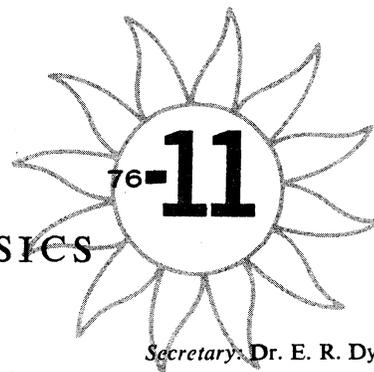


International Council of Scientific Unions

SPECIAL COMMITTEE  
ON  
SOLAR-TERRESTRIAL PHYSICS



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Secretary: Dr. E. R. Dyer

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INTERNATIONAL MAGNETOSPHERIC STUDY  
J. G. Roederer, Chairman IMS Steering Committee  
JOE H. ALLEN, HEAD, TEMPORARY IMS CENTRAL INFORMATION EXCHANGE OFFICE  
WORLD DATA CENTER A FOR STP, D64 NOAA, BOULDER, COLORADO 80302, USA

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## IMS NEWSLETTER

CONTENTS

Program Plans for Nov, Dec 76 & Jan 77	Page 2,3
SSC Special Satellite Intervals	3
General News	4
Sources of IMS Information/Data	5,6
ICSU/SCOSTEP	7
Japanese IMS Observations, Nov 76-Mar 77	7
Calendar of GBR Campaigns, Jan-Jun 1977	8

Some changes (improvements we hope) in the format of this NL result from a "micrometing" we attended October 8-9 at the IMS Satellite Situation Center (see note on pg 4). Corresponding improvements in content depend in main part on more contributions from participants, through national/regional contacts or directly. These should cover not only plans and activities for experiments but, now that the IMS is well started, also reports of science-in-progress and preliminary scientific results. Sharing of information through these now established IMS communication channels both enhances cooperation and stimulates the related work of others.

---JHA Oct 27, 1976.

TIMSCIE Office: Telex 45897 SOLTERWARN BDR  
Telephone: 303-499-1000 x6501 (FTS 323-6501)  
IMS/SSC (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

SPECIAL IMS PERIODS

Nov 26, 1100 UT to Nov 26, 2300 UT                   IMP-H, Hawkeye 1 - Magnetopause  
 Dec 3, 0800 UT to Dec 3, 2000 UT                   IMP-J, Vela 5B, Vela 6A, Vela 6B - Magnetopause  
 Dec 6, 0600 UT to Dec 8, 1800 UT                   IMP-H, Vela 5B, Vela 6B - Neutral Sheet  
 Dec 30, 0200 UT to Dec 31, 1300 UT               Hawkeye 1 - Cusp; Vela 5B, Vela 6A - Neutral Sheet

Times of Satellite Conjunctions from SSC Report No 7 (in preparation), see page 3 for first half of 1977  
 Jan 3, 1100 UT to Jan 5, 0200 UT                   4 satel crossing magnetopause in 5 hr, 3 satel in tail 8 hr  
 Jan 11, 1400 UT to Jan 14, 1000 UT               6 satel in magnetosheath for 10 hr (only Moon not in)

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

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

--- to Dec 31; #0531, et al; Lazutin, et al; Kiruna/ESRANGE; BALLOONS (14) - Rescheduled SAMBO 1B  
 --- to Dec 31; #0332; DeMendonca; Sao Paulo; BALLOONS (13) - X-rays, gamma rays, UV, joint program  
 Nov 5 to Nov 30; #0400; Fitz ("Wideband"); Poker Flat; ROCKETS (4) - high lat scintillation coord satel.  
 Nov 10 to Dec 20; #0474; Rees, et al; Andoya; ROCKETS (2) - Coordinated launches and ground, see below  
 Nov 10 to Dec 20; #0152; Bryant, et al; Andoya; ROCKETS (2) - Coordinated launches, see below  
 Nov 13 to Nov 30; #0400; Fitz; Poker Flat; ROCKET - Talos-Castor, e- gun/TV  
 Nov 13 to Nov 30; #0400; Fitz; Poker Flat; ROCKET - Talos-Sergeant-Hydac, ballistic test shot  
 Nov 26 to Dec 6; #0522; Truttse; Moscow Region; AIRCRAFT- Oxygen emissions, H- $\alpha$ , Nitrogen, other spectra  
 Dec 1 to Mar 31; A-32; L.G. Smith (Univ Illinois); Wallops Isl; ROCKETS (2) - 80-200 Km study, see note  
 Dec 25 to Jan 7; #0522; Truttse; Moscow Region; AIRCRAFT - Same program as above  
 Jan 1 to Jan 31; #0131; Arnoldy, Cahill; Andoya; ROCKETS (2) - 18.1004UE, 18.1005UE Nike-Tomahawks  
 Jan 1 to Jan 31; B-14; Whalen; Ft Churchill; ROCKETS (2) - Complex experiments, see note below  
 Jan 1 to Feb 28; B-5; Egeland, Johnstone ("Harang Pair I"); Andoya; ROCKETS (2) - into Harang discont  
 Jan 1 to Mar 15; B-6; ? ("EUV1 & EUV2"); Andoya; ROCKETS (2) - launches into aurora  
 Jan 1 to Mar 31; B-1; Witt (S-22 "Aurora"); Kiruna/ESRANGE; ROCKET - Complex experiments see note below  
 Jan 1 to Mar 31; B-2; Holmgren (S-21 "Trigger"); Kiruna/ESRANGE; ROCKETS (2) - Complex experiments see note  
 Jan 1 to Mar 31; B-3; Bjorn (S-18 "D-Layer"); Kiruna/ESRANGE; ROCKET - Complex experiments see note  
 Jan 6 to Mar 15; #0308, Theile ("Polar High Atmosphere"); Andoya; ROCKETS (4) - Complex exper, see note  
 Jan 10 to Jan 31; #0064; Scherb, Lynch; Poker Flat; ROCKET - energetic 10 Kev Oxygen, Helium ions, note  
 Jan 12 to Feb 6; #0170; D. Evans; Poker Flat; ROCKET-29.003AE, resched Terrier-Malemute (A-7 in 76-i)  
 Jan 24 to Jan 27; #0400; Fitz ("SPIRE"); Poker Flat; ROCKET - optical earth-limb meas in quiet conditions

