Report on the SCOSTEP and its PRESTO activities

Kazuo Shiokawa
(SCOSTEP President)

ISWI Steering Committee, February 10, 2023, Vianna

SCOSTEP
Scientific Committee on Solar-Terrestrial Physics

SCOSTEP
Scientific Committee on Solar-Terrestrial Physics

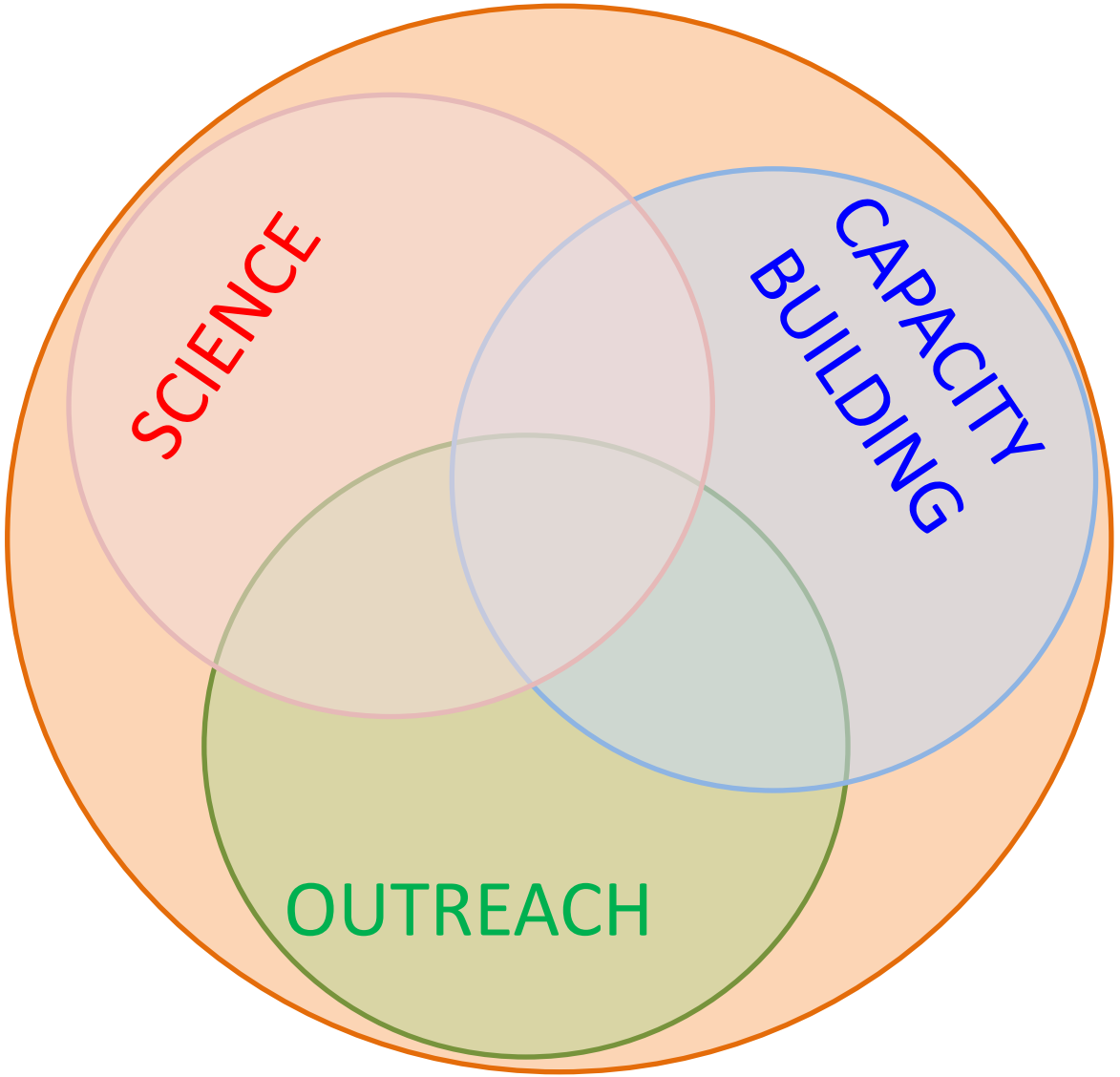
A thematic organization of the International Science Council (ISC) and a permanent observer at UNCOPUOS.

