International Council of Scientific Unions

SPECIAL COMMITTEE
ON
SOLAR-TERRESTRIAL PHYSICS

77-12

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INTERNATIONAL MAGNETOSPHERIC STUDY
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IMS NEWSLETTER

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本号はIMS第二年度の最終号です。今年はIMSCIE事務局にとって画期的な年でした。多くの地上、ロケット、衛星観測に加えGEOS, ISEE 1・2衛星が打上げられました。今年前半にはNASAから、四月と九月からは日本とイタリアから助っ人が来ましたし各国から多くの情報が寄せられました。来年も一層の協力をお願いいたします。メリークリスマス そして実りの多い良きお年をお迎え下さい。

ジョー H アレン 亀井豊永 マウリチオ カンディディ 77/11/30 JHA

(Translation into English, for those needing it, will appear next month)

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PROGRAM PLANS FOR DECEMBER 1977 - FEBRUARY 1978

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), 77-7 (pg 5) and 77-9 (pg 5). These periods will probably be important for the forthcoming IMS Workshops because of the more comprehensive satellite data acquisition during these times. Also note a number of remaining special conjunctions associated with the STIP-IV/IMS Special Observational Period (events 11-18, IMS NL 77-10, pg 5; events 17-22, NL 77-11, pgs 8&9).

December 10, 1100 UT to December 12, 0700 UT December 27, 0800 UT to December 29,0200 UT

Special IMS Satellite Intervals for 1978 will be selected by staff of the Satellite Situation Center as soon as is possible. We hope to have the first tables of intervals for publication in NL 78-1 although it is a question of many priorities for the NASA GSFC computers. These intervals are usually selected for up to six months in advance. For this reason, the selections are based only upon interesting groupings of high-altitude satellites such as Vela, Prognoz, Imp, Solrad, Hawkeye, GEOS and ISEE. Conjunctions with low-altitude satellites such as ISIS, TRIAD, S3-2&3, DMSP and AE-C can only be predicted a few weeks in advance; hence, the need for weekly updates provided by the SSC through the IMSCIE Office using telephone and telex facilities.

SATELLITE LAUNCHES:

Jan 1 to Feb 28; K. Tao; "ISS-2"; Tanegashima; SATELLITE - see details below
Feb 1 to Feb 28; K. Hirao; "EXOS-A"; Uchinoura; SATELLITE - see details below

Ground-Based, Balloon and Rocket Campaigns:

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

------ to Dec 6; Woolliscroft; "2ND HIGH LATITUDE CAMPAIGN"; Andoya; ROCKETS (3) - SL1424, F4 & F6
Dec 1 to Dec 31; Shepherd; "... CLEFT"; Cape Parry; ROCKETS (2) - Details in 77-10, pg 2
Dec 1 to Dec 31; Forsyth; "... CUSP IONOSPHERE"; Cape Parry; ROCKETS (3) - Details in 77-10, pg 2
Jan 1 to Jan 31; Wilhelm; "SUBSTORM CAMPAIGN"; Andoya; ROCKETS (2) - T/NL3&4, note below and Actuality
Jan 1 to Mar 31; Venkatesan; "AURORAL X-RAYS"; Ft Churchill; ROCKETS (3) - note in 77-11, pg 10
Jan 1 to Mar 31; Whalen; "ENERGETIC PARTICLE DETECTOR"; Ft. Churchill; ROCKET - note in 77-11, pg 10
Jan 4 to Feb 2; Matthews; Andoya; ROCKET - multi-national cooperation, note 77-11, pg 2
Jan 28 to Feb 14; Scherb; Poker Flat; ROCKET - 29.009UE to measure particles and fields
Jan 30 to Feb 11; P. Cloutier, H. Anderson; "29.007UE"; Poker Flat; ROCKET - Auroral particles & fields
Feb 1 to Feb 28; E. Thrane, U. von Zahn; "Ferdinand 47-BUGATTI"; Andoya; ROCKET - note below
Feb 1 to Feb 28; E. Thrane, D. Krankowsky; "Ferdinand 48-TRINOM"; Andoya; ROCKET - with BUGATTI
Feb 1 to Feb 28; J. Ulwick; "EXCEDE II-SPECTRAL"; Poker Flat; ROCKET - electron gun, like EXCEDE I
Feb 1 to Mar 31; E. Llewellyn; "Atom Oxygen and Ozone"; Ft. Churchill; ROCKET - see note below
Feb 20 to Apr 20; Lundin; "S23-SUBSTORM GEOS"; ESRANGE; ROCKETS (3) - updated note below
Feb 27 to Mar 10; W. Sharp; "25.031UE"; Ft. Churchill; ROCKET - auroral studies, refly of 25.005UE
xxxxxxxxxxxxxxx; Heppner; Poker Flat; ROCKETS (4) - Ba 18.196 - 199, updated note below
xxxxxxxxxxxxxxx; Zhulin; "SAMBO-II"; ESRANGE; BALLOONS (25) - updated note below

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

Dec 6-8; Bauer, Evans; IISN; Global Network; SURFACE incoherent scatter radar net
Monthly; Wright & Hilsenrath; "OZONESONDE"; Various Sites; ROCKETS - see Actualities, NL 77-10, pg 3