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

Nov 1 to Dec 31; #0458; Charakchyan; Mirny, Murmansk, Moscow, Alma Ata; BALLOONS - daily, cosmic rays

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

Nov 1 to Dec 31; B-13; Berkey, Parsons; Norway; SURFACE- ground campaigns supporting rocket & other camp

\* marks new or changed information from NL 76-9

Program Planning Notes by Region, Nov 76 - Jan 77

SATELLITES

Refined Times of Special IMS Periods for Nov - Dec. Start and end times of the periods listed above and in the SCOSTEP Special Announcement shift a few hours as a result of recomputations given in the IMS Satellite Situation Center Report No. 6 (pg 14) by Vette. Refined UT times are (changed times are underlined): Nov 26 1100 to Nov 26 2400; Dec 3 0700 to Dec 3 2300, Dec 6 0600 to Dec 8 1400, Dec 30 0100 to Dec 31 1400. SSC Special Satellite Intervals for first half 1977 are on p 3 of this NL. Details will appear in SSC Report No. 7, in preparation.

USSR

#0522; Truttse will resume flights from the Moscow region to cover range from 50-72 deg N. Flight times will be from 2200-0600 LT. Measurements will be of Oxygen emissions at 6300 and 5577 A, H-alpha at 6563 A, Nitrogen at 4278 A and will include several wide spectra.

KIRUNA

B-1; Witt, Dept of Meteorology, Univ Stockholm, is project scientist for campaign "S22 Aurora", to fly on Skylark 3, 250 km. Co-investigators and experiments are: Univ Liege, UV Spectrograph; Witt, UV photometers; Egeland, visible light photometers; Kiruna Geophys Inst, 50 eV to 30 keV channeltrons, Soraas, >20 keV solid state detect Egeland and Royal Inst Tech, combined AC & DC using quadrupole probe technique; Egeland, VLF doppler exper; Uppsala Ionos Obs, single probe and Faraday exper. Study of quiet auroral arc.

B-2; Holmgren (UJO), project scientist for "S21 Trigger" launching payloads type A and B using Nike-Apache and Nike-Tomahawk. Payload A contains two injection exper, TMA (Univ College London) and TNT-Cs (UJO). Payload B co-investigators and experiments are: UJO, particles with E>15keV; KGI, particles with E<15keV; KTH, DC E-fields; Kelley, AC E-fields and short wavelength E-fields; UJO, e- density variation; UJO, e- temp UJO, TNT-Cs injection. Rocket launches will be supported by large ground observation programmes (Univ Leicester, see #0207, Jones; Univ College London & UJO). NL 76-5 described March Trigger. Study of magnetospheric/ionospheric interaction during active injections in ionosphere and mechanism for energetic particle precipitation at high latitude.

B-3; L Bjorn, UJO, is principal scientist for "S18 D-layer" launch of 2 Nike-Apache to about 100km. Objective, study lower ionosphere during aurora. with co-inves/exper: Krankowsky, mass spectrom; Thrane, energetic e- by solid state detectors; Thrane, GM detectors; Bjorn, Faraday exper and meas of + and - ions and e- density using probes.

ANDOYA

#0474; Rees is Project Scientist for launches SL 1425 and F5, both part of the 1st High Latitude Campaign. They are a Skylark 12 to 700 km alt and a Fulmar to 260 km. Purpose of the coordinated launches is to study the energetic input to the thermosphere during a geomag substorm and subsequent thermal and dynamic response of the thermosphere. Experimenters and their projects on the Skylark are: Rees (0474), vector magnetic field in auroral ionosphere; Rees/Maynard (0025), DC to 100 khz electric field; Rees/ (continued on page 3)

(continued from page 2)

Thomas (0449), neutral wind profile; Maehlum, e- and p+ @ 20ev - 1 kev; Bryant (0152), e- @ 0.5-25 kev; and Johnstone (0450), e- dens and temp. For the Fulmar they are: Rees, interferometer meas of wind velocity by laser illuminated Na Li release; Theile (0308)/Rees, vector mag fields. Launch conditions will be at night, clear sky, new moon, negative bay magnetic disturbance of greater than 500 . F5 to be launched 1-2 hrs after SL 1425. Ground instrumentation includes magnetometer, riometer, photometer, all-sky cam, TV system, Fabry-Perot interfer (wind and temp).

