International Council of Scientific Unions

SCIENTIFIC COMMITTEE
ON
SOLAR-TERRESTRIAL PHYSICS

79-3

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IMS NEWSLETTER

PRESS-TIME SCATHA NOTE --- A. Vampola called with more news of SCATHA (see pgs 3 & 8 inside for SSC report). Because of its near-equatorial orbit with nearly 24-hr period and 5°/day apogee drift rate, SCATHA will appear to orbit around GEOS for 5-6 days during late March. It will have a similar orbit with respect to all geostationary spacecraft as it drifts past them. After some 73 days SCATHA will return to again orbit GEOS. Opportunities for cooperative joint observations should be abundant. 79/02/27-THA, D. Mc

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SPECIAL IMS HIGH-ALTITUDE SATELLITE PERIODS - 1979

Special IMS High-Altitude Satellite Intervals for Mar - May 1979 are given below. Page 5 of this NL has a detailed listing of all the SSC - selected Special Satellite intervals for January - June 1979 and the satellite configurations that were the basis for selection of these periods. As was done for such earlier intervals, start and end times were extended from the model calculations to allow for boundary fluctuations during disturbances. Details for the latter half of 1978 were published in NL 78-8, pg 4.

#4	8 Apr	98/1900 UT	to	10 Apr	100/0900 UT
#5	27 Apr	117/2200 UT	to	29 Apr	119/1600 UT
#6	27 May	147/2300 UT	to	29 May	149/2400 UT

SPECIAL LOW-ALTITUDE SATELLITE CONJUNCTIONS

The IMS Satellite Situation Center prepares a weekly forecast of times of satellite magnetic field line conjunctions for principal high-altitude IMS satellites, selected low-altitude satellites and selected ground-arrays. This information is telexed by the IMSCIE Office, upon request, to some 20 locations for use by project scientists, satellite tracking controllers and administrators. The service was started for those interested in the position of their experiments relative to the orbit foot-track of GEOS-1 and was expanded with the successful launch of ISEE-1&2. It is expected that many of the original interested persons will wish to continue receiving such information to facilitate special data acquisition in connection with the newly-launched GEOS-2 satellite. We will continue to feature conjunction intervals between the ISEEs and GEOS-2. Those interested in addition of other satellite or ground-based experiments to these forecasts should contact J. Vette, IMS SSC (see NL letterhead for address) and anyone wishing to receive the weekly telexes should contact the SSC or the IMSCIE Office. A conjunction forecast telex was shown in NL 78-4, pg 3.

GROUND-BASED, BALLOON AND ROCKET CAMPAIGNS:

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

Jan 24 to Mar 4; I. Zhulin; "SAMBO II"; ESRANGE; BALLOONS (25) - see NL 78-11 pg 3
Mar ----------; Moore; "27.038UEX"; White Sands; ROCKET - 27.038UEX
Mar -- to Apr --; S.I. Avdyushine, C. Renard; "IPOCAMP 3"; Heiss Is; ROCKET - see NL 79-2 pg 3
Mar 9 to Mar 31; L.J.C. Woolliscroft; "F6"; Andoya; ROCKET - Fulmar - see NL78-10 pg3
Mar 9 to Mar 31; L.J.C. Woolliscroft; "VLF"; Andoya; ROCKET - Petrel II - see NL 78-11 pg 3
Mar 13 to Apr 4; G. Holmgren; "Ba-GEOS S-29"; ESRANGE; ROCKET - Nike Black Brant VC - see NL 79-1 pg 2
Mar 15 to Apr 26; C. Haerendel; "Porcupine III & IV"; ESRANGE; Rockets (2) - Aries - see NL 78-9 pg 3
Mar 16 to Apr 3; E.M. Wescott "12.1003, 12.1004"; Poker Flat; ROCKETS - 12.1003, 12.1004-plasma physics
Mar 16 to Apr 3; J.P. Heppner; "18.217-8GEX, 29.011-2GEX"; Poker Flat; ROCKETS (4) - see NL 79-1 pg 3
Mar 20 to Mar 22; R. MacQueen; "27.033AS/US"; White Sands; ROCKET - 27.033AS/US - see NL 78-10 pg 3
Apr ----------; G. Rottman; "27.028US"; White Sands; ROCKET - see NL 78-12 pg 3
Apr 23 to May 4; E.R. Williams; "P201H"; South Uist; ROCKET - Petrel - see NL 79-2 pg 3

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

Mar 15 to Jun 20; Siebert, Wedeken, Krenzien; "GEOMAGNETIC PULSATIONS"; N. Scandinavia;
Monthly; Wright & Hilsenrath; "OZONESONDE"; Various Sites; ROCKETS - See Actualities, NL 77-10, pg 3

REGIONAL IMS SAT/GBR PROGRAM DETAILS, MARCH - MAY 1979

Program details for many brief listings given above appeared, as indicated, in earlier IMS NLs.

BALLOONS

ESRANCE

"SAMBO II" --- - This is a French - Soviet program with Austrian participation. The two co - prime investigators are F. Cambou and I. A. Zhulin. For details of the experiments see NL 78-11 pg 3.

ROCKETS

ESRANGE

"S-29 Ba GEOS" --- On page 5 is a diagram of the launch windows for Porcupine III and IV and the S-29 Ba GEOS (see NL's 78-9 pgs 3 & 4 and 79-1 pg 2). There is a good chance that at least one of the Ba injections will be made in shadow. This leads to an additional scientific objective, namely to check the efficiency of Alfven's critical velocity effect in ionizing the high speed barium atoms which are injected at an angle of 30 degrees to the magnetic field.

POKER FLAT

"12.1003, 12.1004" --- Two rocket-borne barium plasma injection experiments are to be launched from Poker Flat Research Range in March-April, 1979. The primary scientific goal of the experiments is to gain knowledge of the evolution and dynamics of laminar V-shocks (or double layers) which may form between 2000 and 15000 km altitude over discrete auroras. The experiments are also expected to increase knowledge of magnetospheric electric fields, Birkeland currents, and the orientation of magnetospheric field lines.

The fluorescent plasma streak will be visible from most of the western U.S. and Canada and eastern U.S.S.R. Participation by observers in these areas is invited. For information contact the project scientist; Dr. Eugene M. Wescott, Geophysical Institute, Fairbanks, Alaska, 99701, phone 907 479-7576.

"ECHO V" --- J. R. Winkler reports that this project has been postponed until October 1979.

WHITE SANDS

27.028US --- G. Rottman, U. of Colorado, reports that this rocket, which was scheduled for launch in February, 1979, has now been put back to 9 April 1979 due to problems with the booster.