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

------ to Dec 15; M. Siebert, O. Hillebrand; "Geomagnetic Pulsations"; N. Scandinavia; SURFACE - new note
------ to Dec 31; Rycroft; "VLF"; N. Scandinavia; SURFACE - see current Actualities, pg 6
------ to Apr 30; Eather; "Meridian Scanning Photometers"; Churchill Chain; SURFACE - note below
Feb 27 to Mar 13; W. Heikkila, R. Pellinen; "Auroral Breakup"; N. Europe; SURFACE - note below

Regional IMS SAT/GBR Program Details, Nov 77-Jan 78

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

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SPACE

ISS-2 --- Ionosphere Sounding Satellite-2 will be launched during Jan or Feb 1978, from Tanegashima Range, Kagoshima, Japan. Project Scientist is K. Tao and Project Manager is Y. Ogata of Radio Research Lab, 2-1 Nukui-Kitamachi 4 chome, Koganei-shi, Tokyo 184, Japan. The satellite will carry 4 experiments into an orbit with apogee 1015 km, perigee 980 km, period 105 min and inclination 70 deg. The launch vehicle will be a Nu rocket. Objectives of ISS-2 (ISS-1 was the first IMS satellite but died soon after entering orbit): accumulate data for study of the topside ionosphere and survey radio noise at four frequencies (from both earth and cosmic sources). Worldwide maps of F2 critical frequency will be prepared from the ionosphere sounding data. Principal experimenters and instruments are: N. Fuguno (RRL), N. Niwa (Univ of Tokyo) - ion mass spectrometer; N. Matuura (RRL) - Sweep frequency topside ionsopheric sounder (TOP); S. Miyazaki (RRL) - Retarding potential trap; and K. Muranaga (RRL) - Radio noise near 2.5, 5, 10 and 25 MHz.

EXOS-A --- This satellite for auroral studies will be launched by an M-3H rocket from Uchinoura Range, Kagoshima, Japan during Feb 1978. Project Leader is K. Hirao, Inst of Space and Aeronautical Science, Univ of Tokyo, Komaba, 4-6-1 Meguroku, Tokyo 153, Japan. The orbit will have apogee 4000 km, perigee 250 km, inclination 60-65 deg, and the period was not specified. The studies will emphasize auroral ultra-violet emission characteristics and auroral particles. Experiments - experimenters are: Aurora UV Television Camera - E. Kaneda (GI-Univ of Tokyo), N. Niwa (ISAS-Univ of Tokyo), M. Takagi (IIS-Univ of Tokyo); Ultra-violet Airglow - M. Nakamura, T. Watanabe (Sci Div, Tsukuba U.); Electron Energy Spectrum - T. Mukai (ISAS-Univ of Tokyo); Mass Spectrometer - I. Iwamoto, Y. Sagawa (RRL); Electron Density Measurement - K. Oyama, K. Hirao (ISAS-Univ of Tokyo); and Electrostatic Plasma Wave Measurement - R. Nakamura (ISAS-Univ of Tokyo), Y. Yoshino (RPL-Univ of Telecommunications). Coordinated ground experiments will be airglow observations at Miyako Island and Iriomote Island (both in the Pacific) and coordinated experiments are planned with GEOS and EXOS-B (to be launched in Aug 1978).

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ESRANGE (Kiruna)

SAMBO-II --- rescheduled for Nov 78 - Mar 79.

"S23-Substorm/GEOS"--- R. Lundin (KGI, Sweden) will launch the two Black Brant V-C and the Nike/BBVC from Kiruna as described in NL 77-11, pg 2, during the interval 20 Feb to 20 April rather than as shown and given last month. Also, the experiment of O. Storey should be described as "Enhanced Resistivity". This campaign may be further delayed if the launch of GEOS-II is firmly established.

ANDOYA (Andenes)

"Substorm Campaign" (FRG) --- K. Wilhelm notified IMSCIE Office by telex that the 2nd half of his campaign is postponed until Jan 1978, when he will attempt to launch the two remaining Skylark rockets (T/NL-3&4) into the same substorm. The rescheduling was necessary to allow the launch of rockets in the 2nd UK High-Latitude Campaign (see Actualities).

"Ferdinand 47-BUGATTI" --- Thrane (NDRE, Norway) and von Zahn, Bonn Univ, Nussalle 12, 53 Bonn, FRG, will launch a Nike-Apache rocket to 120 km in Feb 1978. The objective of this multi-national payload is to provide a detailed, in situ study of the structure of the mesosphere and lower thermosphere. Experiments/PI's are: BUGATTI (Bonn Univ Gas Analyzer for Turbopause and Turbulence Investigations) - U. von Zahn; Energetic particle spectrometer & Gerdien probe - E.V. Thrane; X-ray spectrometer - F. Stadness; Faraday Rotation - M. Friedrich. This rocket is to be launched 1 sec before Ferdinand 48 and the observations will be coordinated with ground observations by riometer and magnetometers at Andoya and with partial reflection measurements at Univ of Tromso. Launch will be into moderately disturbed night time conditions.

"Ferdinand 48-TRINOM" --- E. Thrane and D. Krankowsky (MPI, Heidelberb) will launch a Nike-Apache with "high drag configuration" 1 sec after Ferdinand 47. This payload will also serve to study in situ composition and structure of the mesosphere and lower thermosphere to an latitude of 120 km. Experiments/PIs are: Ion and neutral mass spectrometer and ionozation gauge - Krankowsky & Arnold; Ejectable electrostatic probes - Thrane; and Gerdien probe and Faraday rotation - M. Friedrich. Same coordination as Ferdinand 47-BUGATTI.

