International Council of Scientific Unions

SPECIAL COMMITTEE
ON
SOLAR-TERRESTRIAL PHYSICS

77-9

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

INTERNATIONAL MAGNETOSPHERIC STUDY
J. G. Roederer, Chairman, IMS Steering Committee
JOE H. ALLEN, HEAD, IMS CENTRAL INFORMATION EXCHANGE OFFICE
TOYOHISA KAMEI, UNIVERSITY OF KYOTO, IMSCIE ASSOCIATE
MAURIZIO CANDIDI, EUROPEAN SPACE AGENCY, IMSCIE ASSOCIATE

IMS NEWSLETTER

IMS NL 77-9 is about 2 weeks late because of the lag following return of IMSCIE staff from the IAGA/IAMAP Assembly in Seattle. It was helpful to have just had personal contact with so many of the experimenters cooperating in the IMS. Also, several visitors have come to the IMSCIE Office in Boulder either enroute to Seattle or returning. NOTE: announcements of special intervals for intensive data analysis and the IMS Working Conference together with planning of other workshops is discussed in this NL. Responses are invited from all participants. IMS Data Publication No. 2 is going to press this same week as NL 77-9.

77/09/15 JHA

IMSCIE Office: Telex 45897 SOLTERWARN BDR
Telephone: 303-499-1000 x6501 (FTS 323-6501)
IMS Satellite Situation Center (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

SPECIAL IMS SATELLITE PERIODS

Tables giving details about satellite conjunctions for the second half of 1977 were given in NL's 77-6 (pg 3) and 77-7 (pg 5). Revised intervals for November through December 1977, are given in this NL on page 5. These periods may be of special importance at the IMS Workshops because an effort is often made to obtain more comprehensive satellite data coverage during these periods and data for these times are often available at an earlier date than for non-IMS intervals. Special intervals for the three months covered in detail in this NL are:

September 9, 0800 UT to September 10, 2400 UT
October 18, 1500 UT to October 20, 1000 UT
November 9, 1200 UT to November 10, 2300 UT
September 30, 2100 UT to October 4, 0900 UT
October 31, 1400 UT to November 2, 1300 UT
November 15, 1600 UT to November 17, 0800 UT

GBR Campaigns:

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

------ to Sep 14; Pongratz & Smith; LAGO PEDO; Kauai; ROCKETS (2) - see note below
------ to Sep 30; Sagredo & Martelli; Arenosillo; ROCKET - Flamenco, explosive plasma injection, 77-7
Sep 3 to Sep 8; Obayashi; K-9M-59; Kagoshima; ROCKET - K-9M rocket to 355 km alt, see note
Sep 14 to Sep 20; Matsuo; "S-210-12"; Kagoshima; ROCKET - S-210 rocket to 117 km, see note
Sep 21 to Sep 28; Oda; "S-310-4"; Kagoshima; ROCKET - S-310 rocket to 192 km, see note below
Sep 10 to Oct 20; Fremouw; "WIDEBAND"; Poker Flat; ROCKETS (2) - scint. meas. with Wideband
Sep 10 to Oct 20; Ulwick; WIDEBAND MULTI; Poker Flat; ROCKET - Wideband,e-dens.,energ. particles
Sep 10 to Oct 20; Ulwick; FIELD WIDENED INTERFEROMETER; Poker Flat; ROCKET - IR during aurora
Sep 10 to Oct 20; Ulwick; SPIRE I; Poker Flat; ROCKET - telescope spectrometers, daylight limb spectra
Oct 1 to Oct 31; Sheldon; White Sands; ROCKETS (2) - 23.009UE and 23.010UE
Oct 6 to Nov 19; Rees; 2ND HIGH LATITUDE CAMPAIGN; Andoya; ROCKET - F3, detailed note below
Oct 6 to Nov 19; Johnstone; 2ND HIGH LATITUDE CAMPAIGN; Andoya; ROCKETS (2) - SL1421 & SL1423
Oct 6 to Nov 19; Bryant; 2ND HIGH LATITUDE CAMPAIGN; Andoya; ROCKET - F1, note below
Oct 6 to Dec 6; Woolliscroft; 2ND HIGH LATITUDE CAMPAIGN; Andoya; ROCKETS (3) - SL1424, F4 & F6
Oct 6 to Dec 6; Wilhelm; SUBSTORM CAMPAIGN; Andoya; ROCKETS (4) - T/NLI-4, coord with 2ND HL
Oct 31 to Nov 15; Jorgensen, Kelley; Sondre Stromfjord; ROCKETS (2) - 18.1015UE & 18.1016UE, see note
Nov 1 to Nov 30; Sharp; "MAP-2"; Wallops Island; ROCKET - 26.xxxUE, no details

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

Sep 13-15; Oct 11-13; Nov 15-17; Bauer, Evans; IISN; SURFACE incoherent scatter radar net

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

Sep 10 to Oct 25; Siebert; "Geomagnetic Pulsations"; N. Scandinavia; SURFACE - see note below

---

Regional GBR IMS Program Details, Sep - Nov 1977

Program details for some of the brief listings given above have appeared in earlier IMS NL's. These will only be repeated below if there is new information.

KAGOSHIMA

This rocket launch facility is on the southern end of Kyushu Island (Japan) in Kagoshima Prefecture (not in the city of the same name). It is sometimes referred to by the name of the nearest community, Uchinoura.

L-3H-9, K. Hirao, ISAS, the launch window for this program is not given above becsuse it has already passed. However, details just received about the rocket program may be of interest to IMS participants. The L-3H rocket was to be launched between 15 and 22 August 1977 to an altitude of 1300 km. The experiments in the payload and the principal experimenters are: UV glow, K. Suzuki; Proton and electron spectrum, H. Kubo; Positive ion composition, I. Iwamoto; Electron beam, N. Kawashima; O2, OH night glow, T. Makino (Rikkyo Univ.); He, H geocorona, M. Nakamura; Electron temperature, K. Hirao; Photoelectrons, K. Hirao; Planetary radio emission, A. Morioka; Electron density, H. Oya and S. Miyatake; Plasma wave excitation, H. Oya and S. Miyatake.

K-9M-59, T. Obayashi, ISAS, will launch a K-9M rocket to 355 km during the period 3-8 Sep 1977. Experiments and principal experimenters are: Electron density, T. Obayashi; O+ airglow, K. Suzuki; O3 aerosol, K. Suzuki; Electron temperature, K. Hirao; O2 density, T. Ozio (Osaka City Univ.); and N, NO, T. Ogawa.

S-210-12, M. Matsuo, ISAS, will launch an S-210 rocket to 117 km during the time 14-20 Sep 1977. experiments and principal experimenters are: Electron density, T. Obayashi; O2 twilight glow, T. Makino; O3 aerosol, T. Watanabe.

