



## The Scientific Committee on Solar-Terrestrial Physics (SCOSTEP) ANNUAL REPORT (1 JANUARY – 31 DECEMBER 2022)

*Prepared by Kazuo Shiokawa, SCOSTEP President*

SCOSTEP is a thematic body of the International Science Council (ISC). Its long-term objectives include promoting international interdisciplinary programs of finite duration in solar-terrestrial physics, specifically to:

- Develop and sustain student interest in Sun-Earth connections,
- Promote efficient exchange of data and information between solar and terrestrial scientists in all countries,
- Seek projects and programs that cross over transitional boundaries of physical regions and focused scientific disciplines.

SCOSTEP is engaged in science, capacity building and public outreach to achieve these objectives in cooperation with other scientific organizations and scientific unions of the ISC. These other organizations are the Participating Bodies of SCOSTEP. These include COSPAR, IAGA/IUGG, IAMAS/IUGG, IAU, IUPAP, SCAR, URSI and WDS. The SCOSTEP Bureau consists of representatives of all of these scientific bodies, making it a truly interdisciplinary body.

The report that follows covers the period of 1 January to 31 December 2022. It reflects the activities carried out by the organization and its scientific programs. The year 2022 was a challenging period for SCOSTEP during the recovery time of the worldwide COVID-19 pandemic and the sudden passing of the Scientific Secretary, Patricia Doherty, on 14 July 2022. However, SCOSTEP continued to reach out to the solar-terrestrial physics community by participating in and hosting virtual programs; providing grant opportunities for meetings, workshops, database development; the launch of a series of online seminars; and the SCOSTEP Visiting Scholar program. SCOSTEP also held its annual awards program for Distinguished Scientist and Distinguished Young Scientist awards.

This report provides details on activities carried out in the year 2022. All these events and opportunities were communicated to the SCOSTEP scientific community via the SCOSTEP Newsletters and public announcements on relevant scientific community mailing lists.

### **1. SCOSTEP EXECUTIVES AND BUREAU MEMBERS**

The SCOSTEP Executives for the period 2019-2023 include:

President: Dr. Kazuo Shiokawa, Nagoya University, Japan

Vice President: Dr. Daniel Marsh, NCAR (USA) and University of Leeds (UK)

Past President: Dr. Nat Gopalswamy, NASA, USA  
 Scientific Secretary, Patricia Doherty (until July 2022) and Keith Groves (after September 2022), Boston College, USA

The SCOSTEP Bureau is comprised of the Executives named above together with representatives of SCOSTEP participating organizations. The representatives are appointed by the Secretary General of their organizations. In 2022, the Bureau members representing their organizations include: Yoshizumi Miyoshi (COSPAR), Renata Lukianova (IAGA/IUGG), Peter Pilewskie (IAMAS), Kyung-Suk Cho (IAU), Prasad Subramanian (IUPAP), Annika Seppälä (before February 2022) and Lucilla Alfonsi (after March 2022) (SCAR), Jorge Chau (URSI) and Mamoru Ishii (WDS).

The SCOSTEP Bureau directs the scientific, administrative, and financial activities of SCOSTEP. The Bureau meets at least once annually. In 2022, the SCOSTEP Bureau met virtually on 18 November 2022.

## 2. CAPACITY BUILDING AND OUTREACH ACTIVITIES

SCOSTEP is actively involved in the advancement of Capacity Building and scientific excellence through its scientific programs and partnerships with the ISWI, ISC and URSI. Through its initiatives, e.g., Space Science Schools, SCOSTEP Visiting Scholarships (SVS), and online capacity building lectures, SCOSTEP facilitates the training, interaction and collaboration of young and early career scientists with prominent members of the STP scientific community.

### 2.1 WORKSHOPS AND SCHOOLS

Each year, SCOSTEP supports a number of workshops and schools. SCOSTEP provides financial support for travel and subsistence for participants from developing countries. In 2022, SCOSTEP supported the following 5 schools in Spain, Bulgaria, Côte d’Ivoire, Argentina, and Finland. Detailed reports of these schools are shown in the SCOSTEP/PRESTO Newsletters (<https://scostep.org/newsletter-archive>) and the websites of each school.

