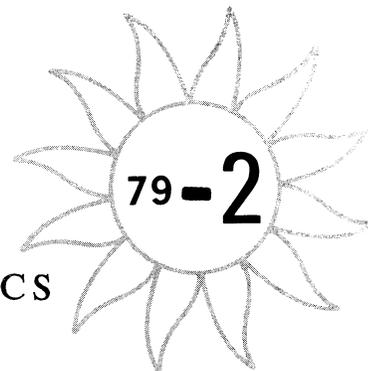


International Council of Scientific Unions  
SCIENTIFIC COMMITTEE  
ON  
SOLAR-TERRESTRIAL PHYSICS



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WORLD DATA CENTER-A FOR STP, D64, NOAA, BOULDER, COLORADO, 80303, USA

## IMS NEWSLETTER

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Last month we mailed IMS NL 79-1 with the first SMY NL, followed a week later by the first MAP NL. We will continue to send these IMS NLS to everyone currently in our IMS Directory with future additions or deletions made upon request (some 100 new names have been added in the last 2 weeks). However, as indicated in the SMY and MAP NLS, a coupon or other note must be returned to this office to be added to the MAP and SMY Directories and to continue receiving those newsletters. Already some 251 orange SMY coupons and some 138 green MAP coupons have been returned.

79/01/30 J.F.A.

IMSCIE Office: Telex 45897 SOLTERWARN BDR  
Telephone: 303-499-1000 x6501 (FTS 323-6501)  
IMS Satellite Situation Center (J. Vette): Telex 89675 NASCOM GBLT  
Telephone: 301-982-2354  
European Information (P. Simon): Telex 200590 CNET OBS B MEUDO  
Telephone: 027-75-30 et 75-70  
USSR Coordination/Information Office (I. Zhulin): Telex 7523 SOLTER SU

PROGRAM PLANS FOR FEBRUARY 1979 - APRIL 1979

SPECIAL IMS HIGH-ALTITUDE SATELLITE PERIODS - 1979

Special IMS High-Altitude Satellite Intervals for Feb - Apr 1979 are given below. Page 4 of NL 78-8 has a detailed listing of all the SSC - selected Special Satellite intervals for July - December 1978 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 first half of 1978 were published in NL 78-2, pg 4.

#3	25 Feb	56/0100 UT	to	26 Feb	57/1200 UT
#4	8 Apr	98/1900 UT	to	10 Apr	100/0900 UT
#5	27 Apr	117/2200 UT	to	29 Apr	119/1600 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.

SATELLITE LAUNCHES:

February 1979; M. Oda; "CORSA B"; see NL 79-1 pg 2

GROUND-BASED, BALLOON AND ROCKET CAMPAIGNS:

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

Jan 14 to Mar 9; A. Bryant; "P215K, P216K"; ESRANGE; ROCKETS (2) - Petrel II - see NL 78-12 pg 3  
 Jan 14 to Mar 9; R. Lundin; "S23 Substorm GEOS"; ESRANGE; ROCKETS (2) - see NL 78-11 pg 2  
 Jan 14 to Mar 9; L.J.C. Woolliscroft; "F6"; ESRANGE; ROCKET - Fulmar - see NL 78-10 pg 3  
 Jan 14 to Mar 9; L.J.C. Woolliscroft; "VLF"; ESRANGE; ROCKET - Petrel II - see NL 78-11 pg 3  
 Jan 18 to Feb 3; J.R. Winkler; "ECHO V"; Poker Flat; ROCKET - Strypi - see NL 78-10 pg 2  
 Jan 18 to Feb 3; H. Anderson; "29.013UEX"; Poker Flat; ROCKET - Terrier Malemute - see NL 78-11 pg 3  
 Jan 22 -----; W. Sharp; "29.041UEX"; Ft Churchill; ROCKET - 25.041UEX - see NL 78-12 pg 3  
 Jan 24 to Mar 4; I. Zhulin; "SAMBO II"; ESRANGE; BALLOONS (25) - see NL 78-11 pg 3  
 Feb 24 to Feb 26; L.G. Smith; "Eclipse"; Red Lake; ROCKETS (3) - Nike/Tomahawks - see NL 78-12 pg 2  
 Feb 24 to Feb 26; L.C. Hale; "Eclipse"; Red Lake; ROCKETS (2) - Astrobee D - see NL 78-12 pg 3  
 Feb 26 ; M. Kelley; "Eclipse"; Red Lake; ROCKET - Taurus Orion - see NL 78-12 pg 2  
 Feb 26 ; E.C. Zipf; "Eclipse"; Red Lake; ROCKET - Taurus Orion - see NL 78-12 pg 2  
 Feb 26 -----; G. Rottman; "27.028US"; White Sands; ROCKET - see NL 78-12 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 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 25; G. Haerendel; "Porcupine III & IV"; ESRANGE; ROCKETS (2) - Aries - see NL 78-9 pg 3  
 Mar 16 to Apr 3; T.N. Davis; "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 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 Campaigns-----

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

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

Jan 14 to Feb 8; R. Pellinen; "ABC II"; N. Europe; Surface - see NL 79-1 pg 9

REGIONAL IMS SAT/GBR PROGRAM DETAILS, FEBRUARY - APRIL

Program details for many brief listings given above coming at the period of solar maximum may enhance that interest.

USA SATELLITES

MAGSAT -- Although this satellite is not due for launch until later this year the following information should be of interest to many readers. R. A. Langel, Magsat Project Scientist, Geophysics Branch, GSFC, has sent news of this new, probably post IMS satellite program. The timing of launch (September 1979) puts it outside the major IMS effort and orbit restriction to near-twilight local times does not sample many regions of interest to magnetospheric physicists, yet Magsat will obtain the most accurate near-earth, vector, magnetic field data ever available. As such it will be of interest to many magnetospheric researchers. Also, Mission objectives are; 1) Obtain an accurate, up-to-date quantitative description of the earth's main magnetic field. Accuracy goals are 6 gamma root sum square (rss) in each component at the satellite altitude and 20 gamma in each component at the earth's surface in its representation of the field from the earth's core, at the epoch of measurement. 2) Provide data and a worldwide magnetic field model suitable for the USGS to update and refine magnetic charts. 3) Compile global scalar and vector crustal magnetic anomaly maps. Accuracy goals are 3 gamma rss in magnitude and 6 gamma rss in each component. The spatial resolution goal for the anomaly map is 300 km. 4) Interpret the crustal anomaly map, in conjunction with correlative data, in terms of

geologic/geophysical models of the earth's crust, thus providing information useful for assessment of natural resources and the determination of future exploration strategy.