#0152; Bryant is Project Scientist for "Local Acceleration of Particles" project. Two launches will coordinate observations from Skylark SL 1422 and Flamenco (Fulmar) F2, high-alt, low-alt pair. The objective is to seek direct evidence for local acceleration of auroral particles, and wave-particle interactions in an auroral arc. Experimenters and projects are: Bryant(0152), e- and p+ greater than 500 ev; Johnstone (0450), e- and p+ less than 500 ev, e- dens and temp; Rothwell (0114), energetic + ions; Martelli (A-23), electrostatic waves 20 kHz-4 MHz. Bryant and Martelli will have e- and p+ (>500 ev) and electrostatic wave detectors on the Flamenco. Ground support will include TV and still cameras. Launches will be into single or multiple auroral arcs under the flight trajectory and will coincide with overhead passage of the DMSP satellite, if possible.

B-5; Egeiland, Johnstone (#0450) to launch Terrier-Malemute & Nike-Tomahawk, "Ferdinand 38 & 39" into Harang discontinuity. Investigation of the plasma boundaries and acceleration processes with an auroral arc and in the Harang discontinuity at two altitudes simultaneously along the same geomagnetic field lines. Principal experimenters and projects are: Maynard (#0025) and Egeiland, 3-axis E-field DC and AC meas; Maseide, auroral emission at 427.8 nm, 486.1 nm and 557.7 nm; Bryant (#0152), e- and p+ 0.5 to 25 keV; Johnstone (#0450), e- & p+ 5 to 500 eV; Soraas, e- & p+ 20 to 100 keV; Friedrich, e- density and temp. Coord with ground magnetic and optical obser.

B-6; Project scientist not known for "EUV 1 & 2". Will launch 2 rockets into disturbed conditions with aurora, magnetic bay and clear sky. Institutes participating are IPW, Freiburg; MPI, Heidelberg; MPI, Lindau; TU, Braunschweig; DFVLR & GSOC, FGR; KTH, Sweden.

#0308; Theile is principal scientist for FRG sounding rocket program "Polar High Atmosphere". To launch 4 Skylark 7's with co-investigator experiment to be: Theile, Luehr, B-fields; Fahleson, Bostrom, Falthammar, E-fields; Wilhelm, low energy e- and p+; Krankowsky, Nord, neutrals & ions; Dumbs, supra-thermal e-; Schmidtke, Fischer, EUV polar emissions; Offermann, Grossmann, auroral IR; Neske, Kist, e- density. EUV & IR exper alternate. 3 rockets into substorms, 1 in quiet.

#### Norway

B-13; Berkey, Parsons (Univ Calgary, Canada), participating in Norwegian campaign with image intensifier TV system, video tape records auroral luminosities from sub-visual to 100 kR. Norwegian equipment includes scanning photometer, zenithal photometer for some auroral emissions, ionospheric drift system at 4 MHz to sample heights from 100-600 km, fluxgate magnetometer, all-sky camera and riometer @ 27.6, 30.1, & 21.1 MHz. A first campaign took place from Nov 23 to Dec 8, 1975. The TV operates for selected intervals, especially near geomagnetic noon. Times of ISIS-2 passes are recorded, about 90% of the passes are visible in TV record.

#### SAO PAULO

#0332; De Mendonca's balloon program consists of 9 balloon experiments, of which 7 are dedicated to galactic x-ray measurements, spanning ranges of

0.015 to 1.2 MeV and including UV galactic spectrophotometry. Experiment OLN by Weill and Sahai will measure airglow in Brazilian Magnetic Anomaly. IR VERTICAL by Ackerman and Sahai will see vertical distribution of stratosph constituents.

#### WALLOPS ISLAND

A-32; L.G. Smith (Univ Illinois) to launch 2 Nike-Apaches to study 80-200 km region: e- density, energetic e- flux at several energy levels, brightness (flux) @ 3914 A. Will launch near midnight when K>5. Objective: Upper E-region study of effects of trapped energetic e- as ionization source at mid-latitudes & nighttime. Nos 14.5330E and 14.5440E.

#### FORT CHURCHILL

B-14; Whalen (NRC, Canada) to launch 2 Nike-Black Brants carrying programmable e- gun to give 10mA at 10keV of e- directed along B-field lines. To study DC E-fields, e- beam induced EM waves, spacecraft charging & discharging in ionosphere. Co-experimenters: McNamara & Harris, NRC; Kellogg Univ Minnesota; Koehler, Univ Saskatoon. Second program to launch Black Brant IVB carrying particle sensors. To study electro-dynamic structure of auroral arc, relation between ambient E-field & charged particles. McNamara & Koehler coop.

#### POKER FLAT

#0400; Fitz, DNA, will launch 4 rockets from Poker Flat to measure  $\Delta Ne/Ne$  in scintillation study at high latitude. Coordinated with "Wideband" satellite/Fremouw, SRI, (see IMS NL 76-7, pg 4). Chatanika radar will measure neutral winds.

#0064; Scherb, Lynch to launch Terrier-Malemute no. 29.0040E, 2nd of a continuing series (#1 launch in Feb 75). Objective to measure charge & mass of ions in aurora. Coinves, D. Evans (#0170). Instrumentation: 100 kV accelerator/electrostatic analyzer to direct particles into solid state pulse-height analyzer, energetic e- detector. See JGR, 81, (1264), 1976 paper by Lynch, et al. Will use data from interplanetary satellites if available, IMP. Will launch when evidence of precipitating p+ from ground photometers.

