An Update on SCOSTEP Activities

Nat Gopalswamy
President, SCOSTEP
(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
- 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

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
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.

A Tsunami in the Heliosphere in July 2012

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


Images from NASA’s STEREO Spacecraft
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

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

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

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
Inside this issue

Article 1:
Kanzelhöhe Observatory Austria: ESA-SSA Expert Service Center for Solar Weather – real-time detection of flares and filaments

Article 2:
RESULTS OF WGT ACTIVITY IN 2015 INSIDE ROSMIC PROJECT
“Solar cycle in UV radiation and its non-zonal temperature response in the atmosphere of the Earth”

Highlight on Young Scientists 1:

Article 1:
Kanzelhöhe Observatory Austria: ESA-SSA Expert Service Center for Solar Weather – real-time detection of flares and filaments

M. Temmer¹, W. Pötzi¹
and A. M. Veronig¹
¹Kanzelhöhe Observatory/
Institute of Physics,
University of Graz, Austria

Manuela Temmer Werner Pötzi Astrid M. Veronig

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Secretary: Mai Asakura
*Interdisciplinary reports *Young scientists introduced *Hot topics discussed

Nat Gopalswamy
SCOSTEP Outreach: Comic Books

- To raise the public awareness on selected scientific topics (currently 9)
- Translated into many languages
- Available online: 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 Rabiu (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

Tån 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 filed 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