Joe H. Allen

International Council of Scientific Unions

78-10

SPECIAL COMMITTEE
ON
SOLAR-TERRESTRIAL PHYSICS

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WORLD DATA CENTER-A FOR STP, D64, NOAA, BOULDER, COLORADO, 80302, USA

IMS NEWSLETTER

Solar Maximum Year --- The Executive Council of the International Astronomical Union have formally approved the Solar Maximum Year program and have requested SCOSTEP to organize practical details and provide an organizational structure for the SMY program. Some preliminary planning for the SMY has already been discussed during the SCOSTEP meeting in Innsbruck in anticipation of IAU approval. Further information will be made available in IMS newsletters, in particular a plan for SMY.

PD 78/09/26

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

SPECIAL IMS HIGH-ALTITUDE SATELLITE PERIODS - 1978

Special IMS High-Altitude Satellite Intervals for October through December 1978 are given below. Page 4 of NL 78-8 has a detailed listing of all the SSC - selected Special Satellite intervals for July - December 1978 and the satellite configurations that were the basis for selection of these periods. As was done for such earlier intervals, start and end times were extended from the model calculations to allow for boundary fluctuations during disturbances. Details for the first half of 1978 were published in NL 78-2, pg 4.

#14	2 Oct	275/1200 UT	to	3 Oct	276/2400 UT	#15	27 Oct	300/1000 UT	to	28 Oct	301/1700 UT
#16	8 Nov	312/0200 UT	to	9 Nov	313/1200 UT	#17	3 Dec	337/1600 UT	to	6 Dec	340/0600 UT
#18	17 Dec	351/0500 UT	to	17 Dec	351/2200 UT	#19	28 Dec	362/0400 UT	to	29 Dec	363/0900 UT

SPECIAL LOW-ALTITUDE SATELLITE CONJUNCTIONS

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

SATELLITE LAUNCHES:

Oct 23; W.R. Bandeen; "NIMBUS-G"; ETR; SATELLITE - see NL 78-8 pg 3

GROUND-BASED, BALLOON AND ROCKET CAMPAIGNS:

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

Sep 9 to Oct 9; G. Haerendel; "PORCUPINE-III&IV"; Kiruna/ESRANGE; ROCKETS (2) - see NL 78-7 pg 3
Oct 16 ---------; R. MacQueen; 27.033AS/US; White Sands; Rocket 27.033AS/US - Coronal Research
Oct 23 ---------; J.P. Heppner, "CAMEO"; ETR; ROCKET - see NL 78-8 pg 3
------ to Oct 3; W. Sharp; "MAP-2"; White Sands; ROCKET - 13.135UE
------ to Oct 11; L. G. Smith; Wallops Is; Rocket - 14.542 - Plasma physics, nighttime ionosphere
Oct 1 to Oct 31; E. Nier; 18.1024UA; White Sands; ROCKET - Nike/Tomahawk for EUV dayglow, ion chemistry
Oct 22 to Nov 8; J.C. Ulwick;3 programs; Poker Flat; ROCKETS (6) - see NL 78-8 pg 3
Oct 22 to Nov 11; L.J.C. Woolliscroft; "U.K. Andoya Campaign 1978"; Andoya; ROCKETS (2) - SL1424 & F6
Nov 13 to Dec 10;Maehlum, Martelli, Maynard; Ferdinand 40,41; Andoya; ROCKETS (2) - 18.216IE, 18.207IE
Nov 25 ---------; J.R. Winkler; "ECHO V"; Poker Flat; ROCKET - Strypi-Plasma Physics-Aurora

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

Oct 18, Nov 15 and Dec 13; Bauer, Evans; IISN; Global Network; SURFACE - See NL 78-2, pg 2 for details
Monthly; Wright & Hilsenrath; "OZONESONDE"; Various Sites; ROCKETS - See Actualities, NL 77-10, pg 3

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

------ to Oct 15; Siebert; "GEOMAGNETIC PULSATIONS"; N. Scandinavia; SURFACE - See NL 78-6 pg 11
------ to Nov 30; K. Wilhelm; "GEOMAGNETIC PULSATION CAMPAIGN"; 20 W to 40 E; SURFACE - NL 78-5 pg 3&11
Dec 1 to Jan 31; C. S. Deehr; Norwegian - Alaskan Spitsbergen Expedition; Spitsbergen - see NL 78-9 pg 3

REGIONAL IMS SAT/GBR PROGRAM DETAILS, OCTOBER - DECEMBER

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

SATELLITES

NIMBUS-G --- The launching of the NIMBUS-G satellite has been postponed to 23 October 1978.

EXOS-B --- The EXOS B satellite was successfully launched on 16 September, and renamed "JIKI-KEN" which is Japanese for magnetosphere. The M-3H-3 satellite launch vehicle lifted off at 0500 UT 16 September from the University of Tokyo's Institute of Space and Aeronautical Science Space Center at Uchinoura, Kagoshima,Japan. The 92 kilogram satellite was put into a near planned orbit and estimated orbital elements are 30557km apogee, 230km perigee, inclination 31 degrees and will orbit the earth every 8 hours 53 minutes. Summary data will be distributed as for EXOS-A.

The launch was delayed 2 days because of a typhoon which hit Japan on September 14 and 15, causing heavy damage and some loss of life. However, by launch time skies became clear.

In a week or so, the onboard 120 meter tip to tip antenna will be deployed and observations started. Japanese scientists expect to make coordinated observations with EXOS-A "KYOKKO", launched last February. Power needed for active experiments will be turned on in about a month's time.

ROCKETS

POKER FLAT, ALASKA

ECHO V --- J. R. Winkler. University of Minnesota, has telephoned more details of this experiment. ECHO V will carry a large accelerometer through the aurora to study plasma physics, electric and magnetic field configuration in the nearby and distant magnetosphere.