Runs long-term (4-5 years) international interdisciplinary scientific programs of solar terrestrial physics since 1966

Interacts with national and international programs involving solar terrestrial physics elements

Engages in Capacity Building activities such as the Space Science Schools with UNOOSA/ISWI.

Disseminates new knowledge on the Sun-Earth System and how the Sun affects life and society as outreach activities



International interdisciplinary programs in solar-terrestrial physics operated by SCOSTEP

1976-1979: IMS (International Magnetosphere Study)
1979-1981: SMY (Solar Maximum Year)
1982-1985: MAP (Middle Atmosphere Program)
1990-1997: STEP (Solar-Terrestrial Energy Program)
1998-2002: Post-STEP（S-RAMP, PSMOS, EPIC, and ISCS)
2004-2008: CAWSES (Climate and Weather of the Sun-Earth System）
2009-2013: CAWSES-II (Climate and Weather of the Sun-Earth System-II）
2014-2018: VarSITI (Variability of the Sun and Its Terrestrial Impact)
2020-2024: PRESTO (Predictability of the variable Solar-Terrestrial Coupling)

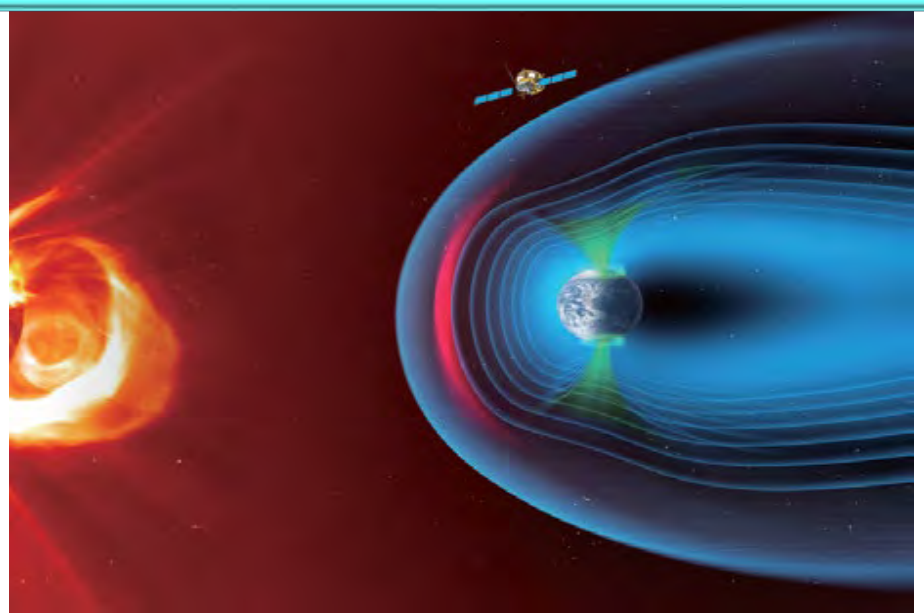
SCOSTEP
Scientific Committee on Solar-Terrestrial Physics

SCOSTEP's international program in 2020-2024

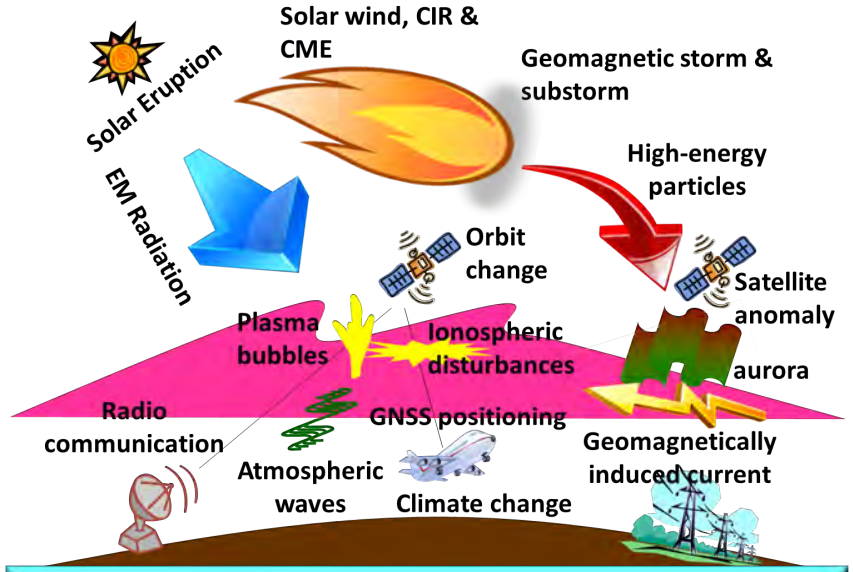
PRESTO: Predictability of the variable Solar-Terrestrial Coupling