A preprint, "Magsat; A Satellite for Measuring Near Earth Magnetic Fields", by Langel, Regan and Murphy, and Magsat Information Bulletins are available from the Missions Utilization Office, Code 902, NASA-GSFC, Greenbelt, MD 20771, USA.

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**ROCKETS**

**ESRANGE**

**F6** --- Bad weather prevented launch of this Fulmar F6 rocket which should have been launched with SL 1424 as part of the U.K. Andoya Campaign (see NL 78-10 pg 3). It is now planned to launch F6 in conjunction with the current Petrel campaigns at ESRANGE, P208K "VLF", Sheffield University (NL 78-1 pg3), and P215K, P216K, Appleton Laboratories (NL78-12 pg3).

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**SOUTH UIST**

**P201H** --- E. R. Williams, University College of Wales, Aberystwyth, is the project scientist for this Petrel rocket scheduled for launching in April at the South Uist range. Measurements will include electron density, Lyman alpha, and neutral gas temperature.

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**USSR**

**IPOCAMP 3** --- Three payloads will be launched on Soviet rocket MR 12 during the IPOCAMP 3 campaign at Heiss Island, March - April 1979. Project scientists are S. I. Avdyushine, Committee of the USSR State on Hydrometeorology and Control of Natural Environment and C. Renard, Lab. Recherches Universitaires, Bourges, France.

The French contribution will be measurement of electric field in the ionosphere and of electron density and fluctuations by a Renard probe and a Langmuir probe. The Russian contribution is not known at this time.

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**ACTUALITIES**

**SATELLITE**

**CANADA**

**ISIS-1,2, Alouette** --- D. B. Muldrew, Communications Research Centre, Canada, sent material consisting of reports to the 34th ISIS Working Group meeting on 27 September 1978 to the Canadian IMS Coordinator. Parts of a report by T. R. Hartz are of special interest to IMS participants. Both ISIS-1 and 2 are still "healthy" satellites, the power systems capable of at least 3 hours per day of satellite operations. While some of the facilities and experiments have developed problems, or failed, the sounders are still operational, including the two optical experiments on ISIS-2 and most of the energetic particle detectors on both satellites. Subject to budget availability and demand for the data, CRC intends to operate both during 1979, also the ground station at Ottawa and probably Resolute for at least part of the year. CRC also intends to continue the ionogram data processing facilities at Ottawa beyond the operational life of the satellites. Hartz emphasizes that he can see no basis for contemplating ISIS operations beyond 1979.

The covering letter from Muldrew points out that the data from Alouette and ISIS satellites are available from the World Data Center. Data is collected now only on a special request basis, anyone interested in a special study should contact someone involved in the ISIS program. Ionogram data from these special studies are kept in Ottawa and the Data Depository, Goddard Space Flight Center, Greenbelt, Maryland, USA, 20771.

In a letter dated September 1978, J. R. Boulding reported on satellite operations. ISIS-2 was

operated up to 4.5 hours daily during the past year. Power systems are fully operational, capable of operating the spacecraft up to 5 hours per day; telemetry is operational except for the on-board tape recorder, on-board clock (intermittent readout), and the 136.41 MHz tracking beacon is on continuously. The command system is operational but there are frequent periods of receiver desensitization due to high-level signals, and stored command capability is lost because of clock problems. Attitude sensing and control is fully operational but solar aspect sensor identification bit became intermittent in Nov. 1976.

All experiments are operational with the exception of the Cylindrical Electrostatic Probe, Soft Particle Spectrometer and Ion Mass Spectrometer, whose low mass channel experienced a decrease in sensitivity in early 1974. Solid state electron detectors for >40, >60, >90 and >120keV remain operational.

ISIS-1 was operated up to 4 hours per day during the past year. ISIS-1 is now in its tenth year of operation and there has been no change in its status during the past year.

During the past year about 25 new ISIS studies were defined. The scheduling of ISIS-1 and ISIS-2 has continued to be in response to these studies and to data acquisition requirements of the other organizations which are involved with ionospheric studies. Most of the data acquisition requirements of the ISIS experimenters were met, but because of the conflicting requirements and heavy demands, not all of the requirements were met.

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**USSR**

**PROGNOZ 6** --- The IMSCIE office has received a table of bow shock, magnetopause and plasmopause crossings sent by Zhenya Kharin, WDC-B, obtained from Prognoz 6 data by Prof. K. I. Gringauz and his colleagues, covering the period 22 September 1977 to 10 January 1978. However, J. Vette points out that as the Satellite Situation Center does not have orbit elements for Prognoz 6, these crossing times do not provide any physical information, they just show the time that Prognoz 6 is in a certain region of near-earth space. Since the orbit elements are necessary to utilize this information properly, the Satellite Situation Center looks forward to receiving the elements so that the comparison between the model boundaries and the Prognoz 6 observations can be presented.

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**USA**

**SOLRAD-HI** --- The Department of the Navy has announced that no further SOLRAD-HI replacements will be launched. Since the early 1960's the Navy has supported a solar monitoring (SOLRAD-HI) satellite program. Over the years ten satellites have been successfully orbited providing a wide spectrum of unique, timely, and accurate solar data. These data have been made available to researchers.

One of the two presently orbiting satellites has failed and replacement satellites are not currently planned. The currently operating SOLRAD-HI satellite is expected to provide solar data through FY 1979 and beyond. Data will be available to all users during FY 79 through the present system. Any requirement for acquisition of data beyond the FY 79 time period should be addressed to the attention of the Naval Research Laboratory.

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**ROCKETS**

**ANDOYA - ANDENNES**

**Ferdinand 40, 41** --- Ferdinand 40 and 41 (see NL 78-11 pg 2 for details), were successfully launched simultaneously on Nov 27 at 1855.35 UT through a quiet arc which broke up into several bands during the flight. Project scientist for these two Nike - Tomahawk rockets was B. N. Maehlung, NDRE.

## MEETINGS and WORKSHOPS

THIRD WORKSHOP ON IMS OBSERVATIONS IN NORTHERN EUROPE --- The workshop will be the third in the series which started at Hankasalmi 1977 and continued in Bad Lauterberg 1978. The aim will be to compare and interpret data from ground based, balloon, rocket and satellite experiments. A few events will be selected for study, in particular events from the new ABC (Auroral Breakup Campaign) January 14 - February 7, 1979, but possibly also some other event. Some follow-up of the studies presented at the two earlier workshops is also anticipated. Papers will be accepted if they deal with the events selected. In general they should make use of data from more than one type of instrumentation. Emphasis should be on the interpretation in terms of physical models.