The Strypi rocket will carry a 30kW electron accelerator, optical, x-ray and particle instrumentation, Langmuir probe, and instruments to measure ion drift of electric field. A special neon gas injection experiment will be carried to generate a neon plasma around the rocket. Ground based instruments will include a network of radio

receivers to listen on the ground for radio noise waves generated by the beam plasma experiment.

A ground based low level TV system will produce images of auroral streaks, and the light generated near the rocket. Use will be made of Chatanika radar and other Alaskan ground instrumentation.

ALASKA - N. SCANDINAVIA

"CAMEO" - J. P. Heppner, NASA - GSFC reports the postponement of this experiment to October 23, 1978 (see NL 78-8 pg 3 for details of CAMEO experiment).

WALLOPS IS.

14.542UE --- L. G. Smith, University of Illinois, is still waiting on suitable geomagnetic storm conditions to launch this rocket. Deadline is October 11.

WHITE SANDS

33.005UA --- E. C. Zipf, University of Pittsburgh reports that this launch is postponed until at least April, 1979.

27.033AS/US --- W. H. Parkinson, Harvard College Observatory has sent us the following report of an experiment which he thinks may be of interest to the IMS community. A Lyman Alpha Coronagraph is being developed to be flown jointly with the Visible Light Coronagraph of the High Altitude Observatory. The first flight is planned for November 1978. From measurements of the profile of hydrogen Lyman alpha and visible wavelength coronal light we expect to be able to determine temperature and densities in the solar corona beyond 1.5 solar radii from the sun center. Such information is critical to the development of physical theories of coronal heating and solar wind acceleration.

Our present schedule calls for integration and test at White Sands Missile Range in October with the first launch of the joint Lyman Alpha and White Light Coronagraphs payload on November 7, 1978. Our initial goals are to positively establish the soundness of our experimental approach, to verify the ability to measure coronal temperatures from resonantly scattered Lyman alpha, and to assess the effects of particulate contamination from the instrument and from the vehicle. We anticipate that these goals will require two rocket flights - the first in November and the second as soon as a turnaround can be achieved, most probably in eight to nine months. Principal investigator is W. H. Parkinson and principal scientist is J. L. Kohl.

ANDOYA - ANDENNES

U. K. Andoya Campaign --- L. J. C. Woolliscroft, University of Sheffield, is the project scientist for this three week campaign starting October 22. The campaign is primarily to study auroral chorus using two rockets left over from the Second U. K. High Latitude Campaign (see NL 77-8 pg2) because of bad weather. The rockets are SL 1424 carrying VLF electric and magnetic sensors (Woolliscroft, Sheffield), Langmuir probe (Gibbons, Sheffield), suprathermal electron detectors (Maehlum, NDRE), and energetic particle detectors (Bryant, Appleton Labs.) with likely apogee of 800 km, and F6, with just the Sheffield experiments, to a planned apogee of 260 km. The Skylark SL 1424 will also carry a TMA release (Rees, UC London) to about 250 km.

Associated ground based observations will include optical observation of the TMA trail (UCL) and the Sheffield/Southampton goniometer network for VLF measurements.

Ferdinand 40 and 41 (Electron 2 and 3) --- Project scientists for the Electron 2 and 3 experiments are E. N. Maehlum, NDRE, G. Martelli, University of Sussex and N. C. Maynard, NASA/GSFC. Two Nike-Tomahawk rockets will be launched simultaneously in a northward direction from Andennes with an east-west separation of a few kilometers. One of the rockets carries an electron accelerator which is separated from the main payload in flight. These rockets will study a variety of effects produced by the electron beam as well as spatial variations in the upper atmospheric phenomena associated with an auroral arc. By using two rockets both the east-west and the north-south variations inside the arc are recorded. Launch date is scheduled between November 14 and December 12, 1978.

ACTUALITIES

SATELLITE

PROGNOZ 6 --- See pages 8 and 9 for news on data from the Russian PROGNOZ 6 satellite.

GROUND BASED

Electric Field Campaign - Summer 1978 --- R. H. Holzworth, University of California, Berkeley, reports another successful worldwide balloon campaign. WWB78, in conjunction with the European SBARMO organization, successfully launched nine balloons from three auroral zone sites obtaining nearly four days of simultaneous balloon vector electric field measurements. As shown in the figure on page 4 these balloon flights were coordinated with three radars and three satellites, all of which also measured the quasi D.C. electric fields. This data set amounts to an unparallelled resource to be used in the study of electrical coupling between the lower atmosphere and the outer magnetosphere.

NETWORK NEWS

ANTARCTICA/ALASKA

Riometer Data: IMS intervals, 1977. This report was sent by H. J. A. Chivers, University of California, San Diego. The following significant absorbtion events were observed on the UCSD riometer network during periods of special study in December 1977.

Vostok, Antarctica - smooth bay like absorption starting at 0308UT 10 December 1977, magnitude 0.7db at 30 MHz.

South Pole, Antarctica - smooth bay like absorption starting at approximately 0310UT 10 December 1977, magnitude 0.5db at 30 MHz, 0.3db at 51.4 MHz.

Anchorage, Alaska - large spike absorption starting at 0810UT 11 December 1977, magnitude 3.4db at 30 MHz. Absorption continues from 0800 to 1800UT 11 December 1977./

The absorption observed at the polar cap stations on 10 December 1977 is most likely PCA occurring with a sunlit ionosphere. Ratio analysis at South Pole indicates that the absorption is caused by 20 Mev protons and the indicated flux would be about 1.0E5/m2/sec/ster at Vostok. The PCA activity precedes the onset of auroral absorption under nighttime conditions at Anchorage by some 29 hours. It preceded the onset of auroral absorption at Roberval (Eastern Canada) by about 27 hours, and the reported (IMS NL 78-9) observation of auroral absorption in Scandinavia by 31 hours. Apparently ULF was observed on GEOS approximately 23 hours after the observed PCA.

