

# U. R. S. I.

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## URSI BOARD OF OFFICERS

The Board of Officers of URSI met in Brussels on 27-28 November 1970. The principal matters discussed and the decisions taken are summarised below.

### REORGANISATION OF URSI

The Board received the Report (including Recommendations) of the URSI Working Group on Reorganisation which was presented and explained by Prof. Beynon, Chairman of this Group. The relevant documents were sent to all Members Committees on 29 December 1970 and are reprinted in this issue of the Bulletin.

At its meeting in April 1971, the Board will give further consideration to the Recommendations in the light of the comments received from Member Committees.

### TRIENNIAL REVIEW OF RADIO SCIENCE

The Board agreed on the procedure to be adopted for the preparation of the Triennial Review, publication of which was recommended by the Publications Committee at the XVI General Assembly.

Member Committees were informed of the procedure on 4 January and were invited to cooperate in sending basic material for the Review to the Chairmen of the URSI Commissions before 31 May 1971.

The Review will be published in *Radio Science* in June 1972 and each registered delegate at the XVII General Assembly in 1972 will receive a copy.

### XVII GENERAL ASSEMBLY, WARSAW, 1972

The provisional timetable for the Assembly is as follows :

1972 :

Council Meetings (former Executive Committee) :

18 (afternoon), 19, 26 (morning) and 30 August.

Plenary Sessions :

21 (opening) and 29 (closing) August.

Scientific Sessions organised by Commissions :

22-25 and 28-29 August.

The Commissions will hold their Business Meetings on 21 August and on other dates, at their convenience, up to 29 August.

The Polish Organising Committee is making arrangements for visits of scientific interest and social events.

It was agreed to allocate a sum of \$10,000 to assist a number of young scientists to attend the Assembly. Member Committees will be asked to propose candidates towards the end of 1971.

#### FINANCE

The provisional accounts for 1970 and the budgets of income and expenditure for 1971 and 1972 were reviewed. The Board noted with satisfaction that, with only a few exceptions, the amounts due from Member Committees for 1970 had been paid in full. As envisaged in the Financial Report approved at the XVI General Assembly, expenditure will exceed income in 1971, but the situation will be rectified with the increased annual contributions payable as from January 1972.

#### CHILI

An application for membership of URSI has been received from the National Committee for Scientific and Technological Research (CONICYT) in Chile. In the opinion of the Board the current activities, in Chilean Universities and other scientific institutions, on subjects relating to most of the URSI Commissions justified the provisional admission of a Chilean Member Committee in accordance with Art. 40 of the Statutes. The President of CONICYT has been invited to say whether provisional membership is desired in 1971 or whether it is preferred to await the decision of the XVII General Assembly.

#### NEXT MEETING

1/ The Board and the Coordinating Committee will meet in Brussels in April 1972, primarily to discuss the programme for the General Assembly.

## BUREAU DE L'URSI

Le Bureau de l'Union s'est réuni à Bruxelles les 27 et 28 novembre 1970. Le résumé ci-dessous rend compte des principales questions examinées et des décisions prises à cette occasion.

### RÉORGANISATION DE L'URSI

Le Prof. Beynon a présenté le Rapport et les Recommandations du Groupe de travail dont il a présidé les travaux. Les documents relatifs à l'ensemble des questions de réorganisation ont été adressés le 29 décembre 1970 à tous les Comités Membres; ils sont également reproduits dans le présent numéro du Bulletin.

Lors de leur session d'avril 1971, les membres du Bureau réexamineront les Recommandations à la lumière des commentaires qui leur auront été soumis par les Comités Membres.

### REVUE TRIENNALE DE RADIOÉLECTRICITÉ SCIENTIFIQUE

Le Bureau s'est mis d'accord sur la procédure à suivre dans la préparation de la Revue triennale dont la publication a été recommandée par le Comité des Publications lors de la XVI<sup>e</sup> Assemblée générale.

Cette procédure a été portée le 4 janvier à la connaissance des Comités Membres, qui sont invités à faire parvenir leurs rapports aux Présidents des Commissions de l'URSI pour le 31 mai 1971.

La Revue paraîtra dans le numéro de juin 1972 de *Radio Science* dont un exemplaire sera remis à chaque délégué lors de son inscription à la XVII<sup>e</sup> Assemblée générale en août 1972.

### XVII<sup>e</sup> ASSEMBLÉE GÉNÉRALE, VARSOVIE 1972

Le calendrier provisoire de l'Assemblée a été établi comme suit :

1972 :

Séances du Conseil (ancien Comité exécutif) :

18 (après-midi), 19, 26 (matinée) et 30 août.

Séances plénières :

21 (ouverture) et 29 (clôture) août.

Séances scientifiques des Commissions :

22 au 25 et 28 et 29 août.

Les Commissions tiendront leurs premières séances administratives le 21 août; elles fixeront elles-mêmes à leur convenance les dates d'autres séances administratives.

Le programme des visites d'intérêt scientifique et des réceptions est organisé par le Comité organisateur polonais.

Il a été décidé de réserver une somme de 10 000 \$ pour aider la participation à l'Assemblée d'un certain nombre de jeunes scientifiques. Vers la fin de 1971, les Comités Membres seront invités à soumettre les noms de leurs candidats.

#### FINANCES

Le Bureau a examiné les comptes provisoires pour 1970 et les budgets portant sur les exercices 1971 et 1972. Il a noté avec satisfaction que toutes les cotisations pour 1970 avaient été payées à quelques rares exceptions près. Comme prévu dans le Rapport du Comité des Finances approuvé lors de la XVI<sup>e</sup> Assemblée générale, il y aura un excédent de dépenses en 1971, mais l'équilibre sera rétabli en 1972 grâce à l'augmentation des cotisations annuelles qui entrera en vigueur le 1<sup>er</sup> janvier 1972.

#### CHILI

Le Comité National pour la Recherche Scientifique et Technologique (CONICYT) du Chili a déposé une demande d'admission à l'URSI. De l'avis des membres du Bureau, les activités déployées par les universités et autres institutions scientifiques chiliennes dans les domaines de la plupart des Commissions de l'URSI justifient l'admission du Chili comme membre provisoire de l'Union, conformément à l'Article 40 des Statuts. Le Président du CONICYT a été prié de faire savoir si son Comité désirait être admis comme membre provisoire dès 1971, ou bien s'il préférerait attendre la décision définitive de la XVII<sup>e</sup> Assemblée générale en 1972.

#### PROCHAINE SESSION

Le Bureau et le Comité de Coordination se réuniront à Bruxelles en avril 1971. A l'ordre du jour figure notamment la mise au point du programme de la XVII<sup>e</sup> Assemblée générale.

## URSI WORKING GROUP ON REORGANISATION

(Doc. URSI-R28-70 dated 13 October 1970)

### RECOMMENDATIONS

#### RECOMMENDATION 1. — RESPONSIBILITY FOR RADIO SCIENCE.

*Considering*

(a) that the present applications of radio and closely related techniques to scientific research extend over a wide range of disciplines and are consequently of interest to at least three Unions besides URSI;

(b) that it is possible to envisage the future application of these techniques in other fields of scientific research;

(c) that the development of fundamental theories and basic techniques in radio science and their exploitation in other branches of research constitute a strong cohesive force among radio scientists;

(d) that it is desirable to maintain, within ICSU, a single forum for the discussion of all aspects of radio science and its applications;

*the Working Group recommends*

1. that URSI should remain in being as a Union concerned primarily with radio science;

*and considering also*

(e) that a Union concerned with radio science has a duty to encourage the applications of radio science over a wide range of disciplines and should avoid giving undue emphasis to the applications in any one field;

*the Working Group expresses the opinion*

2. that, in the interest of science as a whole, it would be undesirable to transfer the present URSI responsibilities for the stimulation and coordination of studies in radio science to a Union whose interests cover only the applications of radio science in particular fields;

3. that, in consequence, the transfer of these responsibilities to a new Union dealing with the physics of the Earth's environment should be avoided.

RECOMMENDATION 2. — WORKING GROUPS.

*Considering*

(a) that there has been a rapid expansion in the whole field of radio science and in the applications of radio techniques to scientific research;

(b) that there has not been a corresponding increase in the number of URSI Commissions;

(c) that, in consequence, the range of topics covered by a Commission has become very great and that it is not possible for the Official Members who constitute a given Commission to give detailed consideration to all these topics;

*the Working Group recommends*

1. that consideration be given to the creation, perhaps for the time being under the auspices of the present Commissions, of a number of Working Groups;

2. that each Working Group should be responsible for a small number of well-defined and closely-related tasks, including the organisation of colloquia and other discussion meetings as necessary;

3. that a Working Group should be dissolved as soon as it has completed its tasks;

4. that the individual members of a Working Group be selected bearing in mind only their personal interest and activities in work relevant to the tasks of the Group;

5. that the membership of a Working Group should not include national representatives;

6. that the Chairmen of Commissions be consulted before decisions are made concerning the creation of the Working Groups;

7. that, in cases where the tasks of a Working Group established by URSI are of interest to one or more other Unions, the activities of the Group should be jointly sponsored by the Unions concerned;

8. that other Unions be invited to consider the recognition of such jointly sponsored Working Group as a means of ensuring closer inter-Union cooperation at the level of the working scientist.

RECOMMENDATION 3. — MEETINGS ON SOLAR-TERRESTRIAL PHYSICS.

*Considering*

(a) that several ICSU Unions and Committees are interested in solar-terrestrial physics and that they may individually take the initiative in organising international meetings in this field;



(b) that, in practice, it has not been possible to avoid the occurrence of series of meetings on similar topics within time intervals which are too short;

(c) that, as a result of the large number of such meetings, it has been difficult to ensure the presence, at any one meeting, of a large percentage of the key scientists;

*the Working Group recommends*

1. that the interested Unions and Committees of ICSU should agree to organise a single annual meeting on solar-terrestrial physics;

2. that, in any given year, this meeting be held at the same time and in the same location as the General Assembly of IAU, IUGG or URSI as appropriate.

#### RECOMMENDATION 4. — GENERAL ASSEMBLY.

*Considering*

(a) that the representatives of the Member Committees who constitute the URSI Council meet during General Assemblies and that the business of the Council is mainly administrative;

(b) that it is desirable to include also, in the programme of the General Assembly, scientific meetings relating to some of the current activities of the Union;

(c) that the Council meetings must be arranged so as not to overlap with the scientific meetings;

(d) that the programme of scientific meetings should be planned so as to make more effective use of the time available than has been customary in the past;

*the Working Group recommends*

1. that the Council meetings, and any other meetings concerned with administrative questions, should be confined to periods of a few days before and after the scientific meetings;

2. that the scientific meetings at a General Assembly be limited to a period of about one week;

3. that the scientific meetings should not attempt to cover the whole field of radio science but should be restricted, at a given Assembly, to a number of selected topics of current importance;

4. that the Commission Chairmen be consulted before decisions are made concerning the modified type of programme.

RECOMMENDATION 5. — INDIVIDUAL MEMBERS.

*Considering*

(a) that the only Members of URSI are the Committees formed by academies of science and similar bodies;

(b) that the only Members of Commissions are those officially appointed by the Member Committees;

(c) that it is desirable to encourage a greater degree of personal participation, on the part of individual scientists, in the activities of URSI;

*the Working Group recommends*

that serious consideration be given to the controlled admission of individual scientists to URSI, including such questions as the conditions of admission and the privileges of such members, and the practical consequences for URSI of the admission of a large number of individual members.

RECOMMENDATION 6. — ICSU EXECUTIVE COMMITTEE.

*Considering*

(a) that the membership of the ICSU Executive Committee includes the Representatives of the 16 Unions of ICSU and Representatives of 11 National Members of ICSU;

(b) that ICSU wishes to increase the effectiveness of this Committee by reducing the number of both the Union and National Representatives;

(c) that ICSU has suggested the creation of federations of several groups of Unions with similar interests;

(d) that it seems preferable to allow the Unions to retain their independent and individual outlooks on science which would tend to be obscured in a federation of Unions;

(e) that the creation of federations would give rise to difficult organisational problems;

*the Working Group recommends*

1. that the Unions be invited to agree to establish several informal groups of Unions, the Unions in each group having broadly similar interests;

2. that each of these groups be represented on the Executive Committee of ICSU by a single representative;

3. that this representative be designated in accordance with a procedure to be agreed among the Unions in the group;

4. that, after the receipt of the agenda and supporting documents for an Executive Committee meeting, this representative should be briefed so that he can present the individual views of the Unions he represents;

5. that, in addition to circulating the routine reports from ICSU bodies, ICSU should be encouraged to provide adequate advance information on other items on the agenda and especially on those relating to questions which require some consideration by the Unions before the meeting of the Executive Committee.

## **REPORT OF THE WORKING GROUP ON THE REORGANISATION OF URSI**

(Doc. URSI-R29-70 dated 13 October 1970)

by

W. J. G. BEYNON

(*Chairman*)

### I. — INTRODUCTORY NOTE

1.1. Resolution 2, adopted at the XVI General Assembly of URSI (Ottawa, 1969), reads as follows :

“URSI,

*considering*

(a) that the Board of Officers has recommended that a study should be made of the internal structure of URSI and its relations with other Unions and ICSU organizations;

(b) that the Executive Committee has given further consideration to these questions and to a report submitted by a Working Group appointed at an earlier meeting;

*resolves*

(1) that a new Working Group be formed

(1.1) to investigate possible ways of changing the internal structure of URSI and the organisation of its General Assemblies so that the Union can better serve the present-day needs of radio scientists;

- (1.2) to explore slowly and carefully the possibility of establishing closer links between URSI and IUGG and, if it is considered desirable, with other ICSU organizations;
  - (1.3) to submit a report on its work to the Board of Officers by 30 September 1970.
- (2) that the following be invited to serve as members of the Working Group :

*Chairman* : W. J. G. Beynon (UK).

*Members* : W. N. Christiansen (Australia);  
N. D. Clarence (South Africa);  
A. L. Cullen (UK);  
W. Dieminger (West Germany);  
W. E. Gordon (USA);  
C. O. Hines (Canada);  
V. V. Migulin (USSR);  
S. Silver (USA);  
F. L. Stumpers (Netherlands);  
M. E. Zhabotinskii (USSR)".

Subsequent to the Ottawa Assembly, and with the approval of the URSI Board of Officers, the Chairman of the Working Group invited Mr. M. Thué (France) to join the Group.

1.2. An ad hoc Working Group on the Reorganisation of URSI met in Ottawa during the Assembly. In two meetings, this Group held discussions with the Chairmen and Vice-Chairmen of the eight URSI Commissions. In addition, written comments were received from some 50 or so participants at the Assembly. A full report by the ad hoc Group has been published in the Proceedings of the XVI Assembly, pp. 82-84, and the findings have been taken into account by the present Working Group. Subsequent to the Assembly, a questionnaire relating to arrangements for the General Assembly was circulated to all Member Committees of URSI and the replies received have also been considered by the Working Group.

1.3. In January 1970 the Chairman prepared and circulated to the Working Group a comprehensive document reviewing the whole situation and including notes on an informal meeting that he had had with the President of IUGG, Prof. J. Coulomb. In the subsequent months there was an extensive exchange of views, by correspondence, between the members of the Working Group and on 2 July 1970 a meeting of six out of the twelve members of the Group (together with the Secretary General of URSI) was held in London. Altogether some 12 written documents

covering all aspects of the problem were discussed at this meeting. A draft report was then circulated to all members of the Working Group and their comments were invited. These comments have been received and taken into account in drafting our final conclusions which take the form of six recommendations.

