散逸の危険性の特に大きいと考えるものを列挙すれば下記の如くである。

(1) 原爆被災者調査資料（昭和２９年広島市の実施したもの）

(2) 被爆者手帳特別並びに一般）新旧書き換え後の旧手帳

(3) 被爆者カルテ

(4) 死亡診断書（法務局保有）のもの

(5) 警察関係資料（被爆直後の資料）

(6) その他種種のフイルム，学校・工場等の資料，被爆者の日記など

7－５０

庶発第４９４号　昭和４３年５月２３日

内閣総理大臣　佐　藤　栄　作　殿

日本学術会議会長　朝　永　振一郎

（写送付先：科学技術庁長官，大蔵，文部，運輸，および郵政各大臣）

太陽活動期国際観測年（ＩＡＳＹ）の実施について（勧告）

標記のことについて，本会議第５０回総会の議に基づき，下記のとおり勧告します

記

来たるべき太陽活動期に行なわれる地球外圏大気及び太陽一地球関連現象の国際共同研究事業にわが国研究者を参加させることはその意義が極めて大きいので，その国際的事業を成功させるために，政府は太陽活動期国際観測年（ＩＡＳＹ）の実施につき必要な措置をとられたい。

別添資料：１　欧文資料（第１頁はＩＣＳＵより日本学術会議あてＩＵＣＳＴＰ設立通知ならびにその合同委員会への協力依頼。第２～４頁はＩＡＳＹ計画協力を依頼してきたＩＵＣＳＴＰ委員長からの通知，第５～１６頁はＩＡＳＹ計画事業草案）

２　国際地球観測年以降における地球物理各方面の国際共同事業の変遷

３　日本におけるＩＡＳＹ計画作成方針

４　ＩＡＳＹ研究計画案（国内における研究計画）

（別添資料 -1 ）

International Council of Scientific Unions

FROM THE PRESIDENT
J.M. HARRISON

588 BOOTH STREET
OTTAWA 4, ONTARIO

November 15, 1967

Prof. Hisao Ukai,
Science Council of Japan,
Ueno Park,
Tokyo, Japan

Dear Prof. Ukai:

The International Council of Scientific Unions has endorsed the charter of the IUCSTP and authorized the Commission to press on with its program for the coming years of the active sun.

This is a significant scientific enterprise and I hope that, as in its predecessors the IGY and recently the IOSY, your institution will play a role, You will shortly hear from the President of the IUCSTP, Dr. Herbert Friedman.

Sincerely,

(SGD.)

J.M. Harrison

International Council of Scientific Unions
INTER-UNION COMMISSION
ON
SOLAR TERRESTRIAL PHYSICS

STP 62 (67)

IUCSTP Secretariat,
6 Carlton House Terrace,
London SW 1.

16 November, 1967

To: ICSU National Correspondents

Dear Colleague,

At the Rome meeting of the Executive Committee of the International Council of Scientific Unions 10, October 1967, the constitution of the Inter-Union Commission on Solar-Terrestrial Physics (IUCSTP) was formally approved. The terms of reference for the Commission authorize it "to promote, organize and coordinate international research and cooperative projects in solar-tarrestrial physics" of the types that have characterized the IGY and IQSY programs.

It is only natural that man should take a close interest in his immediate environment and this interest has provided the driving force behind his explorations of the surfaces of the continents and the oceans of the world. At a later stage, his investigations led him to probe down into the earth's crust and the depths of the oceans as well as into the air above. Netecrology began with the quest for information about the characteristics of the lower atmosphere since these had an important influence on the weather. As techniques developed, new methods of probing the atmosphere and its ionized components up to greater and greater heights became possible; the space vehicles of today carry scientific instruments which can explore the wast reaches of interplanetary space and transmit their data back to the earth.

Probably the most important result to emerge from recent investigations of the upper atmosphere and interplanetary space is the growing understanding of the role that energetic solar radiation plays in determining the physical state of these regions; these radiations include ultraviolet light, X-rays and

charged particles. Research on upper atomospheric phenomena is concerned with the nature of the interactions between these radiations and the earth's environment. In this connection, it is important to consider not only the interactions with the earth's atmosphere but also those with the geomagnetic field. In recent years, the concise term "solar-terrestrial physics" (hereafter abbreviated to STP) has been widely used to describe the whole complex of studies covered by research into the interactions between energetic solar radiations, the interplanetary medium and the near-earth environment.

