

## **2002 ANNUAL REPORT**

### **SCIENTIFIC COMMITTEE FOR SOLAR-TERRESTRIAL PHYSICS (SCOSTEP)**

Joe H. Allen, Scientific Secretary

In 2002 there were several scientific meetings organized by SCOSTEP programs or involving SCOSTEP representation.

Following the death of Yuri Galperin in December 2001, COSPAR appointed Ryo Fujii to be their representative on the SCOSTEP Bureau. He attended the annual SCOSTEP Bureau meeting held in Rio immediately after the ICSU G.A.

The Bureau took an extra day in Rio to meet with representatives of Latin American STP programs and scientific administration responsibility (mainly Brazilian) about the desirable future cooperation between Brazil and SCOSTEP during the CAWSES program. The Brazilian Adherent Representative, Prof. Pierre Kaufmann, shared with the Bureau copies of the latest issue of Scientific American magazine in which he had an article about Space Weather and the concluding paragraph talks about CAWSES.

After the SCOSTEP Bureau meetings in Rio, Joe Allen gave talks at MacKenzie University (Sao Paulo) and UNICAMP (Campesinas, Brazil) about Space Weather affecting satellites, humans, and ground technology, and about CAWSES.

The concluding SCOSTEP activity in Brazil was the concluding symposium of the PSMOS program, held at Foz do Iguassu, Brazil. About 100 participants were there. Much of the discussion time was about future programs and how to integrate the programs of PSMOS into CAWSES.

Information about the EPIC conference at the University of Kyoto campus in Uji City in March 2002 was given in the EPIC report section above. On the way to this meeting, the Scientific Secretary attended the GOMAC 2002 meeting (Government Microelectronics Application Conference) to give an invited review paper on "Historical and Recent Solar Activity and Geomagnetic Storms Affecting Spacecraft Operations." He attended as a representative of SCOSTEP and also spoke briefly about the future CAWSES program.

At the EPIC conference, the Scientific Secretary gave an invited talk about CAWSES on the last day of the meeting. Participants were

enthusiastic about the possibility to have their research programs integrated into CAWSES.

In **April** the NOAA Space Environment Center in Boulder, Colorado held their annual "Space Weather Week" and a number of participants associated with S-RAMP gave invited or contributed talks or presented poster papers. The emphasis of this meeting was mainly applications, and it was very interesting to have the opportunity to interact with persons who use understanding arising from STP research programs. Several of the participants are included on the SATELLITE ANOMALIES contact e-mail group list maintained at the SCOSTEP Secretariat by Joe Allen. They shared personal information about the effects of solar activity on satellites, aircraft flying polar routes, and the health of astronauts during energetic proton events.

The Russian-Chinese Joint Task Group on Space Weather met in Irkutsk in June. Several members of this group also are on the Anomalies e-mail list. In July the WPGM (Western Pacific Geophysics Meeting) 2000 was held in New Zealand. Dan Baker and Joe Allen organized a scientific session "Threats to Human Technology: The International Space Weather Program" on behalf of S-RAMP and involved participants from Australia, China, Germany, Japan, and New Zealand. Dan and Joe co-authored an invited All Union paper on the Space Weather Threat to Human Technology. Copies have been distributed to participants at SCOSTEP and other meetings on CD-ROM (with selected other Power Point talks on related topics). Requests were received at the Secretariat to allow the use of figures from the CD in lectures and other presentations.

In Shanghai the ICSU Scientific Committee on Antarctic Research (SCAR) held its XXVII<sup>th</sup> General Assembly. Prof. M. Candidi (Chairman of the Solar-Terrestrial research part of SCAR) invited SCOSTEP to send a representative to speak about CAWSES. The President asked the Scientific Secretary to make this trip and take the opportunity to continue on to visit SCOSTEP-related groups in Beijing. At the SCAR G.A., Joe Allen gave an invited paper on Recent Satellite Anomalies (2001-2002) and Space Weather. He gave a second paper about CAWSES. SCAR members were very interested in CAWSES and suggested a closer relationship between SCAR and SCOSTEP. This has since been realized when their Executive Committee appointed Prof. Candidi as the SCAR representative on the SCOSTEP Bureau. This renews a previous relationship between the two scientific committees that had elapsed almost a decade previously.

In Beijing the Chinese Committee on Space Research (CSSAR) hosted the Scientific Secretary and Prof. Xiao Zhou (Chair of the Chinese National Committee for SCOSTEP) organized a very busy schedule for the week

after SCAR. I gave one or two papers each morning and afternoon to different groups on the topics of Satellite Anomalies, Space Weather, and CAWSES. Many young Chinese space science students at Beijing University asked to be added to the e-mail list for current satellite anomaly information. It was a very interesting visit and hopefully will lead to closer cooperation between Chinese scientists and SCOSTEP.

