

1996 ANNUAL REPORT

SCIENTIFIC COMMITTEE FOR SOLAR-TERRESTRIAL PHYSICS (SCOSTEP)

Joe H. Allen, Scientific Secretary

INTRODUCTION:

In 1978, by virtue of an action of the 17th ICSU General Assembly, SCOSTEP (previously an Inter-Union Commission in 1966-72, and a Special Committee in 1972-1978) became a Scientific Committee of ICSU with the following principal tasks:

- To promote international interdisciplinary programmes in solar-terrestrial physics, and to organize and coordinate such programmes of interest to and approved by at least two of the Participating Bodies.
- To define the data relating to these programmes that should be exchanged through the World Data Centres.
- To provide such advice as may be required by the ICSU bodies and World Data Centres concerned with these programmes. And,
- To work with other ICSU bodies in the coordination of symposia in solar-terrestrial physics, especially on topics related to SCOSTEP's programmes.

MEMBERSHIP:

SCOSTEP's Bureau consists of a President, Vice President, Scientific Secretary, and one representative each from the Participating Bodies (COSPAR, IAMAP, IAGA, IAU, IUPAP, SCAR, and URSI). Current officers were elected in June 1994; they are: C.H. Liu (President), H. Oya (vice-president), and J.H. Allen (Scientific Secretary). The other Bureau members and the organizations they represent are: S. Grzedzielski (IUPAP), A.P. Mitra (URSI), H. Oya (IAGA), M.J. Rycroft (SCAR), B. Schmieder (IAU), O.L. Vaisberg (COSPAR), and R.A. Vincent (IAMAS). The Council consists of representatives from 29 Adherents. Scientific Discipline Representatives (SDRs) are chosen for expertise in the various disciplines related to solar-terrestrial physics and involving scientists from differing geographical locations (over 40 scientists from some 21 countries are SDRs). Other members are Steering Committee, Working Group, and Panel Chairmen, as well as members of the Finance and Awards Committees. In addition, there are Representatives of three World Data Centres for STP; Representatives of two Affiliates (IUWDS and WMO); Representatives from eight ICSU participating bodies, and an ICSU Representative plus Correspondents

from 12 countries. In total, some 317 scientists worldwide comprise SCOSTEP at the end of 1996. However, the distribution list for SCOSTEP publications includes some 3,800 currently active scientists. Both groups are volatile, and numbers change monthly. The SCOSTEP Directory of members is on-line on the World Wide Web at: <http://www.ngdc.noaa.gov/stp/SCOSTEP/scostep.html>.

VITAL STATISTICS:

Number of Members: Bureau Members: 10; Scientific Discipline Representatives: 45; Adherent countries: 29; Representatives from Affiliates: 2; World Data Centres: 3; ICSU: 1; Finance Committee: 2; Awards Committee: 4; Steering Committee, Working Group and Panel Chairmen: 15; Honorary Members: 4 (Sir Granville Beynon died in 1995); Correspondents: 12. (Some persons hold more than one position.)

ORGANIZATIONAL MATTERS:

Scientific and Planning Meetings involving SCOSTEP support:

1. SCOSTEP at Foxbury Hall. The Bureau, STEP and S-RAMP Steering Committees, representatives of proposed Post-STEP programs and others met 11-14 July 1996, at Foxbury Hall Conference and Training Center in the London suburban area. At most, up to 30 people were present for some days of the meeting. This was a very satisfactory facility for a scientific meeting of such a size and they also accomodated two university and business groups in parallel. Most participants were accomodated in the main house where meals and coffee/tea breaks were held either inside on or the grounds. This site in England took advantage of travel plans by SCOSTEP persons going to the COSPAR meeting in Birmingham the following week. By this means, SCOSTEP economized on travel costs. The most important meeting results were:

- Bureau decisions about funding selected proposed supplemental STEP projects as part of the effort to use accumulated cash reserves.
- Bureau action about proposed post-STEP projects for SCOSTEP: three programs now identified and approved: EPIC, PS-MOS and ISCS (see Newsletters for descriptions).
- Bureau action in re SCOSTEP representation at the ICSU General Assembly and other meetings (resulted in full participation by C.H. Liu and J.H. Allen).
- Recognition given STEP publications prepared by the Secretariat and by scientific groups in Japan with noted special benefit to developing countries.
- First meeting of the Post-STEP SRAMP (STEP Results, Applications and Modeling Phase) Steering Committee and its report to the Bureau.
- Penultimate meeting of the STEP Steering Committee.
- Program outline completed and prospective speakers identified for the 9th Quadrennial STP Symposium to be held in Uppsala, Sweden during August 1997 (entire program now approved and speakers accepted).

