



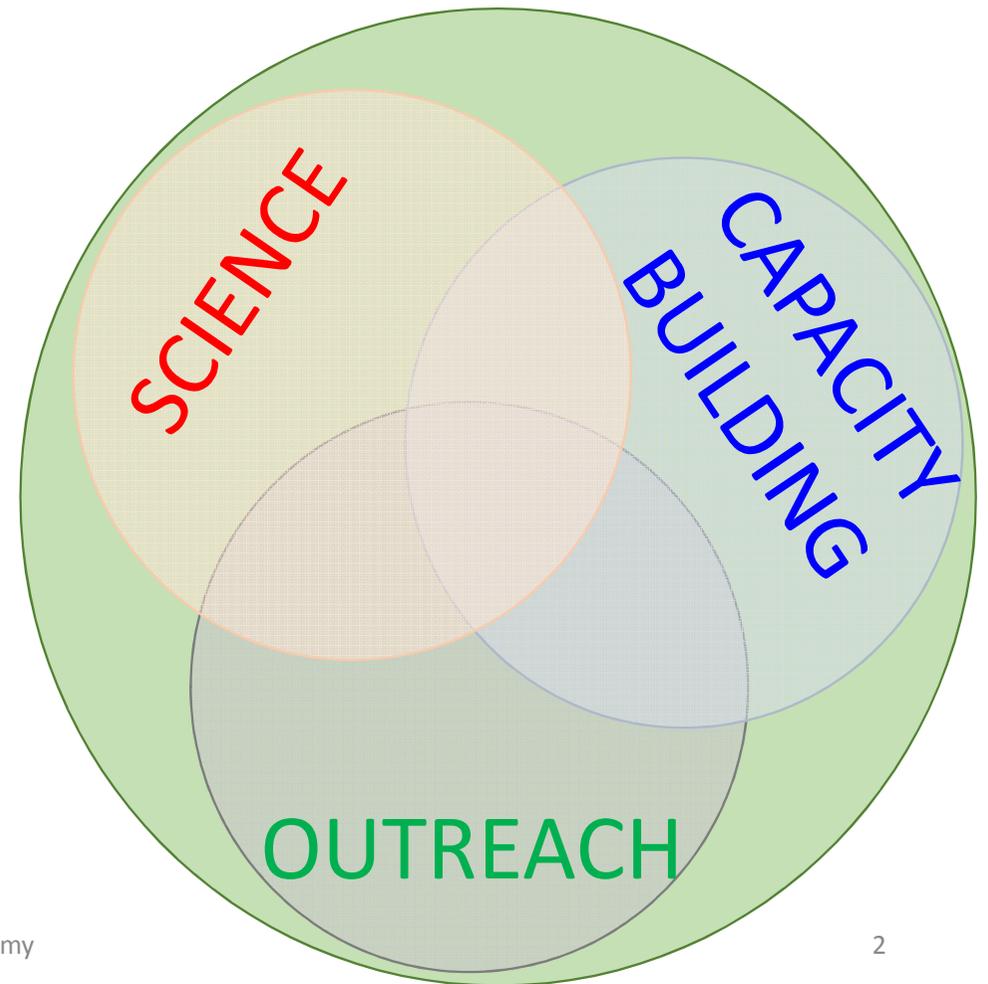
# An Update on SCOSTEP Activities

Nat Gopalswamy  
President, SCOSTEP  
([nat.gopalswamy@nasa.gov](mailto:nat.gopalswamy@nasa.gov))



# What Does SCOSTEP do?

- Runs long-term international interdisciplinary scientific programs in solar terrestrial physics since 1966
- Interacts with national and international programs involving solar terrestrial physics elements
- Engages in Capacity Building activities such as the annual Space Science Schools and SCOSTEP Visiting Scholar Program
- Outreach activities (comics books; public lectures)
- Disseminates new knowledge on the Sun-Earth System and how the Sun affects life and society
- Quarterly Newsletters
- Website: [www.yorku.ca/scostep](http://www.yorku.ca/scostep)
- Symposia
- Quadrennial Solar Terrestrial Physics Symposia
- Scientific papers in refereed journals



