

## NEWSLETTER

### *In this issue:*

- Foreword*
- 1. *Message from the President*
- 2. *SCOSTEP General Assembly and Election*
- 3. *CAWSES*
- 4. *Reports on Meetings*
- 5. *Upcoming Events*
- 6. *General Information about SCOSTEP*

### FOREWORD

This is the first issue of the SCOSTEP Newsletter after moving the SCOSTEP Secretariat to York University in Toronto, Canada in the summer of 2010. The year 2011 was a very active year for SCOSTEP (*Scientific Committee on Solar-Terrestrial Physics*) and its CAWSES (*Climate And Weather of the Sun-Earth System*) programme. In July 2011 the SCOSTEP General Council held an election for new SCOSTEP Executives, President and Vice-President during the IUGG General Assembly in Melbourne, Australia, June 27 – July 7. A summary on the results from this election is presented. There were also changes in the representation of various organizations like IUPAP, COSPAR, IAMAS, and URSI to the SCOSTEP Bureau. In September 2011 new Co-chairs for the CAWSES programme were appointed. Brief information on these appointments is also provided.

The issue contains information on the SCOSTEP supported scientific conferences and workshops during 2011.

Finally information on upcoming events is also given. More detailed information can be found on the SCOSTEP Website (<http://www.yorku.ca/scostep/>).

News on SCOSTEP-related activities is distributed via e-mail to all members of the General Council, including the Bureau, National Adherent Representatives, Science Discipline Representatives and the CAWSES Co-chairs and Theme Group Leaders. The issue may be freely distributed to the Solar-Terrestrial Community at large. A copy of the Newsletter is available to the general public at the SCOSTEP Website.

*Marianna Shepherd*  
(*Scientific Secretary*)

### 1 MESSAGE FROM THE PRESIDENT

SCOSTEP is functioning in full gear with a number of major accomplishments in the past six months. The SCOSTEP Bureau – the policy-making body of SCOSTEP – has several new members representing international scientific unions and organizations. The full Bureau already met in October 2011 and made important decisions regarding the growth and efficient functioning of SCOSTEP. The list of scientific discipline representatives (SDRs) has been updated to truly reflect the current developments in our scientific disciplines, keeping in mind the geographic and gender balance. SCOSTEP welcomes all the new SDRs and looks forward to working with them to accomplish the objectives of SCOSTEP. As you know, SCOSTEP promotes scientific advancement in solar terrestrial physics (STP) by providing the necessary scientific framework for international collaboration and dissemination of the derived scientific knowledge.



A constitutional committee has been established, which is busy working out details on the constitutional amendments needed for the efficient functioning of SCOSTEP, given the rapid growth of our community over the past several decades. Another committee was set up to develop a detailed procedure to honor members of our community recognizing their service in tirelessly promoting SCOSTEP and those who have made outstanding contributions to the advancement of STP science. Both these committees will submit their reports to the Bureau, which will discuss them during the next Bureau meeting to be held in Vienna, Austria adjacent to the EGU meeting in April 2012.

The current scientific program of SCOSTEP is the Climate and Weather of the Sun-Earth System (CAWSES), which is in the second and final phase to conclude by the end of next year (2013). New co-chairs were appointed who have already started working closely with the CAWSES Task Groups, making use of the modern virtual conference facilities. Only minor changes have been made to the Task Group leadership. Efforts are also underway in setting up the next SCOSTEP scientific program to take effect in 2014. CAWSES-India

and CAWSES-Japan are actively involved in organizing symposia in 2012 and 2013, respectively in Pune India and Nagoya Japan. The proposal from China to hold the next STP symposium (STP<sub>13</sub>) has been accepted by the Bureau. STP<sub>13</sub> will take place in XiAn, China in August 2014. These meetings will highlight the accomplishments of the CAWSES program and reflect SCOSTEP's broader global collaboration with other international organizations such as the International Living With a Star (ILWS) and the International Space Weather Initiative (ISWI) that are involved in complementary aspects of STP research.

SCOSTEP has expanded its capacity building to include activities specific to the current scientific program (CAWSES) and STP in general. SCOSTEP is cosponsoring many sessions of interest to the STP community at the COSPAR Scientific Assembly in July this year in India. SCOSTEP is planning to display and distribute outreach and promotional materials during the assembly.