## 2. — COMMENTS OF THE CHAIRMAN

In presenting these six recommendations, it may be helpful to make one or two supplementary comments on them.

2.1. Recommendation 1 expresses a view very widely held within URSI, namely the continuing need for a Union to deal with radio science. In expressing the opinion set out in this Recommendation, the Working Group took into consideration recommendations prepared in May 1970 by the Group on Problems of Structure in IUGG which envisaged the formation of a new Union on the Environment in which all the present scientific activities of URSI and IUGG would be included. Although Recommendation 1 of the URSI Group does not favour a simple transfer of the present responsibilities of URSI to a new Union, I think that the Group would not wish it to be interpreted as a proposal which completely precludes further discussions with other ICSU bodies on ways and means of achieving closer cooperation. Further reference to this point is made in Section 2.2 below.

2.2. Recommendation 2 proposes a new and more flexible structure for URSI. In particular, I think that attention should be given to Recommendations 2.7 and 2.8. If 2.7 is accepted, then it follows that, for topics in which the interests of URSI and other ICSU bodies overlap, the proposed scientific Working Groups in the relevant fields will not be exclusive to URSI, but will be jointly sponsored by these ICSU bodies. The administrative and financial implications of such jointly sponsored scientific Groups will, of course, have to be worked out in collaboration with the other interested bodies. Recommendation 2.8 suggests that a similar policy on flexibility of structure could profitably be adopted by other ICSU bodies.

2.3. Recommendation 3 is essentially the same as an opinion expressed by the URSI Board of Officers at its meeting in February 1970.

2.4. Recommendation 4 is concerned with the organisation and form of future General Assemblies of URSI. In my view, if Recommendations 2 and 3 are implemented, then they themselves will almost certainly have consequences for the scientific content of the programme of future Assem-

blies. However, even if there is no other reorganisation of URSI, the Working Group recommends a reorganisation of the General Assemblies along the lines indicated in Recommendation 4.

2.5. Recommendation 5. One of the suggestions reviewed by the Working Group was that it would be desirable to modify the present situation whereby most of the activity of URSI is concentrated on the General Assembly. It was felt that some means should be found for stimulating a greater sense of personal involvement of individual scientists in the activities of the Union, not only at Assemblies but also during the three-year interval between them. The suggestion that consideration be given to the concept of admitting "individual members" to URSI is an attempt to meet this objective. Precisely what is implied by "individual membership" will, of course, be a matter for further discussion.

2.6. Recommendation 6. For some years ICSU has had a Standing Committee on Admissions and Organisation. The URSI Working Group recognised the difficulties being studied by this Committee, which relate to the ever growing number of members in the ICSU Executive Committee. Recommendation 6 is intended to help towards a solution of these difficulties.

It should be pointed out that a reference to this problem was made at the recent General Assembly of ICSU held in Madrid in September 1970, and that a copy of Recommendation 6 was informally given, for information only, to the Secretary General of ICSU. In doing so it was stressed that the Recommendation had not yet been considered or approved by the URSI Board of Officers and that the Union was in no sense committed to it.

## **REORGANISATION OF URSI STATEMENT BY THE BOARD OF OFFICERS**

(Doc. URSI-R38-70/Rev. dated 29 December 1970)

The URSI Board of Officers, with the President in the Chair, met in Brussels on 27 and 28 November 1970 and received the Report and Recommendations of the Working Group on the Reorganisation of URSI (URSI-R28- and R29-70). The Report was presented by the Chairman of the Group, Prof. Beynon, and the discussion which followed provided an opportunity for an exchange of views on both the internal structure of URSI and the relations between URSI and other ICSU organisations.

The Board agreed that it would be inappropriate for it to express an opinion on the Report at the present time. It was considered essential first to give the Member Committees of URSI an opportunity of considering the recommendations of the Working Group and to provide them with some supplementary information which was made available at the meeting of the Board, as well as several comments and suggestions which emerged during the discussions. The remarks which follow relate to the six Recommendations contained in R28-70.

#### RECOMMENDATION 1. — RESPONSIBILITY FOR RADIO SCIENCE.

Prof. Beynon pointed out that the Report of the Group on Problems of the Structure of IUGG (URSI-R18-70), which had been submitted to URSI in May 1970, had been received before the preparation of R28- and R29-70 and had been given careful consideration by his Working Group. Recommendation 1.3 was intended to refer specifically to the new Union the creation of which had been suggested in the Report of the IUGG Group.

Prof. Beynon emphasised, however, that this Recommendation was not meant to preclude further discussions with IUGG and with other ICSU bodies with the objective of finding ways of achieving closer cooperation between them and URSI.

#### RECOMMENDATION 2. — WORKING GROUPS.

The Board noted that no detailed consideration had been given to the question of the relationship between the Commissions and the Working Groups in the more highly developed structure envisaged in Recommendation 2. Initially the Working Groups could be formed under the auspices of the Commissions, in accordance with the present Statutes, but the composition and rôle of the Commissions might later require to be modified.

The Board attached considerable importance to the idea of forming Working Groups which would be sponsored jointly by URSI and one or more other Unions. In fields where several Unions have overlapping interests in a subject these Groups could play a valuable part in maintaining permanent effective contacts between the Unions, and in organising joint activities of various kinds as recommended in the Report of the IUGG Group.

It is worth pointing out that the jointly sponsored Groups would be formed on the initiative only of the interested Unions; they would not, as in the case of Inter-Union Commissions, require the approval of ICSU.

RECOMMENDATION 3. — MEETINGS ON SOLAR-TERRESTRIAL PHYSICS.

It was recognised that this proposal could not be implemented by URSI alone, and that it would need the full cooperation of the other Unions.

RECOMMENDATION 4. — GENERAL ASSEMBLY.

Prof. Beynon pointed out that Recommendation 4.2 was not meant to apply to the General Assembly in 1972. The Board later agreed on an outline programme for this Assembly which included a nine-day period to be devoted almost entirely to scientific meetings organised by the Commissions and several days for administrative meetings before and after this period (see Rec. 4.1).

The shortened programme would probably be appropriate later if Recommendations 2 and 3 were implemented and if it were considered desirable to plan a more specialised scientific programme at Assemblies as suggested in Recommendation 4.3.

RECOMMENDATION 5. — INDIVIDUAL MEMBERS.

The following information on the conditions of admission of individual members to the International Astronomical Union was considered by the Board during its discussion on Recommendation 5.

1. Candidates should be astronomers or, alternatively, scientists whose work is closely linked with astronomy. Factors considered are :

- (a) their standard of achievement,
- (b) relevance of their research to astronomy,
- (c) their desire to promote the aims of IAU.

Young astronomers should have Ph. D., or an equivalent qualification, and several years of experience in original research.

2. Candidates are proposed normally by the national committees adhering to the Union; the Presidents of Commissions may also make proposals, preferably through the appropriate national committee. A proposal must be accompanied by full details of the candidate's qualification, experience, publications, etc. and must be submitted to IAU five months before a General Assembly. A Nominating Committee considers the candidates proposed by the national committees, as well as those proposed by the Presidents but not included in the lists submitted by the national bodies.

3. The national committees are encouraged to propose the cancellation of the membership of members who are no longer engaged in astronomy.



4. Individual members have the following privileges :

- (a) they may participate in General Assemblies and vote on scientific questions;
- (b) they are eligible for election to IAU offices and for co-option as members of Commissions;
- (c) on invitation, they may attend IAU Symposia and Colloquia;
- (d) they receive free copies of the Proceedings of Assemblies and the *Information Bulletin* (twice per year).

5. Individuals pay no membership fees, but the contribution paid annually by a national committee is determined partly by the number of individual members associated with the committee. The Union can refuse the admission of a committee if its contribution is "manifestly inadequate".

6. As in URSI, the categories of membership in IAU are defined in terms of the number of unit annual contributions paid by the adhering body. For comparison, the numbers of units in the eight IAU and six URSI categories are as follows :

IAU	1	2	4	6	10	14	20	30	units
URSI	1	2	4	8			16		32 units

The Board recognises that some thought must be given to the disadvantages as well as to the advantages of admitting individual members to URSI. It was suggested that the effectiveness of a small Union such as URSI might be reduced if it became a very much larger body as a result of the admission of individual members.

An alternative worth considering would be to arrange for appropriate individual scientists to be admitted as members of Working Groups dealing with subjects in which they have an active interest and to which they could contribute their ideas.

It was considered necessary to examine the possibility of charging a small individual membership fee to cover the cost of, for example, copies of the *URSI Bulletin* and the Proceedings of Assemblies, additional administrative expenses, etc. A fee of \$5 per year, with a reduction for members under 30 years, was suggested for further consideration.

RECOMMENDATION 6. — ICSU EXECUTIVE COMMITTEE.

The possibility of encouraging the formation of groups or federations of Unions has been under consideration by ICSU for some years, but no information is available on the present views of ICSU on this subject.

The Board of Officers agreed that, if the structure suggested in 6.1 and 6.2 were accepted by ICSU, the procedure mentioned in Recommendation 6.3 would have to incorporate a system of rotation according to which the representative of the group on the Executive Committee of ICSU would be designated by each of the component Unions in turn.

\* \* \*

The Board of Officers will reconsider the Report and Recommendations at its meeting in Brussels in April 1971, and it is hoped that as many as possible of the Member Committees will have submitted their comments by the end of March. Since the Coordinating Committee will also meet in April, this occasion will enable the views of the Commission Chairmen to be taken into account also.

**INTERNATIONAL UNION  
OF GEODESY AND GEOPHYSICS**

**REPORT OF THE GROUP DEALING  
WITH PROBLEMS OF STRUCTURE**

(Doc. URSI-R18-70)

*English translation*

In Madrid, the IUGG Executive Committee referred the study of the Union's structural problems to a Group composed of Prof. Coulomb (Chairman), Drs Levallois, Malone, Nicolet and Stewart. The Group held two meetings in Brussels on 21 March 1970. Dr. Minnis, Secretary General of URSI, was present at the afternoon meeting.

Following a discussion of the facts of the situation and an exchange of individual points of view, the Group unanimously submits the following recommendations :

(1) In external geophysics, the present situation, in which URSI, IAGA and IUCSTP deal with the same questions, is abnormal and it is worth making a serious attempt to modify it.

(2) The size of the component Associations of IUGG is satisfactory for it permits the members to work closely together. Thus it seems reasonable to use them as the foundation for a new structure. However, it is possible to envisage the separation of the two distinct sections of IAGA (geomagnetism and aeronomy) into two different Associations; any further subdivision should be avoided : for example, the separation of geomagnetism into two parts — internal and external (especially if these two parts were to belong to different Unions as suggested in the proposals made by the French National Committee for Geodesy and Geophysics (CNFGG)).

(3) In considering the present structure of URSI, it appeared to the Group that URSI consists first of a fairly coherent section dealing with radiophysics on one hand and radio-astronomy on the other. The remaining section, like IAGA, is concerned with the magnetosphere, the ionosphere, and the non-ionized parts of the upper atmosphere. It may perhaps be possible to distinguish between scientists who are directly concerned with electromagnetic waves, such as those working in the field of external geomagnetism, and others who are interested in questions closer to aeronomy. However, avoiding further consideration of detailed distinctions of this kind, which would depend on individual opinions, it seems reasonable to suggest that URSI and IAGA, taken together, would correspond fairly well to three Associations of the size of those now in IUGG. We shall refer to them here as the Associations for Radiophysics, Geomagnetism and Aeronomy, but it is understood that both the titles and the subdivisions themselves would be completely open to further review during discussions with URSI.

(4) Assuming that the Associations (or groups with a different title but similar responsibilities) would form the basic units, the new structure would cover, without duplication, the present responsibilities of URSI, IUGG and IUCSTP, and would be composed of nine Associations with the following provisional titles :

- |                  |                  |                 |
|------------------|------------------|-----------------|
| (a) Radiophysics | (b) Geomagnetism | (c) Aeronomy    |
| (d) Geodesy      | (e) Seismology   | (f) Volcanology |
| (g) Meteorology  | (h) Oceanography | (i) Hydrology   |

The Group considered two quite different types of structure for the entire group of Associations, although it would be possible to suggest structures of intermediate type. In both cases the Unions would be dissolved. At the end of IASY, IUCSTP would also be dissolved since its responsibilities for long-term programmes could be taken over by the new structure. The present Unions would be replaced in the first case by one

Union, and in the second case by a Federation of Unions. The Group agreed that it would not be possible to choose between these two structures without first making contact with representatives of URSI.

The ultimate establishment of either structure will be a slow process and the Group considers that it would be appropriate to establish permanent contacts with URSI and to organise joint meetings, etc... without waiting for the completion of the new structure.

(5) In the first possibility, a new Union would be created with a title such as International Union for the Physical Environment, or International Union for the Physics of the Environment. The nine Associations would be attached to it. The national members would adhere to the Union and make financial contributions to it, and the national Committees would be the Committees of the Union. However, the rules would permit a country to allocate a greater fraction of its contribution to a particular Association, and an adhering country would always be free to decide the relative importance of the support it gives to the different parts of its national Committee.

The interval between General Assemblies of the Union would be fairly long, for example four years. The General Assembly would include only organizational meetings and those devoted to general reviews of scientific activity so that the national delegations would be quite small. The detailed scientific work would be carried out during meetings organized by each Association during the intervening four-year period. These meetings could be jointly organized by several Associations which could also be organized jointly with other Unions or with Scientific Committees of ICSU (SCOR, COSPAR, etc...).

In order to allow such an important Union to act effectively as an organising body, the Group believes that it ought, like URSI, to appoint a permanent secretary, in spite of the difficulty of finding a scientist willing to accept a partly administrative position.

(6) In the second possibility, the nine Associations would form a number of Unions : for example, Electromagnetism and Aeronomy (*a, b, c*); Geodesy and Physics of the Solid Earth (*d, e, f*); Physics of the Atmosphere and Oceans (*g, h, i*). ICSU would be asked to admit, to the Executive Committee, representatives of Federations of Unions; each representative would have a number of votes equal to the number of Unions in his Federation. Taking the three Unions mentioned above as an example, they would group themselves into a Federation on the Physical Environment which would have three votes in the ICSU Executive Committee.

With this solution, the administrative and financial powers of the Federation could be very great (office and permanent secretariat with central responsibility for membership and annual contributions); alternatively they could be very small, and in the extreme case the Federation would be simply an informal agreement between the Presidents of the three Unions. Although the Group expressed its preference for the simplest possible structure, consistent with effective organizational ability, it was considered premature to discuss this in more detail.

(7) It will be noticed that the two solutions envisaged would have the desirable result of reducing by one the number of members of the Executive Committee of ICSU (if the number of members of this Executive Committee continue to increase, it will be difficult to avoid the constitution of an "échelon supérieur"). However this is not the major reason for the propositions of the Group.

(8) The Group recommends that the present report should be widely distributed within IUGG and to other bodies, and that, in particular, it must be transmitted to the Working Group established by URSI. The comments received will enable the Group to decide in what way it can best continue its work, the aim being to submit to the Executive Committee of IUGG a more detailed report which could serve as a basis for discussion at the General Assembly.