S-310-4, M. Oda, ISAS, will launch an S-310 rocket to 192 km during 21-28 Sep 1977. Experiments and principal experimenters are: Electron density (Doppler method), I. Kimura; D-layer electron density, M. Mambo (Kanazawa Univ.); Positive ion temperature, S. Minami (Osaka City Univ.); Electron temperature, K. Hirao; and Thermal electron spectrum, T. Dote.

SONDRE STROMFJORD (GREENLAND)

18.1015UE & 18.1016UE, T.S. Jorgensen & M. Kelly, will launch two Nike-Tomahawks from Greenland in a plasma physics experiment to study ionized and neutral thermospheric winds in the evening sector of the auroral oval. There will be Barium and TMA releases in this cooperative project between the Danish Meteorological Institute and Cornell University.

NORTHERN SCANDINAVIA

A campaign of geomagnetic pulsations recording by Siebert, Voelker and Hillebrand (see details in IMS NL 77-3, pg. 5 and map in 77-1, pg. 4) has been announced for 10 Sep - 25 Oct 1977 at stations SKA, KUN, KEV, IVA, MAR and KUU. Three of the sites will record 3-components of magnetic vairations on FM tape and three will record digitally on tape. The Grenet-type induction variometers have a period range from 2 s to approximately 600 s. Maximum resolution is 1/20 nT in the period range around 20 s. The FM recordings are 4-channel and the digital records are 7-track, 200 bpi. Each station can record for about 10 days without resupply and they can operate independently from mains. Past campaigns have cooperated with rocket programs in N. Scandinavia.

The 1977 campaign is planned in cooperation with Kertz and Maurer (shared magnetometer sites, see NL 77-1 map), Untiedt, Kuppers and Baumjohann (32 Gough-Reitzel magnetometer network), Troitskaya and

(Continued on pg 3)

(Continued from pg 2)

Baranskiy (GMP magnetometers), Observatories Sodankyla, Tromso and Kiruna, and the GEOS Satellite experimenters. Digital data from this campaign probably will be available in the spring of 1978. A campaign in 1978 is now planned for the period March-September. For further information the principal scientists may be contacted at the Inst. fur Geophysik der Universitat, Herzberger Landstrasse 180, 3400 Gottingen, FRG. Telephone (0551) 397452, Telex 96703 UNIGOE. This announcement updates those previously published in these NLs, in the IMS Bulletin No. 2 (Program # 066) and the CCOG Handbook.

ROBERVAL (Correction to NL 77-8)

In describing the joint campaign for September 1977 between Matthews (Univ. Maryland) and others, IMSCIE Office mistakenly attributed institutional affiliation of some participants to Stanford Research Institute, all references to this or to SRI should be replaced by "Stanford University" for this program.

ACTUALITIES

SATELLITES

GEOS --- There is no change in GEOS experiment status from that announced in IMS NL 77-8 (pg 4). Data are collected for about 10.5 hours during the Odenwald pass (E. Apogee) and for about 6 hours during the Alaskan pass (W. Apogee). Periods of magnetic conjugacy with other satellites (defined by the IMS SSC) are given priority.

On 26 August 1977, the local time of apogee was 12.00 hr with the elevation of apogee being 18 deg. Apogee longitudes were 6 deg E and 186 deg E (E. and W. Apogee, respectively). In late September they will be shifted to about 37 deg and 217 deg, respectively. The shift plan is subject to experimenter approval during September. Also forthcoming during the second half of September is a spin axis inversion by 180 deg in order to avoid boom shadowing of the solar array during northern winter.

Scientific data processing has progressed in spite of some difficulties with the offline attitude reconstitution program. Clearance to release daily summaries has not been received yet from all experimenters. Therefore, publication of summaries will be delayed into September.

There are still difficulties with feeding NASA-recorded GEOS tapes into the GEOS data processing system at ESOC. The reason is that the front-end of the GEOS data handling system is constructed for on-line operation only and a special interface for data from tapes had to be developed. --- K. Knott, GEOS Project Scientist, ESTEC.

S3-3 --- In response to the request for information on data acquisition times for the special periods for cooperation with GEOS, J.F. Fennell, Aerospace Corp., has provided the following information. During NASA data acquisition periods G1-G17 for GEOS passes through apogee over W. North America (see IMS NL 77-7, pgs 8 & 9), S3-3 data was acquired for three intervals: G9 - 19 June 0446-0644 UT; G10 - 20 June 0419-0617 UT and G16 - 26 June 0402-0548 UT. In addition to the times bounding these GEOS crossings, additional S3-3 data were acquired on 19 June (0150-0347), 20 June (0120-0320); and 26 June (0105-0252, 0658-0856, 1015-1153, and 1302-1449 UT). These additional data acquisition periods cover either conjugate crossings or eastern apogee crossings (see pg 4 of this NL).

From the time period of 6 June to 27 June, there were 53 data acquisitions recorded by S3-3, the majority correlated with conjugate crossings or E. apogee crossings of GEOS. S3-3 also acquired data near the E. GEOS apogee crossings in May 1977. It has been requested that a list of S3-3 correlated times with GEOS be produced for this time. This list will be updated for S3-3 conjugacies during August as soon as acquisition logs are available. Calculations of overlapping data acquisition intervals for July can be prepared when intervals of interest are identified. All experiments on S3-3 are known to be working properly as of 2 August 1977 (experiments were summarized in NL 77-7, pg 7).

GROUND BASED

CHATANIKA --- In SRI Bimonthly Report 4 (15 July 1977) we find the following information about Chatanika Radar operations from 1 June to 31 July 1977. Data was obtained by Chatanika during the following intervals in support of the objectives given: 26 May 0532-0629 UT, F-region thermospheric winds; 11 June 0340-0716 UT, GEOS satellite pass; 16 June 0145-2410 UT, Synoptic 24-hr run; 17 June 0413-0641 UT, GEOS satellite pass.

A succession of equipment problems culminating in failure of several different radar parts began in late May and continued into mid-June. Repair efforts on-site were temporarily successful, permitting the data acquisition given above. Final shut-down of the site was necessary with shipment of klystron and modulator switch tubes, crowbar pulse transformer, serier capacitor and the beam tank transformer to their manufacturers for repair. It is hoped the radar will be returned to operation in October to support the Poker Flat launch program at that time.

WORLDWIDE RADAR NETWORK

IISN --- P. Simon, European Regional Information Office, sends the following information about the IISN observations at St. Santin, Nancay, Monpazier and Mende (France) for April - July 1977. Project scientist is P. Bauer, CNET.