The SCOSTEP Newsletter you are reading is the newest channel to effectively communicate with the STP community. SCOSTEP has also a new web site (<http://www.yorku.ca/scostep/>). The web site already provides important links to on-line scientific literature and outreach material. Online resources specific to the CAWSES program will be available from [http://www.cawses.org/wiki/index.php/Online Resources](http://www.cawses.org/wiki/index.php/Online_Resources). The STP community is encouraged to contribute to these online resources.

SCOSTEP delegates participated in the deliberations of the 30<sup>th</sup> General Assembly of the International Council for Science (ICSU) held in Rome during late September 2011. SCOSTEP, as one of the interdisciplinary bodies of ICSU, conducts activities consistent with ICSU priorities and its mission to "strengthen international science for the benefit of society" in the STP area. ICSU has twenty interdisciplinary bodies representing various fields of science and SCOSTEP is uniquely positioned to promote solar-terrestrial and space science that have wide-ranging implications to the human society.

We have had a good start and are on the way to face challenges and accomplish a lot more to the continued growth and expansion of SCOSTEP.

Wish you all the very best for a great 2012!

Nat Gopalswamy

## 2 SCOSTEP GENERAL COUNCIL MEETING AND ELECTION

SCOSTEP organizes and conducts international solar-terrestrial physics (STP) programs of finite duration in cooperation with other International Council for Science (ICSU) bodies. Results from these programs are shared with the community of SCOSTEP scientists by joining in conducting meetings, conferences, and workshops and by publishing newsletters, handbooks and special journal issues.

The relevant ICSU bodies are represented in SCOSTEP by the Bureau members (IAU, IAGA, IAMAS, IUPAP, COSPAR, URSI, SCAR; IUGG has a liaison).

SCOSTEP is one of the 17 interdisciplinary bodies of ICSU, along with COSPAR and SCAR.

The general requirement for conducting a scientific program is that it be approved by at least two of the participating bodies. The current scientific programme supported by SCOSTEP is the Climate and Weather of the Sun-Earth System (CAWSES - Phase II).

There have been a number of changes in the SCOSTEP Secretariat since July 2010, when the Office was moved to York University, Toronto and is supported by the Canadian Space Agency and the Centre for Research in Earth and Space Science of York University. A number of activities were undertaken in preparation for the SCOSTEP Election of new Executive officers, which took place in July 2011. All members of the General Council were contacted and contact information verified (total 85); a new web site was created (<http://www.yorku.ca/scostep/>); a contest for a new SCOSTEP Logo was held, and all members of the GC received election kits with information on the candidate for Election of new SCOSTEP Executive Officers. The SCOSTEP Bureau met on July 2, 2011 in Melbourne, Australia during the IUGG General Assembly (June 28 – July 7, 2011) and reviewed the state of the organization to date. The Bureau thanked the SCOSTEP President Prof. Robert Vincent and Vice-President Dr. Brigitte Schmieder for their contribution to SCOSTEP. On July 3, 2011 a meeting of the General Council was held to elect new SCOSTEP Executive Officers, President and Vice-President. All members of the General Council cast their ballots by mail. From the 85 Members contacted, 75 voted, or 88% of the total, electing Dr. Natchimuthuk (Nat) Gopalswamy (NASA/GSFC) for SCOSTEP President and Prof. Dr. Franz-Josef Lübken (Leibniz Institute of Atmospheric Physics) – for Vice-President. The General Council also selected the new logo and the one receiving the most votes was approved as the new SCOSTEP logo.

In 2011 there were changes in the SCOSTEP Bureau as well, with new appointments for the ICSU bodies represented by: Mark Lester (IUPAP), Lee-Anne McKinnell (URSI), Takuji Nakamura (COSPAR), and David Siskind (IAMAS). (For more information on the SCOSTEP Bureau please see the SCOSTEP Website).

On October 9-10, 2011 the SCOSTEP Bureau held its first meeting after the Elections in Melbourne, which took place in Greenbelt, MD (near Washington, DC). Some of the decisions made are given below.

