/ 0.67
38/ 2.76	38/ 4.36	83/12.42	83/15.00	128/22.77	129/ 0.49	174/ 7.90	174/10.18
40/11.83	40/14.09	85/22.43	85/23.83	131/ 7.73	131/10.92	176/18.20	176/19.03
42/21.52	42/23.19	88/ 7.16	88/ 9.74	133/17.77	133/19.01	179/ 2.15	179/ 4.95
45/ 6.63	45/ 8.68	90/16.82	90/18.92	136/ 2.43	136/ 5.11	181/12.70	181/13.75

MORE ACTUALITIES

ROCKETS

CAPE PARRY, CANADA

AMF-NVB-03 & -04 --- G.G. Shepherd launched two rockets in this program to make coordinated measurements of several properties of the dayside magnetosphere cleft. The first was at 000455 UT on 6 Dec 1977 and the second was at 2300 UT on 12 Dec. Not all experiments on board the first launch performed as expected and a larger than predicted coning angle degraded some of the optical measurements. However, preliminary observations of active cleft conditions by ground scanning photometers at Cape Parry and Sach's Harbour and by the Cape Parry ionosonde were confirmed by observations of very strong low energy electron fluxes along the rocket trajectory. The meridional alignment of the flight azimuth should give a good comparison with meridian scanners at both locations where precipitated flux was optically monitored. Rocket telemetry stopped during second stage burning for the second launch and no data were obtained from the main payload. However, Koehler's ejected electric and magnetic field probes gave data. In addition to data from the first launch there will be some 10 days of coordinated ground-based data acquisition from ionosondes, scanning photometers, all sky cameras, the magnetometer chain, a scanning Michelson interferometer, an O2 ^ photometer, some Chatanika observations and some ISIS-II passes. This program was described in NL 77-10, pg 2.

SOUTH UIST

Petral launches --- Numerous rockets in the U.K. South Uist winter campaign were not announced in these NL's; however, the following actualities have been reported. 2 Feb 1978: P199H, Dickinson, e- density; P203H, Krankowsky, mass spectrometer; P112H, Williams, Lyman alpha electron density. 6 Feb: P200H, Dickinson, UV night glow; P202H, Williams, Lyman alpha electron density. 7 Feb: P204H, Krankowsky, mass spectrometer; P198H, Dickinson, neutral atomic oxygen. P202H had telemetry problems but all others were successful.

ANDOYA - ANDENES

IMS SUBSTORM --- On 30 January 1978, two rockets F4C and F2D were launched successfully into a magnetospheric substorm event. The first payload studied the expansion phase from 2137 to 2149 UT, the second one the recovery phase of the substorm from 2210 to 2222 UT. Skylark 12 motors carried the payloads on nearly nominal trajectories to heights of 540 km. All experiments and subsystems worked well and a comprehensive set of particle and field data could be collected. Information on this campaign, for which Wilhelm was project scientist , has been published in a handbook available from MPI Lindau-Harz and an outline description was given in IMS NL 77-8, pgs 2 & 3.

ANTARCTICA

15.160 - .163 --- Sheldon's Antarctic rocket program was not announced in these NL's because we understood (incorrectly) that the program was postponed for a year. However, since Sheldon is presently in the Antarctic and the Wallops Flight Center lists his program as scheduled for January 1978, we assume that these rockets may already have been launched and will publish proper "Actualities" as soon as they are available.

REPORT OF 2ND UK HIGH LATITUDE CAMPAIGN --- The following summary was prepared by A. Johnstone.

Six of the eight rockets scheduled to be launched between October and December 1977 from Andoy Rocket Range at 69 deg N, 16 deg E have been launched. Two rounds, SL 1424 and F6 (Woolliscroft) still await the desired launch conditions and have been rescheduled for 3-23 Feb 1978. This is a report on the rockets already fired for the information of any investigators wishing to pursue joint studies.