April 18/0700 UT to 18/1200 UT, supplementary experiment due to solar eclipse, good results at Mende and Monpazier.

April 19/0500 UT to 21/1900 UT, good results at all three stations for regular IISN observations.

May 17/0300 UT to 19/1900 UT, IISN program followed with good results but transmission stopped on 18th from 0400 to 0600 UT.

June 14/0300 UT to 16/1900 UT, regular program with good results at all three stations.

July 19/0300 UT to 21/1900 UT, regular program but lightning at Monpazier caused the program to begin with only one beam at 19/0948 UT.

August 16/0300 UT to 18/1900 UT, regular program with good results at all three stations.

NORTH AMERICAN IMS MAGNETOMETER CHAINS

C. Hornback's "IMS Platform Status Report - 4 August 1977" gives the following information about the N. American magnetometer chains (IMS NL 77-1). The "stand alone" systems at Eureka and Isachsen (Alaska Chain) have been installed according to Dr. G. Romick and seem to be working well. The engineer installing the system, Brett Delana, has partially solved the RFI problem for these sites so that both the magnetometer and the riometer can function. Johnson Point will probably be restarted when systems are installed at Sachs Harbor and Cape Parry.

The USGS has shipped the Eusebio system to UCLA, the Pelly Bay system is ready for DEMR, Canada and the Tungsten, Lynn Lake and Fort Simpson systems are being tested. Problems with the radio receiver/transmitter system are recurrent and have caused extensive delays in getting the systems into the field.

Programs for plotting the near-real-time

(Continued on pg 4)

(Continued from pg 3)

magnetometer data have been implemented and a sample plot (without editing for bad values) is enclosed with the memo, showing one station day of data. Programs to generate data tapes in the WDC-A 1-min format are still in development.

A separate attachment gives a brief description of the filtering algorithm used in the IMS Platform Controller (ADIMCS) for both the magnetometer and riometer data. A complete technical description of the filter is available from L. D. Lewis, NOAA, Space Environment Laboratory, Boulder, Colorado 80302, USA.

SPECIAL GEOS COOPERATION INTERVALS

In these NL's we have published the SSC-identified times and special data acquisition intervals for cooperative projects with GEOS experimenters. They are: G1 through G17 (11-27 June 1977) in 77-7 (pgs 8 & 9) for passes over the W. apogee; G45-G69 (24 July - 17 August) in 77-9 (pg 10) for W. apogee. GEOS flux tube conjunctions with low-altitude satellites over the E. apogee have been published in NL 77-8 (pg 12) for intervals 53-69 (corresponding to G53-G69 for W. apogee). These intervals should provide further opportunities for cooperative studies if data acquisition was possible for those dates and times. In this NL we provide below retrospective special GEOS conjunction times 1-17 for the E. apogee passes (corresponding to G1-G17). Also given are special intervals/conjunctions for the drift period: G18-G44 and 18-44. Because the data acquisition over Odenwald (E. apogee) is always complete for the time the satellite is in view (unless commands are being given), we give only the interval number, day number for start of tracking on that pass, UT time of apogee to nearest 10th or 100th hour, and then the code for the low altitude satellites and their times of conjunction with the GEOS field line (flux tube) during that pass. For non-drifting W. apogee passes the format is different because of the selection of some times as high-priority/high-speed data acquisition intervals. However, during the drift period (G18-G44), the format is the same as for the E. apogee passes described above.

Eastern Apogee Conjunctions (pre-drift):

1 162/14.3 AC-8.8, 15.7; I2-9.8, 11.1; S2-11.2; T-11.7, 16.2; S3-13.2 --- 2 163/14.25 S2-10.2; T-11.2; I2-11.7; AC-14.7 --- 3 164/14.19 S2-10.3, 10.8; I2-10.5; AC-15.4 --- 4 165/14.13 I2-11.1; T-11.8, 16.3; S2-11.4; AC-14.4 --- 5 166/14.07 S2-9.9, 10.4; I2-9.8; T-11.3, 15.7; AC-13.5, 15.1 --- 6 167/14.01 I2-10.5; S2-11.0; S3-13.9; AC-14.1 --- 7 168/13.95 S2-10.0; T-11.9; AC-13.2; S3-13.4, 18.3; T-16.3 --- 8 169/13.89 I2-9.8; S2-10.1, 10.6; T-11.3, 15.8; S3-13.0; AC-13.8 --- 9 170/13.83 I2-9.2, 10.5; S2-9.6, 11.3; T-10.8; S3-12.6; AC-12.9 --- 10 171/13.77 S2-9.8, 10.3; I2-11.1; AC-12.0 --- 11 172/13.71 I2-9.8; S2-10.9; T-11.4, 15.9; AC-12.6 --- 12 173/13.65 S2-9.9, 11.5; T-10.9, 15.3; I2-10.4; AC-11.7 --- 13 174/13.59 S2-10.0, 10.5; I2-11.1; AC-12.3; S3-13.7; T-14.8 --- 14 175/13.53 I2-9.8; S2-11.1; AC-11.3; S3-13.2; T-15.9 --- 15 176/13.47 S2-9.6, 10.1; T-10.9, 15.4; AC-12.0; S3-12.8, 17.8 --- 16 177/13.41 I2-9.2; T-10.4, 14.9; S2-10.2, 10.8; AC-11.0; S3-12.4 --- 17 178/13.35 I2-8.5, 9.8; S2-9.8, 10.3.

Western Apogee Conjunctions (during GEOS drift):