It was decided that the CAWSES Virtual Institute (VI) should be reorganized according to the current needs of the CAWSES programme. The basic concept of the VI was to serve as a forum for discussions and information on Solar-Terrestrial Physics. The concept for using the internet as a medium of outreach and training need be reconsidered and it was suggested that the VI be converted to an on-line resource database with links to other outreach sites (e.g. NASA, JAXA, CNES, CSA, ...), which already have experience with the organization of the information and are easily accessible and free of charge. The idea has already been discussed with Dr. Janet Kozyra, who was responsible for the VI. (Some of these links are already available on the SCOSTEP website (<http://www.yorku.ca/scostep/>)). The links will be extended and updated as new information becomes available on an on-going basis. The new VI will consider including also information on meta-data and will be linked with Internet sites where such information is available. Tutorial lectures presented at various conferences and workshops will be recorded or compiled and made part of the VI, thus creating a virtual library. Using the Y-Tube as a medium for such tutorial lectures; all these are intended to be a part of the SCOSTEP/CAWSES Capacity building activity.

The time and sites of future SCOSTEP/CAWSES meetings were also selected as follows:

**November 5 - 12, 2012:** *International symposium on Solar Terrestrial Physics: ISWI-CAWSES Joint meeting, Pune, India*

**November 18 - 22, 2013:** *International CAWSES symposium, Nagoya, Japan*

**August 25-28, 2014:** *STP13 Xi'an, China*

Information about these conferences will be posted on the SCOSTEP Website as it becomes available.

### 3 CAWSES

In September 2011 the Bureau unanimously approved the appointment of new CAWSES Co-chairs, Dr. Joseph M. Davila (NASA/GSFC) and Prof. Toshitaka Tsuda (RISH/Kyoto University), who replaced Dr. Susan Avery (Woods Hole Oceanographic Institution) and Dr. Alan Rodger (British Antarctic Survey).

Joe Davila conceived and implemented the STEREO mission, has been Executive Director of the IHY Secretariat and is currently leading the ISWI. He was Principal Investigator for the Solar Extreme-ultraviolet R Telescope and Spectrograph (SERTS) and has conducted research on the structure of the solar corona.

Toshitaka Tsuda has been a Bureau member for many years; he was involved in the PSMOS programme and is familiar with SCOSTEP. He is the Director of Research Institute for Sustainable Humanosphere (RISH) in Kyoto University. He has also been working on atmospheric coupling processes as part of CAWSES II.

SCOSTEP is grateful for their willingness to serve.

At the SCOSTEP Bureau meeting in Greenbelt T. Tsuda and J. Davila presented an action plan for implementation in the remaining time of the CAWSES programme. As a part of this plan the CAWSES web page at [www.cawses.org](http://www.cawses.org) will be reactivated. The site will continue functioning until the end of the CAWSES programme in 2013.

The Co-chairs have divided the responsibilities for the CAWSES themes as follows: Joseph Davila is responsible for TG<sub>1</sub> (Annika Seppälä) and TG<sub>3</sub> (Kazunari Shibata & Joe Borovski), while Toshitaka Tsuda is responsible for TG<sub>2</sub> (Daniel Marsh & Jan Laštovička) and TG<sub>4</sub> (Jens Oberheide & Kazuo Shiokawa).

Combined meetings between several TG's will be encouraged in order to enhance interaction and mutual understanding. Significant effort will be invested in Capacity building by providing intensive lecture series, training courses, capacity building sessions as a part of a workshop, etc. These should also be addressed within the more general workshops wherever possible.

TG leaders will strongly be encouraged to propose a session(s) at various international assembly; AGU, EGU, AOGS, JpGU, thus broadening the SCOSTEP/CAWSES scientific outreach. It was suggested that the CAWSES TG leaders should have working meeting independently of the Bureau meeting and more frequently to review the CAWSES activities.

Collaboration between CAWSES and ISWI, ILWS, etc will be promoted and increased.

