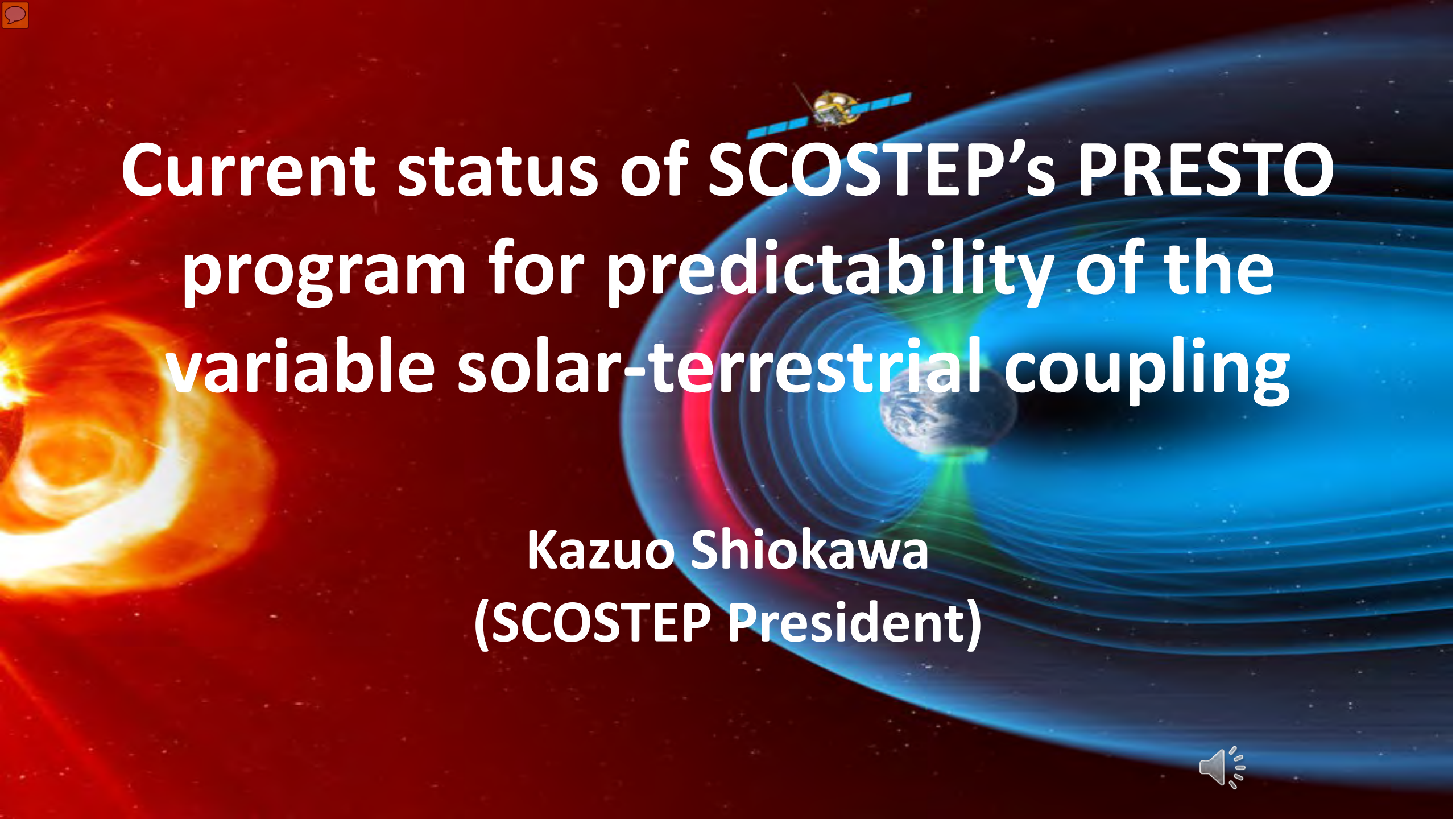


Current status of SCOSTEP's PRESTO program for predictability of the variable solar-terrestrial coupling

Kazuo Shiokawa
(SCOSTEP President)

SCOSTEP
Scientific Committee on Solar-Terrestrial Physics

SCOSTEP
Scientific Committee on Solar-Terrestrial Physics

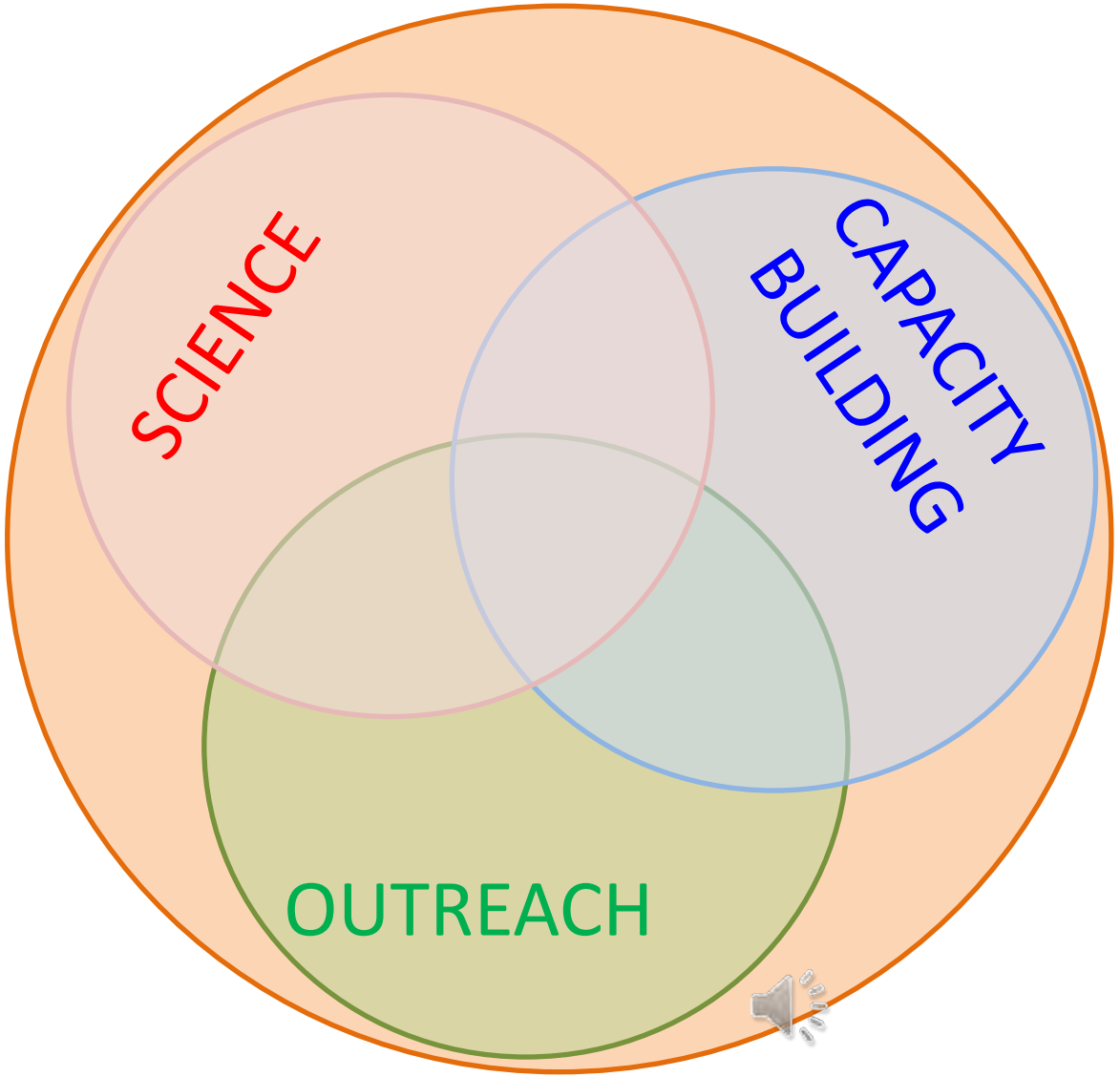
A thematic organization of the International Science Council (ISC) and a permanent observer at UNCOPUOS.