G18 178/1.38 AC-22.3, 23.8; T-22.7; I2-23.7 --- G19 179/1.58 AC-22.9; T-23.9; I2-0.4; AC-3.6; S2-4.3 --- G20 180/1.78 T-23.3; I2-1.0; AC-4.2 --- G21 181/1.97 T-22.8, 4.4; I2-23.7; AC-3.3; S2-3.8 --- G22 182/2.16 S2-22.3, 4.4; T-23.9; I2-0.4; AC-3.9; S3-5.7 --- G23 183/2.34 T23.4, 5.0; I2-1.0; AC-3.0; S2-4.9 --- G24 184/2.53 AC-2.0, 3.6; T-4.4 --- G25 185/2.72 T-0.0; I2-0.3; AC-2.7;S2-4.4 --- G26 186/2.82 S2-22.9, 5.0; T-23.5, 5.0; I2-1.0; AC-1.7; S3-6.8 --- G27 187/2.79 I2-23.7; AC-0.8, 2.3;T-4.5;S3-6.4 --- G28 188/2.76 AC-23.8, 1.4; T-0.1; I2-0.3; S2-4.5 --- G29 189/2.74 S2-23.0, 5.0; T-23.5, 5.1; AC-0.5;I2-0.9 --- G30 190/2.72 AC-23.5, 1.1; I2-23.7; T-4.5 --- G31 191/2.70 T-0.1; AC-0.2, 6.9; I2-0.3; S2-4.5 --- G32 192/2.66 AC-23.2; S2-23.0, 5.1; T-23.6; I2-0.9 --- G33 193/2.60 T-23.1, 4.6; I2-23.7; AC-23.9, 6.6; S3-6.6 --- G34 194/2.54 AC-22.9; S2-22.5, 4.5; T-0.2, 4.1; I2-0.3 --- G35 195/2.48 S2-23.1, 5.1; T-23.6, 23.7; AC-23.5, 6.3; S3-6.5 --- G36 196/2.42 AC-22.6; T-23.1, 4.7; I2-23.7 --- G37 197/2.36 S2-22.6, 4.6; I2-0.3; T-4.2; AC-6.0 --- G38 198/2.30 S2-23.1, 5.1; I2-23.0; T-23.7, 3.6; AC-5.0 --- G39 199/2.24 T-23.2; I2-23.7; AC-5.7 --- G40 200/2.19 T-22.7, 4.2; S2-22.6, 4.6; AC-4.7, 6.3; S3-6.4 --- G41 201/2.13 I2-23.0; AC-0.7, 5.3; T-3.7; S3-6.0 --- G42 202/2.07 S2-22.1; T-23.3; I2-23.7; AC-23.7, 1.3, 2.9, 4.4, 6.0; S3-6.2 --- G43 203/2.01 T-22.7, 4.3; AC-22.8, 0.4, 1.9, 3.5, 5.0; S2-22.7, 4.7 --- G44 204/1.96 I2-23.0; AC-23.4, 1.0, 2.5, 4.1, 5.6; T-3.8.

Eastern Apogee Conjunctions (during GEOS drift):

18 179/13.48 S2-10.3, 10.9; I2-10.4; T-11.0, 15.5; AC-10.7 --- 19 180/13.68 I2-9.2; T-10.5; S2-11.4 --- 20 181/13.88 S2-9.8, 10.3, 12.0; I2-9.8; AC-10.4; S3-13.4, 18.4; T-16.1 --- 21 182/14.07 I2-9.1, 10.4; S2-10.4, 10.9, 12.5; T-11.1, 15.5; S3-12.9 --- 22 183/14.27 AC-10.1; S2-10.9, 11.5, 13.1; I2-11.1; S3-12.5; T-16.7 --- 23 184/14.43 AC-10.7; S2-12.0, 13.6; T-16.1 --- 24 185/14.63 I2-10.4; T-11.1; S2-12.6; AC-19.5 --- 25 186/14.77 AC-10.4; S2-11.0, 13.1; I2-11.1; T-16.7; S3-19.2 --- 26 187/14.83 T-11.7, 16.2; S2-11.5, 12.1, 13.7; I2-11.7; S3-13.6 --- 27 188/14.78 AC-10.0; I2-10.4; T-11.2; S2-12.6, 14.3; S3-13.1 --- 28 189/14.75 I2-9.8, 11.0; S2-11.0, 13.2, 14.8; S3-12.7; T-16.8 --- 29 190/14.73 S2-11.5, 13.8; I2-11.7; T-16.3; AC-19.5 --- 30 191/14.71 I2-10.4; T-11.3; S2-12.7, 14.3 --- 31 192/14.68 I2-9.7, 11.0; S2-11.0, 13.2, 14.9; T-16.9; AC-19.2; S3-19.4 --- 32 193/14.63 S2-11.6, 13.8; T-16.3; S3-19.0 --- 33 194/14.57 I2-10.4; T-11.3, 15.8; S2-12.7, 14.4; S3-13.3; AC-18.9 --- 34 195/14.51 I2-9.7, 11.0; T-10.8; S2-11.1, 13.3, 14.9; S3-12.9 --- 35 196/14.45 S2-11.6, 13.9; S3-12.4; T-16.4; AC-18.6 --- 36 197/14.39 I2-10.4, S2-12.8, 14.4; T-15.9 --- 37 198/14.33 T-10.9; S2-11.1, 13.4, 15.0; I2-11.0; AC-18.2 --- 38 199/14.27 I2-9.8; S2-11.7, 13.9; T-16.5 --- 39 200/14.21 I2-10.4; S2-12.9, 14.5; T-15.9; AC-17.9; S3-18.7 --- 40 201/14.16 T-10.9, 15.4; S2-11.2, 13.4, 15.0; S3-13.1; AC-17.0 --- 41 202/14.10 I2-9.8; T-10.4; S2-11.7, 14.0; S3-12.6; AC-17.6 --- 42 203/14.04 I2-9.1, 10.4; S3-12.2; S2-12.9, 14.5; T-16.0; AC-16.6 --- 43 204/13.98 S2-11.2, 13.5, 15.1; T-15.5; AC-17.3 --- 44 205/13.92 I2-9.8; T-10.5; S2-11.8, 14.0; AC-16.3.

JUNE AND JULY EVENTS FOR SPECIAL DATA ANALYSIS: GEOS, North American and Ground-Based Arrays

US IMS Coordinator R.H. Manka summarized the conclusions of European and N. American scientists (see pg 6) regarding the best times for analysis of data collected during the N. American apogee passes of GEOS. Low-altitude spacecraft with possibilities of collecting data in cooperation with GEOS included: ATS-5,6; S3-2,3; ISIS-1,2; Triad, AE-C and lately DMSP. Several ground arrays including Chatanika Radar, Jim Creek transmitter, Alberta magnetometer chain, etc. were well-located for cooperative measurements.

June 11-27 (see pg 3 of this NL): Intervals G1-G17. This entire 17-day interval prior to drifting GEOS westward is of interest. Practically identical field line conjunctions occurred between GEOS and ATS-6 during the apogee passes, data was acquired during 3 passes near Chatanika and there were several passes over Jim Creek and numerous other satellite conjunctions (see above). A list of data actually acquired by satellites and ground arrays is being compiled by the SSC and the US Coordinator.

Other potentially interesting June intervals are: 9/0100-0200 UT and 10/0200-0300 UT when Rostocker recorded large pulsation events; and 25/0400-0700 UT when a substorm was well-recorded by the Alberta magnetometer chain.