(1) The Iberian Space Weather School, June 6-10, 2022, University of Alcalá, Spain (<https://www.i4s-iberian-space-science-summer-school.com/>)



Iberian Space Weather School

(2) The 2nd summer school on Space research, technology and application, 3-10 July 2022, National Astronomical Observatory (NAO) – Rozhen, Bulgaria ([https://bulgarianspace.online/second-summer-school\\_2022/](https://bulgarianspace.online/second-summer-school_2022/))



The 2nd summer school on Space research, technology and application

(3) 5th edition of the ISWI Maghreb Afrique de l’Ouest (IMAO) school, Houphouët Boigny University, Abidjan, 17-28 October, 2022, Côte d’Ivoire



5th edition of the ISWI Maghreb Afrique de l’Ouest (IMAO) school

(4) The International Workshop on Machine Learning for Space Weather: Fundamentals, Tools and Future Prospects, 7-11 November 2022 in Argentina (<http://indico.ictp.it/event/9840/>).



The International Workshop on Machine Learning for Space Weather: Fundamentals, Tools and Future Prospects

(5) 10th VERSIM Workshop and School, VLF/ELF Remote Sensing of Ionosphere and Magnetosphere, 7-11 November 2022, Sodankyla Geophysical Observatory, Finland (<https://www.sgo.fi/Events/VERSIM/>)



10th VERSIM Workshop/School, VLF/ELF Remote Sensing of Ionosphere and Magnetosphere

## 2.2 SCOSTEP VISITING SCHOLAR (SVS) PROGRAM

The objective of the SVS program is to provide training to graduate students from developing countries in established laboratories of solar-terrestrial physics for periods of 1 to 3 months. The SVS program is open to applicants from all countries but encourages and prioritizes applicants from developing countries. The program is open to Masters and PhD students with the requirement that the recipient has not received a PhD at the time of application to the program. SCOSTEP supports round-trip airfare for the students and the host institutions supports the cost of stay for 1-3 months for these students.

In 2022, SCOSTEP received 23 proposals and awarded the following 20 SVS awards. Although travel limitations due to COVID-19 continue, 16 SVS award recipients have stayed at their host institutions to conduct international collaborative research.

	Name	Home Institute	Host Institute
1	Aderonke Adekemi Obafaye-Nee Akerele	Bowen University and National Space Research and Development Agency, Nigeria	South African National Space Agency, South Africa
2	Adithya H.N.	Young innovators, Educational Services Pvt. Ltd., India	ISEE, Nagoya Univ., Japan

3	Oscar Batalla	National and Autonomous University of Mexico, Mexico	University of Oulu, Finland
4	Nilam Yashwant Bhosale	Indian Institute of Geomagnetism, India	NASA Goddard Space Flight Center, USA
5	Nilesh Chauhan	Indian Institute of Geomagnetism, India	ISEE, Nagoya Univ., Japan
6	Anoruo Chukwuma Moses	Univ. of Nigeria, Nigeria	ISEE, Nagoya Univ., Japan
7	Gourav Mitra	Physical Research Laboratory, Ahmedabad, India	Leibniz Inst. For Atmospheric Physics, Germany
8	Hagar Mohamed Salah Hussein	Helwan University, Egypt	National Space Research and Development Agency, Nigeria
9	Maheswaran Veera Kumar	Sastra University, Thanjavur, India	ISEE, Nagoya Univ., Japan
10	Onyinye Gift Nwankwo	University of Michigan, MI, USA	ISEE, Nagoya Univ., Japan
11	Stephan Owino Omondi	Egypt Japan Univ. of Science and Technology, Egypt	Kyushu University, Japan
12	Taiwo Olusayo Osanyin	INPE, Brazil	South African National Space Agency, South Africa
13	Pankaj K Soni	Indian Institute of Geomagnetism, India	ISEE, Nagoya Univ., Japan
14	Pooja Devi	Kumaun University, India	NASA Goddard Space Flight Center, USA
15	Rahul Rathi	Indian Institute of Technology, India	ISEE, Nagoya Univ., Japan
16	Srikar Paavan Tadepalli	Indian Institute of Technology, India	NASA Goddard Space Flight Center, USA
17	Sunil Kumar	Physical Research Laboratory, India	Leibniz Inst. For Atmospheric Physics, Germany
18	Theogene Ndacyayisenga	University of Rwanda, Rwanda	National Space Research and Development Agency, Nigeria
19	Rukundo Wellen	Egypt Japan University of Science and Technology (E-JUST), Egypt	ISEE, Nagoya Univ., Japan
20	Mr Yogesh	Physical Research Laboratory, India	NASA Goddard Space Flight Center, USA