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

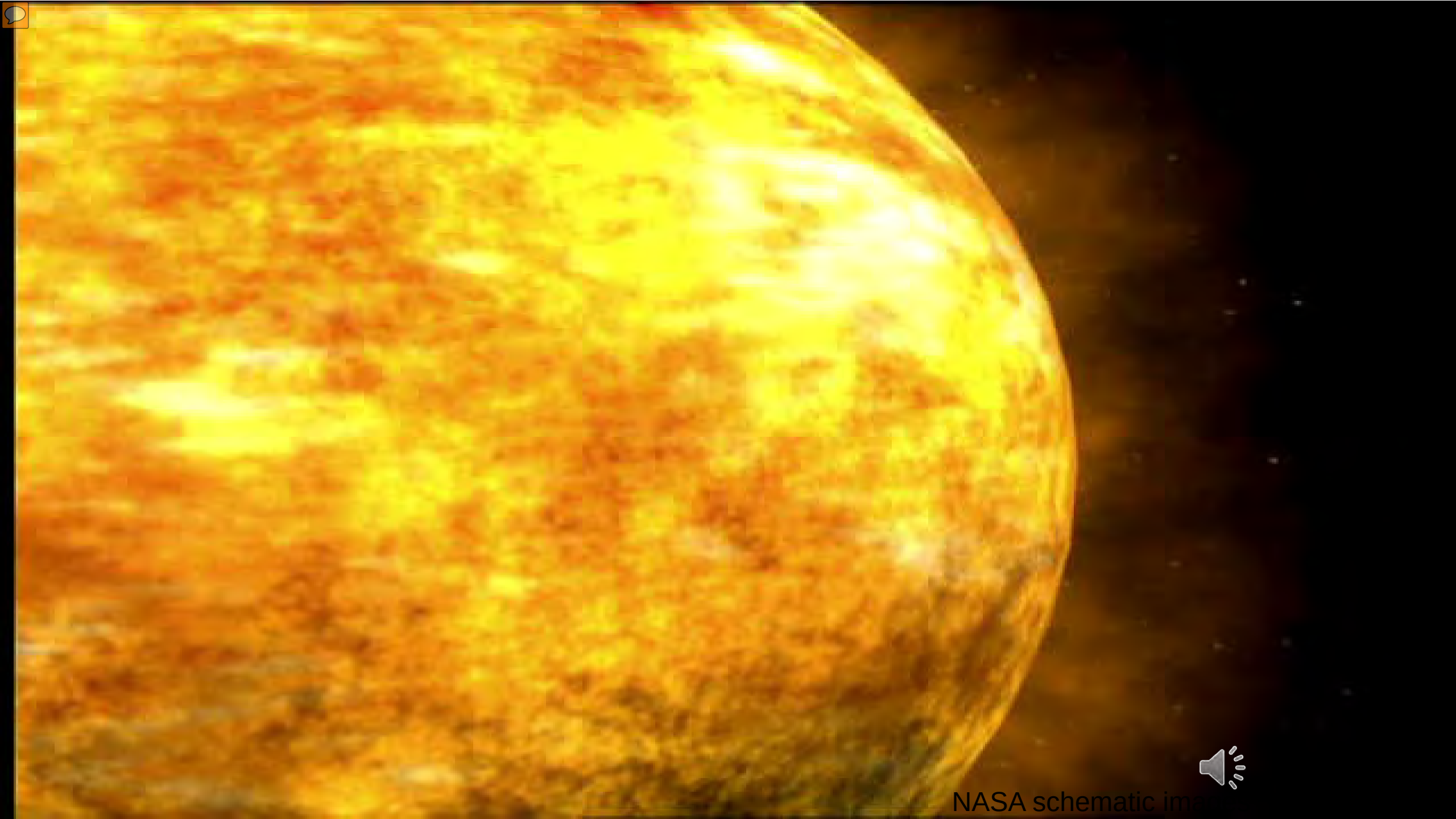


SCOSTEP
Scientific Committee on
Solar-Terrestrial Physics

SCOSTEP
Scientific Committee on Solar-Terrestrial Physics

Current Member Countries and Geographical Regions of SCOSTEP

Australia
Austria
Brazil
Bulgaria
Canada
China
Croatia
Czech Republic
Egypt
Finland
France
Georgia
Germany
Hungary
India
Indonesia
Israel
Japan
Kenya
New Zealand
Nigeria
Norway
Poland
Russia
South Korea
Slovakia
South Africa
Switzerland
Taiwan
United Kingdom
USA


NASA schematic ima

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)