USSR

IPOCAMP - --- Information has been provided by Dr's. Avdyushin and Pokhunkov on the Soviet contribution to this campaign (see NL 79-2 pg 3). A series of three MR12 rockets will be launched in March 1979 on Heiss Island to obtain quantitative data on variation of ionospheric conditions during strong geomagnetic disturbances. The rockets will

be equipped with a complex of French scientific instruments; different probes for electron density, temperature and electric field measurements in D and E-regions of the ionosphere. For these experiments the Soviet side will supply rockets, telemetry system, magnetometers, programmers, and power supply units. Ionospheric sounding, registration of three components of the earth's magnetic field, and riometric measurements at 40 MHz will be made during the launches.

ANDOYA - ANDENES

"F6, VLF" --- These two rockets were not launched at ESRANGE as planned and are now programmed for launch at Andoya in the period 9 - 31 March.

ACTUALITIES

SATELLITES

"SCATHA" --- The P78-2 (SCATHA-Spacecraft Charging at High Altitudes) satellite was successfully launched on Jan. 30, 1979 at 2142 UT from the Eastern Test Range. Following the transfer orbit, the satellite was injected into the final orbit on Feb. 2, 1979. The Satellite Control Facility at Sunnyvale gives the following osculating elements for this orbit: Epoch: 1979 Day 37 0h 37min 29.477s, Semi-major axis: 41769.83 km, Eccentricity 0.1878419, Inclination 7.899 degrees, Right Ascension of Ascending Node 271.4481 degrees, Argument of Perigee 184.61 degrees, Mean Anomaly 239.5177 degrees.

The satellite has a period of 23.6 h and an apogee longitude drift rate of approximately 5 degrees per day eastwards. This drift rate may be modified. The above orbit has an apogee local time of 9.1 h and a latitude and longitude of 0.6N and 194.8E respectively. Magnetic foot track plots are shown on page 8 for early February and early March. These were obtained using the Barraclough internal field model and the Olson-Pfitzer 1978 external field model.

The SSC will routinely receive orbit elements for SCATHA and will compute magnetic conjunctions with the following satellites: ISEE 1/2, ESA-GEOS 2, ESA-GEOS 1 (when operating), ISIS 1, ISIS 2, EXOS 1, EXOS 2, DMSP-5D-F1, -F2 and -F3, S3-3 and TRIAD. The conjunction times will be telexed by the IMSCIE office. Additional information on the conjunctions may be obtained from the SSC.

A detailed description of the SCATHA payload was given in NL 78-2. Charles Welsh at SAMTEC East, which has responsibility for data processing, reports that data were obtained during the transfer orbit from the following experiments: Spacecraft Contamination Monitor (ML12), Spacecraft Sheath Electric Fields (SC2), High-Energy Particle Spectrometer (SC3), and the San Diego Particle Detectors (SC9). The apogee and perigee heights for the transfer orbit were 43,905 km and 184 km, respectively. Al Holman of Science Applications Inc. which has responsibility for data distribution coordination, reports that the AFGL Thermal Electron experiment has failed because of a malfunction in the power supply.

GEOS-1 and GEOS-2. --- K.Knott sent us the following report on the operations of the two satellites.

GEOS-1 : good quality data have been acquired from this satellite, for roughly 3 hours per day, mostly from 0750 UT to 1050 UT during the period October 27, 1978 to November 26, 1978, and mostly from 0350 UT to 0650 UT during the period November 27, 1978 to December 15, 1978. Only low speed data were recorded. A listing of actual times of operation is available at the IMSCIE office. It is scheduled to reactivate GEOS-1 again for about 50 more intervals during February-March 1979. The whole payload except magnetometer and electron beam experiments are still working well.

GEOS-2 is operational 24 hours per day and all the experiments are working well. Problems arising from solar cell malfunction have been overcome by means of software. The satellite will be stationed at 37 degrees East longitude for the Porcupine campaign (16 March- 6 April) and for the SBARMO balloon campaigns (1 June to 13 July). Thereafter the excursion to 15 degrees East longitude and the subsequent stay at the geomagnetic equator will be arranged for.

ROCKETS

ESRANGE

S23 Substorm GEOS --- P. Simon reports that this campaign was successfully completed on January 27 at Kiruna. For experiment details see NL 78-11 pg 2. Project scientist was R. Lundin, Kiruna Geophysical Observatory.

Black Brant VC rocket with payload S23L1 was launched at ESRANGE on January 27 at 17H 12M 32S UT. It reached an altitude of 267 km and impacted in bearing 345 degrees 80.5 km downrange. It was launched during a buildup phase of a substorm.

A Nike Black Brant rocket with payload S23H was launched into a substorm on 27 January at 21H 01M 59S UT and reached a height of 413 km. The third rocket of the series, a Black Brant VC with payload S23L2 was launched 27 January at 21H 52M 20S UT, reached an altitude of 266 km and impacted on a bearing of 343 degrees, distance 71 km. It was launched into the breakup phase of a substorm. All three launches were successful, payloads worked well and good scientific data is expected.

P215K, P216K --- D. Bryant reports that Petrel 2 sounding rocket P216K was launched from ESRANGE at 21 07 33 UT on 25 January, 1979. Carrying 8 charged particle detectors it measured with high resolution the distribution function of electrons with energies above 1 keV in a pulsating aurora. The pulsations were irregular with durations of 1-10 secs. The apogee was 179 km. A similarly instrumented rocket P215K was launched on 27 January at 20 04 55 UT also into a pulsating aurora. The pulsations were mainly of 1 sec. and shorter period though there were some of 1 -10 sec. The apogee of P215K was 180 km.

Both flights were supported by ground-based optical measurements with TV and photometers. These were made from ESRANGE and Rappsaive, a site allowing the aurora traversed by the rocket to be viewed in the magnetic zenith.

The measurements are to be correlated with those at the geostationary satellite GEOS 2 whose equivalent particle experiment was switched into the most suitable mode of operation for the duration of the flights.

FORT CHURCHILL

25.041UEX --- This rocket was launched on 22 January. The experiment was unsuccessful, the payload detaching after 22 seconds. (See NL 78-12 pg 3 for details of experiments).

POKER FLAT

29.013UEX --- H. R. Anderson, Rice University reports that this rocket was fired on the morning of 26 January. The second stage failed, and though telemetry worked, no useful scientific data is expected.

BALLOONS

ESRANGE

"SAMBO II" --- B. Sjoeholm reports that several balloons have been launched as part of the "SAMBO II" campaign (see NL78-11 pg 3). Four balloons were launched on 23 January at 1713, 2117, 2221 and 2334 UT, three on 30 January at 1736, 2123 and 2253 UT, one at 0017 UT 31 January and one at 1625UT 5 February. X-rays, E-field and photometer measurements were carried out.