#0170; Evans to launch Terrier-Malemute 29.003AE to investigate auroral particle acceleration mechanisms below 200 km. Will measure energetic particles, E & B-fields and other phenomena.

#0400; Fitz to continue "SPIRE" program with Talos-Castor launch into quiet conditions. "ICECAP" & "STRESS" programs in next NL (see calendar p 8).

#### SSC Special Satellite Periods for Jan - June 1977.

The following intervals are based upon SSC-computed conjunctions of the satellites Vela 5B, IMP-J, IMP-H, Hawkeye 1, Solrad 11A, Solrad 11B and the Moon. Idealized start and end times for the interesting periods have been extended by 6 hours to allow for possible motion of the boundaries and cusp region. Details are in SSC Report Number 7.

Jan 3 1100 UT to Jan 5 0200 UT
Jan 11 1400 UT to Jan 14 1000 UT
Feb 2 0700 UT to Feb 6 0400 UT
Feb 7 0800 UT to Feb 8 0100 UT
Mar 4 0600 UT to Mar 8 1000 UT
Apr 2 0700 UT to Apr 4 0000 UT
May 25 2200 UT to May 27 1800 UT
May 30 0100 UT to Jun 3 1800 UT
Jun 25 2000 UT to Jun 27 0500 UT

SSC Services and Products. In addition to the various types of orbit plots available from the SSC (NL 76-6 and 76-10), the SSC has an on line 'Query' system that enables the user to determine if and when a wide variety of multiple satellite conjunctions occur. For instance, it is a simple matter for the Query system to determine the times at which Prognoz 4 passes through the the bow shock

(continued on page 4)

(continued from page 3)

within an hour of IMP J and IMP H crossing the magnetopause, or to determine the times during which ISEE A/B, Vela 5B, and the Moon will be in the neutral sheet simultaneously for more than 2.5 hours.

The system is designed to be used by scientists visiting the SSC or for the processing of requests submitted to the SSC. The user simply specifies in real time, at the terminal, the general time period of interest and the list of satellites to be included and defines the required conjunction by inputting a series of simple statements that specify the regions to be occupied by a satellite, the duration of the simultaneous occurrence, or the time between boundary crossings for the case of the bow shock and magnetopause. Twelve regions are presently incorporated into the Query system: Interplanetary, Bow Shock, Dayside and Nightside Magnetosheath, Magnetopause, Dayside and Nightside Magnetosphere, Northern and Southern Cusp, High and Mid-latitude Magnetotail and the Neutral Sheet. The SSC would welcome suggestions for additional regions to be incorporated into the system. Ephemeris information for the following satellites and times is presently available to the on line system: IMP H, IMP J, Hawkeye 1, Vela 5B, Vela 6A, Vela 6B, and the Moon for 1976 and 1977, Prognoz 4 for early 1976, Solrad 11A and Solrad 11B for launch through 1977 and ISEE A/B for launch (October 15 1977) through 1978.

#### GENERAL NEWS

IMS Information Services Micro-Meeting. Early in October, Roederer convened a micro-meeting of persons closely associated with the various IMS information services. Among those present were: Roederer, Dyer, Simon, Vette, Sugiura, Shapley and Allen. Manka and Ogilvey attended part of the meeting. As a result of this opportunity to assess the past products of the Satellite Situation Center and the TIMSCIE Office, we have some new ideas about how to better convey IMS information. Discussions with P. Simon promise to improve the already effective exchange of information between the European Regional Office and the Central Office. This short survey of topics from the meeting will mention mostly items that will not already be apparent as changes in the format of the IMS Newsletter. Some topics will be the basis for discussions by the IMS Steering Committee.

New emphasis for IMS Newsletter --- we will begin to include NL items on the "science of IMS" as well as the usual program planning information and actualities. Perhaps some emphasis of the IMS has shifted (or should) away from previous planning into new areas. If so, this should become apparent as we obtain reports of groups using IMS data, especially any data from the designated IMS Special Intervals. These may be groups who are not conducting IMS experiments but have used or are interested in using data already collected or wish new types of data. We hope to have communications from such participants to put in the NL.

Data availability --- now that IMS is almost 1-year old, the NL will begin to carry more information about useful data collections in addition to the "Actualities" reports. There are many data sources and we include in this NL a report on such sources compiled by P. Simon and discussed at the micro-meeting (page ).

IMS Special Intervals --- mechanisms were discussed by which candidate special intervals could be identified. The 3 types of intervals are: Satellite, GBR and Retrospective. In the past, the IMS Steering Committee has made final selection and will probably consider candidate intervals at future meetings unless other means are adopted. Vette presented orbit plots (see IMS NL's 76-6 and 76-10) that were used by the SSC in evaluating many candidates for 1977 SSC Special Satellite Intervals. Some 9 were selected for the first half of 1977 and are the subject of the next SSC Report, #7. The TIMSCIE Office will relay any suggestions for special intervals based upon concurrence of

major GBR campaigns, special observational opportunities or other useful criteria. In many ways the retrospective intervals "select themselves" when unusual events compel general interest across the many IMS disciplines. We will relay suggestions for such event-denominated intervals (or others such as retrospective, quiet-time baseline intervals) as they are received. Please be specific as to dates and reasons for future or past times.