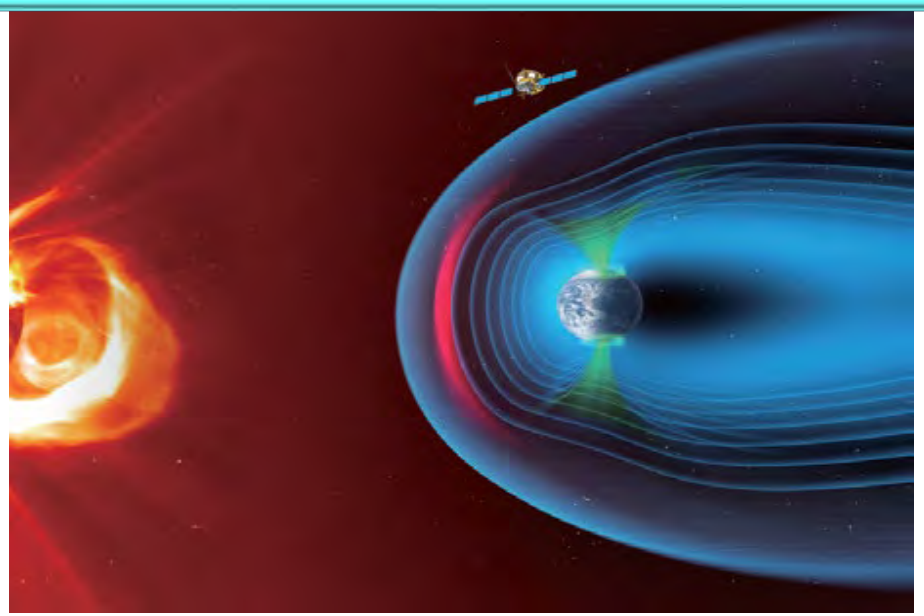
SCOSTEP
Scientific Committee on Solar-Terrestrial Physics

SCOSTEP's international program in 2020-2024

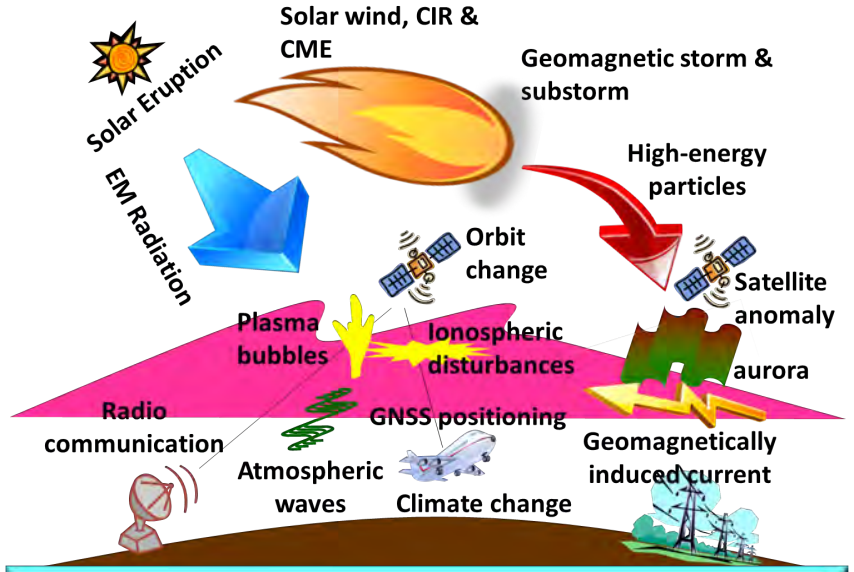
PRESTO: Predictability of the variable Solar-Terrestrial Coupling

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

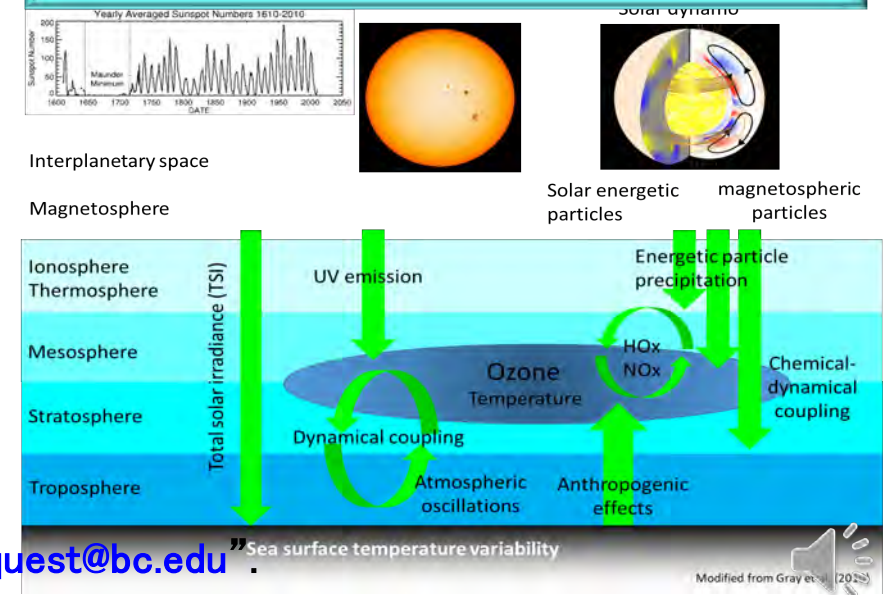
Pillar 1: Sun, interplanetary space and geospace



Pillar 2: Space weather and the Earth's atmosphere



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

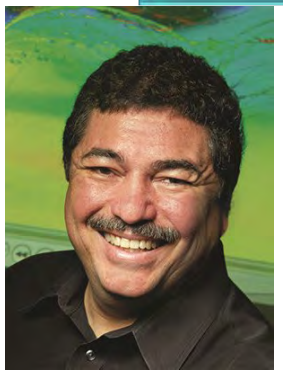


For subscription on the SCOSTEP-all mailing list, send e-mail to "scosteprequest@bc.edu".

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

Co-chair
Eugene Rozanov
Switzerland

Co-chair
Jie Zhang
USA

Pillar 2: Space weather and the Earth's atmosphere

Loren C. Chang
(Taiwan)

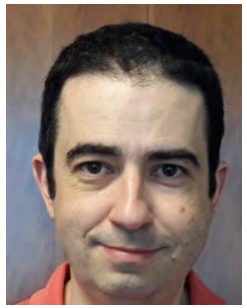
Duggirala
Pallamraju
(India)

Nick M. Pedatella
(USA)

Pillar 1: Sun, interplanetary space and geospace

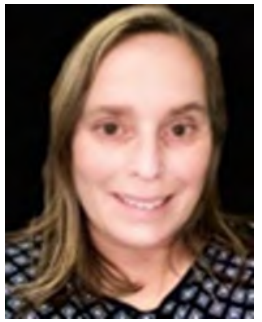
Allison
Jaynes
(USA)

Emilia
Kilpua
(Finland)



Spiros
Patsourakos
(Greece)