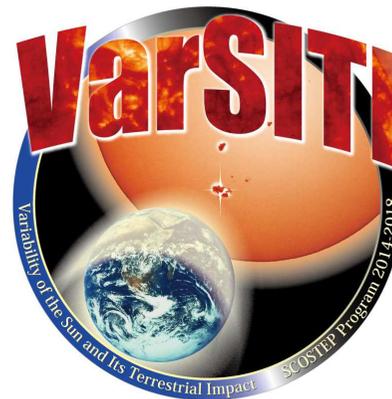
# *Variability of the Sun and Its Terrestrial Impact (VarSITI)*

varsiti.org

launched on  
January 13, 2014

2014-2018

Four Major Projects are  
being carried out



Co-chairs



Kazuo Shiokawa (Japan)



Katya Georgieva (Bulgaria)

<http://www.youtube.com/watch?v=couR4MyxNPY>

# Initial VarSITI Results Published in American Geophysical Union Journal

## Editors:

Qiang Hu (USA)

Bernd Funke (Spain)

Martin Kaufmann (Germany)

Olga Khabarova (Russia)

Jean-Pierre Raulin (Brazil)

Craig J. Rodger (New Zealand)

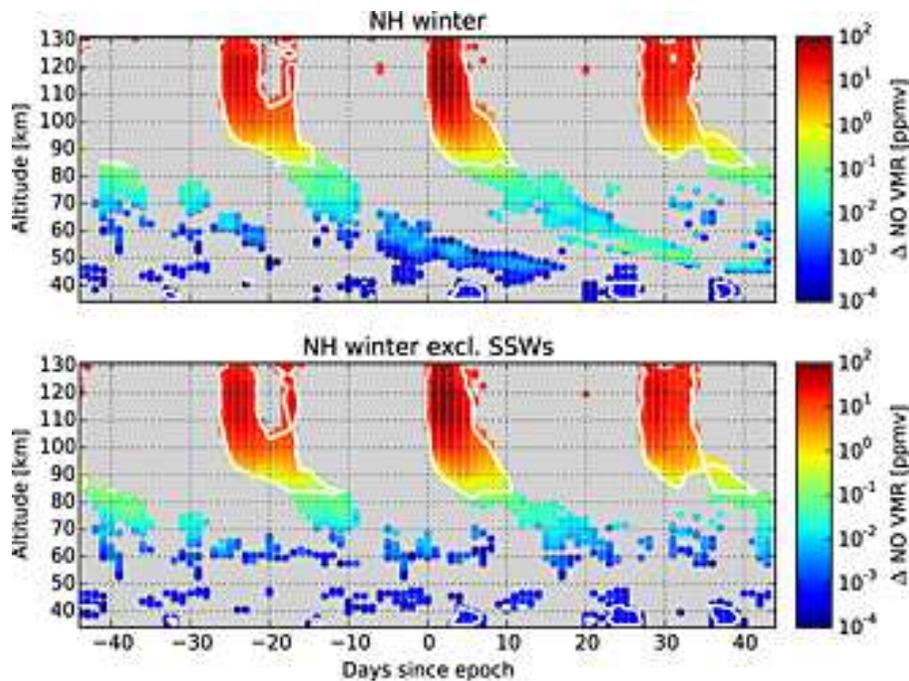
David F. Webb (USA)

- 26 Papers published in a Special issue named VarSITI (October 2015)
- Covers all aspects of solar terrestrial relationships
- Available on line:

[http://onlinelibrary.wiley.com/10.1002/\(ISSN\)2169-9402/specialsection/VarSITI](http://onlinelibrary.wiley.com/10.1002/(ISSN)2169-9402/specialsection/VarSITI)

The logo for the Journal of Geophysical Research (JGR), consisting of the letters 'JGR' in a bold, white, sans-serif font on a dark blue background.The logo for AGU Publications, featuring a stylized white 'AGU' symbol followed by the text 'AGU PUBLICATIONS' in a white, sans-serif font on a dark blue background.