This is a very competitive program of SCOSTEP. As such, we encourage worldwide laboratories to consider hosting students in the future. As in the past, SCOSTEP will provide the airfare for SVS awardees and the host laboratory is responsible for living expenses, visa fees, and other incidentals. For more information, contact Dr. Kazuo Shiokawa (shiokawa[at]nagoya-u.jp) or Keith Groves (keith.groves[at]bc.edu).

The full requirements together with the application procedure and current list of host laboratories are available on the website: <https://scostep.org/svs/>

### 2.3 SCOSTEP ONLINE CAPACITY BUILDING LECTURES

In response to the COVID-19 situation, in January 2021 SCOSTEP began holding online capacity building lectures for students and young scientists. Dr. Claudia Martinez-Calderon of the Institute for Space-Earth Environmental Research, Nagoya University, has been working as the coordinator of this lecture series. These lectures provide both basic background and an introduction to the latest scientific topics of solar-terrestrial physics to students and young scientists of all countries. Their duration is one hour and presented by one speaker. The first half will be a tutorial-like session gives basic background on a topic, mostly oriented at students. After a short break, the tutorial continues with the latest research or hot topic in the same subject accessible to younger and senior scientists.

There were five online capacity-building lectures (11<sup>th</sup>-15<sup>th</sup>) in 2022 as follows. The numbers at the end show the numbers of real-time participants/registration. The recorded video of the lectures is available from the SCOSTEP website at <https://scostep.org/capacity-building-lectures/>.

#11 Topic: The energetics of sprites: New results from South Africa  
Speaker: Michael Kosch (South African National Space Agency, Hermanus, South Africa)  
Date/time: January 27 (Thu), 2021, 11:00-12:00 UTC (51/111)

#12 Topic: Space Weather Geoelectromagnetic effects  
Speaker: Martin Connors (Athabasca University, Alberta, Canada)  
Date/time: March 31 (Thu), 2021, 01:30-02:30 UTC (37/132)

#13 Topic: Space weather monitoring with the Super Dual Auroral Radar Network (SuperDARN)  
Speaker: Evan Thomas (Dartmouth College, New Hampshire, USA)  
Date/time: April 28 (Thu), 2022, 10:00-11:00 UTC (67/175)

#14 Topic: Space weather ionospheric effects at high latitude  
Speaker: Lucilla Alfonsi (Istituto Nazionale di Geofisica e Vulcanologia, Italy)  
Date/time: July 12 (Tue), 2022, 09:00-10:00 UTC (59/152)

#15 Topic: Global properties of solar flares and some recent sun-as-a-star discoveries  
 Speaker: Hugh Hudson (Affiliation: University of Glasgow, Glasgow, UK)  
 Date/Time: September 08 (Thu), 2022, 09:00-10:00 UTC (99/194)

#16 Topic: Response of the Earth’s middle atmosphere to solar particle forcing  
 Speaker: Pekka Verronen, FMI/SGO, University of Oulu, Finland  
 Date and Time: Oct 25 (Tue), 2022, 08:00-09:00 UTC (66/156)

### 3. SCOSTEP’s NEW SCIENTIFIC PROGRAM – PRESTO

The SCOSTEP’s scientific program PRESTO (Predictability of the Variable Solar-Terrestrial Coupling) is in effect for the interval of 2020-2024. PRESTO is a science program that seeks to improve the predictability of energy flow in the integrated Sun-Earth system on times scales from a few hours to centuries through promoting international collaborative efforts. PRESTO is sponsored by SCOSTEP. SCOSTEP is the only organization dealing with the coupled solar-terrestrial system under the umbrella of the International Science Council (ISC). PRESTO is the latest program of SCOSTEP in the modern space era, following a number of programs such as CAWSES (2004-2008), CAWSES-II (2009-2013) and VarSITI (2014-2018).