MEETINGS AND WORKSHOPS

Conference on Magnetospheric Boundary Layers --- AGU and the European Geophysical Society will cosponsor a conference on magnetospheric boundary layers at Alpbach, in the Austrian Tyrol,, June 11-15, 1979, to be organized by the Austrian Solar and Space Agency (ASSA) and the Max Planck Society.

This conference will provide a timely forum for the discussion of recent measurements in the earth's magnetospheric boundary layer (particularly by ISEE 1 and 2), possible measurements in the Jovian magnetosphere (by Voyager), the theory of the structure of the magnetopause boundary layers (including merging processes), and global implications of momentum, energy, and mass transfer between stellar winds or interstellar matter and magnetospheres immersed therein (i.e., solar-terrestrial relations from a more general viewpoint). The final composition of the program will be determined by a committee now being formed. G. Haerandel. Max-Planck-Institut, and J. Ortner, ASSA, will serve as coconveners.

Attendance will be limited to 70 participants. Those interested should have submitted a preliminary abstract by January 15 1979 to G. Haerandel, Max-Planck-Institut fur Physik und Astrophysik, 8046 Garching b. Munchen, West Germany, from whom further information may be obtained. Final abstracts in AGU format will be required by March 15,1979.

International Solar-Terrestrial Predictions --- The International Solar-Terrestrial Predictions proceedings and workshop will be held April 23-27, 1979 in Boulder, Colorado. The proceedings and workshop will be hosted by the Space Environment Laboratory, NOAA/ERL, in Boulder. Scientific societies cosponsoring the program are AGU, AMS, COSPAR, IAGA, IAU, IUWDS, SCOSTEP, and URSI.

Principal objectives will be to discuss how solar-terrestrial predictions are made and the applications of predictions and future needs for predictions and to provide in-depth interaction of prediction users, forecasters, and scientists involved in research and development of prediction techniques in the light of recent scientific developments.

Contributed papers and invited review papers will be exchanged in preprint form among members of topical working groups from September through February to permit reading, review, and discussion via airmail among working group members. The deadline for contributed papers was November 1, 1978. These papers, together with the working group reports, will be published in Solar-Terrestrial Predictions Proceedings in the summer of 1979. The program does not include a meeting at which these papers will be presented orally.

The workshop will be held April 23-27, 1979, in Boulder, Colorado. The purpose of the workshop is to complete the activities of each working group and to provide in-depth interactions between representatives of the various working groups and interaction among forecasters, prediction users and scientists. Attendance at the workshop is by invitation only. The selection of invited attendees starts with recommendations by the working group leaders. The following criteria are important: participation in a working group, authorship of pertinent review or contributed paper, and worldwide representation. Each group should include at least one professional forecaster and preferably at least one representative of prediction users. About seven to ten representatives per working group or subsection will be invited.

The program includes three types of invited review papers: (1) reviews by groups that routinely make solar-terrestrial predictions (i.e., prediction-group reviews) (the deadline for these reviews was September 15, 1978), (2) prediction-user reviews, including needs for predictions in the future (deadline was December 15,1978), and (3) topical or literature reviews (deadline was October 15, 1978).

For further information about the program, especially the working-group topics and leaders and the review-group leaders, write to R. F. Donnelly, ISTP/P-W Program, Space Environment Laboratory, NOAA/ERL, Boulder, Colorado 80303.

NETWORK NEWS

N. AMERICA

IMS Magnetometer Network --- The IMSCIE office has received the following update on the status of the IMS Magnetometer Network operations from A. Gray and C. Hornback, SEL Boulder, covering the period 27 June to 15 December 1978. As of the present time the only station that has not been initially installed is San Juan, and it is presently being prepared for shipment. Installation is expected to be in January. The Guam station has been installed and 10 second data tapes are being received.

The IMS radio platform performance has exceeded expectations with a few exceptions. About October 1, the riometer chain started to receive an interfering signal in the period from 1800 - 2400 hours. The period varied somewhat with the stations' locations. Other people have verified that it is in other data sets as well as the IMS set. If anyone has any information as to where this interference originates, forward the information to Al Gray, SEL Boulder.

Dr. Robert Manka has arranged a procedure for shipping equipment through customs which will allow for easier return of the equipment after the project is terminated. For further details call Dick Kuberry. Dr. Jo Ann Joselyn has replaced Dr. Joe Barfield as the coordinator for all users of IMS data facilities external to SEL.

The GOES 2 is currently being used as the east satellite and GOES 3 is the west satellite. SMS2 was used as the alternative satellite during the eclipse period, and all three satellites are functioning very well. The data summaries show that there was a loss of data during the eclipse period but most of the lost data was recovered in the system using post-eclipse retransmission process.

The SELDADS data base program system is progressing. The IMS full resolution data tapes (10-second data) will be forwarded to EDIS starting with the first day of August, 1978, as time permits. A revised description of the IMS full resolution magnetometer data tapes follows.

The original full-resolution IMS-STR magnetometer/riometer data will be written by the SELDADS system on 1600 BPI P-E binary ANSI labelled tapes, compatible with the Boulder CDC 6600 installation. Those tapes will be delivered to EDIS along with a conversion routine which will enable EDIS to produce the IBM-compatible tape format (sent with status report). EDIS will then produce distribution tapes in either the IBM format or the CDC 6600 format. Three data tapes will be produced each month, each tape beginning on the first, eleventh, or tweny-first of the month. Each tape will consist of one file. For each day there will be one header record, one or more comment records, and 720 data records of 2 minutes each. Five components will be recorded for each observatory (three magnetometer, one riometer, one sub- multiplex housekeeping). The five-component format provides for later installation of riometers at stations not initially equipped with them.