N. SCANDINAVIA

"Geomagnetic Pulsations" --- M. Siebert and O. Hillebrand have extended their ground-based campaign of FM and digital recording of geomagnetic variations at 6 sites (NL 77-1, pg 4, map profile #5) as described in NL 77-9, pg 2. Their campaign will have spanned the time from Sept 10 to Dec 15, 1977. The extension is so that data will be collected during the Special 2-week IMS Observational Interval from 1-15 Dec. This time will be the basis for selection of shorter periods containing interesting events and these will be analyzed in common at the IMS Working Conference in Innsbruck, Austria as part of the COSPAR meeting next June.

N. EUROPE

"Ground-Based Observations of Auroral Breakup" --- W. Heikkila and R. Pellinen, Finnish Meteorological Inst, Div of Geomagnetism, Postbox 503, SF-00101 Helsinki 10, Finland, have issued a 3-page "Call for Contributions to the Campaign ...". This is an outgrowth of the Regional IMS Workshop held at Hankasalmi, Finland in May 1977 (a meeting much praised at the Seattle IAGA Assembly). Preliminary plans called for observations to start during the new moon interval beginning on the evening of 27 Feb and continuing to the morning of 13 March 1978. In part this was a response to J. Roederer's call for "...deliberately coordinated, collective efforts for data acquisition and interpretation...", and "... organized team effort by experimentalists and theoreticians can lead to credible, quantitative answers..." (Global Problems in Magnetospheric Plasma Physics and Prospects for Their Solution - 1977). Also, they point out that perhaps never again after the next two years of the observational phase of the IMS will there exist such an extensive network of ground-based instruments any place on Earth as presently are found in N. Europe. Hence this proposal for joining forces in a broadly based campaign linking ground and satellite programs.

The main phenomena to be studied is the evening-side aurora but the extensive automatic, continuous recording instruments will also permit studies of the early morningside phenomena. Recording should begin just after local sunset and continue past magnetic midnight to about 2400 UT. They propose that instruments at locations listed below be operated during these 14 nights at their highest speed appropriate to the weather conditions (bounding on optical observations). Most scientists responsible for the listed instruments have already indicated their interest in participating in such a campaign.

Roederer pointed out the basic problems that can be studied by this type of campaign in his review paper (#3: Plasma Storage and Release Mechanisms in the Magnetospheric Tail; #4: Magnetic Field Aligned Currents and Magnetosphere-Ionosphere Interactions). Other topics are the growth phase phenomenon, triggering of auroral breakup and the breakup itself (the first few minutes), and the delay time of breakup-type proton precipitation compared to electron precipitation on the evening side (especially noting times of breakup near Iceland or Greenland). Small scale variations in auroras can be monitored by TV recordings, larger scale phenomena by all-sky cameras, photometers, and optical satellite instruments. Electrodynamical changes can be traced by magnetometers and the different radar networks. Particle precipitation spectra can be recorded by photometers, riometers, ionosondes and satellite instruments. Ideal time resolution is 10 sec or less but resolutions of several minutes are acceptable for supporting data. Absolute timing accuracy must be stressed because of its crucial importance.

Those willing to participate are requested to send an answer to the "Call" and a description of the essential technical data of the instruments that will be operated. This is needed before the end of 1977. Heikkila and Pellinen will circulate the collected information with time tables of appropriate satellite passes and further instructions during January 1978.

Successful acquisition of extensive data during a couple of substorms within this time interval (27 Feb - 13 Mar 1978) would make it possible for a preliminary data examination in Stockholm during May 1978. Format and date of this meeting would be set once the status of available data is known. At the meeting it would be possible to propose further campaigns (e.g. with "Porcupine" in 1978) and to begin work on joint papers to be presented at the Second Regional IMS Workshop to be held at Lindau in October 1978 (see note in this NL, pg 5).

Instruments and locations for a "Ground-Based Campaign to Study Auroral Breakup": TV recording - Apatity, Kevo, Tromso, ESRANGE, Abisko and Andoya; Photometers - Several meridian scanning photometers; All-Sky cameras - Kevo, Ivalo, Sodankyla, Muonio, Oulu and Kiruna (6 frames/min) and Tromso (1 frame/min) with color film at each station; Radar - STARE, Borlange-Lycksele, Borlange-Nurmijarvi, Pihtipudas-Sodankyla and 93 Mhz monostatic radar at Essoyla (USSR); Magnetic field - the whole Scandinavian network will operate without break during this period; Riometers - N-S line in Finland, several others in Sweden, Norway, Bear Island, Spitzbergen and the Murmansk region; Pulsations - N-S line of 5 stations in Finland plus other stations to E and W; Satellite data - Supporting ISIS data received at Sodankyla during the campaign and other satellites to be specified by the IMS SSC; and Ionosondes - all ionosondes and oblique sounders in N. Europe.

FORT CHURCHILL

"Atomic Oxygen and Ozone" --- E.J. Llewellyn, Inst of Space and Atmospheric Studies, Dept of Physics, Univ of Saskatchewan, Saskatoon, Saskatchewan S7N 0W0, will launch a Black Brant V-C from Churchill, Manitoba, Canada to an altitude of 150 km to measure the height distribution of atomic oxygen and ozone during winter warming in the morning twilight. Experiments/PI's for the payload are: Odd Oxygen Photometer - E.J. Llewellyn; Vapour Photometer - W.F.J. Evans; Ram Sensors - A.A. Koehler; Plasma Probes - A.G. McNamara; and Polarization Photometers - G. Witt. Rocket will launch into morning twilight with a solar depression angle of 4-6 degrees. This launch will be coordinated with a similar one at Kiruna (ESRANGE), Sweden about 36 hours earlier.