The PRESTO program organizes/supports meetings and database developments. We also distribute SCOSTEP/PRESTO Newsletter every three months. SCOSTEP/PRESTO online seminar is also organized to deliver the latest scientific topics and/or instructive review presentations of solar-terrestrial physics that are related to the PRESTO Program.

#### 3.1 PRESTO MEETINGS

The following five meetings were held in association with the PRESTO program. SCOSTEP financially supported these meetings. In addition, the STP-15 symposium was held in 21-25 February 2022 via online where the PRESTO program is the main topic of the symposium.

Meeting title	location	country	date
European Space Weather Week 2022	Zagreb	Croatia	Oct 24-28, 2022
Extreme solar particle storms on Earth	Rokua	Finland	Mar 27-30, 2022
Organization of the 8th International Space Climate Symposium (SC8)	Krakow	Poland	19-22 September 2022
International Beacon Satellite Symposium	Boston College	USA	1-5 August 2022
14th Workshop on Solar Influences on the Magnetosphere, Ionosphere and Atmosphere	Primorsko	Bulgaria	6-10 June 2022

### 3.2 PRESTO DATABASE CONSTRUCTIONS

The following five databases were constructed in association with the PRESTO program. SCOSTEP financially supported these database constructions.

Title	Institute	Country
Database for unambiguous identification of waves in the inner heliosphere (DUWI)	Peking University	China
Database development of the ionosonde and magnetometer data recorded during the AIEE campaign in 1992-2001 period	1 Université Félix Houphouët Boigny	Cote d'Ivoire
The Argentinian-Chilean Validated Ionospheric Data-base (ACVID)	Univer-sidad Nacional de Tucumán and other 3 institutions	Argentina and Chile
Improvement of GLE database - providing verified records for systematic analysis of strong SEP events and assessment of their terrestrial effects	University of Oulu	Finland
Catalog of Auroral Kilo-metric Radio emissions for solar-terrestrial physics	Dublin Institute for Advanced Studies (DIAS)	Ireland

### 3.3 SCOSTEP/PRESTO NEWSLETTERS

SCOSTEP has produced SCOSTEP/PRESTO Newsletters in 2022 every three months in January, April, July, and October. To access the newsletters, please visit the website: <https://scostep.org/newsletter-archive/>.





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Article 1:  
**The Dimmest State of the Sun**

Kok Leng Yeo<sup>1</sup>  
<sup>1</sup>Max Planck Institute for Solar System Research, Göttingen, Germany



Kok Leng Yeo

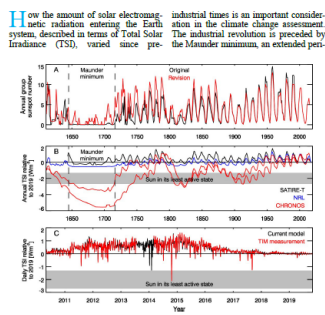


Figure 1. A) Solar activity since the Maunder minimum as indicated by the group magnet number (black; Hoyt and Schatten 1998; red; Svendsen and Schatten 2016). B) The reconstruction of TSI over the same period from the SATIRE-T (black; Hoyt et al., 2016), SATIRE-M (red; Hathorn et al., 2016), and CERVOX (blue; Geyer et al., 2018, red). C) The reconstruction of TSI since 2010 from SATIRE-ID (black; Yeo et al., 2021) and the measurements from SOCRATES (Gong et al., 2005, red). We established, with this model, that the TSI level of the Sun in its least-active state is 2.647 · 10<sup>17</sup> W m<sup>-2</sup> below the 2019 level, indicated by the shaded stage.