The format of the reports is as follows - Date/launch time/rocket/apogee/project scientist/ auroral conditions/successful measurements/main ground based observations/first look scientific results.

13 Oct/2159 UT/Skylark SL1423/788 km/J. Sojka MSSL/widespread diffuse aurora with pulsations/electrons and positive ions 5eV to 40keV, VLF 3 magnetic components, ion flow, sodium release with lidar track/narrow field TV, VLF emissions, neutral wind interferometer/bursts of suprathermal e-, positive ions peaked at 13 keV and anticorrelated with 3-, low level VLF activity, launched 33 min after German Skylark T/NL3A into same event.

16 Oct/2223 UT/Fulmar F3/247 km/T. Killeen, D. Rees UCL/breakup, negative bay 450nT/neutral wind and temp using FP interferometer, e- and + ions 0.5-25 keV/narrow field TV, neutral wind and temp interferometer/good wind measurements, very narrow structures in e- fluxes.

16 Oct/2233UT/Petrel 207A/207 km/T. Killeen, D. Rees UCL/breakup, negative bay 450nT/sodium release with lidar track/neutral wind and temp interferometer/good wind meas, launched 10 min after F3.

17 Nov/2132 UT/Skylark SL 1421/718 km/A. Johnstone MSSL/expansion phase of substorm/e- and + ions 5eV to 25 keV, 3 axis DC to 100 kHz E-field, attitude with intertial platform, electrostatic waves 0.3 to 3.7 MHz, ion flow, ion mass spectrometer, e- density and temp/all sky TV, narrow field TV/suprathermal particles intense and dynamic, energetic particles field aligned with inverted V structures, intense broadband e.s. noise bursts on spin modulated background, some bursts.

17 Nov/2143 UT/Fulmar F1/261 km/D. Bryant AL/expansion phase of substorm/e- and + ions 0.5-25 keV, electrostatic waves 0.3-3.7 MHz/all sky TV, narrow field TV/launched 90 sec after SL 1421, made measurements during upleg of SL 1421 but further south, both vehicles crossed same westward travelling arc segment, similar particle and wave results.

5 Dec/0208 UT/Fulmar F4/260 km/L. Wolliscroft UShef/Strong VLF chorus/e- density and temp/VLF receiver power failed at boom deployment.

GROUND-BASED

ALBERTA MERIDIAN CHAIN --- G. Rostoker reports that large pulsations were well-recorded by this network of magnetometers from 1000 - 1800 UT on 3 Dec 1977. There was virtually no other interference and large riometer signals were also recorded. Mme Troitskaya has communictate to Rostoker that interesting pulsations were recorded in the USSR on this day.

GLOBAL MONITORING NETWORKS --- Because of many reactions from solar-terrestrial physicists to the outstanding solar-geophysical activity associated with McMath plage region 14943, and the MONSEE Steering Committee request to treat the 22 Nov 1977 Ground Level Event as an interval for special study, the World Data Center A for Solar-Terrestrial Physics is soliciting data contributions from all those interested. The period to be covered by a special UAG Report will be from 7-24 September and 22 November 1977. Potential contributors should compare material in Report UAG-61, "Collected Data Reports for STIP Interval II, 20 March-5 May 1976." Contributions must reach WDC-A for STP no later than 31 May 1978. A brochure is available announcing this planned data compilation.

SCOSTEP SECRETARIAT NEWS

E.R. Dyer requests that the IMS NL please notify as broad a selection of IMS participants as can be reached that the announcement of an IMS meeting in Australia during December 1978 is a mistake. There will be an IAGA-sponsored IMS Symposium in Australia (probably Melbourne) in Nov 1979, in the week before the IUGG Assembly.