The format of the workshop will be quite informal with ample time for discussions. We expect about 50 participants. There will be a few invited papers. We plan to appoint a discussion leader for each event studied. The oral presentations of the contributed papers should be short and concise and supported by posters showing the data and summarizing the interpretation. The site of the meeting, Skokloster Wardshus med Hotell, is an inn located next to the Skokloster castle in the neighbourhood of Uppsala and 45 km from the Stockholm/Arlanda international airport. Charter bus transportation from the airport will be arranged. The meeting starts with an evening session on Monday September 3 and ends after the morning session on Friday, September 7. The price for full board and lodging will be 4 x Sw.crs. 235:- for accommodation in single room with shower or bath and 4 x Sw.crs. 215:- for double room. The registration fee will not exceed Sw.crs. 200:-.

This first announcement will be followed by a second circular with further details on the program and registration forms. You are invited to communicate your suggestions for the program, including your choice of events to be studied, to the program committee.

Program committee; Rolf Bostrom (chairman) UIO, Walter Heikkila UTU, Risto Pellinen FMI, Ray Greenwald MPAE, Arne Pederson ESTEC, O. M. Raspopov PGI.

Address of chairman; Uppsala Ionospheric Observatory, S-755 90 Uppsala, Sweden. Tel. 46-18-300020, telex; 760 36 UJONOS S

Second Workshop on IMS Observations in Northern Europe --- This report was sent by K. A. Greenwald. From 23-27 October 1978 the second workshop on IMS observations in northern Europe was held at Bad Lauterberg, West Germany. The meeting was attended by approximately 60 scientists from Denmark, Finland, Norway, Sweden, France, Germany, Great Britain, the Soviet Union and the USA. The principal periods that were studied at this workshop were the 2nd December 1977 IMS interval and the 2nd March 1978 Auroral Breakup interval. In addition there was an invited review paper by J. A. Fejer in which he surveyed some of the current problems in ionospheric - magnetospheric physics, a survey of the experiments on GEOS I along with some of the results, and sessions on VLF, micropulsations, current systems and related phenomena. A special meeting was held at which future directions for the CCOG (Committee on Coordinated Observations with GEOS) were discussed.

At this meeting it was announced that R. Pellinen would become the new committee chairman and W. Stoffregen was formally thanked for his previous efforts as chairman.

The highpoints of the 2nd December study were (1) the simultaneous observation around 0400 UT of red aurora in Finland and 180 degree pitch angle energetic particle fluxes at GEOS, (2) the observed passage of the Harang discontinuity across the Scandinavian sector at 1630 UT, and (3) the large

equatorward expansion of the oval at 1907 UT followed by auroral breakups at 2106 and 2141 UT. It is hoped that the investigations and discussions that took place at the Bad Lauterberg workshop will serve as valuable input for future studies on the 2nd December period.

The auroral breakup event of 2nd March 1978 was studied in great detail. R. Pellinen, who acted as chairman of this session, had collected all the ABC data available and merged it together in a review paper that was distributed to all participants. One of the aims of the review was to model a prototype on how to collect and combine data sets that are being obtained during the IMS period. The review paper provided the basis for an organised treatment of the data. For the March 2nd event, the optical breakup appeared to occur slightly to the west of Kiruna at 22.22 UT. The breakup was initiated on the equatorward edge of a southward moving Harang discontinuity. At the time of the auroral brightening a westward electrojet intensified near the activated arc as it expanded northward.

Contributed papers covered a large number of topics. One of the most important features of these papers was that they showed that much of northern European instrumentation was being used in comparative and cooperative studies. This instrumentation includes the various Scandinavian and Soviet magnetometers and all-sky camera networks, the STARE radars, Soviet radars, the riometer network, the Tromso partial reflection experiment, and GEOS. Two examples of these cooperative studies are the simultaneous observation of Pc5 micropulsations with the electric field experiment on GEOS I, the STARE auroral radar system, and an IMS pulsation magnetometer network, and the observation of eastward surging auroral phenomena with all-sky cameras in Finland and the Soviet Union, and the STARE and Soviet auroral cameras.

On the whole the meeting was successful and an attempt will be made to publish some of the papers that were presented in a special issue of the Journal of Geophysics. Some participants felt that the meeting should have been devoted solely to workshop type events and at the next European Workshop at Uppsala, Sweden, in September 1979 an attempt will be made to go in this direction.

Canadian Participation in workshops --- B. W. Currie, Canadian IMS Coordinator wrote the following article for the November 1978 issue of the Canadian IMS Newsletter: The value of holding workshops where each IMS participant can bring his data pertaining to significant IMS events for discussion as to their physical significance has been approved in principle by the DASP meeting at Edmonton, a subsequent meeting of the NRC Associate Committee on Space Science, and at the spring meeting of the Canadian National Committee for the IUGG. A letter from Gilles Julien, Executive Director of NSERC, indicated a favourable reception of the proposal for IMS workshops. However, as we know from experience, favourable reception of a proposal does not necessarily lead to funding. From a telephone conversation with Dr. Rostoker, it seemed to us that some positive action by Canadian IMS participants is needed, each outlining his particular needs, and ideas about the bringing together groups of IMS participants, each group with a common interest in one or more important IMS event.

Originally Dr. Rostoker suggested two workshops, presumably in Canada, but important ones are occurring in the USA and it is at these where significant spacecraft data are likely to be included. Unquestionably, many numerous worthwhile papers will be published by Canadian participants using ground-based data. But the IMS was planned to be an "active" rather than a "passive" enterprise, - a combination of ground-based observations and coincident spacecraft observations on the same magnetic field lines so that the

physical processes taking place in the magnetosphere could be resolved.

## GEOS-2 DAILY SUMMARIES.

Because of current travel costs and economy actions by the Canadian Government, it is unlikely that most university participants will have grant funds sufficient for much travel. Incremental funding will have to be sought in much the same way as was done for university IMS projects. Action taken by university IMS participants might also lead to Government Establishments providing some funds for their IMS participants.

As Canadian IMS coordinator, I'm willing to take some action re funding of workshops. To do so I will need to be specific about details, including estimated costs. Your suggestions about workshops in which you are interested would be appreciated. Several occur to me - the Cape Parry campaigns, the NRC Herzberg Institute spectral campaigns combined with magnetic data from the geomagnetic lines, the Watanabe-Oguti-Paulson studies on micropulsations, and so on. Advertised, they would probably attract USA participants. There have been a number of significant solar events (the flare late in April 1978 for example). I anticipate that these will likely lead to USA workshops in which some of you would like to participate.