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Article 1:  
**Similar patterns of tropical precipitation and circulation changes under solar and greenhouse gas forcing**

Stergios Misiotis<sup>1</sup>  
<sup>1</sup>National Observatory of Athens, Athens, Greece



Stergios Misiotis

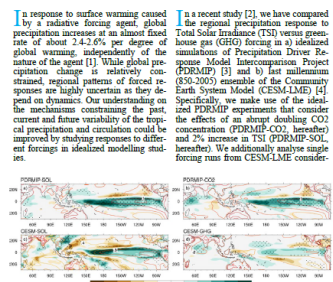


Figure 1. Spatial patterns of ensemble mean filtered precipitation (shaded, in mm/day/K) and surface temperature (contours, in K/K) reproduced onto the filtered global mean surface temperature in a) PDRMP-SOL, b) PDRMP-CO<sub>2</sub>, c) CESM-SOL and d) CESM-GHG simulations. Shipping indicates regions of chance probability  $p < 0.05$  according to a t-test. Contour spacing is 0.2 K.



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Article 1:  
**The SafeSpace Project**

Ioannis A. Daglis<sup>1,2</sup> and Georgios Balasis<sup>3</sup>  
<sup>1</sup>National and Kapodistrian University of Athens, Athens, Greece  
<sup>2</sup>Hellenic Space Center, Athens, Greece  
<sup>3</sup>Institute for Astronomy, Astrophysics, Space Applications and Remote Sensing, National Observatory of Athens, Athens, Greece



Ioannis A. Daglis, Georgios Balasis

The "Radiation Belt Environmental Indicators for the Safety of Space Assets - SafeSpace" project was launched in January 2020 with a duration of 36 months (<https://www.safespace-h2020.eu/>). This comprehensive space weather project has been funded by the European Union in the framework of the Horizon 2020 research and innovation funding programme. The objectives of SafeSpace are relevant and fully aligned with the SCOSTEP/PRESTO program, and in particular with its first pillar of research (Sun, interplanetary space and geospace). SafeSpace aims at advancing space weather forecasting and forecasting capabilities and, consequently, at contributing to the safety of space assets through

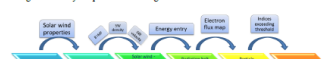


Figure 1. The overall project logic covers the complete Sun - interplanetary space - magnetosphere chain of space weather.



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Article 1:  
**A new journey of the Arase satellite to the 25th solar cycle**

Yoshizumi Miyoshi<sup>1</sup> and Iku Shinohara<sup>2</sup>  
<sup>1</sup>Institute for Space-Earth Environmental Research, Nagoya University, Nagoya, Japan  
<sup>2</sup>Space and Planetary Research Group, ISAS, JAXA, Sagamihara, Japan



Yoshizumi Miyoshi, Iku Shinohara

The geospace exploration satellite Arase (ERG) was launched in December 2016 and has observed space March 2017 [1] (Figure 1). The five years of observations covered the transition period from the declining phase of the 24th solar cycle to the beginning phase of the 25th solar cycle (Figure 2).

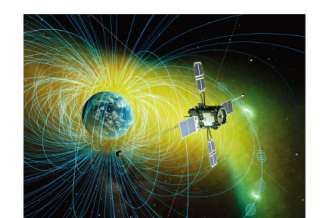


Figure 1. Conceptual image of Arase (ERG) satellite in the inner magnetosphere (copyright: ERG-Science Team).

Top pages of the SCOSTEP/PRESTO Newsletters in 2022

### 3.4 SCOSTEP/PRESTO ONLINE SEMINARS

Beginning in May 2020, SCOSTEP/PRESTO initiated a series of online seminars that deliver the latest scientific topics and/or instructive review presentations of solar-terrestrial physics that are related to SCOSTEP's PRESTO Program. This seminar series is partly in response to the current difficulties of hosting meetings in person. The seminars are open to scientists and students in all countries. The seminars are announced through the SCOSTEP-all and other mailing lists and on the SCOSTEP website at [scostep.org](http://scostep.org).

The seminar speakers are invited by the PRESTO Steering Committee. They are widely announced through relevant mailing lists including the SCOSTEP-all mailing list and the SCOSTEP website at <https://scostep.org>. The length of the seminars are 60 minutes (maximum) including 15-minute question/discussion time using the Zoom meeting system. The seminars are only for scientific purposes and are not for commercial use. With the consent of the speaker, the seminars have been recorded and made available on the SCOSTEP website.