Examining available riometer records for period December 1-3 there is no apparent PCA at the high latitude stations. Auroral absorption was observed at Anchorage and Roberval during the night of December 2 in coincidence with the Scandinavian activity.

Copies of the records are available on request.

CANADA

Canadian Magnetic Data --- J. Walker, Division of Geomagnetism, Department of Mines and Resources, Ottawa, will send the digital magnetic data for the 22 November 1977 event recorded by the Churchill

line of stations to WDC-A in Boulder when they have been edited. The 10 second data from these stations are also available, and he would appreciate the opportunity for collaborative studies with investigators who might use these data sets.

One minute digital data from Fort Severn, Thompson and Mould Bay will be available for the duration of the IMS. The tape data loggers and satellite data loggers are recording from the same magnetometers at Island Lake, Gillam, Bach, Eskimo Point, Rankin Inlet and Pelley Bay. However, the A/D converters on these two data loggers are different so the data from one logger will not appear to merge with that from the other despite the fact that they are in the same units (nanotesla). The two data sets may be made compatible by subtracting 2048 from each of the values of the tape data loggers for the data to be consistent. This could be done when the tapes are converted into archival format.

SCANDINAVIA

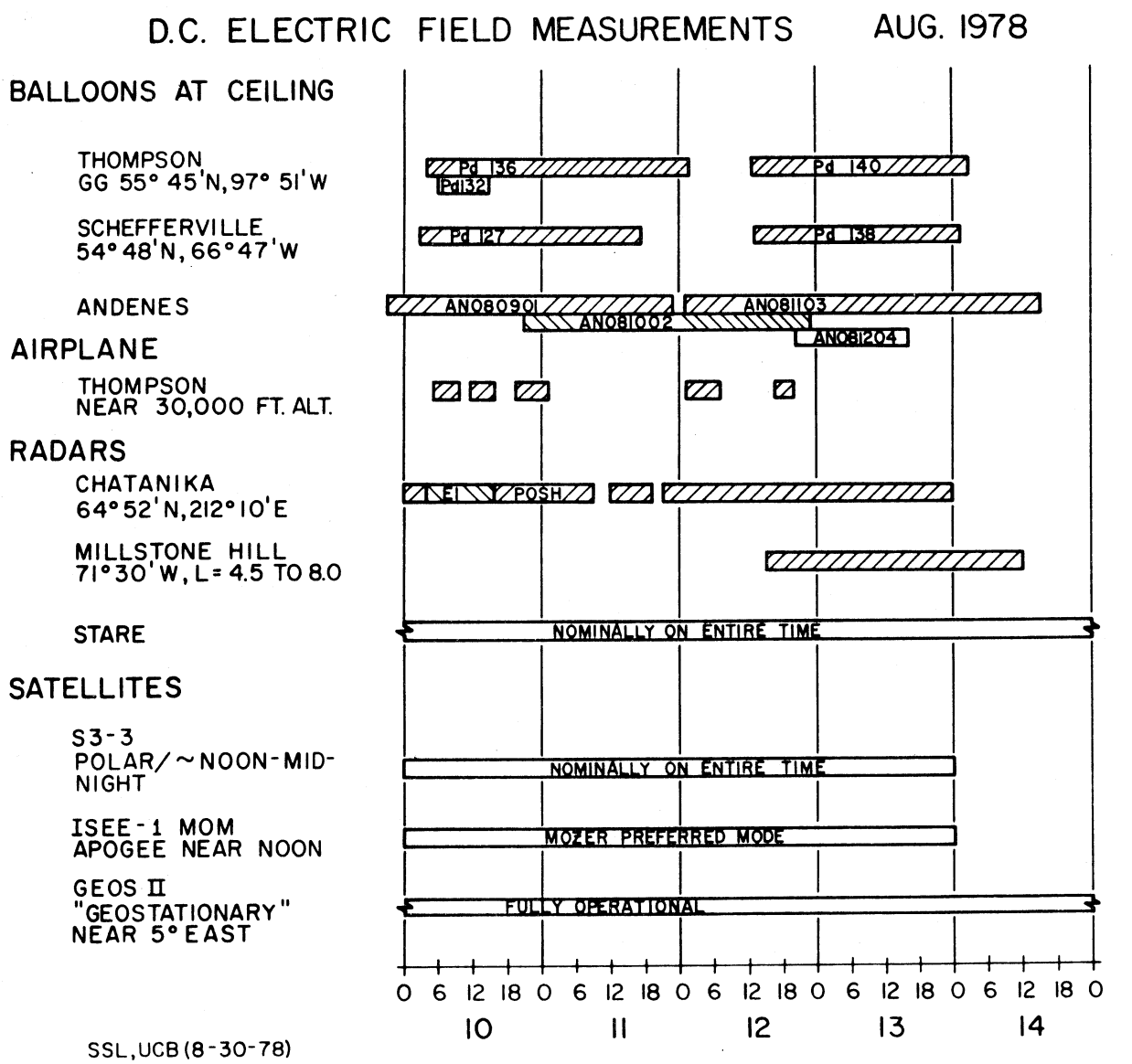
New IMS Magnetometers --- W. Baumjohann has sent details of four new IMS magnetometers installed by the University of Munster in July, 1978 (see drawing page 6). Stations FLO and ESM form together with the already existing stations NAM and AKV a new profile in Southwest Norway. HOP has been installed as a southern extension of profile 3 (MIK - PIT) and RKS as a southern extension of profile 5 (SKA - KUU, TU Braunschweig).