# Solar Rotation Signal in Earth's Atmosphere due to Energetic Particle Precipitation

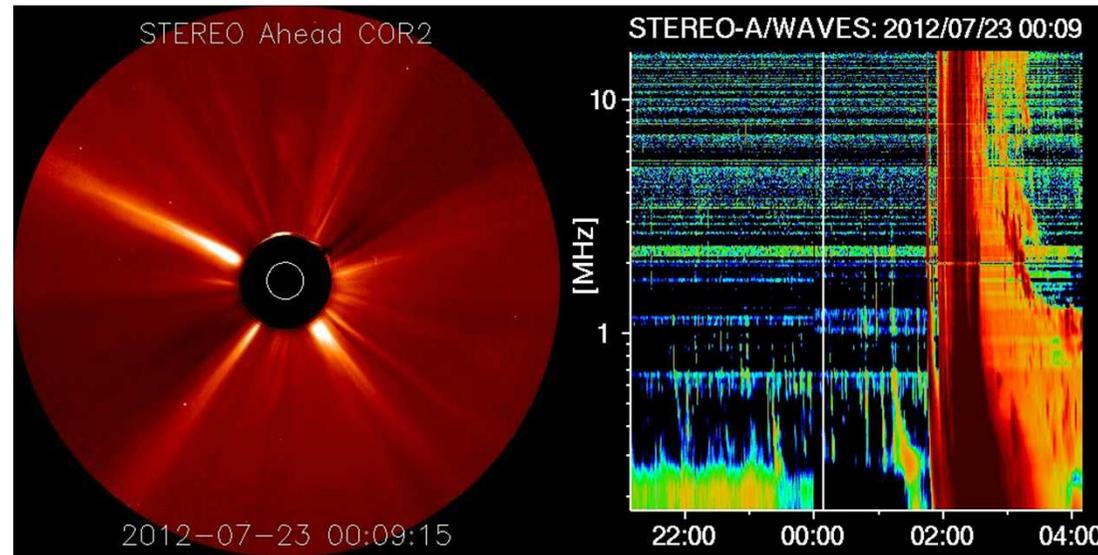
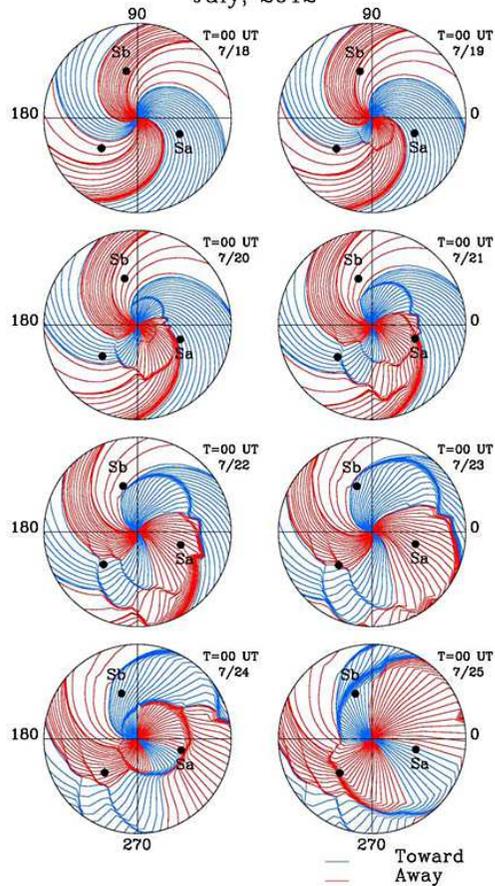


- Solar rotation (27-day) signal is clearly observed in the production of Nitric Oxide in the lower thermosphere down to about 50-km altitude.
- The Nitric Oxide descends to the stratospheric levels, where it destroys ozone
- The descent can last for up to a month after the production of Nitric Oxide

K. Hendrickx, L. Megner, J. Gumbel, D. E. Siskind, Y. J. Orsolini, H. Nesse Tyssøy, M. Hervig, J. Geophys. Res. 2015  
SCOSTEP/VarSITI Special Issue

# A Tsunami in the Heliosphere in July 2012

Ecliptic Plane IMF to 2 AU  
July, 2012



Images from  
NASA's STEREO  
Spacecraft

- An extreme solar event occurred on 23 July 2012
- Modeling shows that the event disturbed the entire solar system and is confirmed by spacecraft measurement

Devrie S. Intriligator, et al. J. Geophys. Res. 2015 SCOSTEP/VarSITI Special Issue