There is no need to stress the fact that, in research relating to STP, it is essential for scientific workers in may disciplines to work in close collaboration; the many different contributions which they make must be regarded as complementary to each other in the search for a better understanding of the processes at work in the upper atmosphere and in interplanetary space. In addition, since STP can be studied sucessfully only if experimental data are available from all parts of the world, it is obviously essential for scientists from many parts of the world to share their results and often to plan their experiments in cooperation with each other so as to ensure that the maximum advantage can be gained from the resulting data. It is for this reason that STP is recognized as a science in which both international and interdisciplinary cooperation and planning must receive great attention if success is to be achieved.

Within ICSU, the many disciplines which form part of STP are spread over four of the Unions: IAU, IUGG, IUPAP, and URSI, all of which had already collaborated during the IGY (1957-1958) and the IQSY (1964-1965). Although the IQSY program concentrated almost exclusively on the acquisition of data relating to STP, the IGY program included other types of investigation which required international cooperation. Both the IGY and the IWSY programs were of limited duration and they concentrated mainly on the encouragement and coordination of synoptic-type observations, these provided assential basic data for global studies of many kinds, and background material for specialized experiments with more specific objectives.

Since the end of the IQSY, discussions have taken place from time to time on the desirability of continuing, in some modified form, the international interdisciplinary coordination which proved to be so successful during the IQSY and the IGY. In recognition of this need, the ICSU established the

STP 62 (67)

IUCSTP in 1966 and one of the principal objectives of this new Commission is to decide what form this coordination should take in the light of present-day needs.

The enclosed document describes, in brief form, the recommendations which have recently emerged from meetings of the IUCSTP in London (July 1967) and ST. Callen (October 1967) for a continuing program. Although it is recommended that certain programs of observation should be given special attention during the next few years, it must be emphasized that it is not the intention of IUGSTP to try to restrict the freedom of national organizations to pursue the lines of research and the experiments which they believe to be best suited to their available resources and capabilities.

It is my hope that you will bring the contents of the enclosed document to the attention of the appropriate organization in your country as soon as possible. After they have considered in what way they wish to collaborate in the programs outlined, it would be appreciated if their plans could be communicated to the Acting Secretary of IUCSTP (Dr. C.M. Minnis) in London. At a later stage, it is intended to provide more precise information about the actual intentions in each area and detailed arrangements for cooperation between active workers in each project. In the meantime, the outline provided will give a preliminary indication of the broad intentions of the IUCSTP and I look forward to your cooperation in helping to make a success of this new effort in international cooperation.

Sincerely yours,
(SGD)
H. Friedman
President, IUCSTP

Enc: STP 63 (67)

For information to:
Secretaries General IAU, IUGG, IUPAP, URSI
IQSY Participating Committees
IUCSTP Members

International Conacil of Scientific Unions
INTER-UNION COMMISSION
ON
SOLAR-TERRESTRIAL PHYSICS

STP 63(67)

International Cooperation in Solar-Terrestrial Physics
FOREWORD

This document has been prepared jointly by the members of the Inter-Union Commission on Solar-Terrestrial Physics (IUCSTP) following meetings of the Commission held in the United Kingdom and Switzerland in July and October 1967. The information about the various projects described in the document should be regarded as preliminary only. Early in 1968, it is intended to circulate a second document in which more precise plans for the execution of the projects will be given. It is intended also to organize a General Meeting in Europe during 1968 at which ad hoc Working Groups will discuss the more detailed aspects of the different projects and make recommendations concerning their execution and the subsequent collection and analysis of the data.

The President of IUCSTP, Dr. H. Friedman, in his circular letter of 16 November 1967 has requested information on the desires of national organizations and scientists to participate in one or more of the projects. It would be appreciated if such information could be transmitted to the following address:

IUCSTP Secretariat,
6 Carlton House Terrace,
London SW 1.