Station number	Station code	Station name	Geographic latitude	Geographic longitude
06	FLO	Flotingen	61.88 N	12.23 E
07	ESM	Esmared	56.74 N	13.22 E
36	HOP	Hoopaka	63.01 N	22.56 E
57	RKS	Roksa	62.57 N	30.26 E

SOLAR PROTON EVENT

An importance 3B flare, at N35 W50, beginning at 0947UT, maximum 1029UT on Sep 23, produced a proton event, PCA and GLE. The X-ray classification of the flare was X1 and a 10cm. burst of 1300 flux units was recorded. The proton event began at satellite altitudes Sept 23/1035UT and exceeded event threshold by 1035UT. The >10MeV protons peaked at 24/0400UT, with a count rate of 2200 particles/sq cm/sec/ster. By 25/200UT the count rate was down to 250 but still above event threshold. A PCA event began at 23/1300UT. Maximum daytime absorption at 30 MHz was 9.6db at 1800UT measured at Thule, Greenland. A GLE was monitored at Thule with

(continued on pg 8)



SYMPOSIUM ON IMS RESULTS

Melbourne, Australia, Nov 27 - Dec 1, 1979 (to be held in conjunction with the 1979 IUGG General Assembly).

Program Committee;

IAGA (Divisions II &III): Dyson, Falthammar, Russell, Tinsley, Troitskaya

SCOSTEP (IMS Steering Committee): Roederer (Chairman), Cole, Haerendel, Kostoker, Williams

Terms of Reference:

* To critically examine what has been learned so far during the IMS; to analyze phenomena observed by different techniques; to synthesize interpretation of results.

* To focus primarily on physical mechanisms, and on morphological characteristics where these still await understanding (separation of space-time effects; time sequence of events).

* To carry out a critical comparison between theoretical expectations and the new observations.

* To consider problems in broad context such as "dependence of magnetospheric processes on solar wind conditions", "energy and momentum balance", etc.

Topics:

1. Solar wind plasma entry mechanisms. (Includes recent developments in the understanding of macroscopic boundary features; the hunt for day-side reconnection; boundary field topology; boundary layers).

2. Turbulence and wave-particle interactions in the magnetopause and cusp regions. (Specialized topic dealing mainly with microscopic processes).

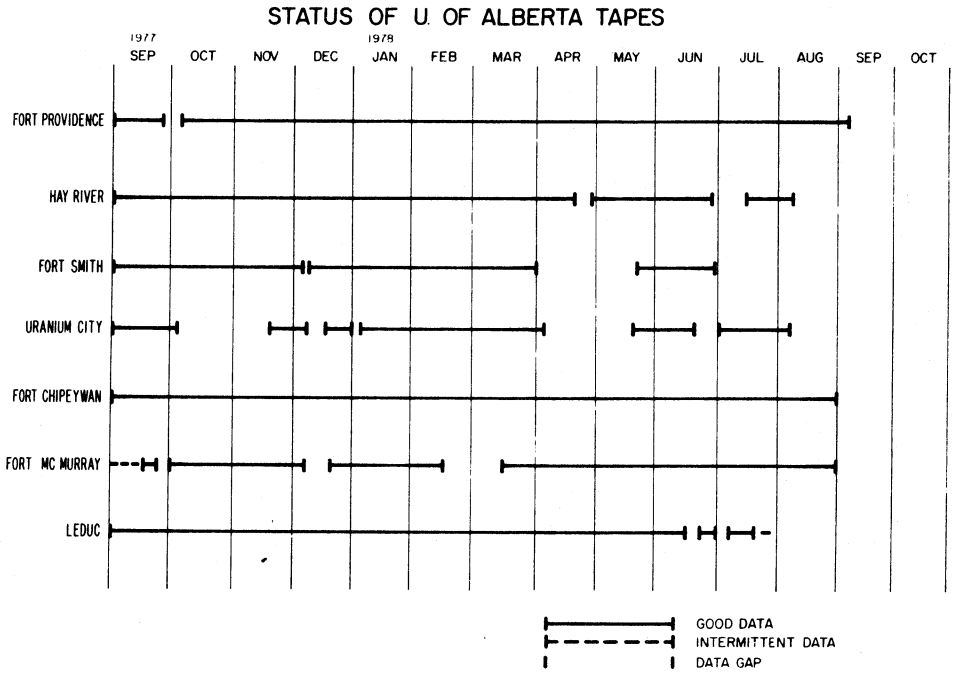
3. Substorms and auroral processes: relationships among currents, electric fields and particle precipitation. (IMS results on polar cap processes; time-sequence of events; the role of the ionosphere, etc. Excluding those non-linear effects which belong into the IAGA Symposium on Non-linear Waves in Geophysical Plasmas).