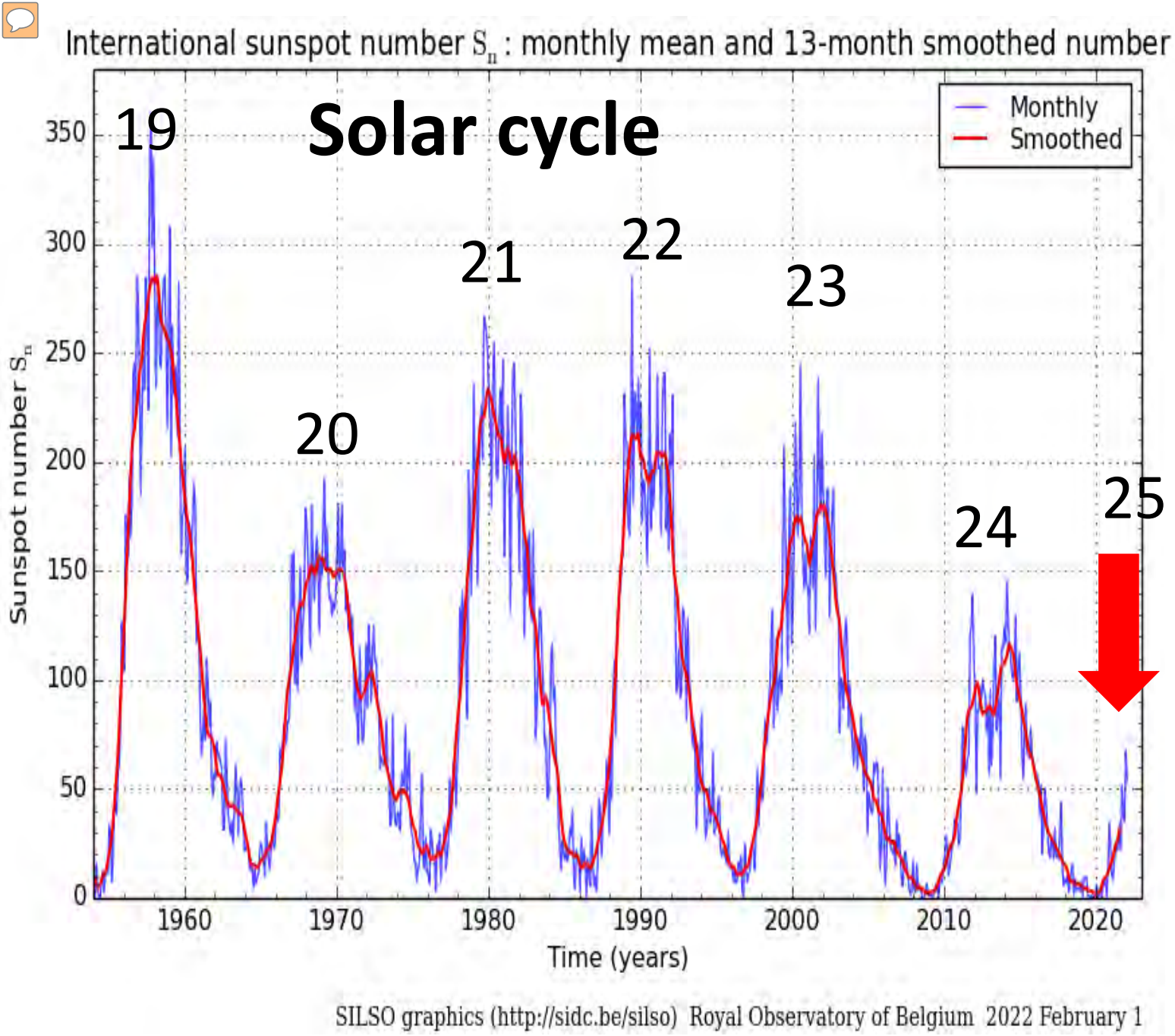
Pillar 3: Solar activity and its influence on the climate of the Earth System



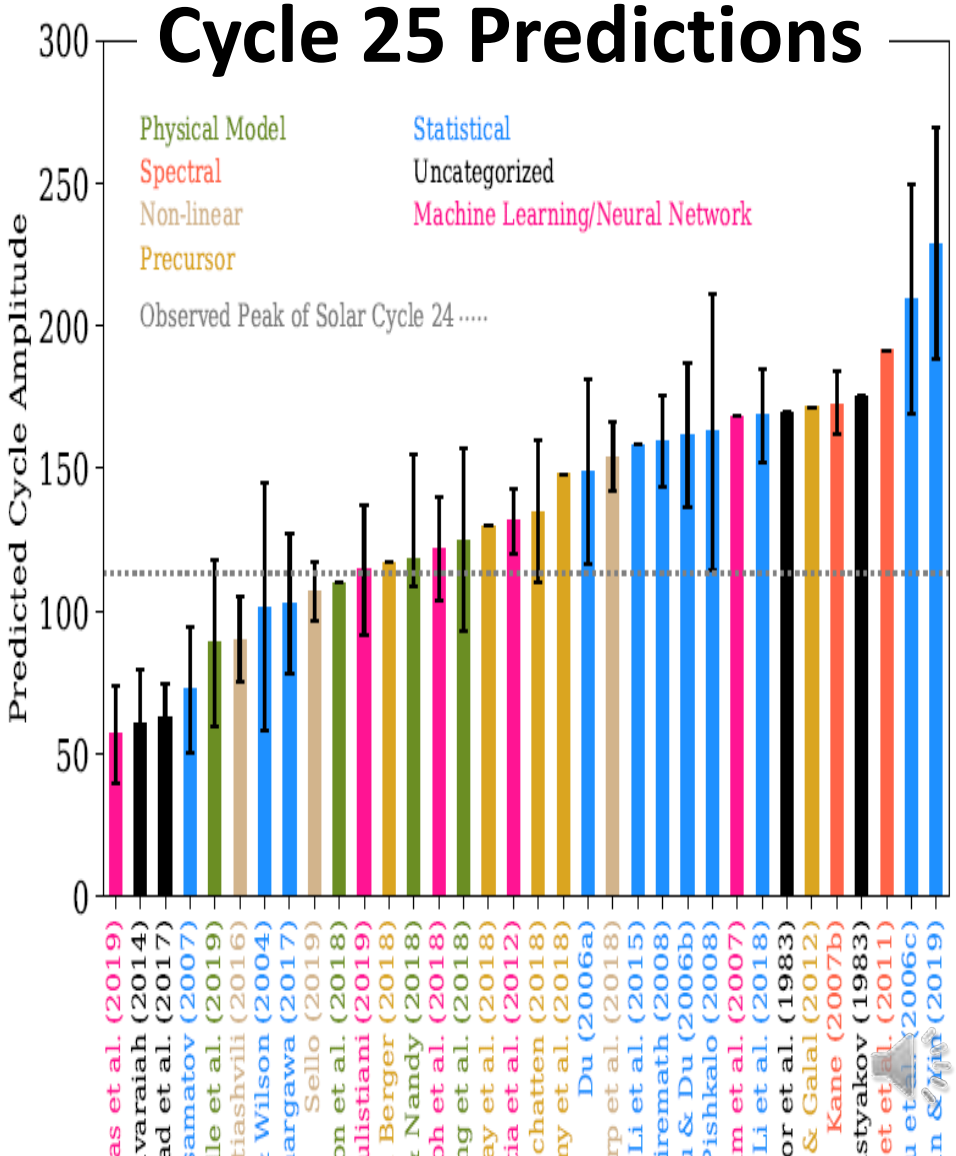
Odele Coddington
(USA)