(9) The Group wishes to thank Prof. Van Mieghem for the hospitality offered by the Institut Royal Météorologique of Belgium and Dr. Minnis for having provided the necessary information about the structure of URSI.

J. Coulomb, J. Levallois, T. Malone, M. Nicolet, R. W. Stewart.

## GRUPE DE TRAVAIL POUR LES QUESTIONS DE RÉORGANISATION

(Doc. URSI-R28-70 du 13 octobre 1970)

### RECOMMANDATIONS

#### RECOMMANDATION 1. — RADIOÉLECTRICITÉ SCIENTIFIQUE.

##### *Considérant*

a) que les applications actuelles à la recherche scientifique des techniques radioélectriques et des techniques apparentées couvrent une vaste gamme de disciplines et que, par conséquent, elles présentent de l'intérêt pour au moins trois Unions autres que l'URSI;

b) que des perspectives existent pour l'application de ces techniques dans d'autres domaines de la recherche scientifique;

c) que l'élaboration de théories fondamentales et le développement de techniques de base en radioélectricité scientifique, ainsi que l'exploitation de ces théories et techniques dans d'autres branches scientifiques, représentent pour les spécialistes en la matière une grande force de cohésion;

d) qu'il est souhaitable de conserver, au sein du CIUS, un seul organisme pour traiter tous les aspects de la radioélectricité scientifique et de ses applications;

##### *le Groupe de travail recommande*

1. de maintenir l'URSI en tant qu'Union essentiellement concernée par la radioélectricité scientifique;

##### *et considérant encore*

e) qu'une Union se consacrant à la radioélectricité scientifique se doit d'en encourager les applications dans un grand nombre de disciplines et d'éviter de placer l'accent sur une seule de ces disciplines;

##### *le Groupe de travail exprime l'opinion*

2. qu'il ne serait pas dans l'intérêt de la science en général de transférer les actuelles responsabilités de l'URSI — à savoir stimuler et coordonner

les études radioscientifiques — à une autre Union dont les activités concernent les applications de la radioélectricité scientifique uniquement dans quelques domaines particuliers;

3. que, par conséquent, il n'est pas souhaitable pour l'URSI de transférer ses responsabilités à une nouvelle Union s'occupant de la physique de l'environnement terrestre.

#### RECOMMANDATION 2. — GROUPES DE TRAVAIL.

##### *Considérant*

a) que l'ensemble du domaine de la radioélectricité scientifique et ses applications à la recherche scientifique ont connu une expansion rapide et considérable;

b) que le nombre des Commissions de l'URSI n'a pas été augmenté de manière à faire face à cette situation;

c) que, en conséquence, le nombre des sujets traités par chacune des Commissions s'est fortement accru et qu'il est actuellement impossible aux Membres officiels qui forment ces Commissions de consacrer toute l'attention voulue à chacun de ces sujets;

##### *le Groupe de travail recommande*

1. que soit envisagée la création d'un certain nombre de groupes de travail peut-être, pour une période transitoire, sous les auspices des actuelles Commissions;

2. qu'un nombre restreint de tâches bien définies et apparentées, y compris l'organisation de colloques et d'autres réunions scientifiques, soient assignées à chacun de ces groupes;

3. que, dès accomplissement de ses tâches, le groupe de travail concerné soit dissous;

4. que les membres des groupes de travail soient choisis uniquement en fonction de leurs activités et de l'intérêt personnel qu'ils portent aux tâches en question;

5. qu'il n'y ait pas de représentation nationale au sein des groupes de travail;

6. que les Présidents des Commissions soient consultés avant la prise de décision concernant le principe même de la création des groupes de travail;

7. que, dans les cas où les tâches assignées à un groupe de travail de l'URSI intéressent également une ou plusieurs autres Unions, les acti-

vités de ce groupe soient organisées conjointement par les Unions concernées;

8. que les autres Unions soient invitées à envisager la reconnaissance de tels groupes de travail en tant que moyen d'assurer une collaboration inter-Unions plus étroite au niveau des chercheurs individuels.

RECOMMANDATION 3. — CONFÉRENCES CONSACRÉES A LA PHYSIQUE SOLAIRE-TERRESTRE.

*Considérant*

a) que plusieurs des organismes du CIUS, Unions ou Comités, sont concernés par la physique solaire-terrestre et que chacun d'entre eux peut prendre l'initiative d'organiser des conférences internationales consacrées à ce domaine;

b) que, dans la pratique, il s'est avéré impossible d'éviter l'organisation, à des intervalles de temps trop rapprochés, de séries de conférences traitant des sujets analogues;

c) que, en conséquence, il a été difficile d'assurer la participation à chacune de ces conférences des principaux spécialistes en la matière;

*le Groupe de travail recommande*

1. que les Unions et Comités intéressés du CIUS acceptent de n'organiser qu'une seule conférence annuelle sur la physique solaire-terrestre;

2. que cette conférence annuelle soit convoquée aux mêmes lieu et moment que l'Assemblée générale de l'UAI, de l'UGGI ou de l'URSI.

RECOMMANDATION 4. — ASSEMBLÉE GÉNÉRALE.

*Considérant*

a) que le Conseil de l'Union, qui est composé des Représentants des Comités Membres, se réunit pendant les Assemblées générales et que ses travaux portent principalement sur des questions administratives;

b) qu'il est souhaitable d'inclure au programme de l'Assemblée générale des séances scientifiques consacrées à certaines des activités courantes de l'Union;

c) que les séances du Conseil doivent être convoquées de manière à ne pas coïncider avec les séances scientifiques;



d) que le programme de ces dernières devrait être plus condensé dans le temps que par le passé;

*le Groupe de travail recommande*

1. que les séances du Conseil, ainsi que toutes les autres réunions de caractère administratif, soient convoquées dans la période des quelques jours qui précèdent ou qui suivent immédiatement la partie scientifique du programme de l'Assemblée générale;

2. que les séances constituant la partie scientifique de l'Assemblée générale soient limitées à une période d'environ une semaine;

3. que, dans le cadre des séances scientifiques, il ne soit pas tenté de couvrir l'ensemble du domaine d'activités de l'Union, mais que soient inclus au programme un certain nombre de sujets d'actualité importants;

4. que les Présidents des Commissions soient consultés avant que soit prise la décision de modifier le programme de l'Assemblée générale dans le sens ci-dessus.

RECOMMANDATION 5. — MEMBRES INDIVIDUELS.

*Considérant*

a) que les membres de l'URSI sont les Comités établis par les académies des sciences ou institutions analogues;

b) que les membres des Commissions sont les Membres officiels nommés par les Comités Membres;

c) qu'il est souhaitable d'encourager une participation personnelle accrue des chercheurs individuels aux activités de l'URSI;

*le Groupe de travail recommande*

qu'un examen sérieux soit consacré à la possibilité d'une admission contrôlée de membres individuels à l'URSI, y compris les conditions d'admission et les droits de ces membres, ainsi que les conséquences que pourrait entraîner sur le plan pratique pour l'Union l'adhésion d'un grand nombre de membres individuels.

RECOMMANDATION 6. — COMITÉ EXÉCUTIF DU CIUS.

*Considérant*

a) que le Comité exécutif du CIUS est composé des représentants des 16 Unions affiliées et des représentants de 11 membres nationaux;

b) que le CIUS a exprimé le désir d'accroître l'efficacité de son Comité exécutif en réduisant à la fois le nombre des représentants des Unions et celui des représentants des membres nationaux;

c) que le CIUS a suggéré la création de fédérations groupant chacune plusieurs Unions ayant des intérêts similaires;

d) qu'il semble préférable de permettre aux Unions de conserver vis-à-vis de la Science une attitude individuelle et indépendante, laquelle pourrait s'estomper dans le cadre d'une fédération d'Unions;

e) que la création de telles fédérations se heurterait à de sérieux problèmes sur le plan organisation;

*le Groupe de travail recommande*

1. que les Unions soient invitées à se concerter pour établir parmi elles plusieurs groupements officieux ayant des intérêts plus ou moins similaires;

2. que chacun de ces groupements soit représenté au sein du Comité exécutif du CIUS par un seul représentant;

3. que ce représentant soit désigné selon une procédure à convenir par les Unions membres du groupement;

4. qu'à la réception de l'ordre du jour et des documents relatifs à la session du Comité exécutif du CIUS, toutes les indications nécessaires soient fournies au représentant du groupement pour lui permettre de présenter de manière adéquate les opinions individuelles des Unions;

5. qu'outre les rapports réguliers qui sont soumis par les différents organismes pour les sessions du Comité exécutif, le CIUS soit encouragé à diffuser en temps opportun toutes les informations utiles concernant les points inscrits à l'ordre du jour et, plus spécialement, ceux qui exigent un examen préliminaire de la part des Unions.

## RAPPORT DU GROUPE DE TRAVAIL POUR LES QUESTIONS DE RÉORGANISATION DE L'URSI

(Doc. URSI-R29-70 du 13 octobre 1970)

par

W. J. G. BEYNON

(Président)

### 1. — INTRODUCTION

1.1. Aux termes de la Résolution 2, adoptée lors de la XVI<sup>e</sup> Assemblée générale (Ottawa, 1969) :

« L'URSI,

*considérant*

*a*) la recommandation du Bureau d'examiner la structure interne de l'Union ainsi que ses relations avec les autres Unions et les organismes du Conseil International des Unions Scientifiques;

*b*) les discussions menées au sein du Comité exécutif ainsi que le rapport présenté par le Groupe de travail chargé d'étudier ces questions;

*décide*

1) de constituer un nouveau Groupe de travail ayant pour mission :

1.1) d'étudier les possibilités de modifier la structure interne de l'Union ainsi que l'organisation de ses Assemblées générales de manière à servir plus efficacement les besoins actuels des spécialistes de la radioélectricité scientifique;

1.2) d'explorer, sans hâte et avec soin, la possibilité d'établir des relations plus étroites avec l'Union Géodésique et Géophysique Internationale et, si considéré opportun, avec d'autres organismes du CIUS;

1.3) de présenter un rapport d'activité au Bureau pour le 30 septembre 1970;

2) d'inviter les personnalités suivantes à faire partie de ce Groupe de travail :

*Président* : W. J. G. Beynon (Royaume-Uni).

*Membres* : W. N. Christiansen (Australie);  
N. D. Clarence (Afrique du Sud);  
A. L. Cullen (Royaume-Uni);  
W. Dieminger (Allemagne de l'Ouest);  
W. E. Gordon (EUA);  
C. O. Hines (Canada);  
V. V. Migulin (URSS);  
S. Silver (EUA);  
F. L. Stumpers (Pays-Bas);  
M. E. Zhabotinskii (URSS) ».

Après l'Assemblée d'Ottawa, le Président du Groupe de travail, avec l'approbation du Bureau de l'Union, a invité M. M. Thué (France) à se joindre au Groupe.

1.2. Pendant l'Assemblée d'Ottawa, un Groupe de travail ad hoc a été formé pour étudier la question de la réorganisation de l'URSI. Au cours des deux séances qu'il a tenues à Ottawa, le Groupe a eu des entretiens avec les Présidents et les Vice-Présidents des huit Commissions de l'URSI. De plus, une cinquantaine de participants à l'Assemblée lui ont adressé leurs vues et commentaires par écrit. Le rapport des travaux de ce Groupe ad hoc a été publié dans le Compte Rendu de la XVI<sup>e</sup> Assemblée générale (pp. 82-84) et les conclusions auxquelles il a abouti ont été prises en considération par le présent Groupe de travail. Après l'Assemblée, un questionnaire relatif à la question générale du programme des Assemblées générales a été adressé à tous les Comités Membres dont les réponses ont également été examinées par le Groupe de travail.

1.3. En janvier 1970, le Président a rédigé et diffusé aux membres du Groupe de travail un document faisant le point de l'ensemble de la situation et comportant des notes sur l'entrevue officieuse qu'il avait eue avec le Prof. J. Coulomb, Président de l'UGGI. Au cours des mois suivants les membres du Groupe de travail ont procédé à d'intenses échanges de vues par correspondance. Six membres du Groupe, sur les douze qu'il compte, se sont réunis à Londres le 2 juillet 1970 (le Secrétaire général de l'URSI était également présent). Une douzaine de documents couvrant tous les aspects du problème ont été examinés au cours de la séance, suite à laquelle un projet de rapport a été envoyé à tous les membres du Groupe de travail,

qui étaient invités à formuler leurs remarques et commentaires. Ceux-ci ont été pris en considération lors de la rédaction finale des conclusions, qui sont présentées sous la forme de six recommandations.

## 2. — COMMENTAIRES DU PRÉSIDENT

Il semble opportun d'ajouter quelques commentaires à propos de ces six recommandations.

2.1. Dans la Recommandation 1, le Groupe de travail a exprimé l'opinion, très largement répandue dans les cercles de l'URSI, que l'existence d'une Union se consacrant à la radioélectricité scientifique est toujours nécessaire. Ce faisant, il a aussi tenu compte des recommandations formulées en mai 1970 par le Groupe de l'UGGI pour les problèmes de structure; celles-ci envisageaient la création d'une Union nouvelle, de l'Environnement, qui aurait englobé toutes les activités scientifiques actuelles de l'URSI et de l'UGGI. Bien que la Recommandation 1 du Groupe de l'URSI ne se prononce pas en faveur d'un simple transfert des responsabilités actuelles de l'URSI à une nouvelle Union, je pense que les membres du Groupe ne souhaiteraient pas voir cette Recommandation interprétée comme une prise de position qui éliminerait toute possibilité de discussions futures avec les autres organismes du CIUS sur les moyens de réaliser une coopération plus étroite. Cette question est aussi traitée à la section 2.2 ci-dessous.

2.2. La Recommandation 2 propose pour l'URSI une structure nouvelle et plus souple. Je considère que les points 2.7 et 2.8 de la Recommandation, en particulier, doivent retenir l'attention. Si le point 2.7 est accepté, les sujets où il y a recouvrement des intérêts de l'URSI et d'autres organismes du CIUS seront traités par les Groupes scientifiques proposés, lesquels ne relèveront pas seulement de l'URSI, mais seront conjointement patronnés par tous les organismes intéressés. Les détails administratifs et financiers du fonctionnement de ces Groupes devront bien entendu être mis au point de commun accord avec ces organismes. Le point 2.8 de la Recommandation préconise l'adoption, par les autres organismes du CIUS, d'une politique analogue d'assouplissement structurel.

2.3. La Recommandation 3 correspond dans son essence à une opinion exprimée par le Bureau de l'URSI lors de sa session de février 1970.

2.4. La Recommandation 4 porte sur l'organisation et la forme des Assemblées générales futures de l'URSI. A mon avis, si les Recommandations 2 et 3 sont mises en pratique, elles auront très probablement des

répercussions sur le contenu scientifique du programme des Assemblées. Il est à noter cependant que, même en l'absence de toute autre mesure de réorganisation de l'Union, le Groupe de travail recommande une réorientation des Assemblées générales selon les principes exposés dans la Recommandation 4.