Participants continued from Foxbury Hall to Birmingham for the COSPAR General Assembly for which SCOSTEP provided support for costs of scientists from developing countries to take part in jointly sponsored sessions having solar-terrestrial interest.

2. STEP Solar Workshop in Huntsville, Alabama. Participants in STEP WG-1 met during 9-11 April 1996 for a workshop on measurements and analyses of the 3-D solar magnetic field.
3. 4th COLAGE in Tucuman, Argentina. The Fourth Latin American Conference on Space Geophysics met 22-26 April in Tucuman. SCOSTEP joined other groups in supporting this workshop (see appended report by J.G. Roederer).
4. ICE-3 in Versailles, France. The Scientific Secretary participated in the third International Conference on Substorms organized by A. Roux (13-17 May 1996). There was extensive discussion about the effects of solar activity causing magnetic storms and substorms at Earth and affecting technology in space around Earth and on the ground.
5. ICSU HQ meeting of General Secretaries. The SCOSTEP Scientific Secretary attended this planning meeting at the Paris headquarters of ICSU. It was important to provide the first opportunity for most secretaries of ICSU bodies to meet personally and share experiences. Also, it was a time of preparation for the ICSU General Assembly to be held in September.
6. The Scientific Secretary met with the President of SCOSTEP in Taiwan and Chung Li in early June. Their main activity was the identification of Tutorial speakers and topics for the 9th STP Symposium and planning the agenda for the Bureau and Steering Committee meetings in August 1996 at Foxbury.
7. SOLERS-22 Workshop at Sacramento Peak Observatory. The 17th annual National Solar Observatory Workshop hosted a meeting of SCOSTEP's SOLERS-22 (Solar Electromagnetic Radiation Study for Solar Cycle 22) at the mountain top site of Sac Peak Observatory (17-21 June 1996). STEP WG-1 and the STEP Steering Committee provided significant financial support that helped scientists from developing countries to attend. Over 100 participants crowded into the meeting auditorium.
8. ICSU General Assembly, Washington, DC. SCOSTEP's President and Scientific Secretary participated in the 24-27 September 1996, meeting of 25th General Assembly of ICSU. Important contacts were made with members of other ICSU bodies. Resolutions passed and topical issues were described in the "International STEP Newsletter", Vol. 2, No. 4.

9. SOLTIP III Symposium in Beijing. The third SOLTIP symposium on Solar Transient and Interplanetary Phenomena was held 14-18 October 1996. This meeting was supported by STEP WG-2.
10. First SPARC General Assembly in Melbourne, Australia. Middle Atmosphere scientists who are active in the STEP program (WG-4) participated in the first meeting of the new program "Stratospheric Processes and Their Role in Climate".

This list includes meetings receiving financial support from SCOSTEP either directly from the Bureau or indirectly through one or more of the STEP Working Groups. SCOSTEP scientists have been active participants in observing and data collecting campaigns and in reporting on their research at the usual national and international scientific symposia (e.g. AGU, EGS). Financial support to these meetings went mainly to cover the expenses of scientists from developing countries and/or the Former Soviet Union or Eastern Europe.

ACTIVITIES UNDERTAKEN DURING 1996:

In addition to organizing or participating in the scientific meetings described above, the SCOSTEP Secretariat continued quarterly publication of the "International STEP Newsletter". Preparation and distribution of this newsletter reaches some 6,000 scientists and administrators worldwide. We continue to receive feedback from scientists in less developed countries for whom this is an essential means of communication with the active STP community. Some scientists in developed countries also prefer to have a printed document which can be easily held, browsed while doing other activities, and carried easily to different locations. Each issue runs from 12-20 pages. Electronic versions are on the SCOSTEP WWW pages for those able to browse electronically.

SCOSTEP maintains an extensive WWW "homepage" on the node operated in Boulder by the US National Geophysical Data Center. The address is:

<http://www.ngdc.noaa.gov/stp/SCOSTEP/scostep.html>.

It has proven to be very convenient for many people to access. Separate statistics are not kept for parts of NGDC STP Division pages on WWW (where the SCOSTEP entries are located); however, the number of accesses per year by external users who penetrated to at least a second level of information and copied one or more pages of data or information in 1996 totaled some 400,000. SCOSTEP persons going to the Foxbury Hall meeting were able to make good use of the map included with other information about that meeting.