Future of IMS Directory --- discussion continued about the differences between the IMS NL distribution list, lists of experimenters named in NL's and the IMS Directory of Participants published in Bulletin No 2. These NL's may be going to some persons not really interested in the IMS, updates of the Directory (maintained at SSC) are needed, expansion of the Directory is desirable but not simple. If there are suggestions about what the IMS NL might include on a "tear-away" page that would ask a few simple questions by which we could accomplish some updating, please send them to TIMSCIE Office. We would not want to arbitrarily purge any names of interested persons from the NL distribution list because they overlooked a questionnaire, were away when it came, etc.

Reports on Completed IMS Experiments --- Simon and Allen continue to collect reports on completed experiments submitted by principal scientists or collected by direct contacts. Information from these will be published in IMS NL's and is available at the Regional and Central Offices. There is interest between satellite and GBR communities in each being able to efficiently query the other for information on whether or not data was collected during an interval of interest (perhaps within 2 weeks after the date). Our success depends completely on the faithfulness of participants at passing-on information.

SSC Special Services --- Demonstrations were provided of the use of SSC computer and terminal to access information on satellite conjunctions. It was very interesting to choose some satellites and watch their orbit plots emerge on the viewing screen with the ability to specify certain regions or conditions and display format. Anyone interested in details, contact J. Vette at the SSC (see NL letterhead for SSC telex & telephone #s).

IMS Workshops --- There have been a series of IMS Workshops in Japan. The NL will report on these as information becomes available. The Schloss Elmau meeting in FRG last May was closely tied to the IMS in covering "European Programmes on Sounding Rocket & Balloon Research in the Auroral Zone". The Symposium Proceedings are now in print, published by: ESA Scientific and Technical Publications Branch, ESTEC, Noordwijk, The Netherlands.

(T)IMSCIE Office Help --- Manka reported on promising results of search for US scientist to visit Boulder to help with the TIMSCIE Office. Allen reported on encouraging responses from Japan. Other possibilities continue to spring up but we await official notification before sharing. Perhaps we will be able to "Drop the 'T' from TIMSCIE."

Chatanika Incoherent-Scatter Radar Facility --- M. Baron, #0067, sent a collection of material about Chatanika. Included are: log of observations from 1/7/74 through 9/08/76; monthly schedules for Jun-Oct 1976; and a note giving background, operating philosophy and details on arranging for radar time. If interested call or write: M.J. Baron, Radio Physics Lab, Stanford Research Inst, Menlo Park, California 94025, USA. Radar time is available for visiting scientists along with limited on-site staff and equipment support. Request forms should be submitted early in month preceding month of operation. Prospective visitors are encouraged to visit SRI first to gain experience with Chatanika data tapes from the library of raw and processed tapes there. Data are available to scientists after 6-9 months.

Satellites

Planned years in advance, they receive a name and number if they are part of a series. At their launching, they receive an international designation (a number in that year) and sometimes they will have several alternate names. A project scientist is in charge of the satellite, a principal investigator is in charge of each experiment which receives a name and number within the satellite. Data exchange is to be arranged through the relevant principal investigator. If common data pool tapes are prepared, the Principal Scientist will be responsible for them.

Information

1. SSC Special Reports on IMS Satellites and Periods - Description of all elements and experiments of a satellite, names of project scientists and all principal investigators. - Announcement of orbits. Already published in SSC Reports: Nr. 2 Hawkeye 1-1976, Nr. 3 IMP-H-1976, Nr. 4 IMP-J-1976, Nr. 5 VELA 5B-1976, Nr. 6 Special IMS Periods for 1976. Comment: only satellites with high apogees are described in this series. Microfilm plots of orbits are also available.

2. Spacewarn Bulletin. Biweekly report prepared by the IUWDS World Warning Agency for Satellites. - International Designation of the satellites recently launched. - Description of satellites a few weeks prior to or just after launch. - Other information for special programs. Comment: this report, prepared on behalf of COSPAR, concerns all existing satellites, whether or not devoted to IMS programs.

3. Report on Active and Planned Spacecraft and Experiments. Yearly publication of the NSSDC/WDC-A for R&S. - Description of all elements and experiments of any past or future satellites, including the list of project scientists and principal investigators, effective or planned launch date, etc.

4. IMS Newsletter. Monthly publication prepared by TIMSCIE Office with the assistance of the IMS Regional Office and national contacts. - For satellites, this source updates information on operations and advertises useful publications or current plans/actions such as shift plans for geostationary satellites or failures of experiments.

5. IMS Directory. Names, mail address, telephone and telex numbers of all satellite experimenters involved in IMS program either in Bulletin No 2 or will be published (see under GBR).

6. Status reports by European Office on past IMS Periods and completed GBR experiments. Prepared and distributed by the Regional IMS Information Office with a few months delay, these reports will show effective schedules of satellite tracking during special intervals and other select times.

7. STP Notes. Published irregularly by the SCOSTEP Secretariat, these reports contain minutes of ICSU's SCOSTEP meetings and working group or committee meetings. They may also contain national reports on STP programs, including satellites.

Ground-Based, Balloon and Rocket

These are the most changeable part of the IMS Program. They are planned one or two years in advance but due to technical or budgetary problems, they may be postponed for months or a year. The effective date of operation is generally linked to the occurrence of a specific phenomena and cannot be specified in advance. Many of these projects are prepared by several groups, sometimes from several countries. In the IMS framework, each project receives a name, possibly a number in a series and their description will show the project scientists (or program coordinator) and various

principal investigators. The latter are the ones to contact for arranging exchange of data.