POKER FLAT

"Ba 18.196-18.199GEX" --- J.P. Heppner's program of 4 Nike-Tomahawks to study "auroral belt winds" is of somewhat uncertain prospects. In August the Poker Flat Research Range launch schedule listed a January 1978 launch window for this program. However, the 14 Nov listing of the rockets in preparation by the NASA Goddard Space Flight Center Sounding Rocket Division has removed the "integration" and launch window dates and replaced them with the word "LIMBO" (i.e. uncertain). A footnote to this entry states that the program will take place in the indicated fiscal year only if sufficient funds become available; however, since no fiscal year is given this is even more uncertain in meaning.

ACTUALITIES

SATELLITES

ISEE-1&2 --- These satellites were described in some detail in IMS NL 77-8, pgs 8&9, and details of their successful launch were given along with orbit foot-track maps during conjunctions with low-altitude satellites on several pages of NL 77-11. Also, summary letters containing numerous tables and maps for ISEE-1&2 have been distributed by IMS SSC staff and the US IMS Coordinator, R.H. Manka. Project Scientists K. Ogilvie and A. Durney are interacting with PI's for the two spacecraft in order to determine if all experiments are functioning properly. As soon as details become available, we will include them in these NL's. At this time we understand that both satellites are "in good shape" with the usual problems attendant upon the start-up of any complex scientific satellites.

ROCKETS

ANDOYA (Andenes)

"Substorm" --- K. Wilhelm and P. Simon notified IMSCIE Office of the successful launch of Skylark-12 rocket T/NL-1B (formerly called T/NL-2) on 2 Nov 1977 at 2015 UT. The launch was into a positive magnetic disturbance and the vehicle and experiments appear to have functioned nominally. "2nd UK High-Latitude Campaign" --- A. Johnston (SL1421) and D.A. Bryant (F1) launched their respective rockets on 17 Nov at 213236 and 213406 UT.

SURFACE

DISTRIBUTED POINTS

"Conjugate Point Experiment" --- R. Gendrin and P. Simon report that this complex campaign linking ground-based, rocket and satellite observations continued from 4 July to 22 Sept 1977. The French Mobile Station was on Iceland, GEOS was near apogee at geostationary altitude close to the magnetic meridian of Iceland and the Japanese Antarctic station SYOWA. The following experiments were operated ast Husafell, Iceland (20.83 deg W, 64.43 deg N): magnetic field by 3-comp fluxgate; ULF waves by 2-comp flux meter in PC2-4 range and 3-comp flux meter for PC1's); ELF & VLF waves; riometer; photometers. Optical measurements began only on August 19. VLF waves were recorded on analog tapes and spectral analyzed in real time. Other signals were digitized. Japanese scientists were present at Husafel from 28 July to 18 Sept. They operated a TV camera and a 2-comp flux meter. Three rockets were launched from SYOWA, Antarctica on July 12 (1245UT), July 26 (1535 UT) and August 10 (1245 UT). See IMS NL 77-11, pg 6. During the campaign many events occurred which were detected on the ground and on board GEOS. Requests concerning these data should be sent to: Dr. S. Perraut (for French participants) or Dr. T. Hirasawa (for Japanese participants) and the request will be forwarded to the appropriate campaign scientist.

L. Lanzerotti informs us that since late summer 1977 digital magnetometer data with a 2-sec digitization interval have been acquired at 3 N. American sites: Girardville, Quebec (L=4.4); Pittsburg, New Hampshire (L=3.5); and Durham, New Hampshire (L=3.2). Also, since Jan 1977 similar data have been acquired At Siple station Antarctica. At Siple, 30 MHz riometer data are also recorded digitally at 2-sec intervals along with the magnetometer data. Data acquisition at Lac Rebours, Quebec (L=4.0) has been temporarily suspended while the station is being refurbished. It will be reactivated at a new location somewhat south of Lac Rebours in the Spring of 1978.

Japan --- The Japanese language IMS Newsletter No. 4 was distributed in late Summer 1977. The IMSCIE Office has received an English language translation of the principal topics from this publication. Many of the programs described had not been listed in these NL's as pre-campaign information. A brief summary of the new actualities from this source are given below without regard to division by location or vehicle.

I. Structure and dynamics of the plasmasphere --- S. Kato reports on:

1. VLF-ULF wave observations at the auroral zone and the plasmapause. A campaign in Aug-Sep 1976 and another in Feb 1977 in collaboration with Univ of British Columbia and Univ of Victoria collected the data. First, ULF waves were recorded at Churchill, Gillam, Thompson, Island Lake, and Star Lake. Auroral TV and VLF direction finding observations were made at Churchill and Thompson. In the second, ULF, VLF direction finding and auroral TV observations were made at Churchill.

2. Kyoto Univ is constructing a meteor radar to obtain information on the dynamics of the lower ionosphere. Transmission frequency is 31.57 MHz, peak power output is 10 kW, pulse width is 280 microsec and pulse repetition frequency is 20 Hz to about 200 Hz. Data acquisition will take place from Sept 1 at Shigaraki (near Kyoto).