MEETINGS & WORKSHOPS

ISEE EXPERIMENTERS --- At a place not yet announced and for a time yet to be chosen, the ISEE experimenters will meet around 1 April 1978, for a bow shock workshop. A major purpose of the meeting would be to correlate data for papers to be presented at the ESLAB Symposium in Innsbruck. The workshop could continue a separate but overlapping existence after Innsbruck along with workshops that arise to study other topice, e.g. substorms, tail phenomena, etc. Experimenters will try to stick to the following time scales for plots: 1 cm/hr (ISEE-GEOS coarse scale), 8 cm/sec (GEOS standard), 64 cm per hour (GEOS standard), 512 cm/hr, 1 cm/sec (ISEE fine scale). Experience at the first few meetings may reduce the list.

SYMPOSIUM ON EUROPEAN SOUNDING-ROCKET, SCIENTIFIC BALLOON AND RELATED RESEARCH, WITH EMPHASIS ON EXPERIMENTS CARRIED OUT AT HIGH LATITUDES --- A sequel to the last Symposium in this series which was held at Schloss Elmau in May 1976. This meeting will be in Ajaccio, Corsica from 24-29 April 1978. CNES, France is the responsible organizing body.

ESLAB SYMPOSIUM --- First and Second Announcements of the 13th ESLAB SYMPOSIUM have been received in the IMSCIE Office. This meeting is from 5-7 June 1978, and is in conjunction with several other meetings, most notably COSPAR (which includes the IMS "Working Conference"). Some 100 scientists have indicated plans to attend and 50 announcements of papers have already been received. Most of these deal with results from GEOS-1 or ISEE 1/2. All experiments on these principal IMS spacecraft are represented by one or more papers. For further information contact K. Knott, Secretary, 13th ESLAB Symposium, SSD-ESA, Domeinweg, Noordwijk, Holland.

SECOND WORKSHOP ON IMS OBSERVATIONS IN NORTHERN EUROPE --- As follow-up to the successful Hankasalmi workshop of May 1977, the MPI fur Aeronomie is hosting a second regional meeting at Lindau/Harz from 24-27 October 1978. This meeting has been approved by the SCOSTEP National Committee of the DFG. Its purpose will be to further the cooperative ground-based studies begun in Hankasalmi and to try to bring about a closer coordination of research goals between these ground-based studies and the various rocket and satellite programs that are simultaneously occurring in northern Europe. A portion of the program will be dedicated to detailed studies of the geophysical processes occurring in the ionosphere and magnetosphere during two preselected rocket flights and one GEOS pass. Suggestions for periods for detailed studies are needed soon. Preregistration forms should already have been returned at this time. Those interested are asked to correspond with R.A. Greenwald, Chairman, or G. Lange-Hesse, Local Organizer (both at MPI Lindau).

WORKSHOP ON SOLAR-TERRESTRIAL PREDICTIONS --- Some IMS participants may be interested in the topic of solar-terrestrial predictions and the meeting in planning for Boulder, Colorado in the spring of 1979. The first announcement includes a list of topics and and the program committee. Anyone interested in further information should write to R.F. Donnelly, STP/PW Program, Space Environment Lab, ERL, Boulder, Colorado 80302, USA.

NEW IMS PROGRAM INFORMATION

BALLOONS

SBARMO --- Project Scientist S. Ullaland has sent IMSCIE Office a handbook "The SBARMO-78 Campaign". This extensive auroral zone balloon program is planned for 24 May - 5 July 1978 if GEOS-B is launched in March/April or for 30 June - 8 August if GEOS is launched on 22 June. The campaign will include 36 balloon drifting across the auroral zone from Scandinavia toward Greenland. Parameters to be measured include: X-rays, magnetic and electric fields, VLF emissions, and atmospheric infrasonic waves. Special emphasis is laid on coordination of the balloon flights with the scientific programme of geostationary satellites (GEOS-I or II). The 19-page handbook gives a summary of the scientific, technical and organizational aspects of the campaign.

R. Holzworth (UC Berkeley) has given us a verbal description of the balloon campaign of 8-10 units planned for a cooperative study over E. Canada. Coordination with Greenwald's STARE (auroral radars) is planned. Time constraints may compel launch of the Mozer/Holzworth balloons before SBARMO. A third balloon program is planned for coordination with these but details of the Danish program are not available yet.