#### 4 REPORTS ON MEETINGS: SCOSTEP SUPPORTED OR WITH SCOSTEP INTEREST

##### 4.1 4th International Space Climate Symposium, January 16-21, Goa (India)

The 4th International Space Climate Symposium, Space Climate was held in Goa, India between 16<sup>th</sup> –21<sup>st</sup> January, 2011. This meeting brought together researchers from around the world to discuss the causes of the long-term variability of the Sun and its consequences, including its modulation of climate and the radiative and particulate environment in the heliosphere. The symposium had a special session dedicated to observations and modeling of the unusual minimum in solar activity at the end of solar cycle 23.

The sessions were structured around tutorial lectures reviewing major sub-fields of Space Climate, invited lectures summarizing recent advances in our understanding in those fields, and contributed lectures and posters reporting relevant research. There were 92 participants in attendance drawn from Asia, Europe and North America. Further details on this meeting are available online at the websites:

<http://www.iiserkol.ac.in/~spaceclimate4/>

(Dibyendu Nandi)

##### 4.2 4th IAGA/ICMA/CAWSES-II TG4 Workshop on Vertical Coupling in the Atmosphere/ Ionosphere System, February 14-18, Prague (Czech Republic)

The 4th IAGA/ICMA/CAWSES-II TG4 Workshop on "Vertical Coupling in the Atmosphere/Ionosphere System" was held in Prague, Czech Republic, February 14- 18, 2011. The meeting was attended by a total of 75 senior and young scientists from 16 countries. During the 5-days workshop the participants presented 79 papers, from which 16 were solicited presentations. Before official opening of the workshop there were two public/educational lectures (By Esa Turunen and Mike Taylor) attended mainly by students from Prague grammar schools and university. The aim of the workshop was not only to address the physics behind the forcing mechanisms that originate in the lower atmosphere and play an important role on the upper atmosphere and ionosphere, but also to show the solutions of some of the problems which were only formulated during the 3rd IAGA/ICMA Workshop held in 2006 in Varna, Bulgaria. The meeting was designed so that research experts from both the middle and upper

neutral atmosphere and ionosphere communities come together in order to present their work and assess/debate ongoing issues related to the theoretical, modeling and observational aspects of all kind of processes which transfer energy and momentum from the lower atmosphere to the upper atmosphere and ionosphere and vice versa. The programme focused on various aspects and topics of neutral dynamics as well as ionospheric electrodynamics and plasma physics. These included: 1) Coupling processes in the middle atmosphere, through planetary waves, mean flows and temperature variability; Gravity wave and tidal forcing of the middle atmosphere, and the role of dynamics, solar variability and greenhouse gasses on the chemical structure and feedback processes.

2) Coupling processes in the atmosphere/ionosphere system, due to: dynamical forcing of the ionosphere from below; and electrodynamic coupling and plasma instabilities; the role of electrical processes in the coupling.



*Figure 1: Group photo of the participants in the 4<sup>th</sup> IAGA/ICMA/CAWSES-II Workshop*

This workshop brought together a mix of scientists doing mostly independent research on the fields of the MLT neutral atmosphere and the ionosphere, that is, on two collocated "spheres" of the near earth environment which remain closely coupled and in a continuous interaction. The meeting provided an excellent opportunity for these research communities to interact in a supplementary manner in reviewing and debating the progress done to date in the field of the upper atmosphere/ionosphere and come up with suggestions and ideas for further research on the vertical coupling of the atmosphere-ionosphere system.

The presentations at this Workshop will be published in a special issue of JASTP. The team of Guest Editors includes: Dora Pancheva (Geophysical Institute, BAS, Sofia, Bulgaria), Petra Koucka Knizova (Institute of Atmospheric Physics, CAS, Prague, Czech Republic), Kazuo Shiokawa (Solar-Terrestrial Environment Laboratory, Nagoya University, Japan) and Weixing Wan

(Institute of Geology and Geophysics, Chinese Academy of Sciences, China).