PRESTO identifies predictability of the variable solar-terrestrial coupling performance metrics through modeling, measurements, and data analysis and to strengthen the communication between scientists and users

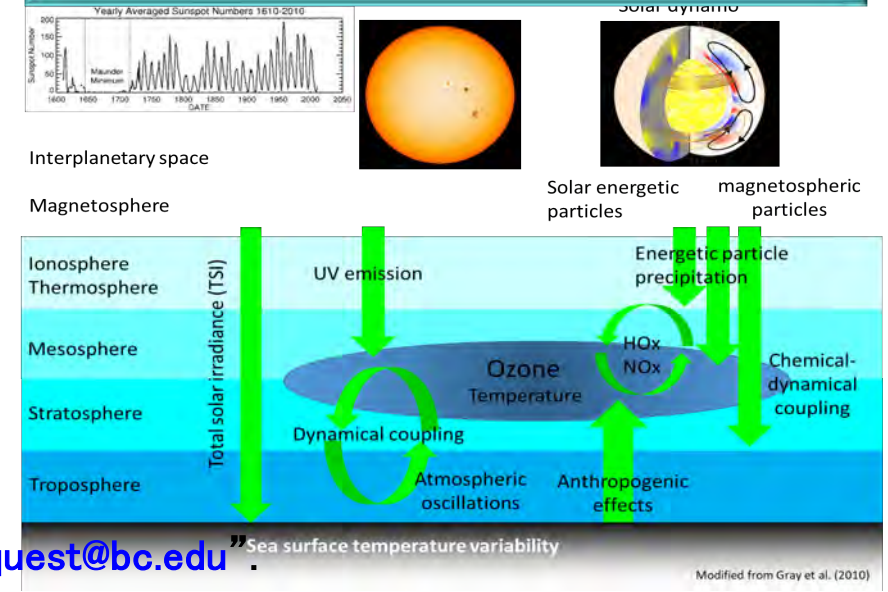
Pillar 1: Sun, interplanetary space and geospace



Pillar 2: Space weather and the Earth's atmosphere



Pillar 3: Solar activity and its influence on the climate of the Earth System

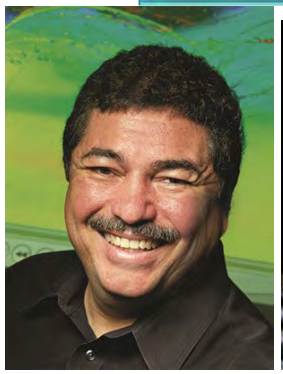


For subscription on the SCOSTEP-all mailing list, send e-mail to "scosteprequest@bc.edu".

SCOSTEP's international program in 2020-2024

PRESTO: Predictability of the variable Solar-Terrestrial Coupling

PRESTO chair and co-chairs



Chair
Ramon E. Lopez
USA

Odele Coddington
(USA)

Co-chair
Jie Zhang
USA

Pillar 2: Space weather and the Earth's atmosphere

Loren C. Chang
(Taiwan)

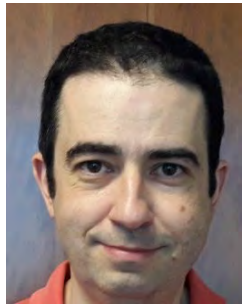
Duggirala
Pallamraju
(India)

Nick M. Pedatella
(USA)

Pillar 1: Sun, interplanetary space and geospace

Allison
Jaynes
(USA)