IMSCIE VISIT TO EUROPE

Over the following months results from the many conferences, sessions of looking at instruments and data, and discussions about promoting IMS campaign coordination for the remaining two years of the observational phase, should become appearant in these newsletters. At least if the various experimenters who have promised to send lists of interesting phenomena and times of observation from their experiments are faithful to their promises, the accumulation of material for each IMS NL will become more simple. It was a valuable experience, if only for the opportunity to sample the varieties of enthusiasm with which different experimenters and groups approach their growing supply of data. Knowing from contacts at the IMSCIE Office that other regions are equally eager in the conduct of their programs and the anticipation of interesting science to come, it is obvious that the IMS is alive and strong.

DATA AVAILABLE FROM ISGI

D. van Sabben prepared a useful summary report of the various data products available from the International Service of Geomagnetic Indices (ISGI). From time-to-time in these NLs, we present such information that "must" be well-known to many IMS participants but is sometimes surprizingly fresh to some potential users.

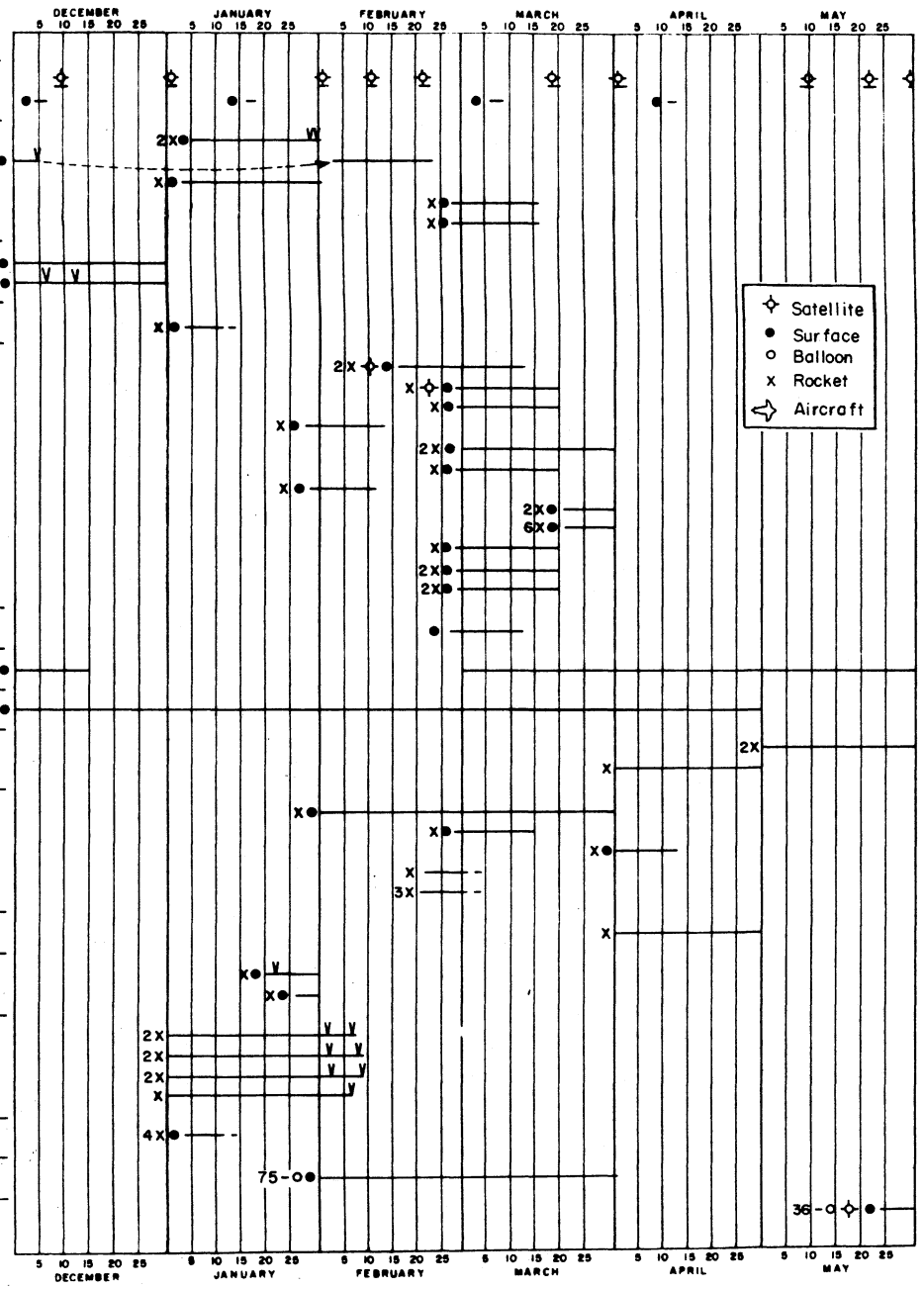
Data presently published by the ISGI (as of June 1977):