The speakers featured in 2022 include the following. The numbers at the end shows the numbers of real-time participants/registration. The recorded video of the seminars is available from the SCOSTEP website at <https://scostep.org/online-seminar-series/>.

#11 Title: Solar-Terrestrial Coupling via Energetic Particle Precipitation

Speaker: Dr. Cora Randall (University of Colorado, USA)

Date/time: February 10, 2022, 14:00-15:00 UT (155/280)

#12 Title: First Solar Cycle of Observations of our Heliosphere's Interaction with the Very Local Interstellar Medium

Author: Prof. David J. McComas – SCOSTEP 2022 Distinguished Scientist Award Lecture

Affiliation: Department of Astrophysical Sciences, Princeton University, Princeton, New Jersey 08544, USA

Date/time: May 11, 2022, 14:00-15:00 UT (48/139)

#13 Title: Ca II observations: Exploiting historical treasures for solar activity and variability studies

Author: Dr. Theodosios Chatzistergos – SCOSTEP 2022 Distinguished Young Scientist Award Winner

Affiliation: Max Planck Institute for Solar System Research, Gottingen, Germany

Date/time: June 16, 2022, 12:00-13:00 UT (32/120)

#14 Title: Mesoscales and their Contribution to the Global Response: A Focus on the Magnetotail Transition Region and Magnetosphere-Ionosphere Coupling

Author: Dr. Christine Gabrielse (The Aerospace Corporation, USA)

Date/time: July 5, 2022, 22:00-23:00 UT (30/174)

#15 Title: Forecasting the Extreme End of Solar Weather: Flares, Coronal Mass Ejections and SEP Event Complexes

Author: Dr. Manolis K. Georgoulis (RCAAM of the Academy of Athens, Greece)

Date/time: September 23, 2022, 10:00-11:00 UT (61/214)

Please watch for more news about PRESTO in 2023. The PRESTO Workshop and School will be held on 29 May – 2 June 2023 in Trieste, Italy (<https://indico.ictp.it/event/10176/>)

#### **4. SCOSTEP's 15<sup>th</sup> QUADRENNIAL SOLAR-TERRESTRIAL PHYSICS SYMPOSIUM (STP-15)**

SCOSTEP organizes the Solar-Terrestrial Physics (STP) symposia once every four years. This time the Indian Institute of Geomagnetism (IIG) hosted the SCOSTEP's 15th Solar-Terrestrial Physics Symposium (STP-15) during 21-25 February 2022 (<https://stp15.in>). The aim of the STP-15 was to bring together experts, young scientists and young research students from solar, magnetospheric, ionospheric and atmospheric physics communities to discuss and deliberate on the frontline and up-to-date sciences pertaining to STP. Considering the regulations imposed by COVID-19 pandemic, STP-15 was conducted in a completely virtual mode.

The 15th Quadrennial Solar-Terrestrial Physics Symposium featured 8 scientific sessions:

- Session 1 encompassed the several overarching topics in the Sun-Earth Connection, broadly covering the various aspects of solar-terrestrial relationship.
- Sessions 2, 3 and 4 covered presentations from the three pillars of the Predictability of the Variable Solar-Terrestrial Coupling (PRESTO).
- Besides the Science, there were sessions that dealt with the prediction of space weather and its implementation (Session 5), besides modelling and data analysis tools to address challenging problems in STP (Session 6).
- Another session dealt with the new ground- and space-based initiatives for STP research (Session 7).
- As Geomagnetism provides an important link between the Sun and Earth, one special session was dedicated to this topic (Session 8).

The STP-15 Symposium received an overwhelming response with nearly 480 registered users. In total we had 343 papers scheduled over five days. We had representations from 40 countries with over 350 registered participants. A large number of student and regular participants from colleges and universities of low and middle income group countries were provided with the registration fee waiver.

Just before STP-15, a 2-day student Workshop on Solar-Terrestrial Physics for Students and Young Scientists (STEPSYS) was organized during 19-20 February 2022 for the benefit of students and young re-searchers by arranging tutorials/lectures by eminent scientists on topics ranging from the Sun, its interior and its atmosphere, through the magnetosphere-ionosphere system and reaching the Earth. The speakers were B. R. Arora, D. Nandi, Ramon Lopez, Jens

Oberheide, Annika Seppala, Mamoru Ishii, D. Pallamraju and G. K. Rangarajan. The lectures were of one-hour duration with 30-min interaction with the participants.