2.5. Recommandation 5. Selon une des suggestions qui ont été étudiées par le Groupe de travail, il serait souhaitable de modifier la situation actuelle où la plupart des activités de l'Union se concentrent autour de l'Assemblée générale. Il conviendrait de trouver des moyens pour stimuler l'intérêt personnel des chercheurs pour les activités de l'Union, et cela non seulement en période d'Assemblée, mais aussi dans l'intervalle de trois ans qui sépare les Assemblées. C'est dans cet esprit qu'a été formulée la suggestion d'étudier la possibilité d'admettre à l'URSI des « membres individuels ». La question du statut de ces « membres individuels » resterait bien entendu à être discutée et précisée.

2.6. Recommandation 6. Depuis quelques années, un Comité permanent des Admissions et de l'Organisation siège dans le cadre du CIUS. Reconnaissant la difficulté de l'un des problèmes, qui a été renvoyé à ce Comité et qui a trait au nombre toujours croissant des membres du Comité exécutif du CIUS, le Groupe de travail a voulu par cette Recommandation apporter sa contribution à la solution du problème.

Il convient de remarquer que ce problème a été mentionné au cours de la récente Assemblée générale du CIUS à Madrid (septembre 1970) et qu'une copie de la Recommandation 6 a été remise au Secrétaire général du CIUS à titre d'information exclusivement. L'attention du Secrétaire général du CIUS a été attirée sur le fait que la Recommandation n'avait pas encore été soumise à l'examen et à l'approbation du Bureau de l'Union et que, par conséquent, elle ne pouvait être considérée comme engageant l'URSI de quelque façon que ce fût.

## **RÉORGANISATION DE L'URSI DÉCLARATION DU BUREAU DE L'UNION**

(Doc. URSI-R38-70/Rev. du 29 décembre 1970)

Les membres du Bureau se sont réunis à Bruxelles les 27 et 28 novembre 1970, sous la présidence du Prof. Dieminger, pour recevoir le Rapport et les Recommandations du Groupe de travail pour les questions de

réorganisation de l'URSI (URSI-R28 et R29-70). Le Rapport a été présenté par le Prof. Beynon, Président du Groupe. Les membres du Bureau ont ensuite procédé à des échanges de vues aussi bien sur la structure même de l'URSI que sur la question des relations entre l'URSI et les autres organismes du Conseil International des Unions Scientifiques (CIUS).

Le Bureau a jugé qu'il serait inopportun pour lui à l'heure actuelle de prendre position sur les documents précités. Il considère essentiel de donner au préalable aux Comités Membres la possibilité d'examiner les Recommandations du Groupe de travail, et de leur communiquer les renseignements supplémentaires dont il a disposé lors de sa réunion, ainsi que les commentaires et suggestions qui ont résulté de ses discussions. Les remarques, ci-dessous ont trait aux six Recommandations contenues dans le Doc. URSI-R28-70.

#### RECOMMANDATION 1. — RADIOÉLECTRICITÉ SCIENTIFIQUE.

Le Prof. Beynon a souligné que les membres de son Groupe avaient soigneusement étudié le Rapport du Groupe de l'UGGI pour les problèmes de structure (URSI-R18-70), qui avait été soumis en mai 1970 à l'URSI, avant de rédiger les documents R28- et R29-70. C'est à la nouvelle Union dont la création a été suggérée dans le Rapport du Groupe de l'UGGI que se rapporte le point 3 de la Recommandation 1.

Le Prof. Beynon a souligné que cette Recommandation n'éliminait aucunement la possibilité de discussions ultérieures avec l'UGGI et les autres organismes du CIUS pour trouver les moyens qui permettraient de réaliser une coopération plus étroite entre l'URSI et ces organismes.

#### RECOMMANDATION 2. — GROUPES DE TRAVAIL.

Le Bureau a noté que la question de la relation entre les Commissions et les Groupes de travail au sein d'une structure plus évoluée n'avait pas fait l'objet d'un examen approfondi. Au stade initial, les Groupes de travail pourraient être constitués sous les auspices des Commissions, en conformité avec les Statuts actuellement en vigueur; des modifications ultérieures pourraient être éventuellement apportées à la composition et au rôle des Commissions.

Le Bureau attache une importance considérable à l'idée de la formation des Groupes de travail dont les activités seraient patronnées conjointement par l'URSI et une ou plusieurs autres Unions. Dans les domaines où il

y a recouvrement des intérêts de plusieurs Unions, ces Groupes pourraient remplir un rôle très utile en maintenant des contacts permanents efficaces entre les Unions et en organisant des activités communes, comme préconisé dans le Rapport du Groupe de l'UGGI.

Il convient de faire remarquer que la création des Groupes conjointement patronnés par deux ou plusieurs Unions dépendrait de la seule initiative des Unions et ne serait pas, comme dans le cas des Commissions inter-Unions, soumise à l'approbation du CIUS.

#### RECOMMANDATION 3. — CONFÉRENCES SUR LA PHYSIQUE SOLAIRE-TERRESTRE.

Il a été constaté que la mise en œuvre de cette proposition ne dépendait pas uniquement de l'URSI et qu'elle exigeait la pleine adhésion des autres Unions.

#### RECOMMANDATION 4. — ASSEMBLÉE GÉNÉRALE.

Le Prof. Beynon a souligné que, dans l'esprit des membres du Groupe de travail, le point 2 de la Recommandation 4 n'était pas destiné à l'Assemblée générale de 1972. Le Bureau a établi, pour cette Assemblée, un avant-programme qui prévoit une période de neuf jours presque entièrement consacrée aux séances scientifiques des Commissions, ainsi que plusieurs journées, avant et après cette période, pour les réunions administratives (voir point 1 de la Recommandation 4).

Dans le cas où les Recommandations 2 et 3 seraient mises en application et où il serait considéré souhaitable d'organiser des programmes scientifiques plus spécialisés aux Assemblées générales (comme suggéré au point 3 de la Recommandation 4), le programme condensé prévu au point 2 pourrait alors s'avérer plus approprié.

#### RECOMMANDATION 5. — MEMBRES INDIVIDUELS.

Au cours de la discussion de la Recommandation 5, le Bureau a examiné les conditions qui s'appliquent à l'admission de membres individuels au sein de l'Union Astronomique Internationale (UAI).

1. Les candidats doivent être spécialisés en astronomie ou dans des disciplines étroitement associées à l'astronomie. Les facteurs suivants sont pris en considération :

- a) niveau des travaux de recherche,
- b) relation de ces travaux avec l'astronomie,
- c) désir des candidats de contribuer à la réalisation des buts de l'UAI.



Pour les jeunes astronomes, un doctorat (ou diplôme équivalent) et une expérience de plusieurs années dans la recherche sont requis.

2. Les candidats sont normalement présentés par les comités nationaux adhérant à l'Union; ils peuvent également être proposés par les Présidents des Commissions mais, de préférence, par l'intermédiaire du comité national correspondant. Les propositions doivent être accompagnées de détails concernant les titres et expérience du candidat, les articles qu'il a publiés, etc. et doivent être soumises à l'UAI cinq mois avant l'Assemblée générale. Un Comité des Nominations examine les propositions présentées par les comités nationaux, ainsi que celles, parmi les propositions des Présidents des Commissions, qui ne seraient pas englobées dans les listes soumises par les comités nationaux.

3. Les comités nationaux sont encouragés à faire rayer de la liste des membres les individus dont les travaux ne concernent plus l'astronomie.

4. Les membres individuels jouissent des privilèges suivants :

- a) ils peuvent participer aux Assemblées générales et voter sur les questions scientifiques;
- b) ils sont éligibles aux organes directeurs de l'Union et peuvent être cooptés par les Commissions;
- c) ils peuvent, sur invitation, assister aux symposia et colloques de l'UAI;
- d) ils reçoivent gratuitement le Bulletin d'Information de l'UAI (semestriel) ainsi que les Comptes rendus des Assemblées générales.

5. Les membres individuels ne paient pas de cotisation, mais le montant de la contribution annuelle des pays adhérents dépend en partie du nombre de membres individuels qui leur sont associés. L'Union peut refuser d'admettre un comité national dont la contribution serait considérée comme « manifestation inadéquate ».

6. Comme à l'URSI, les catégories dans lesquelles sont classés les pays adhérents dépendent du nombre d'unités de cotisation payées. Le nombre des unités de cotisation dans les huit catégories de l'UAI et les six catégories de l'URSI se présente comme suit :

UAI	1	2	4	6	10	14	20	30	unités
URSI	1	2	4	8			16	32	unités

Le Bureau estime qu'il convient d'étudier sérieusement les avantages et les désavantages que peut présenter l'admission de membres individuels à l'URSI. Il a été constaté que l'admission d'un grand nombre de membres individuels pourrait diminuer l'efficacité d'une petite Union, telle que l'URSI.

Une autre possibilité à étudier serait de mettre au point un système selon lequel les spécialistes directement intéressés seraient admis comme membres des Groupes de travail.

Le Bureau croit utile d'étudier aussi la possibilité d'instituer pour les membres individuels une cotisation peu élevée destinée, par exemple, à couvrir le coût des publications (Bulletin d'Information de l'URSI et Comptes Rendus des Assemblées générales), le surplus des dépenses administratives qui serait occasionné par l'admission de membres individuels, etc. Au cours de la discussion, un montant de 5 \$ a été envisagé pour la cotisation annuelle des membres individuels, avec réduction pour les membres n'ayant pas atteint l'âge de 30 ans.

#### RECOMMANDATION 6. — COMITÉ EXÉCUTIF DU CIUS.

Le CIUS étudie depuis plusieurs années la possibilité de former des groupes ou fédérations d'Unions. La position actuelle du CIUS sur cette question n'est pas connue.

Le Bureau est convenu que si le CIUS admettait le principe des points 1 et 2 de la Recommandation 6, la procédure envisagée au point 3 devrait explicitement prévoir un système de rotation où le groupe serait représenté au Comité exécutif du CIUS par une personnalité désignée à tour de rôle par chacune des Unions formant ce groupe.

\* \* \*

Au cours de sa session d'avril 1971, le Bureau réexaminera le Rapport et les Recommandations du Groupe de travail pour les questions de la réorganisation de l'URSI à la lumière des vues et commentaires qui lui auront été soumis d'ici la fin de mars 1971 par les Comités Membres de l'Union, ainsi que par les Présidents des Commissions qui participeront, en avril également, à la réunion du Comité de Coordination.

**UNION GÉODÉSIQUE  
ET GÉOPHYSIQUE INTERNATIONALE**  
**RAPPORT DU GROUPE  
CHARGÉ DES PROBLÈMES DE STRUCTURE**

(Doc. URSI-R18-70)

*Texte français*

Le Comité exécutif de l'UGGI réuni à Madrid a confié l'examen des problèmes de structure à un groupe composé de MM. Coulomb, Président, Levallois, Malone, Nicolet, Stewart. Le groupe a tenu deux réunions à Bruxelles le 21 mars 1970. Le D<sup>r</sup> Minnis, Secrétaire général de l'URSI, assistait à la réunion de l'après-midi.

Après échange d'informations et confrontation des opinions individuelles, le groupe présente à l'unanimité les recommandations suivantes :

1) La situation actuelle de la géophysique externe, dans laquelle l'URSI, l'AIGA et l'IUCSTP s'occupent des mêmes questions, est anormale et mérite des efforts sérieux pour la modifier.

2) Les *Associations* qui composent l'UGGI sont des groupements de dimension satisfaisante pour permettre à leurs membres de travailler en commun. Il serait donc raisonnable de les prendre comme base des nouvelles structures. On peut cependant admettre que le Géomagnétisme et l'Aéronomie, qui forment déjà deux sections distinctes au sein de l'AIGA, deviennent des Associations différentes; mais il faudrait éviter de fragmenter davantage, par exemple de couper le Géomagnétisme en deux parties interne et externe (surtout si ces deux parties devaient appartenir à des Unions différentes comme il est prévu dans le projet du Comité National Français de Géodésie et de Géophysique).

3) En considérant la composition actuelle de l'URSI, il a semblé au groupe qu'elle comportait d'abord un ensemble assez uni traitant des questions de radiophysique d'une part, de radio-astronomie d'autre part. Le reste de l'URSI s'intéresse comme l'AIGA à la Magnétosphère, à l'Ionosphère, aux milieux non ionisés de la haute atmosphère. Peut-être peut-on distinguer entre les scientifiques utilisant directement les ondes électromagnétiques, lesquels seraient plus proches du Géomagnétisme externe et d'autres scientifiques plus proches de l'Aéronomie. Mais sans vouloir

entrer dans les détails d'une répartition qui devrait résulter de choix individuels, on peut dire que l'URSI et l'AIGA prises ensemble correspondent assez bien à trois Associations du volume de celles qui constituent l'UGGI. On les appellera ici Associations de Radiophysique, de Géomagnétisme et d'Aéronomie, étant entendu que ces noms et cette répartition seraient entièrement à revoir au cours de discussions avec l'URSI.

4) En admettant toujours que les Associations (ou des groupements de nom différent mais d'importance analogue) constitueraient les Unités de Base, la structure nouvelle assurant sans duplication les tâches actuellement dévolues à l'URSI, à l'UGGI et à l'IUCSTP, concernerait 9 Associations que nous nommerons pour fixer les idées :

- |                  |                  |                 |
|------------------|------------------|-----------------|
| a) Radiophysique | b) Géomagnétisme | c) Aéronomie    |
| d) Géodésie      | e) Sismologie    | f) Volcanologie |
| g) Météorologie  | h) Océanographie | i) Hydrologie   |

Pour cet ensemble, le groupe a envisagé deux structures extrêmes entre lesquelles il serait possible d'imaginer des intermédiaires. Dans les deux cas, les Unions disparaissent. A la fin des IASY, l'IUCSTP disparaîtrait également puisque ses responsabilités concernant le programme à longue échéance pourraient être reprises par la nouvelle structure. Les deux Unions actuelles sont remplacées dans le premier cas par une Union, dans le second cas par une Fédération d'Unions. Le groupe a jugé impossible de proposer un choix entre les deux structures avant d'avoir pris contact avec les représentants de l'URSI.

Dans les deux cas la route sera longue et le groupe considère qu'il serait opportun d'établir avec l'URSI des contacts permanents, d'organiser des réunions communes, etc... sans attendre les arrangements définitifs.

5) Dans la première solution, il serait créé une nouvelle Union, dont le titre pourrait être Union Internationale de l'Environnement Physique ou Union Internationale pour la Physique de l'Environnement. Les 9 Associations lui seraient rattachées. Les membres nationaux adhèreraient et cotiseraient à l'Union, les Comités nationaux seraient des Comités de l'Union. Cependant des modalités pourraient permettre à certains pays de favoriser financièrement telle ou telle Association, et les pays adhérents seraient toujours libres de favoriser telle ou telle partie de leur Comité national.

Les intervalles de temps entre les Assemblées Générales de l'Union seraient assez grands, quatre ans par exemple. L'Assemblée Générale comporterait seulement des séances d'organisation et des séances de synthèse scientifique, en sorte que les délégations nationales à cette Assemblée

Générale auraient assez peu de membres. Le travail scientifique de détail se ferait au cours de réunions organisées par chaque Association pendant les périodes de quatre ans. Ces réunions pourraient être communes à plusieurs Associations, toujours les mêmes ou chaque fois différentes. Les réunions pourraient aussi être organisées en commun avec d'autres Unions ou des Comités Scientifiques de l'ICSU (SCOR, COSPAR,...).