Information

1. IMS Newsletter is the main source of information, at least for global scale (local reports may provide greater detail). Information must be approved by the experimenters and they are responsible for updating and correcting it. Regional and Central Offices collect bits of information from many sources, cross check them and prepare this publication with emphasis on geographical area and dates of planned operation. New projects are announced as soon as information is received at the TIMSCIE Office. This is updated as often as necessary from reports of the responsible scientists. Windows of operation are published three months in advance with greater detail as campaign time comes closer. Confirmation of a completed campaign is published when received as short "Actualities" reports and cumulative records of accomplishments are kept at Regional and Central Offices.

2. Status Reports on past IMS Periods and completed GBR experiments. Their preparation is described above. They contain a description of the experiments, names of the Principal Investigator and all project scientists, place and time of operation, coordination with other experiments, information on tracking of IMS Satellites and other relevant information. These reports will be prepared as promptly as possible by the relevant Regional IMS Office and distributed to other Regional or Central Offices for information of any IMS experimenter and to update the IMS Directory.

3. IMS Directory. Names of scientists involved in GBR IMS experiments are the main content of the Directory published in the IMS Bulletins.

4. Sounding Rocket Launch Report. Prepared monthly by WDC-A for R&S from information provided by ranges, principal scientists and many other sources. They give details of sounding rocket launches, addresses of experimenters and rocket discipline codes. This information is published twice a year in cumulative catalogues of rocket & satellite data and these are combined in larger cumulative editions every two years.

Synoptic or quasi-synoptic Observations.

All these programs are included in the MONSEE project. Most of the stations are operated continuously, without interruption. However, several networks follow a daily schedule that changes during the year (e.g. solar radio astronomy) or, in addition, that may be limited by seeing conditions (e.g. optical solar survey, aurora, etc). Practices of exchanging data are far from uniform.

1. Copies of original data or, sometimes, the original data records are deposited at a WDC and copies may be ordered at expense of copying.

2. WDCs receive reports on the observed phenomena (solar flare, geomagnetic survey, etc.) and on the effective schedule of observations. Generally copies of the data have to be requested from the responsible experimenter.

3. Observers keep their data at their station or institute and do not submit a report about their existence. Information and copies can only be obtained from the experimenter.

4. WDCs use selected data or reports for preparing, with some delay, synoptic charts of data or derived data products such as indices.

5. Some reports on data or events are distributed daily, on a near-real-time schedule, by national agencies' Regional Warning Centers of the International Ursigram and World Days Service. This service is mainly devoted to the practical  
(continued on page 6)

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 purpose of serving experimenters in the conduct of their investigations and the "final" records of the preliminary quick-time data are usually obtained from one of the sources given above.

7. Other sources of this type of data are the Space Environment Laboratory Data Acquisition and Display System (SELDADS) and the USSR publication "COSMIC DATA".

Information

1. MONSEE Directory. To be published in January 1977, giving a description of all existing monitoring programs, information on data format, location of data, person to contact, etc. The Directory will be supplemented as necessary (MONSEE Newsletter is a quarterly publication for such announcements).

2. Catalog of WDCs. These list programs and stations from which data or reports have been received, usually with a year or more delay.

3. Published series of indices or data: Quarterly Bulletin on Solar Activity, IAGA Bulletins, etc.

4. Solar Geophysical Data. Issued monthly by WDC-A for STP in Prompt (Part A) and Comprehensive (Part B) formats.

5. CCOG (Committee for Coordination of Observations Associated with GEOS) reports and booklet to be published in 1977. They describe all surface programs to be carried out in Scandinavia during GEOS operation.

6. National IMS, MONSEE, SCOSTEP programs.

7. IMS Bulletins No 1 & 2.

8. Information on temporary programs (perhaps of several years' duration), such as IMS meridian

magnetometer chains, incoherent scatter network, etc. is reported in the IMS NL. Such programs will eventually be reported in the other sources listed above.

9. International Geophysical Calendar shows world days and other monitoring intervals.

ICSU Resolution No. 11.	SCOSTEP
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The 16 General Assembly  
 Having examined the reasons for an extension of the International Magnetospheric Study\* and the Special Committee on Solar-Terrestrial Physics (SCOSTEP) as submitted by SCOSTEP and modified by the General Committee  
 Resolves to continue the existence of SCOSTEP through 1980, and to  
 Request the General Committee at its 8th meeting in 1977, to review this extension and to make a final decision on the termination date of SCOSTEP

\*The extension of the IMS is implicit in this resolution. ICSU, however, did not try to set the new termination date, but left that decision to SCOSTEP and its scientific constituency. In keeping with decisions taken at the June 1976 meetings of SCOSTEP, its IMS Steering Committee and its Council of National Representatives, SCOSTEP has agreed with ICSU that the period of actively coordinated observations for the IMS will include the calendar year 1979, with 1980 as a year in which to consolidate results and bring the IMS to an orderly close, with some observations possibly continuing on an optional basis.

Solar Minimum Epoch Follow-up. The smoothed curves of Sunspot Number, Rz, and 10cm Flux, Sa, continue downward to probable minima in July 1976. For Aug, Rz=16.9 and Sa=76.6; for Sep, Rz=13.4 and Sa=73.9.