II. Auroral flare --- T. Oguti

1. Rocket launchings from SYOWA in conjunction with overpasses of ISIS. Other rockets into auroral displays with copies in the report of magnetograms during the time of the launchings. Tables give the number of satellite orbits during which telemetry data were received at SYOWA. Examples of topside sounder data and VLF data thus obtained are given. On the ground, observations were carried out at a station network including SYOWA, Mizuho, and an unmanned station. Chorus emissions received are compared and detailed correspondences can be recognized. Hiss emissions are compared.

2. Ionospheric temperature observations during auroral displays are shown for Doppler temperatures at 5577 and 6300A from Fairbanks, Alaska during a 2-week campaign in Jan 1977.

III. Geocorona --- H Kamiyama

1. Magnetospheric glow of He 10830 and H 6563A is

observed at Kakioka from October 1977.

2. Subtropical glow observations made at Miyako (southern tip of Japan archipelago) from Oct 1977.

IV. Survey of the heliosphere --- K. Nagashima

1. Radio star scintillation is used to determine solar wind velocities from quasar 3C48. The latitudinal gradient is of 5 to 6 km/deg. Recurrent streams have an amplitude of 3 to 400 km/sec in the equatorial region but become less pronounced at higher latitudes. Two volumes of data books have been published covering Jun-Dec 1975 and Jan-Jul 1976.

2. High energy cosmic ray modulation is shown by the GG index representing N-S flow of cosmic rays compared with IMF sector polarities inferred by Svalgaard. The GG index was derived from the dependence of count rates of the meson telescope at Norikura on the look direction. Very good correlation is recognized and IMF polarity can be inferred from GG with a high probability as summarized in tables. Spacecraft-observed and inferred polaritie compared for 1971 through 1973.

3. Polarization of Jovian decametric radiation is deduced from the phase of the cross Yagi antenna. These observations began in Oct 1976. The R component predominates although sometimes R and L are mixed. The occurrence frequency of the non-Io associated emission is compared with the magnetic field distribution on the Jovian surface (deduced from Pioneer 11 data) and the emission from around the S magnetic pole is inferred from this comparison.

4. Optical observation of comet Schessmann-Wachamann revealed that it increased in brightness 500 times last Oct within one night.

V. Solar Active Region --- H. Tanaka

1. Monochromatic imaging of the sun shows the variation in structure of the McMath-14771 region after it emerged from the E edge on 9 May 1977. Observations are taken at Mitaka (near Tokyo).

2. Spectrum of solar radio burst is shown by two dynamic spectra of noise bursts. The high sensitivity of the spectrometer makes it possible to see frequency drifts of short duration bursts (<1 sec).

3. Burst observations by automatic solar radio intensity monitor is shown by an example for 17 April 1977 with a timing accuracy of better than 1/100 sec.

VI. Data reduction, analysis and synthesis --- H. Maeda

1. Kakioka Magnetic Observatory has derived power spectra of Pi waves observed at Memabetsu by an FFT method. Spectrograms of pulsations observed from Jan-Jun 1976 at Memabetsu, Kanoya and Chichijima were published as "Preliminary Report of Magnetic Pulsations". A tape format is given for digitized magnetometer data produced at Kakioka, Memabetsu and Kanoya.

2. Radio Research Laboratories are observing whistler atmospherics at the newly relocated Okinawa Radio Observatory and is operating a meteor radar at Akita 4 days/week (since Jul 1977).

3. Institute of Physical and Chemical Research --- Cosmic ray data has been processed and data analyses routinely carried our.

4. National Institute of Polar Research calculated power spectra and polarization analyses of pulsation data from SYOWA and has produced colour-coded all-sky camera pictures of auroral intensities.

5. Inst of Atmospherics, Nagoya Univ has introduced a telephone fax system for prediction and warning about solar activity. Toyokawa, Mitaka, Nobeyama and Okayama are connected. An 8-cm heliograph was transmitted in 6-min.

6. Inst of Space and Aeronautical Sci, Univ of Tokyo has attempted to deduce solar wind velocity from AU and AL indices on the basis of the difference in observed V-dependencies of these two indices.

7. Faculty of Science, Kyoto Univ has predicted sunspot numbers by Wiener's prediction theory. Attempts are shown of geomagnetic disturbance predictions as given by AE and Dst indices from solar wind and IMF data.

8. Faculty of Engineering, Kyoto Univ is working with ionospheric HF Doppler analysis.

9. Faculty of Science, Nagoya Univ gave the 1/3-day variation of Norikura V-component of cosmic rays, pressure-corrected data including secular variation and differences from the 24-hr running mean and similar values/figures for 1/4-day variations. Average vectors of 1/3 & 14-day variations are 0.0138% & 0.006%, respectively in amplitude and about 4 hr and o hr in direction.

10. Faculty of Science, Tohoku Univ gave examples of curve following by a graph-pen showing the correlation between geomagnetic disturbance and Jovian decametric emission constructed using an automatic data reading system, and equipotential contours around a probe immersed in plasma (simulating a probe to be mounted on EXOS-B).