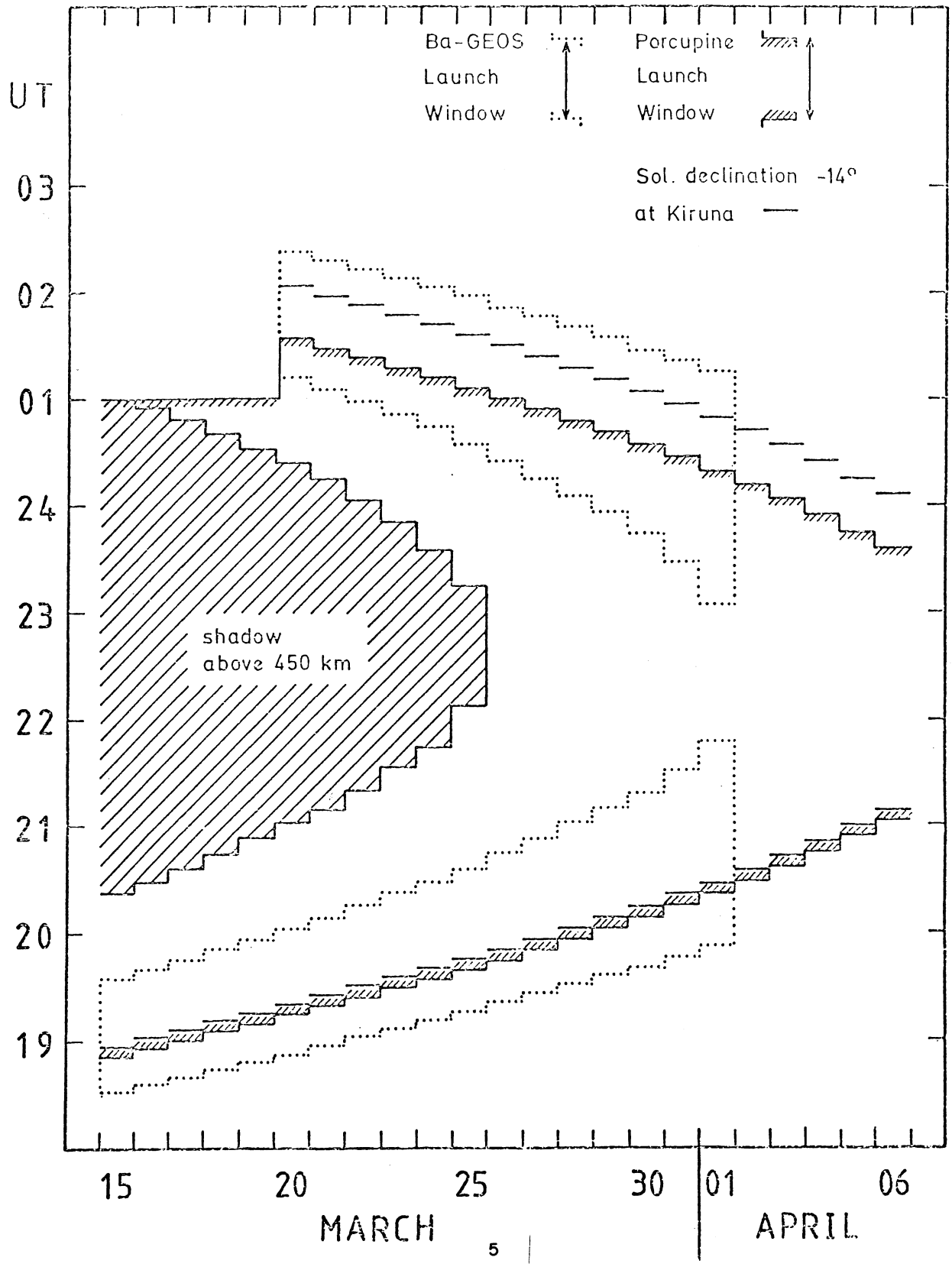
CANADA

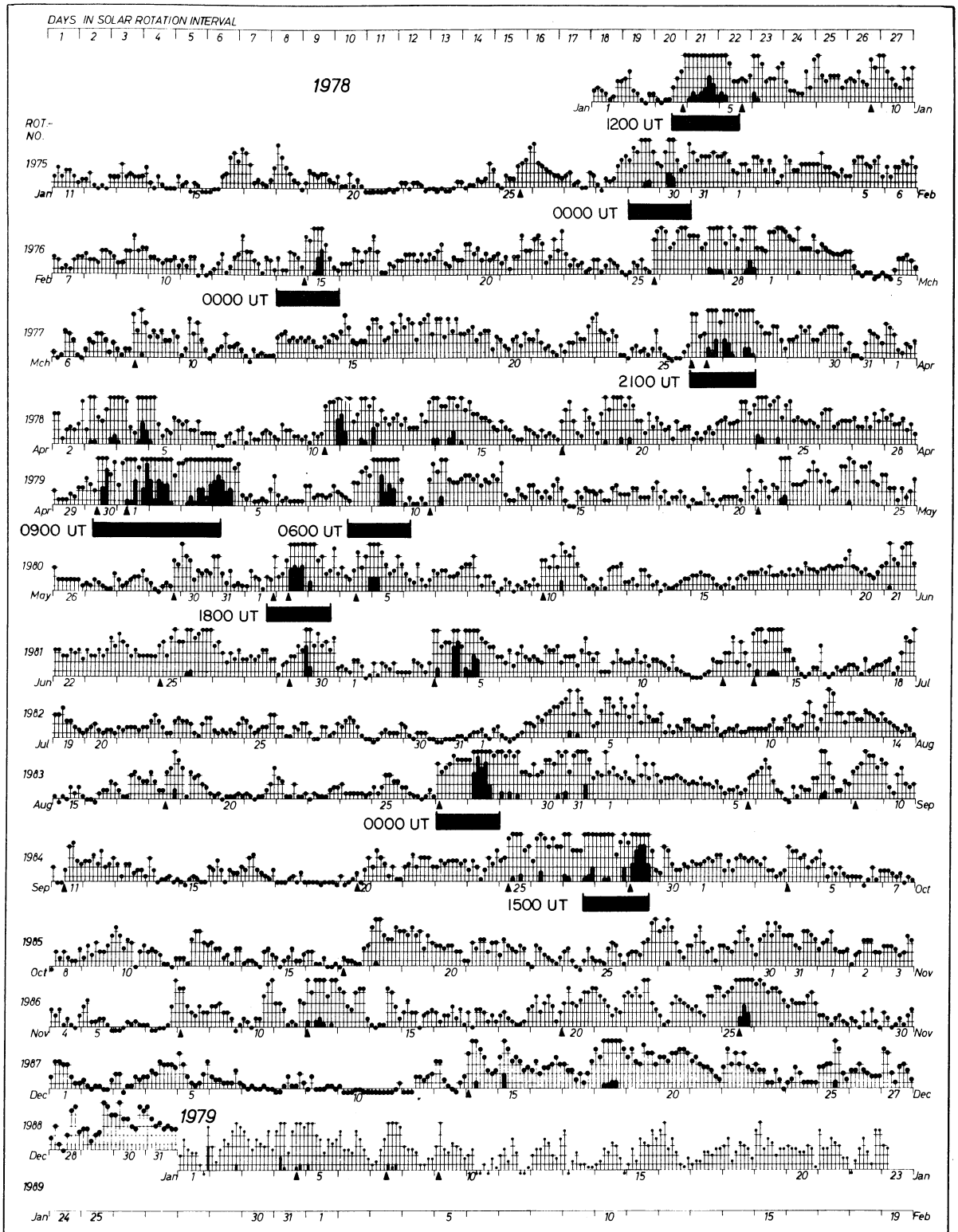
J. V. Walker, Division of Geomagnetism (EMR), is preparing a catalogue listing the services of the Division, listing the magnetic observatories and the IMS stations together with descriptions of