JAPANESE IMS OBSERVATIONS, GROUND-BASED, NOVEMBER 1976-MARCH 1977

(Observations tabulated in the IMS Newsletter 76-8 and 76-9 will be continued except when noted otherwise.)

The following table lists new additions and some revisions.)

Object	Method	Site(Geomag.lat.long.)	Interval	Observer
Ionospheric E and F	HF Doppler	Kasugai(25,204)	continuous	T. Yonezawa (I)
Whistler mode VLF	phase tracking receiver	Kyoto (25, 204)	continuous	T. Araki (0422)
ULF, aurora and VLF	induction magnetometer, TV, and direction finder	Churchill(68,322)	January	T. Oguti (0414)
Topside ionosphere	ISIS-1 and -2 telemetry	Syowa (-70,79)	more than 3 passes per week	
VLF emission	"	Syowa (-70,79)	more than 1 pass per week	
Geocoronal H and He	Michelson photometer	Kakioka (26,207)	continuous	T. Tohmatsu (0429)
Magnetospheric glow	Fourier transform interferometer	Kakioka (26,207)	continuous	M. Nakamura (0255)
Auroral Temperature	Fabry-Perot interferometer	Fairbanks(64,256)	Jan-Fab	H. Kamiyama (0211)
Airglow temperature	Fabry-Perot interferometer	Zao (28,207)	New moon 10 days a month	H. Kamiyama (0211)
Solar active region	high resolution photography	Okayama	after January	F. Moriyama (0249)

(I) same as 0216. Correction to coordinates of the Solar wind velocity observing sites: Toyokawa (25,204), Fujigane (25,205), and Sugadaira (26, 204). Ionospheric vertical sounding will be resumed at Okinawa (15,197) in March 1977.

Selection of GEOS Archive Data

Because of the large quantity of data bits to be acquired from GEOS, only some 10% will be selected for retention. Data to be kept must be identified within 3 months after acquisition. Choice will be by an evaluation process using internal and external factors: internal --- quality of data, intensity of flux and identification of events; external --- coordinated experiments, identification of events. The external factors can double the index of selection.

Coordinated experiments will be selected according to a pre-established agreement between GEOS experimenters and the other experimenters. The IMS Newsletter will contribute to this factor by publishing program plans in advance. 5 categories of coordinated experiments are: RCK = rocket flight; BLN = balloon (selected event intervals during long flights); SRF = surface experiments; LRV = "rendezvous" of low altitude satellites; HRV

= "rendezvous" of high altitude satellites.

Events. Categories have been established and will be given in these NL's when available. The type of event will determine the duration of the data retention interval.

Problem. A report identifying data intervals for retention will be prepared each 2 weeks for the data of the preceeding 2 weeks (i.e. report at end of month for data to be retained from first 2 weeks of month). Information from other IMS participants will be needed within 2 weeks from time of data acquisition. For rocket, balloon and/or surface experiments this should be possible, major events will generally identify themselves but it may be difficult to obtain a recommendation for data retention times based upon interesting records from other satellites.

More information will be forthcoming. Details may be obtained from P. Simon, Meudon.

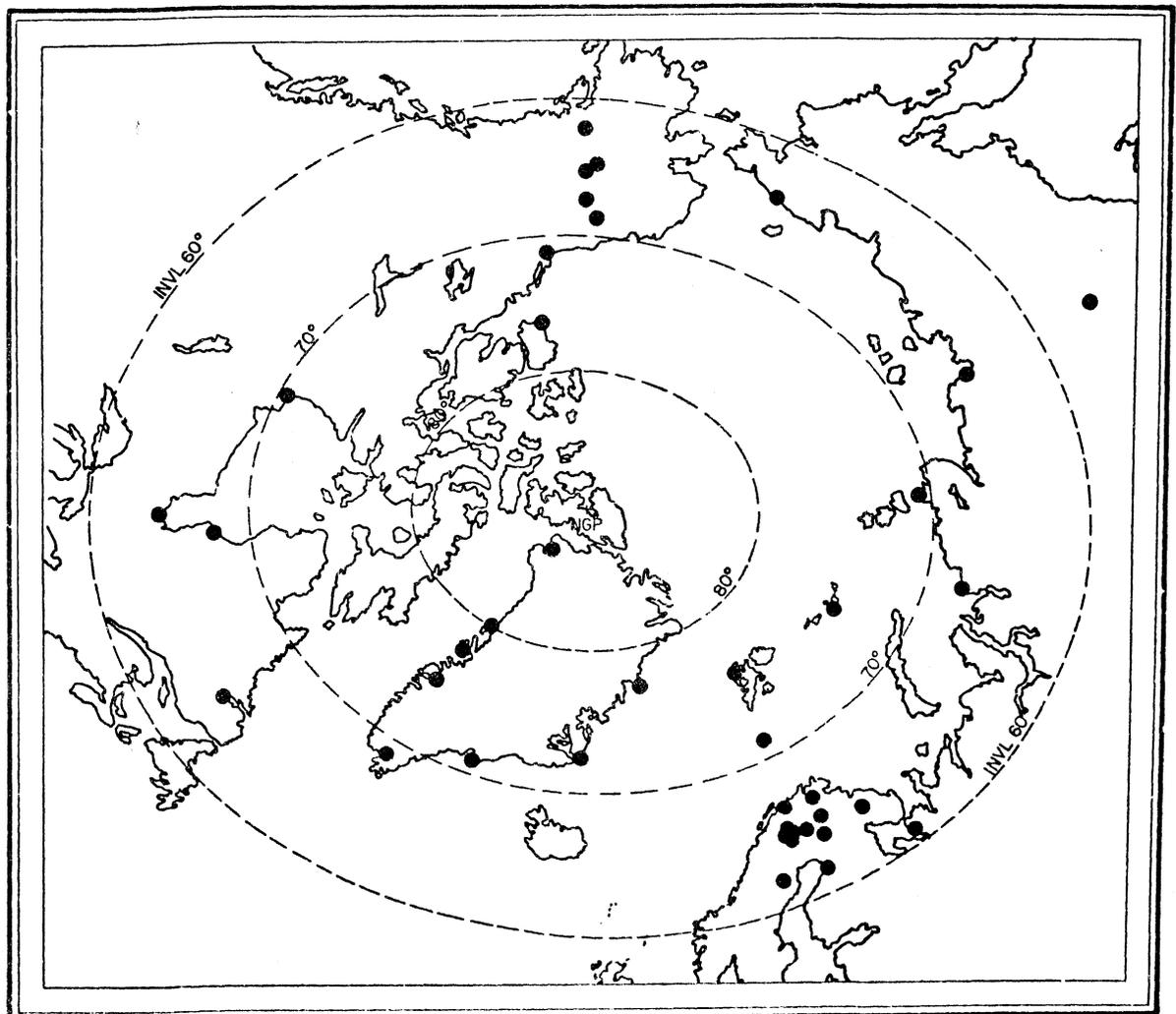
Canadian Ionosondes and ISIS-2 Tracking. B. Currie, Canadian IMS Coordinator, sends news that the regular Canadian ionospheric stations will continue to operate for at least another year. Also, read-out of ISIS-2 data from Resolute, N.W.T. will continue for the year. Operation will be subject