In **July**, the ICSU Scientific Committee on Antarctic Research (SCAR) held its General Assembly in Shanghai, China. SCOSTEP was invited to participate, and I was asked to give a talk about CAWSES and another on satellite anomalies related to space weather. After the SCAR G.A., I visited Beijing for several meetings with representatives of Chinese agencies and institutions to discuss their future cooperation in SCOSTEP programs.

In **August**, the CAWSES Scientific Steering Group (SSG) met in Maastricht for a few days after the end of the URSI General Assembly. Marv Geller chaired the meeting so that the incoming Chair of the SSG, Sunanda Basu, would not be in a compromised position relative to her role in the US NSF. She retires in the middle of January 2003, and will move to Boston University. There she will actively lead the CAWSES SSG. The SSG members attending in Maastricht were Art Richmond, Joanna Haigh, Yohsuke Kamide, Jean-Louis Bougeret, and C.-H. Liu. At that meeting, they decided to ask Lev Zelenyi to join the SSG and he accepted. At the request of ICSU, the SCOSTEP Secretariat prepared a brochure talking about CAWSES for the General Assembly in September 2002. Four scientific program areas ("themes") were identified by the SSG: Solar Influence on Climate; Space Weather: Science and Applications; Atmospheric Coupling Processes; and Space Climatology. A "Townhall" session about CAWSES will be held at the 2003 joint AGU-EUG-EGS meeting in April at Nice, France. Sunanda Basu and leaders of the four programs will present their ideas about specific projects and solicit input from participants about national programs and international projects that will be consistent with CAWSES.

Also, in **August** Sunanda Basu (now Chair of the CAWSES Science Steering Group-SSG) participated in the URSI General Assembly and then led the first meeting for the SSG. Members of the SSG are from France, Germany, Japan, Russia, Taiwan, and USA. In a few days they defined the four principal scientific themes around which CAWSES research programs will emerge. These are: Solar Influence on Climate (Chair M. Lockwood), Space Weather: Science and Applications (Co-chairs J. Kozyra and K. Shibata), Atmospheric Coupling Processes (Chair F.-J. Luebken), and Space Climatology (Co-chairs C. Froehlich and J. Sojka). A fifth theme, to be overseen directly by the SCOSTEP Bureau, is the combined areas of Capacity Building and Education. An envelope-

sized brochure was prepared at the Secretariat. We mailed them to some 300 SCOSTEP members and passed them out at the ICSU General Assembly in Rio. Copies have been distributed at numerous scientific meetings and an updated version listing theme leaders and the new Bureau member was published to take to IUGG-2003.

President Geller attended the ICSU General Assembly in Rio de Janeiro in late September 2002. The SCOSTEP Bureau met following the G.A. They also met one day in a special discussion session with Brazilian science representatives for very fruitful presentations. After the end of the Bureau meetings, the Scientific Secretary visited McKenzie University in Sao Paulo and gave seminars on Satellite Anomalies and CAWSES. He also visited UNICAMP (University dos Campos) and gave similar talks. Then he attended the PSMOS wrap-up symposium at Foz do Iguassu, Brazil (see PSMOS report) in early October.

SCOSTEP joined COSPAR in supporting sessions of joint interest at the COSPAR General Assembly and World Space Congress in Houston, Texas later in October. ISCS organized one of the scientific sessions and Sunanda Basu took advantage of the opportunity to meet with space scientists to discuss their cooperation with CAWSES. Janet Kozyra and others met to discuss the Space Weather theme activities in CAWSES.

At the Fall Meeting of the American Geophysical Union (AGU) Sunanda held an ad hoc meeting of CAWSES SSG and Working Group leaders. Later in December NOAA and NASA organized a meeting in Washington, D.C. with Indian leaders in space programs and invited Sunanda Basu to participate. She also was invited to be part of a planning program meeting for NASA's Living With A Star (LWS) and representatives from space agencies of other nations to discuss internationalizing LWS. She gave a presentation on CAWSES.

In **October** 2002 at the World Space Congress and COSPAR General Assembly in Houston, Texas there was participation by SCOSTEP's ISCS members in sessions on solar activity. Sunanda Basu made a number of contacts with scientists who propose to conduct the International Heliospheric Year (IHY) on the 50<sup>th</sup> anniversary of IGY (2007-2008). She also attended meetings at NASA about internationalizing the Living With A Star (LWS) program, and at NOAA about cooperative programs with the Indian Space Agency. Finally, there were meetings of opportunity and scientific sessions involving SCOSTEP participants at the Fall AGU meeting in San Francisco.