(Continued on pg 8)

NOTES FROM THE IMS SATELLITE SITUATION CENTER

The SSC has modified the high-altitude satellite special periods 19 through 21 (See IMS NL 77-7, pg. 5). The periods already published were based upon an incorrect ISEE A/B orbit tape. In addition, since that time it has become known that the Hawkeye 1 satellite is no longer acquiring data and SOLRAD 11A has been declared inoperative (as of 12 June 1977). The new periods 19-21, given below, exclude these satellites. For complete details on each of the satellite positions used in determining the unchanged special periods for the last quarter of 1977, see IMS NL 77-7. However, because of the probable special interest in these periods for use in coming IMS Workshops, we have relisted all the "extended" special intervals below. Included are both the newly derived periods 19-21 and the unchanged periods 16, 17, 18 and 22. Details of satellite boundary crossings or regions during the designated special periods are given only for the modified intervals 19-21.

The SSC has incorporated a model of the plasmapause boundary into its interactive computer system and is now able to process requests for satellite encounters with this boundary. A list of encounter times for the ISEE A/B satellites has been forwarded to A. Durney, ESTEC. The model used is simple and is based upon Chappel's model of Sharp's OGO-5 ion mass spectrometer measurements. The equatorial profile is extended to higher latitudes by making a dipole assumption and thus the model is appropriate for low and mid-latitude encounters such as those of the ISEE A/B satellites.

CHANGES IN EXTENDED IMS/SSC SPECIAL PERIODS FOR HIGH-ALTITUDE SATELLITES OCTOBER - DECEMBER 1977

Period Number	Period: Day/Hr	Period: Date/Hr	Duration (Hr)
16	273/21 - 277/9	Sep 30/21 - Oct 4/09	84
17	291/15 - 293/10	Oct 18/15 - Oct 20/10	43
18	304/14 - 306/13	Oct 31/14 - Nov 2/13	47
19	313/12 - 314/23	Nov 9/12 - Nov 10/23	35
20	319/16 - 321/08	Nov 15/16 - Nov 17/08	40
21	344/11 - 346/07	Dec 10/11 - Dec 12/07	44
22	361/08 - 363/02	Dec 27/08 - Dec 29/02	42

See 77-7

CHANGES IN IMS/SSC SPECIAL PERIODS FOR HIGH-ALTITUDE SATELLITES NOVEMBER - DECEMBER 1977

Period Number	Day/ Hour	Vela 5A	Vela 5B	Vela 6A	Vela 6B	IMP-H	IMP-J	Solrad 11-B	Prognoz 5	ISEE A/B	Comments
19	313/18	NM	I	DS	NM	I	P	I	P	I	Boundary encounters in 4 hr
	314/17	S	NS	P	NM	S	S	S	I	DM	Boundary encounters, 3.5 hr
20	319/22	I	P	HT	P	NS	I	S	O.K.	P	Boundary encounters, 1.5 hr
	320/10	I	HT	Sh	NS	S	I	NS		I	Boundary encounters, 2.5 hr
	321/02	DS	MT	P	I	I	I	Sh		I	Boundary encounters, 4 hr
21	344/17	DS	MT	P	I	P	I	I	P	I	Boundary encounters, 4 hr
	345/21	HT	I	I	DS	NS	I	DS	NS	DS	
	346/01	MT	I	I	DS	S	I	DS	S	NS	Boundary encounters, 5 hr

SSC SPECIAL SERVICES

The following information was shared by J. Vette, SSC, to illustrate the variety of services they provide to meet special needs of IMS participants.

"Besides the standard services of the SSC, which have been published in these NL's, there have been some special requests recently that will be summarized to indicate to the IMS community other possible support for individual campaigns.

In connection with the movement of GEOS to the west to place the foot track of the field line through Iceland and Syowa Base, Dr. Simon, European Regional IMS Office, requested, on behalf of French experimenters, that times of simultaneous magnetic conjunctions of GEOS, Syowa Base, ISIS 1 or ISIS 2 be provided for August and September 1977. The flux tube was defined as containing the geographic latitude range ±3 deg and longitude range ±6 deg around Syowa Base. No such conjunctions were found even by extending the ranges to ±5x10 deg, respectively. Some near approaches in September were provided.

In support of the Lago Pedo project, reported in IMS NL 77-8, Dr. David Winningham, Univ. Texas at Dallas, requested conjucntions based on the following criteria: for the defined burst position at 285 km altitude between a UT of 0600-0700 for the period 8/31-9/14, determine the satellites which could provide in-situ measurements or be on the same magnetic field line as the burst (±15 deg, lat. and long.) or be able to view from above, in the case of DMSP satellites. No in-situ conjunctions were found nor were DMSPs able to view from above; however, numerous magnetic conjunctions be AE-C, ISIS 1, ISIS 2 and DMSP-F2 were provided along with one case for TRIAD. A later request involved determining the optimum lati. & long. for the burst point to view the burst from Tern Island (one of the French Frigate Shoals) in line-of-sight with ATS-3 so that the beacon on the satellite could be used for electron content measurements. The orbit of ATS-3 had to be used since the inclination is presently 6.8 deg and the position

(Continued on pg 6)

(Continued from pg 5)

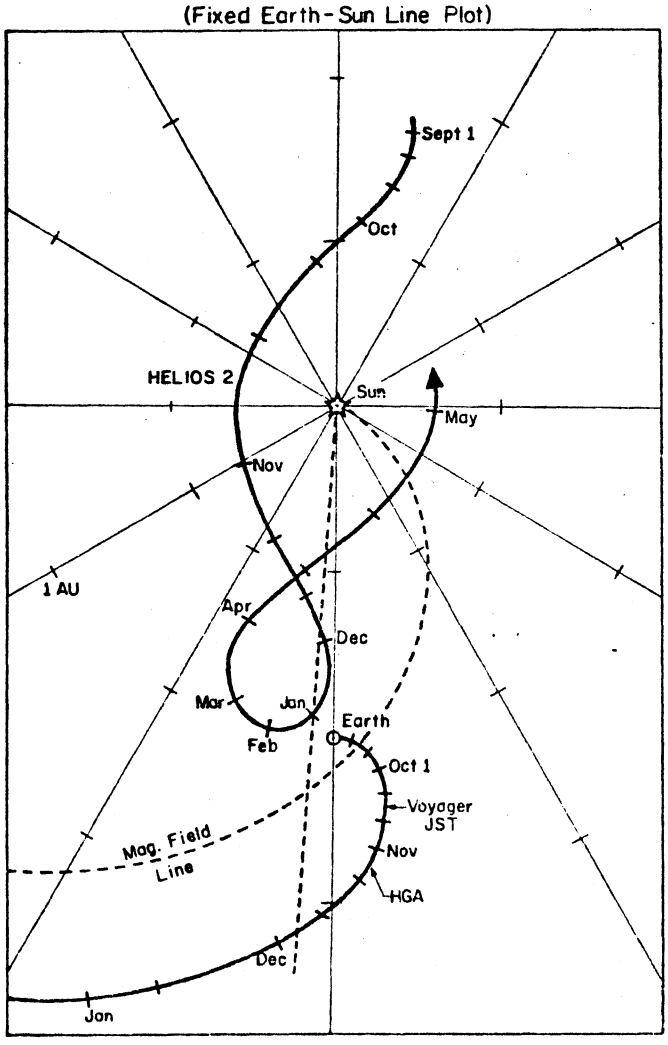
Dr. G. Bennett, Appleton Laboratory, has requested the times when DMSP satellites will have sub-satellite tracks passing within 200 km west or 170 km east of Anqoya range between 1700-0500 UT for the period 10/1 to 12/6. These will be provided 3 to 4 weeks in advance; longer prediction times last year resulted in some appreciable errors.