Again may I emphasise that I need suggestions and some specific details about possible workshops if I am to prepare a submission for financial support. I would like to hear from those who do not anticipate a need for a workshop to make a complete analyses of their data, as well as those who do.

### CDAW AT THE DAWOC

(continued from NL 79-1 pg 6)

As explained by Jim Vette, there are five phases to the CDaw concept with the present workshop being only phase-3. First is PLANNING, then DATA ENTRY and VERIFICATION, the INITIAL WORKSHOP, a TIME FOR THINKING, and finally smaller, FOLLOW-ON WORKSHOPS. As a result of decisions reached at the closing CDaw-1.0 session, all participants will receive microfilm copies of all data frames prepared and cataloged during the week. Further, participants may use up to 150 terminal hours (about three times what was used in the workshop) to request further multi-parameter data displays to be prepared and mailed to them. Copies of each request will go the scientist providing the data with a list of figures sent to the requestor. It is expected that appropriate courtesy about corresponding with those responsible for contributing the data will be exercised by everyone. Finally, the group voted to "open" the common data base to general access according to the usual rules applied to data bases collected in the NSSDC archives. Also, other data bases which might be useful to complete the collection for the times studied will be added as they are made available.

Extensive written material and diagrams illustrating the CDaw concept in general and the specific realization in CDaw-1.0 are available from J. Vette (see letterhead this NL for address) and/or may be copied at the IMSCIE Office. Plans for subsequent smaller workshop groups are under discussion (several participants were vocally in favor of such a return visit). Also, discussions about a CDaw-2.0 are progressing under the coordination of Bob Manka. This planning will be described in more detail next month.

The IMS community is indebted to J. Vette and his entire staff who worked so very hard to bring about this CDaw-1.0. Many names could be mentioned of SSC staff who worked so diligently to cope with the variety of data problems submitted, with difficult requests for more and more sophisticated displays, and with occasional equipment failures. We understand that Mike Teague directed the SSC staff (those seen and those tucked-away operating communication consoles, video terminals, the computer, etc.) and trust that he and Jim will make known to all our well-earned compliments.

On pages 6 and 7 of this NL are reproduced copies of the GEOS-2 daily summary plots, displaying output from the wave and field experiments on one page and from the particle experiments on the other. A previous example of such daily summaries for GEOS-1 was shown in NL 77-10, on pages 8 and 9, and commented on page 7. The data displayed cover 24 hours from November 11, 1978, at 1200 UT, to November 12, 1978, at 1200 UT. The most noticeable difference is the 24 hours coverage by GEOS-2, whose orbit is the correct one. The particular time period was selected to give a feeling of both quiet time (as for November 11, 1200 UT to around 1800 UT), and disturbed (as from November 11, 1800 UT on). The daily summaries are available for GEOS-2 from August 15, 1978, onwards.

The description of the summaries came together with a comment from K. Knott, GEOS Project Scientist, that they should not be taken as a "ready to write paper" output from GEOS. They only give status information on the environmental conditions encountered along the geostationary orbit. Bilateral cooperation should be established between anybody interested in the data and the relevant experimenter. The data are plotted on a time scale of 1 cm/hour.

The wave-field data sheet contains:

1. V (local vertical component of the magnetic field);
2. D (component perpendicular to V and the spin axis of the earth, towards east);
3. H (completing the VDH triad);
4. The standard deviation of the total field;
5. The DC electric field direction with respect to the satellite sun line;
6. Total ULF magnetic RMS power in the plane perpendicular to the S/C spin axis below 5 Hz and parallel to it below 1.5 Hz;
7. The RMS power (0-80 db) in the magnetic domain in the frequency bands 2.5-5.0 kHz, 1.2-2.5 kHz, 0.6-1.2 kHz and 0.2-0.6 kHz;
8. The RMS power (0-80 db) in the electric domain in the frequency bands 5.0-10.0 kHz, 2.5-5.0 kHz, 1.2-2.5 kHz, 0.6-1.2 kHz and 0.2-0.6 kHz;
9. The plasma density as derived from the plasma resonance sounder.

The particle data sheet contains:

1. Electron count rates in the energy range 50 to 500 eV obtained by integrating the outputs from two electrostatic analysers, one viewing parallel and the other close to perpendicular to the spin axis;
2. Average counts at the hydrogen mass from the ion mass spectrometer;
3. Energy flux of electrons in the 0.5 to 20 keV range parallel to the S/C spin axis;
4. Electron flux in the energy range 0.5 to 20 keV parallel to the spin axis;
5. Electron count rates in the energy range 20 to 250 keV, one parallel and one perpendicular to the spin axis;
6. Proton count rates in the energy range 20 keV to 3.3 MeV, one parallel and one perpendicular to the spin axis.