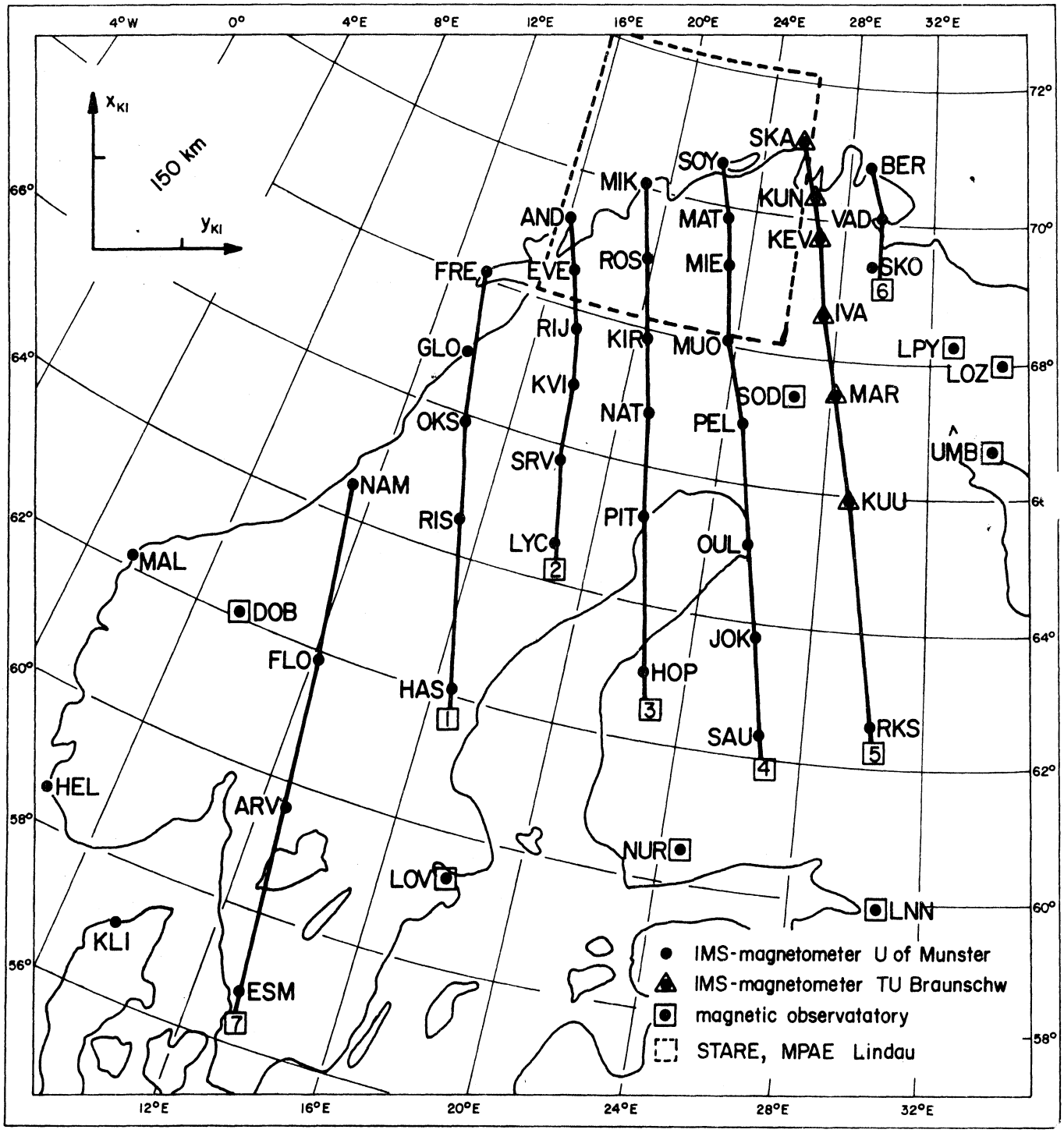
4. Plasma processes in the tail. (Mainly local processes such as flows, expansions and contractions, merging, tearing, bubbles, plasmoids, etc.)

. Structure and origin of large-scale magnetic fields. (Specialized topic on convection fields, .ield-aligned electric fields, and wave electric fields that cause plasma motion).

6. Energetic particle composition and dynamics, and wave-particle interactions. (Injection into trapped orbits, acceleration, diffusion. Excluding those ULF topics which belong into the IAGA Symposium on Geomagnetic Pulsations).

Abstracts must reach J. G. Roederer (Geophysical Institute, University of Alaska, Fairbanks, Alaska 99701) before August 1, 1979. See IAGA News No. 17 for required format (to appear November 1978). If you do not receive IAGA News contact your IUGG National Committee or write to the IAGA Secretary General (Dr. N. Fukushima, Geophysics Research Laboratory, University of Tokyo, Tokyo 113, Japan). The Program Committee will screen the abstracts and schedule papers according to topics.

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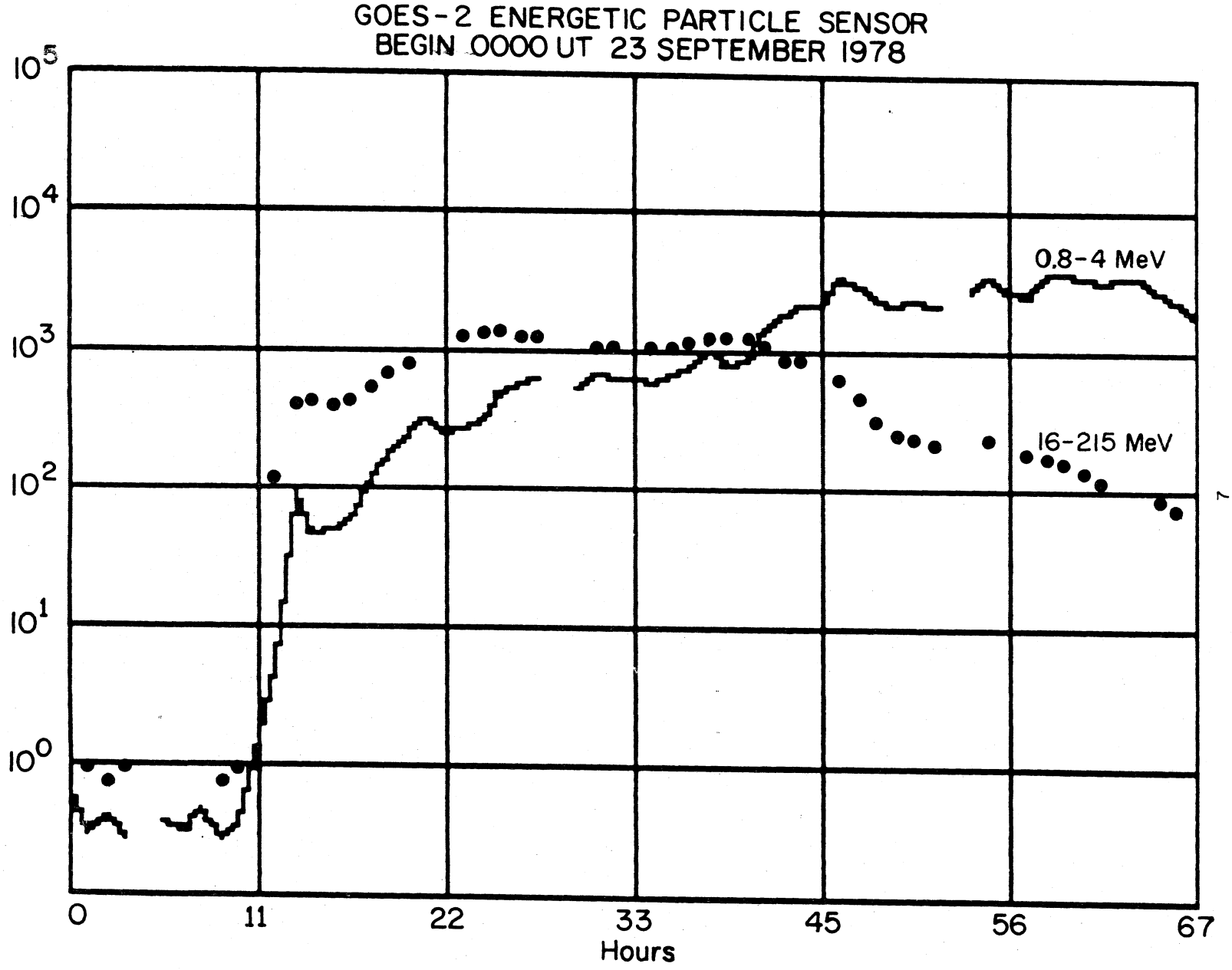
magnetic observatatory
STARE, MPAE Lindau