(continued on pg 9)

Porcupine and Ba-GEOS

Launch and Injection Windows (1979)




DAYS IN SOLAR ROTATION INTERVAL
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
1978
ROT.-NO.
1200 UT
1975
Jan 11 15 20 25 30 31 1 5 6 Feb
0000 UT
1976
Feb 7 10 15 20 25 28 1 5 Mch
0000 UT
1977
Mch 6 10 15 20 25 30 31 1 Apr
2100 UT
1978
Apr 2 5 10 15 20 25 28 Apr
1979
Apr 29 30 1 5 10 15 20 25 May
0900 UT
0600 UT
1980
May 26 30 31 1 5 10 15 20 21 Jun
1800 UT
1981
Jun 22 25 30 1 5 10 15 18 Jul
1982
Jul 19 20 25 30 31 5 10 14 Aug
1983
Aug 15 20 25 30 31 1 5 10 Sep
0000 UT
1984
Sep 11 15 20 25 30 1 5 7 Oct
1500 UT
1985
Oct 8 10 15 20 25 30 31 1 2 3 Nov
1986
Nov 4 5 10 15 20 25 30 Nov
1987
Dec 1 5 10 15 20 25 27 Dec
1988
Dec 28 30 31
1979
Jan 1 5 10 15 20 23 Jan
1989
Jan 24 25 30 31 1 5 10 15 19 Feb
KEY
0 1 2 3 4 5 6 7 8 9
0 + - 0 + - 0 + - 0 + - 0 + - 0 + - 0 + - 0 + - 0
▲ = sudden commencement
PLANETARY MAGNETIC
THREE - HOUR - RANGE INDICES
Kp 1978
(preliminary indices to 1979 January 23)

IMS/SSC Special High-Altitude Satellite Intervals

The IMS Satellite Situation Center has completed derivation of a set of special intervals for the first half of 1979 based upon configurations of high-altitude IMS 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. 11 or NL 78-8). 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. By special agreement among experimenters, enhanced data acquisition and processing efforts will be made for these intervals.

The following are the ESA-GEOS 1 magnetic conjunction times with ISEE 1 (IE), ESA-GEOS 2 (G2), ISIS 1 (I1), ISIS 2 (I2), EXOS 1 (E1), EXOS 2 (E2), DMSP-5D-F1 (D1), DMSP-5D-F2 (D2), DMSP-5D-F3 (D3), TRIAD (T), S3-3 (S3), and AE-C (AC), as computed by the IMS Satellite Situation Center. These are conjunctions for the time period November 2 (Day 306) through November 25 (Day 329), 1978, that were not previously distributed via the routine telex. The conjunctions were computed for times corresponding to ESA-GEOS 1 apogee plus or minus 1.5 hours.

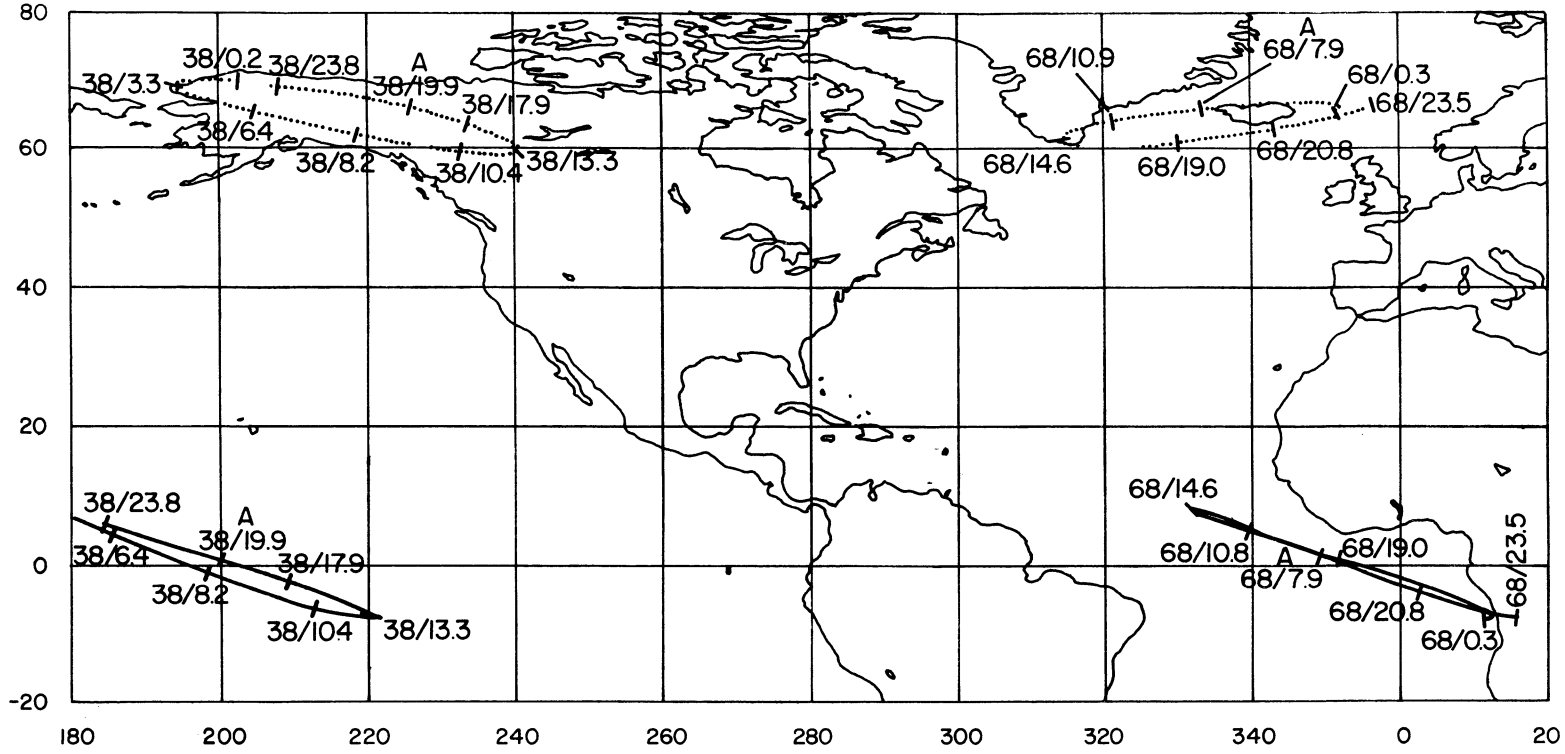
306/9.2 : I2-8.8, 10.7; G2-8.9 to 10.7; E1-9.9; AC-10.1
307/9.1 : D1-7.8; G2-8.9 to 9.9; I2-9.4
308/9.0 : I2-8.2, 10.0; G2-8.8 to 10.5; I1-10.3
309/9.0 : G2-8.8 to 9.8; I2-8.8; D1-8.9; E1-9.6; I1-9.8
310/8.9 : G2-8.7 to 9.7; I2-9.4; I1-9.4; E1-10.2
311/8.8 : D1-7.6; I2-8.1, 10.0; E1-8.6; G2-8.6 to 9.6
312/8.8 : D1-7.3, 8.0; G2-8.6 to 9.6; I2-8.8; E1-9.2
313/8.7 : D1-7.7; G2-8.5 to 9.5; I2-9.4; E1-9.8; I1-10.0
314/8.6 : D1-7.4; I2-8.1, 10.0; E1-8.2; G2-8.4 to 9.4; I1-9.6
315/8.6 : IE-7.8 to 8.3; G2-8.4 to 9.4; I2-8.8; D1-8.8; E1-8.8; I1-9.1
316/8.5 : I2-7.5, 9.4; G2-8.3 to 10.0; D1-8.4; E1-9.4
317/8.4 : D1-7.5; E1-7.8; I2-8.1; G2-8.2 to 9.9
318/8.4 : D1-7.2, 7.9; G2-8.2 to 9.9; E1-8.4; I2-8.7; I1-9.8
319/8.3 : D1-6.9, 7.5, 9.2; I2-7.5, 9.4; G2-8.1 to 9.8; E1-9.1; I1-9.3
320/8.2 : D1-7.2; E1-7.4, 9.7; G2-8.0 to 9.7; I2-8.1; I1-8.8
321/8.2 : D1-7.0, 8.0, 8,7; G2-8.0 to 9.7; E1-8.0; I2-8.7
322/8.1 : D1-6.7, 8.3; I2-7.5, 9.4; I1-7.9; G2-7.9 to 9.6; E1-8.7
323/8.0 : E1-7.1, 9.3; D1-7.4, 8.0; G2-7.8 to 9.5; I2-8.1
324/8.0 : I2-6.8, 8.7; D1-7.1, 7.8; E1-7.7; G2-7.8 to 9.5; AC-8.9; I1-9.0
325/7.9 : D1-6.8, 7.5, 9.1; I2-7.5, 9.4; G2-7.7 to 9.4; E1-8.3; I1-8.6; AC-8.8
326/7.8 : D1-6.5, 7.2, 8.8; E1-6.7, 9.0; G2-7.6 to 9.3; I2-8.1; I1-8.1; AC-8.7
327/7.7 : I2-6.8, 8.7; D1-6.9, 7.9, 8.5; IE-7.2 to 7.6; E1-7.3; G2-7.6 to 9.3; AC-8.6