SATELLITE INFORMATION

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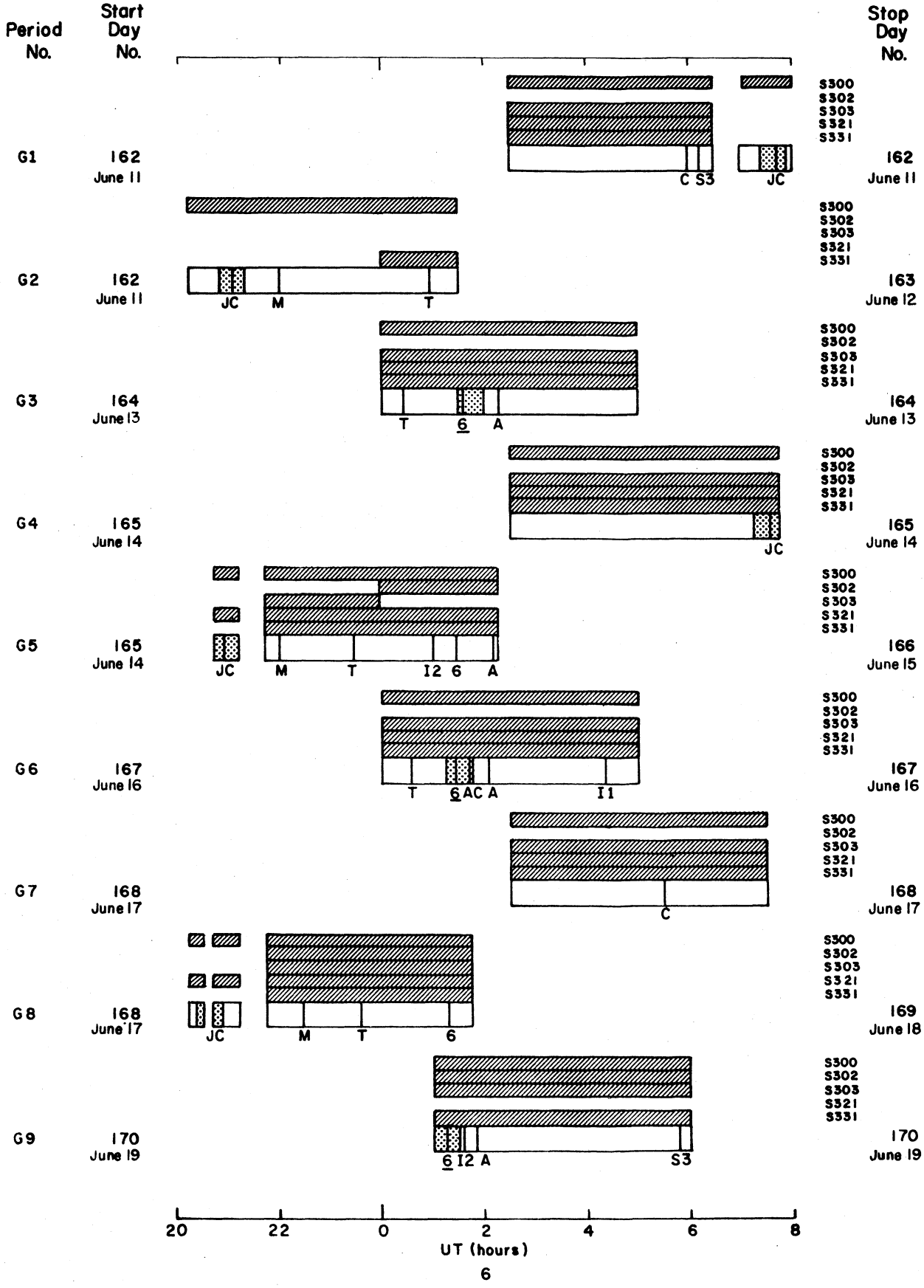
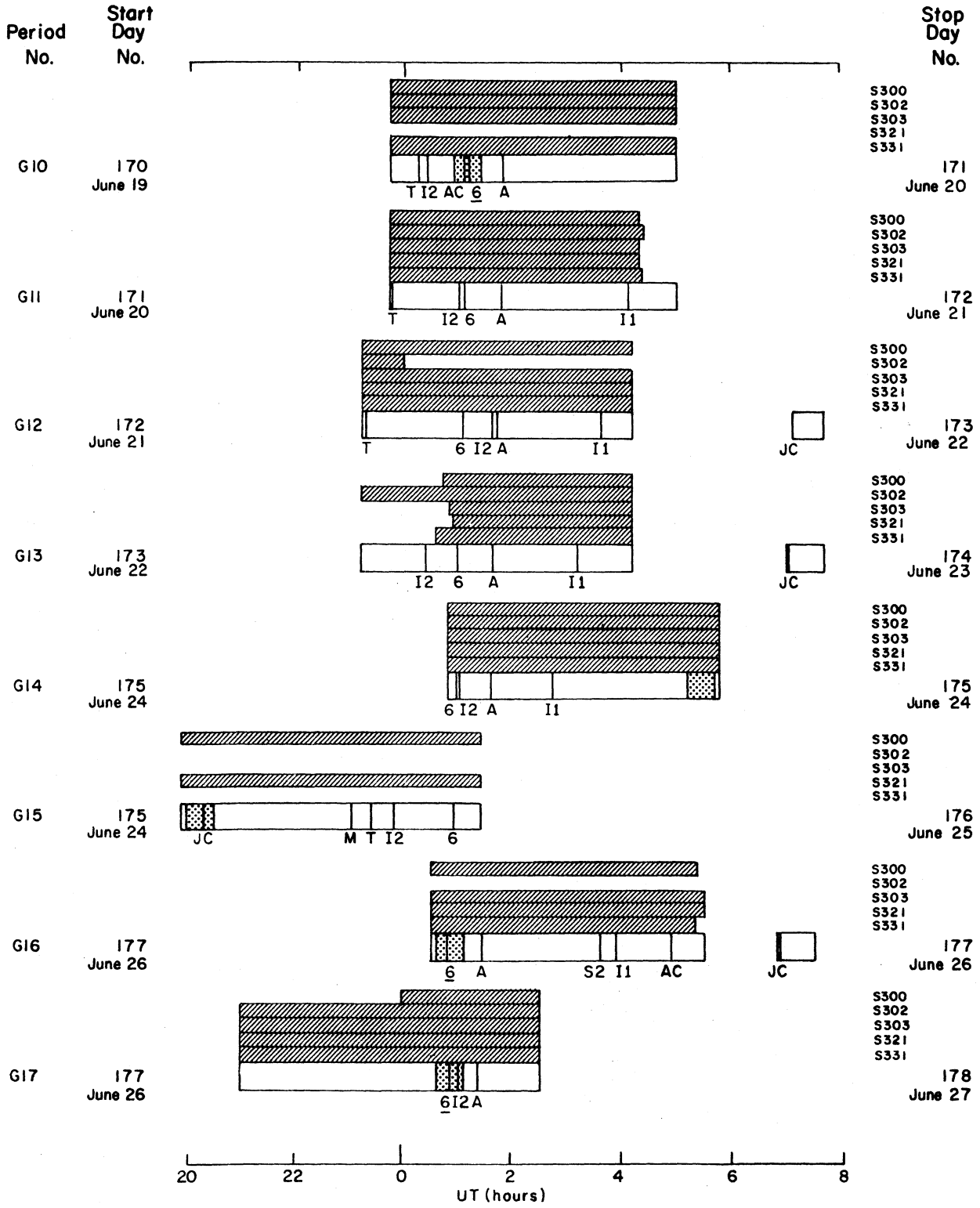
* GEOS S-300 DATA TO BE ERASED --- D Jones, ESTEC *
* S-300 Operation Group Scientist, requests that *
* all IMS participants note the impending erasure *
* of GEOS S-300 wave data for most of July - *
* September 1977. "Due to restrictions on the *
* amount of GEOS WAVE DATA that can be stored, *
* GEOS experimenters will soon decide on periods *
* within the months of July, August and September *
* 1977 for which data will be erased. Anyone *
* wishing that data for specific limited periods *
* (in 1-hour units) should not be erased should *
* contact K. Knott. As a guide, please note that *
* on the average only 10 percent of the wave data *
* can be kept." *
****