16 November 1967

C.M. Minnis,
Acting Secretary, IUCSTP

STP 63 (67)

International Cooperation in Solar-Terrestrial Physics

I INTRODUCTION

In recent months, the Inter-Union Commission on Solar-Terrestrial Physics (IUCSTP) has received many proposalsm relating to the field of solar-terrestrial physics, for programmes of observations which could be achieved mainly by making use of existing resources during the next few years. After considering these proposals, the Commission decided to select a limited number of project areas and to submit this short list to national academies, research councils and similar bodies. In this way, it is hoped to direct the attention of the international scientific community to certain projects which seem to be important at the present time, and particularly for the period 1968-1970. In some cases, the project has been selected as being important for general reasons. In other cases, emphasis has been given to a project because it is particularly appropriate to the period of maximum solar activity which will coincide with the period 1968-1970 which is referred to as the International Years of the Active Sun (IASY).

In the list of projects contained in this document, each has been given a short title and this if followed by a brief explanatory statement of the main features or the objectives of the project. At a later date, further attention will be given to the more detailed aspects of each project, including not only the programme of observations but also plans for the subsequent study and analysis of the results, often on a cooperative basis.

II DISTRIBUTION OF INFORMATION ON PROGRAMME PLANS

The success of all the proposed programmes in solar-terrestrial physics (STP) can be enhanced by the arrangements, provided through IUCSTP, for national bodies and institutions to share advance information about their plans for undertaking work in the various programmes. If such information is made available, it is more likely that useful complementary and supplementary work will be carried out by organizations in other countries.

It is especially important to coordinate complementary observations in the case of programmes involving satellites in

order to take the maximum advantage of the relatively rate and expensive opportunities thus provided. The authorities responsible for satellite experiments are, therefore, invited to announce their plans, preferably as much as two years in advance, and to confirm or revise them at intervals of about six months. A responsible scientist should take the initiative to announce such information as:

(a) the approximate time interval within which the lauch is expected to take place;
(b) a brief statement listing the parameters to be measured and giving enough information to assist in the planning of related ground-based measurements, such as planned orbits, senstitivity of equirement, and rates of sampling;
(c) recommendations as to which types of related ground-based measurements are considered to be most useful.

Similar announcements by ground-based stations would assist the planners of rocket and satellite experiments, especially where the ground-based measurements refer to phenomena in the magnetosphere or interplanetary space, or where they involve special or non-permanent series of observations.

III RECOMMENDED PROJECTS FOR PERIOD 1968-1970 INCLUDING THE YEARS OF THE ACTIVE SUN

1. Monitoring of the Solar-Terrestrial Environment

Systematic monitoring of solar activity and the terrestrial environment is a necessity for further progress in understanding most of the problems in solar-terrestrial physics. The cooperation which was characteristic of the IGY and the IQSY should be continued between the existing ground-based networks in the disciplines of solar activity, ionosphere, geomagnetism, aurora, airglow, and cosmic rays. Data interchange through World Data Centres (WDCs) and through the exchange of publications allows the results of the monitoring programme to be used in global and regional studies and in interdisciplinary researches. The detailed plans for the acquisition, processing and redistribution of data will be modified in the light of recent research experience and of plans for special experiments.

Solar X-ray, ultraviolet and particle radiations can be monitored directly only from space vehicles. The observations

are of basic importance in studies of many ionospheric processes and atmospheric effects. Thus, solar monitoring from satellites, preferably at distances beyond the radiation belts, should be imporved and made continuous as soon as possible, and the data should be made available to the scientific community for the many special projects which depend on knowing the changes of the solar flux with time.

It will be important also to organize, as soon as practicable, the monitoring, by means of satellites in suitable orbits, of the variations in space and time of the characteristics of the near and distant magnetosphere and the solar wind. It would be advantageous:

(a) to have a number of small, real-time telemetry satellites, operating simultaneously and carrying standard-package instruments;

(b) to include, in as many spacecraft as possible, standard packages of radiation detectors and magnetic field probes.

Monitor data from simultaneously operating spacecraft with similar or equivalent instrumentation should be made available to all experimenters as promptly as feasible, for example, through Satellite Data Centres. This prompt supply of data would be aided considerably by making on-board data processing a standard procedure in spacecraft.

2. Proton Flares

Proton flares are one of the most powerful manifestations of sclar activity; they inject into interplanetary space, streams of atomic particles with energies often ranging up to hundreds and even thousands of MeV. Such catastrophic outbursts constitute one of the most serious hazards to the survival of men in space and they may also be of concern to passengers in future high-flying supersonic aircraft.