Jie Jiang
(China)

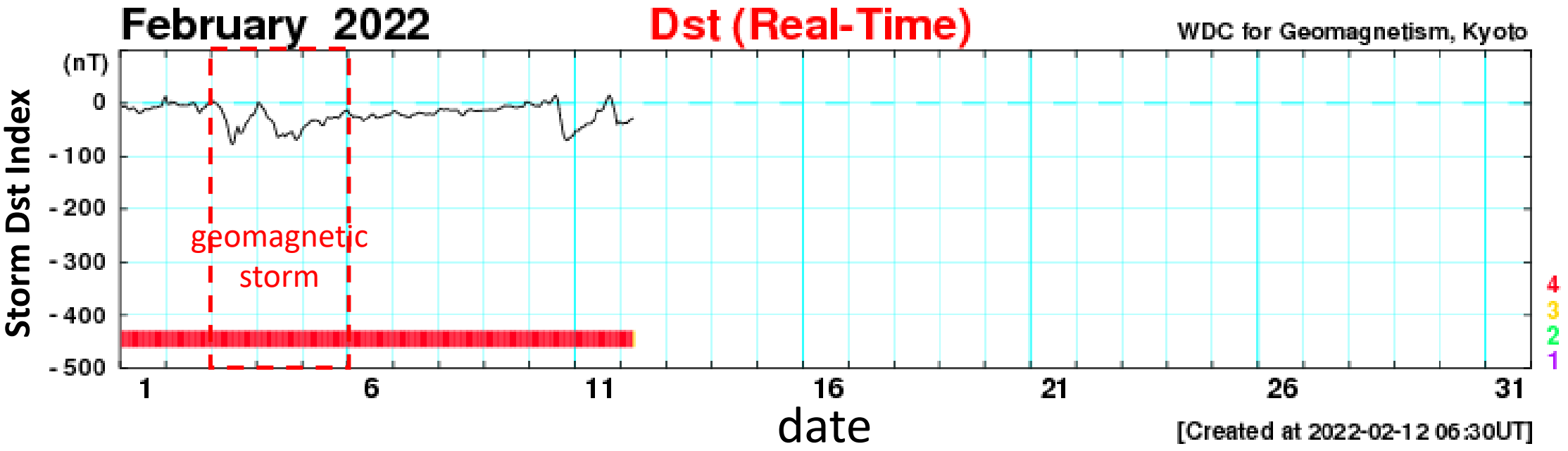
Stergios Misios
(Greece)