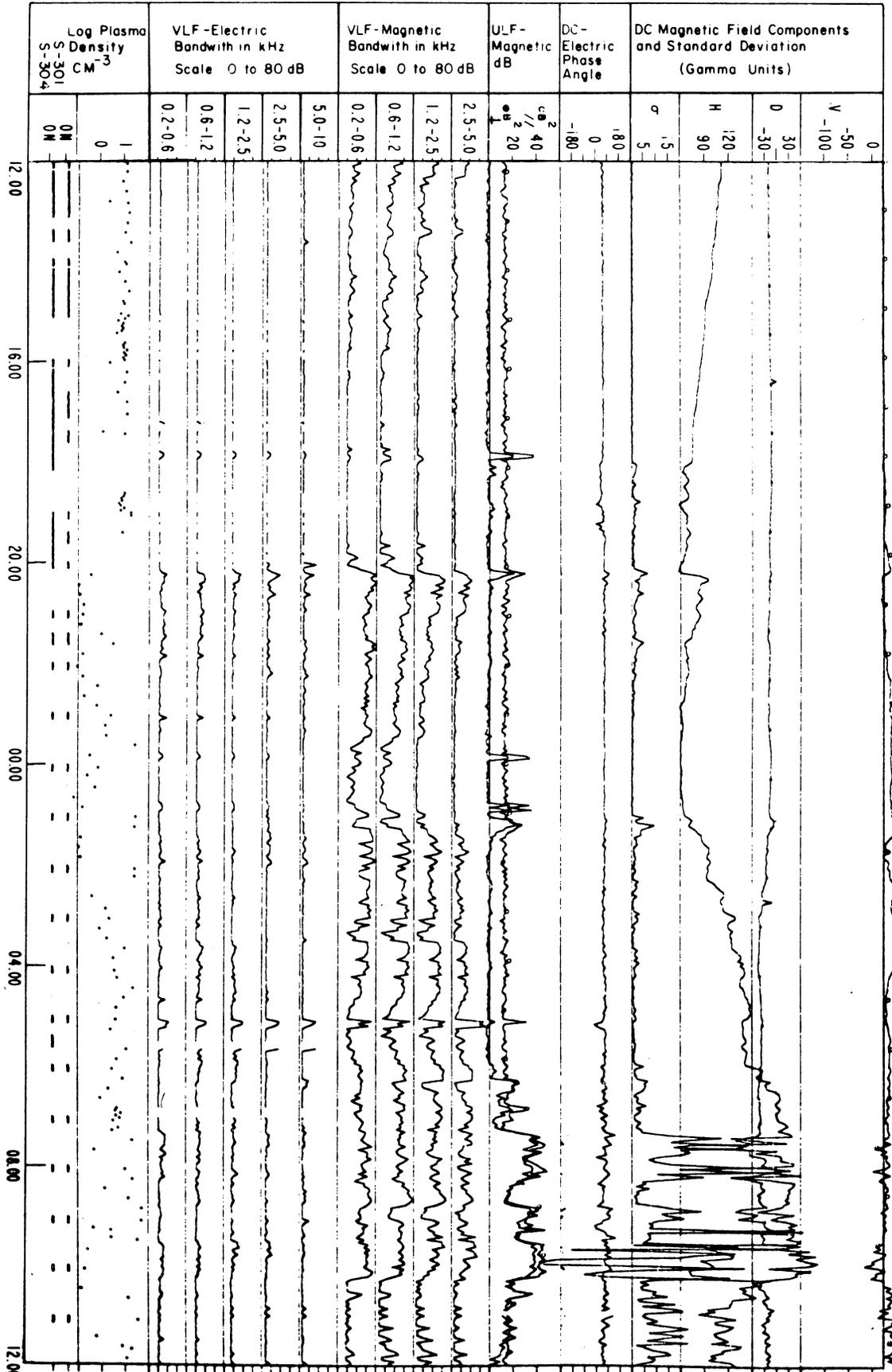
Extreme care must be exercised in interpreting these data: they are raw data and corrections for offsets, background and calibrations should be applied. Since August 5, 1978, an anomaly has developed in conjunction with the solar array, which causes periodic variations of the zero volt reference of all the experiments. As a consequence of this the DC electric field plot in line 5. of the wave-field sheet should be disregarded until further notice and the AC electric field data in line 8. are not available. The mass spectrometer data in line 2. of the particle data sheet will sometimes have a sawtooth appearance due to mode changes within the experiment from thermal to survey; thermal mode fluxes are generally higher than survey mode, so that the upper envelope of the trace will be proportional to the average flux in the 0 to 110 eV range, while the lower envelope will be proportional to the average flux in the 25 eV to 16.4 keV range.

11.11.78

GEOS WAVE/FIELD DATA SUMMARY.