For the Porton Flare Project, evey available tool, both ground-based and space-borne, will be used in the study of all observational aspects of selected flares. Of particular interest are:

(a) the spatial structure of local solar magnetic fields at the flare source;

(b) the mechanisms by which particles are accelerated in and ejected from active regions;

(c) the energy spectra and composition of the relativistic particles produced by the flare;
(d) the interplanetary plasma clouds and shock waves that propagate from the flare source both in and outside the ecliptic plane.

The project is intended partly to improve our understanding of this most energetic phenomenon originating in the solar atmosphere and partly to develop more successful methods for flare prediction. Routine observations should be accelerated and, in addition, more sophisticated measurements should be introduced. The choice of periods for such observations should be coordinated with the time schedules of related satellites, space probes, and rocket observations. Certain space projects such as "Apollo Telescope Mount", which is scheduled for the later portion of IASY, should be supported by the most comprehensive ground-based programme of observations that can be organised within that time interval.

3. Disturbances of the Interplanetary Magnetic Field Configuration

During quiet solar conditions, a continuous flow of plasma streams radially away from the sun. This solar wind carries "frozen-in" solar magnetic field lines which, in the ecliptic plane, attain a spiral form due to the sun's rotation, and which appear to be bunched in "sectors" with field vectors pointing either away from the sun or towards it. The basic configuration of the interplanetary magnetic field can be highly perturbed by enhanced plasma emissions from active regions of the sun, and by plasma clouds and shock wayes emitted during solar flares. Several processes are of particular importance in relation to interplanetary magnetic field perturbations;

(a) galactic cosmic-ray modulation;
(b) solar energetic particle propagation and diffusion through interplanetary space;
(c) particle accelaration in the neutral regions between sectors or near shock fronts;
(d) the structure of the interplanetary medium outside the ecliptic plane, and
(e) the effects of interacting plasma clouds or shock waves.

Most important for the study of the interplanetary field

are in situ measurements of the magnetic field and observations of the flux and anisotropy of solar energetic particles, together with precise directional measurements of consmic-ray particles by ground-level monitors. These data should be correlated with solar observations throughout the entire electromagnetic frequency range, as well as with observations of magnetic and ionospheric storms and other related terrestrial affects. The network of super-neutron monitors is an essential element of the observational programme and should be appropriately enlarged.

4. Determination of Characteristics of the Magnetosphere

The earth's magnetosphere behaves like an elastic container of plasma and energetic particles enveloping the earth; it is stretched and squeezed by the solar wind, and is capable of transmitting perturbations in the form of waves from one point to another. It follows that many geophysical ground-based observations provide data which are related directly to the actual configuration of the magnetosphere and its temporal variations. For example, some geomagnetic pulsations are manifestations of the response of the magnetosphere to changing conditions in the solar wind; others are generated by plasma resonances due to an interaction between waves and particles. A better physical understanding of such correlations would make it possible to organize a service which could quickly provide much information about important characteristic parameters of the magnetosphere, such as the positions of the boundary, the limit of the closed field lines, the plasmapause and the maxima of the trapped particle fluxes. This project would afford valuable data to complement in situ observations made with rockets and space vehicles.

The immediate goal of the project would be to discover the detailed relationships that must exist between ground-based geophysical observations and the behaviour of the fields, plasmas and energetic particles in magnetosphere and the interplanetary medium. On the basis of the results obtained and their physcial interpretation, the types of surface observations that provide the most useful information about phenomena in space would be recognized and then organized into a continuous service which would be capable of supplying rapidly all available information on certain characteristic parameters of the magnetosphere.

The execution of this project would require

(a) the establishment of appropriate observatories to supplement those which are already in operation and to fill any gaps in the present observatory network, particularly in auroral and sub-auroral latitudes and on the polar caps;

(b) the simultaneous use of satellites to measure magnetic fields, electric field, magnetic pulsations, low-energy plasma and energetic particles along different orbits in space; and

(c) effective means of collecting and exchanging both ground-based and satellite data.

5. Conjugate-Point Experiments

The effects induced by many magnetospheric processes can be propagated in the form of particles or waves along a geomagnetic field line. If the field line forms a closed loop linking the northern and southern hemispheres, the effects can be detected on the ground almost simultaneously at the conjugate points at which the field line intersects the earth's surface.