Nandy (2021)
https://doi.org/10.1007/s11207-021-01797-2



http://wdc.kugi.kyoto-u.ac.jp/dst_realtime/202202/index.html

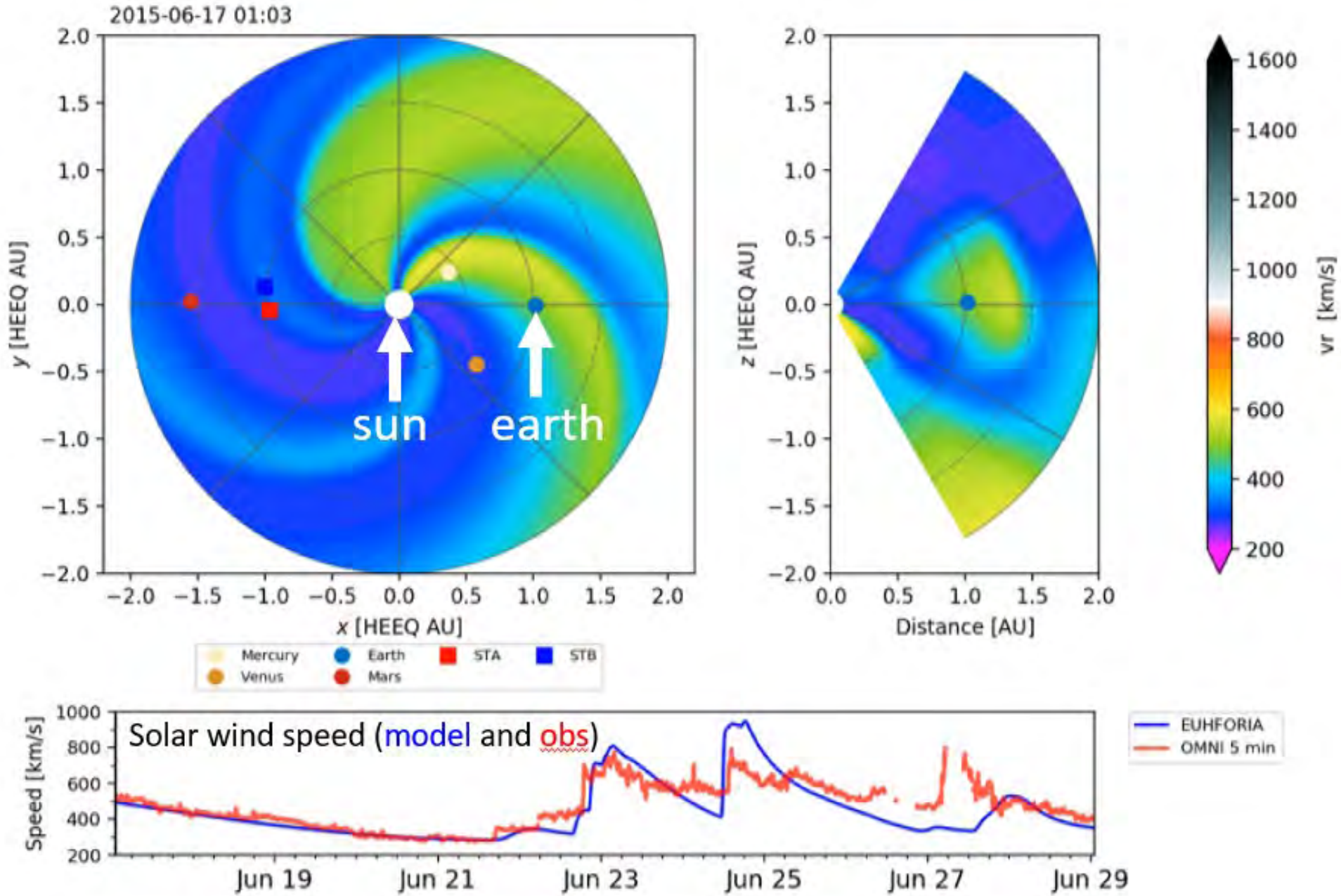


Small geomagnetic storm on Feb.3-5, 2022

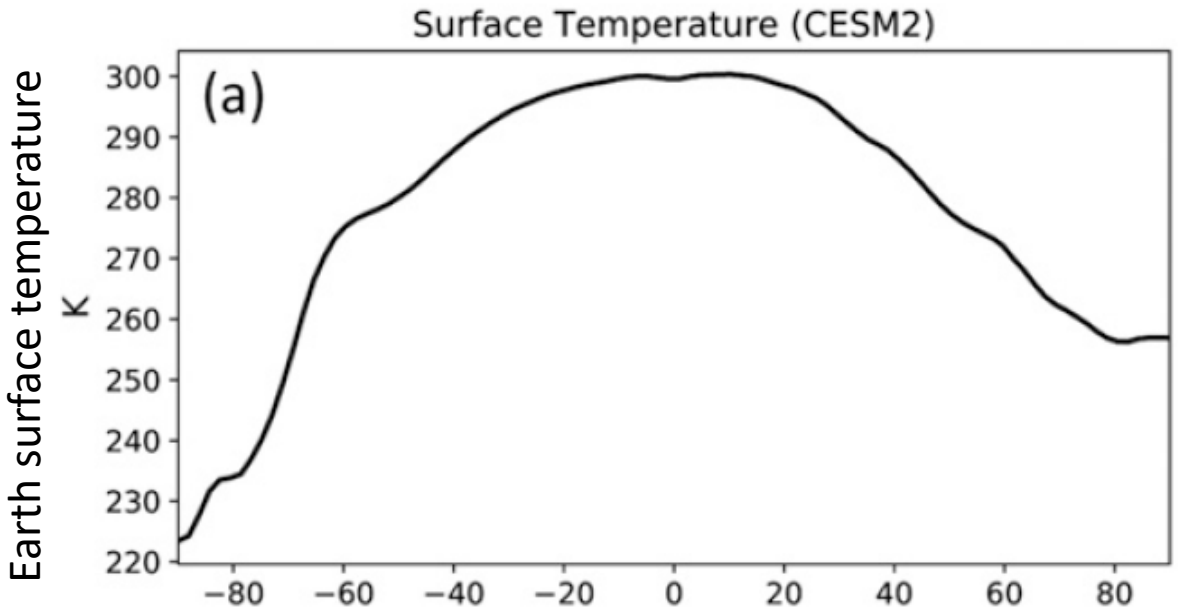
→Expansion of the upper atmosphere

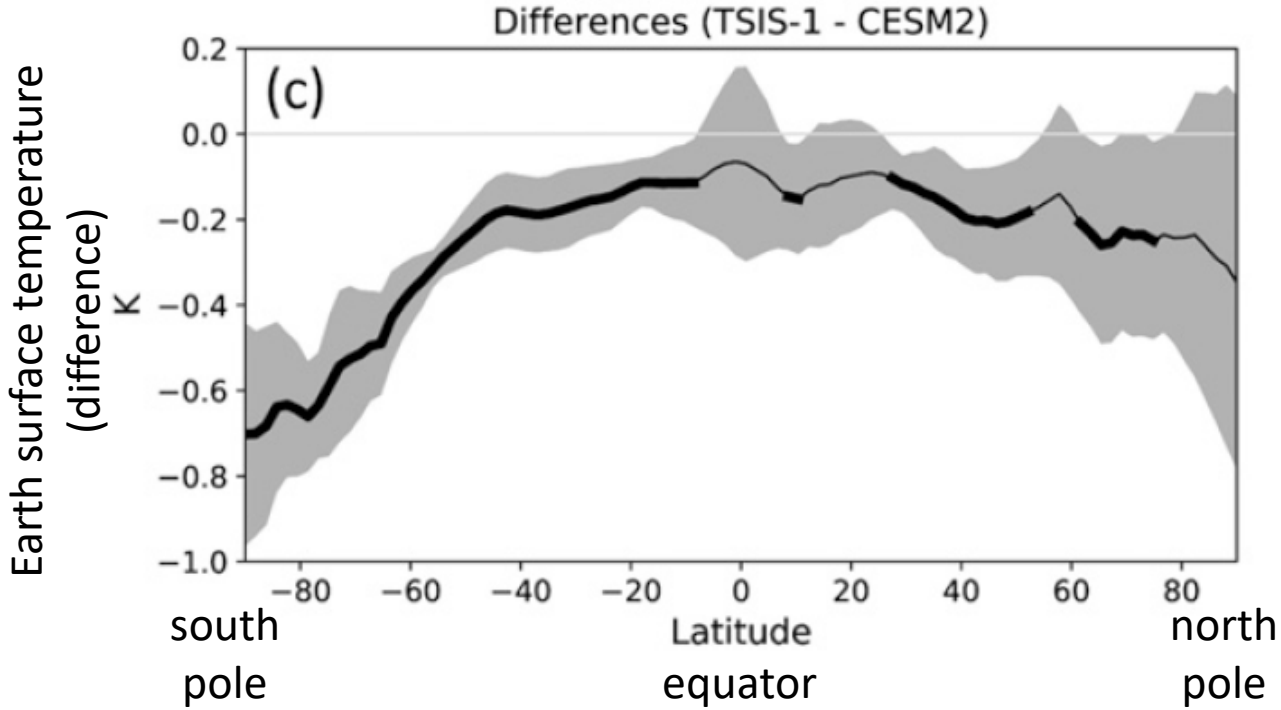
→Atmospheric drag increase.