NOT FOR PUBLICATION

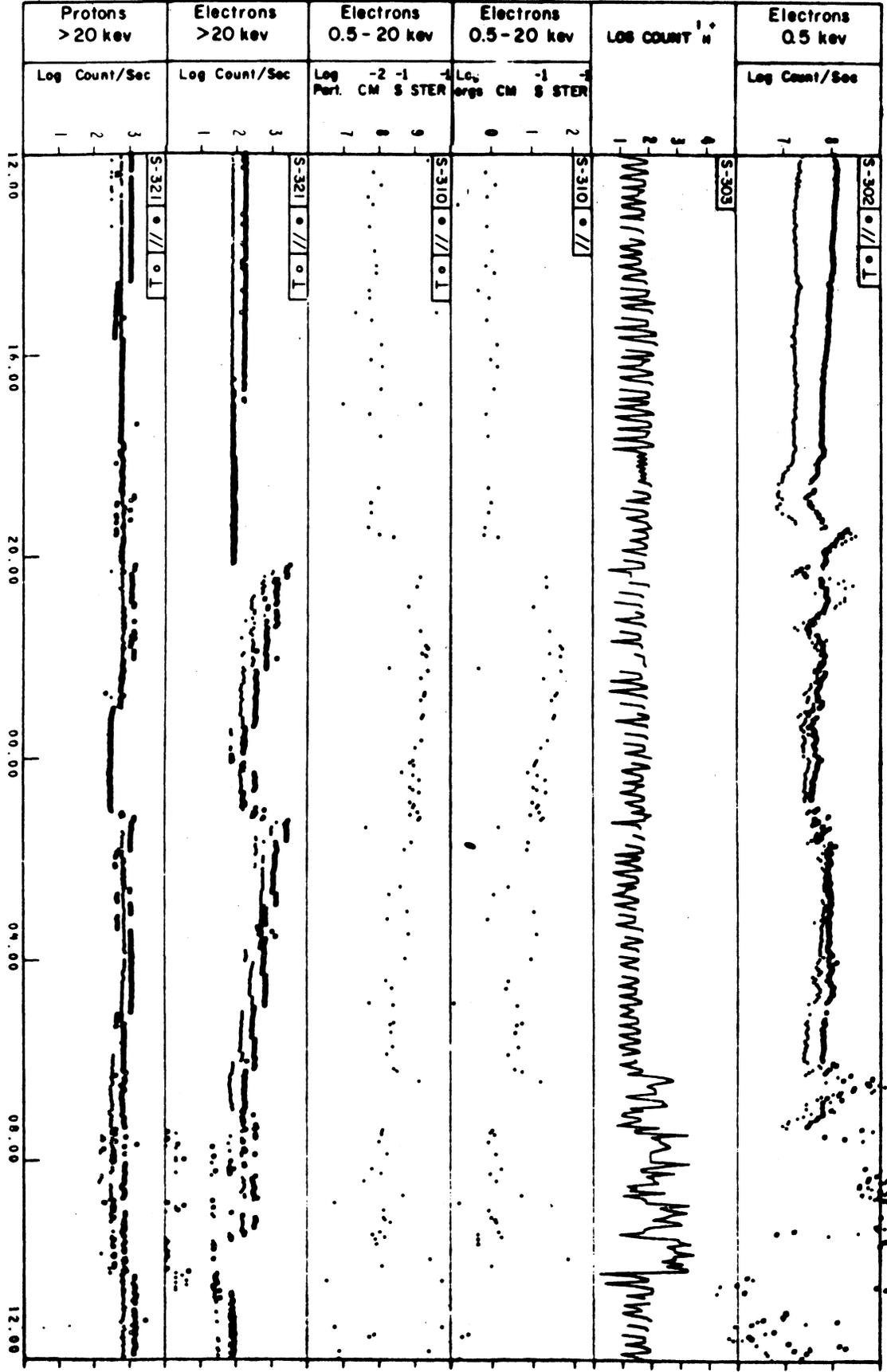
12.11.78



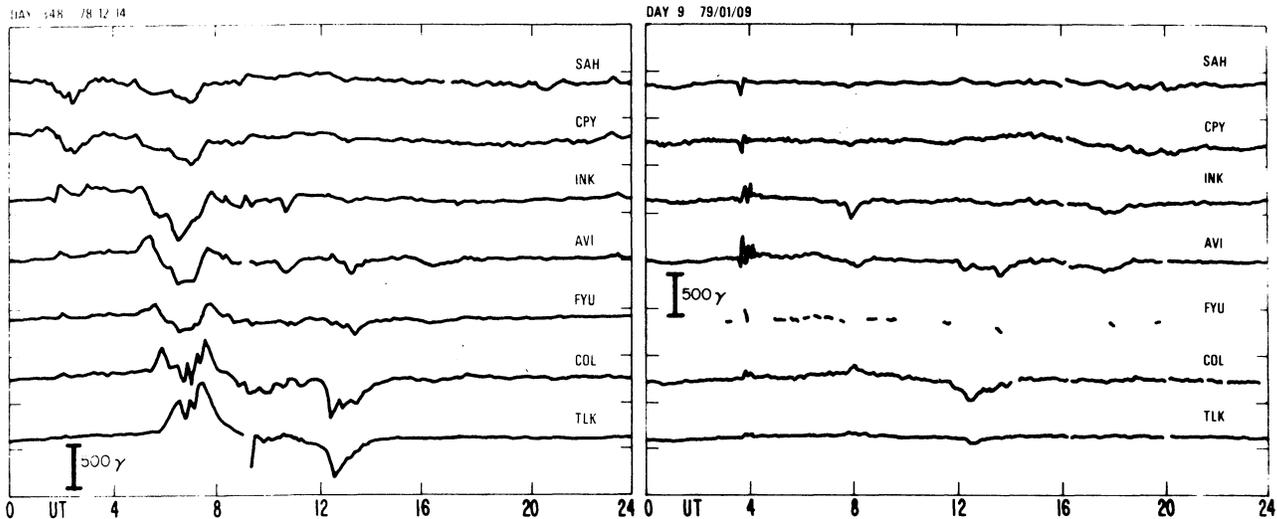
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GEOS PARTICLE DATA