A great variety of phenomena such as aurora, VLF emissions, micropulsations, and pre-dawn ionospheric heating, give rise to such conjugate-point effects, and they can provide important clues about the primary processes. Whistlers can be used as a means of studying the propagation mechanism along the field line, and the field-line geometry can be deduced from observation of the night-time opening of field lines, diurnal and seasonal variations of conjugacy, and the artificial injection of particles.

Conjugate-point experiments must be performed simultaneously in opposite hemispheres; in consequence, they require co-operation between two or more countries. In principle, they involve ground stations located as closely as possible to a pair of conjugate points; however, more sophisticated experiments require one station at one point and a network of stations in the conjugate area.

Of particular importance in the field of auroras and energetic particle precipitation are simultaneous high-altitude observations from aircraft flying along conjugate paths or from balloons launched in conjugate areas. Another extremely valuable arrangement would consist of simultaneous observations from a geostationary satellite and from ground stations at the con-

jugate points joined by the field line on which the satellite is located. Finally, observations of the effects produced at conjugate points by particles injected along a field line, by means of an accelerator flown on a rocket or satellite, can yield vital information on field-line geometry and electric fields.

6. Electric Fields in the Magnetosphere

The distribution of plasma and the energetic particle concentration in the magnetosphere are primarily controlled by the magnetic field. However, slowly varying electric fields, associated with co-rotation or convection of the plasma and with ionospheric currents, are also present; these fields also exert an important influence on the charged particle population.

Very little is known at present about these electric fields. However, their configuration is extremely importants, in general, to particle acceleration and hydromagnetic processes in the magnetosphere. The experimental techniques for the direct measurement of these d.c. electric fields are rapidly improving and could, if applied in a coordinated programme, yield information of crucial importance.

A study project should include systematic electric field measurements carried out simultaneously with ion-cloud injections at pre-fixed locations and altitudes, and with satellite measurements of plasma convection possibly involving direct electric field probes. These investigations would be valuably complemented by ionospheric drift studies. During the initial stage of such a programme, combined experiments using two or more methods at the some time would be necessary to calibrate the different methods against each other. In addition, careful studies should be made of the effect of ion-clud injections on the field to be measured.

7. Magnetic Storms and Polar Disturbances

Magnetic storms and polar disturbances are manifiestations of violent perturbations caused by solar plasma clouds impinging on the earth's magnetosphere. These perturbations are morphologically complex; they involve the whole particle population of the magnetosphere, ranging from the cold plasma to the most energetic of the trapped particles.

In order to make further advances in our understanding of these phenomena, well-coordinated observations are necessary both on the ground and in space. The conduct of the proposed project would require;

(a) improvement of magnetic observations at ground stations;
(b) rapid transmission of microfilmed copies of records and digital data from the stations to the appropriate World Data Centres;
(c) establishment of new stations at locations lekely to be the most useful for specific problems.

Activity indices intended to represent the physical processes involved should be recorded and made available to scientists working in other related disciplines. Simultaneous highaltitude balloon X-ray measurements, at high latitudes and along geomagnetic parallels and meridians, should be coordinated with auroral observations from the ground, airoraft and satellites. Regarding measurements in space, variations in the flux and energy spectrum of trapped particles should be studied, especially in the geomagnetic tail should be carefully analyzed. The recently developed techniques of measuring electric fields in the ionosphere and in the magnetosphere by rockets and satellites should be utilised also so as to provide complementary data.

8. Low-Latitude Auroras

Tropical auroras in which the luminosity exhibits a structure have been observed by the naked eye at times of great geomagnetic storms, but reports of such events are rare. However, it is very likely that many barely subvisual auroras occur which could be detected with sensitive photoelectric photometers. During the last sunspot cycle, there were five geomagnetic storms of such great intensity that they must almost certainly have been accompanied by sub-visual forms at low latitudes. These great geomagnetic storms indicate a gross deformation of the manetosphere, the nature of which can be revealed by the accompanying mid-latitude and tropical luminosity.