GEOS Special Periods G1 - G17 --- These NL's have contained tables and other information about GEOS Special Periods beginning with 77-7, pg 9. R.H. Manka and IMS SSC staff have collected information about the GEOS tracking periods by NASA and published this together with charts and tables displaying information about data collection by select low-altitude satellites and certain ground-based experiments when these were in magnetic conjunction with GEOS. K. Knott sent IMSCIE Office a listing of experiment switch-on and -off times for the days of the first 17 special intervals (both E & W apogee passes). We have combined a figure from Manka, et. al. with the GEOS experiment status information for intervals G1-G17, producing the figures on pages 6&7 of this NL. GEOS experiment S-329 is not shown because it was on almost continuously. The open bars are the nominal tracking time when NASA was receiving GEOS data around the W Apogee. Vertical lines show the times of magnetic conjugacy with low-altitude satellites and the dotted region is the 30-min high-priority period for acquisition of high data rate data from GEOS. These coincide with coordinated ground or satellite experiments. The shaded bars above each segment represent times when the respective GEOS experiments were turned-on (shown only for the NASA tracking periods). This does not mean that good quality data were acquired nor does it mean that the various experiments were optimally oriented or otherwise deployed, only that they were "ON".

Magnetic Conjunctions with ESA-GEOS during Special Periods G1 - G17 and Status of GEOS Experiments