GOES-2 ENERGETIC PARTICLE SENSOR
BEGIN 0000 UT 23 SEPTEMBER 1978
10^5
10^4
10^3
10^2
10^1
10^0
0.8-4 MeV
16-215 MeV
0
11
22
33
45
56
67
Hours

IMS SCIENCE

Initial ISEE Magnetometer Results --- Two preprints have been sent to the IMSCIE office. The first, Magnetopause Observations, by C. T. Russell and R. C. Elphic, Institute of Geophysics and Planetary Physics, University of California, Los Angeles, and the second,Shock Observations, by C. T. Russell, and E. W. Greenstadt, TRW Defense and Space Systems Group, Redodndo Beach, California. Abstracts are reproduced below.

Magnetopause Observations. The magnetic field profiles across the magnetopause obtained by the ISEE-1 and 2 spacecraft separated by only a few hundred kilometers are examined for four passes. During one of these passes the magnetosheath was northward, during one it was slightly southward, and in two it was strongly southward. The velocity of the magnetopause is found to be highly irregular ranging from 4 to over 40 km/sec and varying in less time than it takes for a spacecraft to cross the boundary. Thicknesses ranged from 500 to over 1000 km.

Clear evidence for reconnection is found in the data when the magnetosheath field is southward. However, this evidence is not in the form of classical rotational discontinuity signatures. Rather, it is in the form of flux transfer events, in which reconnection starts and stops in a matter of minutes or less, resulting in the ripping off of flux tubes from the magnetosphere. Evidence for flux transfer events can be found both in the magnetosheath and the outer magnetosphere due to their alteration of the boundary normal. In particular, their presence at the time of magnetopause crossings invalidates the usual 2-dimensional analysis of magnetopause structure. Not only are these flux transfer events probably the dominant means of reconnection in the magnetopause, but they may also serve as an important source of magnetopause oscillations, and hence of pulsations in the outer magnetosphere. On two days the flux transfer rate was estimated to be of the order of 3xE11 Maxwells per second by the flux transfer events detected at ISEE. Events not detectable at ISEE and continued reconnection after passage of an FTE past ISEE could have resulted in an even greater reconnection rate at these times.

Shock Observations. ISEE-1 and 2 magnetic field profiles across 6 terrestrial bow shocks and one interplanetary shock are examined. The interplanetary shock illustrates the behaviour of a low Mach number shock. It had an upstream whistler wave precursor with an apparent wavelength of 180 km. The shock thickness was about 90 km for the thickness of the final field jump or 279 km for the exponential growth of the precursor wave packet. The ion inertial length was 50 km, upstream of the shock.

Three examples of low or moderate beta, high Mach number, quasi-perpendicular shocks are examined. These did not have upstream waves, but rather had waves growing in the field gradient. The growth length for these waves and the shock profile wa of the order of the ion inertial length.

Two examples of high beta shocks showed little coherence in field variation even though the two vehicles were only a few hundred kilometers apart. Thus we cannot gauge their velocity and turn the time profiles into distances. The final crossing examined shows clearly the effect of changing the orientation of the interplanetary magnetic field. Initially the upstream magnetic field made an angle of about 80 degrees to the shock normal and the shock position remained fairly steady. Then the field rotated to 45 degrees to the normal and the field profiles became very irregular and the shock position very unstable. Discrete wave packets appeared.

Finally, we present the joint behaviour of wave, particle and field data across some of these shocks to show some of the myriad shock features whose behaviour we are now beginning to investigate.

Preliminary Listing of Solar Flares

Solar Flare Data --- The table below contains a listing of X-ray flares, class M1 and higher, for the period 24 July-17 September 1978 extracted from "Preliminary Report and Forecast of Solar Geophysical Data", published by SESC in Boulder (see IMS NL 78-5).

Date	Begin	Max	End	Location		Imp	Reg	Cl
Aug16	1326	1337	1406	S28	W76	-N	1238	M1
30	1530	1548	1703	N18	E65	1B	1271	M2
Sep 1	1711	1712	A1725	S32	E60	-B	1277	M1
	2224	2226	2232	S30	E36	1N	1272	M2
2	0004	0011	0158	S30	E42	1B	1272	M1
	B0546	0600	0630	S29	E40	1B	1272	M9
	1415	1425	1554	S30	E37	1B	1272	M1
4	0820	0823	0903	S14	E53	1B	1280	M2
16	1328	1330	1400	N39	E41	-B	1294	M2
17	1459	1505	1555	N37	E22	1B	1294	M4

(continued from pg 4)

neutron monitors being at 11% above quiet day background. The solar longitude of the flare was ideal for a proton event but not for a geomagnetic event and only a minor geomagnetic storm was predicted (an SSC was recorded at 25/0718UT). On page 7 is a plot of the GOES 2 energetic particle sensor, 5 minute average count rate, 0.8 MeV (P1) and 16-215 MeV (P2).