Emilia
Kilpua
(Finland)



Spiros
Patsourakos
(Greece)

Pillar 3: Solar activity and its influence on the climate of the Earth System

Jie Jiang
(China)

Stergios Misios
(Greece)

SCOSTEP/PRESTO Funding Opportunities

PRESTO MEETINGS in 2022

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

15th Quadrennial Solar-Terrestrial Physics Symposium

S1 - Overarching Topics in the Sun-Earth Connection
S2 - PRESTO Pillar 1: Sun, Planetary Space, and Geospace
S3 - PRESTO Pillar 2: Space Weather and Earth's Atmosphere
S4 - PRESTO Pillar 3: Solar Activity and its Influence On Climate
S5 - Space Weather Prediction and Implementation
S6 - Modelling, Database and Data Analysis Tools for Solar-Terrestrial Physics
S7 - New ground- and space-based initiatives for Solar-Terrestrial Physics
S8 - Special Session on "Geomagnetism-The Connecting Link between Sun and Earth"

~400 participants from 40 countries
https://stp15.in

35 papers were submitted to the special issue in JASTP so far.

ICTP-SCOSTEP-ISWI School and Workshop on the Predictability of the Solar-Terrestrial Coupling - PRESTO

https://indico.ictp.it/event/10176/

29 May - 2 June 2023
An ICTP Meeting
Trieste, Italy

Directors:

S. GADIMOVA, ICG/UNOOSA, Austria
N. GOPALSWAMY, NASA, USA
K.M. GROVES, Boston College, USA
R. LOPEZ, University of Texas at Arlington, USA
B. NAVA, ICTP, Italy
K. SHIOKAWA, Nagoya University, Japan

Further information:
http://indico.ictp.it/event/10176/
smr3842@ictp.it

Local Organiser:

B. NAVA, ICTP, Italy

Topics:

- Observations and modelling of solar eruptions, solar wind and SEPs from Sun through interplanetary space
- Prediction of solar transients, streams/SIRs and SEP from Sun to geospace
- Effect of space weather on the Earth's ionosphere, thermosphere, and magnetosphere
- Influence of the lower atmosphere on the mesosphere, thermosphere, and ionosphere
- Solar forcing specification and impacts on the atmosphere and climate
- Precipitating energetic particles and their effects on atmosphere
- Predictability of the solar cycle

School Lecturers:

N. GOPALSWAMY, NASA, USA
S. MISIOS, NOA, Greece
D. NANDI, IISER, India
N. PEDATELLA, NCAR, USA
K. SHIOKAWA, Nagoya University, Japan
J. ZHANG, George Mason University, USA

https://indico.ictp.it/event/10176/

How to apply:

Online application:
http://indico.ictp.it/event/10176/

Female scientists are encouraged to apply.

Grants:

A limited number of grants are available to support the attendance of selected participants, with priority given to participants from developing countries.
There is no registration fee.

Deadline:

28 February 2023

JSPS

ISWI

ISEE
Institute for Space-Earth Environmental Research

ICG

SCOSTEP
Scientific Committee on Solar-Terrestrial Physics

ICTP
The Abdus Salam International Centre for Theoretical Physics
www.ictp.it
Trieste, Italy

IAEA

SCOSTEP-PRESTO ONLINE SEMINAR SERIES

real-time participants / number of registration

#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

#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

#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

#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

#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

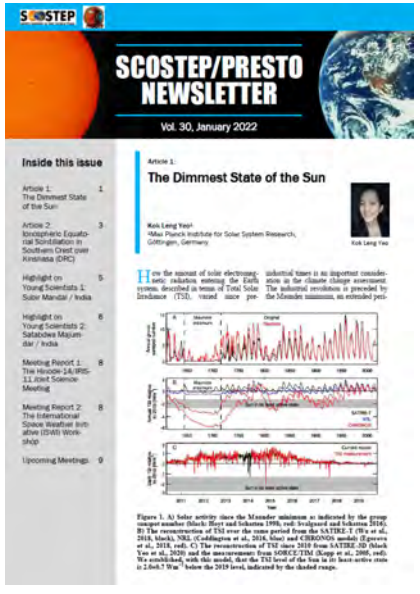
SCOSTEP/PRESTO Funding Opportunities

PRESTO DATABASE Constructions in 2022

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	1Université 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