(Petra Koučka Knižova)

#### 4.3 Chapman Conference on Gravity Wave Effects on General Circulation and Climate, February 28 - March 4<sup>th</sup>, Honolulu (Hawaii)

Chapman Conference on "Gravity Wave Effects on General Circulation and Climate" was held from 28 February through 4 March, 2011 at the East-West Center in Honolulu, Hawaii. The conference conveners were M. Joan Alexander, Kevin Hamilton and Kaoru Sato. The conference was attended by 87 scientists including 11 students from India, Argentina, Canada, England, Japan, Korea, Slovenia, France, Germany and The Netherlands. (<http://www.agu.org/meetings/chapman/2011/ccall/>)

(On behalf of Joan Alexander)

#### 4.4 3<sup>rd</sup> International Workshop, Solar influences on the magnetosphere, ionosphere and atmosphere, June 6-10, Sozopol (Bulgaria)

The 3<sup>rd</sup> International workshop "Solar influences on the magnetosphere, ionosphere and atmosphere" was held in Sozopol, Bulgaria, during 6 - 10 June 2011. The scientific programme was comprised by the scientific program of the workshop: 1) Sun and solar activity, 2) Solar wind-magnetosphere-ionosphere interactions, 3) Solar effects in the ionosphere, 4) Solar influences on the lower atmosphere and climate, 5) The variable Earth radiation field and its impact on humans, 6) Instrumentation for space weather monitoring, 7) Data processing, modeling and e-science.

The program included invited lectures summarizing recent advances in our understanding in those fields, and contributed lectures and posters reporting relevant research. A total of 10 oral and 4 poster sessions were held at which 86 papers were presented, out of those 5 were invited, 40 were oral and 41 were given as poster presentations. For more information on the workshop please see:

<http://www.stil.bas.bg/WS-sozopol/>

(Katya Georgieva)

#### 4.5 FTM-2Workshop, July 20-31, Kyoto/Hida Observatory (Japan)

The first FMT data analysis workshop at UNICA in Peru was held in November, 2010 (<http://esi.igp.gob.pe/FMTworkshop/>) to educate young

students and researchers how to analyze solar data taken by FMT and how to use a spectroscope for solar observations. This workshop was partly supported by CAWSES-II, and was very successful.



**Figure 2:** A lecture by Prof. K. Shibata, Jul 20, 2011 (left) and Summary report by Peruvian young scientists, Jul 27, 2011 (right)

As a continuation of the previous FMT workshop, a second FMT Workshop "Japan-Peru: FMT Summer School and Data Analysis Workshop" was held during July 20-27, 2011 at Hida Observatory, Kyoto University in Japan, and during July 28-31, 2011 at National Astronomical Observatory of Japan (NAOJ) (<http://www.kwasan.kyotou.ac.jp/CHAIN/WS/2011Jul/>). The purpose of the summer school/workshop was to teach students and young researchers how to analyze solar data more deeply and to teach them how to write scientific papers by using solar data (<http://cawses-ii-wg3.blogspot.com/2011/07/chain-peru-japan-fmt-workshop-hida.html>). There were about 30 participants, including 5 Peruvian young scientists at the workshop held at Hida Observatory. This FMT-Workshop was hosted by Kwasan and Hida Observatories, Kyoto University, Japan and NAOJ, and was financially supported by CAWSES-II and STE Laboratory of Nagoya University, Japan.



**Figure 3:** Group photo of FMT-WS at Hida Observatory (July 20, 2011)

The workshop continued at Hida Observatory with lectures on solar physics, space weather physics, and

solar active phenomena especially related to FMT. There were also tutorial lectures on how to access (download) and analyze solar observational data not only by FMT, but also by other ground-based and space-born instruments. The young Peruvian scientists reported recent observation by FMT in Peru. In additions to the lecture the attendees concentrated on data analysis of targets events determined during the discussion. Work on the data analysis has continued after the WS, and the results will be presented as scientific papers in near future.

At NAOJ the participants learned how to use a spectroscope and carried out actual spectroscopic observation by using a Coelostat, as well as learned how to analyze spectroheliogram, so that they would be able to obtain the data by operating the Coelostat-spectroscope of UNICA in near future. During the workshop at NAOJ, the participants also attended an international solar physics seminar, on "Quiet Sun magnetic field".