To accomplish the observations, tropical airglow observatories should be equipped with automatic scanning filter photometers. After being alerted by flare-warning systems and by networks of ground-based magnetometers, jet aircraft could fly photometers across wide spans of latitude so as to map the extent of the auroral luminosity. At the same time, rockets in standby readiness could be launched to traverse the disturbed regions. Modern image-orthicon cameras are capable of recording

detailed pictures of sub-visual auroral structures as has already been demonstrated at mid-latitudes during a great storm in May 1967. Ionospheric sounders should be used to make observations of anomalous E-region ionization and these observations should be repeated at the highest practical rates under the alert conditions mentioned above.

9. Basic Structure of the Upper Atmosphere

The atmosphere "breathes" in and out as a result of the diurnal, seasonal and solar-cycle variations of the energy input from the sun. In order to clarify the global picture of atmospheric structure, a systematic worldwide survey of composition, temperature and density is needed.

The air drag on satellites can be measured with high sensitivity up to great altitudes and such measurements provide a simple and precise means of following density variations. At altitudes below 200 km, however, drag forces increase so rapidly that the lifetime of a typical satellite is severely curtailed. Satellites with high mass to cross-section ratios and with restartable rocket power to sustain their lives in low orbit are needed to explore the atmosphere below 200 km. Instrumentation should be included for composition, airglow and total-density measurements.

The 80-120 km region includes the transition from a mixed atmosphere to one in which eddy and molecular diffusion compete with one another before diffusive equilibrium is attained at still greater altitudes. Furthermore, the photochemical reactions that occur in the 80-120 km region exert a most important influence on the neutral aumosphere at all greater heights.

During IQSY, small rocket techniques were developed to probe the atmospheric structure from the high stratosphere up to the thermosphere. Ther methods employed included the use of explosive grenades, luminous vapour releases, falling spheres, mass spectrumeters, obervations of airglow at different heights and photometry of solar radiation fluxes at various wavelengths. The techniques have only recently attained a high degree of absolute accuracy and their employment thus far has been confined to the vicinities of just a few rocket ranges.
For the future, therefore, it is important to apply small rocket methods more widely in conjuction with satellite surveys, so as to establish the large-scale global figure of the mesoshere

and thermosphere under basic conditions and to distinguish the distoritions caused by micro-, meso-, and macroscale changes.

10. Atmospheric Dynamics

Atmospheric dynamics encompasses what is perhaps the most complex system of interacting processes that faces man in the study of his physical environment. These processes have origins that derive in part from the behaviour of the meteorological regions beneath, in part from interactions with the solar wind beyond, and in part from effects induced in situ. They have consequences that range from simple wind systems, through such diverse phenomena as compositional changes in the neutral gas, anomalous heating, and the modulation of energetic particle precipitation, to the formation of various types of ionization irregularity such as sporadic-E, spread-F, travelling disturbances and radio auroras.

Despite the complexity of the processes involved, recent advances indicate that a concerted effort at this time will lead to a greatly improved understanding of individual aspects of these phenomena and of the system as a whole. The project must involve an extension of normal meteorological measurements, improved networks of standard equipment for monitoring the ionosphere, and a judicious use of the more sophisticated (although more expensive) techniques now provided by groundbased meteor-scatter and Thomson-scatter radar systems and by high-altitude gun and rocket soundings.

11. Ion Chemistry of D and E Regions

It is generally agreed by ionospheric physicists that their most urgent need is a knowledge of the identity of the positive and negative ions in the D and E regions. Because of the importance of minor constituents in the neutral atmosphere and the complexity of the relevant ionic reactions, it is difficult to deduce the fundamental processes from measurements of electron density alone, except in the most general terms. Focket and groundbased measurements must be used in combination and at times and places selected carefully so as to yeild the maximum amount of scientific information. The experiments should include rocket measurements of the ionized and neutral constituents of the D and E regions, rocket and ground-based measurements of electron density; and measurements of the intensities of solar

radiations and energetic particles in appropriate energy bands. Among the problems which may be solved by these measurements, if properly coordinated, are;

(a) the role of meteoritic ionization;
(b) sunrise effects;
(c) ion production by mid-latitude particle precipitation;
(d) sporadic-E ionization; and
(e) the relation between laboratory measurements of rate coefficients and those observed in the ionosphere.