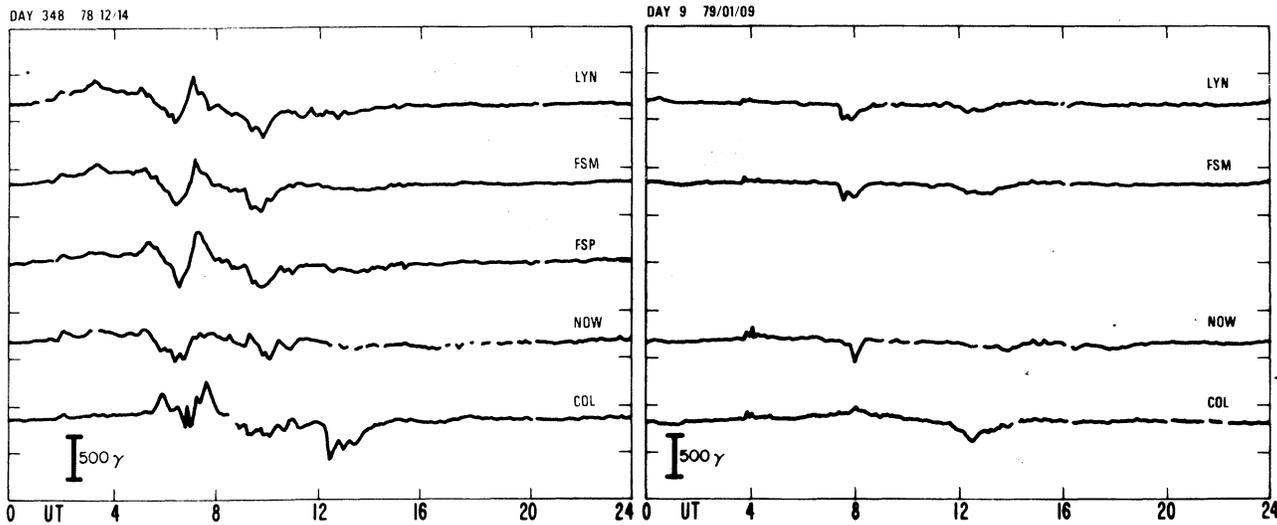
NOT FOR PUBLICATION



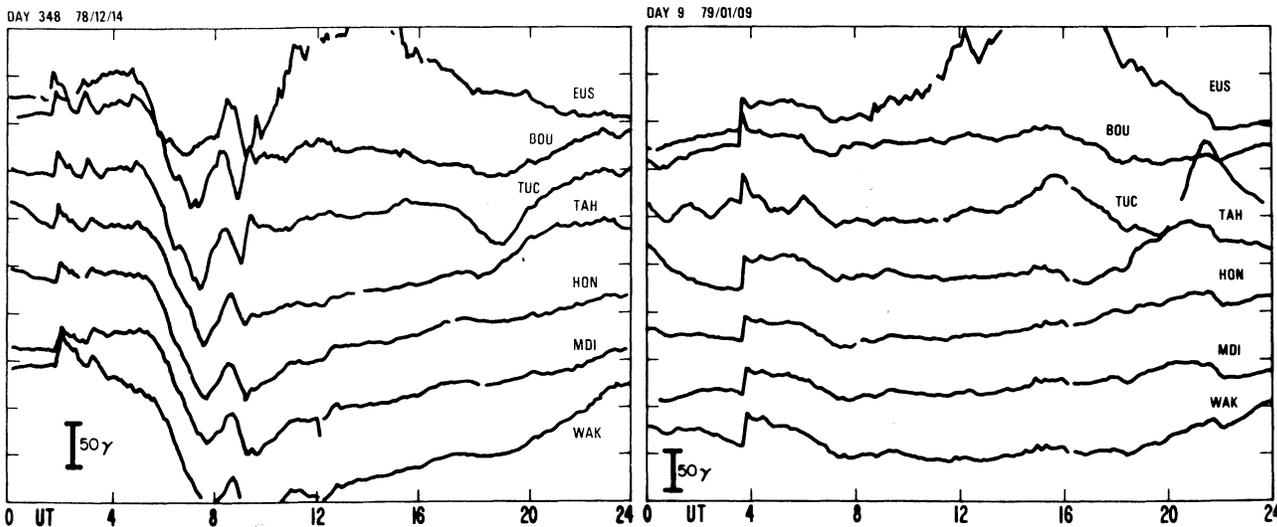
### ALASKA CHAIN H-TRACE



### EAST-WEST CHAIN X-TRACE



### MIDLATITUDE CHAIN H-TRACE



**STACKED MAGNETOGRAMS FROM IMS NETWORK**

To the left (pg. 8) you will find stacked plots of 5-min average data from jointly operated Canadian and US IMS magnetometers. These data show two events which may be of interest for further study.

The first is for an active period during day 348 of 1978 (14 December 1978). In IMS NL 79-1 (pg 9) we published a diagram of solar flare X-ray emissions sensed by instruments on the GOES-2 geostationary satellite of NOAA. This flare was classified optically as a Two Bright (2B) and by X-ray emission as X2 (see Preliminary Listing of Solar Flares, just above the X-ray figure in NL 79-1). The flare was from an active region located at solar coordinates S19, W73. Because of the earlier X1 flare near the E. limb (79/12/11; 1942-2018 UT; S17, E14) and the favorable location of the W-limb flare to produce geoeffective emissions, notice of the flares was passed by J. Joselyn (SESC staff) to M. Dryer (S/TIP Coordinator). Murray then notified Pioneer-Venus satellite experimenters D. Intrilligator and J. Wolf about the event. A shock arrival was predicted for the P-V satellite at Venus and was detected. Apparently the Venusian ionopause was pushed closer to the surface by the shock. Based on these observations, a shock arrival time was forecast for earth together with a probable amplitude of mid-latitude H variation. Considering the uncertainties involved, these forecasts were remarkably successful. F. Scarf informs IMSCIE Office that a special issue of SCIENCE (now in press) will be devoted to these Pioneer-Venus observations. In some 60 pages will be featured reports from the NASA Goddard temperature, UCLA magnetometer, Goddard Langmuir probe, and TRW E-field detectors. All show some effect on the Venusian upper atmosphere and ionosphere from this shock arrival.

IMSCIE Office staff notified participants at the NASA Goddard CDAW Workshop of the flare occurrence and we were interested to note the coincidence of one IMS workshop with an event that may lead to another. Routine notification of such events can be arranged through the Space Environment Services Center, NOAA/ERL, Boulder, Colorado 80303, USA.

The second event is shown by the stacked magnetograms on the right of pg. 8. On day 9 of 1979 (9 January 1979) at about 0340 UT a mid-latitude H field increase was recorded that was similar to the shock event of 14 December 1978. However, no main phase depression seems to have followed this compression event and after some large oscillations in the auroral zone at the time of the arrival, there seemed to be little activity in the auroral zone (even considering the small substorm centered around 0800 UT).

**CORRIGENDA**

In IMS 79-12, pg 7, we may have made an "earth-shaking" mistake. The map shown there of "Geophysical Institute Field Sites in Alaska" depicts many stations not associated with the IMS; in particular, it shows many seismological recording sites. Also, it omits perhaps their most important site, the POKER FLAT ROCKET RANGE just outside College, Alaska. Earlier IMS NL issues (77-1, pgs 5-7; 77-6, pg 6; and 78-11, pg 5) give descriptions and/or show maps illustrating the locations of Alaskan IMS sites.

**CALL FOR INFORMATION ABOUT SMY SATELLITES**

P. Simon, SMY SC Secretary, has asked that we share the following call for information from satellite experimenters who are prospective SMY participants.

While SMY Coordinators are in contact with the Solar Maximum Mission (SMM) team, they expect that other space experimenters will be interested in contributing to the SMY. Could any such persons contact P. Simon, SMY Secretary, Observatoire, 92190 Meudon, France, and confirm or correct the description of their experiment as published in the several IMS satellite reports or elsewhere.

**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 18 Dec. 1978 - 21 Jan. 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
Dec18	2348	2350	0004	S20 W00	1N	1453	M3
21	1646	1650	1742	N19 W71	1B	1452	M1
22	1627	1642	1655	Unknown	--	----	M1
23	2219	2222	2225	N25 W48	-F	1457	M1
27	1627	1637	1800	S13 E39	3B	1475	X1
30	0549	0607	0620	S20 E57	2B	1488	M3
Jan 4	02149	2152	A2255	S12 W01	-N	1487	M1
5	1520	1525	1534	Unknown	--	----	M1
	1826	1851	2001	S35 W19	1N	1484	M1
8	2222	2245	2304	N17 E47	1B	1495	M3
11	0740	0744	0749	S17 W22	1B	1492	M3
	1114	1129	1134	Unknown	--	----	M1
	1234	1237	1244	S18 W28	SB	1492	M1
12	0017	0029	0039	S18 W32	1N	1492	M2
15	0703	0711	0713	N13 W02	SN	1502	M1
	0713	0722	0730	N15 W33	1N	1502	M3
	1053	1109	1120	Unknown	--	----	M3
	1334	1340	1342	S17 W79	2B	1492	M2
	2004	2012	2020	N14 W40	1B	1502	M1
	2236	2241	2243	Unknown	--	----	M1
16	0731	0742	0749	N15 W47	1N	1502	M2
	1035	1039	1041	Unknown	--	----	M2
18	0854	0900	0902	Unknown	--	----	M1
19	0433	0438	0442	S23 W05	SF	1523	M1
	2232	2254	2308	N18 E18	1B	1519	M1
21	1310	1315	1321	S22 W85	SB	1507	M6

**DMSP DATA**

Paul Mizera, Aerospace Corporation, has asked the IMSCIE Office to share the following information: date (day of January) and times (UT) of DMSP-5D-F2 passages near the flux-tube connecting to the ionosphere at 100 Km above Chatanika, respectively for dusk and dawn at Chatanika, are given below. Special optical, auroral X-ray and electron precipitation data coverage will be available around these times. Anyone interested may contact him for details. 18, 07:16, 17:11; 19, 08:39, 16:54; 20, 08:22, 16:37; 21, 08:04, 16:20; 22, 07:47, 17:43; 23, 07:30, 17:25; 24, 07:13, 17:08; 25, 06:55, 16:51; 26, 08:18, 16:33; 27, 08:01, 16:16; 28, 07:44, 17:39; 29, 07:26, 17:22; 30, 07:09, 17:04; 31, 08:32, 16:47.