Pour permettre à une Union aussi importante de jouer pleinement son rôle d'organisation, le groupe estime qu'elle devrait avoir comme l'URSI un secrétaire permanent appointé, malgré la difficulté de recruter une personnalité scientifique dans un poste en partie administratif.

6) Dans la deuxième solution il serait créé à partir des 9 Associations un certain nombre d'Unions, par exemple : Electromagnétisme et Aéronomie (*a, b, c*); Géodésie et Physique de la Terre solide (*d, e, f*); Physique de l'Atmosphère et de la Terre liquide (*g, h, i*). Il serait demandé à l'ICSU d'admettre dans son Comité exécutif les représentants des Fédérations d'Unions; chaque représentant disposerait d'un nombre de voix égal au nombre des Unions membres de la Fédération. Les trois Unions indiquées plus haut (à titre d'exemple) se grouperaient alors en une Fédération de l'Environnement physique qui disposerait de trois voix au Comité exécutif de l'ICSU.

Dans cette solution, les pouvoirs administratifs et financiers de la Fédération pourraient être ou très grands (bureau et secrétariat permanent, adhésions et cotisations centralisées) ou très petits, jusqu'à réduire la Fédération à une simple entente entre les présidents des trois Unions. Bien que marquant sa préférence pour la structure la plus légère possible, tout en restant efficace, le groupe a estimé qu'il était trop tôt pour entrer dans les détails.

7) On remarquera que les deux solutions envisagées réduisent d'une unité le nombre des membres du Comité exécutif de l'ICSU, ce qui est un pas dans une direction très souhaitable (si le nombre des membres de ce Comité exécutif continue à augmenter, il sera difficile d'éviter la constitution d'un échelon supérieur). Ce n'est cependant pas la raison majeure des propositions du groupe.

8) Le groupe estime que le présent rapport devrait être largement diffusé à l'intérieur et à l'extérieur de l'UGGI, et qu'il doit en particulier être communiqué à la Commission créée par l'URSI. Les commentaires reçus permettront au groupe de voir dans quelle direction il devrait poursuivre sa tâche, son but étant de présenter au Comité exécutif de l'UGGI un rapport plus élaboré, qui pourrait servir de base à une discussion par l'Assemblée Générale.

9) Le groupe tient à remercier le Professeur Van Mieghem pour l'hospitalité accordée par l'Institut Royal Météorologique de Belgique et le Dr Minnis pour avoir bien voulu lui fournir sur la structure de l'URSI les informations nécessaires.

J. Coulomb, J. Levallois, T. Malone, M. Nicolet, R. W. Stewart.

## URSI COMMITTEE FOR SPACE RESEARCH

The present membership of the URSI Committee for Space Research (1) is shown below. An informal meeting of members will be held in Seattle in June 1971 during the COSPAR Meeting.

*Chairman* : M. J. Voge (France) (*a*)

	<i>COSPAR Panel (d)</i>
<i>Members</i> : B. R. Bean (USA) ( <i>b</i> )	6B
S. A. Bowhill (USA)	4B
V. Eshelman (USA)	7A, B
G. Haerendel (W. Germany)	2C, 4C
K. Maeda (Japan)	4B
K. Rawer (W. Germany) ( <i>c</i> )	1B, 4B
P. Simon (France)	2D, 4C
M. Thué (France)	1B
V. S. Troitskij (USSR) ( <i>b</i> )	7A, B

(*a*) M. Voge represents URSI on the COSPAR Executive Council.

(*b*) Provisional.

(*c*) Chairman Joint URSI-COSPAR Working Group on the International Reference Ionosphere (2).

(*d*) Key to COSPAR Panels on which URSI is represented :

- 1B Radio tracking and real-time telemetry
- 2C Structure of the magnetosphere
- 2D Magnetic disturbances and polar substorms
- 4B Interaction of the neutral and ionized atmospheres (including International Reference Ionosphere)

- 4C Polar ionosphere (including polar cap and auroral zone phenomena)
- 6B Observations by remote sensing for meteorology and earth surveys
- 7A, B The Moon and planets

REFERENCES

- 1. *URSI Inf. Bull.*, No. 168, p. 4.
- 2. *URSI Inf. Bull.*, No. 169, p. 50; No. 170, p. 62.

**DYNAMICS OF THE THERMOSPHERE  
AND IONOSPHERE ABOVE 120 KM**

In accordance with Recommendation III.1 (1)-3 of the XVI General Assembly of URSI, a Symposium on the above subject is being organised jointly by URSI and COSPAR. The Symposium will be held in Seattle, USA, during the COSPAR Meeting, on 24-26 June 1971.

The topics to be discussed are as follows :

- 1. Structure and motion of the thermosphere and ionosphere
  - A. Satellite drag results
  - B. Measurements of thermosphere composition
  - C. Ionospheric motions from chemical releases and airglow
  - D. Ionospheric motions from radio reflection
  - E. Ionospheric motions from incoherent scatter
- 2. Theory of thermospheric and ionospheric motions
  - A. Solar heat input
  - B. Dynamics of the thermosphere
  - C. Calculation of winds from thermospheric structure
  - D. Theory of super-rotation
  - E. Dynamical interactions between the thermosphere and ionosphere
- 3. Waves and travelling disturbances
  - A. Tidal motions in the thermosphere
  - B. Observations of waves and travelling disturbances
  - C. Theory of mesoscale waves in the thermosphere

The Chairman of the Programme Committee is

Prof. S. A. Bowhill,  
Aeronomy Laboratory,  
Department of Electrical Engineering,  
University of Illinois,  
Urbana, Illinois 61801, USA.

## WAVES AND RESONANCES IN PLASMAS

In accordance with Recommendation III.1 (1)-2 of the XVI General Assembly, a Symposium on the above subject is being organised by URSI with the cooperation of the Plasma Physics Commission of IUPAP.

At the kind invitation of the Canadian National Committee of URSI (Chairman : Dr. M. P. Bachynski, Montreal), the Symposium will be held at the University of St Johns, Newfoundland, in Eastern Canada, from 5-9 July 1971.

It is considered important that those who participate should be representative of the main groups of research workers in plasma physics : (a) artificial plasmas in laboratories, (b) natural plasmas in space, (c) theory of plasmas. In the past, it appears that the contacts between these groups have not been sufficiently close.

The number of participants will be limited to 80 and invitations are being issued on behalf of the Programme Committee by its Chairman :

Prof. K. Rawer,  
Arbeitsgruppe für physikalische  
Weltraumforschung, 13 Kronenstrasse,  
D-78 Freiburg im Breisgau (FR Germany)

## XIVth MEETING OF COSPAR INCLUDING SPECIALIZED SYMPOSIA

Detailed information on the XIVth Meeting of COSPAR is given in the first and Second COSPAR Circulars issued in December 1970.

1. This Meeting will include

- (a) Meetings of the various COSPAR bodies — Plenary, Executive Council, Bureau, Working Groups and Panels — business matters;
- (b) Symposia on selected subjects;
- (c) Open Meetings of Working Groups.



2. The XIVth COSPAR Meeting and Specialized Symposia will take place in Seattle, Washington, USA, in the north Court Rooms and Play House of the Seattle Centers from 21 June through 2 July 1971.

Two Specialized Symposia will be held in Seattle immediately before the COSPAR Meeting during 17-21 June 1971. Two other Symposia will be held during the main COSPAR Meeting, as well as a SPARMO Colloquium. One Specialized COSPAR Symposium will take place before the COSPAR Meeting at Boston College at Chestnut Hill, Mass., USA on 16, 17 and 18 June 1971, and one after the COSPAR Meeting at the University of Illinois on 6, 7 and 8 July 1971.

3. The US National Academy of Sciences has formed the US National Committee for the XIVth Meeting of COSPAR. There is also a local Arrangements Committee in Seattle. Dr. Harold B. Liemohn from the Boeing Company is the Secretary of this Committee. The address of the Local Arrangements Committee is

COSPAR, P.O. Box 24165,  
Seattle, Washington 98124, USA.  
Telephone : (206) 655-0695    Cable address : COSPAR Seattle.

4. *The Open Meetings of Working Groups* and their Panels are organized by their respective Chairmen. The Chairmen of Working Groups form the Program Committee and are assisted by the Chairmen of the Panels. Open Meetings of Working Groups and their Panels will consist mainly of presentation of papers on latest significant results but may also include some invited papers. Some topics have already been chosen for Open Meetings. They are listed below.

#### OPEN MEETINGS OF WORKING GROUP 1

One half-day session on Long Baseline Interferometry.

One half-day session on Lunar Laser. This will be a technical session concerning apparatus.

One half-day session on Tropospheric and Ionospheric Refraction Errors in Satellite Tracking and Relevant Correction Methods (organized by Panel 1.B).

The papers on other subjects dealing with topics of interest to the International Association of Geodesy of IUGG, a meeting of which will take place in August 1971, will not be accepted for presentation at the Open Meetings of Working Group 1 in Seattle.

#### OPEN MEETINGS OF WORKING GROUP 2

No special topics are proposed for Open Meetings of Working Group 2 other than those suggested by the name of Working Group 2, namely "The Experiments in Interplanetary Space and in the Magnetosphere".

However, the prospective contributors are warned that papers related to the topics of the IAGA Symposia to be held in Moscow, USSR, in August 1971 (see program of IUGG XV General Assembly in IUGG Chronicle No. 79, March 1970, p. 9), will not be accepted.

#### OPEN MEETINGS OF WORKING GROUP 3

*Panel 3.A.* No special topics other than suggested by the name of the Panel, namely "Galactic and Extragalactic Astronomical Measurements".

One should note that some of the papers which would usually be submitted to the Panel will be absorbed by the COSPAR/IAU Symposium "High Resolution Astronomical Observations from Space".

*Panel 3.B.* One half-day session on Flare Forecasting Methods used in the USA (invited papers). One half-day session on Flare Observations (contributed papers).

*Panel 3.C.* Four half-day sessions are planned including invited and contributed papers dealing with either Experimental or Theoretical Study of Interplanetary Dust.

The emphasis will be placed on the following topics :

- Current Status of Knowledge of Meteoritic Material found in the Lunar Samples;
- Discussion of Balloon Data on Interplanetary Dust Collections, including Infrared Emission from the Dust;
- Discussion of Laser Radar Study of Upper Atmospheric Dust Layers.

#### OPEN MEETINGS OF WORKING GROUP 4

*Panel 4.A.* The Panel plans to organize sessions with invited and contributed papers on properties of the Upper Atmosphere with the following topics :

- Stratosphere and Mesosphere.
- Thermosphere and Exosphere.

*Panel 4.B.* There will be one half-day session devoted to discussion on International Reference Ionosphere.

In addition, a session may also be organized with contributed papers on the Ionosphere which would not fall within program of the URSI/COSPAR Symposium on Dynamics of the Thermosphere and Ionosphere above 120 km

*Panel 4.C.* The Panel intends to organize three half-day sessions with the following topics :

Daytime High Latitude Phenomena.

Night-time High Latitude Phenomena.

Polar Cap Phenomena.

Submission of papers dealing with results of observations from four following geophysical events is especially requested : 2-5 February, 23-25 March, 8 June, and 27-30 September, all in 1969.

#### OPEN MEETINGS OF WORKING GROUP 5

Sessions on the following three topics will be organized :

Effects of Weightlessness.

Chronic Effects of Ionizing Radiation — this Session will be followed by the half-day Panel discussion.

Reports on Preparation for the Exploration of Mars.

#### OPEN MEETINGS OF WORKING GROUP 6

There will be sessions covering the following subjects :

Reports on National Activities in Earth Surveys (invited papers).

Latest Results in Satellite Meteorology with Special Emphasis on GARP (contributed papers).

Scientific Investigations in Meteorology and Earth Surveys from Manned Platforms (invited and contributed papers).

#### OPEN MEETINGS OF WORKING GROUP 7

The Sessions will be devoted to presentation of invited and contributed papers on :

Latest Investigations of the Moon (Luna 16 and 17, Apollo 14) — 2 sessions;

Latest Investigations of Venus (Venera 7) — 1 session;

Recent Results on Mars from Mariner 6 and 7 Missions — 1 session.

JOINT ANNUAL REVIEW SESSIONS OF WORKING GROUPS

Three Joint Annual Review Sessions are planned, during which invited reviews from Working Groups, reporting on annual progress, will be presented for all the COSPAR audience. No other parallel Sessions will be organized during the above presentations.

5. SYMPOSIA TO BE HELD IN CONJUNCTION WITH THE XIV COSPAR MEETING

5.1. Several Symposia will be organized in Seattle before and during the COSPAR Meeting. They are as follows :

A. — SYMPOSIUM ON THE TOTAL SOLAR ECLIPSE OF 7 MARCH 1970.

Sponsors : COSPAR, IAU, IUGG/IAGA, and URSI.

Dates : 18-21 June 1971.

Location : Seattle Center, Seattle, Washington, USA.

Secretary of Program Committee : Dr. E. R. Dyer, Jr., IUCSTP Secretary, c/o Space Science Board, National Academy of Sciences, 2101 Constitution Avenue, Washington, D.C. 20418, USA.

This Symposium will comprise contributed papers on the (at least partially analysed) scientific results of observations of the Sun during the eclipse and of the effects of the eclipse on the Earth's physical environment (atmosphere, magnetic field, etc.).

B. — SYMPOSIUM ON GLOBAL BIOPHYSICS.

Sponsors : IUPAB, COSPAR, and probably IUBS.

Dates : 17-19 June 1971.

Location : Seattle Center, Seattle, Washington, USA.

Organizer : Prof. C. Tobias, Donner Laboratory, University of California, Berkeley, California 94720, USA.

Proposed program :

1. *Energy Balance of the Globe*

- (a) Balance of solar and internal energy.
- (b) Artificial energy sources.

2. *Global Atmosphere*

- (a) Factors in control of global weather.
- (b) Transport mechanisms for global contaminants.

3. *Global Hydrology*

- (a) Water requirements for support of life.
- (b) Hydrolic transports of wastes and contaminants.

4. *Biophysics of Population*

- (a) Mathematical population dynamics.
- (b) Environmental poisons that affect the genetic system, the respiratory, metabolism and nervous systems.

5. *Methods for Global Biophysical Studies*

- (a) Earth satellites.
- (b) Strategy for studies for interactions between various environmental hazards.

This Symposium will include only invited papers.

C. — SYMPOSIUM ON DYNAMICS OF THE THERMOSPHERE AND IONOSPHERE ABOVE 120 KM.

Sponsors : URSI/COSPAR.

Dates : 24-26 June 1971.

Location : Seattle Center, Seattle, Washington, USA.

Chairman of Program Committee : Prof. S. A. Bowhill, Dept. of Electrical Engineering, University of Illinois, Urbana, Illinois 61803, USA.

The tentative list of topics is as follows :

1. Methods for measurement of ionospheric and thermospheric motions.
2. Description of ionospheric motions.
3. Description of thermospheric motions.
4. Energy sources for thermospheric and ionospheric motions above 120 km.
5. Theories of atmospheric motions (gravity waves, tides, etc.).
6. Ionospheric anomalies and their interpretation.

In addition to the invited papers a limited number of contributed papers may be accepted by the Program Committee.

D. — SYMPOSIUM ON HIGH RESOLUTION ASTRONOMICAL OBSERVATIONS FROM SPACE.

Sponsors : COSPAR/IAU.

Dates : 28 June-1 July 1971.