# International Support for VarSITI Research

- USA, Japan, and Germany have provided significant funding for VarSITI research
- NASA has provided grants to US scientists to participate in VarSITI research to the tune of \$2.5 million over a three-year period
- Similar funding in Germany
- US National Science Foundation provides travel support to US scientists to participate in SCOSTEP/VarSITI activities
- ISRO support to Indian SCOSTEP/VarSITI scientists expected soon
- Japan (via Nagoya University) provides strong support to the VarSITI program
- Bulgaria continues to provide cyber infrastructure to SCOSTEP/VarSITI

# SCOSTEP-WDS Collaboration

SOHO (ESA & NASA)

**SCOSTEP-WDS Workshop**

**Global Data Activities for the Study of Solar-Terrestrial Variability**

**28-30 September 2015**

National Institute of Information and Communications Technology (NICT), Tokyo, Japan

Home Programme Scope Venue Committees Schedule Accommodation Practical Information



## Collaboration for achieving common objectives:

- A) Enable universal and equitable access to quality-assured scientific data, data services, products and information
- B) Ensure long-term data stewardship
- C) Foster compliance to agreed-upon data standards and conventions
- D) Provide mechanisms to facilitate and improve data usage for solar terrestrial science



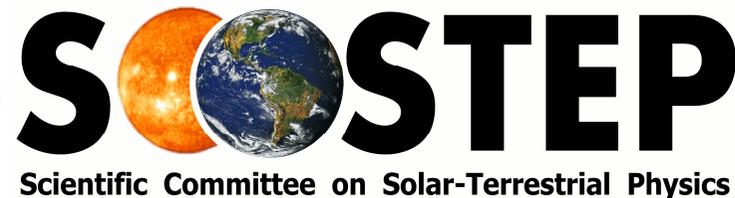
Important Dates

Abstract Submission (closed):

Data bases for STP identified; Support provided for making rare data sets available to the community

# SCOSTEP-COSPAR Collaboration

- *The session will involve reviews of recent progress in the SCOSTEP scientific disciplines and the relevant COSPAR commissions.*
- *There will be panel discussion on capacity building and public outreach.*
- *Each talk will have three elements: (1) state of the field, (2) knowledge gap, and (3) future directions including observing tools and modeling.*



# VarSITI General Symposium 2016

**First VarSITI General Symposium**  
June 6-10, 2016, Bulgaria

Basic information Meeting place Registration&Abstract remarks Program&Presentations Final

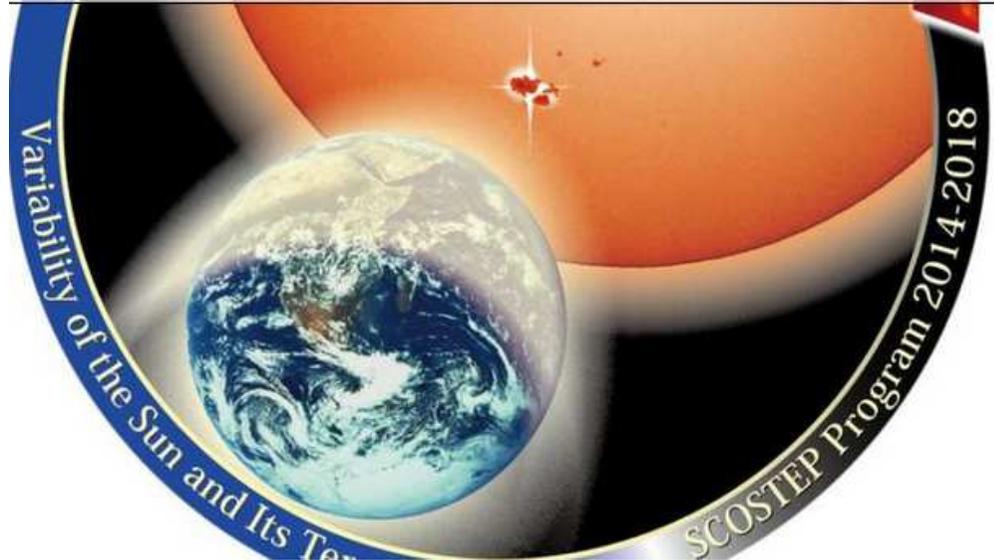
**Deadlines** Registration&Abstract

**Pre-registration: 1 March 2016;**  
**Note** that you have to complete your pre-registration before you can submit an abstract and a financial support application **There are 82 days until the Pre-Registration Deadline!**