(continued on pg 9)

IMS/SSC Special Periods for Days 1-181 1979 by Region

Special Period No.	Approx. Time (d/h)	Satellite Regions							Comments
		IMP-H	IMP-J	ISEE 1	Vela 5A	Vela 5B	Vela 6A	Vela 6B	
1	8/9	I	**P**	**P**	MT	**P**	I	I	Boundary encounters within 1 h.
	10/20	I	**P**	**P**	I	I	HT	**P**	
2	28/4	**NS**	**I**	**NS**	**NS**	HT	**NS**	I	4 in magnetosheath for 9 h.
	29/10	**P**	**I**	NM	I	S	HT	**P**	Boundary encounters within ½ h.
	29/20	**HT**	**I**	**MT**	I	I	**HT**	**Sh**	4 in tail for 5 h.
3	56/7	**HT**	**I**	**HT**	NS	**HT**	DS	I	3 in tail for 19 h.
	57/6	**Sh**	NS	**Sh**	I	NS	**HT**	DS	3 in tail for 12 h.
4	99/1	I	**HT**	**HT**	DS	**HT**	DS	I	
	99/18	I	**Sh**	**Sh**	I	NS	NM	NS	
	100/0	I	**Sh**	**MT**	I	DS	**HT**	DS	
	100/3	I	**P**	MT	I	DS	HT	**P**	Boundary encounters within 1½ h.
5	118/4	**P**	**I**	HT	DS	NM	**P**	S	Boundary encounters within ½ h.
	118/22	**Sh**	**I**	**MT**	I	DS	**HT**	NS	3 in tail for 20 h.
	119/10	**MT → HT**	**I**	**Sh**	I	I	**HT → MT**	NM	3 in tail for 20 h.
6	148/5	I	**HT**	**Sh**	DS	I	**HT**	**MT**	4 in tail for 5 h.
	148/10	I	**MT**	**MT**	DS	I	NS	**MT**	3 in tail for 12 h.
	149/18	I	**HT**	**Sh → MT**	**MT → Sh**	NM	I	S	3 in tail for 8 h.
7	157/8	**HT**	**I**	**Sh**	I	I	**MT → HT**	**HT**	4 in tail for 12 h.
	157/14	**HT**	**I**	**MT**	DS	I	**HT**	**Sh**	4 in tail for 12 h.
	158/12	**P**	**S**	DM	HT	DS	I	**P**	
	158/23	**NS**	**NS**	**NS**	MT	**NS**	I	**NS**	5 in magnetosheath for 4 h.

SCATHA ORBIT-PROJECTION PLOT



A=Apogee

Scatha Subsatellite Point

Scatha Olson/Pfitzer-Tilt
Int: Barraclough

(continued from pg 4)

types of data available, how to order, and approximate costs. When available, this should prove very useful to anyone needing data re specific events.

He mentions that the satellite data loggers are proving to be a very good system for collecting data from a remote site. The status of each station is continually monitored. The Division is informed of a malfunction within a day sc immediate action can be taken to correct it. The satellite data can also be obtained directly with a standard computer terminal. The data are edited in Boulder. Eventually the Division receives both tapes and microfilm of the data collected from WDC-A for STP.

PUBLICATIONS

GEOS-GROUND VLF EXPERIMENT REPORT

Report ATR-79(7731)-1, "The Sortland Norway Transmission Line VLF Tests, September to October 1978," has just been received. It is by M.H. Dazey (Aerospace Corp.) and relates the experiences of trying to use a 34 km-long, 60 kV power transmission line as an antenna for the transmission of VLF signals from a 100 kW system. Their goal was to produce a VLF signal that would be detected at the GEOS-2 satellite. Cooperating scientists were from Univ. Oslo, Univ. Paris, and Aerospace Corp. Staff from the Royal Norwegian Council for Scientific and Industrial Research, Andoya Rocket Range, Sortland Power Co., Lodingen Power Co., Teledistrict Nord and the Lodingen Telephone Co. were among those involved in the experiment.