Dr. E.T. Sarris, MPI Garching, requested the position of Explorer 33 on May 17, 1971 on a very short deadline. A rapid checking of several different data sources resolved the solar magnetospheric coordinates within the desired accuracy.

Dr. Alastair Durney, ISEE-B Project Scientist, was sent tables giving the predicted crossing times of the bow shock, the magnetopause and the plasmapause for the period from launch on 10/13 through 12/31 when it was learned that he wished to provide such information to the investigators on ISEE-A&B. Except for the plasmapause crossings, this information will appear in SSC Report # 10, which has been delayed because of the extended support given to the coordination of satellites and North American ground based stations with GEOS. This Report should be in the mail by late September.

The SSC is dedicated to providing information that will assist the IMS community in obtaining important coordinated measurements. If the services illustrated above are required, contact the SSC." --- J. Vette

VOYAGER AND HELIOS TRAJECTORIES
(Fixed Earth-Sun Line Plot)



IMS WORKING CONFERENCE --- 9-10 June 1978

An international working conference organized by the IMS Steering Committee will be held in Innsbruck immediately following the STP and ESLAB Symposia and within the framework of the COSPAR meeting. Emphasis will be on correlation of ground-based and satellite data, particularly from GEOS and early ISEE data. The preselected interval is 1-15 December 1977. All participants are asked to submit lists of events from this period to the IMS Steering Committee before 1 March 1978. Participants will be notified by 1 April of the 5 or 6 events finally selected for intensive examination at the working conference. For more information, write to Dr. Gordon Rostoker, Dept. of Physics, Univ. of Alberta, Edmonton, Alberta, Canada T6G 0A8. Details will be given in the NL.

AD HOC IAGA MEETING ON GEOS-N. AMERICAN COOPERATION

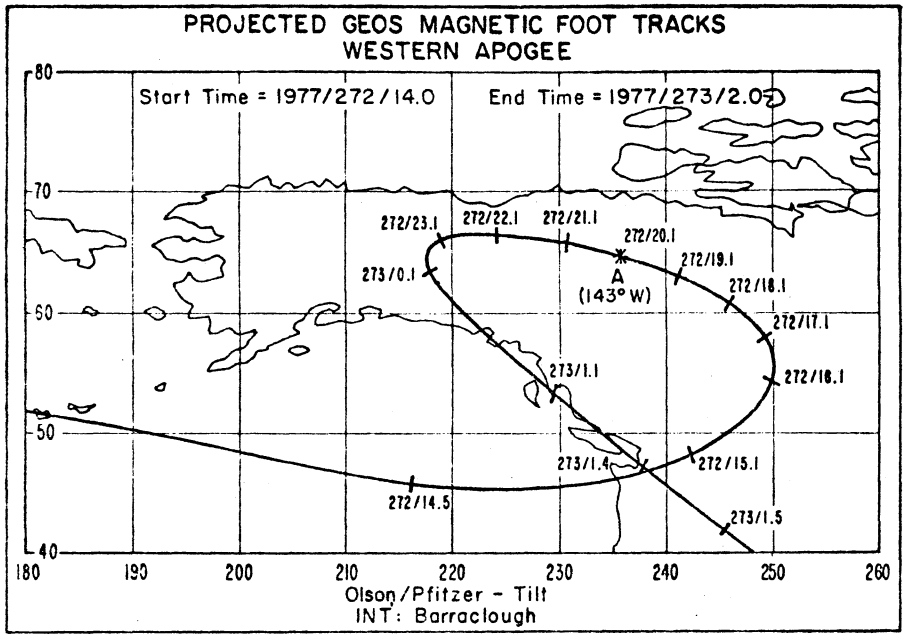
At Seattle about 30 IAGA attendees took part in an ad hoc meeting to discuss cooperative measurements between N. American and GEOS experimenters. Reports on experiment status and data acquisition were given for GEOS (Pederson, et al.), ATS-6 (Fritz and Whipple), S3-3 (Johnson), the Jim Creek VLF station (Helliwell), Chatanika (Vondrak) and the Alberta magnetometer chain (Rostoker). Data will soon be available for comparative study and workshop plans are progressing for the US and Europe. Several time periods were suggested for special study; Rostoker presented magnetograms and riometer records showing activity on 3 days during times when GEOS was near W. apogee. Pulsations occurred on June 9/0100-0200 UT and 10/0200-0300 UT and a large substorm was recorded on June 25/0400-0700 UT. Johnson described global magnetic activity for 12-21 July (Kp>5- for 7 active periods) and 25 July - 2 August (peak /Dst/ about 100 nT) during the largest substorm since GEOS launch. He reported that the S3-3 satellite obtained data on 80 to 90% of the N. hemispnere passes during these two periods. There was a concensus that these intervals (June 9, 10, 25, July 12-21 and July 25 - Aug 2) be adopted as special periods for joint GEOS-N. American studies (see pg 4). Possibilities of a joint N. American - GEOS workshop built around these events was discussed. Pedersen, Knott, Manka, Johnson, Fritz and Vette are to examine prospects for such a workshop in either late 1977 or early 1978. Pedersen will discuss the possibility at the forthcoming GEOS experimenters meeting. The GEOS session at the European Geophysical Society meeting, ISEE workshops, the ESLAB symposium and the June '78 IMS workshop in Innsbruck were noted.