Location : Seattle Center, Seattle, Washington, USA.

Chairman of Program Committee : Prof. C. de Jager, Laboratorium voor Ruimte Onderzoek, Beneluxlaan 21, Utrecht, Netherlands.

Tentative topics :

Ground based observations, results, limitations, expectations from increased resolution.

High resolution observations from balloon borne instruments.

High resolution X- and gamma-ray observations : results and projects.

High resolution optical and UV observations and satellites : results and projects.

The Symposium will be based on invited review papers but some significant contributed papers may also be accepted for inclusion in the reviews.

E. — SPARMO COLLOQUIUM ON THE USE OF STRATOSPHERIC BALLOONS IN SPACE RESEARCH.

Sponsor : SPARMO.

Dates : 26 and 28 June 1971.

Location : Seattle Center, Seattle, Washington, USA.

Chairman of Program Committee : Prof. L. D. de Feiter, Laboratorium voor Ruimte Onderzoek, Beneluxlaan 21, Utrecht, Netherlands.

Proposed topics :

Historical review.

Technology of stratospheric balloons.

Experiments carried out aboard stratospheric balloons.

General conclusions.

The Colloquium will include only invited review papers concerning the discussions of techniques rather than scientific results.

5.2. *Two COSPAR Symposia* will be held in different locations than Seattle, immediately before and after the XIV Meeting of COSPAR.

They are :

F. — SYMPOSIUM ON NOVEMBER 1969 SOLAR PARTICLE EVENT.

Sponsor : COSPAR.

Dates : 16, 17 and 18 June 1971.

Location : Boston College, Chestnut Hill, Massachusetts, USA.

Chairman of Program Committee : Dr. J. C. Ulwick, Ionospheric Physics Laboratory, AFCRL, L. G. Hanscom Field, Bedford, Mass. 03170, USA.

Chairman of Local Arrangements Committee : Mr. Leo Power, Space Data Analysis Laboratory, Boston College, Chestnut Hill, Mass. 02167, USA.

The purpose of this Symposium will be :

to present measurements and observations made during the November 1969 Solar Proton Event (solar, magnetospheric and aeronomic measurements by rocket, satellite and ground-based techniques) in order to provide a comprehensive picture of the phenomenology and morphology of this particular event.

to review and discuss present knowledge of solar proton events and their effect on polar ionosphere. This will include theoretical studies as well as results from investigations of other solar proton events to be related to the November 1969 event.

This Symposium will consist of invited as well as contributed papers.

#### G. — SYMPOSIUM ON D- AND E-REGION ION CHEMISTRY.

Sponsor : COSPAR.

Dates : 6, 7 and 8 July 1971.

Location : University of Illinois, Urbana-Champaign, Illinois, USA.

Chairman of Program Committee : Dr. Lance Thomas, Radio and Space Research Station, Ditton Park, Slough, Bucks., England.

Chairman of Local Arrangements Committee : Prof. C. F. Sechrist, Jr., Aeronomy Laboratory, Dept. of Electrical Engineering, University of Illinois, Urbana, Illinois 61801, USA.

The objective of this Symposium will be to treat the ionospheric D and E regions as a whole because both regions have several chemical and transport properties in common. Fundamental questions relating to the physics and chemistry of these regions will be considered, and emphasis will be placed on ionic processes.

Examples of topics to be covered include :

neutral composition, including transport effects;

ionization sources;

positive ion chemistry;

negative ion chemistry;

electron density profiles;

reaction rates derived from laboratory and ionospheric measurements.

This Symposium will include invited and contributed papers.

5.3. *The Conference on "Theoretical Ionospheric Models"* will be held at the Pennsylvania State University, University Park, Pennsylvania, USA,

on 14, 15 and 17 June 1971, immediately prior to the XIVth Meeting of COSPAR in Seattle.

Though not sponsored by COSPAR, this conference will be of great interest to the COSPAR scientists active in ionospheric research, especially those engaged in the work of the URSI/COSPAR Working Group on the International Reference Ionosphere and of COSPAR Panel 4.B.

This conference is intended to lay the groundwork for developing future ionospheric models based as far as possible on aeronomy. Attention will be focused on those aspects of ionospheric theory directly applicable to the development of models, on standardizing basic input data to make different models compatible and on identifying areas in which theoretical knowledge or critical measurements are lacking. Further information may be obtained from The Director, The Ionosphere Research Laboratory, Electrical Engineering East Building, University Park, Pennsylvania 16802, USA.

The first and second Circulars were distributed very widely, but a number of copies are still available on request at the COSPAR Secretariat.

#### TENTATIVE TIME SCHEDULE

#### XIVth PLENARY MEETING OF COSPAR AND RELATED SYMPOSIA.

Seattle, Washington, USA, June/July 1971.

Date	A.M.	P.M.
<i>June 1971</i>		
Thursday 17	Symposium B : 1st Session	Symposium B : 2nd Session
Friday 18	Symposium A : 1st Session Symposium B : 3rd Session	Symposium A : 2nd Session Symposium B : 4th Session
Saturday 19	Symposium A : 3rd Session Symposium B : 5th Session Finance Committee	Symposium A : 4th Session Symposium B : 6th Session Bureau : 1st Session
Monday 21	Symposium A : 5th Session W.G. Business (if possible W.G. 5, W.G.1)	Symposium A : 6th Session Executive Council : 1st Session
Tuesday 22	Opening Ceremony and Public Session of Plenary	Public Session of Plenary (cont'd)
Wednesday 23	Annual Reviews : 1st Session	Working Groups (Open and Bu- siness Sessions)



Date	A.M.	P.M.
Thursday 24	Symposium C : 1st Session Working Groups (Open & Business Sessions except W.G.4)	Symposium C : 2nd Session Working Groups (Open & Business Sessions except W.G.4)
Friday 25	Symposium C : 3rd Sessions Working Groups (Open & Business Sessions except W.G. 4)	Symposium C : 4th Session Working Groups (Open & Business Sessions except W.G. 4)
Saturday 26	Symposium C : 5th Session Colloquium E : 1st Session Working Group (Business Sessions)	Symposium C : 6th Session Colloquium E : 2nd Session Working Groups (Business Sessions)
Monday 28	Colloquium E : 3rd Session Annual Reviews : 2nd Session	Symposium D : 1st Session Working Groups (last Business Sessions W.G. 4) Bureau : 2nd Session
Tuesday 29	Symposium D : 2nd Session Working Groups (Open Meetings except W.G.s 3 & 7)	Symposium D : 3rd Session Drafting Committee
Wednesday 30	Symposium D : 4th Session Working Groups (Open Meetings except W.G.s 3 & 7)	Symposium D : 5th Session Executive Council : 2nd Session Bureau (Confirmation of decisions of the Executive Council)
<i>July 1971</i>		
Thursday 1	Symposium D : 6th Session Working Groups (Open Meetings except W.G.s 3 & 7)	Annual Reviews : 3rd Session
Friday 2	Final Session of Plenary	
Symposium A	1970 Solar Eclipse (COSPAR-IAU-IUGG/IAGA-URSI)	
Symposium B	Global Biophysics (IUPAB-COSPAR and probably IUBS)	
Symposium C	Dynamics of the Termosphere and Ionosphere above 120 km (URSI-COSPAR)	
Symposium D	High Resolution Astronomical Observations from Space (COSPAR-IAU)	
Colloquium E	Use of Stratospheric Balloons in Space Research (SPARMO)	

## **INFORMATION THEORY (ISIT-2)**

The Second International Symposium on Information Theory (ISIT-2) will be held from 2-8 September 1971 at Tsakhkadzor, Armenian SSR. It is being organised by the Council for Cybernetics and the Institute for Problems of Information Transmission, both of the Academy of Sciences of the USSR, and in cooperation with the Armenian Academy of Sciences. The Honorary Chairman of the Organising Committee is Professor V. A. Ambartsumian, President of ICSU.

It is expected that about 100 participants from outside the USSR will be present at the Symposium. Professor V. I. Siforov, Associate Vice-Chairman of URSI Commission VI, extends a cordial invitation to interested scientists, especially those associated with URSI Commission VI, to participate in the Symposium and to take this opportunity of making contact with Soviet scientists concerned with information theory and its applications.

Enquiries for further information should be addressed to : ISIT-2 (Organising Committee), Council for Cybernetics, Ul. Vavilova 40, Moscow V-333, USSR.

## **FINNISH NATIONAL COMMITTEE**

The Finnish National Committee of URSI organised a National Radio-Scientific Convention at Otaniemi, on 27-28 October 1970, which was attended by more than 300 people. The Opening Address was given by Prof. Martti Tiuri, President of the Finnish Committee who welcomed the participants. The President of URSI, Prof. W. Dieminger, reviewed the advances in our knowledge of the earth's environment in space over the past century (Die Kenntnis vom erdnahen Raum in Wandel eines Jahrhunderts).

During the 14 Sessions, 61 papers were presented on the following topics :

Electromagnetic Waves and Antennas  
Electronic Measurements  
Electron Physics  
Microwaves  
Bioelectronics  
Communications  
Applied Electronics

The text of the papers is in English (23) or in Finnish or Swedish (37); all the papers have abstracts in English.

The papers are available at US \$3.60 (15 Finnmarks), surface postage included, from

Prof. S. J. Halme  
Secretary of the Finnish National Committee of URSI  
Helsinki University of Technology  
Radio Laboratory  
Otaniemi, Finland.

Cheques should be made payable to "Suomen Radiotieteen Kansalliskomitea, URSI".

## **RECORDING OF IONOSPHERIC DATA IN DIGITAL FORM**

Recommendation III.6 of the XVI General Assembly of URSI authorised the formation of a Working Group to give guidance to users of new recording techniques and to help in making possible the exchange and the joint utilisation of digital data.

The Chairman, Dr. K. Bibl, convened a meeting of the Working Group in Leningrad in May 1970 and the Minutes of this meeting were circulated in November 1970.

Comments on the Minutes, reproduced below, including the proposed standard formats presented in Appendix I, will be welcomed from anyone who is interested in digital data recording whether or not he is a member of the Working Group. It is expected that the recommendations of the

Working Group will be considered by the URSI Committee on Solar-Terrestrial Physics when it meets probably in mid-1971. In view of this it would be appreciated if comments could be sent by 30 April 1971 to

Dr. K. Bibl,

Lowell Technological Institute Research Foundation,  
450 Aiken Street,  
Lowell, Mass. 01854, USA.

MINUTES OF MEETING OF URSI WORKING GROUP  
ON DIGITAL DATA PRE-PROCESSING AND DISPLAY

Leningrad, May 1970

1.0. — MEMBERSHIP.

Since the location of the Sun-Earth Symposium facilitated participation in the Working Group of interested colleagues from USSR, other East European countries, and Japan, we were successful in finding new members : I. Kasuya for Japan and L. S. Chesalin for USSR. On demand of the respective members or delegations, I. Hewett, Canada, will be replaced by J. S. Belrose, and Mlle Pillet, France, by B. Morlet. Listed in Appendix II are names and addresses of the Working Group members. Russian members asked the chairman to contact Dr. A. de Vuyst, Belgium, who is chairman of a similar working group of IAGA.

2.0. — PROGRESS IN REAL-TIME DATA.

2.1. Dr. Belrose reported on a real-time output from his partial reflection experience which monitors D-layer ionization by digital comparison of the two circularly polarized echo components.

2.2. R. J. Slutz, USA, described his important Real-Time Data Compiling System for short-term forecast and warning. To the Space Disturbance Laboratory of ESSA are sent riometer, magnetic, hf-phase and amplitude as well as ionospheric scatter data which are compared, after computer processing, with data from the Solar Flare Network (SOFNET) containing barometer corrected neutron measurements from Canada and New Hampshire.

2.3. Several ionospheric sounding stations in Europe participate with analog equipment and observers in a network of hourly real-time collection of simple ionospheric characters ( $f_oF2$ ,  $MUF(3000)$ ,  $f_bE_s$  and  $f_{min}$ ). Two of these stations : Dourbes, Belgium, and Breisach, Germany, will install new digital equipment in the course of this year.

2.4. In addition to experimental stations in the USA : one of ESSA, Boulder, and two of Air Force Cambridge Research Laboratories (AFCRL) in Florida and in a jet aircraft, a continuously operating digital ionosonde will be operating for AFCRL in Maynard, Massachusetts, USA, very soon.

The main purpose of digital real-time data gathering for the American stations is support and scheduling of related experiments and monitoring of remote, unmanned sites.

2.5. Under the direction of L. Bossy, a small on-line computer will assist the digital ionosonde in Dourbes, Belgium, to further compress the digital data to form ionospheric characteristics as time-functions; the computer will also steer the Digisonde's operational parameters dependent on the output data content in routine operation. The latter approach is also being used in the Dynasonde of ESSA, Boulder, Colorado, USA and by J. D. Whitehead at the University of Queensland, Australia.

### 3.0. — DIGITAL DATA FORMATTING.

In contrast to many other fields of geophysical research, ionospheric data gathered by radio sounding exhibit a multitude of parameters which must be measured simultaneously to permit correct interpretation : magnitude and phase of echo amplitude, measured over large frequency and height ranges and in quite different scales of time, disclose the local and temporal dynamic structure of the ionosphere only if the parameters are brought into right perspective. Multiple and oblique echoes (Fig. 1) must be eliminated and the two magneto-ionic components separately considered. For this reason, proper formatting of the records is of paramount importance. Digital data gathering can overcome the technical handicap of the limited standardization in optically recording equipment : cameras, oscilloscopes and film developing.

In the past, it was found impossible to standardize height and frequency range, not to talk about accuracy, identification, resolution and reproducibility of the height and frequency scanning function. With digital data, this can be done in a joint effort, even on an international basis. But it must be done soon to match the fast growing intention to generate digital data. In Appendix I, a set of proposed formats is presented for discussion.