The account of the conduct of this IMS experiment combining ground-based transmitters and satellite receivers will make an interesting study for sociologists as well as the involved scientists because of the impact of the transmissions on local telephone systems and other interactions mentioned in the report. Four days of transmissions to GEOS did not reveal any observable signal in the "quick look" data; however, this is not surprising and continuing study of the "high speed tapes" is in progress.

Examples are given of attempts to transmit to three satellites, ISEE-1&2, S3-3, and GEOS. These illustrate the frustrations that can occur in that the S3-3 passes came only during daylight business hours when transmissions were shut down because of interference with telephones; transmissions to ISEE were completed on schedule but the tracking station in Spain was down resulting in data loss during that time. Thus the GEOS high speed tapes are the only remaining hope for signal detection by satellite. From these experiences alternative plans for future VLF transmissions from Scandinavia are being made. Both GEOS and SCATHA may be involved in these further attempts to study wave-particle interactions in the outer magnetosphere by VLF transmissions from the surface.

(continued from pg 7)

328/7.6 : D1-6.6, 7.6, 8.2; I2-7.4; G2-7.5 to 9.2; E1-7.9; AC-8.4
329/7.6 : D1-6.3, 7.3, 7.9; E1-6.3, 8.6; AC-6.8, 8.3; G2-7.5 to 9.1; I2-8.1; I1-8.8

Additional information about position during ESA-GEOS 1 / ESA-GEOS 2 conjunctions follow. The altitude of GEOS 2 is fixed at 35800 Km. The two numbers give, respectively entering and exiting conjunction : UT time ; GEOS 1 altitude in Km ; geometric separation between GEOS 1 and GEOS 2 in earth radii (RE); separation along the flux tube in earth radii (RE).

306/	8.9-10.7	38400-37400	1.7-1.4	0.2-0.6
307/	8.9-9.9	38400-37900	1.7-1.7	0.2-0.4
308/	8.8-10.5	38400-36500	1.7-1.5	0.2-0.8
309/	8.8-9.8	38400-37800	1.3-1.3	0.1-0.4
310/	8.7-9.7	38400-37800	1.3-1.3	0.1-0.4
311/	8.6-9.6	38400-37900	1.3-1.3	0.1-0.4
312/	8.6-9.6	38400-37800	1.3-1.3	0.1-0.4
313/	8.5-9.5	38400-37800	1.4-1.4	0.2-0.4
314/	8.4-9.4	38400-37900	1.4-1.4	0.2-0.4
315/	8.4-9.4	38400-37800	1.4-1.4	0.2-0.4
316/	8.3-10.0	38400-36400	1.7-1.6	0.2-0.8
317/	8.2-9.9	38400-36400	1.7-1.6	0.2-0.8
318/	8.2-9.9	38400-36300	1.7-1.6	0.3-0.9
319/	8.1-9.8	38400-36400	1.7-1.7	0.2-0.8
320/	8.0-9.7	38400-36500	1.8-1.7	0.3-0.8
321/	8.0-9.7	38400-36300	1.8-1.7	0.3-0.8
322/	7.9-9.6	38400-36400	1.8-1.7	0.3-0.8
323/	7.8-9.5	38400-36500	1.8-1.7	0.3-0.8
324/	7.8-9.5	38400-36300	1.8-1.8	0.3-0.9
325/	7.7-9.4	38400-36300	1.8-1.8	0.3-0.9
326/	7.6-9.3	38400-36500	1.8-1.8	0.3-0.8
327/	7.6-9.3	38400-37300	1.8-1.8	0.3-0.7
328/	7.5-9.2	38400-36400	1.9-1.8	0.3-0.9
329/	7.5-9.1	38400-36500	1.9-1.8	0.3-0.8

	Day/Hour	GEOS 1 alt.	ISEE 1 alt.	GSEP	FTSEP
Enter	315/7.8	37500	32800	2.2	1.6
Exit	315/8.3	38300	26600	2.2	2.9
Enter	327/7.2	24700	37800	3.1	3.1
Exit	327/7.6	19000	38400	3.1	4.1

Preliminary Listing of Solar Flares

Solar Flare Data --- The table below contains a listing of X-ray flares, class M1 and higher, for the period 22 Jan. 1979 - 18 Feb. 1979 extracted from "Preliminary Report and Forecast of Solar Geophysical Data", published by SESC Boulder (see IMS NL78-5).

Date	Begin	Max	End	Location	Imp	Reg	Cl
Jan24	B1249	1249	1315	S16 E26	1B	1532	M3
25	0315	0336	0356	S13 E21	-B	1532	M1
	1417	1418	1508	S25 E23	1B	1533	M1
28	1304	1309	1405	N12 W55	-B	1525	M3
	1427	1442	1456	N08 W57	-B	1527	M1
Feb 1	0758	0811	A0827	S20 E55	2F	1548	M2
	0905	0912	0921	Unknown	--	----	M2
5	0635	0644	0702	Unknown	--	----	M2
	2115	2121	2123	S20 E41	1B	1555	M2
7	B0352	0355	0406	S19 E27	-B	1555	M2
	1103	1110	1120	Unknown	--	----	M1
8	0205	0208	A0347	S15 E14	1B	1555	M2
	0644	0713	0751	N17 E20	1B	1556	M1
	1515	1524	1602	N12 W59	1B	1550	M1
9	0750	0757	A0807	N15 W04	1N	1556	M3
	1857	1901	1904	N08 W90	--	1545	M1
10	B0745	0800	0825	N15 W20	-N	1556	M2
11	1225	1233	1349	N13 W32	1B	1556	M3
12	0005	0017	0110	N15 W37	1B	1556	M4
	0548	0555	0600	N15 W38	-N	1556	M1
	0810	0813	0821	Unknown	--	----	M2
	0917	0919	0922	Unknown	--	----	M2
	1435	1442	1449	Unknown	--	----	M1
	1948	1956	2031	S34 E15	1B	1561	M2
13	0445	0452	0505	S36 E14	-B	1561	M2
	1058	1110	1122	Unknown	--	----	M1
	1709	1712	1729	N14 W58	-N	1556	M1
	1849	1849	1903	N14 W59	-N	1556	M1
	1957	1958	2007	N17 E55	-B	1568	M1
14	0106	0109	0113	N17 E82	-N	1574	M1
	1548	1601	1618	N18 W80	1B	1556	M3
15	1713	1715	1725	N16 E49	1B	1574	M1
16	0145	0200	0248	N15 E48	2F	1574	X2
	0314	0317	0319	Unknown	--	----	M2
	0547	0552	0609	Unknown	--	----	M2
	2138	2143	2209	N19 E13	1B	1568	M5
	2217	2222	2256	Unknown	--	----	M1
	2251	2256	2258	Unknown	--	----	M2
	B2307	2307	A2318	N20 E11	-F	1568	M2
17	B0030	0036	0100	N18 E10	1N	1568	M1
	0224	0246	0340	N18 E09	1B	1568	M4
18	B0649	0649	A0656	N16 E13	-B	1574	X1
	1310	1327	1335	Unknown	--	----	M1
	1636	1651	1809	N17 W13	2B	1568	X2
	1947	1856	2044	N16 E14	-B	1574	M4

1978 GEOMAGNETIC ACTIVITY AND SPECIAL INTERVALS --- On pg 6 is the 1978 musical note table of Kp indices. We have added markings to show the times for which NGSDC is preparing common-scale magnetograms and preliminary AE indices.