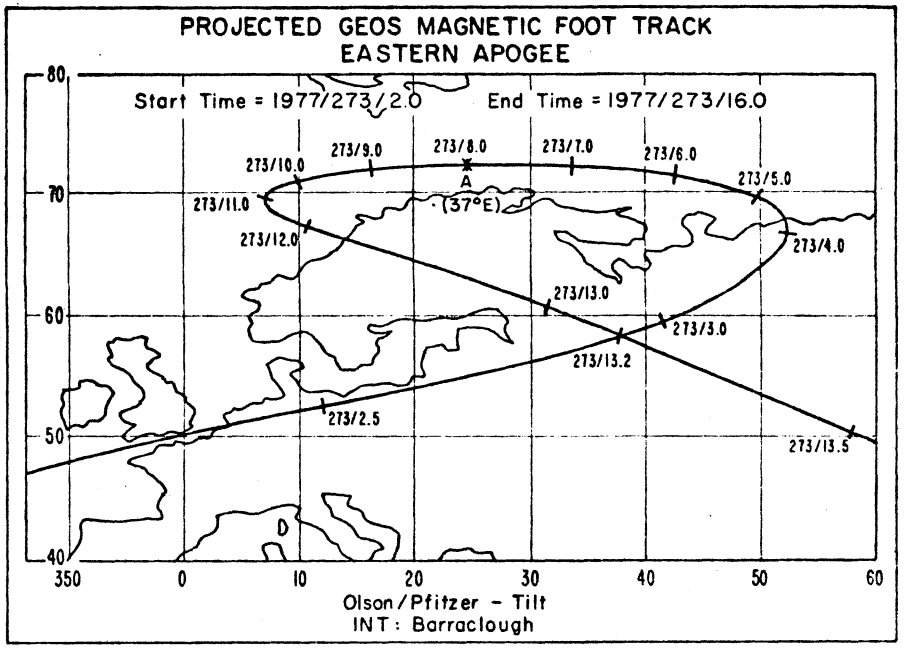
HELIOS-2 AND VOYAGER RADIAL ALIGNMENT: IMS Opportunity --- 15 Oct - 31 Dec 1977

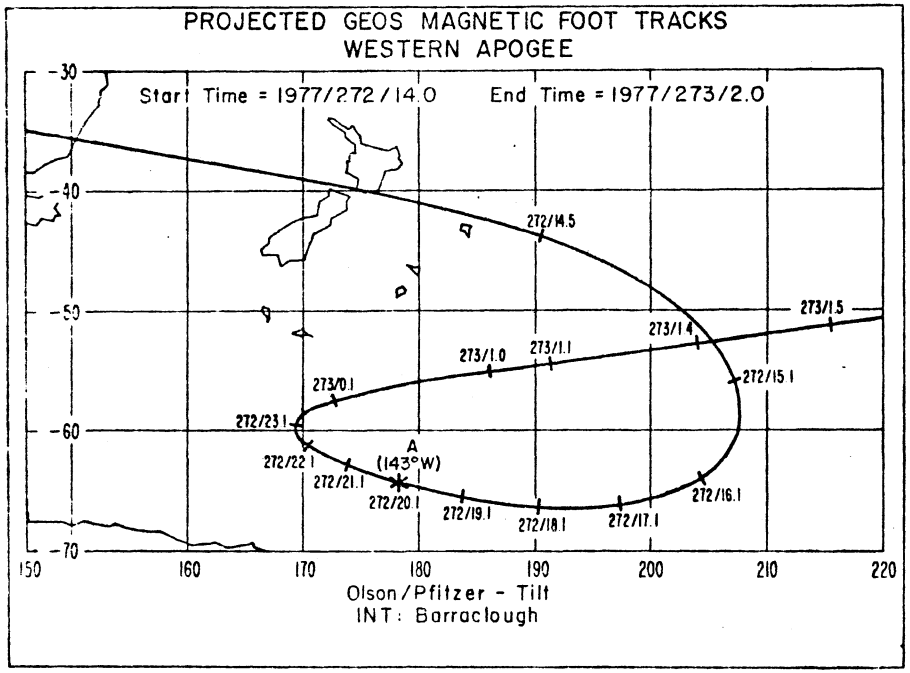
R.H. Manka, US IMS Coordinator, and F.L. Scarf, Chm. US Academy IMS Panel, have recommended consideration of the interval 15 Oct through 31 Dec 1977, as a time presenting special opportunities for IMS observations. During this interval, there will be a unique radial alignment along the Sun-Earth line, of several interplanetary spacecraft including Helios 2 in front of the Earth and Voyagers 1 and 2 approximately 1/2 AU outside the Earth and down tail.

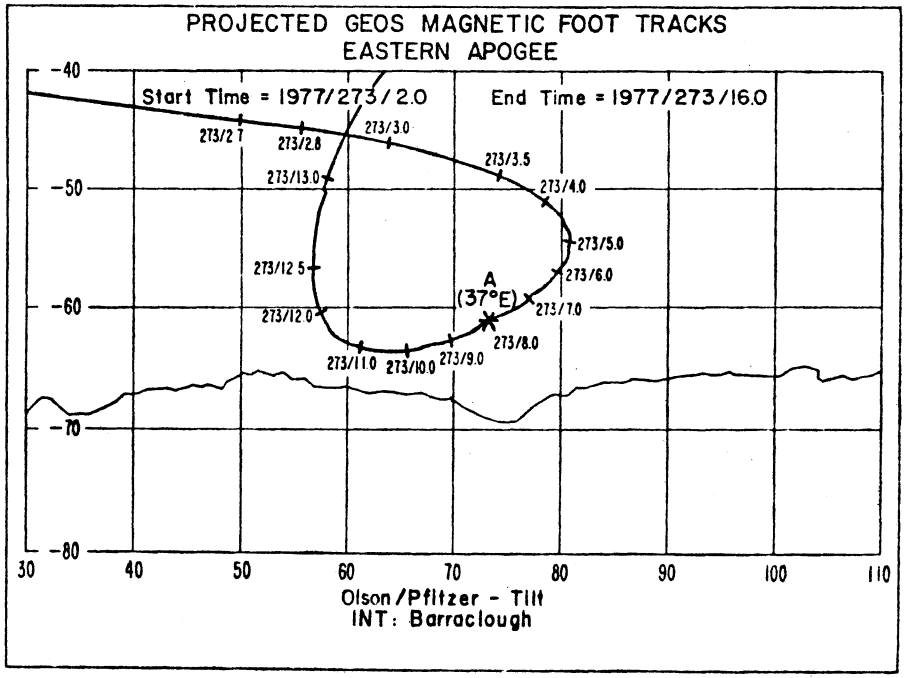
According to M. Dryer, Convener of STIP, Oct 15 - Dec 15 has already been declared a STIP interval and should provide good solar and solar wind coverage. The radial alignment was noted by F. Neubauer (Braunschweig) who is associated with Helios 2 and Voyager. Subsequently, H. Porsche (Helios 2) wrote to E. Stone (Voyager) suggesting coordinated measurements.