*(On behalf of Jose Ishitsuka & Kazunary Shibata)*

#### 4.6 ISWI-Europe Summer School in Space Science, Aug 21-27, Tatranská Lomnica (Slovakia)

The 2011 ISWI – Europe Summer School in Space was held from August 21 to August 27, 2011 at the Astronomical Institute of the Slovak Academy of Sciences, in Tatranská Lomnica, Slovakia. Twenty five scientists from 11 countries gave invited lectures on the Solar corona and the inner heliosphere; Solar Eruptions, CMEs and Space Weather; CMEs / Data Analysis; Effects of Solar Activity on Earth's Climate Solar Energetic Particles, Solar Radio Emission Processes, Long-term Trends in the Ionosphere and Upper Atmosphere and other space weather topics. The workshop was attended by 76 scientists from 26 countries including 46 students.



**Figure 4:** Group photo of the participants in the ISWI-Europe Summer School 2011

The lectures presented at the workshop could be found at

([http://stara.suh.sk/id/iswi/summer\\_school/scientific\\_program](http://stara.suh.sk/id/iswi/summer_school/scientific_program) ). Photos from the event could be found at [http://stara.suh.sk/id/iswi/summer\\_school/photos](http://stara.suh.sk/id/iswi/summer_school/photos)

*(On behalf of Ivan Dorotovič)*

#### 4.7 IAU Symposium 286, Comparative Magnetic Minima: Characterizing quiet times in the Sun and Star, Oct 3-7, 2011, Mendoza (Argentina)

IAU Symposium 286, "Comparative Magnetic Minima: Characterizing Quiet Times in the Sun and Stars", was held in Mendoza, Argentina during October 3 - 7, 2011. The meeting was attended by 93 scientists from 23 countries, Argentina, Belgium, Brazil, Colombia, Costa Rica, Denmark, Finland, France, Germany, Hungary, India, Israel, Italy, Japan, Mexico, Peru, Romania, Russia, Turkey, Spain, Sweden, Switzerland, UK, and USA.

The goal of IAU S286 was to consider solar and stellar minima, from generative dynamo mechanisms, to in depth analyses from Sun to Earth for recent well observed and modeled minima, to the range in stellar cyclic activity, to outlier "grand minima". Solar, heliospheric, geospace, atmospheric, stellar, and planetary science were included in the meeting's scope.



**Figure 5:** Group photo of the participants in the IAU S286 Symposium

At the meeting, both invited and contributed presentations were given describing how magnetic fields can be cyclically generated in solar and stellar interiors via various dynamo processes. Numerical models have increased in complexity to the point where many observed aspect of cycles in the Sun and stars are captured, although mysteries still remain. The question of the origins and implications of Grand Minima, for the

Sun Earth system and also other stellar planetary systems, was the subject of several presentations. Both stellar observations and historical and cosmogenic records at the Earth were presented to form a basis of understanding of such fascinating intervals, and of solar/stellar long term variability in general. The recent extended solar minimum was examined in detail from Sun to Earth, provoking discussions of the possibility of a trend in the Sun's current magnetic cycles towards a Grand Minimum, and the potential implications for the Earth's climate.

(Cristina Mandrini)

#### 4.8 10<sup>th</sup> Layered Phenomena of the Mesopause Region, 24-27 October, Blacksburg Virginia (USA)

The 10<sup>th</sup> Layered Phenomenon of the Mesopause Region was held in Blacksburg Virginia, 24-27 October, 2011. This was the 10<sup>th</sup> symposium in a series which has become a regular biennial (triennial prior to 2007) catalyst for advancing our understanding of ice layers in the region of the mesopause and the environment in which they form. The workshop provides a forum for presentation and discussion of new results, new questions and new ideas ranging from the microphysics of mesospheric particles to the global processes controlling the state of the mesosphere. Researchers from all perspectives are invited to participate including ground-based, in-situ, and satellite measurements laboratory studies as well as modeling and theoretical studies on mesospheric ice phenomena and their coupled dynamical, radiative, chemical, and plasma environment. The workshop promotes discussion of the current state of knowledge and of future directions for international, interdisciplinary cooperation.

The workshop consisted primarily of oral talks, some posters, and significant time for interaction and discussion. There were 40 scientists attending the workshop including 8 students. The focus areas of the Workshop were well within the scope of CAWSES-II and specifically related to Tasks 2 (Project 3) and 4. Project 3/Task 2 is "PMC/NLC altitude, frequency and brightness changes related to changes in dynamics and chemical composition". This is one of the overarching themes of LPMR and therefore the workshop. Project 1/Task 4 "How do atmospheric waves connect tropospheric weather with ITM variability?" is also highly relevant as mesospheric ice layers are very sensitive to wave forcing from below. This area has received increased interest in recent years and so will be central to the workshop.