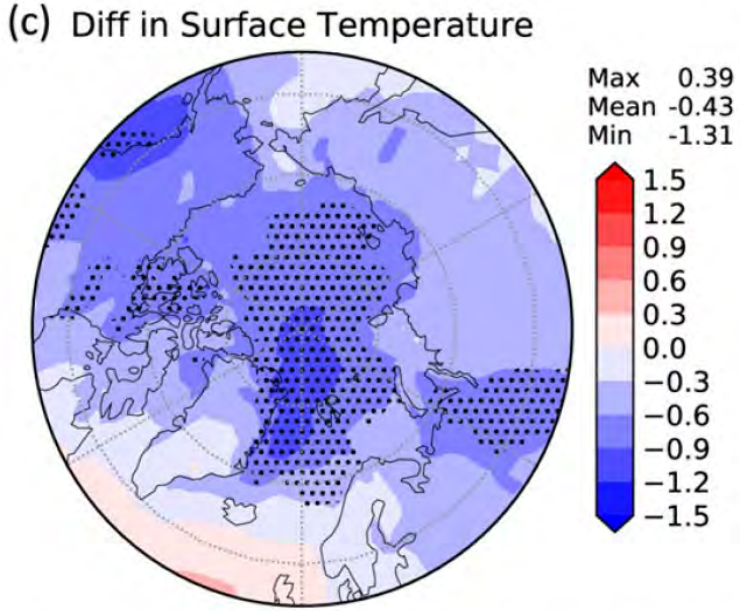
→ Up to 40 Starlink satellites of SpaceX is getting lost into the Earth's atmosphere (https://www.spacex.com/updates/, Feb. 8, 2022)



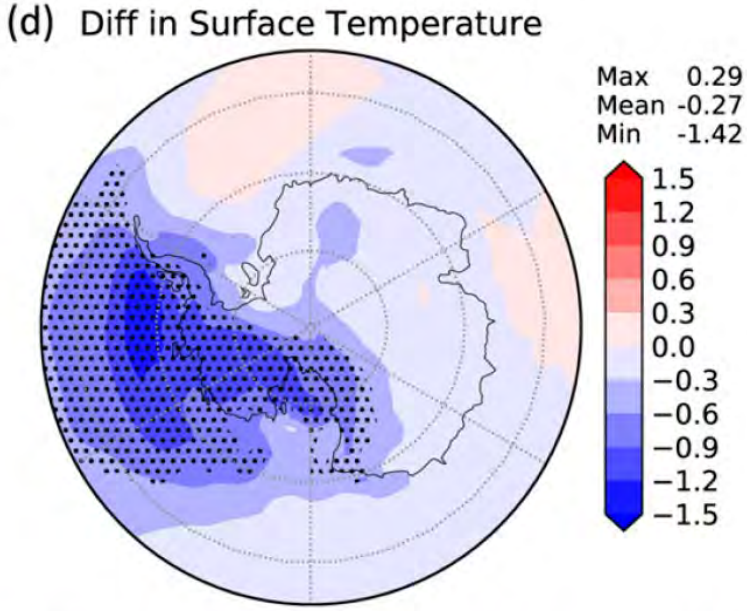
Pomoell & Poedts (2018) https://doi.org/10.1051/swsc/2018020







Northern hemisphere



Southern hemisphere

Jing et al. (2021, DOI: 10.1175/JCLI-D-20-0743.1)

PRESTO Website at Boston College: https://scostep.org/

SCOSTEP

Scientific Committee on Solar-Terrestrial Physics

ABOUT US | SCIENTIFIC PROGRAMS | CAPACITY BUILDING | AWARDS | EVENTS | RESOURCES | CONTACT US | SEARCH

SCOSTEP/PRESTO

Predictability of the **S**olar-**T**errestrial C**o**upling

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, the Scientific Committee on Solar Terrestrial Physics.

Chair:
Ramon E. Lopez

For subscription on the SCOSTEP-all mailing list: drop e-mail to "scostepprequest@bc.edu".

SCOSTEP
Scientific Committee on Solar-Terrestrial Physics

SCOSTEP/PRESTO Funding Opportunities

- SCOSTEP/PRESTO provides financial support for organizing international campaigns and meetings every year.

- SCOSTEP also provides financial support for capacity building activities.

SCOSTEP-PRESTO ONLINE SEMINAR SERIES

7th SCOSTEP/PRESTO Online Seminar

participants: 111

Title: Physics at the edge between Earth's atmosphere and space
Author: Dr. Franz-Josef Lübken (Leibniz-Institute of Atmospheric Physics, Germany)
Date and Time: May 21 (Fri), 2021, 12:00-13:00 UT

8th SCOSTEP/PRESTO Online Seminar

participants: 157

Title: The Sun making history. The mechanism behind the varying amplitude of the solar cycle
Author: Prof. Dr. Kristof Petrovay (ELTE Eotvos Lorand University, Department of Astronomy, Hungary)
Date/time: June 8 (Tue), 2021, 13:00-14:00 UT

9th SCOSTEP/PRESTO Online Seminar

participants: 118

Title: Space Weather in the Thermosphere-Ionosphere System - observations and Insights from the GOLD* Mission (*Global-scale Observations of the Limb and Disk)
Author: Dr. Richard Eastes (Laboratory for Atmospheric and Space Physics, University of Colorado Boulder, USA)
Date/time: September 23, 2021 14:00-15:00 UT

10th SCOSTEP/PRESTO Online Seminar

participants: 80

Title: Understanding and Modeling Solar Eruptions: Where Do We Stand?
Speaker: Dr. Tibor Török (Predictive Science Inc., USA)
Date/time: November 30, 2021 23:00-24:00 UT

11th SCOSTEP/PRESTO Online Seminar

participants: 153

Title: Understanding and Modeling Solar Eruptions: Where Do We Stand?
Speaker: Dr. Cora Randall (University of Colorado, USA)
Date/time: February 10 (Thu), 2022, 14:00-15:00 UT

SCOSTEP ONLINE CAPACITY BUILDING LECTURE SERIES

6th SCOSTEP Online Capacity Building Lecture registration: 191, participation: 113
Topic: Aurora as a manifestation of electromagnetic waves in space
Speaker: Keisuke Hosokawa (University of Electro-Communications, Japan)
Date/time: June 28 (Mon), 2021, 10:30-12:00 UTC

7th SCOSTEP Online Capacity Building Lecture registration: 157, participation: 47
Topic: Energetic Electron Precipitation from the Radiation Belts: How plasma waves in space kill atmospheric ozone
Speaker: Craig Rodger (Dept. of Physics, University of Otago, New Zealand)
Date/time: August 19 (Thu), 2021, 00:30-01:30 UTC

8th SCOSTEP Online Capacity Building Lecture registration: 202, participation: 88
Topic: Solar Magnetic Fields: Their Origin and Predictability
Speaker: Dibyendu Nandi (Indian Institute of Science Education and Research, Kolkata, India)
Date/time: Sept. 14 (Tue), 2021, 10:30-11:30 UTC