12. Sudden Ionospheric Disturbances (SIDs)

The coming solar maximum offers the first opportunity to apply several recently developed rocket and satellite experimental techniques to the study of solar flare ionization effect in the D region, commonly known as SID's. It is proposed to organize a project which will include the following sub-divisions:

(1) The recognition of the onset of a flare (within 15 sec) by means of real-time transmission, to a launch site, of information from a satellite which can monitor hard X-ray intensity (exceeding 10 keV);

(2) Monitoring throughout the flare, with a time resolution of 1 sec or better, of the solar spectrum in the range 0.05-20A.

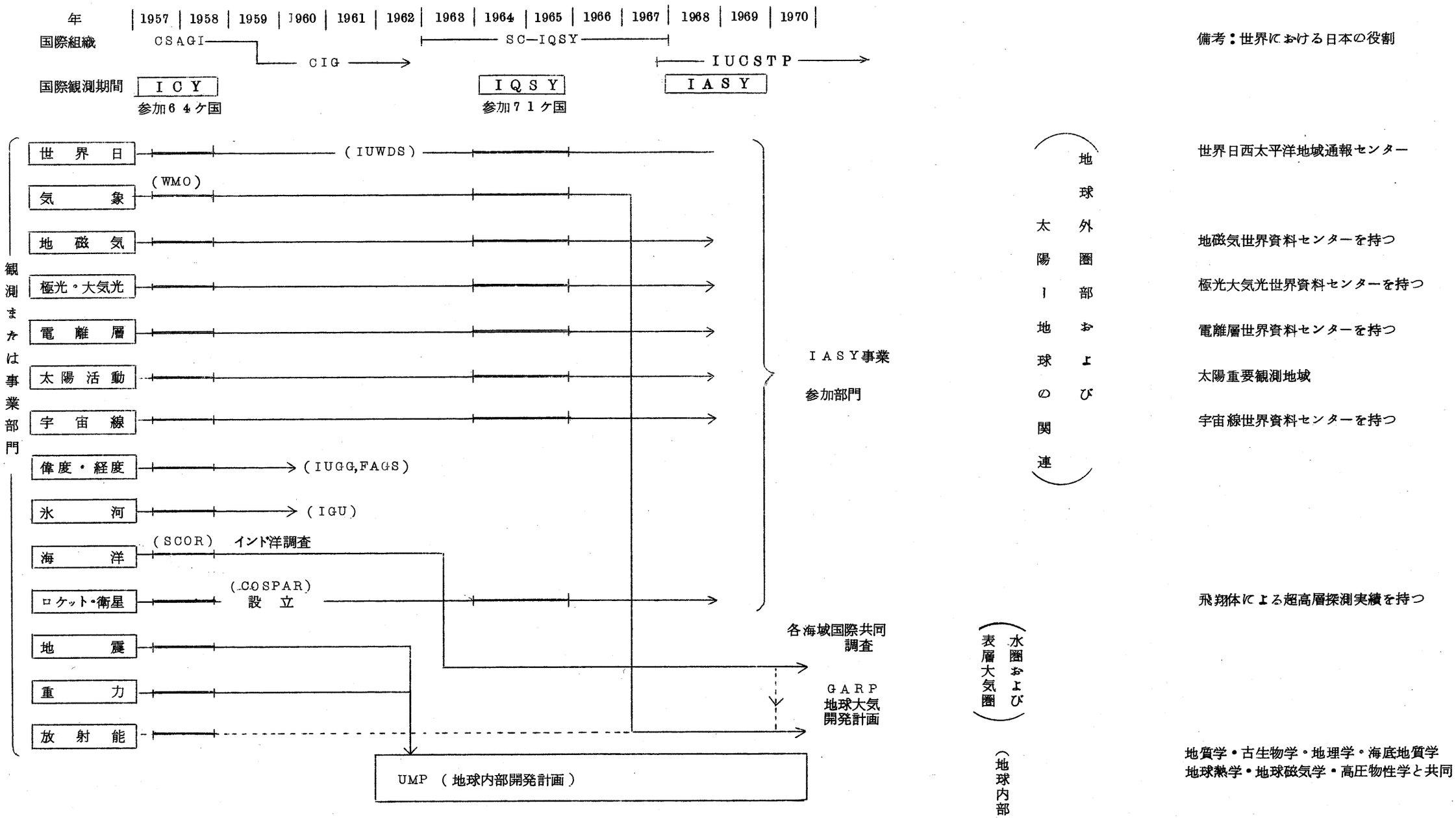
(3) Rocket (and perhaps gun) soundings of the electron and ion density profiles in the D and E regions between 50 and 150 km.
These should start as soon as possible after the flare warning and should be repeated at intervals throughout the duration of the flare; in every case, a control sounding must be made after the end of the flare;

(4) Monitoring, with a time resolution of 1 sec or better, of the phase height given by VLF radio signals, and of the ionospheric absorption as measured by pulse, cw, and riometer methods.