to annual review during the IMS and ISIS-2 read-out is, of course, conditional on the satellite experiments continuing to function. This information is among several other items in the October Canadian IMS Newsletter. We will share more information in NL 76-12.

1976-77 All-sky Camera Stations. K. Lassen, Danish Met Inst, Lyngbyvej 100, DK-2100 Copenhagen, Denmark, has forwarded to TIMSCIE a listing of N. Hemisphere all-sky camera sites that will perform routine observations during the winter of 1976-77.

His map of these sites is reproduced below. Addresses for contacts responsible for these observations will appear in a future NL. The total list has been given to MONSEE for use in the directory that is in preparation.

ALL-SKY CAMERAS IN ROUTINE OPERATION, 1976-77



Correction to IMS Calendar of GBR Campaigns July - December 1976 in NL 76-10  
 POKER FLAT #0400 (Fitz, "Wideband") 4-X • NOV 5-30, 1976

IMS CALENDAR OF GBR CAMPAIGNS JANUARY - JUNE 1977  
 (As of 26 October 1976)

WORLD-WIDE- - - - -  
 Special IMS Periods  
 ASHAY (Radice, et al)  
 MULTIPLE SITES- - - - -  
 #0522 (Truttse) Moscow region, 50-79 deg N.  
 #0139 (Berthel) Pretoria region  
 KIRUNA (FSRANGE)- - - - -  
 B-1 (Witt, et al; "Aurora")  
 B-2 (Holmgren, et al; "Trigger")  
 B-3 (Bjorn, et al; "D-Layer")  
 B-4 ( ? , Nagoya Univ.)  
 ANDOYA (ANDENES)- - - - -  
 B-5 (Egeland & Johnstone, et al; "Harang Pair I")  
 B-6 ( ? : EUV - 1 & 2)  
 #0131 (Arnoldy, Cahill)  
 #0308 (Theile; "Polar High Atmosphere")  
 B-7 (Matthews; 18.211 UE/IE)  
 B-8 (Maehum, Maynard, et al; "Composition")  
 SOUTH UIST- - - - -  
 A-19 (Williams; P112H)  
 #0085 (Dickinson; P189H, P192H)  
 A-18 (Wooliscroft; P139, P140H)  
 WALLOPS ISLAND- - - - -  
 A-32 (Smith; 14.533UE, 14.534UE)  
 FORT CHURCHILL B-14 (Whalen, et al)  
 B-9 (Zipe; 31.001UA, 31.002UA)  
 B-10 (Mentall; 18.1013GA, 18.1014GA)  
 B-11 (Bernstein, et al; 21.035AE)  
 B-12 (Hays/Sharp; 13.132UE)  
 POKER FLAT- - - - -  
 #0064 (Scherb; 29.004UE)  
 #0170 (Evans; 29.003AE)  
 #0400 (Fitz; "SPIRE")  
 #0400 (Fitz; "ICECAP")  
 #0164 (Davis; 18.1011UE, 18.1012UE)  
 WHITE SANDS - - - - -  
 B-10 (Mentall; 31.004GA)  
 #0356 (Shelton; 23.009UE, 23.010UE)  
 EGLAND AFB- - - - -  
 #0400 (Fitz; "STRESS")  
 KWAJALEIN - - - - -  
 #0400 (Fitz; "Equatorial Wideband")  
 CANADA- - - - -  
 #0205 (A. Vallance Jones, et al)