**PUBLICATIONS**

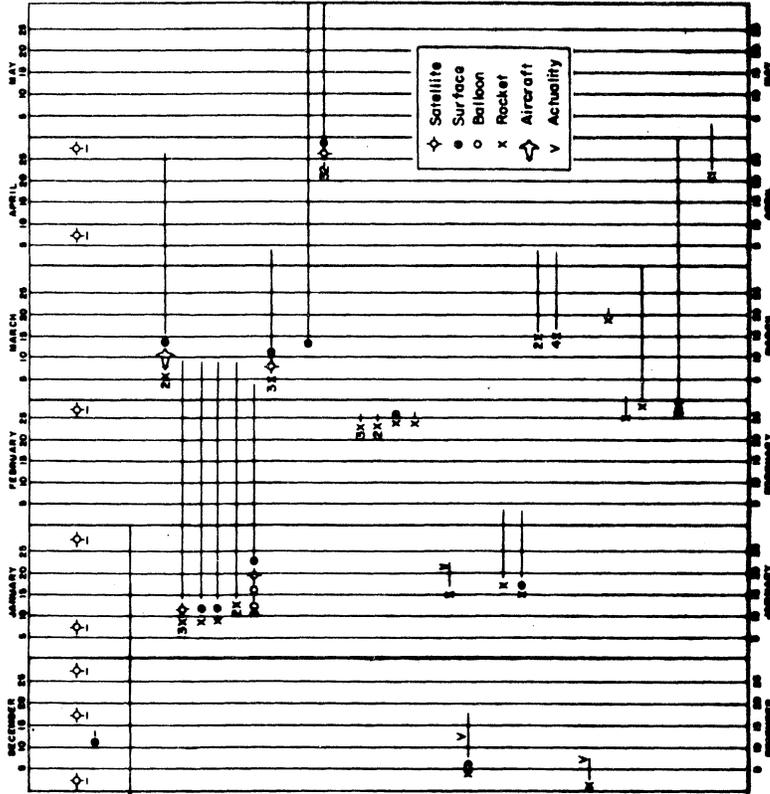
CCOG Handbook for the IMS-GEOS (Period 1976-79), Circular Letter No. May 1978 complements and updates the CCOG Handbook (NL 77-5). It contains an updated (April 78) listing of ground based instruments in operation during the IMS-GEOS period, maps of magnetometer arrays (both DC and pulsation) and riometer arrays, all with reference to the European sector. Also a listing of updates on planned (or by now performed) cooperative studies between GBR experiments and GEOS.

Among other publications received is the NSSDC Data Listing (NSSDC/WDC-A-R&S 78-06) which provides a convenient reference to space science data available from NSSDC. It is in abbreviated form compared to the data catalogs normally published by NSSDC/WDC-A-R&S and is organized by NSSDC spacecraft common name, launch date and ID, and lists experiments, principal investigators, data set name and form code, quantity and time span of data.

NSSDC/WDC-A-R&S, 78-04 August 1978 is a Report on Active and Planned Spacecraft Experiments, and provides information on spacecraft and experiments active sometime during the period July 1, 1977 to June 30, 1978, as well as those planned missions that have progressed beyond the the experiment or investigation selection stage. The document provides brief description for each spacecraft and experiment as well as the current status.

IMS CALENDAR OF GBR CAMPAIGNS DECEMBER 78 - MAY 79  
(As of 29 JANUARY 1979)

WORLD-WIDE - - - - - Special SSC-selected satellite periods  
 IISN (Bauer et al)  
 SPITSBERGEN - - - - - Deehr; "Norwegian - Alaskan Spitsbergen Expedition"  
 KIRUNA (ESRANGE) - - - - - Haerndel; "Porcupine"  
 Lunain; "S23 - Substorm GEOS"  
 Woolliscroft; "F6"  
 Bryant; "Petrel II"  
 Zhulin; "SAMBO II"  
 Holmgren; "S-29 Ba GEOS"  
 N. SCANDINAVIA - - - - - Siebert, Wedeken, Krenzien; "Geomagnetic Pulsations"  
 Ullaland; "SBARMO"  
 CANADA (RED LAKE) - - - - - Smith; "18.1020UE, 18.1021UE, 18.1022UE"  
 Hale; "23.090UE, 23.010UE"  
 Kelley; "33.093UE"  
 Zipp; "33.083UE"  
 FORT CHURCHILL - - - - - Sharp; "25.041UE"  
 POKER FLAT - - - - - Gelescu; "Electron Beam Fluorescence Probe"  
 Winkler; "ECHO V"  
 Anderson; "29.013UEX"  
 Davis; "12.1003UE, 12.1004UE"  
 Hepburn; "18.217-0GEX, 29.011-2GEX"  
 WHITE SANDS - - - - - Niet; "18.1024UA"  
 MacQueen; "27.033AS/US"  
 Rottman; "27.028US"  
 Moore; "27.030UEX"  
 USSR (HEISS IS.) - - - - - Avdyushina; "IPOCAMP 3"  
 UK (SOUTH OIST) - - - - - Williams; "P201H"



◆ Satellite  
 ● Surface  
 ○ Balloon  
 × Rocket  
 ↗ Aircraft  
 v Actuality

SOLAR AND GEOMAGNETIC ACTIVITY NOVEMBER 4 - DECEMBER 27



NOTATION # 1986

2886 MHZ  
 FLUX OTTAWA 181 184 179 177 180 170 171 166 154 148 138 137 132 131 130 131 138 129 130 126 127 131 136 149 167 167 172

SS NO. BOULDER 221 134 186 173 153 150 219 150 161 112 124 102 138 147 151 102 143 127 131 86 138 154 220 218 217 177 176



NOTATION # 1987

2886 MHZ  
 FLUX OTTAWA 172 171 172 169 169 174 169 186 195 206 211 217 239\* 231 202 197 187 184 167 159 143 143 137 138 143 143 149

SS NO. BOULDER 176 170 293 238 226 225 246 223 274 286 217 278 239 229 197 227 215 221 186 152 151 124 120 132 146 150 165

\*FLARE ENHANCEMENT