Other Publications: In addition to the "International STEP Newsletter" which was described above, two handbooks in the STEP series were published in

1996: "Proceedings of the Seventh Workshop on Technical and Scientific Aspects of MST Radar" (July 1996), edited by B. Edwards, 512 pages; and "Handbook of Ionospheric Models" (August 1996), edited by R.W. Schunk, 295 pages. Because of the cost of publishing such large handbooks with complex figures and data tables, publication runs are limited to about 500 copies and these are quickly disseminated worldwide.

A major STEP newsletter, the "STEP GBRSC News", was published in Japan in July 1996: "STEP Activity in Japan, 1996." Prof. H. Oya distributed copies of this NL at the Foxbury Hall meeting and copies were mailed to some 2,000 US scientists by the Secretariat in early 1997. This publication contains numerous color images showing the results of scientific observations and modeling. Prof. T. Watanabe edited this edition. It is the last scheduled for publication in Japan as part of their contribution to the worldwide STEP program.

Prof. H. Matsumoto, Kyoto University, published the "Final Issue" of the "SIMPO Newsletter". The SIMPO News has been the principal communication tool of the STEP Simulation Promotion Office. The title is: "Future Vision and Scope of Space Simulations" Over the years of STEP, the SIMPO News has documented modeling programs and output of many different contributors. The success of this new effort within STEP has shown the importance of systematic and comprehensive modeling attempts as a part of all new global scientific programs.

Efforts are in progress in Japan to organize national support for SRAMP and other Post-STEP programs after the many successes of that program there.

Although the "Solar-Terrestrial Energy Program" (STEP) is to conclude in 1997, the STEP Steering Committee chaired by Prof. G. Rostoker and the STEP International Coordinator, Prof. J.G. Roederer have continued to actively promote the projects and campaigns of this international umbrella program. Prof. Rostoker spent a sabbatical at the Solar-Terrestrial Environment Lab of Nagoya University during 1996. Prof. Roederer continued to be very active in advancing STEP among developing countries and in representing SCOSTEP to COSTED, as reported below.

INTERNATIONAL STEP COORDINATOR'S REPORT:

1. Participation in COSTED-IBN

As the Corresponding Member of SCOSTEP in COSTED-IBN, Juan G. Roederer participated actively in the 1995 and 1997 meetings of the COSTED Executive Committee (for a report on the 1995 meeting, see International STEP Newsletter 1, No. 3, p. 3; a report on the 1997 meeting in Jordan is in preparation).

We believe that SCOSTEP's participation in COSTED is of fundamental importance, for two main reasons: (I) There is a need for an active participation of developing countries in SCOSTEP programs, given the importance of upper atmosphere and near-earth space observations at low latitudes; (ii) SCOSTEP is the only ICSU body with major cooperative projects on space physics that critically depend on networks of ground-based observatories. While most participants in COSTED meetings, and the research projects therein discussed, deal with capacity building in the applied sciences, particularly, those related to the development of renewable resources, the active participation of SCOSTEP in COSTED discussions helps bringing in an important element of capacity building in fundamental science.

Programs like STEP and the post-STEP projects involve networks of research groups in dozens of developing countries, and, in many of them, formal participation of local funding agencies. Given the long-time experience in the organization of such programs, an active participation of an inter-union body like SCOSTEP in COSTED-IBN will help implement the fundamental goals of this committee, defined at its recent meeting in Jordan: to serve as a clearing house for research in developing countries between the ICSU Unions, and to serve as a matchmaker between science and funding.

2. Creation of the Latin American Association of Space Geophysics (Spanish acronym ALAGE).

SCOSTEP was instrumental, over recent years, in the establishment of ALAGE, a non-governmental organization loosely binding together research groups in solar-terrestrial physics, in Latin America. It provided financial support and advice to the ad hoc committee for the statutes and the first ad hoc executive committee, thus helping overcome one of the biggest hurdles in the region: getting small groups together for organizational talks. Although ALAGE does not charge dues and does not have a budget, support like SCOSTEP's and that of some of the officers' home institutions allows ALAGE to publish a periodic Newsletter, to publish and update a Directory of Space Geophysicists in Latin America, and to organize the triennial Latin American Conference on Space Geophysics.

3. Latin American Conference on Space Geophysics (COLAGE)

For the second time, SCOSTEP provided financial support to COLAGE, which held its fourth meeting in April 1996 in Tucuman, Argentina. A detailed report on the meeting was published in International STEP Newsletter 1, No. 3, p. 9.