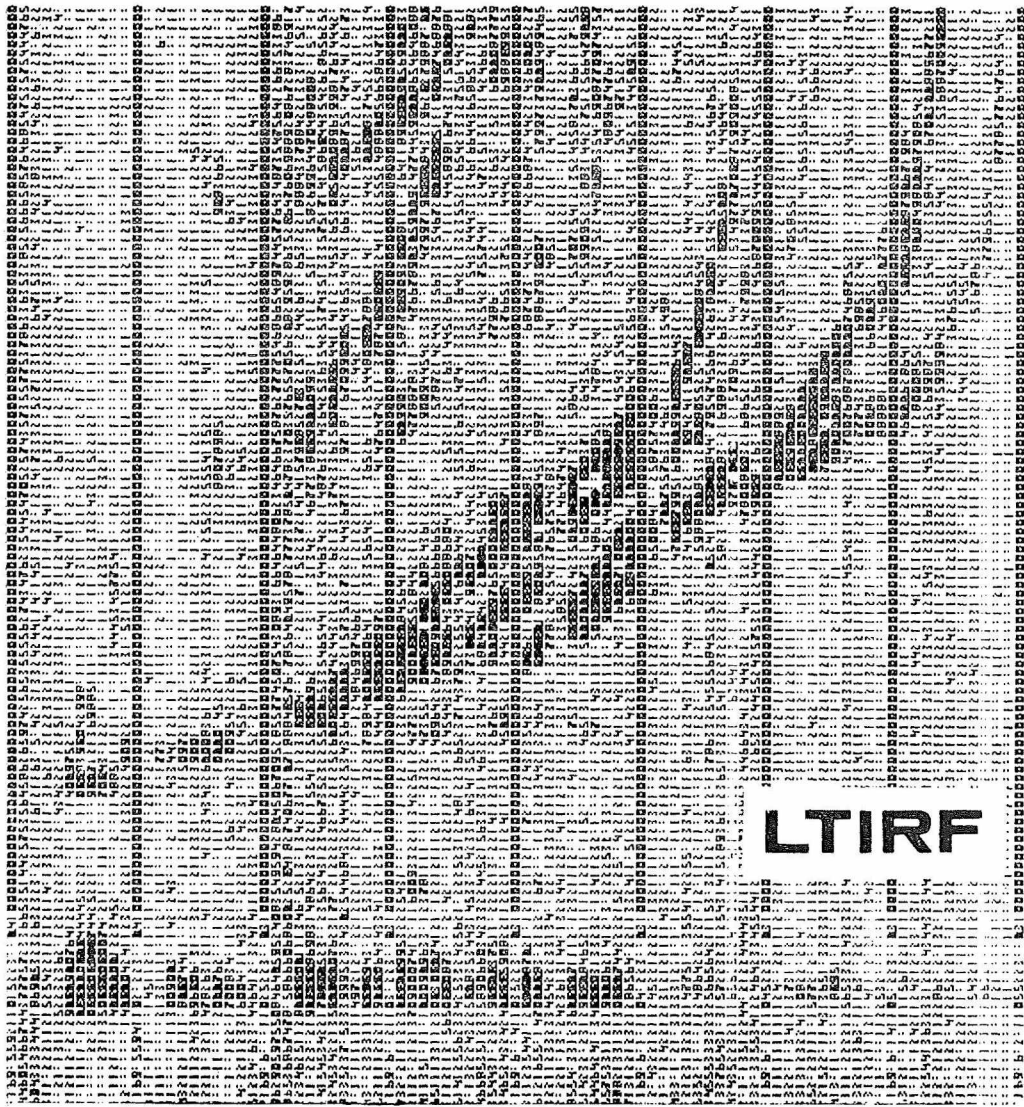


FIG. 1. A Digigram. The pulse signal amplitude is shown as a function of frequency and range. For key to amplitude see Figure 2.

The formats are mainly meant for digital ionogram recording (Fig. 2) but can be applied for compressed time functions of ionospheric parameters<sup>(1)</sup> (Figs. 3, 4, 5) and other data as well. Figure 6 shows, as an example, a digital spectrogram.

#### 4.0. — COMPUTER FEATURES.

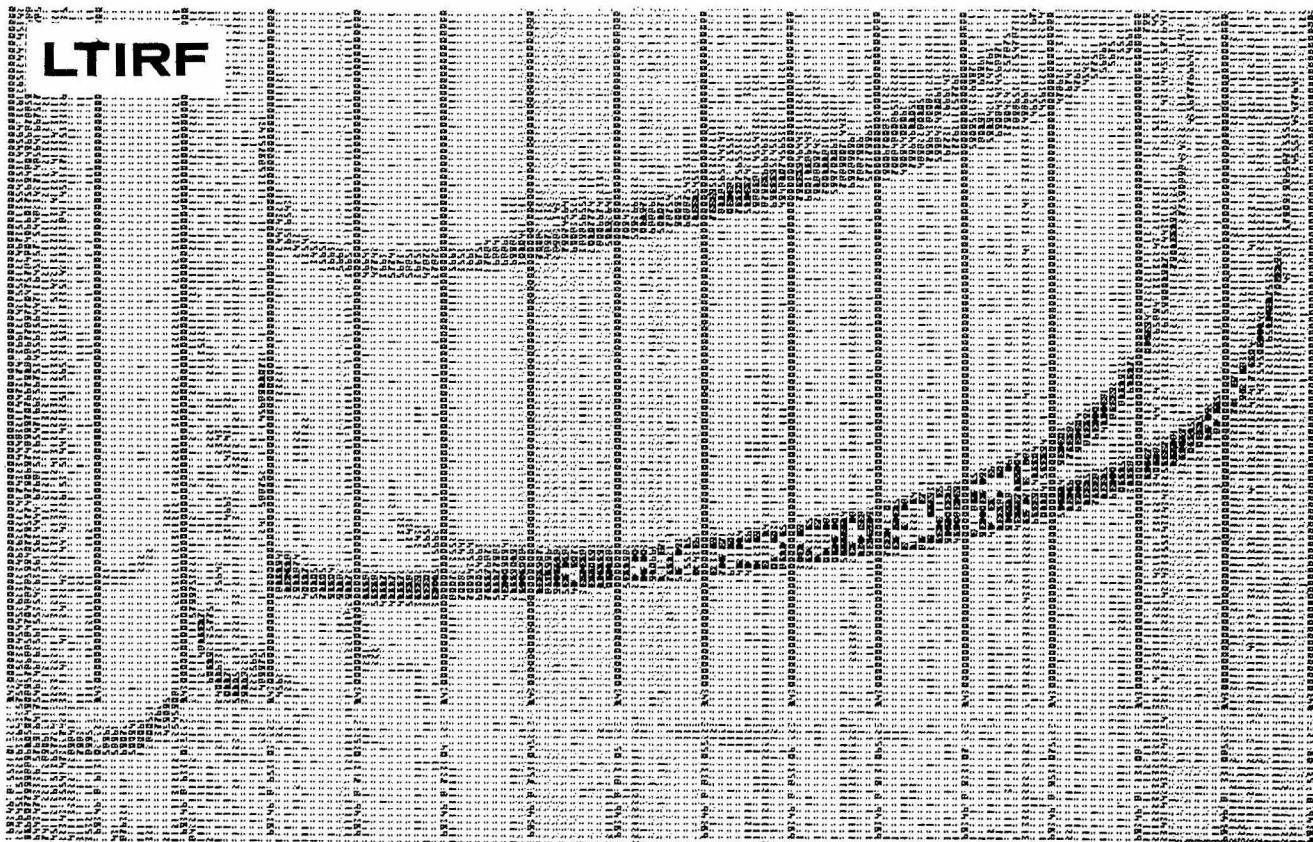
The key to success in digital data recording is some understanding of computer properties. Neither big nor small computers should be used for data storage or data printout.

Complete ionograms, i.e., amplitude record for the whole frequency and height range, must be printed out directly and/or recorded on magnetic tape, since the millions of data bits can not be stored on punch cards or punched tapes. Optical storage of digital data on film or plastic ribbons will become possible in the future.

Compression of data, even after integration, with the help of on-line special purpose computers can reduce the data flow (T. Gautier, ESSA, USA) and permit the use of teletype and paper punch equipment for display and storage. This route is, however, limited. Temporary storage on magnetic tape is preferable if a computer is accessible for printer data compression and reformatting. Scanning devices forming special fonts for the selected numbers are available, permitting use of reliable facsimile printers even on remote locations.

Not only small computers with limited memory, but also computers with fast data intake require strict limitation in the size of individual records. It is, therefore, almost always impossible to have a complete ionogram on a single record. Records of about 400 IBM words of six characters appear very economical; they require almost 4 in. (10 cm) (five times the gap length) on a tape with a density of 556 bits/inch. For limited data flow, a 200 bits/inch tape recorder might be usable. Then the formatting of echo amplitudes from about 100 height ranges to independent records can become feasible, making the record length about as long as the record gap. Single line records have the important advantage that neither additional storage nor an incremental reading capability is required for subsequent printout of the records on inexpensive synchronous facsimile printers. Even if about ten frequency lines are combined to a record, it is advisable to start each line within the record with a new preface. This makes the format

<sup>(1)</sup> Program developed by J. Buchau, CRPC, Boundaries Interaction Branch, Air Force Cambridge Research Laboratories, Bedford, Mass., USA.



0(2) 1(5) 2(6) 3(7) 4(8) 5(9) 6(10) 7(11) 8(12) 9(13) 10(14) 11(15) 12(16) 13(17) 14(18) 15(19)

**1 2 3 4 5 6 7 8 9 0 1 2 3 4**

FIG. 2. A Digisonogram produced in real time with Digisonde 128. The magnitude of the complex amplitude is shown as a function of frequency and range (printed with an on-line printer).



LTIRF

FIG. 3. F-region top frequency  $f^oF_2(t)$  shown as a function of time.

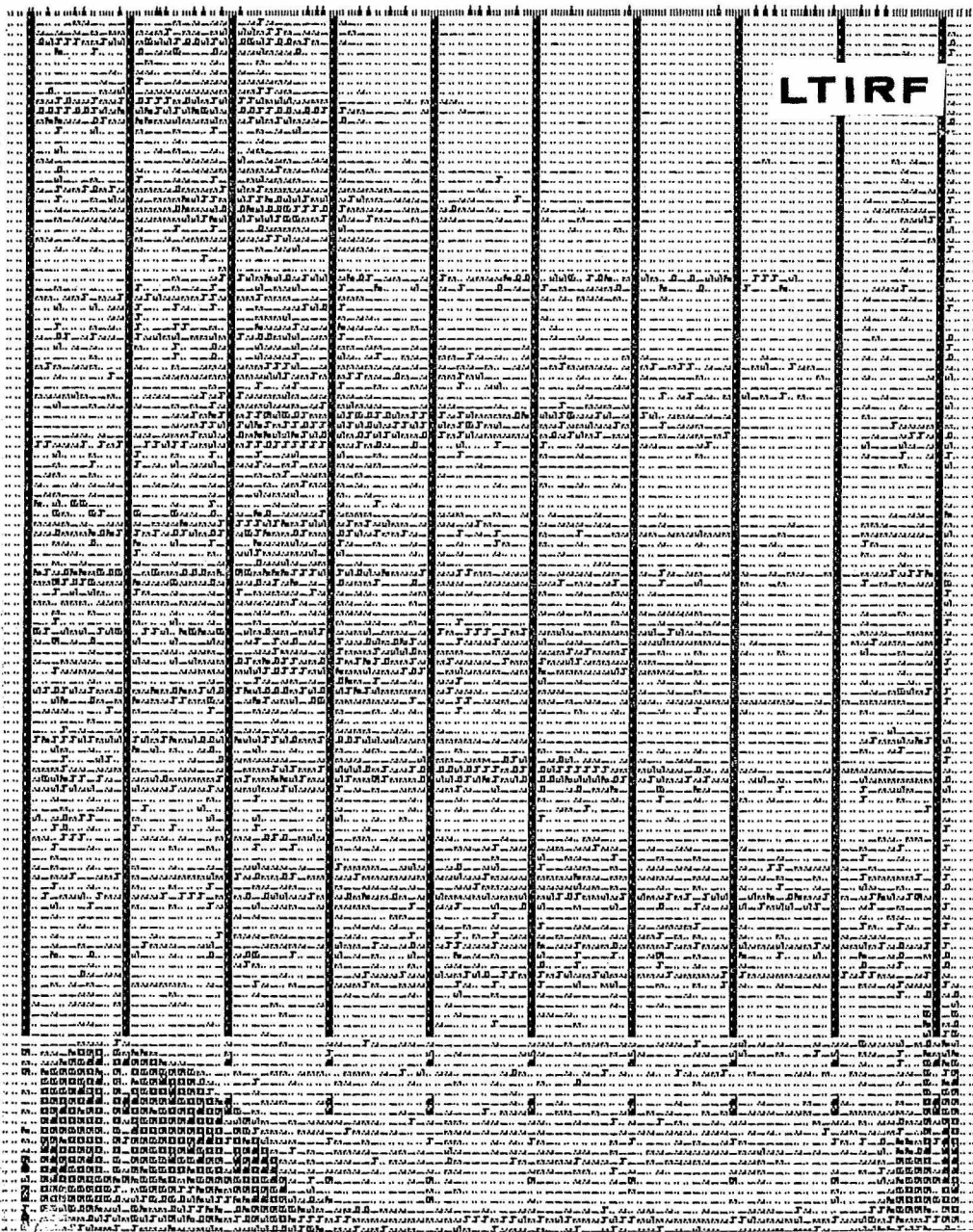


FIG. 4. E-region top frequency  $f_i E(t)$  shown as a function of time.



FIG. 5. Virtual heights  $h(t)$  shown as functions of time.

128 INDEPENDENT CHANNELS OF INFORMATION

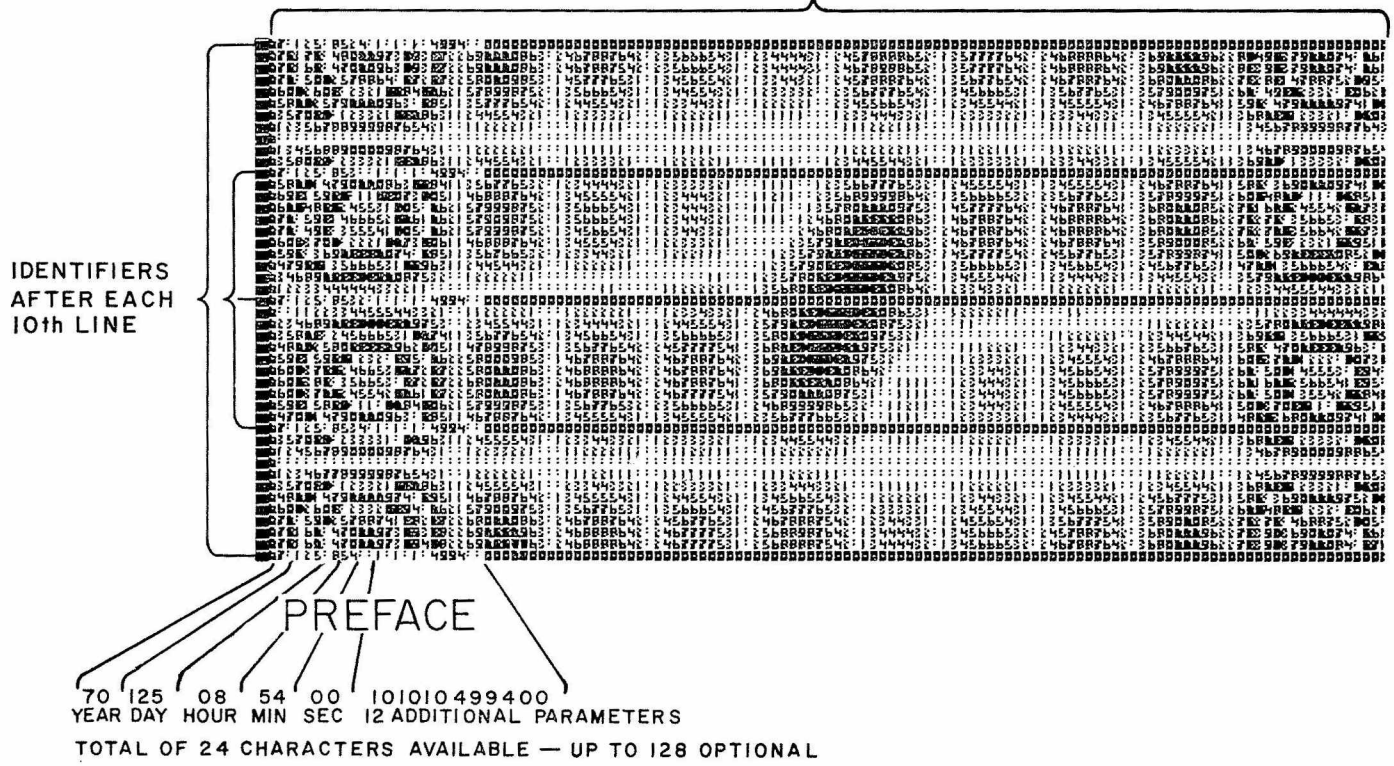


FIG. 6. Data presented as a digital spectrogram.

of the data more periodic and therefore easier to program for identification of selected frequency data and for suppression and correction of errors. The record gap can be used to select the first preface for identification and for frequency or time marks in the printouts.