The radial alignment offers an unique opportunity with Helios 2 upstream as a solar wind monitor and Voyager passing through the geo-tail. A plot of the Helios and Voyager orbits provided by E. Franzgrote (JPL) is shown in the figure. In addition, there are six Earth-orbiting, high-altitude satellite IMS SSC special intervals during this period (see pg 5).

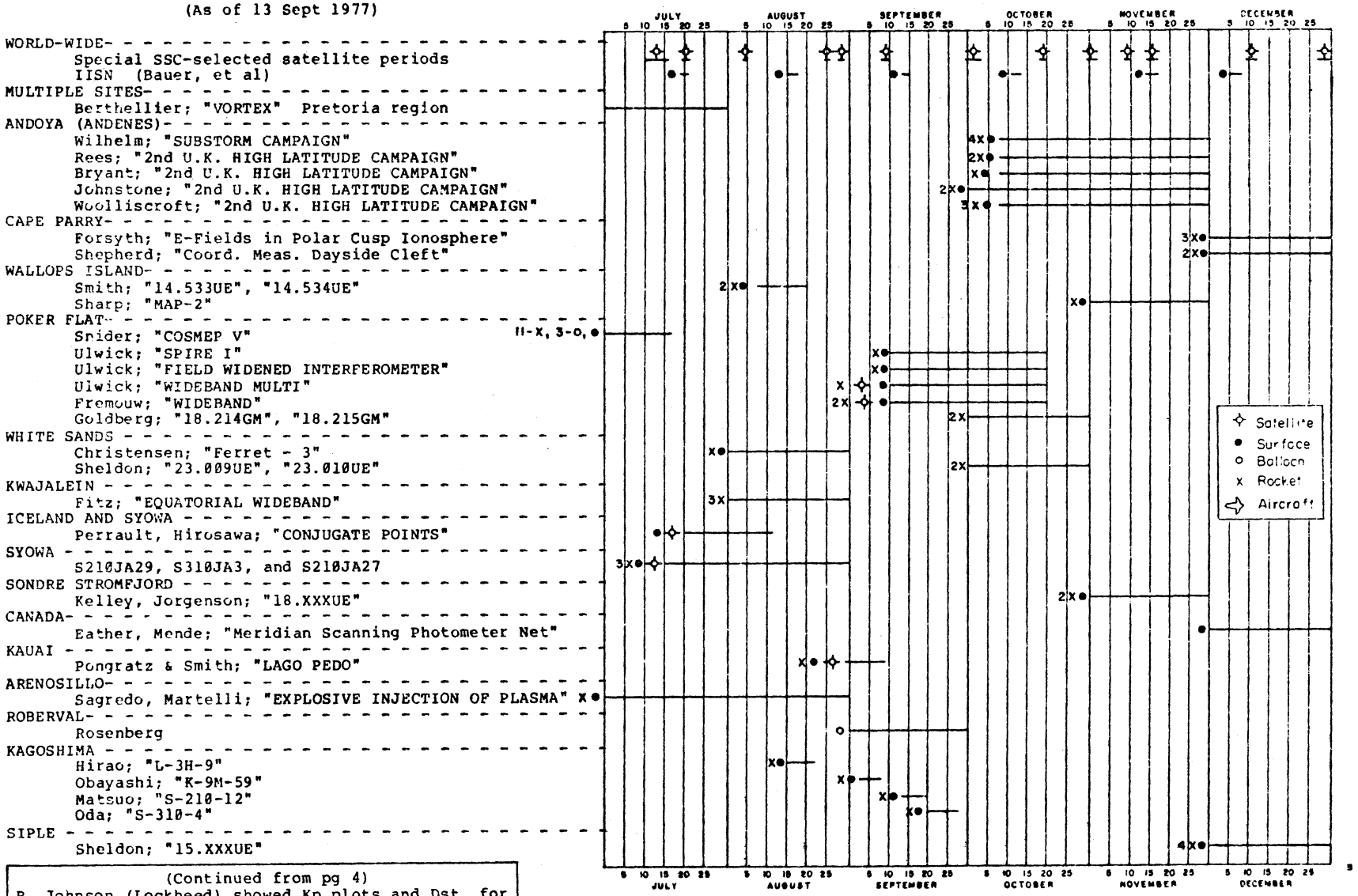

PROJECTED GEOS MAGNETIC FOOT TRACKS
WESTERN APOGEE
Start Time = 1977/272/14.0
End Time = 1977/273/2.0
272/23.1
272/22.1
272/21.1
272/20.1
272/19.1
272/18.1
272/17.1
272/16.1
272/15.1
272/14.5
273/0.1
273/1.1
273/1.4
273/1.5
A
(143° W)
80
70
60
50
40
180
190
200
210
220
230
240
250
260
Olson/Pfitzer - Tilt
INT: Barraclough


PROJECTED GEOS MAGNETIC FOOT TRACK
EASTERN APOGEE
Start Time = 1977/273/2.0
End Time = 1977/273/16.0
273/10.0
273/9.0
273/8.0
273/7.0
273/6.0
273/5.0
273/11.0
273/12.0
273/4.0
273/13.0
273/3.0
273/13.2
273/2.5
273/13.5
A
(37°E)
D
80
70
60
50
40
350
0
10
20
30
40
50
60
Olson/Pfitzer - Tilt
INT: Barraclough


PROJECTED GEOS MAGNETIC FOOT TRACKS
WESTERN APOGEE
Start Time = 1977/272/14.0
End Time = 1977/273/2.0
272/14.5
273/1.5
273/1.4
273/1.1
273/1.0
273/0.1
272/23.1
272/22.1
272/21.1
272/20.1
272/19.1
272/18.1
272/17.1
272/16.1
272/15.1
A
(143°W)
-30
-40
-50
-60
-70
150
160
170
180
190
200
210
220
Olson/Pfitzer - Tilt
INT: Barraclough


PROJECTED GEOS MAGNETIC FOOT TRACKS
EASTERN APOGEE
Start Time = 1977/273/2.0
End Time = 1977/273/16.0
273/2.7
273/2.8
273/3.0
273/3.5
273/13.0
273/4.0
273/5.0
273/12.5
273/6.0
273/12.0
273/7.0
273/8.0
273/11.0
273/10.0
273/9.0
A
(37°E)
-40
-50
-60
-70
-80
30
40
50
60
70
80
90
100
110
Olson/Pfitzer - Tilt
INT: Barraclough

IMS CALENDAR OF GBR CAMPAIGNS JULY - OCTOBER 1977
(As of 13 Sept 1977)



(Continued from pg 4)
R. Johnson (Lockheed) showed Kp plots and Dst for July. The most interesting periods are: July 12-21 (7 active periods with Kp>5-); and July 25 - August 2 (largest substorm since GEOS launch on 29 July, /Dst/ about 100 nT).