SCOSTEP/PRESTO Newsletter vol.23–34

Every 3 months: Articles, Highlight of young scientists, Meeting reports, and Short news



SCOSTEP 2022 Distinguished Scientist Award

2022 Distinguished Scientist Award is given to

Professor David J. McComas

Princeton University, Princeton, NJ, USA

David J. McComas

Citation: For original research, technical leadership and wide-ranging discoveries that have significantly advanced our knowledge and understanding of the global structure and evolution of the solar wind and revolutionized our understanding of its interactive stellar medium.

SCOSTEP 2022 Distinguished Young Scientist Award

2022 Distinguished Young Scientist Award is given to

Dr. Theodosios Chatzistergos

Max Planck Institute for Solar System Research, Göttingen, Germany

Theodosios Chatzistergos

Citation: For his tremendous and unprecedented work on exploiting the potential of historical solar observations for cardinal improvement reconstructions of past solar variability, a crucial input to climate models.

SCOSTEP Visiting Scholar (SVS) Program

In 2022, 20 proposals were approved.

	Name	Home Institute	Host Institute
1	**Aderonke Adekemi Obafaye-Nee Akerele**	Bowen University, Iwo, Osun State, Nigeria (and NASRDA)	South African National Space Agency Space Science at Hermanus
2	**Adithya H.N.**	Young innovators, Educational Services Pvt. Ltd.	ISEE, Nagoya Univ.
3	**Oscar Batalla**	National and Autonomous University of Mexico (UNAM)	University of Oulu, Finland
4	**Nilam Yashwant Bhosale**	IIG, India	NASA Goddard Space Flight Center (GSFC)
5	**Nilesh Chauhan**	IIG, India	ISEE, Nagoya Univ.
6	**Anoruo Chukwuma Moses**	Univ. of Nigeria	ISEE, Nagoya Univ.
7	**Gourav Mitra**	Physical Research Laboratory, Ahmedabad, India	Leibniz Inst. For Atmospheric Physics
8	**Hagar Mohamed Salah Hussein**	Helwan University, Egypt	NASRDA, Nigeria
9	**Maheswaran Veera Kumar**	Sastra University, Thanjavur, India	ISEE, Nagoya Univ.
10	**Onyinye Gift Nwankwo**	University of Michigan, MI, USA	ISEE, Nagoya Univ.
11	**Stephan Owino Omondi**	Egypt Japan Univ. of Science and Technology	Kyushu University
12	**Taiwo Olusayo Osanyin**	INPE, Brazil	SANSA
13	**Pankaj K Soni**	Indian Institute of Geomagnetism, Navi Mumbai, India	ISEE, Nagoya Univ.
14	**Pooja Devi**	Kumaun University, Nainital, India	NASA/GSFC
15	**Rahul Rathi**	Indian Institute of Technology. Uttarakhand, India	ISEE, Nagoya Univ.
16	**Srikar Paavan Tadepalli**	IIG, India, Indian Institute of Technology	NASA Goddard Space Flight Center (GSFC)
17	**Sunil Kumar**	PRL, India	Leibniz Inst. For Atmospheric Physics
18	**Theogene Ndacyayisenga**	University of Rwanda	NASRDA, Nigeria
19	**Rukundo Wellen**	Egypt Japan University of Science and Technology (E-JUST).	ISEE, Nagoya Univ.
20	**Mr Yogesh**	Physical Research Laboratory, Ahmedabad, India	NASA Goddard Space Flight Center (GSFC)









Capacity Building Schools

Schools in 2022

1. Iberian Space Weather School, June 6-10, 2022, University of Alcala, Spain
2. The 2nd summer school on Space research, technology and application, 3-10 July 2022, National Astronomical Observatory (NAO) – Rozhen, Bulgaria
3. 5th edition of the ISWI Maghreb Afrique de l'Ouest (IMAO) school, Houphouët Boigny University, Abidjan, 17-28 October, 2022, Côte d'Ivoire
4. "The International Workshop on Machine Learning for Space Weather: Fundamentals, Tools and Future Prospects", 7-11 November 2022 in Argentina
5. 10th VERSIM Workshop and School, VLF/ELF Remote Sensing of Ionosphere and Magnetosphere, 7-11 November 2022, Sodankyla Geophysical Observatory, Finland

Iberian Space Weather School

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

Workshop on Machine Learning for Space Weather group photo.