The Scientific Organizing Committee (SOC) includes:

Kazuo Shiokawa, Japan (Chair), Daniel Marsh (USA), Nat Gopalswamy (USA), Aude Chambodut (France), Jorge Chau (Germany), Kyung-Suk Cho (South Korea), Yoshizumi Miyoshi (Japan), Renata Lukianova (Russia), Annika Seppälä (Finland), Prasad Subramanian (India), Peter Pilewskie (USA), Ramon Lopez (USA), Katja Matthes (Germany), Jie Zhang (USA), Allison Jaynes (USA), Emilia Kilpua (Finland), Spiros Patsourakos (Greece), Loren Chang (Taiwan), Duggirala Pallamraju (India), Nick Pedatella (USA), Odele Coddington (USA), Jie Jiang (China), Eugene Rozanov (Switzerland) and Subramanian Gurubaran (LOC chair, India)

## 5. SCOSTEP GENERAL COUNCIL AND BUREAU MEETINGS

### 5.1 GENERAL COUNCIL MEETING

A meeting of the SCOSTEP General Council was held virtually on 25 February 2022. The meeting was conducted following the conclusion of the 15th Quadrennial Solar-Terrestrial Physics Symposium (STP15) hosted by the Indian Institute of Geomagnetism.

Dr. Kazuo Shiokawa, President of SCOSTEP, opened this meeting stating that much has happened since the last General Council meeting in 2019. This included transitions in leadership and the launch of the new scientific program PRESTO (Predictability of Solar-Terrestrial Coupling). At nearly the same time the COVID pandemic escalated worldwide, rendering travel, face-to-face meetings, workshops and schools nearly impossible. However, our work did not stop as many opportunities continued as virtual events. Dr. Shiokawa stated that our work cannot stop as understanding solar-terrestrial coupling processes is essential due to the increasing use of space by humans and for the importance of climate change.

The meeting was attended by a number of National Adherent Representatives, Bureau Members, PRESTO chairpersons, and Scientific Discipline Representatives. General Council Meetings are held every two years to determine scientific priorities, consider scientific proposals, and review financial and administrative arrangements, and at alternate meetings to elect the President and Vice President. These elections will be held at the next General Council Meeting in 2023.

The prime topics of the General Council meeting included introductions of SCOSTEP leadership; introductions of new National Adherents and their representatives; the transition of the office of the Scientific Secretary; a report on PRESTO goals and activities; a report on the STP15; updates on SCOSTEP's collaboration with the International Science Council (ISC), the International Space Weather Initiative (ISWI) and the UN Office for the Peaceful Uses of Outer Space (UNCOPOUS). Presentations were also made on the SCOSTEP Visiting Scholar Program and other outreach activities that supported schools and workshops; online capacity building lectures; the delivery of

quarterly newsletters; the translation of the SCOSTEP comic book series into additional languages; the annual SCOSTEP Awards; and the introduction of new SCOSTEP Fellow opportunities.

A full presentation on the Financial State of SCOSTEP was provided by the Scientific Secretary. This presentation revealed that SCOSTEP is in good financial order with a steady flow of income, sufficient to cover anticipated annual program costs. Dr. Shiokawa presented plans to develop Bylaws that would identify the purpose and responsibilities of the various committees of SCOSTEP that are not identified in the Constitution.

Finally, Dr. Shiokawa presented a proposal to amend the SCOSTEP Constitution to account for several changes in the organization. Dr. Shiokawa explained the process for Amending the Constitution which includes presenting it to the General Council for a vote. As not all General Council members were able to attend this meeting, the Scientific Secretary sent the information to all General Council members for their consideration and vote.

This meeting of the General Council generated lively discussion and confirmed significant interest in SCOSTEP activities by the membership. A full copy of the minutes of the General Council meeting can be found on the SCOSTEP website at: <https://scostep.org/meeting-minutes-archive/>.