**Abstract submission: 1 March 2016** There are 82 days until the Abstract submission Deadline!

**Financial support applications: 1 March 2016** There are 82 days until the applications Deadline!

**Final registration: 3 April 2016** There are 115 days until the Final registration Deadline!



## Sessions

- Solar and Heliospheric Drivers of Earth-Affecting Events
- Long-term Variation of the Sun and Climate
- Understanding the Earth's space environment and its connection to space weather
- Sun to Mud Campaign Study of March 15-17, 2015 Event
- Modeling the connection from Sun to Mud
- Data archiving
- on Heliospheric Cataloguing, Analysis and Technique Service (HELCATS)

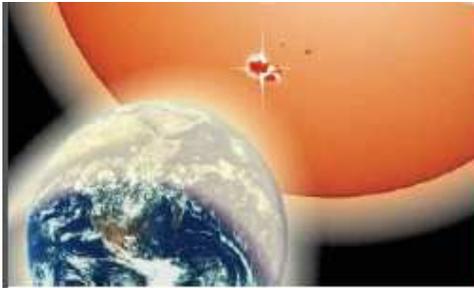
Albena, Bulgaria, June 6-10, 2016

# Solar Terrestrial Physics Symposium (STP14)

- Vancouver, Canada: July 9-13, 2018
- University of British Columbia
- The week before COSPAR Assembly in the US (Pasadena, CA)
- SOC: SCOSTEP Bureau + VarSITI leaders + Community STP leaders
- LOC: Andrew Yau (Co-Chair), Bernie Shizgal (Co-Chair), Donald Danskin, Greg Enno, Ian Mann, John Manuel, Marianna Shepherd, Jean-Pierre St. Maurice, William Ward
- Final results from VarSITI investigations + All aspects of STP research to be presented



Nat Gopalswamy



# VarSITI Newsletter

## Inside this issue

Article 1:

Kanzelhöhe Observatory Austria: ESA-SSA Expert Service Center for Solar Weather – real-time detection of flares and filaments

.....1

Article 2:

RESULTS OF WG1 ACTIVITY IN 2015  
INSIDE ROSMIC PROJECT  
“Solar cycle in UV radiation and its non-zonal temperature response in the atmosphere of the Earth”

.....3

Highlight on Young Scientists 1:

Project ISEST

Article 1:



## Kanzelhöhe Observatory Austria: ESA-SSA Expert Service Center for Solar Weather – real-time detection of flares and filaments

**M. Temmer<sup>1</sup>, W. Pötzi<sup>1</sup> and A. M. Veronig<sup>1</sup>**  
<sup>1</sup>Kanzelhöhe Observatory/  
Institute of Physics,  
University of Graz, Austria