IMS CALENDAR OF GBR CAMPAIGNS JANUARY 79 - JUNE 79
(As of 26 FEBRUARY 1979)

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

SPITSBERGEN
- Deehr; "Norwegian - Alaskan Spitsbergen Expedition"

KIRUNA (ESRANGE)
- Haerendel; "Porcupine"
- Lundin; "S23 - Substorm GEOS"
- Bryant; "Petrel II"
- Zhulin; "SAMBO II"
- Holmgren; "S-29 Ba GEOS"

ANDOYA (ANDENES)
- Woolliscroft; "F6"
- Woolliscroft; "VLF"

N. SCANDINAVIA
- Siebert, Wedeken, Krenzien; "Geomagnetic Pulsations"
- Ullaland; "SBARMO 79"

CANADA (RED LAKE)
- Smith; "18.1020UE, 18.1021UE, 18.1022UE"
- Hale; "23.009UE, 23.010UE"
- Kelley; "33.003UE"
- Zipf; "33.003UE"

FORT CHURCHILL
- Sharp; "25.041UE"

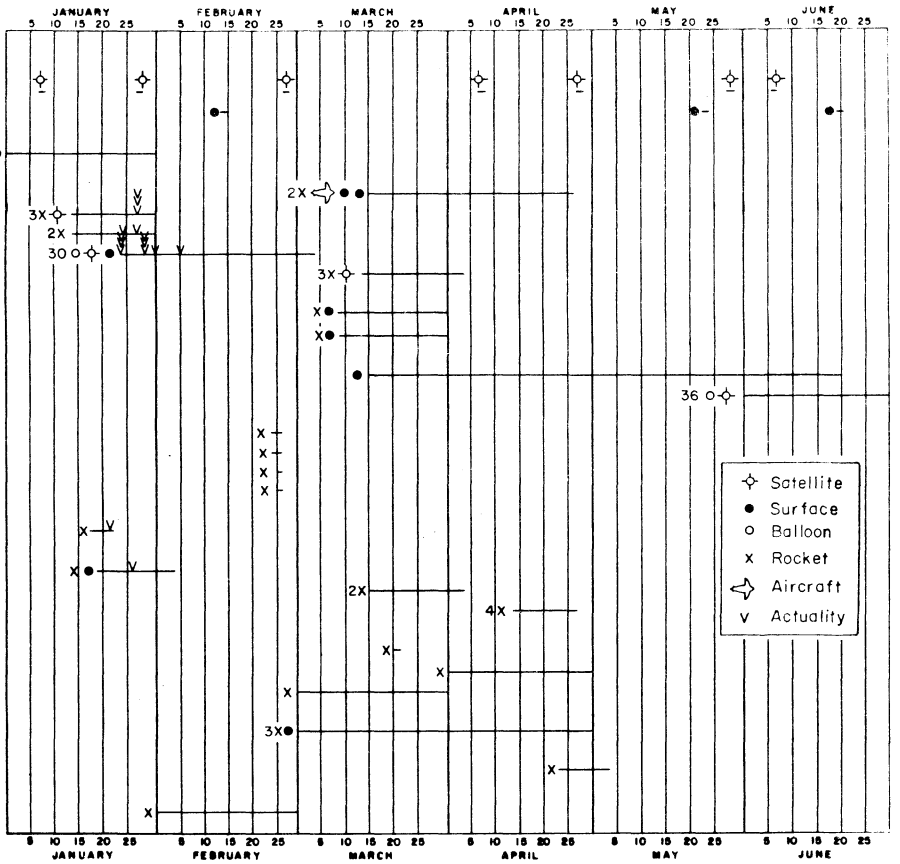
POKER FLAT
- Anderson; "29.013UEX"
- Wescott; "12.1003UE, 12.1004UE"
- Heppner; "18.217-8GEX, 29.011-2GEX"

WHITE SANDS
- MacQueen; "27.033AS/US"
- Rottman; "27.028US"
- Moore; "27.038UEX"

USSR (HEISS IS.)
- Avdyushine; "IPOCAMP 3"

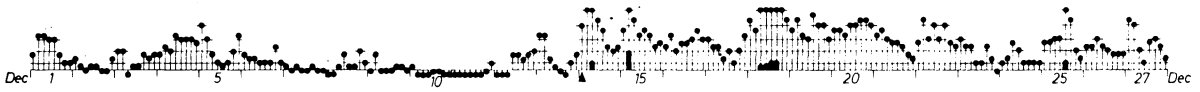
UK (SOUTH UIS.)
- Williams; "[illegible]201H"

INDIA (THUMBA)
- Reddy; Rocket



SOLAR AND GEOMAGNETIC ACTIVITY DECEMBER 1 - JANUARY 23

KP

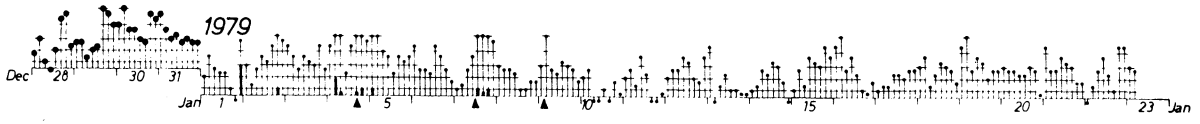


ROTATION #1987

2800 MHZ
FLUX OTTAWA 171 172 169 169 174 169 186 195 206 211 217 239 231 202 199 187 184 167 159 143 143 137 138 143 143 149 170

SS NO. BOULDER 170 293 238 226 225 246 223 274 286 217 278 239 229 197 227 215 221 186 152 151 124 120 132 146 150 165 196

KP



ROTATION #1988

2800 MHZ
FLUX OTTAWA 174 173 170 103 203 208 220 205 200 196 194 207 200 193 185 181 201 214 203 198 179 182 194 204 217 234 232

SS NO. BOULDER 223 233 229 257 257 272 341 229 268 270 294 245 220 272 253 216 209 243 226 171 246 245 328 282 309 319