SCOSTEP ONLINE CAPACITY BUILDING LECTURE SERIES

real-time participants / number of registration

#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**

#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**

#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**

#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**

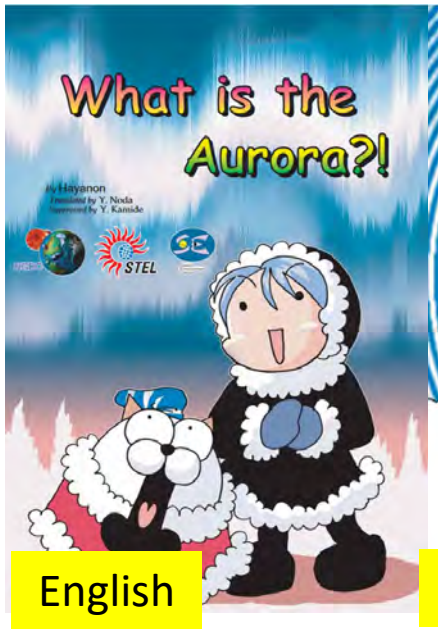
Lecture Coordinator: Dr. Claudia Martinez-Calderon (ISEE, Nagoya Univ.)

#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**

#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**

SCOSTEP - Science Comic Books

https://scostep.org/



English

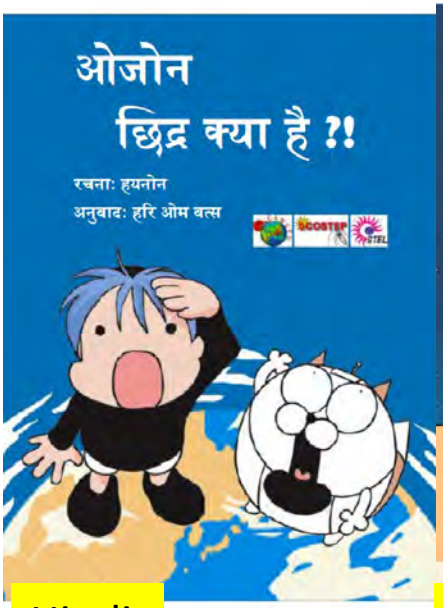
French

Czech

German

Korean

Tamil

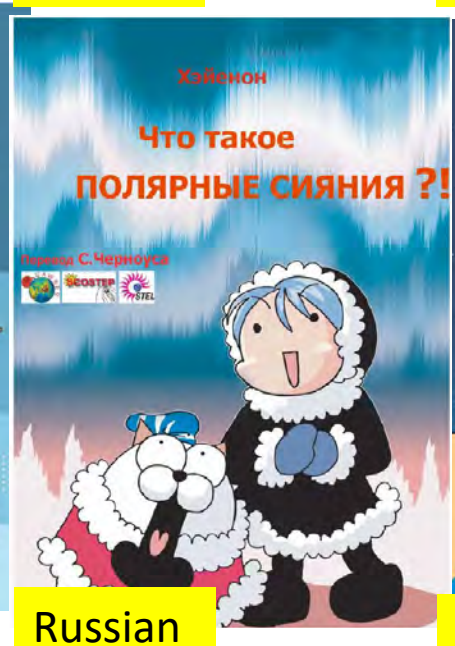


Hindi

Italian

Japanese

Urdu



Russian

Spanish

Summary

- **PRESTO is the current SCOSTEP scientific program to run during 2020-2024 to understand Predictability of the variable Solar-Terrestrial Coupling**
- **Scientists from more than 70 countries participate in the PRESTO program to understand predictability of space weather and solar effect on climate.**
- **Solar terrestrial science will reach as many developing countries as possible via SCOSTEP's capacity building and outreach activities.**

PRESTO: Predictability of the variable Solar-Terrestrial Coupling
SCOSTEP: Scientific Committee on Solar-Terrestrial Physics