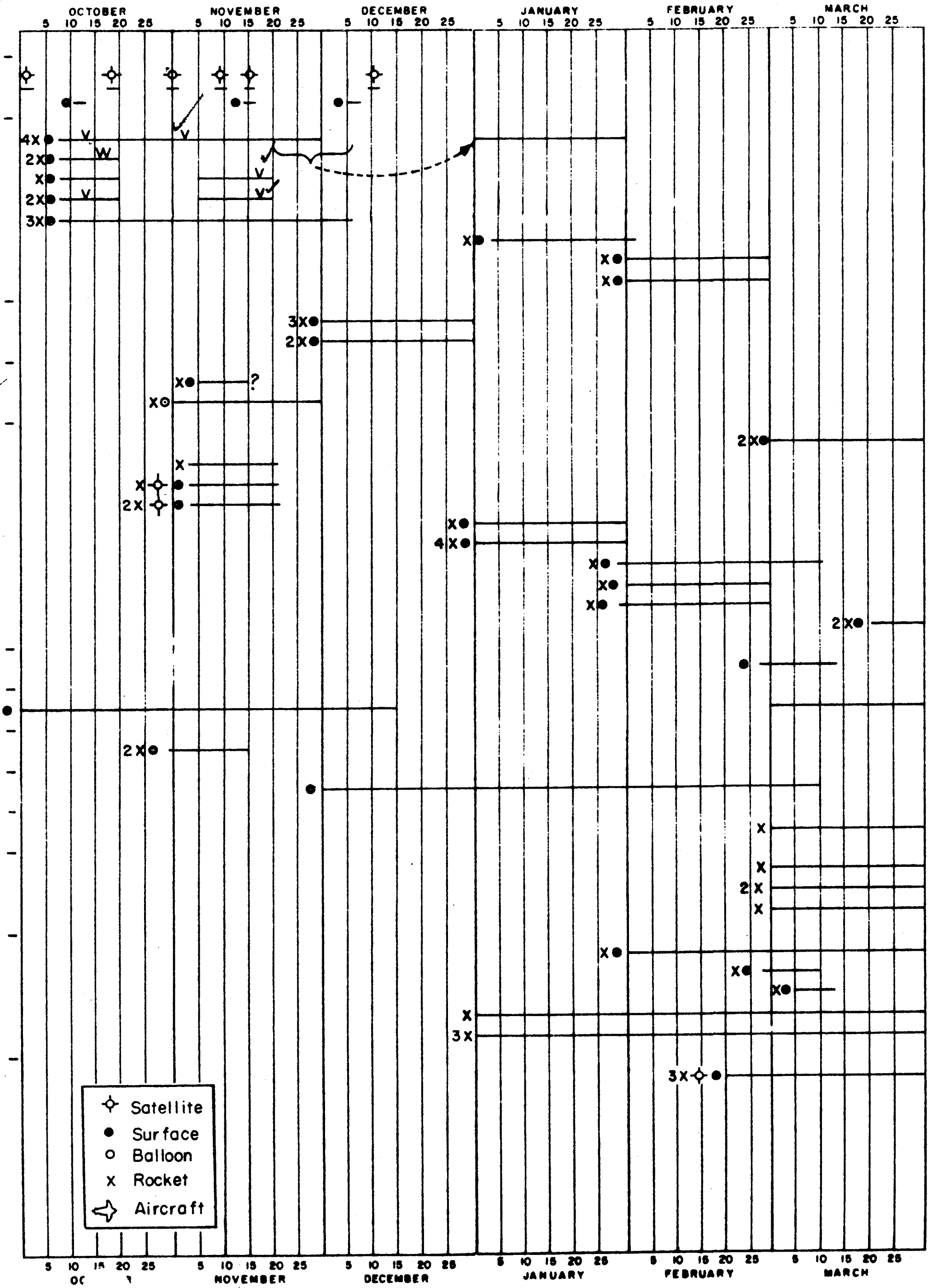


Magnetic Conjunctions with ESA-GEOS during Special Periods G1 - G17 and Status of GEOS Experiments



IMS CALENDAR OF GBR CAMPAIGNS   OCTOBER 77 - MARCH 78
(As of 30 November 1977)

WORLD-WIDE-
  Special SSC-selected satellite periods
  IISN (Bauer, et al)
ANDOYA (ANDENES)-
  Wilhelm; "SUBSTORM CAMPAIGN"
  Rees; "2nd U.K. HIGH LATITUDE CAMPAIGN"
  Bryant; "2nd U.K. HIGH LATITUDE CAMPAIGN"
  Johnstone; "2nd U.K. HIGH LATITUDE CAMPAIGN"
  Woolliscroft; "2nd U.K. HIGH LATITUDE CAMPAIGN"
  Kelley, Matthews; "18.211UE/IE"
  Thrane, von Zahn; "Ferdinand 47 (BUGATTI)"
  Thrane, Krankowsky; "Ferdinand 48 (TRINOM)"
CAPE PARRY-
  Forsyth; "E-Fields in Polar Cusp Ionosphere"
  Shepherd; "Coord. Meas. Dayside Cleft"
WALLOPS ISLAND-
  Smith; "14.533UE"
  Sharp; "MAP-2"
POKER FLAT-
  Davis; "18.1017UE & 18.1018UE"
  Ulwick; "FIELD WIDENED INTERFEROMETER"
  Ulwick; "WIDEBAND MULTI"
  Baron; "WIDEBAND"
  Scherb; "29.009UE"
  Heppner; "18.196 - 199 GEX"
  Winckler; "ECHO V"
  Ulwick; "EXCEDE II"
  Cloutier; "29.007UE"
  Goldberg; "18.214GM & 18.215GM"
N. EUROPE
  Heikkila, Pellinen; "Auroral Breakup"
N. SCANDINAVIA-
  Siebert; "Geomagnetic Pulsations"
SONDRE STROMFJORD
  Kelley, Jorgenson; "18.1015UE & 18.1016UE"
CANADA-
  Eather, Mende; "Meridian Scanning Photometer Net"
WHITE SANDS
  Wilshusen; "31.XXXUE"
PERU (CHILCA)
  Smith, Kopp; "14.XXXUE"
  Hale; "15.XXXUE(2)"
  Kelley; "31.XXXUE"
FORT CHURCHILL-
  Llewellyn; "Atomic Oxygen and Ozone Measurements"
  Sharp; "25.031UE"
  Bernstein; "MONSTER"
  Whalen; "Energetic Particle Detector"
  Venkatesan; "Auroral X-Rays"
KIRUNA (ESRANGE)-
  Lundin; "S23 - Substorm GEOS"



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