One particularly noteworthy highlight of this conference was the organization of public lectures, scheduled in such a way as to allow high school students attend immediately after school. The subjects, while dealing with disciplines of space geophysics, were all of general interest; lectures were given in Spanish by Latin American scientists and Latin American expatriates. SCOSTEP provided partial support for some of these speakers; in particular, it became clear that the investment of funds from an ICSU body like SCOSTEP to enable expatriates to visit and lecture in their (developing) country of origin is extremely well received. All public lectures were attended with standing room only.

The next COLAGE will be held in Costa Rica in fall 1998. SCOSTEP supported the first meeting of the organizing committee for that conference.

4. Support of the ICTP Workshop on Atmospheric Interactions: Downward and Upward Coupling to the Middle and Upper Atmosphere

As in the past, SCOSTEP was a Co-sponsor of a workshop on subjects of its incumbency held at the International Centre for Theoretical Physics in February 1996, in Trieste, Italy. The structure of the lectures followed closely the organizational structure of the STEP Working Groups; young scientists from developing countries attended the two-week workshop.

5. Role of the International STEP Coordinator

Although STEP is winding down, Juan Roederer continued in his role of "Ambassador for STEP". Main focus during recent months was to develop international interest in what for the moment is mainly a US project, the Space Weather Program. Clearly, such a program should have an international component; it will allow developing countries, for the reasons given in 1. above, to get involved in state-of-the-art space science with modest means. It should be remembered that the concept of "weather and climate in space" was one of the fundamental practical goals set for STEP, and that it is most directly related to the objectives of STEP Working Group 5. To promulgate international interest, Roederer gave many lectures on the subject at universities in Russia, at Latin American universities, at the International Space University in Strasbourg, the International Space Institute in Bern, and other European institutes.

BRIEF REPORT ON USE OF 1996 GRANT FROM ICSU AND UNESCO:

The combined ICSU Grant to SCOSTEP for 1996 was \$8.6K for two program areas: (1) International STEP Coordinator support; and (2) Publication of the "International STEP Newsletter". Both are described in some detail above. The International STEP Coordinator was particularly active in Central and South

America and in support of programs in Trieste and Russia that involved young scientists and training/education.

The SCOSTEP Scientific Secretary added to his duties of representing SCOSTEP at various scientific and planning meetings of ICSU and other bodies, and of planning SCOSTEP meetings (e.g. Foxbury Hall), by providing the editorial work to solicit input, collect opportune items, and write as needed materials published in the "International STEP Newsletter". The total cost of editing, printing, and distributing the NL during 1996, of about \$11K. This does not include the cost for addressing envelopes and mailing directly to participants which is estimated at \$40K for 1996. These costs were covered by NGDC.

CONCLUSION AND FUTURE PLANS:

SCOSTEP is entering a period of winding down its main scientific program STEP during its last year, 1997. We are starting up the S-RAMP Post-STEP program which is the: "STEP Results, Applications, and Modeling Phase." The objective of S-RAMP (described in detail in the NL) is to integrate disparate efforts among our STP scientific community to achieve the optimum return on invested funds and efforts by assuring the different disciplines spanned by the STEP Working Groups (described in 1995 annual report) are working together to fully exploit collected data and analysis of events and phenomena of mutual interest. It is hoped that the S-RAMP Steering Committee will be able to establish a chief scientist position at the Secretariat beginning in 1998 to give a Post-doctoral fellow an opportunity to coordinate the integration of efforts. Prof. D. Baker, Chairman S-RAMP SC, is Director of the Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado in Boulder, where the SCOSTEP Secretariat is also located.

The Scientific Secretary participated in meetings of the US National Academy of Sciences/National Research Council (NAS/NRC) Committees on Solar-Terrestrial Research (CSTR) and on Solar and Space Physics (CSSP) during 1996. His personal expertise and background in Spacecraft Anomalies caused by solar emissions has been useful to the emergent US National Space Weather Initiative program which may yet be broadened into an international effort. It is expected that SCOSTEP will play a major role as an interface between the US and the international community in this effort. The CSTR is the US national adherent member of SCOSTEP.

The 9th Quadrennial STP Symposium of SCOSTEP will be held 4-11 August 1997 in Uppsala, Sweden, concurrent with the opening week of the IAGA Scientific Assembly and the IAMAS/ICMA scientific sessions on the middle atmosphere. Also at Uppsala, the Bureau will meet twice and there will be a General Meeting of Adherent Representatives and Scientific Discipline

Representatives to provide guidance to SCOSTEP for its efforts through the rest of this millennium.