The SCOSTEP support facilitated capacity building as it provided a unique forum bringing together researchers

from a variety of approaches, both active and passive ground and space based observers as well as modeling and theoretical. It has always been an important aspect of all LPMR workshops to encourage young researchers and students to participate and interact with more senior researchers.



**Figure 6:** The participants of the 10th LPMR Workshop at Virginia Tech. Not shown are invited keynote speaker John J. Olivero, James M. Russell III, Chad Fish, Justin Yonker, and David Fritz

An important outcome of the workshop is the formation of six sub-working groups to attack focused areas where further work is needed. The topics are: unifying the many data sets; understanding observations of ice particle size distributions; the role of small scale forcing such as gravity waves and turbulence; the role of tides and local time variability; the role of metal layers and surface chemistry; and global connections.

A special issue of the Journal for Atmospheric and Solar Terrestrial Physics has been proposed to publish results from the workshop. The next LPMR workshop is planned for summer 2013 at the University of Leeds, England.

For further information on the workshop program please see

<http://www.cpe.vt.edu/LPMR/LPMRprogram.pdf>

(Scott Bailey)

#### 4.9 2<sup>nd</sup> LISN Workshop, November 7-11, 2011, São José dos Campos (Brazil)

During the last few years, the Low latitude ionospheric sensor network (LISN) community has installed over 40 GPS receivers and 5 magnetometers across the South American continent. This instrumentation has spurred several innovative

investigations in aeronomy and space physics. LISN is about to start with the installation of 4 state-of-the-art ionosondes at locations closely aligned with the magnetic meridian that crosses the magnetic equator at 67° W. The new deployments will increase the capability of the LISN network to achieve a forecasting capability of the equatorial spread F (ESF) phenomena. The 2<sup>nd</sup> LISN workshop was organized to motivate the new members to learn about the LISN instrumentation and science and to engage them in scientific projects and campaigns. The LISN workshop also aimed at starting, and in other cases deepening, the collaborations between the US and South American members of the LISN community and a plan of scientific investigations in Space Weather was outlined. The Workshop was held at the campus of the Instituto Nacional de Pesquisas Espaciais (INPE) at Sao Jose dos Campos in Brazil between November 7 and 10, 2011. The workshop had four themes: (1) New instrumentation, their observable quantities and analysis techniques; (2) Discussions on the physics of the day-to-day variability of the low-latitude ionosphere and the development of a method to predict the initiation of equatorial spread F (ESF); (3) Talks and workshop discussions on space weather applications and the role of LISN on the development of an augmentation system in South America; (4) Define new projects and campaigns to achieve the scientific and forecasting goals.



*Figure 7: The participants in the 2<sup>nd</sup> LISN Workshop.*

One of the outcomes of the international conference has been to develop a plan for investigations and campaigns that will make it possible to forecast communication outages and to correct navigation errors. These projects will have a decisive influence on the development of emerging aeronautical navigation satellite systems in South America and will be part of a global navigation system.

For further information on LISN the reader is referred to: <http://lisn.igp.gob.pe/>

*(On behalf of Cesar Valladares)*

## 5 UPCOMING EVENTS IN NEXT 3 MONTHS

**March 12 – 17, 2012:** 13th International Symposium on Equatorial Aeronomy, Paracas, Peru,  
<http://jro.igp.gob.pe/isea13>

**March 19 – 23, 2012:** 13th Workshop on Technical and Scientific Aspects of MST Radar (MST13), Kühlungsborn, Germany, <http://www.iap-kborn.de/MST13/>

## 6 GENERAL INFORMATION ABOUT SCOSTEP

### 6.1 SCOSTEP Web

Information on SCOSTEP can be found at:  
<http://www.yorku.ca/scostep/>

### 6.2 SCOSTEP contact

The Scientific Secretary is the main point of contact for all matters concerning SCOSTEP.

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