#### 5.0. — RELATED FIELDS.

Similar data preprocessing and display techniques can be applied in the following fields :

- (a) incoherent scatter and radio-astronomical measurements;
- (b) optical scanning;
- (c) acoustical sounding.

## APPENDIX I

### PROPOSED DIGITAL IONOGRAM FORMAT

Data must be broken into records consisting of 120 to 2,400 characters of 6 or 8 bits organized in 20 to 400 words of 6 characters or 12 to 240 words of 10 characters.

Each word may contain 6, 4, 3, or 2 numbers each consisting of 1,  $1\frac{1}{2}$ , 2, or 3 characters.

If four numbers per word is used on 6 bit tracks, than three octals are available for each number so that the upper octal of the second character belongs to the first number and the lower octal of the second character belongs to the second number : a scheme which repeats with a multiple of three characters as module. Those nine bits may mean nine bits of a scalar amplitude or six bits of magnitude and three bits of phase for a complex amplitude. If this accuracy seems insufficient, two or more characters can be combined to a more precise number.

Linear or piecewise linear height and frequency scan is proposed.

Virtual height should be sampled in  $1\frac{1}{2}$ , 3,  $4\frac{1}{2}$ , or 6 km increments.

Frequency should be increased in 25, 50, or 100 kHz increments.

One record shall contain : 1, 2, 4, 5, 8, 10 or 16 frequencies. The preface can consist of 2 to 4 words of 6 characters. Additional information can be stored in subsequent prefaces. Ionogram data recorded in such a format

can be played back at any location and would require only simple instruction for the printout, while the variable parameters may be contained specially keyed in the preface.

For scaling, the smallest frequency and the lowest height range must be known in addition.

#### URSI-STP COMMITTEE

##### *Working Group on Digital Data Pre-Processing*

*Chairman* : K. BIBL, Lowell Technological Institute Research Foundation, 450 Aiken Street, Lowell, Massachusetts, 01854, USA.

Canada : J. S. BELROSE, Communications Research Centre, Shirley Bay, P.O. Box 490, Terminal A, Ottawa 2, Ontario, Canada.

Benelux, SW and SE Europe : L. BOSSY, Institut Royal Météorologique de Belgique, Avenue Circulaire, 3, 1180 Uccle-Bruxelles, Belgium.

Australia and Far East : I. A. BOURNE, Physics Department, Univ. of Melbourne, Melbourne, Australia.

USSR : L. S. CHESALIN, Institute of Space Research, Moscow B-485, USSR.  
Mid and S. Europe : E. HARNISCHMACHER, Ionosphären-Institut, 7814 Breisach/Rhein, Germany.

Japan : I. KASUYA, Radio Research Laboratories, Tokyo, Japan.

France and French-speaking Africa : B. MORLET, Groupe de Recherches Ionosphériques, 4 Avenue Neptune, 94 Saint-Maur-des-Fossés, France.

UK, Asia and English-speaking Africa : W. R. PIGGOTT, Radio and Space Research Station, Ditton Park, Slough, Bucks, England.

S. America : Sandro M. RADICELLA, Departamento de Aeronautica, Univ. Nacional de LaPlata, Calle 1 esq. 47, LaPlata, Argentina.

E. Europe : J. TAUBENHEIM, Zentralinstitut für Solar-Terr. Physik (Heinrich-Hertz-Institut), 1199, Berlin-Adlershof, Germany.

## SOLID STATE VERTICAL INCIDENCE IONOSONDE

Information has been received from : Barry Research, 1530 Page Mill Road, Palo Alto, California 94304, USA, on a new vertical incidence solid-state ionosonde (VIS-1 Vertichirp) which is now available. Four different models are available according to requirements. The main characteristics are :

Frequency range : 0.5-30 MHz.

Sweep rates : logarithmic 10-250 sec/octave; linear -1, 0-1,000 kHz/sec.

Pulse width : 45  $\mu$ sec.

Vertical height range : 0-1,000 km (or 0-1,500 km).

Sounding interval : 1-60 min (or continuous).

Output power : 8 W (peak), 3 W (average).

Power required : 270-500 W depending on model.

Display : cathode ray tube, 35 mm camera, tape recorder, etc. depending on model.

Further technical information on the various models can be obtained from Barry Research.

## FUTURE APPLICATION OF SATELLITE BEACON MEASUREMENTS

PROPOSED SYMPOSIUM AT GRAZ, MAY 1972

Dear Colleague,

1. Thanks to the efforts of Dr. Hartmann and his colleagues of the Max-Planck-Institut für Aeronomie a very successful Symposium on the Application of Satellite Beacon Experiments was held at Lindau/Harz in June 1970. As agreed on this occasion the next Symposium on related topics will be held at Graz (Austria). Under the title "Johannes Kepler Symposium" it will be one of the contributions of the University at Graz to the so-called "Kepler Year". The Institut für Meteorologie und Geophysik will distri-

bute information about the meeting to colleagues interested in this field of research, by means of circulars continuing the series started by Dr. Hartmann

2. We understand from ESSA (K. Davies) that the launch of ATS-F has been postponed for about half a year and is now expected in spring 1973. In agreement with Dr. Davies and Dr. Hartmann we have therefore postponed the next Symposium until May 1972. The exact date cannot yet be given, since it depends on the date and the place of the 1972 COSPAR Plenary Meeting. If this is held in Europe—as is expected—we will arrange our Symposium to follow the COSPAR meeting. In case COSPAR does not meet in Europe (or nearby, e.g. North Africa) it would be bad policy to hold our Symposium immediately after or before the COSPAR meeting. In this case we will try to fix the date so that it follows some other European meeting on a topic related to ionospheric research or wave propagation. If you have information on any such conferences please let us know. In any case the Symposium will be arranged for the first half of 1972.

3. The efforts to get approval by an International Scientific Union as Interim Working Group on Satellite Beacon Experiments (see Report in *URSI Information Bulletin*, No. 176, September 1970) will be continued by Dr. Hartmann. Decisions on this question are to be expected from the meeting of COSPAR Panel 1B at Seattle in June 1971.

4. Please feel free to make comments and suggestions on the proposed Symposium, as a means to further cooperation in the use of beacon satellites for research and application.

Yours sincerely,

14 January 1971.

Dr. R. Leitinger

Institut für Meteorologie und Geophysik  
Universität  
A — 8010 Graz (Austria).



## SOLAR ECLIPSES

Two years ago, in *URSI Information Bulletin* No. 170, we complimented the National Science Foundation on the appearance of *Solar Eclipse 1970 Bulletin A* and on the evidence it provided on the progress made in the central coordination of the scientific programmes proposed for the total solar eclipse of 1970 March 7.

With the recent issue of *Bulletin F*, the last in the series, it seems appropriate again to congratulate the NSF on the successful completion of its task and, in particular, the US Coordinator, Dr. A. E. Belon, who has collected together, in *Bulletin F*, the descriptions of the numerous observational programmes of all kinds and, in many cases, preliminary reports on the results obtained, including numerical and graphical data and photographs.

Dr. Belon points out, however, that *Bulletin F* is not intended to be a scientific treatise, but rather a source of information on the observations planned and in many cases carried out according to plan. There seems little doubt that it will serve as a means of enabling those who made measurements during the eclipse to make contact with others who obtained data which may complement or supplement their own observations.

A special issue of *Nature* (20 June 1970) contained preliminary results on over 40 experiments relating to the 1970 eclipse and isolated papers have been published in *Sky and Telescope* and elsewhere, but the principal conclusions will not appear in print until 1971. A Symposium on the eclipse, sponsored jointly by URSI, IAU, IAGA and COSPAR, is to be held in Seattle in June 1971 during the COSPAR Meeting, and will provide the first occasion for discussion of some of the latest information and conclusions on the solar atmosphere and its radiation, the bottom- and top-side ionosphere, etc.

Eclipse observers are never satisfied with the results they have obtained and it is not surprising that *Bulletin F* contains a 43 page Chapter on future partial, annular and total eclipses. This includes not only numerical data, based on information provided by the Nautical Almanac Offices in the USA and the UK, but also reports of surveys of sites in West, Central and East Africa made by Drs Menzel and Pasachoff, of the total eclipse of 1973 June 30 which will have a maximum duration of more than 7 minutes. The track of the total eclipse of 1972 July 10 will be more easily

accessible than that of the 1973 eclipse; unfortunately totality will last for only  $2\frac{1}{2}$  minutes and, for those making optical observations, the prospects will be less favourable in Eastern Siberia, Northern Alaska and Canada than in Africa. However, this need not deter radio scientists from planning new observations for 1972 and perhaps for improving on the techniques used in 1970.

## **PROGRESS IN RADIO SCIENCE 1966-1969**

Published by the International Union of Radio Science (URSI), 7, place Emile Danco, 1180 Brussels, Belgium.

Vol. 1 : Ionosphere, Magnetosphere, Radio Noise, Ed. G. M. Brown, N. D. Clarence, and M. J. Rycroft (Published January 1971).

Vol. 2 : Radio Propagation in Non-Ionized Media, Radioastronomy, Radio Measurements and Standards, Ed. J. A. Lane, J. W. Findlay, and C. E. White (To be published in April 1971).

Vol. 3 : Radio Waves and Circuits, Radio Electronics, Ed. W. V. Tilston, and M. Sauzade (To be published in June 1971).

These volumes contain most of the papers presented during the scientific sessions of the XVI General Assembly of URSI in August 1969. The programmes were arranged by the Chairmen of the respective URSI Commissions during the period 1966-1969 namely :

Vol. 1 : C. O. Hines, H. G. Booker, F. Horner.

Vol. 2 : J. A. Saxton, E. J. Blum, L. Essen.

Vol. 3 : F. L. Stumpers, P. Grivet.

The volumes are available at \$5.00 (250 Belgian francs) per copy, surface postage included. If all three volumes are ordered together, the price is US \$12.00 (600 Belgian francs). If required copies can be sent by air mail, by arrangement, for an additional charge.

Orders should be sent to URSI, 7, place Emile Danco, 1180 Brussels, Belgium.

A complimentary copy of Vol. 1 has already been posted to each Member Committee of URSI.

## MEMBER COMMITTEES OF URSI ; URSI COMMISSIONS

Since the publication of the complete lists in *Information Bulletin* No. 176, notification has been received of the changes and corrections listed below.

It would be appreciated if notification of further modifications could be sent to the Secretary General before mid-August 1971 for inclusion in the September issue of the Bulletin. A full list, including all revisions, will appear in the March 1972 issue.

The following entries replace the corresponding ones in Bulletin No. 176.

### MEMBER COMMITTEES

#### *Denmark :*

*President :* Mr. J. K. Olesen, Ionosphere Laboratory, Technical University, DK-2800 Lyngby.

#### *West Germany :*

*Secretary :* Dr. R. Eyfrig, Fernmeldetechnisches Zentralamt, Forschungsgruppe D 33b, Postfach 800, D-61 Darmstadt.

### COMMISSION I ON RADIO MEASUREMENTS AND STANDARDS

*Denmark :* Prof. G. Bruun, Laboratory of Electronics, Technical University of Denmark, DK-2800 Lyngby.

*South Africa :* Dr. K. Posel, Department of Chemical Engineering, University of Natal, Durban, Natal.

*West Germany :* Prof. Dr. G. Becker, Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-33 Braunschweig.

### COMMISSION II ON RADIO AND NON-IONIZED MEDIA

*Australia :* Mr. L. M. Harris, PMG Research Laboratories, 59 Little Collins Street, Melbourne, Victoria.

*Denmark* : Mr. M. Grönlund, Danish Research Center for Applied Electronics, Venlighedsvej 4, DK-2970 Hörsholm.

*India* : c/o Dr. A. P. Mitra, Secretary, Indian Committee for URSI, National Physical Laboratory, Hillside Road, New Delhi 12.

*Netherlands* : ir. L. Krul, Technische Hogeschool, Afdeling der Elektrotechniek, Mekelweg 4, Delft.

*West Germany* : Dr. L. Fehlhaber, Fernmeldetechnisches Zentralamt, Forschungsgruppe D 31, Postfach 800, D-61 Darmstadt.

#### COMMISSION III ON THE IONOSPHERE

*Denmark* : Mr. J. K. Olesen, Ionosphere Laboratory, Technical University, DK-2800 Lyngby.

*Israel* : Dr. J. Mass, Radio Observatory NCSR, P.O.B. 4655, Haifa.

#### COMMISSION IV ON THE MAGNETOSPHERE

*Australia* : Prof. C. D. Ellyett, Physics Department, Newcastle University, Newcastle 2308.

*Belgium* : Dr. E. Aerts, Institut d'Aéronomie Spatiale de Belgique, avenue Circulaire 3, B-1180 Bruxelles.

*Denmark* : Dr. E. E. Ungstrup, Danish Space Research Institute, Lundtoftevej 7, DK-2800 Lyngby.

*Israel* : Dr. A. Eviatar, Tel Aviv University, Department of Environmental Sciences, Tel Aviv.

*West Germany* : Prof. Dr. H. Pöeverlein, Lehrstuhl für angewandte Geophysik der Technischen Hochschule, Hochschulstrasse 1, D-61 Darmstadt.

#### COMMISSION V ON RADIO ASTRONOMY

*West Germany* : Dr. R. Wielebinski, Max-Planck-Institut für Radioastronomie, Argelanderstrasse 3, D-53 Bonn.

COMMISSION VI ON RADIO WAVES AND CIRCUITS

*Denmark* : Prof. H. Lottrup Knudsen, Laboratory of Electromagnetic Field Theory, Technical University, DK-2800 Lyngby.

*South Africa* : Mr. P. Meerholz, Director, Fuchs Electronics (PTY) Ltd, P.O.Box 75, Alberton.

COMMISSION VII ON RADIOELECTRONICS

*Australia* : Prof. R. E. Aitchison. Address from May 1971 : Department of Physics, Macquarie University; Balaclava Road, North Ryde 2113.

*South Africa* : Mr. P. Meerholz, Director, Fuchs Electronics (PTY) Ltd, P.O.Box 75, Alberton.

COMMISSION VIII ON RADIO NOISE OF TERRESTRIAL ORIGIN

*Belgium* : Prof. E. Lahaye, Avenue du Pesage 44, B-1050 Bruxelles.

*Denmark* : Dr. E. E. Ungstrup, Danish Space Research Institute, Lundtoftevej 7, DK-2800 Lyngby.

*South Africa* : c/o Mr. P. J. van der Westhuizen, Secretary, S.A. Committee for URSI, CSIR, P.O. Box 395, Pretoria.

*West Germany* : Prof. Dr. R. Mühleisen, Astronomisches Institut der Universität Tübingen, Rasthalde, D-7981 Weissenau bei Ravensburg.