PROGNOZ 6 Energetic Solar Particle Observations, September 24 -30, 1977. E. P. Kharin, World Data Center B2 has sent the following article by V. N. Lutsenko, Space Research Institute, Academy of Sciences of the USSR, and S. Fischer, Astronomical Institute, Czechoslovak Academy of Sciences, Prague.

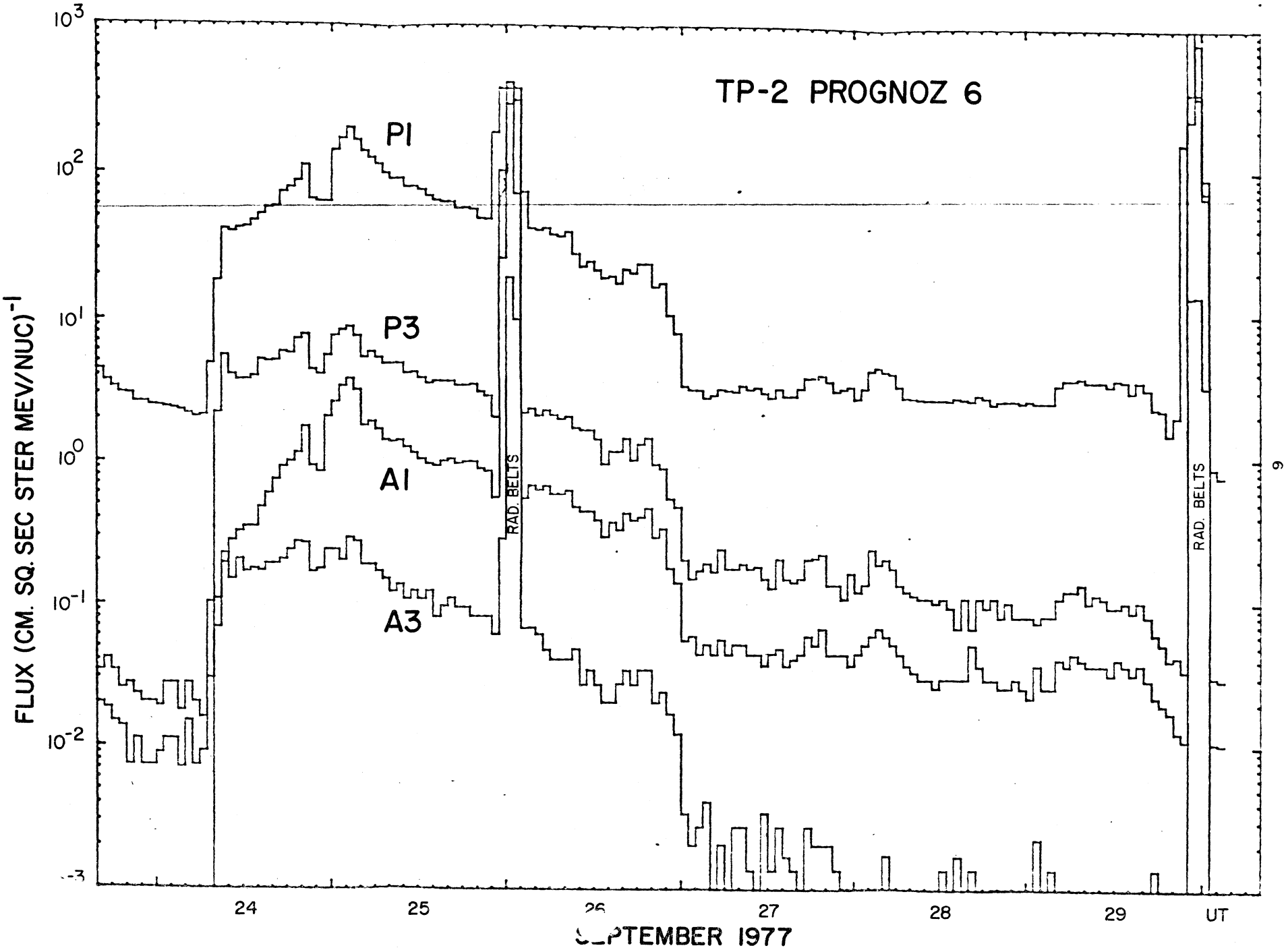
The data presented here are from the Soviet - Czechoslovak experiment TP-2 on board the Prognoz 6 satellite. Prognoz 6 was launched on September 22, 1977 into an orbit with an apogee of 197000 km, a perigee of 498 km, an orbital period of 94.8 hours and an inclination of an apsis to the ecliptic plane of 51 degrees.

The instrument was a three element solid state double dE/dx-E telescope with a plastic scintillator anticoincidence cup. The axis of the telescope was pointed to the sun. The detector thickness was 100 (D1,D2) and 1800 microns (D3). Counting rates for 9 types of events (see table) and for the scintillation detector (D4) were measured.

The time resolution of the counting rates was 2 minutes. The amplitudes of pulses from D1, D2 and D3 detectors were measured with three 249 - channel pulse height analyzers giving charge, mass and energy of particles. Each of three amplitude analyzers had two dynamic ranges of operation so that pulses from charged particles with Z from 1 to 18 were analysed. To collect maximum information on rare elements the amplitude analysis was controlled by a four-step priority system including a particle identifier. The instrument had an in flight calibration mode.

The figure on page 9 presents hourly averaged fluxes of protons P1 (1.4-3.4 MeV), P3 (5-18 MeV) and alpha particles A1 (1.4-3.4 MeV/nuc.), A3 (5-18 MeV/nuc.). The fluxes were obtained by dividing the hourly averaged counting rates by the geometric factors and the corresponding energy intervals. The corrections for counting losses and overflow in the radiation belts (marked in the figure) were not included. The data for the period from September 22 to November 4, 1977 are available.