This project should reveal the effects at various levels in the innosphere of the variations with time in the hardness of the flare radiation and it should add greatly to an understanding of the ion chemistry of the lower D-region.

（別添資料２）

国際地球観測年以降における地球物理各方面の国際共同事業の変遷



備考：世界における日本の役割

世界日西太平洋地域通報センター

地磁気世界資料センターを持つ

極光大気光世界資料センターを持つ

電離層世界資料センターを持つ

太陽重要観測地域

宇宙線世界資料センターを持つ

飛翔体による超高層探測実績を持つ

地質学・古生物学・地理学・海底地質学
地球熱学・地球磁気学・高圧物性学と共同

（別添資料３）

日本におけるＩＡＳＹ計画作成方針

国際地球観測特別委員会ＩＱＳＹ部会の下につくられたＩＡＳＹ準備小委員会は，わが国における超高層および大気圏外域物理学研究者一同の意見を反映してＩＡＳＹ計画を作成しつつある。

ＩＡＳＹ事業は，ＩＧＹおよびＩＱＳＹのような資料の共同利用を目的とする観測網整備とは本質的に異なり，現在地球外圏大気，惑星間空間および太陽一地球関連現象研究に最も必要な研究課題をいくつか選定し，その解明を目的として計画された共同観測を，来るべき太陽活動期を失せずに各国の緊密な協力の下に実施する事業である。すなわち，地磁気変動・電離層・宇宙線・太陽活動観測など地球外圏大気，惑星間空間および太陽一地球関連現象研究に役立っている一般の定常観測が適宜運営されている現実に立脚し，上記の目的のために新たに必要となる観測を追加する。地上施設による観測については，新しいアイデイアによる観測，あるいは現象観測網による定常観測のみでは不十分な観測種目については広範囲な領域に適当な臨時観測網を張り，場合によつては選ばれた特殊地域間で稠密な観測網を布き，また定時観測の時間間隔を適宜せばめるなど，綿密な観測計画にもとずく研究観測を太陽活動の状態に即して機動的に随時実施する。

ＩＵＣＳＴＰで選定された研究課題は下記１２課題である。

(1) 太陽，地球周辺現象に対する監視
(2) プロトン・フレアー現象
(3) 惑星間空間における磁場分布の擾乱
(4) 地球磁気圏の諸性質解明
(5) 共役点における実験観測
(6) 地球磁気圏内の電場測定
(7) 磁気嵐と極地域擾乱
(8) 低緯度極光
(9) 超高層大気の基本的構造研究
(10) 大気動力学の研究
(11) Ｄ層・Ｅ層における化学反応
(12) 電離層突然擾乱現象（ＳＩＤ）

わが国におけるＩＡＳＹ研究計画としては，広い視野から総合的に研究する能力に特に秀でているわが国研究者の特長を最大限に活用しうるように，上記に課題をさらに総合的に編成し，

Ⅰ 太陽フレアーと関連大気外圏諸現象共同研究計画 〔課題(1)～(7)にわたる〕
Ⅱ 電離層域のエアロノミーとダイナミックス共同研究計画 〔課題(7)～(12)にわたる〕

という二つの大きな研究計画を立案した。

これらの研究計画を遂行するに際し，地上観測については，先に「宇宙空間科学推進に伴なう地上観測拡充計画案について」（昭和４０年８月２０日および１２月２４日）日本学術会議から出されている文書に記載されている地上観測強化計画の一部が来るべき太陽活動期に間に合うよう実現されることが必要である。ＩＡＳＹ計画作成に際しては，地上観測施設により十分な観測成果が得られるよう周到な計画を立てているが，さらに気球やロケットによる超高層大気直接探測が同時に行なわれる