Manuela Temmer



Werner Pötzi



Astrid M. Veronig

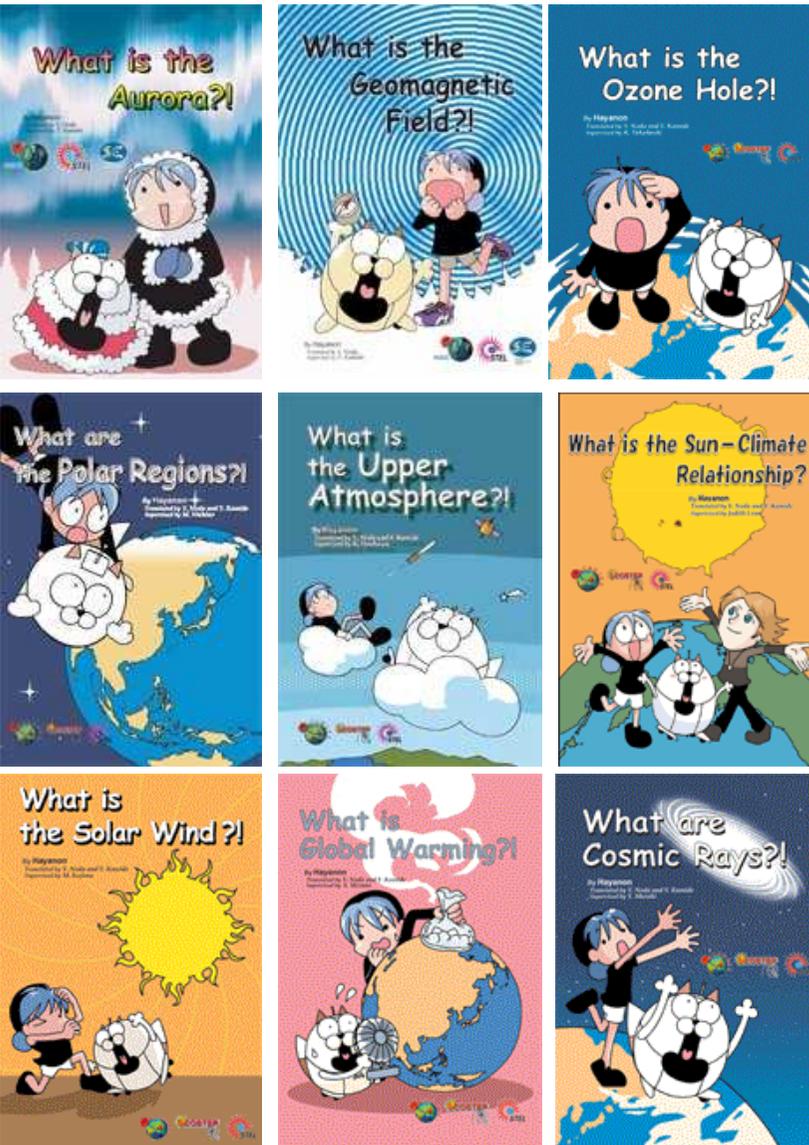
Quarterly produced by the Nagoya University, Japan

Editors: K. Georgieva, K. Shiokawa

Secretary: Mai Asakura

\*Interdisciplinary reports    \*Young scientists introduced    \*Hot topics discussed





## SCOSTEP Outreach: Comic Books

- To raise the public awareness on selected scientific topics (currently 9)
- Translated into many languages
- Available online: [yorku.ca/scostep](http://yorku.ca/scostep)
- Printed and distributed at meetings

# SCOSTEP Visiting Scholar (SVS) Program

- The objective is to train young scientists and graduate students from developing countries in established laboratories of solar terrestrial physics for 1-3 months
- Funding: SCOSTEP will provide the airfare, while the hosting lab will provide the living expenses (lodging, meals, ground transportation, visa fees and other incidentals)
- Frequency: At least four scholars each year, one each related to the four VarSITI themes
- Launched in January 2015
- More labs have come forward to host SCOSTEP Visiting Scholars

## **SVS Selection Committee**

### **Nicole Vilmer (France) Chair**

Maura Hagan (USA)

Babatunde Rabiou (Nigeria)

Jean-Pierre Raulin (Brazil)

Aki Yoshikawa (Japan)

Manuel Grande (UK)

# SVS Class of 2015: Six Students from 4 Countries

Babatunde Olufemi ADEBESIN, Landmark University, Omu-Aran, [Nigeria](#), visiting [NASA/GSFC](#)  
**Translation of realistic geoelectric fields into geophysically induced currents**



Tân LÉ MINH, Tay Nguyen University, [Vietnam](#), visiting [Nagoya University](#)  
**Nighttime D-region ionosphere and lightning-ionosphere interactions**



Owolabi OLUWAFISAYO, University of Lagos, [Nigeria](#), visiting [SANSA](#)  
**Characterization of field aligned current (FAC) during ionospheric local plasma irregularities**



George Erik OMONDI, Maseno University, [Kenya](#), visiting [SANSA](#)  
**Correlation between geomagnetic field variations and the dynamics of the equatorial ionosphere over Eastern Africa**



Selvakumaran RAVINDRAN, Indian Institute of Geomagnetism, [India](#), visiting [NASA/GSFC](#)  
**Identification of CMEs and their characteristics associated with geomagnetic storms**



Neethal THOMAS, Indian Institute of Geomagnetism, [India](#), visiting [Nagoya University](#)  
**Understanding magnetospheric dynamics during Pi2 pulsation events**





- Advanced lectures by international experts on all aspects of the chain connecting the solar interior to Earth's interior
- Hands-on activities (instruments, data analysis)
- Instrument workshops for potential new ISWI instrument deployments
- Sixty students (40 national, 20 international planned)
- Along the footsteps of many successful schools in Indonesia, Kenya, Peru