Coincidence mode		$D1\bar{D}2\bar{D}3\bar{D}4$	$D1D2\bar{D}3\bar{D}4$	$D1D2D3\bar{D}4$
Geometric factor cm.sq ster		1.2	0.1	0.1
Charge	Z = 1	P1	P2	P3
	Z = 2	A1	A2	A3
	Z = 3	Z1	Z2	Z3


TP-2 PROGNOZ 6
P1
P3
A1
A3
RAD. BELTS
RAD. BELTS
FLUX (CM. SQ. SEC STER MEV/NUC)$^{-1}$
10^3
10^2
10^1
10^0
10^{-1}
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24
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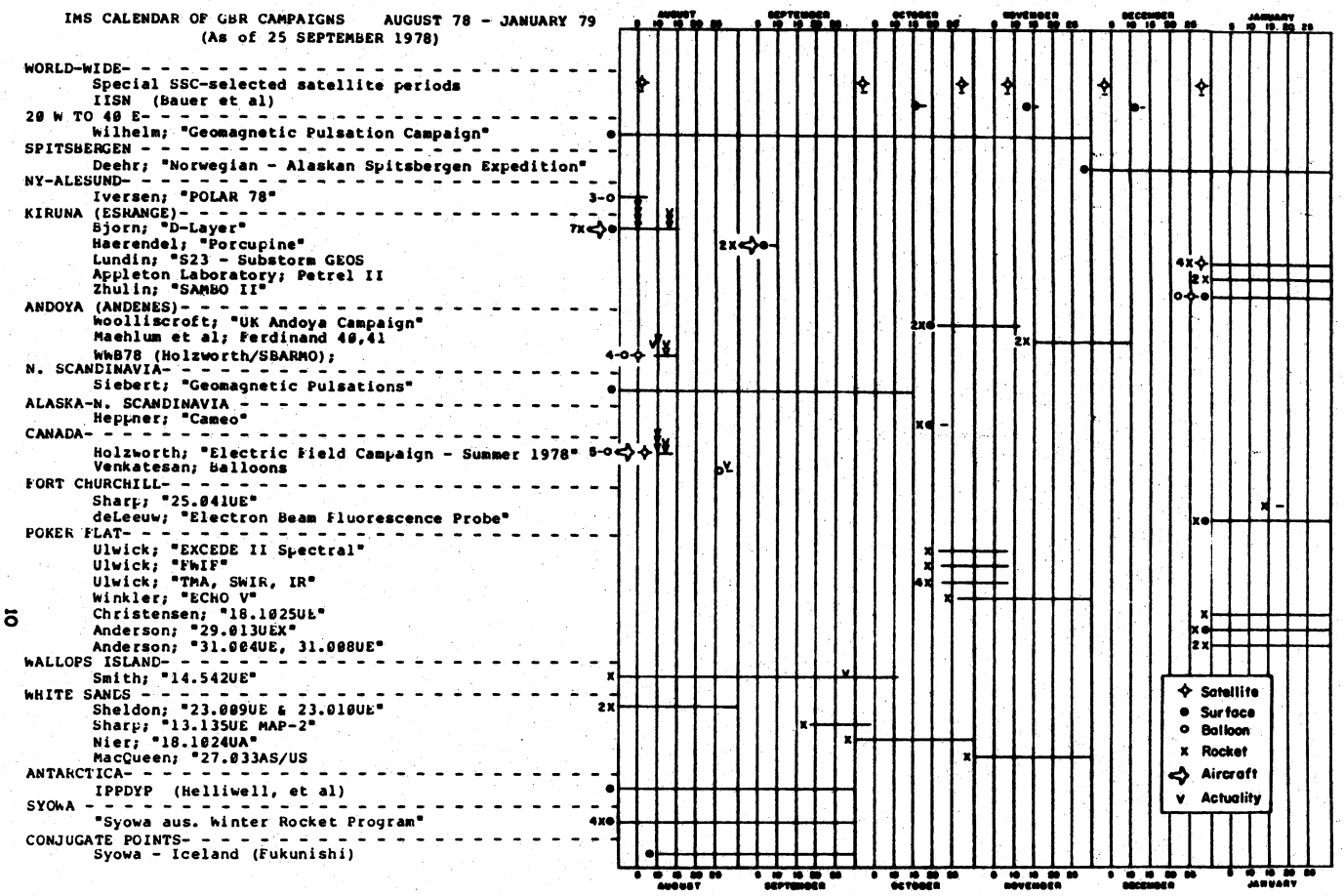
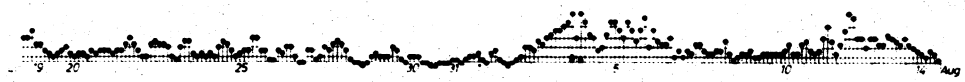
SEPTEMBER 1977

IMS CALENDAR OF GBR CAMPAIGNS AUGUST 78 - JANUARY 79
(As of 25 SEPTEMBER 1978)



SOLAR AND GEOMAGNETIC ACTIVITY JULY 19 - SEPTEMBER 18



ROTATION #1982

2800 MHZ FLUX OTTAWA	144	141	136	123	120	115	110	109	107	107	106	106	106	103	103	106	109	114	119	125	127	128	122	119	121	132	130
SS NO. BOULDER	131	73	70	64	76	41	50	12	51	50	46	57	47	45	58	57	88	100	174	122	111	76	98	71	107	142	130

ROTATION #1983

2800 MHZ FLUX OTTAWA	129	121	118	113	109	105	102	104	102	103	102	99	109	107	106	121	137	156	172	164	178	177	180	175	167	159	148
SS NO. BOULDER	81	63	56	-	44	79	61	54	81	123	63	93	125	61	88	108	187	224	240	245	317	346	247	247	197	158	131