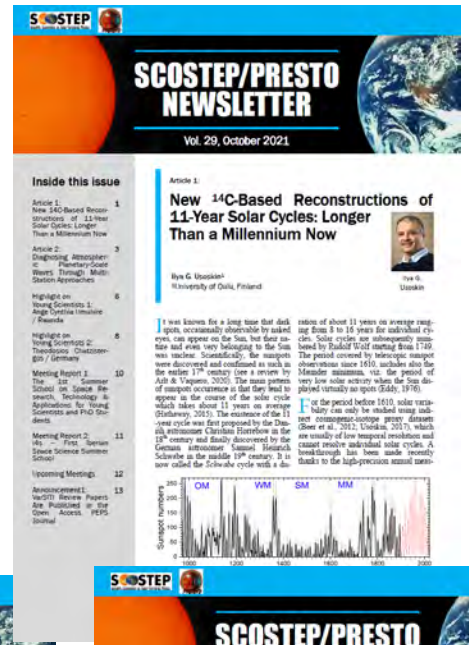
9th SCOSTEP Online Capacity Building Lecture registration: 173, participation: 38
Topic: Whole Heliosphere and Planetary Interactions (WHPI): Connecting Sun to solar wind to planets during "quiet" times of the solar cycle
Speaker: Sarah Gibson (High Altitude Observatory at NCAR, Colorado, USA)
Date/time: October 21 (Thu), 2021, 00:30-01:30 UTC

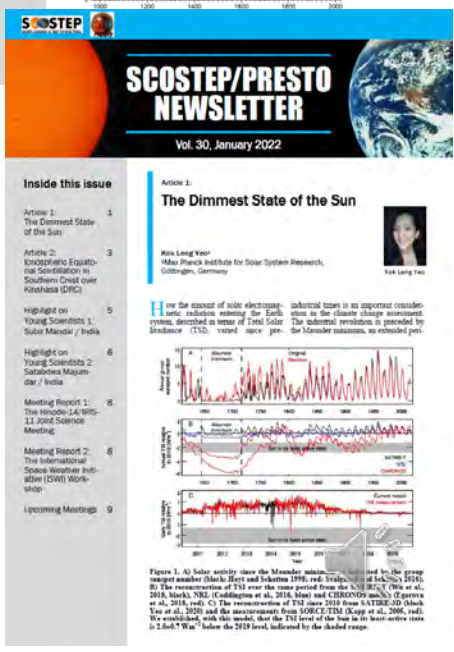
10th SCOSTEP Online Capacity Building Lecture registration: 147 participation: 33
Topic: F10.7 and solar spectral irradiance: drivers of ionosphere models
Speaker: Samuel Schonfeld (Boston College, Massachusetts, USA)
Date/time: November 16 (Tue), 2021, 01:00-02:00 UTC

11th SCOSTEP Online Capacity Building Lecture registration: 111 participation: 51
Topic: The energetics of sprites: New results from South Africa
Speaker: Michael Kosch (South African National Space Agency, South Africa)
Date/time: January 27 (Thu), 2022, 11:00-12:00 UTC

SCOSTEP/PRESTO Newsletter vol.21–30

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





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"

~350 presentations

https://stp15.in

Capacity Building Schools

In 2021:

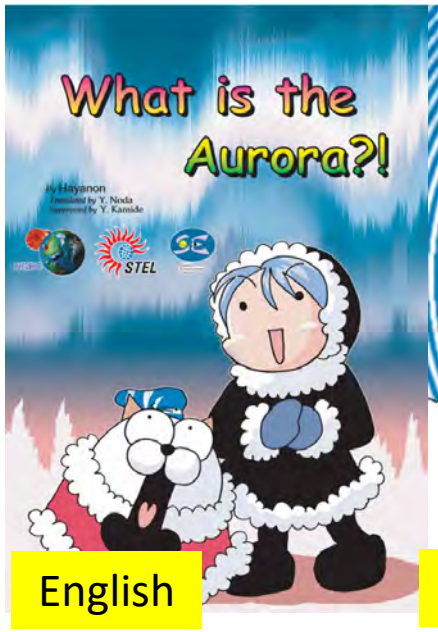
- The 44th Annual Scientific Seminar on Physics of Auroral Phenomena, 15-19 March 2021, Apatity, Russia
- The first summer school on space research, technology and application in Bulgaria, 5-11 July 2021, National Observatory Rozhen, Bulgaria
- ISWI/SCOSTEP Iberian Space Weather School, July 21-25, 2021, University of Coimbra, Portugal

In 2022

- The 2nd summer school on Space research, technology and application, 3-10 July 2022, National Astronomical Observatory (NAO) – Rozhen, Bulgaria
- Sumer Space Weather School - Physics and use of tools, Houphouët Boigny University, Abidjan, October, 2022, Côte d'Ivoire
- Iberian Space Weather School, July 20-24, 2022, University of Alcala, Spain
- Describing and Analyzing Solar Data for a better prediction of Space Weather, TBD, 2021, Kigali, Rwanda

SCOSTEP - Science Comic Books

https://scostep.org/



English

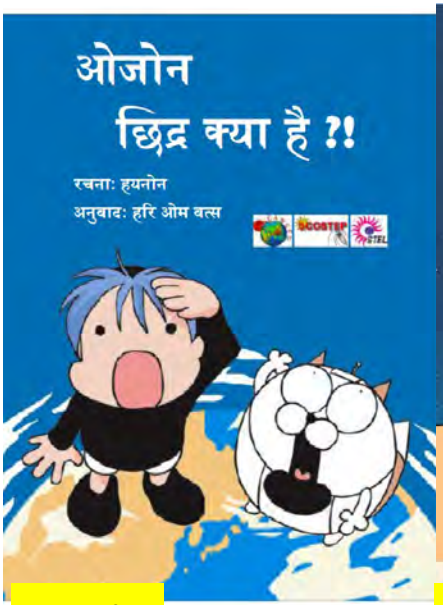
French

Czech

German

Korean

Tamil

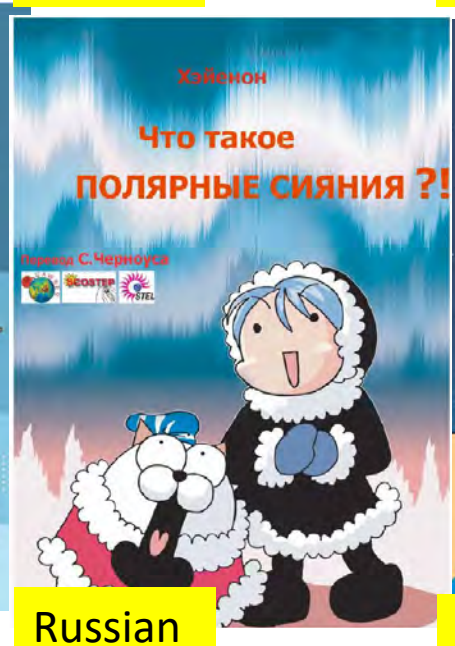


Hindi

Italic

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 all over the world 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