Monthly bulletin from De Bilt containing: daily aa-indices from the Institut de Physique du Globe de Paris (Dr. P.N. MayaudO; international Q- en D-days, received from the Institut fur Geophysik, Goettingen (Prof. M. Siebert); provisional data on rapid variations (ssc, sfe, very unusual events), received from the Observatorio del Ebro, Roquetas, Tortosa, Spain (Dr. A. Romana); provisional hourly equatorial Dst-values, received from NASA/GSFC, Greenbelt, Maryland, USA (Dr. M. Sugiura).

Monthly bulletin from Goettingen (data prepared at Goettingen): international Q- and D-days; three hourly indices Kp and daily indices Ap and Cp; provisional data on ssc and sfe. Note: A monthly bulletin on the provisional 3-hourly indices Kn, Ks, and Km and related daily indices An, As, and Am is published by the Institut de Physique du Globe de Paris (Dr. Mayaud). These bulletins are issued with a delay of several months.

Yearly IAGA-Bulletin No. 32: The bulletins contain the following data for the whole year: daily indices aa (from 1976 onwards, replacing Ci); international Q- and D-days; 3-hourly indices Kp, amplitudes ap, daily indices Ap, Cp; 3-hourly indices Kn, Ks, Km, amplitudes an, as, am, daily indices An, As, Am; hourly values ot equatorial Dst-index; list of ssc's; list of sfe's; list of remarkable events; data on a number of selected special intervals of the year: diagrams of indices; ssc and other storm-data from individual observatories; common-scale magnetograms; AE-indices at 2.5 min intervals. Most of the data for these special intervals are received from the WDC-A for Solar-Terrestrial Physics, Boulder, Colorado 80302, USA.

IMS CALENDAR OF GBR CAMPAIGNS DECEMBER 77 - MAY 78
(As of 1 February 1978)



WORLD-WIDE
- Special SSC-selected satellite periods
- IISN (Bauer, et al)

ANDOYA (ANDENES)
- Wilhelm; "SUBSTORM CAMPAIGN"
- Woolliscroft; "2nd U.K. HIGH LATITUDE CAMPAIGN"
- Kelley, Matthews; "18.211UE/IE"
- Thrane, von Zahn; "Ferdinand 47 (BUGATTI)"
- Thrane, Krankowsky; "Ferdinand 48 (TRINOM)"

CAPE PARRY
- Forsyth; "E-Fields in Polar Cusp Ionosphere"
- Shepherd; "Coord. Meas. Dayside Cleft"

WALLOPS ISLAND
- Smith; "14.533UE"

POKER FLAT
- Davis, Wescott; "18.1017UE & 18.1018UE"
- Ulwick; "WIDEBAND MULTI"
- Baron; "WIDEBAND"
- Scherb; "29.008UE"
- Hale; "15.170UE & 15.171UE"
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