## 5.2 SCOSTEP BUREAU MEETING

A SCOSTEP Bureau meeting were held on 18 November 2022. The meeting was held virtually via a Zoom video conferencing. The following items were discussed during this meeting. Detailed report of the Bureau meeting will be shown in the SCOSTEP website at <https://scostep.org/meeting-minutes-archive/>.

- 1) Approval of the Minutes from the last Bureau Meeting held on 2 December 2021
- 2) Action Items from last Bureau meeting were reviewed.
- 3) Budget of 2022 and 2023 were reviewed and decided.
- 4) Bylaws to define scientific Discipline Representatives (SDRs) was decided.
- 5) Selection procedure to select new SDRs were discussed. The selection was initiated.
- 6) STP-16 venue proposals were discussed. Full proposal is requested to the candidate countries.
- 7) Applications for two new SCOSTEP membership were discussed. They were forwarded to the Council for their approval.
- 8) Selection procedure of the new Award Selection Committee members was discussed.
- 9) Membership Committee report
- 10) Reports from Participating Bodies
- 11) Scientific Secretary (SS) Office Updates
- 12) Updates of ISC, UN\_STSC, UN\_COPUOS, and ISWI activities
- 13) PRESTO Updates
- 14) School activities supported by SCOSTEP
- 15) Current status of SCOSTEP online capacity building lectures
- 16) SCOSTEP Distinguished Science and Young Scientist Awards 2022

- 17) SCOSTEP Visiting Scholar (SVS)
- 18) SCOSTEP Comic Book Updates

## 6. 2022 SCOSTEP Awards

SCOSTEP was pleased to host a very successful awards program in 2022. These included the Distinguished Scientist and Distinguished Young Scientist Awards for 2022. These awards recognize the societal importance of studies in the field of solar-terrestrial physics and give credit to scientists who contribute significantly to these studies and to SCOSTEP activities. The awards include:

- SCOSTEP Distinguished Scientist Award - This award is given to recognize an outstanding contribution of a scientist to solar-terrestrial physics.
- SCOSTEP Distinguished Young Scientist Award - This award is given to young scientists who have achieved considerable success in solar-terrestrial physics and have taken an active part in SCOSTEP-related activities

Award nomination packages (nomination letters and nominee’s curriculum vitae) were received for a number of nominees. After careful consideration, the SCOSTEP Awards Committee selected the following finalists:

**SCOSTEP Distinguished Scientist Award: Professor David J. McComas**, Princeton University, USA

**SCOSTEP Distinguished Young Scientist Award: Dr. Theodosios Chatzistergos**, Max Planck Institute for Solar System Research, Germany

Information about the awardees is included in the SCOSTEP/PRESTO Newsletter, Volume 31, April 2022. This is available on the website: <https://scostep.org/newsletter-archive/>.

Congratulations to the award winners!

## 7. OTHER BUSINESS

### 7.1 SCOSTEP AT UN COPUOS

The President of SCOSTEP, Dr. Kazuo Shiokawa, provided two reports at the 59th Session of the STSC (Scientific and Technical Subcommittee) of the United Nations (UN) Committee on the Peaceful Uses of Outer Space (COPUOS) on 16 February 2022, and at the 65<sup>th</sup> Session of UN COPUOS on 3 June 2022 via online. These presentations were about the current status of SCOSTEP’s PRESTO program for predictability of the variable solar-terrestrial coupling.

## 7.2 SCOSTEP COMIC BOOK UPDATES

The postcard of the comic book was prepared. The comic book has been translated into many languages (<https://scostep.org/space-science-comic-books/>).

Printed versions of the comic books were distributed at the UN COPUOS STSC meeting in February 2023. Translations of the comic book to various languages are still going on by volunteer scientists.



## 8. SUMMARY

In summary, the Scientific Committee on Solar-Terrestrial Physics (SCOSTEP) had a busy year in 2022 – under the recovering phase of the COVID limitations. The year included PRESTO advancements together with the launch of a highly popular series of online seminars. These activities together with grant opportunities for meetings and database development; and the Distinguished Scientist and Young Scientist Awards resulted in an active and productive year.

SCOSTEP looks forward to continued success in 2023.